Social Equity & Regional Growth Study

Considerations for integrating social equity into regional planning and *Metro 2050*

Prepared by Keltie Craig Consulting
in association with:

Luna Aixin Consulting, Kevin Kapenda, & Licker
Geospatial (Aaron Licker, Kristi Silk, Renee Proulx)

You know, inequity is heartbreaking. And if we really talked about all of the things that [inequity] created, I think it would melt people in privileged positions' brains. Because I don't think they have to deal with the things that we have to deal with.

I don't think that they have to make a choice to go and see a friend or a family member who is on their deathbed. Or make a choice to go and see their children. To comfort your friends' children.

Do other people feel that these are choices that they have to make? I do. And it's terrible.

- SOCIAL EQUITY STUDY LISTENING & LEARNING PARTICIPANT

Executive Summary

In a growing region like Metro Vancouver, incorporating social equity into regional growth planning is crucial to ensuring that our region moves forward in an equitable and inclusive manner. The purpose of the Social Equity & Regional Growth Study was to identify how social equity considerations can better inform regional growth planning.
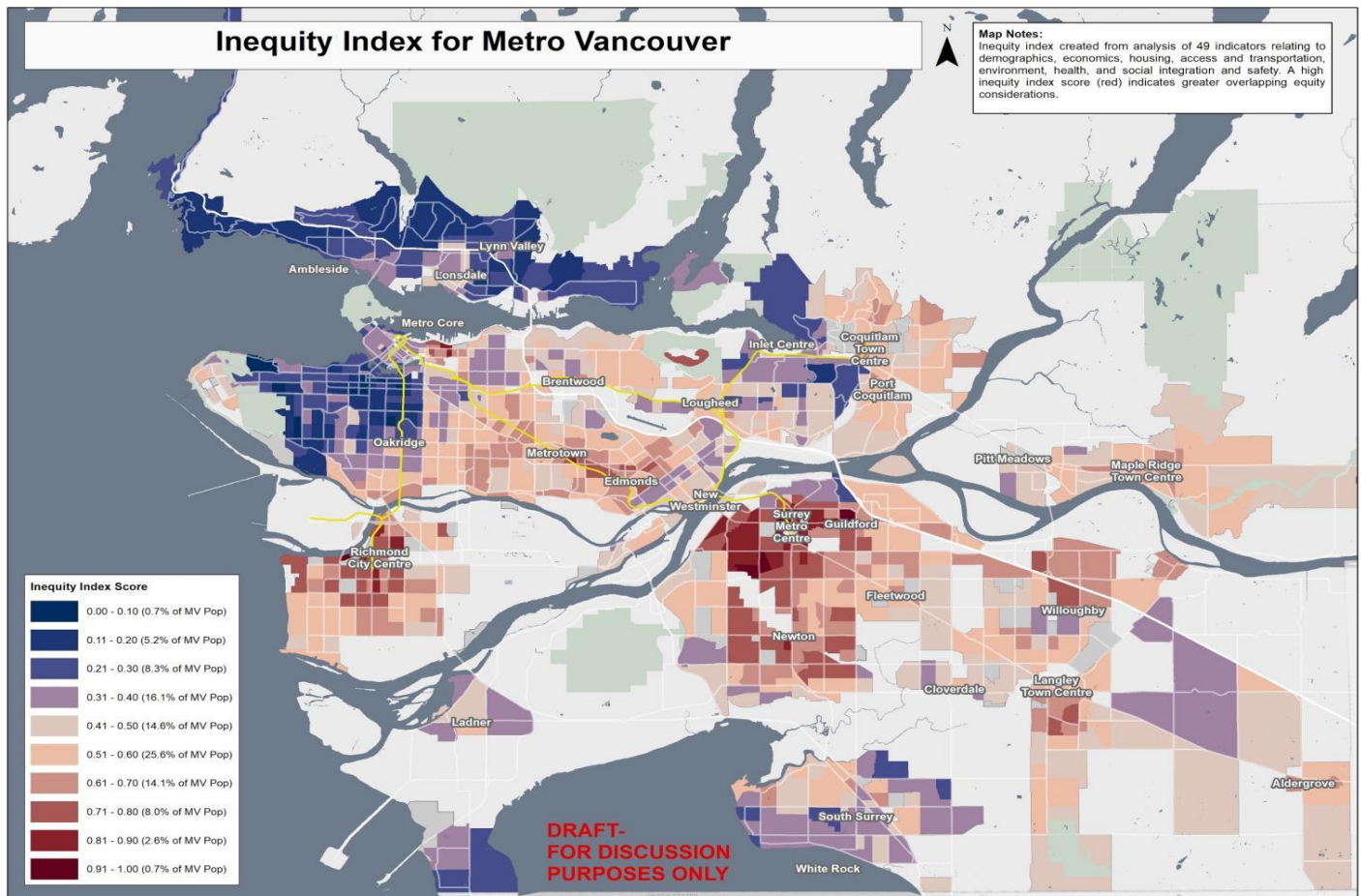
The specific goals of this study are to:

1. Develop a quantitative and spatial understanding of the existing inequities within the MVRD region, as these relate to growth management.

2. Develop a qualitative understanding of how social equity context experts would like to see equity defined and addressed within long-range land use policies.

3. Create an approach to synthesize the findings from the previous two items into an analysis and set of clear, actionable recommendations for incorporating social equity considerations into new and existing policy language and implementation practices, including the development of a "social equity analysis tool" that can be applied to *Metro 2050*.

The quantitative spatial research undertaken in the study was developed by mapping a series of 49 social equity indicators, producing an Inequity Baseline. This is the first Inequity Baseline developed for Metro Vancouver, and one of the first of its kind in Canada to bring together the data in this way.

Indicators were divided into the following categories:

- Demographics-related Indicators
- Conditions-related Indicators
    - o Economics
    - o Housing
    - o Education
    - o Environment
    - o Access and Transportation
    - o Social Integration and Safety
    - o Health

The 49 indicators making up the Inequity Baseline were then analyzed using a mathematical process called a "Principle Component Analysis" (PCA). The PCA groups and weighs data based on similarity in variation and the degree of their correlation. This helps identify patterns and consolidates the large amounts of datasets being examined in this study. A result of running the PCA is a Regional Inequity Index Map that highlights geographic areas with multiple, overlapping inequity concerns. A high Inequity Index score signifies more overlapping equity concerns, based on the 49 indicators mapped.

Inequity Index for Metro Vancouver

Map Notes:
Inequity index created from analysis of 49 indicators relating to demographics, economics, housing, access and transportation, environment, health, and social integration and safety. A high inequity index score (red) indicates greater overlapping equity considerations.

Inequity Index Score
- 0.00 - 0.10 (0.7% of MV Pop)
- 0.11 - 0.20 (5.2% of MV Pop)
- 0.21 - 0.30 (8.3% of MV Pop)
- 0.31 - 0.40 (16.1% of MV Pop)
- 0.41 - 0.50 (14.6% of MV Pop)
- 0.51 - 0.60 (25.6% of MV Pop)
- 0.61 - 0.70 (14.1% of MV Pop)
- 0.71 - 0.80 (8.0% of MV Pop)
- 0.81 - 0.90 (2.6% of MV Pop)
- 0.91 - 1.00 (0.7% of MV Pop)

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FOR DISCUSSION
PURPOSES ONLY

The qualitative component of the study - called "Listening & Learning" engagement sessions - were designed to give voice to the lived experiences of inequities by racialized and LGBTQ2S people from across the region. Some of the main topics and themes heard during the engagement are shown in the table below.

Topic	Themes
What does Social Equity look and feel like?	
Social Equity for Indigenous Nations and Peoples	• Indigenous Social Equity needs to be treated distinctly in recognition of Indigenous Rights and Title • Historical trauma and injustices need to be acknowledged • Each individual's experience is unique, and intersectionality is important • Culture is foundational
Social Equity for Other Equity-Denied Populations	• Move from emphasizing "Equality" to "Equity • Social Equity is experienced differently • Supporting social equity means supporting people's potential, fair distribution, and feelings of inclusion. • Representation is necessary for social equity • Dignity is inherent to social equity
Experiences of Inequities in the Region	
Land Use and Growth Management	• Homelessness looks different throughout the region • Support and opportunities are needed for equity-denied populations to live and work within the same community • The effects of displacement threaten community connections & support

	• Parks and green space need to feel welcoming for all • Classism and race bias in relation to community demographics affects services • There is a need for a diversity of housing types in neighbourhoods across the region • Patterns of historical colonial displacement repeat themselves in contemporary gentrification • Retail space affordability and availability impacts equity-denied populations
Transit and Mobility	• Transit-reliant populations face isolation, delays, and fewer opportunities in parts of the region with lower transit connectivity between job centres • Congested transit disproportionately impacts riders with disabilities, medical concerns, or other mobility considerations • A lack of transit frequency and reliability impacts economic and social opportunities • Some sub-regions are experiencing rapid growth due to immigration and lower housing costs, but don't have sufficient transit service to address resulting congestion • Pedestrian health and safety is concerning in areas with rising vehicle traffic • Lack of amenities at SkyTrain stations and bus exchanges (public washrooms, WiFi) has disproportionate impacts • Greater focus is needed on enhancing the perception of safety while using transit • Racial bias from transit security and employees is experienced in their enforcement of regulations • Interests of privileged stakeholders should not supersede those of transit-reliant populations • Sustaining relationships/community is difficult when solely transit-reliant

A synthesis of key study findings arising from the quantitative and qualitative data produced recommendations in four main areas:

1. Use a refined definition of social equity.
2. Target three priority areas for action:
    a. Focus policy response on inequity indicators connected to regional growth and land use.
    b. Integrate a selection of social equity indicators into regional growth strategy performance monitoring.
    c. Develop a corporate social equity plan.
3. Employ the "Social Equity Analysis Tool" (SEAT) to evaluate policies under consideration.
4. Begin a review of existing policy by drawing on previously identified gaps.

These are summarized below.

1. A refined definition of social equity.

> Social equity in Metro Vancouver is the incorporation of justice and fairness within the region's principles, practices and policies in order to support the development of equitable outcomes for all individuals.
>
> It is the promotion of access to context-appropriate opportunities and representation within systems of power for those that face systemic barriers and are the most negatively impacted by regional decisions, often due to intersecting and compounding factors such as race, ethnicity, Indigeneity, gender, sexuality, religion, age, socio-economic status, and mental or physical disability.
>
> Expanding social equity means developing a region where individuals do not experience discrimination or exclusion from society because of their identities, but instead are welcomed, celebrated, supported and treated with dignity and respect.

2. Priority areas for action

a. Focus policy response on the following inequity indicators connected to regional growth and land use:
   - Rate of Change – demolitions by land use change
   - Access to parks and recreation space
   - Subsidized housing
   - Relative access to transit
   - Rate of change – demolitions by replacement
   - Housing suitability (overcrowding)
   - Employment access (transit)

b. Integrate a selection of 8-12 social equity indicators into regional growth strategy performance monitoring, drawing from the following list:
   - Urban Tree Canopy
   - Employment Access (Transit)
   - Employment Access (Drive)
   - Exposure to Flood Hazard
   - Average Commute Time
   - Subsidized Housing
   - Access to Parks and Recreation Space
   - Transportation Cost Burden
   - Unemployment Rate
   - Income Inequality Ratio
   - Housing Tenure – Renter
   - Housing Tenure – Owner
   - Median Home Value
   - Relative Access to Transit

c. Develop a corporate social equity plan.

   This would complement the external-facing policy/practice work outlined in this report with a more comprehensive look at social equity including internal organizational work and necessary investments in the time, learning, and 'infrastructure' needed for transformational change.

3. **Employ the "Social Equity Analysis Tool" (SEAT)**, developed during this project, to evaluate policies under consideration. The SEAT consists of the following four stages, each with a series of accompanying questions to guide its use:
   - Stage 1: Reflection & Representation
   - Stage 2: Research & Assumption Check
   - Stage 3: Impacts & Solutions
   - Stage 4: Measurement & Evaluation

4. **Begin a review of existing policy by drawing on gaps** previously identified within *Metro 2040* as part of the precursor to the Social Equity & Regional Growth Study: the *Social Equity in Regional Growth Management Report* (2019). This includes identified policy gaps within the Housing, Environmental, Economy & Employment, Climate and Agriculture goal areas.

The Social Equity & Regional Growth Study also includes some suggested areas for future work, both in research and additional engagement, to build on and further develop an understanding of inequity in the region.

While this study is a standalone report, it can inform subsequent work and policy direction for Metro Vancouver, and act as a rough blueprint for incorporating social equity into the region's growth management planning. This process will require significant time and resources, and continual learning. The Social Equity & Regional Growth Study should be viewed as another useful step in the ongoing journey to make social equity a fundamental component of regional growth planning.

1. Introduction

This report was created on the traditional, ancestral, and unceded territories of the xʷməθkwəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and Səl̓ílwətaʔ/Selilwitulh (Tsleil-Waututh) First Nations, in what is also known as Vancouver, as well as the traditional territories of the SEMYOME (Semiahmoo), sc̓əwaθən məsteyəxʷ (Tsawwassen) and q̓ʷa:n̓ƛ̓ən̓ (Kwantlen) First Nations, in what is also known as Surrey.

We begin with an understanding that social equity manifests itself differently based on our environments. In other words, where we are located matters. Social and systemic inequities experienced by communities that are marginalized are linked to the forced removal of First Nations, Inuit and Metis peoples from their lands for the benefit of colonial power. While Indigenous Nations have asserted their sovereignty over their territories since time immemorial, both BC and Canadian legislation also affirm Aboriginal Rights and Title through provincial (2019) and federal (2016) declarations supporting the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Recognizing and naming these truths continues to be a priority action related to reconciliation, and social equity work more broadly.

Social equity is not possible without acknowledging a necessary shift in power, and the role that governments and public institutions can play in this transformation. It is an opportunity to acknowledge and begin to make amends for the historic - and in many cases current – roles that decision-makers and policy writers have held in perpetuating systemic bias and discrimination against Indigenous peoples as well as Black and racialized people, and the intersecting identities that are present within all communities.

We recognize the foundational contributions and efforts that many generations of individuals and organizations have already done to bring voice to the needs, hopes and dreams of those that have been denied a place at the table. A summary of some of the significant contributions to the understanding of lived experiences of inequity over recent years is included in Appendix I, and readers are encouraged to review it. Indigenous, Black, People of Colour, queer, trans, non-binary, two-spirit, lesbian and gay voices - and the intersectional identity elements these folks inhabit such as age, disability, socio-economic status, and religion - have surfaced issues and complexities that many in dominant identity groups can and should listen to and learn from.

Our consulting team members have varied lived experiences based on our intersectional identities: non-binary, woman, man, Black, White, South East Asian + South Pacific Islands, Jewish, queer, heterosexual, neuro-diverse, disabled, able-bodied, parent, partner…but we are all settlers on this land. We recognize that without an Indigenous team member on this project, we lack the direct lived experience of Indigenous culture, worldviews, resilience and challenge that would benefit a deeper understanding of social equity in the region.

1.1   Orientation

This report is organized into the following main sections:

1) **Study Overview**, including background, context and guiding principles.
2) **Inequity Baseline Data Report,** including methodology, approach, and the 49 indicators used to develop the Inequity Baseline, with corresponding maps of distribution in the region. It also presents the Regional Inequity Index.
3) **Listening and Learning Engagement Report,** which provides a description of who and how participants were engaged with, and shares key themes that were heard during the engagement sessions.
4) **Recommendations**, including a definition of Social Equity for MVRD, priorities for action, and a Social Equity Analysis Tool to assist with integrating social equity considerations into policy creation, review, and amendments.
5) **Opportunities for Future Work,** including additional research and engagement that could move forward an understanding of social equity.

Finally, the Appendices summarize important contextual reading, and additional background information and details on the Inequity Baseline and Listening and Learning Engagement Sessions. It also includes high-resolution versions of the Indicator Maps.

1.2   Terminology & Key Concepts

Language matters, language changes, and language is contextual. What may once have been a preferred term may no longer be appropriate, and words or names that one individual may embrace to help define themselves may not resonate with another individual who may share similar identity characteristics.

We use several terms within this report to talk about individuals, communities, and/or populations that historically and currently face systemic barriers, discrimination, and injustice:

Equity-denied populations - marginalized and racialized populations who are being denied access and opportunities by existing structures of power. This term was raised by a participant in the engagement sessions as preferred to the more euphemistic term "equity-seeking." The phrase "equity-seeking" overburdens those who are already impacted by systemic inequities to drive the rationale for equity building. Working towards equity means positioning those that hold systemic power as "equity-sharing" groups, thus balancing and including all the necessary actors for socially equitable outcomes for all to be possible and attainable.

Social equity context experts – individuals who have gained knowledge from their personal involvement and lived experiences of inequity. The importance of including context experts in decision-making processes is grounded in the principle of "nothing about us, without us."'

Communities/populations that are marginalized - communities and populations that experience systemic barriers and discrimination as well as disproportionate oppression from institutions of power because of specific aspects of their identity, such as ethnicity, race, religion, sexual orientation, gender, or disability, among others. The marginalization a community experiences does not necessarily reflect on its resilience. A community can be strong and also be under tremendous economic, environmental, and health pressures due to institutional choices that have discriminated and oppressed them.

Racialized communities: people that are non-Caucasian in race or non-White in colour. As with many of the terms listed in this section, there may be individuals or communities within these identities that prefer other terms, such as "BIPOC" (Black, Indigenous, or People of Colour). While these identities may share experiences of racism and the systemic effects of living in a society that privileges Whiteness, the individual histories and contemporary experiences between each identity group are vastly different and should not be conflated. While the term racialized may be useful as a shorthand to identify "non-White" and the resulting racism that occurs, it is acknowledged that individuals within these communities may or may not identify with any form of aggregated term.

LGBTQ2S+: Persons who identify as Lesbian, Gay, Bi-Sexual, Transgender, Queer, or Two-Spirited. Although all of the different identities within "LGBTQ2S" are often grouped together (and share sexism as a common root of oppression), there are specific needs and concerns related to each individual identity.

Cis-gender: Gender identity and expression matches the biological sex a person was assigned at birth.

Non-binary gender: Gender identity and expression may blend elements of man and woman, or is not captured by either. Other terms may be preferred, such as genderqueer, agender, or bigender – while none of these mean exactly the same thing, they all refer to an experience of gender that is not simply male or female.

In addition, it is important to clarify several other terms that will be referred to throughout this report:

Intersectional/Intersecting identities: The term "intersectionality" was coined in 1989 by Dr. Kimberlé Crenshaw, a civil rights activist and legal scholar in critical race theory, to better depict how discrimination can occur on the basis of both race and gender, and often, a combination of both. The term is now used to describe how

discrimination based on race, gender, class and other individual characteristics "intersect" and overlap with one another. The experience of a lesbian Black woman will be different from that of other women who may not be Black, may not be lesbian, or may not be both.

White Body supremacy: Trauma specialist and therapist Resmaa Menakem describes the concept of 'White body supremacy' as "the perpetuation of a false narrative that White people are better than people with other skin colors and ethnic backgrounds." It is viewing Whiteness as the status quo, placing White people at the top of a ladder of racial hierarchy while positioning Black populations at the bottom. Many people may view White supremacy only as neo-fascism or similar extreme representations of racist harms. While these extremist organizations embody supremacy, so too do many other societal norms that are taken for granted.

Equality, Equity, & Systemic Exclusion:

(Image: Robert Wood Johnson Foundation)

In the diagram, two different scenarios are depicted: equality vs equity. **Under equality, everyone gets the same bicycle** regardless of their size, ability or age. The bike only truly fits one person; it is difficult or impossible for everyone else to ride. **Under equity, each figure gets a bicycle that addresses their specific need**, thus creating a fair way of providing added mobility to each individual.

Moving from an equality approach to a fair and equitable approach might seem to be sufficient in providing proper support to each individual to excel in society. But it doesn't highlight the reality that dominant populations are safeguarded and promoted via the **systemic exclusion** of others, preventing them from gaining power and decision-making authority. Conversations of power and privilege are necessary to truly get to equitable outcomes.

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2. Study Overview

In 2019, a report on [Social Equity in Regional Growth Management](#) highlighted key insights and recommendations to Metro Vancouver Regional District (MVRD) to advance their understanding of social equity and applications in regional land use and planning. This was done in preparation for the upcoming update to of *Metro 2050,* the Regional Growth Strategy, in order to place a more explicit focus on considering social equity.

The Social Equity & Regional Growth Study is an opportunity to follow up on previous recommendations, and begin to explore how regional growth planning can be informed by social equity considerations.

The specific goals of this study are to:

4. Develop a quantitative and spatial understanding of the existing inequities within the MVRD region, as these relate to growth management.

5. Develop a qualitative understanding of how social equity context experts would like to see equity defined and addressed within long-range land use policies.

6. Create an approach to synthesize the findings from the previous two items into an analysis and set of clear, actionable recommendations for incorporating social equity considerations into new and existing policy language and implementation practices, including the development of a "social equity analysis tool" that can be applied to *Metro 2050*.

2.1.1 Project Context

Our understanding of social equity is impacted by the current context – both locally and globally. At the time the Social Equity & Regional Growth Study was undertaken in 2020, the following conditions, limitations and considerations were present:

- Heightened Anti-Indigenous, anti-Black, anti-Asian racism

  o Across Canada and the U.S., systemic anti-Indigenous and anti-Black racism continues to oppress those populations through institutionalized discrimination and injustice that originated with the colonization of North America and trans-Atlantic slave trade. The enduring presence of systemic anti-Indigenous racism in Metro Vancouver dates back centuries to the colonization of the traditional Coast Salish territories our region occupies today. Furthermore, the recent increase of anti-Asian racism (primarily Chinese) in Metro Vancouver and across North America due to the COVID-19 pandemic in 2020 is another chapter in the history of anti-Asian racism on the continent, including the Chinese Exclusion Act of 1923 and the forcible expulsion and internment of Japanese Canadians during World War Two.

- Impacts of Systemic Trauma

  o Impacts of colonization can affect the perception of "safe space" for participation in an engagement process. This can be experienced by Indigenous as well as immigrants and settlers from other countries affected by colonization.

- Safety and access considerations related to the COVID-19 pandemic

  o Physical distancing requirements and gathering restrictions reduce the ability to engage in person.

  o Access to technology and internet may be limited for some groups.

  o Capacity of equity-denied groups to participate in engagement activities might be further limited given the disparities caused by social determinants of health and inequity.

In addition, the project scope created some constraints for engagement:

- Time & budget limitations

    o It is not possible to connect with all equity-denied groups in the region, so the resulting engagement should be viewed as narrative and anecdotal, as opposed to a comprehensive, representative sample.

- Relational commitments

    o Engaging with Indigenous Host Nations (those on whose traditional territory you are situated on) requires investing in ongoing, respectful relationships, not one-time studies or individual projects. The socio-political sphere and current pandemic further compounds challenges to engage individual Nations in meaningful ways. MVRD is working to build long term relationships with First Nations in the region and this study is intended to complement but not replace that work.

- Access Barriers: These include conditions relating to:

    o Technological accessibility and capacity gaps, i.e. seniors; those living in rural areas; those in poverty.

    o Language accessibility barriers for other-than-English speakers.

    o Existence or the lack of cultural safety within engagement practices.

    o Disabilities, including physical and/or mental.

Finally, the Inequity Baseline Report only used one form of quantitative analysis: spatial distribution of equity indicators. While mapping these indicators can be beneficial to planning, which largely exists as a spatial exercise, spatial distribution also has some limitations. Namely, some causes of inequities will not show up on a map, as not every form of oppression can be represented with a spatial proxy. Spatial distribution also does not indicate disproportionate distribution of benefits and harms according to other dimensions, which would be a useful exercise for future study.

2.1.2 Guiding Principles

A set of principles was created to help guide the project process:

- Use intersectional, anti-oppressive and participatory approaches

- Emphasize cultural, identity and relational safety of participants

- Build on existing work, and acknowledge those that have done much already on this topic

- Recognize the importance of collaboration, learning, and reflection to this work

3. Inequity Baseline Data Report

3.1 Description

The Inequity Baseline Data Report created for the Social Equity & Regional Growth Study visually presents spatial data for 49 indicators relevant to the relationship between social equity and growth management. These were applied to the regional context as part of an exploratory analysis. Quantitative data, while imperfect, can help us measure indicators of inequity at regional and local scales. By looking at the relationships between indicators, we can start to frame opportunities and limitations for investing in equity building within communities.

Geographic information systems (GIS) are an effective medium for reviewing spatial relationships and analyzing inter-relationships of data. GIS is a powerful tool and its use should be aligned with the agreed-upon objectives and ethics of any equity project. Examples of themes related to spatial-equity include: distribution of populations, positive and negative natural and social environmental settings, economic opportunities and barriers, transportation and mobility access, the location of goods and services, housing type and location, social connectedness and isolation, and determinants of health.

3.2 Inequity Baseline Indicators

Indicators were selected for this report following a comprehensive review of inequity baselines and indices throughout North America, predominantly in the United States (see Appendix II).

Following this research, a long list of potential indicators was produced. Indicators were refined from the resulting list based on the following criteria:

- regularity of use elsewhere

- applicability to Metro Vancouver

- data availability

- repeatability in the future

- client and team feedback

The best practice review suggested that thematic groupings of indicators are important and that forty to sixty indicators would be reasonable. Our resulting baseline includes 49 indicators and are presented in the table below. Detailed information on each indicator is presented in a data dictionary (see Appendix III).

> A note on terminology
>
> Language and terms are intricately connected to equity and representation, and are evolving. The names of indicators used in this report are drawn from the terminology used in the data source (e.g. Statistics Canada). They do not always represent current best practice, and may in fact be offensive, triggering or erasing to some communities. Examples of this include the term "Visible Minority," a standard term used by Statistics Canada which has generally been replaced by "Racialized Persons" by the wider community. Another example is "Female-headed Single Families" which omits parents that are transwomen, non-binary, and potentially others. Where applicable, we have indicated preferred terms in brackets.

Table 1: List of indicators included in the Inequity Baseline

Demographics-related Indicators	26. Early Childhood Development - Language and Cognitive Development - Vulnerable Children
1. Visible Minority	27. Early Childhood Development - Communication Skills - Vulnerable Children
2. Indigenous Identity	**Conditions-related Indicators: Environment**
3. Seniors	28. Access to Parks and Recreation Space
4. Children	29. Urban Tree Canopy
5. Single Parent Families	30. Access to Grocery Stores
6. Female-Headed Households	31. Urban Heat Island
7. Ethnic Diversity Index	32. Exposure to Flood Hazard
8. Median Age	**Conditions-related Indicators: Access and Transportation**
9. No Knowledge of Official Languages	33. Relative Access to Transit
Conditions-related Indicators: Economics	34. Average Commute Time
10. Median Household Income	35. Transportation Cost Burden
11. Poverty Ratio - Low Income Measure (LIM)	36. Average Transportation Spend
12. Unemployment Rate	37. Jobs Accessible Within 45 Minutes by Car
13. High Paying Jobs Index	38. Jobs Accessible Within 45 Minutes by Transit
14. Income Inequality Ratio	39. Ratio of Employment Access Within 45 Minutes: Transit/Car
15. Expected Employment Growth	**Conditions-related Indicators: Social Integration and Safety**
Conditions-related Indicators: Housing	40. Voter Turnout 2017
16. Housing Cost Burden	41. Youth Voter Turnout 2017
17. Housing Tenure - Renters	42. Four or More Persons to Confide In
18. Housing Tenure - Owners	43. Strong Sense of Community Belonging
19. Median Home Value	44. Long Term Residency (Mobility Status)
20. Housing Suitability (Overcrowding)	45. Sense of Safety
21. Gentrification Score	**Conditions-related Indicators: Health**
22. Subsidized Housing	46. Access to Primary Healthcare
23. Rate of Change - Demolitions by Replacement	47. General Health
24. Rate of Change - Demolitions by Land Use Change	48. Mental Health
Conditions-related Indicators: Education	49. Chronic Conditions (1+)
25. No Post-Secondary Education	

3.3   Methods

The data that was used came from varying geographic scales, i.e. dissemination areas for Statistics Canada, neighbourhood scale from the My Health, My Community survey, and electoral districts. To present information in an effective manner that can support regional decision-making, we conformed data from varying geographic spatial scales into one scale - the traffic analysis zone (TAZ) scale - which is the most common geographic unit of analysis for Metro Vancouver. All data were allocated to the TAZ scale using a population weighting from 2016 Census dissemination block information (Census dissemination blocks are the most granular source of data available for a project such as this one).

This data was used in a statistical analytic process called the Principal Component Analysis (PCA). The PCA groups and weighs data based on similarity in variation and the degree of their correlation. This is important as with such a large volume of data as is present in this study, it would not be possible for the human eye to distill the data to its most important contributors to focus attention on areas with multiple, uniquely contributing indicators. For more information about PCA, see Appendix IV.

A result of running the PCA is an Inequity Index Map that **highlights geographic areas with multiple, overlapping inequity concerns.** The index map is a tool that serves two purposes. Firstly, to highlight areas where, from the data we measured, there are several factors that are occurring and are unrelated. In other words, where there are multiple unique factors that could be contributing to inequity in an area (e.g. higher exposure to flood hazard and high childhood vulnerability rates are likely unrelated but could be overlapping factors in a particular neighbourhood, contributing to a higher inequity index score). Secondly, to serve as a focusing tool to support deeper analysis; 49 individual indicators may be an impossible and overwhelming starting point, so a single composite value provides a quantitative arrow pointing at where to look closer.

3.4   Indicator Maps

Indicators are grouped by theme for clarity and organization; however, a given indicator could belong to more than one group. The themes used are:

- Demographics-related Indicators
- Conditions-related Indicators
    - Economics
    - Housing
    - Education
    - Environment
    - Access and Transportation
    - Social Integration and Safety
    - Health

Descriptions, rationales, methodology and data sources are provided on each map. All mapping was produced using equal intervals or natural breaks in determining the colour distribution and adjusted to its nearest value - whole number or decimal, where appropriate - with the exception of median age which was shown by standard deviation. Basic statistics for each indicator are summarized in Appendix V. The colour gradient on the maps indicate the degree to which the inequity indicator being mapped is present. **Generally, the darker the colour, the greater the potential for inequity** (with the exception of median home value). This should be considered a loose guide however, given that some of the indicators mapped don't necessarily indicate a "concern" but rather the presence of a given condition (e.g. proportion of children). In some cases, such as with the income inequality ratio, both ends of the scale can be inequitable and the mapping attempts to capture this. The indicator maps in the following section are shown as thumbnails; higher resolution maps are included as the final Appendix.

3.4.1 Demographics-related Indicators

Demographics-related indicators are population-specific and were predominantly sourced from the national Census (2016). Exact variables used, links to data sources, and other detailed metadata will be found in the spatial database accompanying this report. Generally, the darker the colour of the map gradient, the greater the potential for inequity related to this indicator.

1. Visible Minority (Racialized Persons)

Description

Percentage of the population that reported being a member of a visible minority group as defined by the Employment Equity Act, calculated through the 2016 Statistics Canada Census of Population.

Rationale

Visible minority persons are different racialized people and minority groups that have historically and currently still are suffering from systematic marginalization.

Result

The results showed highest percentages (where 84% to 99% of the population were visible minority persons) to be in Richmond and Surrey's Newton neighbourhood. Additionally, a swath of South-Eastern Vancouver in the Victoria-Fraserview area also had high percentages of visible minority persons.
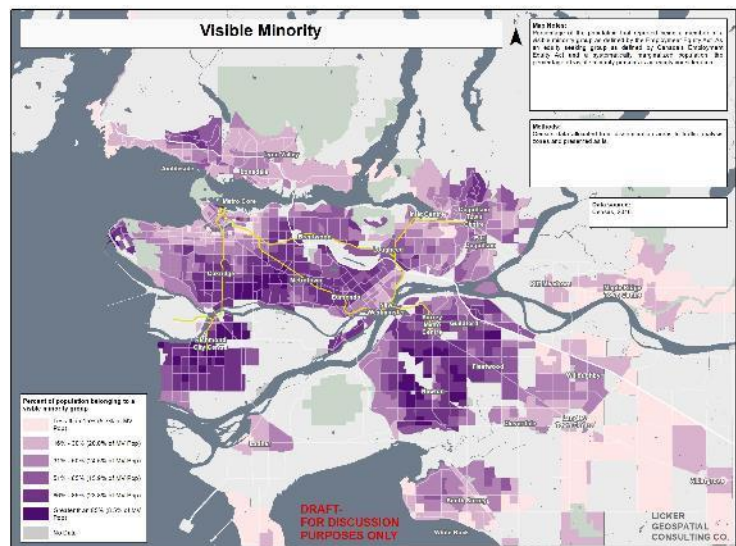
2. Indigenous Identity (Peoples)
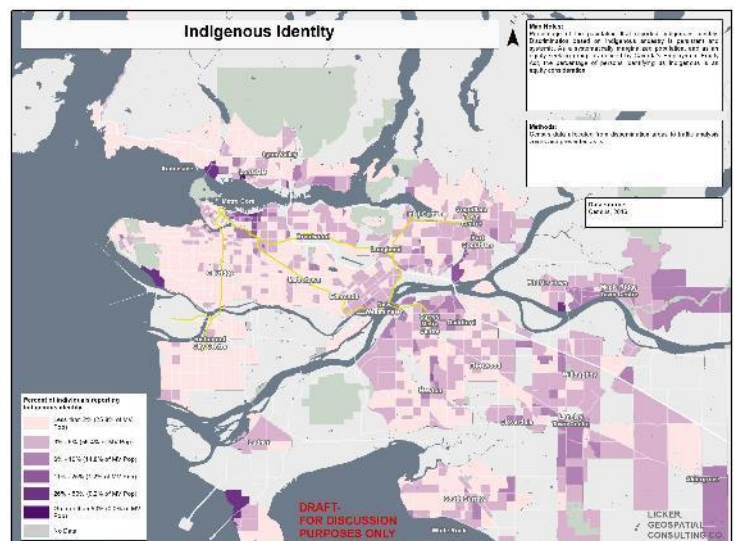
Description

Percentage of the population that reported Indigenous identity, gathered from the 2016 Statistics Canada Census of Population.

Rationale

Discrimination based on Indigenous identity is a persistent and systemic act of injustice. Indigenous People continue to resist oppression and marginalization from colonial-era systems and policies, which may include regional land use practices.

Result

The results showed highest percentages (where 49% to 91% of the population were Indigenous peoples) in the respective reserves of the Skwxwú7mesh (Squamish), Stó:lō (Mission), sq̓əc̓iy̓aʔɬ təməxʷ (Katzie), kwikwetlem (Coquitlam), xʷməθkwəy̓əm (Musqueam), and sc̓əwaθenaʔɬ təməxʷ (Tsawwassen) peoples, as well as in Vancouver's Downtown-Eastside. The regional mean was 3%, while concentrations of more than 50% in reserve lands led to high spatial variability for the region overall. This is the seventh highest variability of the 49 selected indicators suggesting a high concentration of Indigenous peoples in specific geographic areas, and much less so elsewhere.
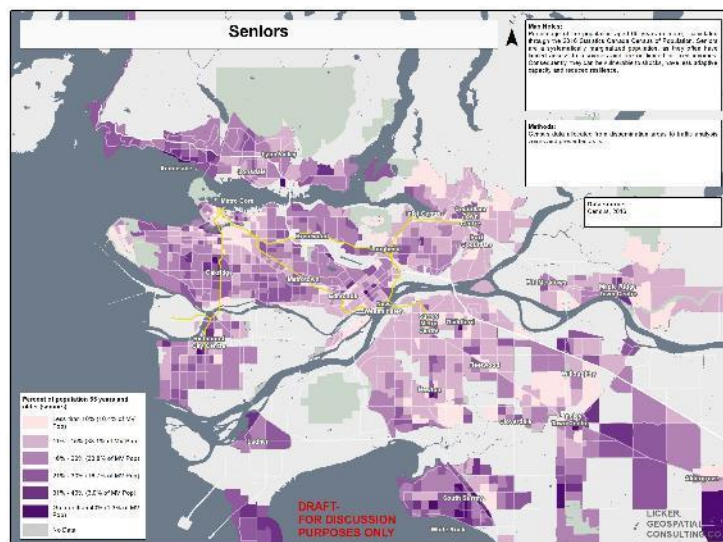
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3. Seniors

   ### Description

   Percentage of the population aged 65 years or more, calculated through the 2016 Statistics Canada Census of Population.

   ### Rationale

   Seniors are especially susceptible to changes, and often have reduced capacity to adapt to crisis events or chronic stressors such as extreme heat or poverty. Ripple effects of inequities can often place seniors at the most risk of being displaced or isolated. Seniors often experience limited or fixed incomes and should be a focus for mobility considerations. Consequently, they can be vulnerable to shocks, and have less adaptive capacity and reduced resilience.

   ### Result

   The results showed the highest percentages (where 40% to 68% of the population were seniors) were in North and West Vancouver, Richmond, South Surrey, and Aldergrove.
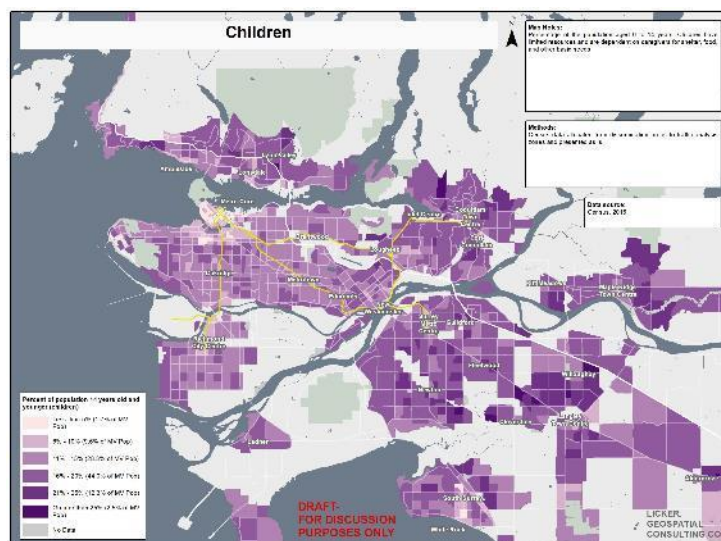
4. Children

   ### Description

   Percentage of the population aged 0 to 14 years, calculated through the 2016 Statistics Canada Census of Population.

   ### Rationale

   Children have limited resources and are dependent on caregivers for shelter, food, and other basic needs.

   ### Result

   The results showed highest concentrations (where 24% to 28% of the population were children) in the edge municipalities of the region: parts of Willoughby, Newton, South Surrey, Cloverdale and Maple Ridge.

5. Single Parent Families
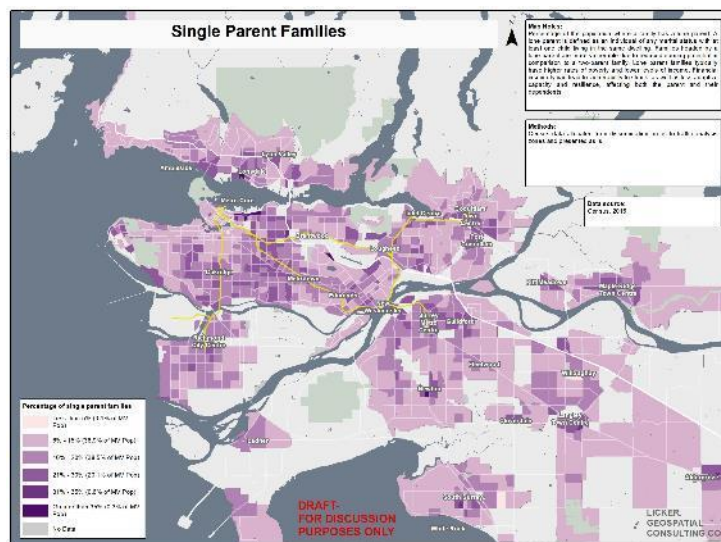
    Description

    Percentage of the population where a family has a single parent, calculated through the 2016 Statistics Canada Census of Population. A single parent is defined as an individual of any marital status with at least one child living in the same dwelling.

    Rationale

    Families supported by one parent are vulnerable to unintended impacts of market forces, such as housing affordability. They often have reduced earning potential in comparison to a two-parent family. One-parent families typically also experience higher rates of poverty and lower levels of income due to lack of access to child care to allow for full-time work, stigmatization, sexism, racism, and other forms of systemic discrimination and exclusion. Financial insecurity can lead to increased vulnerability to shock, as well as compromised adaptive capacity and resilience, affecting both the parent, their dependents and their communities.

    Result

    The results showed the highest concentrations (where 37% to 43% of the population were single parent families) in Vancouver's Downtown-Eastside, Surrey's Newton, and Lonsdale.

6. Female-Headed Households

    Description

    Percentage of the population where a family has a single female parent, calculated through the 2016 Statistics Canada Census of Population. A single parent is defined as an individual of any marital status with at least one child living in the same dwelling.

    Rationale

    Families supported by a single parent that identifies as a woman are more vulnerable due to persistent sexism. Single parent families typically experience higher rates of poverty and low levels of access to income-producing activities, especially when the single parent is a cis-woman, trans-woman, female-bodied trans-man, or non-binary person, and this is further compounded if for those who are Black, Indigenous or a Person of Colour (cis-gender and White men tend to make more income and enjoy more benefits relating to their privilege compared to other genders in the workforce). Economic insecurity and volatility can lead to increased vulnerability to shock, as well as significantly affected adaptive capacity and resilience capacities, affecting both the parent, their dependents and their communities.
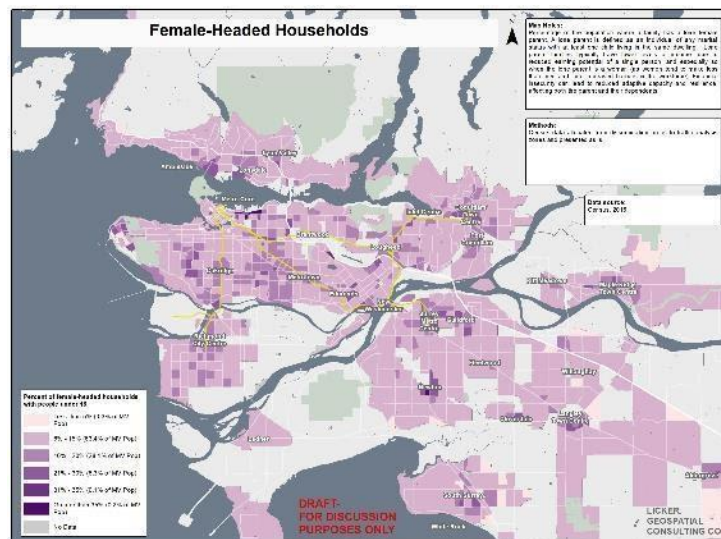
Result

The results showed the highest concentrations (where 37% to 43% of the population were female-headed single parent families) in Vancouver's Downtown-Eastside and Surrey's Newton.

7. Ethnic Diversity Index

Description

The ethnic diversity index is a measure of the number and relative evenness among ethnic groups within a community that considers the following ethnicities, as reported through the 2016 Statistics Canada Census of Population: South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean, Japanese, Other Visible Minority, Multiple Visible Minorities, and Not a Visible Minority. It was calculated using Shannon's Diversity index, which posits that a community dominated by one or two groupings of individuals is less diverse than one in which several different groups have a similar abundance. Thus, the formula takes into account both abundance and evenness of the input categories. The diversity index ranges between 0 and 1, with 1 representing infinite diversity and 0 representing no diversity. In this map, lighter shaded TAZs have a higher ethnic diversity index score while darker TAZs have a lower diversity index score.
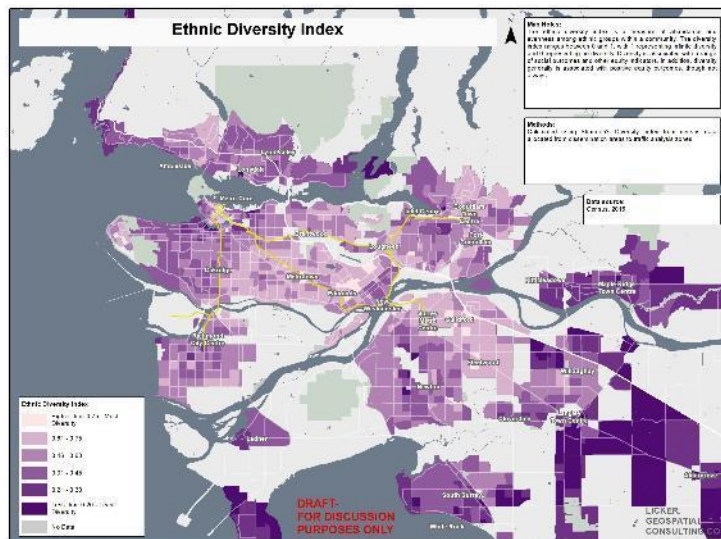
Rationale

The spatial distribution of ethnic diversity may reflect a variety of historical and contemporary influences on neighbourhood choice (for example racist housing policies or the presence of a strong ethnic enclave). Mapping the spatial distribution of ethnic diversity can support planning for more culturally appropriate engagement, services, and other government programs.

Result

The results showed the lowest diversity index scores (with scores less than 0.1) in Delta, Langley Township and South Surrey. Highest diversity was in Vancouver's Metro Core, Burnaby's Metrotown and Edmonds, and areas of Guildford.

8. No Knowledge of Official Languages
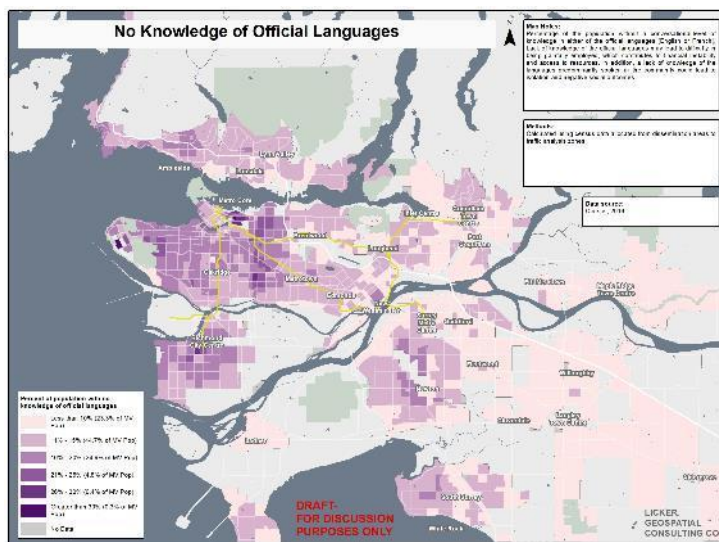
Description

Percentage of the population without a conversational-level of knowledge in either of the official languages (English or French), calculated through the 2016 Statistics Canada Census of Population.

Rationale

Lack of knowledge of the official languages may lead to difficulty in being gainfully employed, which contributes to financial instability and access to resources. In addition, a lack of knowledge of the languages predominantly spoken in the community could lead to isolation and negative social outcomes.

Result

The results showed the highest concentrations (where 22% to 39% of the population could experience language barriers) in the Downtown-Eastside of Vancouver, Richmond, and UBC.

9. Median Age

Description

Median age of the population as reported through the 2016 Statistics Canada Census of Population. The regional median for Metro Vancouver in 2016 was 41 years of age.

Rationale

Median age of the population provides insight into the overall distribution of age across the region and is useful for future planning to locate areas that may become predominantly senior within a certain time horizon and to provide context in conjunction with other indicators such as single parent families or education where programming may be beneficial.

Result

The results showed the oldest populations for the region in Belcarra, South Surrey, Delta and Richmond. Youngest populations were located at UBC and SFU, due to high student populations. Apart from UBC and SFU, the youngest populations were located in Langley Township (East Clayton) and South Vancouver (Marpole). The overall median age of the population, at 41 years, shows a predominantly middle-aged population in the region.
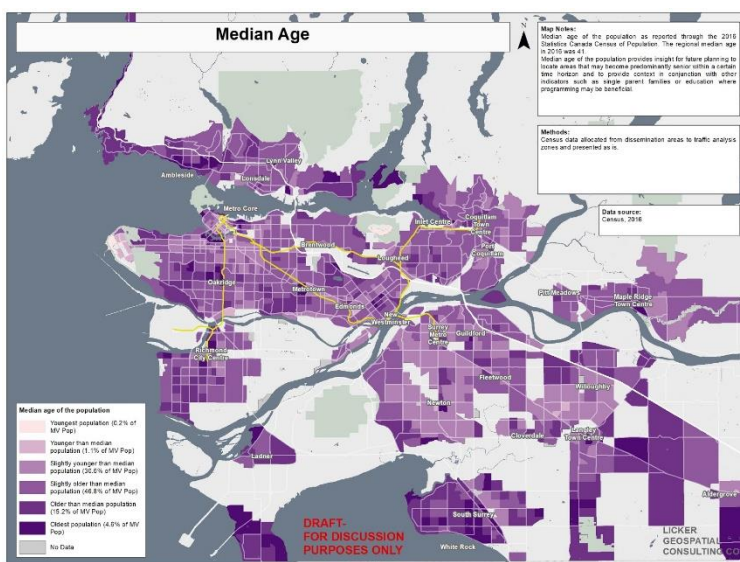
3.4.2 Conditions-related Indicators

Conditions-related indicators are further divided into the following themes: economics, housing, education, environment, access and transportation, social integration and safety, and health. These indicators are functions of the region and can be more or less influenced by regional planning. Generally, the darker the colour of the map gradient, the greater the potential for inequity related to this indicator.

Economic

10. Median Household Income

Description

Median household income is the median total income for households within a traffic analysis zone, as reported through the 2016 Statistics Canada Census of Population.

Rationale

Median household income is a means of assessing and comparing living standards, as well as economic well being. Low median household income is an equity consideration.

Result

The results show that the majority of instances where median household income is less than $20,000 annually are found in Vancouver's Downtown Eastside, and one instance in Surrey's Metro Centre.

Other areas with low median incomes (less than $30,000) are found in Langley City, Vancouver's Downtown Eastside periphery, Richmond City Centre, Maple Ridge Town Centre, as well as UBC and SFU's campuses.

The region has a fairly high overall median income of just over $72,000, with relatively low variability suggesting that perhaps the region has relatively widespread moderately high median income, or that the large reporting area may be masking areas of economic inequity. It is suggested that other economic indicators such as the Low-Income Measure and Income Inequality Ratio should be considered in conjunction with this indicator.
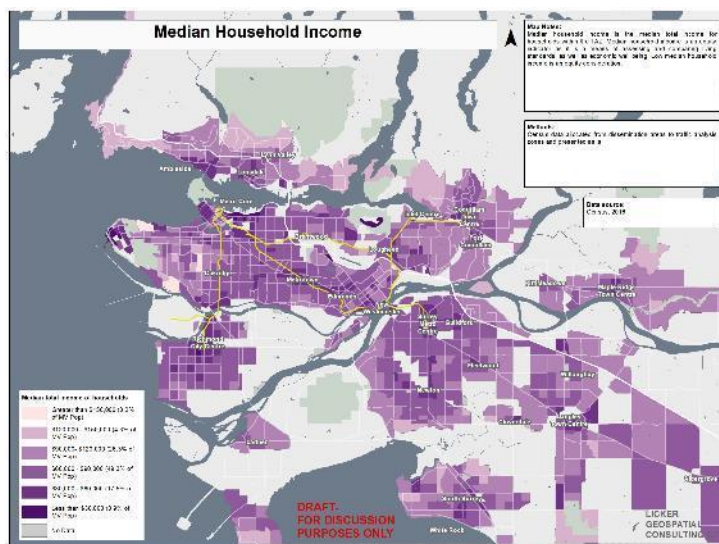
11. Poverty Ratio - Low Income Measure (LIM)

Description

The low-income measure is a measure of income and living wage reported through the 2016 Statistics Canada Census of Population. This measure refers to thresholds below which a family would likely devote 20% more of their after-tax income than average to the necessities of food, shelter and clothing. The thresholds are adjusted to current dollars using the Consumer Price Index. LIM is adjusted for household size.

Rationale

This indicator can be used to assess and compare living standards and economic wellbeing. It is useful to assist in the identification of areas which may have reduced resilience in the face of rapid urban change and/or assist in the identification of populations who may be vulnerable to gentrification and similar associated effects. This indicator can be used to reasonably locate concentrations of populations who are affected by multiple intersecting social inequities.

Result

The results showed the highest concentrations (where greater than 50% of the population were below the LIM threshold) were found in Langley City, Vancouver's Downtown-Eastside and the university campuses of SFU and UBC. Additionally, Richmond Town Centre, Guildford, Newton, Metrotown and Edmonds, and Langley Town Centre showed concentrations of 40%-50%.
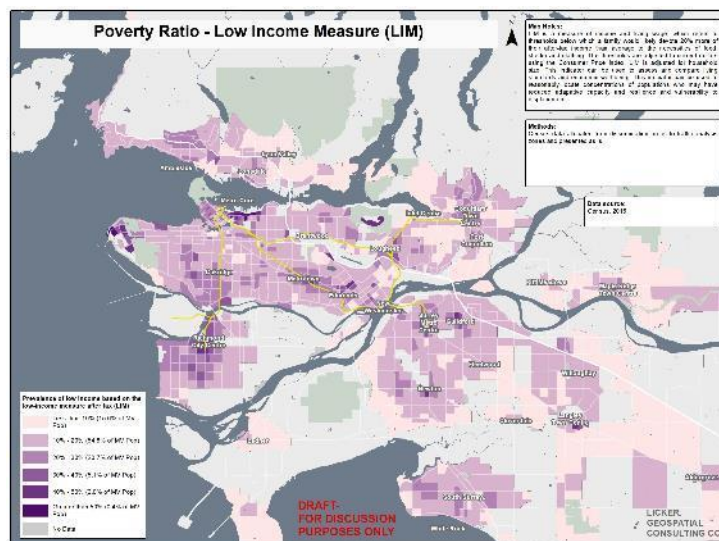
12. Unemployment Rate

Description

The unemployment rate is the number of unemployed persons expressed as a percentage of the labour force, through the 2016 Statistics Canada Census of Population.

Rationale

In an equitable economy, everyone who wants to work would be employed. Unemployment rate relates to economic well-being and health.

Result

The highest unemployment rate occurs within Vancouver's Downtown-Eastside, at 21.6%. Other areas with greater than 15% unemployment rates include Langley City/Langley Township, Lions Bay, UBC and North Vancouver's Lonsdale.
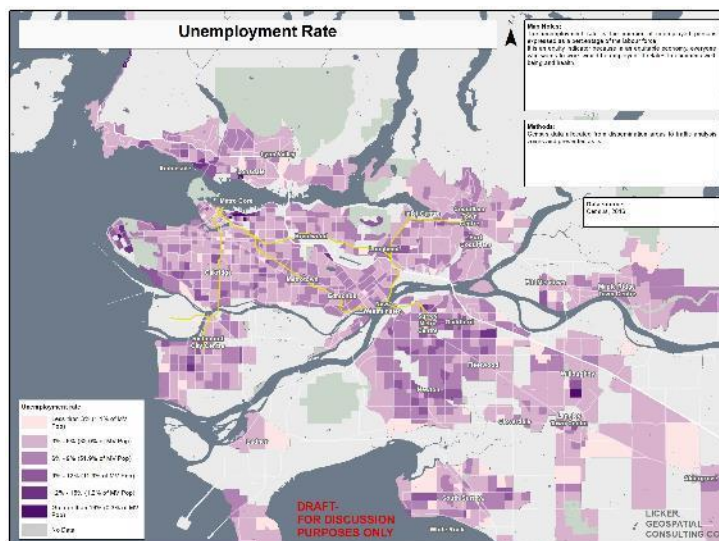
13. High Paying Jobs Index

Description

An indexed score of how many high paying jobs exist within the study unit relative to all other study units in Metro Vancouver. High paying jobs are those paying a median of $60,000 per year or greater based on their National Occupational Classification (NOC). This was calculated using the residential location of high paid workers from Census and then identifying their place of employment using TransLink origin-destination data. A score of one indicates the areas with the most high-paying jobs located within the TAZ regionally, and 0 indicates the fewest.

Rationale

Availability of high paying jobs within an area contributes to financial stability, access to resources and a reduction in cost burdens for transportation and shelter needs.

Result

Greater instances of high paying jobs (scores of greater than 0.5) tend to occur in core urban areas, such as Vancouver's Metro Core, Burnaby's Brentwood and Metrotown centres, Coquitlam Town Centre, Richmond Town Centre and Guilford. Ambleside and UBC also score relatively high in concentrations of high paying jobs. These are areas with office complexes and/or institutions. Areas with lower rates of high paying jobs occur in more isolated/suburban areas. This indicator was in the top ten for variability, indicating spatial clustering of high paying jobs.
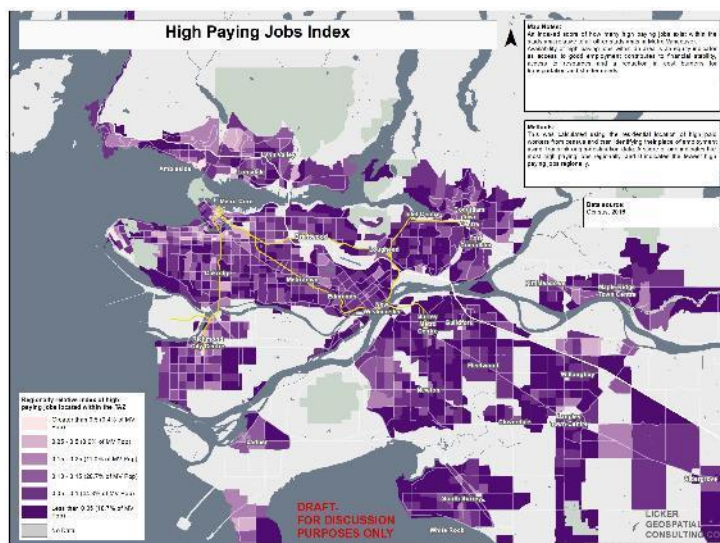
14. Income Inequality Ratio

Description

An alternative measure to the Employment Index, income equality ratio is a measure of the dispersion of incomes within the community. It compares the 8th income decile to the 2nd income decile, creating a score indicating the relative proportions of highest and lowest earners, calculated through the 2016 Statistics Canada Census of Population. For example, an income inequality score of 2 indicates that there are on average twice as many people earning incomes in the 8th income decile than those in the 2nd decile. The reason the 8th and 2nd deciles are chosen is to reduce the influence of outliers that may occur in the 1st
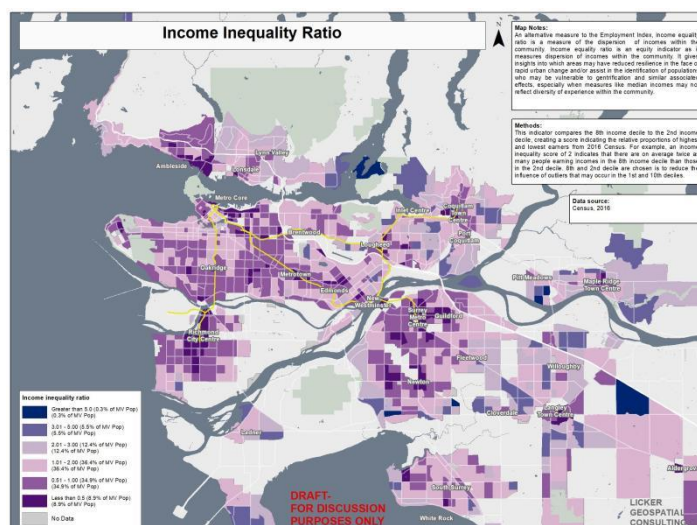
and 10th deciles, while still preserving the variability that would not occur in the middle deciles. The dark blue areas show where there are far more high income earners than low income earners (up to five-fold) while the dark purple areas indicate where there are more low income earners than high income earners (up to two-fold).

Rationale

Income equality ratio measures dispersion of incomes within the community. It gives insights into which areas may have reduced resilience in the face of rapid urban change and/or assist in the identification of populations who may be vulnerable to gentrification and similar associated effects, especially when measures like median incomes may not reflect diversity of experience within the community.

Result

Generally, income inequality tends to be higher in suburban areas. The highest income inequality scores (greater than 5) occur in Surrey, Langley Township and Pitt Meadows, though most municipalities do have areas with high income inequality scores. When examining urban core areas, the highest income inequality is 2.7, and occurs in Vancouver's False Creek neighbourhood. The lower scores, indicating a lower proportion of high-income earners to low-income earners occurs in the urban cores of Langley City and Richmond and Vancouver's Downtown-Eastside.

15. Expected Employment Growth

Description

This equity indicator highlights locations where access to economic opportunity is projected to increase (at least at a local scale). It is calculated using employment change projections (2016-2050), divided by the total number of employees in the area in 2016.

Rationale

This dataset can be used, especially in conjunction with transit/transportation access indicators, to understand which areas may be seeing increased access to jobs. Access to employment relates to economic well-being. Locations of increased employment growth are areas for focus in terms of transportation for commuting to and livability within those areas.

Result

The majority of Metro Vancouver is projected to experience employment growth or loss within 0-1%. A decline in employment (less than 0% growth) is projected in UBC, a small area in Vancouver's Metro-Core and rural Maple Ridge. Employment growth had the second highest variability of the selected indicators. Areas of high employment growth (greater than 3%) occurred in many of the metro centres including Langley's Willoughby, Lougheed, Surrey and Guildford, Maple Ridge and around Vancouver's False Creek.

Housing

## 16. Housing Cost Burden

Description

Housing cost burden is defined as the percent of households spending 30% or more of their income on shelter costs, as reported through the 2016 Statistics Canada Census of Population.

Rationale

Housing cost burden is a means of assessing and comparing living standards and economic well being. It is also useful to assist in the identification of areas which may have reduced resilience in the face of rapid urban change and/or assist in the identification of populations who may be vulnerable to gentrification and similar associated effects. This indicator can be used to reasonably identify concentrations of populations who are affected by multiple intersecting social inequities.

Result

The highest proportion of households spending 30% or more of income on shelter costs, excluding UBC where we see large student populations, occurred within Vancouver's Downtown-Eastside and Metro Core, as well as Richmond and Burnaby's Metrotown. The regional mean is 30% of the region spending at least 30% of their monthly income on shelter costs, suggesting that nearly a third of the region's population may be struggling with housing affordability.
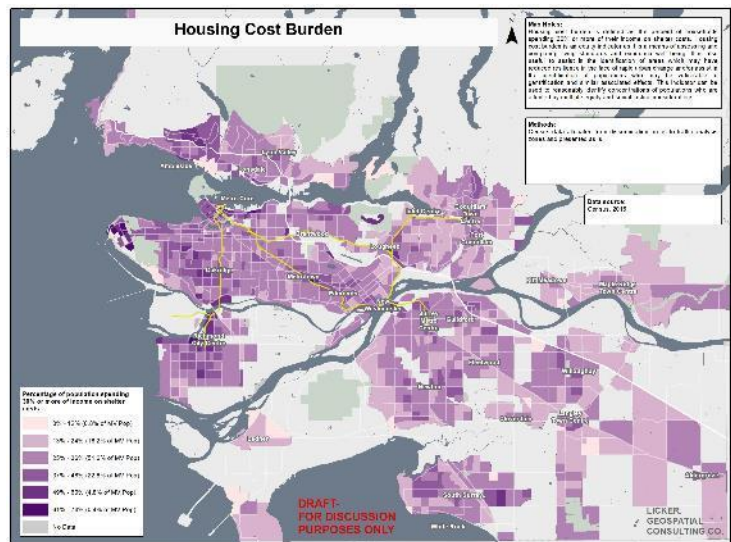
17. - 18. Housing Tenure - Renters and Owners

Description

A renter household refers to a private household where no member of the household owns the dwelling. An owner household refers to a private household where some member of the household owns the dwelling, even if it is still being paid for. This indicator represents the percentage of households that are renters or owners, respectively, and is calculated through the 2016 Statistics Canada Census of Population.

Rationale

Percentage of renter and owner households relates to potential wealth distribution as well as housing security in the face of urban change (an owner household has greater security of tenure as well as financial equity in their home, which are advantageous in the face of rapid urban change compared to a renter household).

23
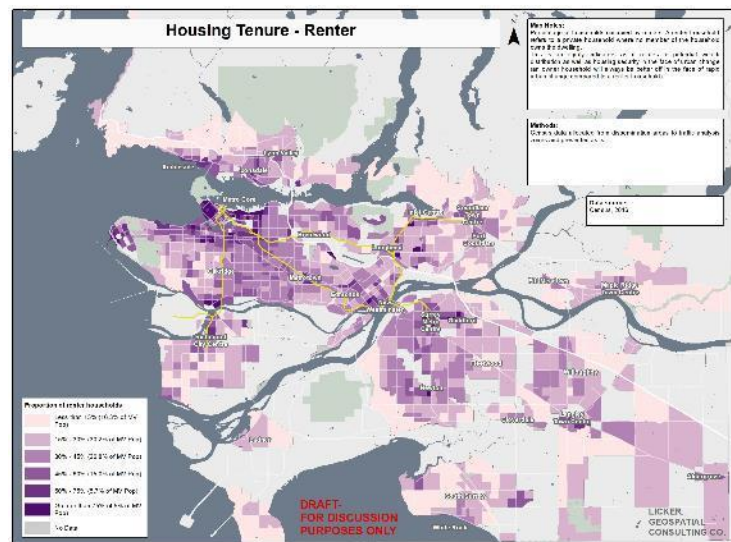
Result

Urban areas and municipal centres see higher rates of renter households, whereas there are higher rates of owner households outside of urban areas. The highest rates of renters (with greater than 90% of households renting the dwelling) occur in Vancouver's Downtown and Downtown-Eastside.

19. Median Home Value

Description

Median owner estimated value of dwelling is defined as the dollar amount expected by the owner if the asset were to be sold. It refers to the value of the entire dwelling, including the value of the land it is on and of any other structure on the property. This data is collected through the 2016 Statistics Canada Census of Population. In this map a darker shade indicates a higher median home value for the TAZ.

Rationale

Median home value is a means of assessing accessibility to different forms of housing. This factor can be combined with an understanding of mortgage assignments to gain a sense of structural wealth inequities within the community.

Result

Highest home values occur in Vancouver's western neighbourhoods: Arbutus Ridge, Dunbar Southlands and Point Grey, as well as West Vancouver. The regional median home value was $800,000 with the above-zero minimum being just under $40,000 and the maximum being nearly $4 million.
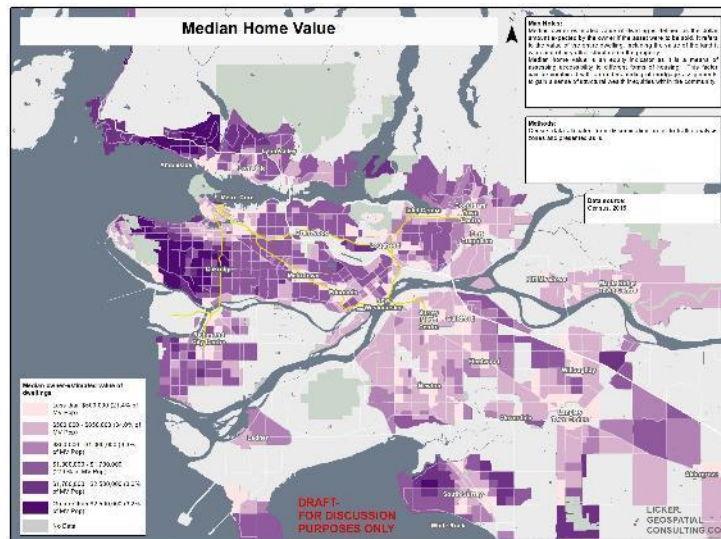
20. Housing Suitability (Overcrowding)

Description

Housing suitability is used as an indicator of overcrowding. Housing suitability refers to whether a household is living in suitable accommodations according to the National Occupancy Standard (NOS), and indicates if the dwelling has enough bedrooms for the size and composition of the household, as measured through the 2016 Statistics Canada Census of Population.

Rationale

Overcrowding is a means of assessing accessibility of appropriate housing. This indicator is a measure of housing size relative to the composition of a household (age, sex, relationships) and can indicate areas where the

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availability or affordability of housing has created situations where persons cannot live in a dwelling with adequate personal space. It is important to note that the term "suitability" is highly subjective as the definition prescribed by National Occupancy Standard may not align with cultural preferences and inter-generational living arrangements.

Result

Greatest percentages of households reporting unsuitable housing, at 25% to 39%, are found in Surrey (Newton, Metro Centre, Guilford) and Burnaby (Metrotown), as well as southeast Vancouver.

21. Gentrification Score

Description

This measure was modified from the methodology used by LA County and is an index of the measures listed below between 2006 and 2016 Census years. 2006 currency values are adjusted to 2016. 2006 values were reallocated to the 2016 dissemination areas for comparability using the modifiable areal unit problem methodology described on page 6. The gentrification score measures the relative likelihood that an area experienced gentrification and involuntary displacement between 2006 and 2016. This measure could be applied for consideration as a future measure by identifying areas with certain criteria as outlined below and ensuring policy mitigation measures for the impacts of neighbourhood change.
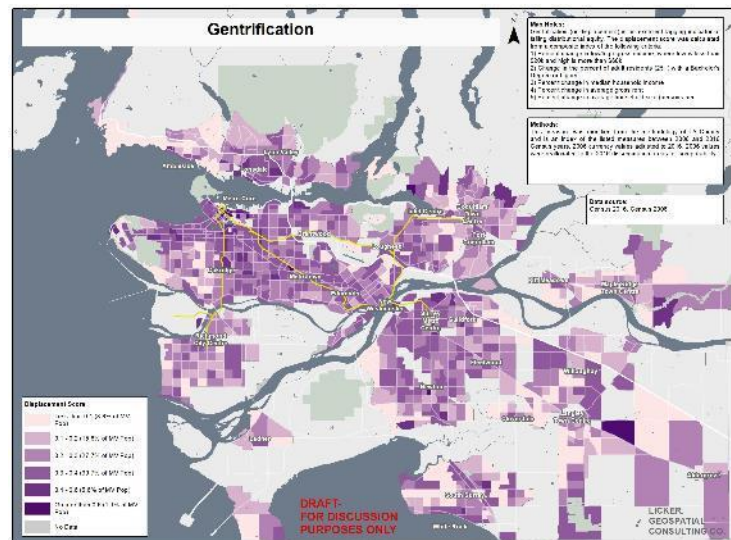
> 1) Percent change in low/high gross income, where low is less than $20k and high is more than $60k
> 2) Change in the percent of adult residents (25+) with a Bachelor's Degree or higher
> 3) Percent change in median household income
> 4) Percent change in average gross rent
> 5) Percent change in average household size (persons per household)

Rationale

Gentrification is the involuntary displacement of existing residents due to rising land values and rents. It can be characterized by a rise of more expensive housing, new public amenities, a growth in residential densities, and new businesses. Gentrification is a consideration for regional planners because new residential and employment growth and services (such as public transit investments) can contribute to rising land values, speculation, and the potential for involuntary displacement of existing residents and businesses, especially renters.

Result

Highest gentrification scores (0.75-1) are found in Vancouver's Metro-Core (east of Granville), Burnaby's Metrotown and Port Moody's Ioco area.

22. Subsidized Housing

Description

This indicator refers to the percentage of the population living in subsidized housing, through the 2016 Statistics Canada Census of Population. Subsidized housing refers to renter households that live in a dwelling that is subsidized. Subsidized housing includes rent geared to income, social housing, public housing, government-assisted housing, non-profit housing, rent supplements and housing allowances.

Rationale

Subsidized renter households relates to housing affordability. Additionally, it relates to potential for wealth distribution as well as housing security in the face of urban change.

Result

Subsidized housing tends to be clustered, with many areas completely without subsidized housing. Areas with greater than 60% of residents in subsidized housing are found in Vancouver's Downtown-Eastside, Surrey (Newton, Metro-Centre and Guildford neighbourhoods) and Burnaby's Cariboo-Armstrong neighbourhood. This indicator was in the top five indicators for highest variability, which indicates the data is highly geographically concentrated and not equitably distributed throughout communities or the region as a whole.
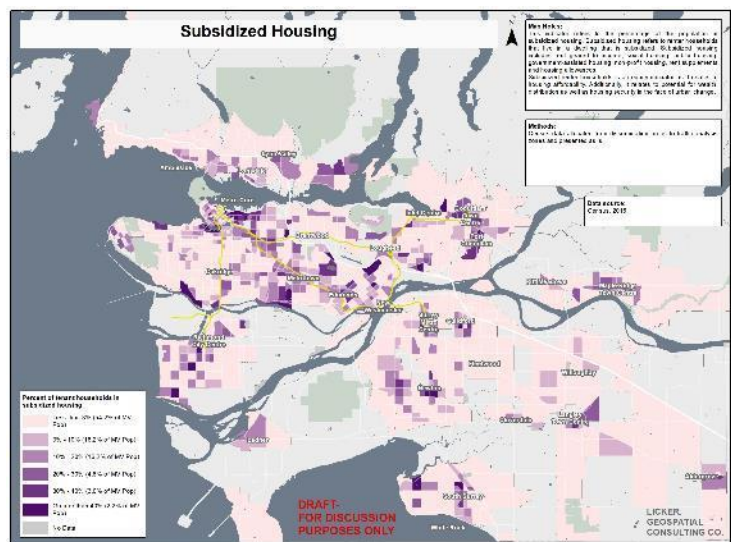
23. Rate of Change - Anticipated Demolitions by Replacement

Description

Calculated as the rate of *anticipated* residential demolitions by replacement (anticipated percent by year from 2016 and 2050) under current planning (i.e. *Metro 2040*). 'By replacement' is defined as a structure that is demolished and replaced with the same type of structure and same land use (e.g. a single detached house replaced by another single detached house).

Rationale

High replacement rate generally indicates loss of old, potentially more affordable buildings, as well as the presence of land speculation. Areas which are experiencing a rapid rate of change typically see a loss of affordable rentals as well as significant disruptions to community cohesiveness.
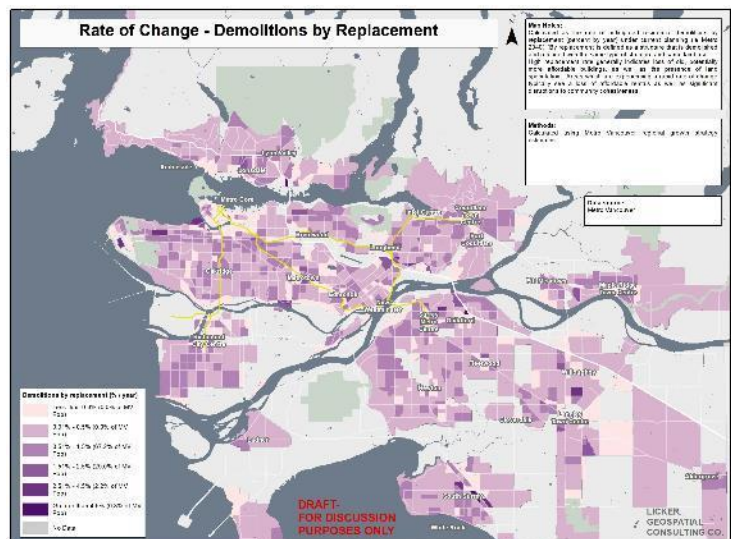
Result

Replacement rates higher than 4.5% are found in South Surrey north-east of White Rock along King George Blvd and Guildford along Highway 1, as well as in North Vancouver proximate to Iron Workers Bridge. Vancouver's West Point Grey neighbourhood, Kits Point, south Lougheed, just east of Surrey Metro Centre and just north of Langley Town Centre were between 2.5 and 4.5%.

24. Rate of Change – Anticipated Demolitions by Land Use Change

Description

Calculated as the anticipated rate of demolitions by land use change (% / year) from 2016 and 2050 under current planning (i.e. Metro 2040). 'By land use change' is defined as a structure that is demolished and replaced with a different type of structure and land use changed to a higher density (e.g. single detached house to apartment dwelling).

Rate of Change - Demolitions by Land Use Change

Rationale

High anticipated rates of change indicate areas where there will be significant increases in a population or employment in a given area. These increases, unmitigated, may be a warning sign of gentrification, displacement and unaffordability effects that may cause significant issues with many populations with overlapping intersecting social inequities.

Result

The rate of demolitions by land use change are typically low within Metro Vancouver, with a majority of TAZs with less than a 1% demolition rate. Areas with high rate of demolition by land use change (between 90-100%) are found only in less developed/less urbanized areas within New Westminster, Surrey, South Surrey and Langley. This indicator had the highest variability of all indicators where the majority of the region had anticipated change of less than 0.75%, meaning that most of the land use remained fairly static with more significant changes in very few localities.
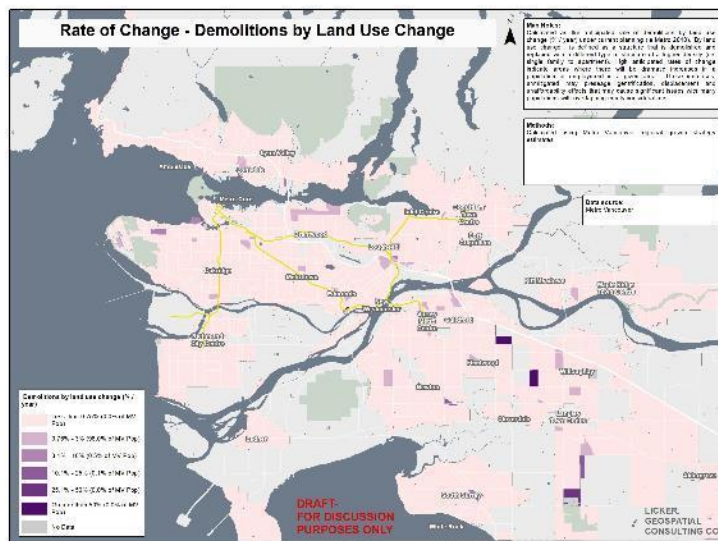
Education

25. No Post-Secondary Education

Description

This indicator shows the percentage of the population over the age of 25 with only a high school diploma or without a diploma, certificate, or degree of any kind, as reported in the 2016 Statistics Canada Census of Population.

Rationale

Post-secondary education is a consistent indicator of access to economic opportunity.

Result

The highest concentrations (more than 60%, of population without post-secondary education) occurred in Surrey's Newton and Aldergrove, with areas in Surrey's Metro Centre, Vancouver's Downtown-Eastside and Victoria-Fraserview having high concentrations (50-60%) as well.
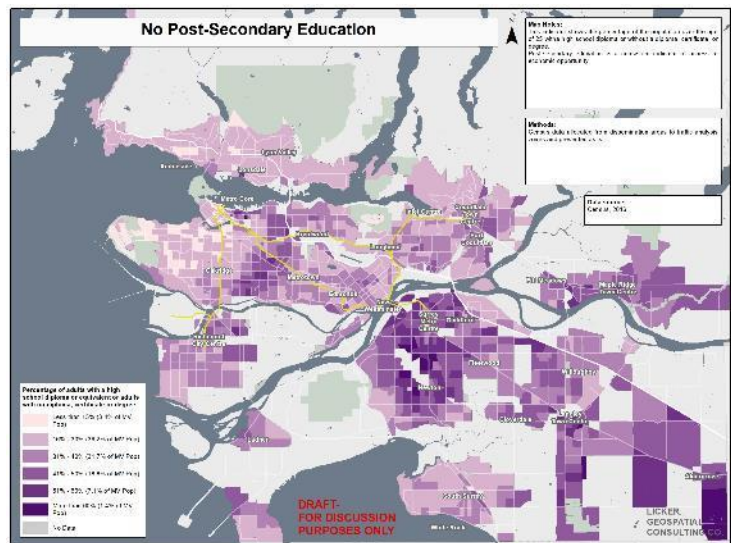
26. Early Childhood Development - Language and Cognitive Development - Vulnerable Children

Description

This indicator shows the percentage of children entering kindergarten that showed a vulnerability when assessed for language and cognitive development, including measures such as numeracy and literacy, through Human Early Learning Partnership (UBC) research, 2017-2019.

Rationale

In best practices review, preschool enrollment was considered a leading indicator of access to economic opportunity. This measure was used as a proxy as the questions were considered useful predictors for educational outcomes and areas with greater vulnerability could be areas where access to resources for success in pre-kindergarten are not equitable.

Result

Higher percentages of children coming into kindergarten that showed a vulnerability in language and cognitive development (between 20% and 24.6%) were recorded in Vancouver's Downtown-Eastside, Surrey (Guilford and Metro Centre), and Langley City.

27. Early Childhood Development - Communication Skills - Vulnerable Children

Description

This indicator shows the percentage of children entering kindergarten that showed a vulnerability when assessed for communication skills, including English language skills, through Human Early Learning Partnership (UBC) research, 2017-2019.

Rationale

In best practices review, preschool enrollment was considered a leading indicator of access to economic opportunity. This measure was used as a proxy as the questions were considered useful predictors for educat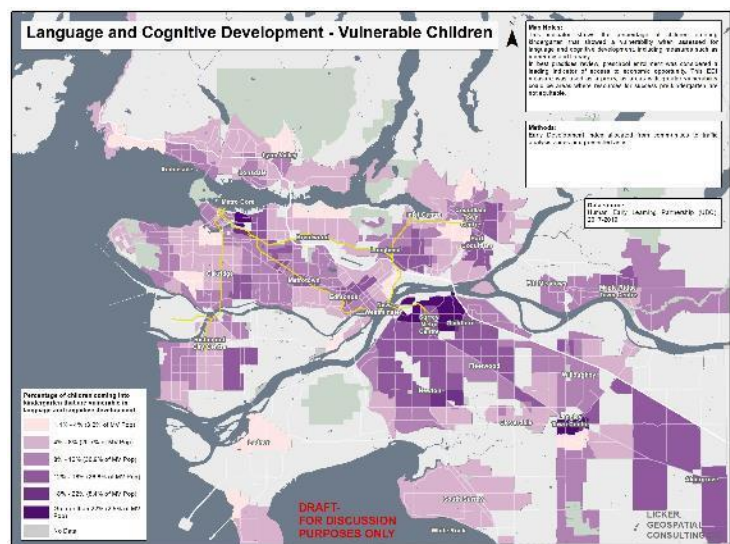ional outcomes and areas with greater vulnerability could be areas where access to resources for success in pre-kindergarten are not equitable.

Result

Higher percentages of children coming into kindergarten that showed a vulnerability when assessed for communication skills (between 25% and 33.3%) were recorded in Vancouver's Downtown-Eastside, East Vancouver, Burnaby (Metrotown and Edmonds), Richmond, Surrey and Aldergrove.
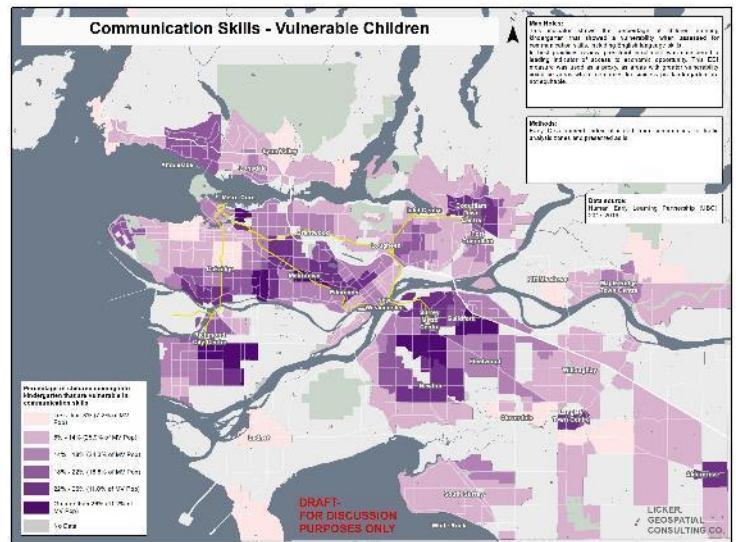
Environment

28. Access to Parks and Recreation Space

Description

This indicator presents access to parks as the average total park area accessible within a 10-minute walk from a 2016 dissemination block centroid. Parks used for this analysis were the "Local and Regional Greenspaces" data from the Province of BC, which included the following primary uses: Athletic, Park, Playground, Plaza, School Park. Routing was done using Open Trip Planner.

Rationale

Access to parks is a factor in positive health outcomes and community belonging. Furthermore, this indicator can be used to identify the need for deeper exploration into parks and recreation access, such as park provisioning, park programming, and quality, all of which can have disproportionate effects on populations affected by intersecting social inequities.
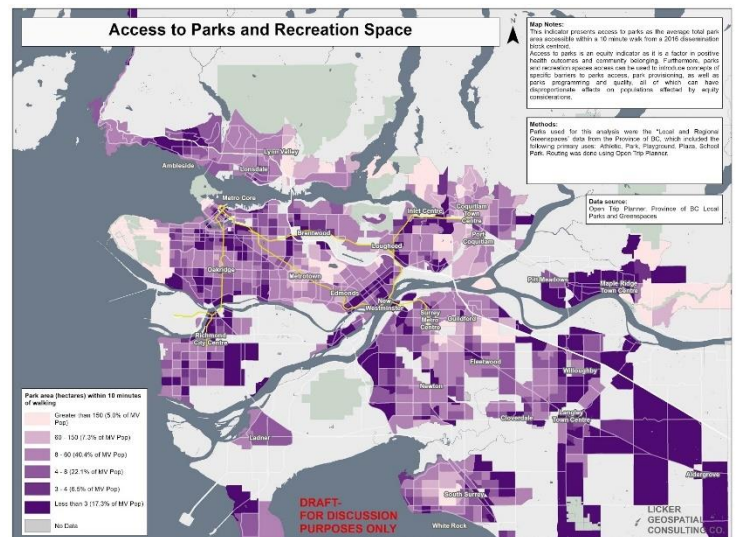
Result

Best access (greatest area of park and recreation space accessible) occurs proximate to Metro Vancouver's largest parks (namely Pacific Spirit, Belcarra Regional Park, Stanley Park and Lynn Headwaters Regional Park). The greatest clustering of poor access (less than 3.7 hectares available) occurs in Langley Township, Maple Ridge and Richmond. This indicator had high variability due to the wide range in areas accessible, 0 to over 800 hectares. This indicator would benefit from further exploration incorporating park types and amenities.

29. Urban Tree Canopy

Description

This indicator is calculated as the ratio of canopy cover, or the layer formed by the branches and crowns of trees, to the total area of the study unit, derived from the Metro Vancouver amalgamated LiDAR dataset, 2014-2017. In this map, the darker the colour gradient, the lower the canopy cover.

Rationale

Canopy cover relates to health outcomes as well as community well-being. For example, canopy cover relates to the mitigation of extreme heat, provides clean air, captures carbon dioxide, contributes to wildlife habitat, beautifies the community and mitigates flood risk.

Result

Highest tree canopy cover occurs in West Vancouver, North Vancouver and Coquitlam municipal areas. Lowest tree canopy cover occurs in urban centres, like Vancouver's Metro Core, Richmond's City Centre and Langley's Town Centre. Further study on healthy thresholds could be beneficial to determine significant areas (in conjunction with other intersecting social inequities) in the urban areas and focus for tree planting programs. Note that caution should be used that planting doesn't result in unintended "green gentrification," wherein increased tree planting drives up housing costs and potentially results in displacement.
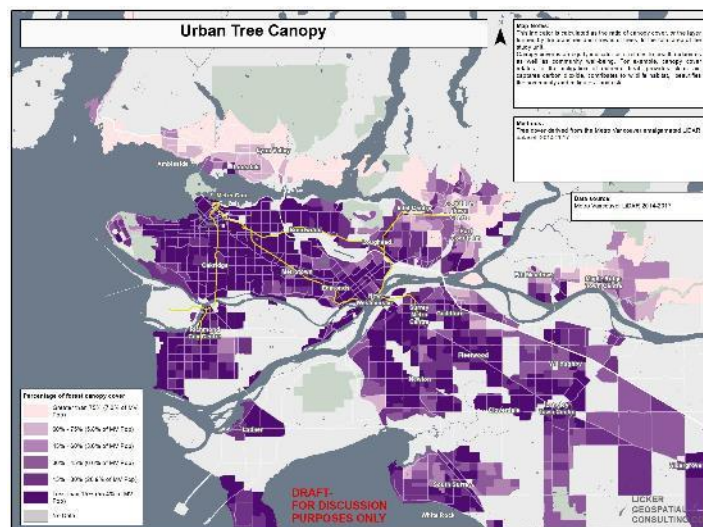
30. Access to Grocery Stores

Description

Access to grocery stores was used as a proxy indicator for access to healthy food. It was calculated as the distance from the centre of each TAZ to the nearest large grocery store (from 2018 Dun and Brad Street business points). Routing was completed using Open Trip Planner.

Rationale

Access to healthy food is a factor in positive health outcomes and can be used as a proxy indicator for community resilience.

Result

Shortest distances to grocery stores occur in urban centres. Greatest distances to grocery stores occur in more remote locations, such as Belcarra, Lions Bay, and parts of Langley Township and Surrey. Grocery stores seem to be well distributed across the region with access decreasing in more agricultural and rural areas of the region.
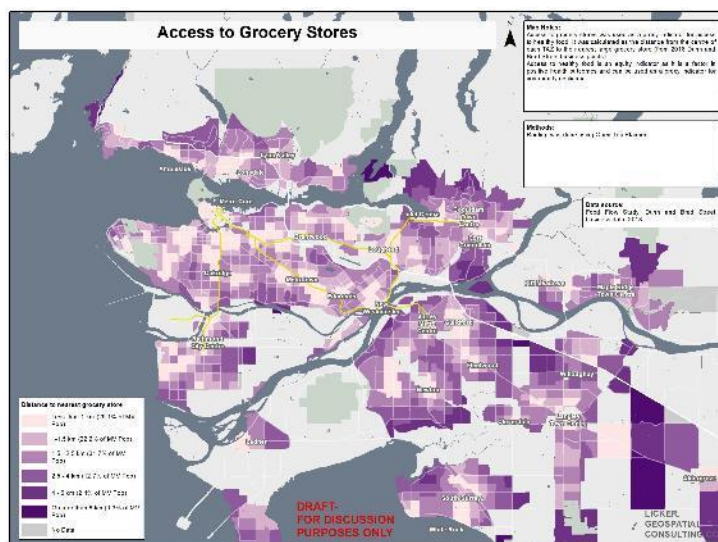
31. Urban Heat Index

Description

An urban heat island is an urban area that is significantly warmer than its surrounding areas generally due to human activity, such as differences in infrastructure and how well the surfaces in each environment absorb and emit heat. Average surface temperature within the study unit was extracted from Landsat 7 satellite data derived average surface temperature for the week of August 14th through August 25th, 2020 using ArcGIS zonal statistics.

Rationale

Heat islands can indicate extreme heat, which is a health risk. Some populations may be disproportionately affected by this health risk due to reduced adaptive capacity.

Result

Highest surface temperatures occur in urban and industrial areas. Some areas with the highest temperatures in Metro Vancouver occurred in Langley's Town Centre, Richmond's City Centre, Vancouver's Downtown-Eastside, Burnaby's Metrotown, and Richmond's City Centre. This indicator had low variability due to the relatively small range of only two degrees in the data resulting from the sample being a measure across a single week in time. Future research could analyze the local
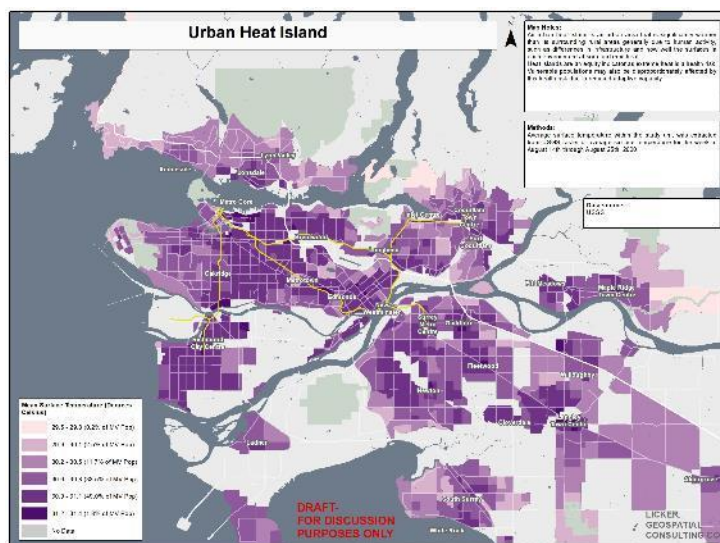
temperature ranges across the region, or projected extremes. This indicator is important to review in conjunction with other intersecting social inequities.

32. Exposure to Flood Hazard

Description

Percentage of the population within the study unit that reside within a combined coastal and freshet floodplain and/or would be impacted by coastal flooding (e.g. 1m sea level rise or storm surge). Note that areas outside the Urban Containment Boundary are also vulnerable to flood hazard but that data is not mapped.

Rationale

Risk to flooding relates to potential vulnerability to property loss or damage, displacement of renters, as well as safety concerns. Adjustment to change is more difficult for renters and / or populations with limited resources.

Result

Richmond and Ladner have the greatest exposure to flooding hazard, with a large number of study units having 100% of residents residing within a risk zone. Other areas of high hazard exposure are concentrated along the Fraser River and Pitt River.
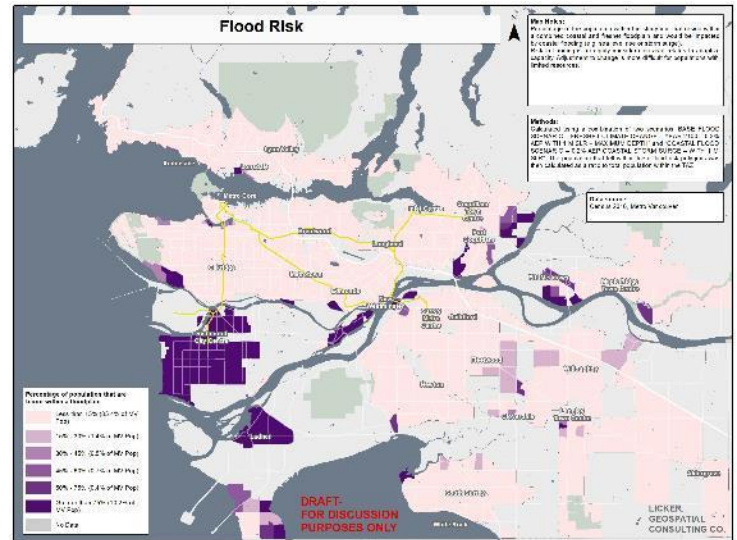
Access and Transportation

33. Relative Access to Transit

Description

A measure that calculates the closeness of a study unit to any source of public transportation within a 1 km walking distance, through the 2016 Statistics Canada Census. This measure is derived from the number of all trips between 7:00 a.m. - 10:00 a.m. from a conglomeration of General Transit Feed Specification (GTFS) data sources. This access score underwent a max-min normalization between all units of investigation, with 1 representing the highest proximity to transit and 0 representing the lowest proximity to transit within the region.
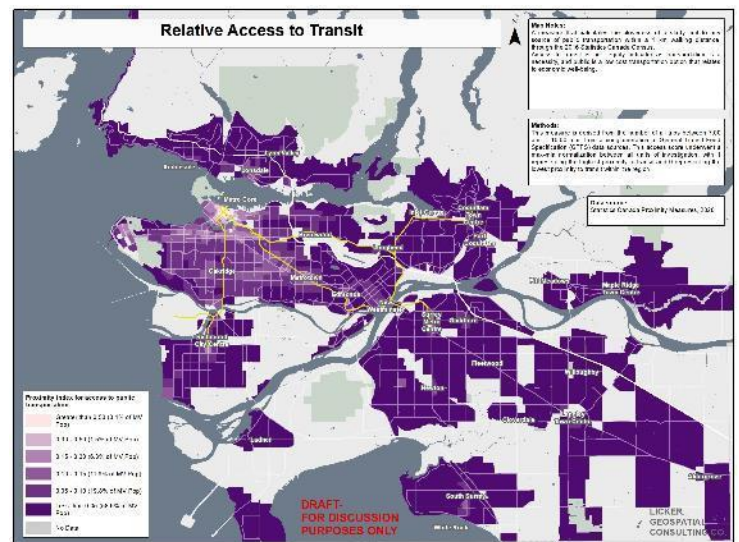
Rationale

Public transit is a low-cost transportation option available to all ages and abilities that impacts access to economic opportunity. Access to transit signals access to employment (income), education, health, and recreational opportunities for those who cannot drive a personal vehicle due to age, ability, or wealth.

Result

Transit access scores of 0.5 or higher all occur within Vancouver's Metro-Core. Lowest transit access scores occur in suburban/rural areas not proximate to any major bus or Skytrain routes. This indicator was in the top ten indicators with the highest variability, likely due to the presence of the rapid transit lines serving the inner municipalities.

34. Average Commute Time (All Modes)

Description

Commute time is the length of time (in minutes) usually required by a worker to travel between their place of residence and their place of work. Average commute times were sourced from the 2016 Census Canada Data. Respondents identified their commute time range as less than 15 minutes, 15-29 minutes, 30-44 minutes, 45 to 59 minutes and 60 minutes and over. Each category was then assigned a midpoint value (i.e. 7 minutes, 22 minutes etc.) and the mean commute time was calculated.

Rationale

Longer commute times imply reduced times for other activities and may disproportionately affect populations who cannot afford to live in close proximity to their place of work or schooling.

Result

Generally, average commute times are less than 30 minutes within all of Metro Vancouver. Shortest commute times occur in Downtown Vancouver, Langley City and Surrey (Willoughby). Longest commute times (greater than 30 minutes) occur in Burnaby (Metrotown, Edmonds Brentwood and Lougheed).
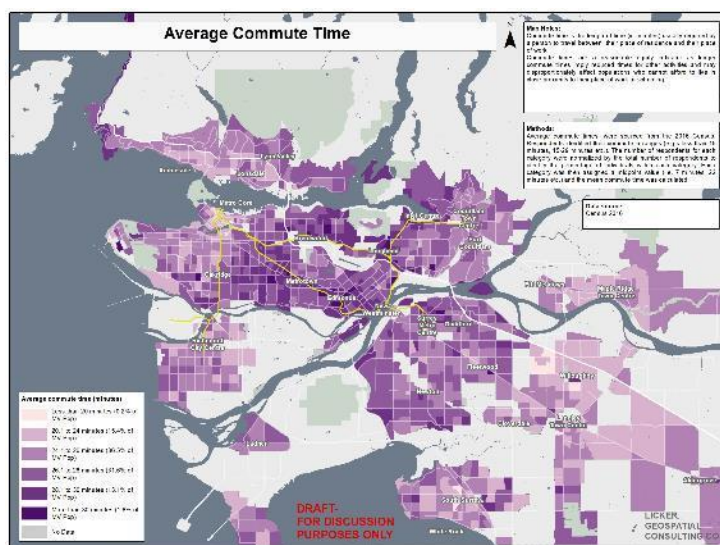
35. Transportation Cost Burden

Description

Transportation cost burden is defined as the ratio of transportation spending to total household spending, calculated using Environics 2020 spend data.

Rationale

The amount that working households spend on transit and vehicle-related expenses reflects to a large degree the density and quality of transit service, the current fare zone structure, and job locations.

This indicator can be used in conjunction with housing affordability to consider equity. Housing and transportation choices are closely linked and represent the two largest expenditures for many working households. Intuitively, there is a trade-off between housing costs and transportation costs in that as we move to more suburban locations to achieve more affordable housing, transportation costs will increase. This indicator can thus be used with Housing cost burden to identify areas that are spending disproportionate amounts of their total spending on necessities. The greater the proportion of a household's spending is taken up by transportation, the less money is left for other expenses such as housing, childcare, education, savings, and investments.

Result

Households allocating greater than 20% of their total spending to transportation costs are found in urban cores like Richmond City Centre, Metrotown, Lougheed Town Centre and Coquitlam Regional City Centre. Interestingly, all cases of greater than 20% spend allocation to transportation occur proximate to Skytrain and other transit hubs, with the exception of UBC. Transit is a lower cost form of transportation. This could suggest that lower income commuters (presumably having lower household spending due to income) live in areas with good transit access. This information can be used in conjunction with the average transportation spending data to give further insight.
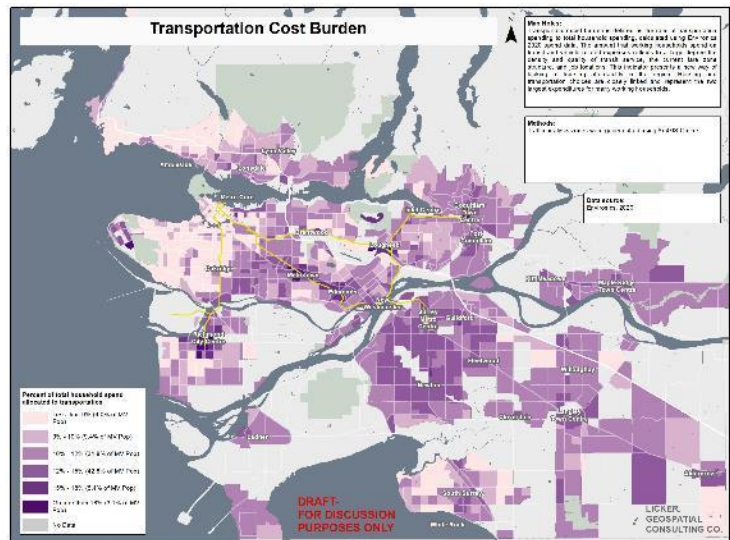
36. Average Transportation Spend

Description

Average total spending on transportation related expenses per household annually, as measured by Environics (2020). Transportation spend includes public transit, private transportation, and shared-use mobility options (taxis, Uber, etc.).

Rationale

Total transportation spend is an equity indicator as transportation is a necessity. This measure provides further context to transportation cost burden as an indicator. We see cases near transit corridors with higher than average transportation cost burden, but lower than average transportation spending, indicating lower income rather than a lack of low-cost transportation. In future, it would be useful to split this indicator into vehicular spending and transit spending.

Result

Transportation costs are lower in urban cores and along transit corridors (such as Skytrain lines). Highest transportation costs are found in West Vancouver, and in Vancouver's Dunbar Southlands and Arbutus Ridge neighborhoods. Interestingly, the total spending is low in areas where there is a high transportation cost burden, suggesting that the areas with good transit access and low spending may be typically lower income, resulting in a higher ratio of total spending being allocated to transportation.

37. Job Accessibility Within 45 Minutes by Car

Description

The number of employment clusters reachable by car within 45 minutes from the centre of the traffic analysis zone using Open Trip Planner. Employment clusters were identified using the highest concentrations of jobs in 2016 (provided by Metro Vancouver) to find the top 30 employment hotspots (or "clusters"). Darker areas show where the fewest number of employment clusters are reachable within a 45 minute drive.

Rationale

Job accessibility relates to accessibility to employment, linked to economic well-being.

Result

The highest access to multiple job clusters by driving is found in Vancouver (east of Cambie) and Burnaby. Lowest access to job clusters occurs in the eastern portion of Maple Ridge and in Belcarra. It also suggests locations where a person could readily find other accessible employment should they lose their job, helping to provide a sense of the locations where residents are more resilient to economic uncertainty.

38. Job Accessibility Within 45 Minutes by Transit

Description

The number of employment clusters reachable by transit within 45 minutes from the centre of the traffic analysis zone using Open Trip Planner. Employment clusters were identified using the highest concentrations of jobs in 2016 (provided by Metro Vancouver) to find the top 30 employment hotspots (or "clusters").

Rationale

Accessibility of employment by transit relates to economic well-being. Additionally, job access through public transit is especially important as public transit is generally more accessible than private (and costlier) modes of transportation. It also suggests locations where a person could readily find other accessible employment should they lose their job, helping to provide a sense of the locations where residents are more resilient to economic uncertainty.

Result

Generally, fewer job clusters are accessible through a 45-minute transit trip in comparison to driving. A greater number of clusters are accessible in urban cores along transit corridors. Suburban areas have less access, as well as Maple Ridge and Langley Regional City Centres.
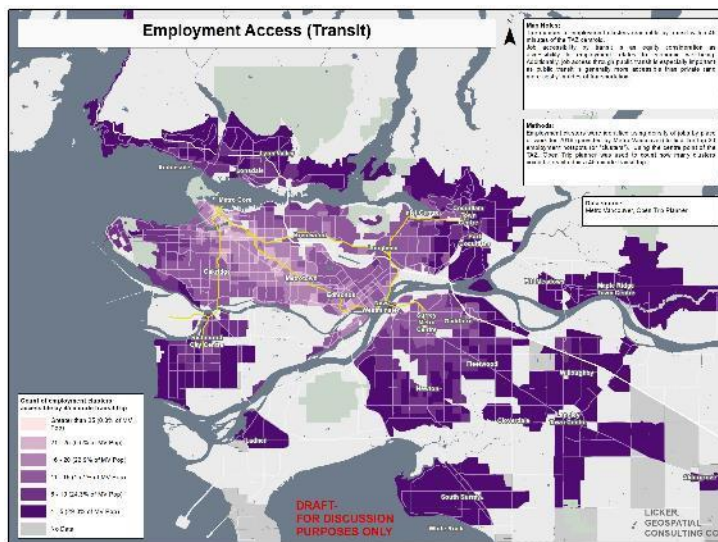
39. Ratio of Employment Access Within 45 Minutes: Transit/Car

Description

Ratio of employment clusters accessible through a 45-minute transit trip and a 45-minute drive from the geographic centre of the study unit. This measure shows where there is a significant difference between job accessibility by car and job accessibility by transit suggesting locations where transit riders are more vulnerable if they were to lose a job.

Rationale

Accessibility to employment and low-cost transportation options relates to economic well-being. Additionally, this measure is a simple calculation that gives
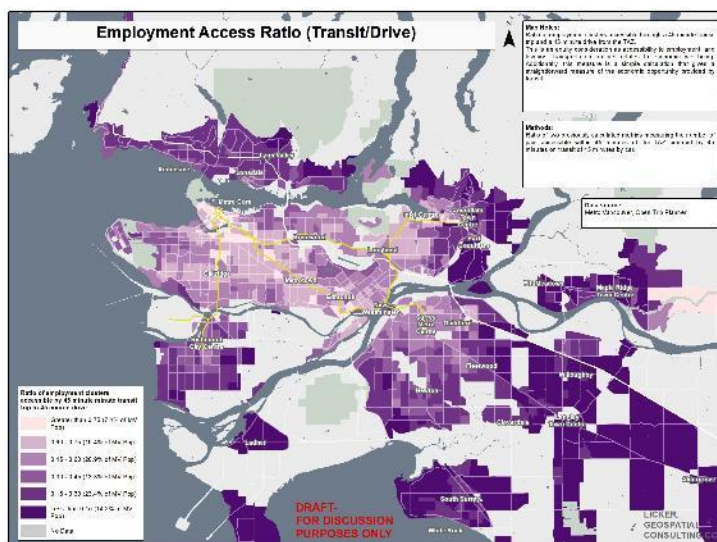
a straightforward measure of the economic opportunity provided by transit. It can be viewed as a proxy for how auto-dependent an area is.

Result

Similar access to job clusters between driving and transit options occurs in Vancouver and Burnaby, as well as parts of Maple Ridge (where access to job clusters for both driving and transit is low). Low ratio scores (indicating poorer transit access) occur in suburban parts of Richmond, Delta, Surrey and Langley.

Social Integration and Safety

40. Voter Turnout

Description

The percentage of registered voters that participated in the 2017 provincial election, as reported by Elections BC.

Rationale

Voter turnout relates to social integration, community belonging, and sense of civic responsibility. Further to community belonging, low voter turnout may indicate a lack of representation in local government, leading to a sense of isolation or powerlessness and low voter turnout.

Result

Lowest voter turnout (at half or less than half of the registered population) was located in Richmond with highest voter turnout occurring in Lynn Valley.
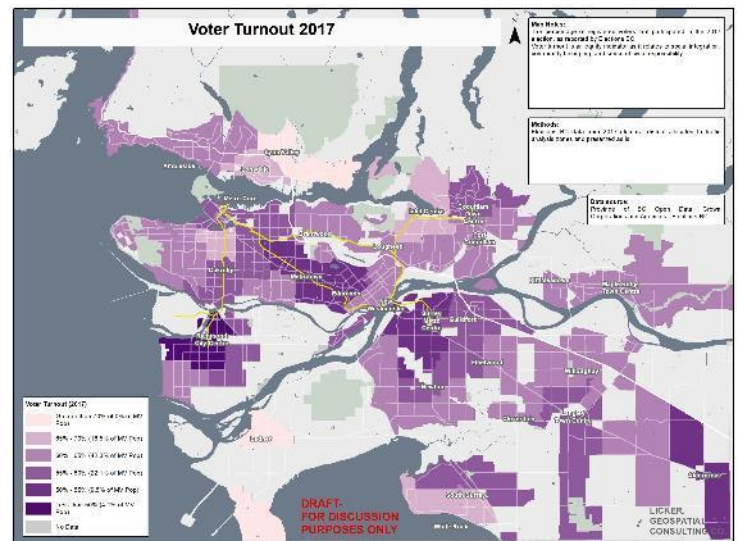
41. Voter Turnout - Youth

Description

Percentage of registered voters, aged 18-24 years, that participated in the 2017 provincial election as reported by Elections BC.

Rationale

Youth voter turnout relates to social integration, community belonging, and sense of civic responsibility. The connectivity of youth with their communities also can be an indicator of future change.
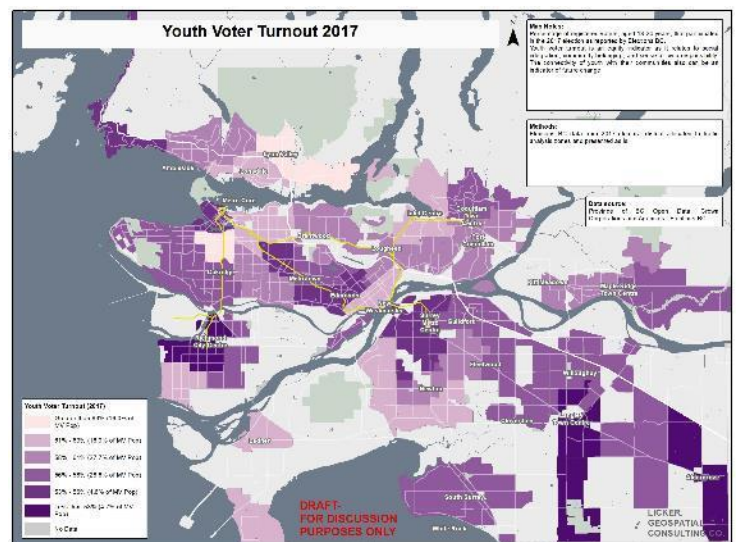
Result

Lowest youth voter turnout (with nearly half the youth population not participating) occurred in Langley City and Township of Langley, Aldergrove and Richmond.

42. Four or More Persons to Confide In

Description

The percentage of individuals that reported having four or more people to confide in during a time of need, through the 2014 My Health, My Community survey.

Rationale

Support networks are associated with better health. This indicator relates to overall community resiliency and adaptive capacity.

Result

The results showed the lowest concentration in Surrey, where 30% or fewer of respondents reported having a reasonable support network.
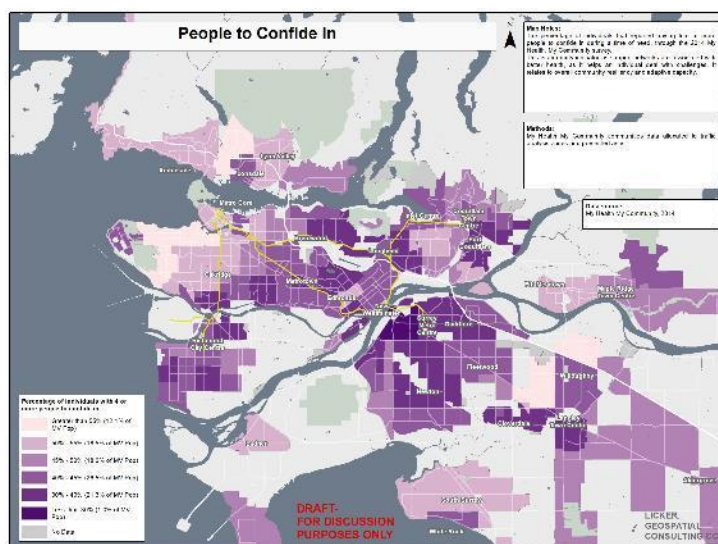
43. Strong Sense of Community Belonging

Description

Percentage of individuals who reported a strong sense of community belonging, through the 2014 My Health, My Community survey. In this map a darker gradient indicates lower reported rates of community belonging.

Rationale

Supportive and connected communities provide healthier environments, and this indicator relates to community resiliency and adaptive capacity

Result

The results showed the lowest percentages in Surrey Metro Centre, where 30% of respondents or fewer reported having a strong sense of community belonging. The highest rates are in Delta and West Vancouver.
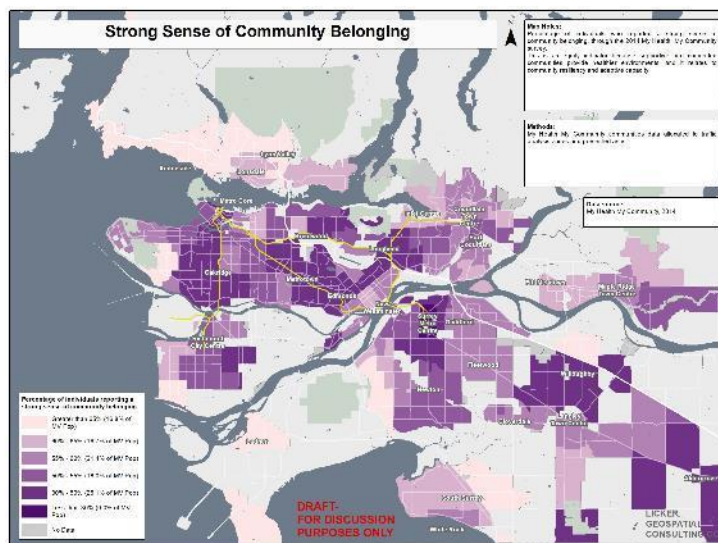
44. Long Term Residency (Mobility Status)

Description

Long term residency is calculated using mobility status, as defined through the 2016 Statistics Canada Census of Population as 'Movers' and 'Non-movers'. 'Non-movers' are persons that lived in the same residence on Census Day as they did five years before.

Rationale

Long-term residency is associated with higher rates of community health and sense of belonging, as well as overall community resilience. Communities with connected residents and strong sense of community belonging are more resilient to shocks and have higher adaptive capacity. Caution should be used in assuming long-term residency is necessarily the best outcome however, as neighbourhoods with more rental housing are going to see the highest turnover, but provide much needed housing options. Mover status relates to both tenure and life stage.

Result

Generally, suburban areas see greater percentages of populations that have been residents for 5 years or more. Areas with the lowest percentage of long-term resident populations (with approximately 5% of the population residing in the same residence as they had 5 years prior) are located on UBC's campus and in Langley's Willoughby neighbourhood. Institutional campuses typically see a lot of students, and high turnover of residents is expected.
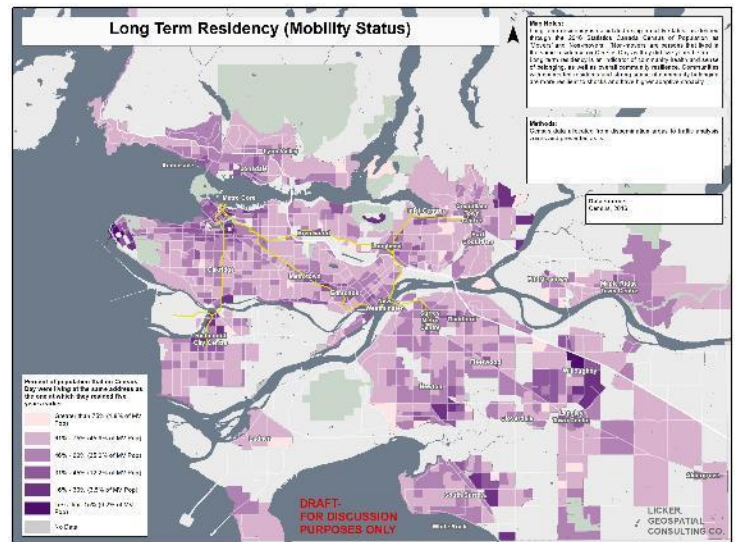
45. Sense of Safety

Description

The percentage of respondents who reported feeling safe walking after dark, through the 2014 *My Health, My Community* survey.

Rationale

Sense of safety relates to the perception of neighbourhood built-environment and sense of community belonging. This links to community resilience and positive health outcomes. Additionally, it relates to transportation accessibility as individuals who do not feel safe walking home may make different and potentially more costly transportation choices (e.g. choose private transportation over public transit plus walking, or active transportation).
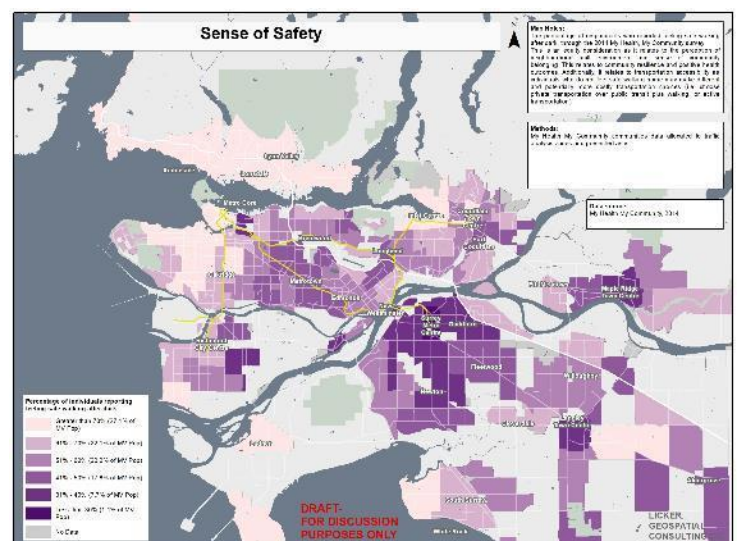
Result

The results showed the lowest concentration (where only 21% to 32% of respondents felt safe walking after dark) in Surrey, most notably the Metro Centre and Newton. Other areas of note (where between 33% and 42% respondents felt safe) are Vancouver's Downtown-Eastside, Richmond and Langley's Town Centre.

Health

46. Access to Primary Healthcare
Description

This indicator is from the 2020 Statistics Canada Proximity Measure Database and is the average relative distance to healthcare facilities within a driving distance of 3 km of a dissemination block. Healthcare facilities for this measure include NAICS codes 6211, 6212, 6213 and 622 which are offices of physicians, dentists, and other health practitioners, and hospitals. This access score was then normalized again across Metro Vancouver as it is, in its raw form, a nation-wide measure. A score of one indicates the greatest proximity to health care regionally, and 0 indicates the lowest proximity to health care.
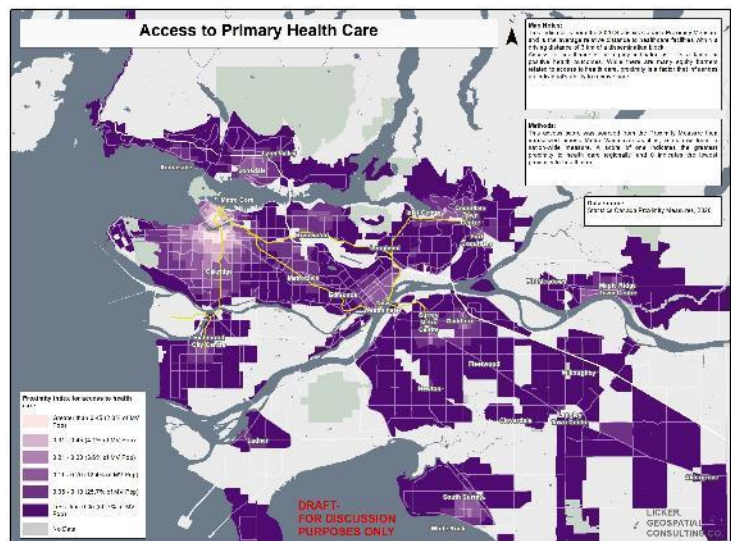
Rationale

Access to healthcare is a factor in positive health outcomes. While there are many equity barriers related to access to health care, proximity is a factor that influences an individual's ability to receive care.

Result

The results showed that access to primary health care is high in Downtown Vancouver (Metro Core) and the Granville and Broadway corridors south of Metro Core. The relative access score declines incrementally with distance from these areas, with slightly higher access scores in the municipal centres. This indicator showed moderate variability. The proximity measure from Statistics Canada utilizes a gravity model, which considers quantity as well as proximity. As such, the area along Broadway south of Downtown Vancouver may be causing a skew for the region due to the numerous health care clinics and the hospital in that area.

47. General Health

Description

Percentage of respondents who self-reported excellent or very good general health, through the 2014 My Health, My Community survey.

Rationale

A low proportion of persons reporting good health may indicate inequitable social determinants of health, environmental factors or other social barriers to wellness. A measure of general health may reflect numerous social determinants (in addition to personal genetics and lifestyle) such as a person's place in society, income, education, or employment. Experiences of discrimination, racism and historical trauma are important social determinants of health for certain groups such as Indigenous Peoples, LGBTQ and Black Canadians.

Result

The results showed the lowest concentration (where less than 35% of the population reported excellent or very good general health) in Surrey's Metro Centre, east Richmond, East Vancouver, north Coquitlam, Delta along Scott Road and Vancouver's Downtown-Eastside. The mean for the region is 51%, suggesting that 49% of the population does not have very good or excellent health.
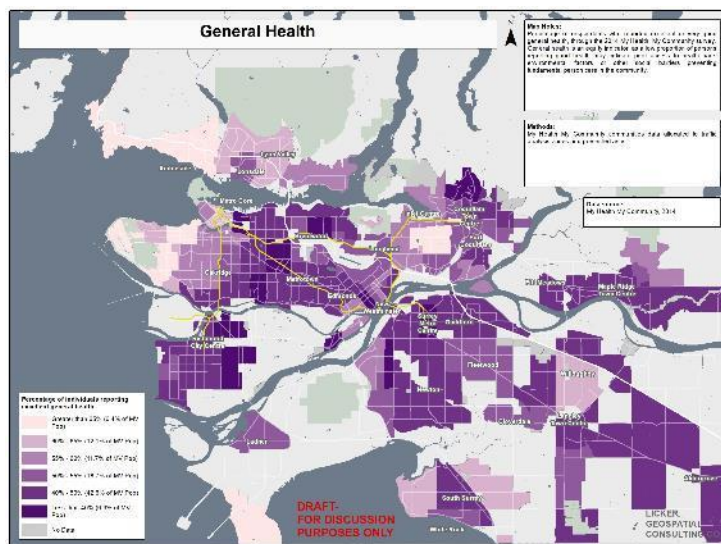
48. Mental Health

Description

Percentage of respondents who reported excellent or very good mental health, through the 2014 My Health, My Community survey.

Rationale

Mental health may indicate decreased access to the social determinants of health that are essential to positive mental health. Additionally, there has been a historic and ongoing marginalization and stigma surrounding mental health, and individuals experiencing mental health struggles may be social equity context experts. Lastly, equity and mental health are intersectional, and mental health issues may be an indicator of additional inequities, such as poverty or discrimination due to race, sexuality or gender.

Result
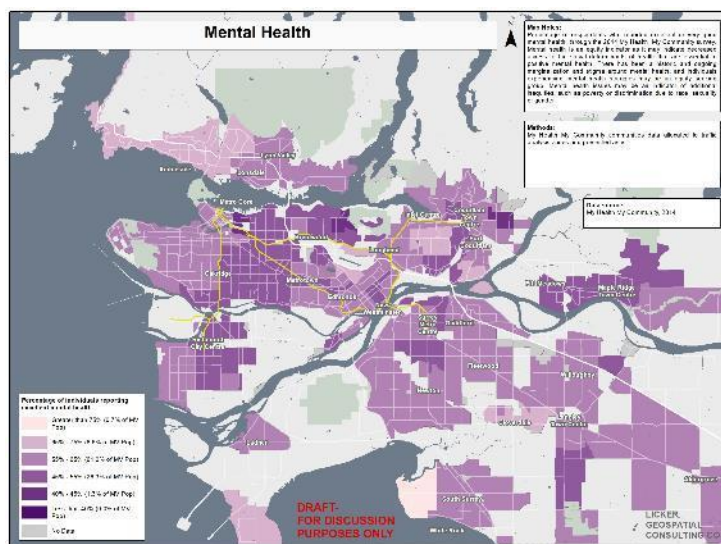
The results showed the lowest concentration (where less than 45% of the population reported excellent or very good mental health) in Vancouver's Downtown-Eastside, East Burnaby and Coquitlam.

49. Chronic Medical Conditions (1+)

Description

Percentage of respondents who reported one or more chronic health conditions based on the 2014 My Health, My Community survey.

Rationale

Occurrence of persons with chronic medical conditions relates to health and well-being. Demographic factors (like age) as well as built environment factors such as air quality and walkability may be a determinant of chronic health conditions.

Result

The results showed the highest concentration (where greater than 40% of the population reported one or more chronic health conditions) in Vancouver's Downtown Eastside, West Vancouver, and South Surrey.
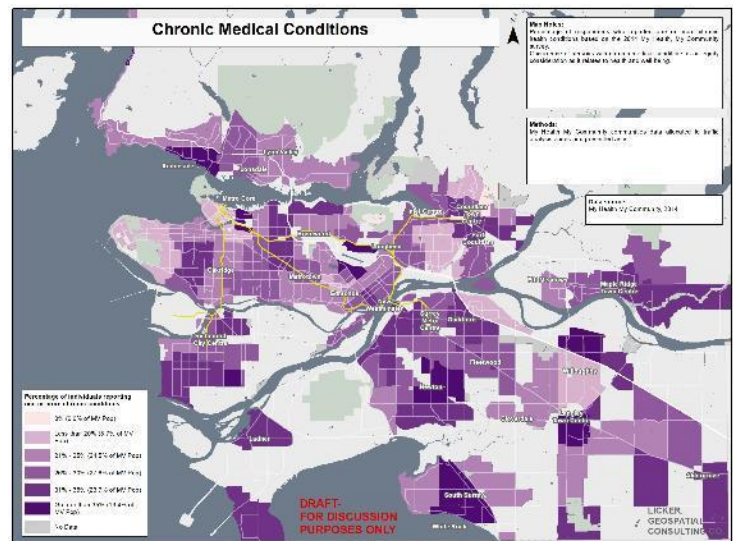
3.5   Regional Inequity Index

The 49 indicators in the Inequity Baseline above have been combined to create a Regional Inequity Index map. This was done through a mathematical process called a "Principle Component Analysis". As briefly described earlier in this report, the PCA groups and weighs data based on similarity in variation and the degree of their correlation. This helps identify patterns and consolidates the large amounts of datasets being examined in this study. PCA is described in greater detail in Appendix IV.

A result of running the PCA is an Inequity Index Map that **highlights geographic areas with multiple, overlapping inequity concerns.** A high Inequity Index score signifies more overlapping equity concerns, based on the 49 indicators mapped above.

The index map is a tool that serves two purposes. Firstly, to highlight areas where, from the data we measured, there are several factors that are occurring and are unrelated. In other words, where there are multiple unique factors that could be contributing to inequity in an area (e.g. higher exposure to flood hazard and high childhood vulnerability rates are likely unrelated but could be overlapping factors in a particular neighbourhood, contributing to a higher inequity index score). Secondly, to serve as a focusing tool to support deeper analysis; 49 individual indicators may be an impossible and overwhelming starting point, so a single composite value provides a quantitative arrow pointing at where to look closer. We ran the PCA analysis three times. The first PCA (A) examines all inequity variables discussed in this study. We also created two PCAs where indicators were isolated based on themes. PCA B examined only inequity indicators related to demographics, and PCA C examined conditions.

The PCAs give each TAZ geography a score, as shown in the map illustrating PCA A below, where the dark blue is the lowest score and the dark red is the highest score. With so many scores, a bivariate colour scheme like this is needed to be able to distinguish between the different classes. The human eye can't perceive differences between 10 shades of the same colour.

The statistical analysis from the PCA A shown below highlights that the areas with the highest intersecting social inequities occur in areas of Surrey (Guildford, Metro Centre, and just north of Newton), Richmond, Vancouver's Downtown Eastside, and Burnaby's Metrotown.
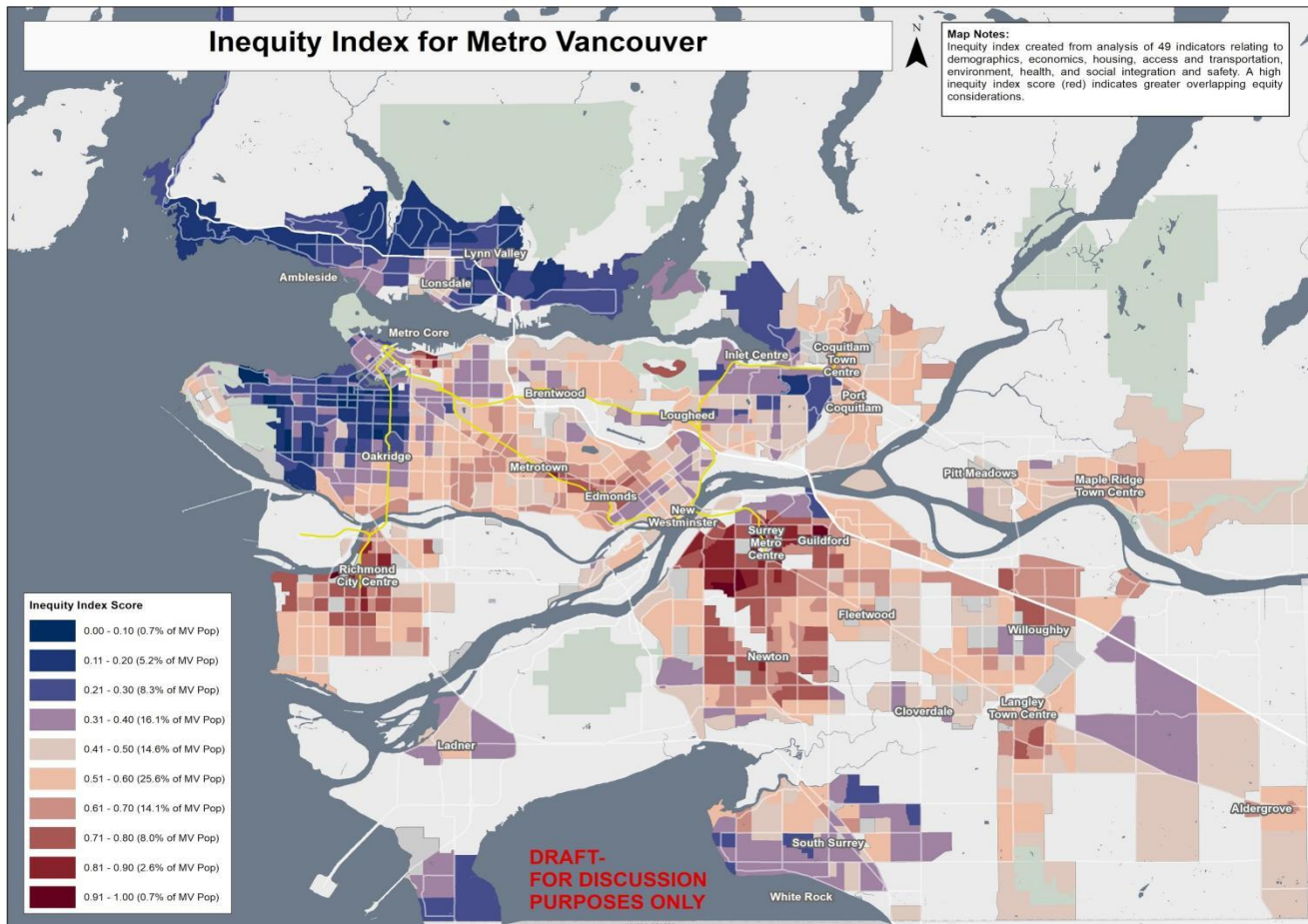
The following map shows the above PCA again, but with the three of the highest score areas with boxes listing the top five intersecting social inequities with respect to their value above (or below) the mean – Vancouver's Downtown Eastside, Guildford (Surrey), and Richmond. With this map we hope to highlight that while an overarching view of inequities in the region is useful, it is important to assess each locality independently. For example, while all three areas have higher than average population below the low-income measure (LIM) threshold, all three areas face different considerations for housing, varying between high rates of housing subsidies, overcrowding, and high housing cost burden.

Inequity Index for Metro Vancouver - Annotated

Map Notes:
A high inequity index indicates greater overlapping equity considerations. The inequity index is representitive of multiple data sources, which include socio-economic, demographic, health- and access-related data. Callout boxes list the top five equity considerations for the highest scoring areas.

Methods:
Equity indicators grouped using prinicpal component analysis and inequity index calculated from results.

Data sources:
Census, 2016; UBC, MHMC, Elections BC

Downtown-Eastside
Subsidized Housing --> 12x higher than regional mean
Indigenous Identity --> 6.4x higher than regional mean
Limited Education -> 4.8x higher no post-secondary
Pop Below LIM --> 3.6x higher than regional mean
Unemployment Rate --> 3.1x higher than regional mean

Guildford
Housing Suitability --> 4.3x higher than regional mean
Limited Education --> 2.8x higher no post-secondary
Vulnerable Children - Cognitive Development --> 2.5x higher than regional mean
Pop Below LIM --> 2.3x higher than regional mean
Renters --> 2.0x higher than regional mean

Richmond
Flood Risk --> 9.7x higher than regional mean
Replacement Rate --> 4.8x higher than regional mean
Pop Below LIM --> 2.2x higher than regional mean
Housing Cost Burden --> 2.0x higher than regional mean
Visible Minority --> 2.0x higher than regional mean

Inequity Index Score
- 0.00 - 0.10 (0.7% of MV Pop)
- 0.11 - 0.20 (5.2% of MV Pop)
- 0.21 - 0.30 (8.3% of MV Pop)
- 0.31 - 0.40 (16.1% of MV Pop)
- 0.41 - 0.50 (14.6% of MV Pop)
- 0.51 - 0.60 (25.6% of MV Pop)
- 0.61 - 0.70 (14.1% of MV Pop)
- 0.71 - 0.80 (8.0% of MV Pop)
- 0.81 - 0.90 (2.6% of MV Pop)
- 0.91 - 1.00 (0.7% of MV Pop)

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Results Overview

The following section includes the results tables from each of the three PCAs performed for the study. The result tables include the components, the variables in each component, and the loading values. The components group similar variables, based on the variance of the data. This means those variables that have similar effects on the variance and direction of variance, which is important as datasets that are statistically similar will not be overemphasized. Loadings show the degree of correlation of each component, and a component with a larger loading value means that the component heavily influenced the PCA and largely characterized the data.

PCA A. All Indicators

Table 2. Component input variables and loadings for the overall equity index (PCA A).

Component	Input Variables	Loadings (e)
Component 1	Non-movers, Children, LIM, Median Household Income, Transit Access, Ethnic Diversity Index	4.2
Component 2	Healthcare Access, 4 people to confide in or turn to for help, Feel Safe walking after dark, General Health (excellent)	3.5
Component 3	Total Visible Minority Population, Indigenous Identity, Median Value of Dwellings, Knowledge of Official Languages	2.2
Component 4	Seniors, Median Age	2.0

Component 5	Mean Surface Temperature, Parks Area, Youth Voter Turnout (2017), Employment Access (Drive)	1.5

When all equity variables are considered in a PCA, the components outlined in the above table are determined to be most statistically significant. Non-movers, Children, LIM, Median Household Income, Transit Access and Ethnic Diversity Index were most heavily weighted, as they were in the component group with the greatest loading value (Component 1). This means that out of all 49 indicators, those listed in Table 2 best represented most variance in the data. The directionality of data variance responsible for the greatest spread in data results is Component 1, meaning that those six indicators were the most statistically influential (thus most heavily weighted).

Under this principle component analysis, the resulting index reveals a clustering of areas of high equity concern in Surrey, Richmond, and Vancouver's Downtown Eastside. Lowest equity concern occurs in Vancouver west of Main street, as well as West and North Vancouver. When considering why these patterns occur, it is important to consider which input variables were determined to be most statistically influential and how those variables were weighted. This PCA heavily weighted transportation accessibility (Component 1), which reduced the index score in areas proximate to the downtown core. However, the LIM was also heavily influential, and transportation cores in combination with other equity concerns (such as LIM or percentage of children) also are highlighted in this analysis.

PCA B Demographic-related Indicators Only

Table 3. Component input variables and loadings for the demographic equity index (PCA B).

Component	Input Variables	Loadings (e)
Component 1	Single-Parent Households, Female Single Parent households	2.2
Component 2	Seniors, Median Age of Population	1.9
Component 3	Total Visible Minority Population, Knowledge of Official Languages	1.6
Component 4	Children, Indigenous Identity	1.0

This PCA examined only demographics-related variables. This was done for exploratory analysis to see how the data within the theme of demographics influence overall spread of results. Demographics and conditions were split because demographics cannot directly be influenced by policy. Due to a lower quantity of input variables, all variables were included in the final PCA and only four components were used, as four components were responsible for greater than 70% of the total variance in data. This PCA reveals the area of highest concern is located in Vancouver's Downtown Eastside. Other areas with a high inequity index score occur in Newton, Lonsdale, Aldergrove, Shaughnessy, and UBC.

This PCA provides interesting insight into our equity variables: the demographic inputs highlight areas as overlapping equity concerns that do not score high in any other PCA. For example, the Shaughnessy area's high equity concern is unique to this PCA. This can be attributed to the fact that it has twice the regional average for percentage of seniors, and 1.5x/1.3x the regional average for female-headed households and single parents, respectively. While the area may not be equity-seeking when examining all variables, these isolated PCAs examining single themed intersecting social inequities reveal interesting variability in scoring between themes.

Inequity Index for Metro Vancouver - Demographics

Map Notes:
Inequity index created from analysis of eight indicators relating to demographics. A high inequity index score (red) indicates greater overlapping equity considerations.

Inequity Index (Demographics)
- 0.00 - 0.10 (0.03% of MV Pop)
- 0.11 - 0.20 (0.83% of MV Pop)
- 0.21 - 0.30 (7.4% of MV Pop)
- 0.31 - 0.40 (22.0% of MV Pop)
- 0.41 - 0.50 (36.4% of MV Pop)
- 0.51 - 0.60 (20.3% of MV Pop)
- 0.61 - 0.70 (8.7% of MV Pop)
- 0.71 - 0.80 (2.5% of MV Pop)
- 0.81 - 0.90 (0.2% of MV Pop)
- 0.91 - 1.00 (0.05% of MV Pop)

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PCA C. Conditions-related Indicators Only

Table 4. Component input variables and loadings for the conditions Inequity Index (PCA C).

Component	Input Variables	Loadings (e)
Component 1	Renters, Median Income, Total Average Transportation Spend, Total Average Household Spend	5.2
Component 2	Transit Access, Healthcare Access, 4 or more Persons to Confide in, Feel Safe Walking Home, General Health Excellent	3.4
Component 3	Population in SLR, Average Commute Time, Employment Access (Drive), Employment Access (Transit)	1.9
Component 4	Median Value of Dwellings, Voter Turnout, Youth Voter Turnout, Strong Sense of Community Belonging	1.7
Component 5	LIM, Park Area	1.2

This PCA was done for exploratory analysis to see how the data within the theme of conditions influence overall spread of results. Demographics and conditions were split because demographics cannot directly be influenced by policy, while conditions can be. Condition-related equity variables were defined as all variables used in PCA A, excluding those related to demographics, used in PCA B. More broadly, these were defined as variables that describe conditions in a TAZ, rather than the population (demographics). When all condition-related variables are considered, the components outlined in the above table were determined to be most statistically significant. Renters, Median Income, Total Average Transportation Spend, Total Average Household Spend were most heavily weighted, as they were in the component group with the greatest loading

value (Component 1). This indicates that out of all examined indicators, those listed in Table 4 were responsible for the most variance in the data. The directionality of data variance responsible for the greatest spread in data results is Component 1, meaning that those indicators were the most influential (thus most heavily weighted).

Under this principle component analysis, the resulting index reveals a clustering of areas of high equity concern in Surrey and Langley. Lowest equity concern occurs in Vancouver along the Broadway corridor.
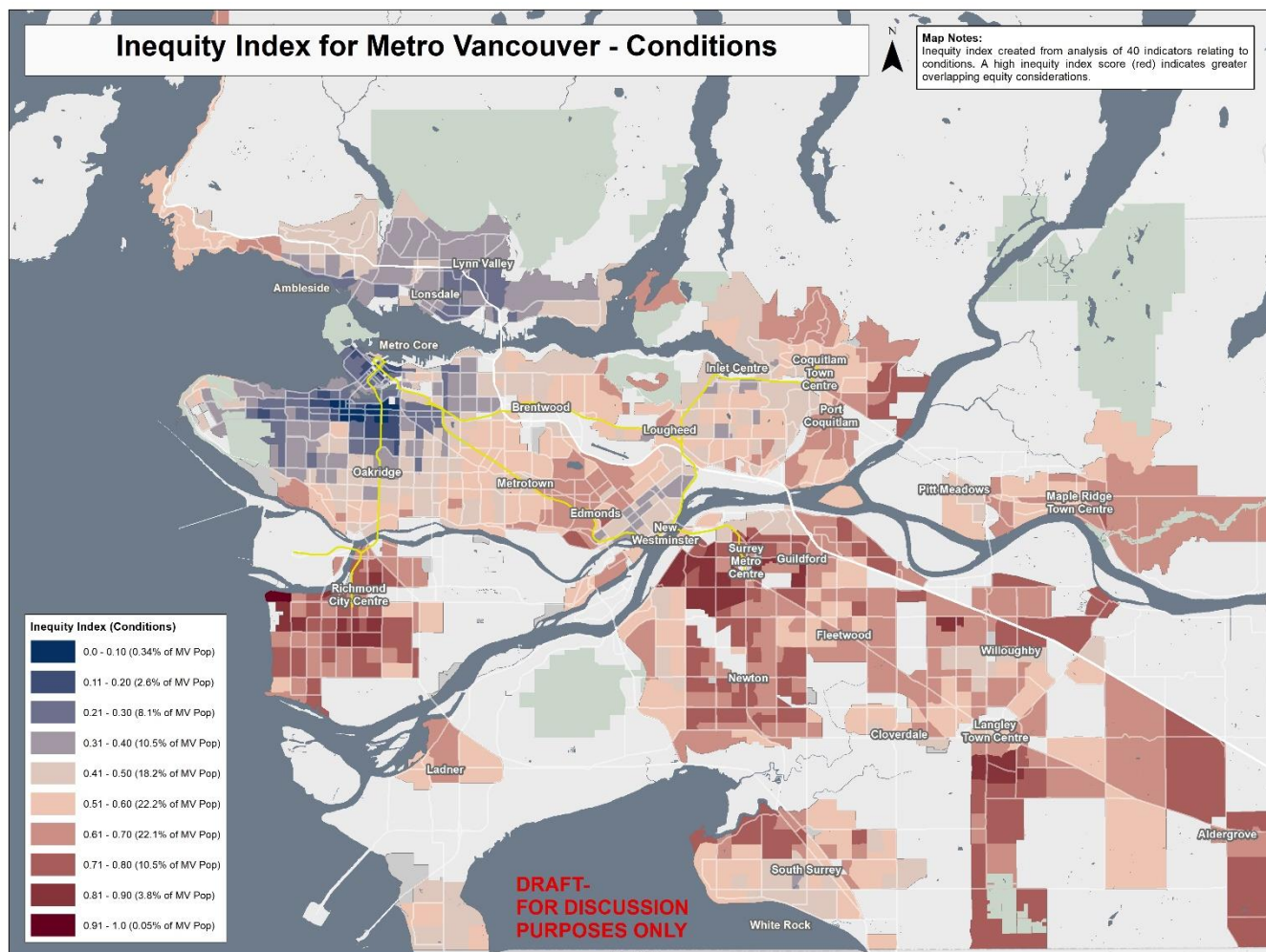
3.5.1 Demographics and Inequity Index regression

Each of the demographic indicators (excluding ethnic diversity index) were analyzed using linear regression with the conditions index, which was produced through a principal component analysis of all non-demographic indices. This was an exploratory exercise to investigate the relationship between the conditions index (i.e. the predominance of overlapping inequitable conditions) and each measured demographic group in the study. Table 5 shows the resulting r-squared values indicating the extent of correlation regionally between each of the demographic indicators (or sub-indicators) and the Inequity Index for condition-related indicators (PCA C).

The results of the regression indicate the South Asian populations are more likely to live in neighbourhoods with more overlapping condition inequities than other racialized groups (higher r-squared equates to a tighter correlation with the conditions index) while Japanese populations, with a negative correlation value, may be the least likely. Children had the highest correlation value with the conditions index, suggesting that increasing concentrations of children are present in areas with increasing inequitable conditions: as the density of children increases, so does the presence of inequitable conditions.

Interestingly, populations below LIM shows very weak correlation to the conditions index, suggesting there is more study required to identify their inequity. For this exercise, we are looking at a composite of conditions that

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best reflects the maximum of non-overlapping regional variation in the MVRD. Some elements that do not vary significantly or are cross-correlated are not included in the conditions index, however those elements would likely highly correlate with LIM in many instances. An initial analysis shows that regionally LICO correlates strongly with:

->Housing Cost Burden 0.78
->Renters 0.64
->Subsidized Housing 0.46
and
->Have Not Moved in 5+ Years -0.46
->Income Inequality Ratio -0.62
->Median Household Income -0.7

Table 5: Demographic Indicators and associated R-Squared values

Demographic Indicator	R-Squared
Children	0.45
South Asian	0.36
Visible Minority (Racialized Persons)	0.28
Filipino	0.17
Single Parent Families	0.14
Black	0.12
Female-Headed Households	0.11
Southeast Asian	0.09
Chinese	0.08
Seniors	0.06
Arab	0.05
Indigenous Peoples	0.03
Population Below LIM	-0.07
Korean	-0.08
Latin American	-0.18
West Asian	-0.27
Japanese	-0.28

3.5.2 Comparisons: Bivariate Analysis

The following section discusses four bivariate maps created to analyze the relationship between select indicators to explore potential insights into the region. Bivariate analysis is a technique by which two indicators can be interpreted together at the same time It can be used to highlight two overlapping inequity considerations

and can help to progress understanding of inequity using indicators that may not necessarily represent an inequity on their own.

Low Income and Income Inequality Ratio

This bivariate analysis shows the population below the low income measure (LIM) and the income inequality ratio, which was a calculated ratio of the proportion of the population in the 8th income decile and the 2nd income decile (both measures were from variables in the 2016 Census.)

High values for the income inequality ratio show areas where there is a very high proportion of high income earners to low income earners, while a low income inequality ratio indicates a higher proportion of low income earners. The highest value for the region was 8.5 in Belcarra and the lowest value was 0.04 in Langley City. The highest concentration of population below LIM was 0.66, occurring in both Langley City and Vancouver's Downtown Eastside.
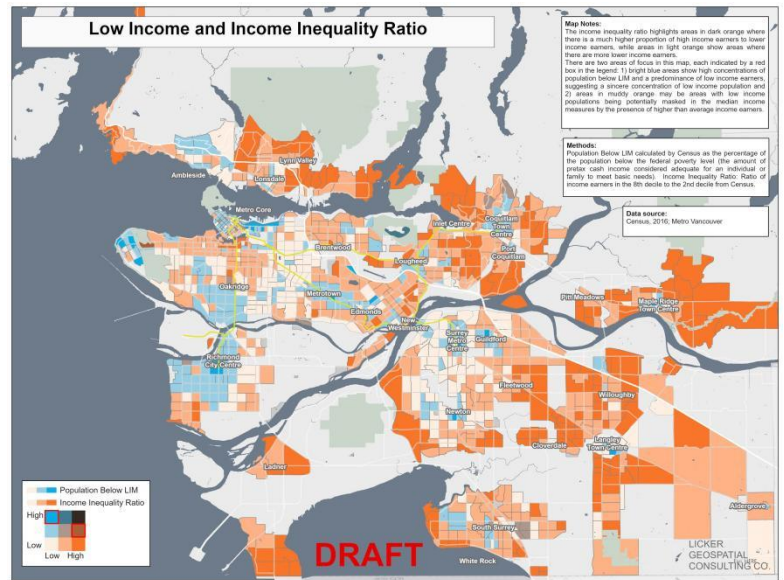
The bivariate analysis reveals two results of interest. Firstly, it highlights areas where there is a high concentration of population below LIM as well as a low income inequality ratio, suggesting a concentration of low income population. These areas are in many of the region's urbans centres, including Langley City, Surrey's Newton and Guildford, Burnaby's Edmonds and Metrotown, Richmond, and Vancouver's Downtown Eastside. We also see this occurrence at UBC due to the presence of low-income students. Secondly, areas with high concentrations of low income population that may be otherwise masked by a measure such as median income due to the presence of higher than average income earners become more apparent through the bivariate analysis. These such areas occur in Vancouver's Arbutus area, likely again due to the presence of students, as well as in South Surrey and in areas of Vancouver's Metro Core. This is shown also in northern Coquitlam, possibly due to the presence of retirees.

Percent of Owner Households and Median Home Value

This bivariate explores the relationship between the percentage of owners and median home value. Both indicators were from the 2016 Census. The highest percentages of owners in the region are 97-100% and occur primarily in West Vancouver, Vancouver's West side, Belcarra, and South Surrey. In South Surrey, there are also some of the highest median home values in the region, valued in the data at just under $2 million. These areas, with high ownership and high median values, indicate areas of significant real-estate wealth. Conversely, the bivariate analysis also highlights areas with lower home values (less than $500,000) and few owned homes, which may indicate reduced wealth. Through this rubric, areas with significant concentrations of wealth occur in the west side of Vancouver and West Vancouver and a stark absence of real estate wealth in the West End and Downtown Eastside neighbourhoods of Vancouver, as well as many town centres clustered along the Expo SkyTrain line, such as Burnaby's Metrotown, New Westminster and Surrey Metro Centre.
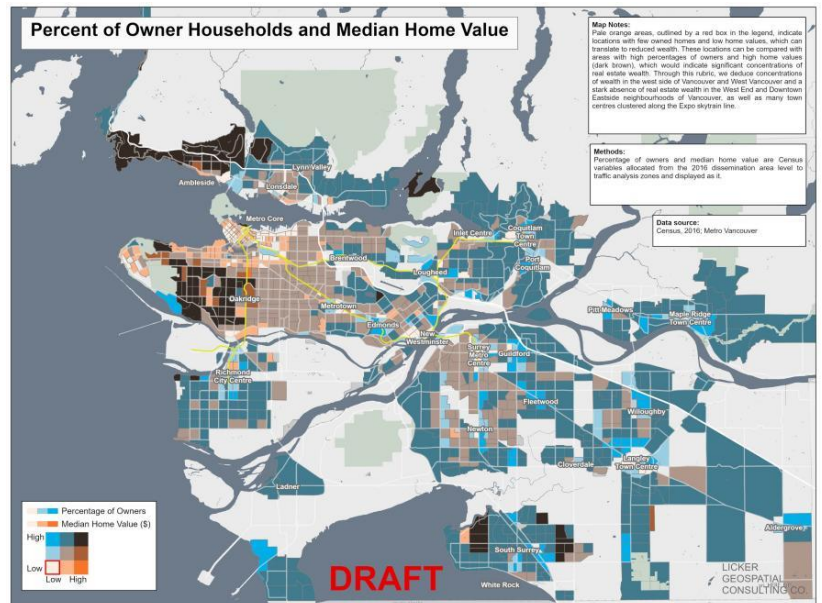
No Post-Secondary Education and Median Age

This bivariate explores the relationship between populations (aged over 25 years) with only a high school diploma or no diploma, degree, or certificate of any kind (i.e. no post-secondary education) and median age. The driving concern for this map is exploring areas where there is a high concentration of population with limited education, a barrier to economic opportunity, and a predominance of working-age population (25-50), who most require economic opportunity. To underline this statement, for example, populations over 55 without post-secondary education would be less of a concern for planning employment area through land use moving forward as these are populations likely moving towards retirement and no longer seeking employment opportunities to support themselves or their families. From this analysis, we see high concentrations of population without post-secondary education between the ages of 25 and 40 widely across Surrey, as well as in specific areas of Pitt Meadows, Burnaby and south-eastern Vancouver. There are also high concentrations of population with no-post secondary between 40 and 55 across Surrey, though to a lesser extent than the previous age group, Langley City, Pitt Meadows and Maple Ridge, Richmond and Burnaby.
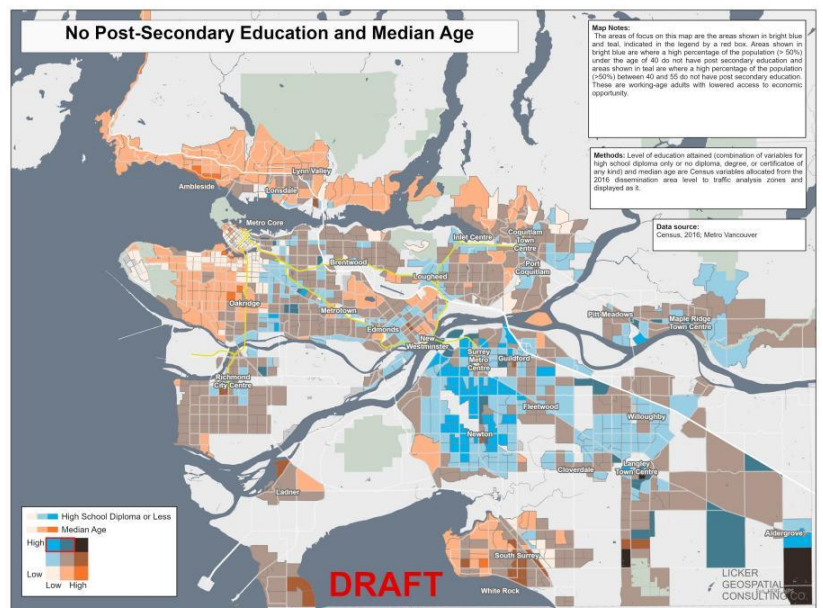
Exposure to Flood Hazard and Demographic Equity Index

This bivariate explores the relationship between the modelled exposure to flood hazard, from Metro Vancouver, and the demographic equity index produced from a principal component analysis of the demographic indicators identified through this project, excluding the ethnic diversity index. This analysis provides more nuance to the flood hazard indicator by highlighting areas where adaptive capacity of multiple population groups may be reduced. For example, there are particular areas of Richmond that may have populations with reduced adaptive capacity, while the entirety of Richmond had been identified as having high risk of flooding, as well as the Bridgeview area of Surrey and North Vancouver's Harbourside. These are areas where further investigation into the barriers to resilience for populations in these areas would be important.

Flood Risk and Demographic Equity Index

Map Notes:
The areas in dark brown, indicated by a red box in the legend, are the primary focus of this map. These areas show where there is a significant flood risk as well as several overlapping equity-seeking demographic populations. This additional analysis is instructive as it adds nuance to the flood risk layer which is more or less binary in presentation.

Methods:
Flood risk is a modelled metric from calculated flooding data prepared by Metro Vancouver. The demographic equity index is the result of a principal component analysis on the identified demographic indicators from the equity baseline study for Metro Vancouver and TransLink.

Data source:
Census, 2016; Metro Vancouver

4. Listening & Learning Engagement Report

4.1   Description

The Listening & Learning engagement sessions were developed to support participants and ensure a safer space. A safer space means that we do all we can to support participation in the session in a manner that reduces harm and expands dignity. Participants and facilitators listened and learned with each other as stories were shared of lived experiences, holding space together for potentially challenging conversations. The design of the engagement was informed by a public engagement guide developed by Simon Fraser University's Morris J. Wosk Centre for Dialogue, titled '*Beyond Inclusion: Equity in Public Engagement.*"

The format for the sessions was designed to be fluid and honour the participants' status as wisdom holders who took time to share personal information about their lived experiences with inequity in the region. The sessions lasted 2.5 hours when conducted in a small group setting, and between 60-90 min when done as individual interviews. All sessions were conducted virtually, using Zoom video conferencing. Participants were provided with honorarium following the sessions, in recognition of their time and wisdom.

Prior to the sessions, participants were sent a 'Preparation Kit' that oriented them to the sessions, provided some tools and resources to help with difficult conversations and the potential triggers that may arise, and asked if any support was needed to help participants with accessibility, cultural safety, or other needs. The consulting team were prepared to offer support for:

- Child-Minding
- ASL Interpretation
- Language Interpretation
- Counselling support
- Other access needs on a case-by-case basis

Listening and Learning Session Agenda

1. Introduction - Participants shared their identities and context to begin the conversation.

2. Breakout and Open Group conversations with writing prompts and somatic/body-based cues to answer questions related to:

   a. A definition of social equity relevant to their experience.

   b. Where inequities are showing up in their day-to-day (with guiding prompts around topics related to regional growth/land use, and transportation).

   c. What a "socially equitable" region might mean for their identities and experiences.

3. Open reflections about the Social Inequity Index

A more detailed description of the agenda is provided in Appendix VI.

4.2   Participants

Due to the project constraints, a targeted recruitment approach was used to adapt to the short timeline and limited budget, while allowing for robust engagement. The consultant team used the following principle to guide participant selection (more information on this decision is included in Appendix VII):

Our priority is to hear the voices of racialized people (Black, Indigenous and People of Colour) as well as lesbian, gay, trans, queer, 2 Spirit people (LGBTQ/2S) within an intersectional framework that acknowledges how other elements of identity such as class, ability, age, and immigration status produce different experiences and unequal outcomes.

Within these populations, it was important to hear from a mix of subject matter experts who work professionally in the fields of social equity, regional growth and transportation (such as urban planners, decision-makers, and policy analysts), as well as members of the public. Subject matter experts were recruited through the professional networks of the consulting team, while members of the public were recruited via referrals from social service agencies in the region that provided services to racialized communities and/or LGBTQ2S populations. All participants were asked to speak from their own personal experiences, rather than attempting to represent their employer or organization, or the experiences of others with similar identities. Group sessions were a mix of both subject matter experts and members of the public.

It is important to recognize that individual experiences are all contextual, and to provide this context when sharing stories. However, it was also important to provide an opportunity for participants to speak anonymously and confidentially. As a result, individual elements of the identity characteristics represented in the Listening & Learning Sessions are aggregated below. Participants were provided with a link to an optional, confidential demographic survey to help the consultant team to better understand the diversity of the participants. While not every participant completed parts or all of the survey, where they did this contextual demographic information is included below.

- All 17 of the participants self-identified as racialized peoples. Five of the participants identified as Indigenous, while the other 12 identified as people with varying ethnic identities.

- Indigenous Participants indicated that they lived on the following traditional territories:
    - Skwxwú7mesh (Squamish) lands (District of North Vancouver)
    - Skwxwú7mesh (Squamish) lands (District of North Vancouver)
    - xʷməθkwəy̓əm (Musqueam) lands (City of Richmond)
    - Qayqayt, and Kwikwetlem Nations (City of New Westminster)
    - Matsqui, Kwantlen, Katzie, and Semiahmoo Nations (District of Langley)

- The rest of the participants indicated that they lived in the following municipalities:
    - Burnaby
    - Coquitlam
    - North Vancouver (City)
    - New Westminster
    - Richmond
    - Surrey
    - Vancouver

- Thirteen participants identified as women; four identified as men.

- Five Participants self-identified as LGBT or Queer.

- Two participants were between the ages of 18-34. Six participants were between the ages of 35-54.

- Six participants shared their level of education:
    - Four participants indicated completing: Master's, PhD. or other Postgraduate Degree
    - One Participant indicated completing: Bachelor's Degree
    - One Participant indicated completing: College or Technical Training

- Six participants indicated being renters or tenants.

- Three participants self-identified as middle-class, while three identified as low-income.

4.3   What We Heard

Key themes were gathered from the discussions held during the Listening & Learning engagement sessions, and a summary of these is shown below in Table 6. Following this, a more detailed discussion of the themes is presented, as well as select quotations from participants as examples of the themes. While themes related to Land Use and Growth Management are most relevant to MVRD in terms of experiences of inequities, themes related to Transit and Mobility have been included due to the overlapping and influencing nature of these two categories.

Table 6: Key topics and themes heard from Listening & Learning participants

Topic	Themes
What does Social Equity look and feel like?	
Social Equity for Indigenous Nations and Peoples	• Indigenous Social Equity needs to be treated distinctly in recognition of Indigenous Rights and Title • Historical trauma and injustices need to be acknowledged • Each individual's experience is unique, and intersectionality is important • Culture is foundational
Social Equity for Other Equity-Denied Populations	• Move from emphasizing "Equality" to "Equity • Social Equity is experienced differently • Supporting social equity means supporting people's potential, fair distribution, and feelings of inclusion. • Representation is necessary for social equity • Dignity is inherent to social equity
Experiences of Inequities in the Region	
Land Use and Growth Management	• Homelessness looks different throughout the region • Support and opportunities are needed for equity-denied populations to live and work within the same community • The effects of displacement threaten community connections & support • Parks and green space need to feel welcoming for all • Classism and race bias in relation to community demographics affects services • There is a need for a diversity of housing types in neighbourhoods across the region • Patterns of historical colonial displacement repeat themselves in contemporary gentrification • Retail space affordability and availability impacts equity-denied populations
Transit and Mobility	• Transit-reliant populations face isolation, delays, and fewer opportunities in parts of the region with lower transit connectivity between job centres • Congested transit disproportionately impacts riders with disabilities, medical concerns, or other mobility considerations • A lack of transit frequency and reliability impacts economic and social opportunities • Some sub-regions are experiencing rapid growth due to immigration and lower housing costs, but don't have sufficient transit service to address resulting congestion • Pedestrian health and safety is concerning in areas with rising vehicle traffic

	- Lack of amenities at SkyTrain stations and bus exchanges (public washrooms, WiFi) has disproportionate impacts - Greater focus is needed on enhancing the perception of safety while using transit - Racial bias from transit security and employees is experienced in their enforcement of regulations - Interests of privileged stakeholders should not supersede those of transit-reliant populations - Sustaining relationships/community is difficult when solely transit-reliant

4.3.1 Social Equity for Indigenous Nations and Peoples

1. **Indigenous Social Equity needs to be treated distinctly in recognition of Indigenous Rights and Title** - Social equity for Indigenous Peoples arises from a distinctly different history and cultural and legal relationship to land than other equity-denied groups. It is important to acknowledge this distinction, rather than categorizing the experiences and rights of Indigenous Peoples with those of settlers and immigrants. Many believe that Indigenous Peoples do not seek equity but rather reconciliation and a restoration of the health, wellness, self-determination and sovereignty which were eroded through historical and ongoing colonization. In addition, policies addressing Indigenous Peoples have to respond to the complexities arising from the colonial history of 'Indigenous' (and other historical labels) acting as both a political identity, and a racial identity that was created by colonial governments to categorize numerous distinct groups as one.

   "So when governments are engaging with stakeholders, you're looking at 'Who are the people that would be impacted by this?' That is a different place than say a 'rights holder' or a 'title holder', and for Indigenous Peoples, specifically in Vancouver, the 'title holders' are a good 11 or 10 Nations whose territories the Metro Vancouver region is on. Then 'title holders' have a different set of obligations that other institutions must follow."

   "The Urban Indigenous Peoples Advisory Committee (UIPAC) and the Metro Vancouver Aboriginal Executive Council (MVAEC) have said that putting Indigenous people under equity is like bringing back the 1969 White Paper which was to make Indigenous Peoples 'Canadians' with the same rights. Inherent [Indigenous] rights supercede all equity rights and policies."

   "What people don't realize - Indigenous People is not a racial category. It is a political category that connects a particular type of people that are found all around the world. There are White Indigenous people, there are Black people, and there are Chinese Indigenous…it's not a racial category. It's a political category that connects Original peoples who are still living on their land and still practicing their cultures and societies of that land with other peoples who also have a similar variety. So it becomes a political category. But there is a racialized element in the sense that Canada racializes Indigenous people through things like the Indian Act and things like policies that target people because of their race. And the health care system as an example of that, the land system as an example. The education system is an example of that. So the state is treating us as a racialized category. And discriminating against us based off of that systemically. And so equity becomes a thing of, well, there are clear indicators that this group of people are being oppressed by policy and law. So equity becomes a call to action to try and address that imbalance that exists."

2. **Historical trauma and injustices need to be acknowledged** - Social inequities experienced by Indigenous Peoples are created from colonial systems of oppression, including those experienced from residential schools, forced relocation, and limited access to services on reserve. Social equity planning with Indigenous Peoples must begin with acknowledging the legacy of colonization and situating one's

organization within that legacy as part of any policy or process that aims to right historic and contemporary wrongs. If social equity planning is not centered within the wider context and legacy of colonization, it risks losing legitimacy.

> *"I think that's a fundamental question about how do we make these decisions about growth and about all these things when we know that there is trauma and there [are] people that have been removed from their land, have been forcibly removed from their lands and there's Urban Indigenous Peoples that live here that also need access to their own practices and healing and wellness centers and things like that. So that's the grand context for me that I'm thinking about, and if we're not anchored in that and those questions then whatever planning we do is quite problematic, and I think for me I've been challenged lately."*

3. **Each individual's experience is unique, and intersectionality is important** - A definition of social equity for the Indigenous Peoples of the Metro Vancouver region needs to consider the diverse experiences held within each community, and within each individual.

> *"My version of how I can create more equity in this world is different from how you can create more equity in this world. And it's because we have different resources, we have different worldviews, and it would be so much better if actually we all thought this way because then we're offering 1000 different ways to instill more equity in our lives and the lives of people around us."*

> *"We are aligned in terms of the types of discrimination or challenges we face as Indigenous people, but it's uniquely different for us, as Indigenous women than it is for Indigenous men, so I think all of those things are kind of where I tried to build a frame around equity."*

4. **Culture is foundational** - Social equity includes having access to traditional cultures, especially for Indigenous Nations.

> *"This is where we get into things like Aboriginal rights and Indigenous rights now in BC. So you get into things like Aboriginal Rights and Indigenous Rights and access, or access and ability to practice in cultural practices that are integral to the society of that Indigenous nation."*

4.3.2 Social Equity for Other Equity-denied Populations

1. **Move from emphasizing "Equality" to "Equity"** - Policies that were historically established with a desire for 'equality' i.e. the same treatment for all, may actually be inequitable. An example of this is the current fare tiers for transit fares. While reduced concession prices are available for seniors, youth, children and Handycard holders, the realities are that many populations within the "adult" full fare category may face systemic barriers that impact their ability to pay full fare.

> *"Equity is just as much about eliminating barriers that may have felt were justified in the name of 'fairness for all', but perhaps penalize some over others - cost is one example. It might be a static thing, but cost differs for all."*

Another example is the unequal impacts experienced by different populations arising from the absence of public washrooms in transit areas. Populations such as seniors, LGBTQ2S peoples, parents with small children, disabled peoples, and/or people experiencing poverty or homelessness all may experience greater sanitation needs while using public transit, and may not have the same options available to them to draw on washrooms provided in the private sector such as in coffee shops.

2. **Social Equity is experienced differently** - Social equity intertwines the lived experiences of individuals with larger systems of power, such as White supremacy and systemic oppression. Identity, place, and institutional discrimination all influence how social equity is experienced at the individual scale.

> *"Equity does not mean the same [for everyone]. It's about understanding where everyone is coming from, their background, their experiences, etc."*

"Social equity is practices that are trying to include factors in addition to above [working definitions], including immigration status, language, ability, race, nationality, income, employment status, education level, etc."

"Social equity looks different for everyone."

3. **Supporting social equity means supporting people's potential, fair distribution, and feelings of inclusion.**

   "Social equity is the proper allocation of opportunities, advantages or privileges to each and every section of the society with no one left out or discriminated against irrespective of creed, race, gender, geographical location or affirmations."

   "Social Equity is about providing a safe space."

4. **Representation is necessary for social equity** - Social equity is having representation in government and positions of power at all levels of society to produce equitable access, outcomes and opportunities for all.

   [Social equity is] "Power in decision-making, representation in top levels of politics/business/society, representation in media, equal access, opportunities for a meaningful livelihood, equitable health outcomes, right to movement (transportation), right to housing, right to healthy + appropriate food."

   "Representation…We need more BIPOC to actually run the government, because systemic inequity is the result of too much of a few privileged groups running the show. We need more BIPOC to smash it all up from the inside."

5. **Dignity is inherent to social equity** - Social equity is about treating people with dignity.

   "Social equity means building universal dignity in our society, institutions and communities."

4.3.3 Experiences of Inequities in the Region

After discussing concepts and definitions of social equity, participants were asked to share stories of inequities they are experiencing or witnessing in the region as a result of land use and growth, and also those related to transportation. It is also important to note that regional growth and transportation inequities are often experienced simultaneously by participants, and that distinguishing them in a planning context is rarely consistent with the public's lived experience.

Land Use & Growth Management Key Themes

1. **Homelessness looks different throughout the region** - the experiences of individuals, and the "visibility" of homelessness, is very different across the region. The 2020 Metro Vancouver Homeless Count found that Indigenous and Black people are significantly overrepresented in the homeless population. This has connections to the distribution of affordable housing, shelters, and the culturally appropriate support services that may be needed by people experiencing homelessness.

   "I've lived in the Lonsdale area for about almost four years now and to this day, I am quite shocked by the complete lack of homeless people, homeless transient, [I] just don't see them. And it's just such a stark contrast to what we see across the water...I don't know exactly what it is. But, I suspect there's some inequities at play."

   - PARTICIPANT, LIVING IN CITY OF NORTH VANCOUVER

2. **Support and opportunities are needed for equity-denied populations to live and work within the same community** - there needs to be a range of employment opportunities present throughout the region, not just in the major downtown centres. Recent immigrants and other equity-denied populations may not be able to afford to live in urban core areas, and as a result may be required to travel long distances to reach appropriate job opportunities.

"Sometimes the work that I want to do might not be in Burnaby for example, and I have to drive all the way or take transit to Vancouver. So I think the idea of a complete city is perhaps a place where, if I want to set up a business, I can just do it close to where I live. Where I need a job, I don't have to drive far away. I can just have a job here [in Burnaby]. We know in Vancouver proper, most people cannot afford to live there. So people have been pushed out to other areas. And those are the areas not served as well. Right?"

- PARTICIPANT, LIVING IN CITY OF BURNABY

3. **The effects of displacement threaten community connections & support** - having support from those with a shared culture living within close proximity is critical. Rising housing costs have impacted the ability for communities to stay together and provide mutual assistance. When cultural communities are forced to move further apart, the transportation costs are felt both in the cost of transit, but also in the time costs.

"I moved to Vancouver in 1998 and I moved to East Vancouver. I lived with my cousin and we lived close to other people from our communities who had been brave enough to move to the city. And our close proximity to one another in East Vancouver made all the difference. We survived together. A lot of people, you know, got so homesick. They dropped out of school, the first people to go to university and their families and they missed home so much they dropped out and moved back to the village. But there was a small group that managed to make it. You know, I think we did it because we were all close to one another, we could share suppers together, we could babysit each other's kids. I don't have kids, but I sure babysat a lot for people who needed it. Now we all live far apart. It's really difficult to find housing in East Vancouver…I wish we could all be an East Van together still [but] gentrification has taken that option away from us. And the high cost of transit. Not only is it too expensive. It's two hours away. So you're not only taking all my money, you're taking my time too. And it's tough."

- INDIGENOUS PARTICIPANT OF NISGA'A AND KWAKWAK'AWAKW HERITAGE, LIVING IN SQUAMISH RESERVE HOUSING, CITY OF NORTH VANCOUVER

4. **Parks and green space need to feel welcoming for all** - there is still a long way to go to make recreational spaces feel inclusive and welcoming to all people, no matter what they look or sound like. Further exploration is required to delve into this theme, such as park distribution. Some neighbourhoods have an abundance of parks while others have less parks, or access to services within these (such as access to public washrooms).

"We can all have access to parks, to green spaces and not be, you know, looked at in a weird way because I dress differently or speak differently."

- PARTICIPANT, LIVING IN CITY OF BURNABY

5. **Classism and race bias in relation to community demographics affects services** - perceived neighbourhood characteristics may impact individuals' access to services such as policing and the quality of these services. This may be in the form of over-policing and surveillance in some neighbourhoods with specific characteristics (e.g. related to race, class, Indigenous identity). It may also be in the form of lower levels of service response to "non emergency" activities in these neighbourhoods. In the example below, a participant feels that the more privileged neighbourhood they now live in resulted in a more prompt and respectful response to a non-emergency call, in contrast to a perception that the same activity originating in another neighbourhood with a less privileged demographic makeup would be perceived as 'normal' for the area, and thus ignored when reported.

"Inequity in my area right now where I live is actually benefiting me, and I'm actually winning from it. And the most recent example I have is I'm going for a walk at night and some things happened. And because I know where I live, and I know my neighborhood, I felt totally comfortable pulling up my phone

and looking up the non-emergency line and making a report with the RCMP, and they showed up in eight minutes, and they're very nice, very friendly. They called, they followed up. We stayed on top of things and they made sure my neighborhood was safe. I got off the phone and I was like, this is really weird. Like, I don't feel like I should do this. But that's sort of the neighborhood that I'm in.

I know people from down the road there [in Surrey], if they phone the cops for things, it's sort of like 'we'll get to it.' Depending on where you are geographically, unless it's something serious or you own a business - they're really quick to respond in the area to business concerns. But I think for me, there's that part there because I sort of benefit from [inequity] here, where I have level of comfort where I'll do that when something is happening."

- INDIGENOUS PARTICIPANT OF ST'AT'IMC HERITAGE, LIVING IN LANGLEY TOWNSHIP

6. **There is a need for a diversity of housing types in neighbourhoods across the region** - low-density neighbourhoods made up exclusively of single-detached homes do not provide the range of affordability, unit size, and transit-supportive densities that are required to meet the needs of the diversity of residents in the region.

"Like in North Van or in Shaughnessy, the Endowment Lands, those types of neighborhoods where they're all very expensive, single-detached homes. With very little diversity in the residential areas, if you were to stick someone in there, say a single mom with several young children with minimum wage income. Are they going to be able to live in those areas that are showing as having very good social equity? Can you imagine someone like that in those areas really having fair access to the same opportunities and services as the rest of the neighborhood? I can't."

- PARTICIPANT, LIVING IN CITY OF NORTH VANCOUVER

7. **Patterns of historical colonial displacement repeat themselves in contemporary gentrification** - when land use decisions are made to re-develop certain areas to accommodate regional growth priorities, the impacts may be felt differently by marginalized populations.

"Who [which areas] suffers next for the greater good? And that's the displacement kind of equation that happens. I think it happens to marginalized people more, and in Canada, it happens to Indigenous people. It's 'this is for the greater good of everybody'. So we're on a smaller scale than Canada here, but for the greater good of Metro Vancouver it looks like parts of Surrey and Langley will suffer next for the greater good of the empire. But I do think that we can learn a lot from that. But I think that the stories in there are what's important. The stories in there will get forgotten and will get paved over to build massive developments instead of a sort of diverse housing initiative."

- INDIGENOUS PARTICIPANT, LIVING IN LANGLEY TOWNSHIP

8. **Retail space affordability and availability impacts equity-denied populations** - affordable retail spaces are affected by displacement, and thus are not equally distributed around the region. Shops providing culturally appropriate food, services etc. may not be available to some residents within their neighbourhoods as part of a compact, complete community. Retailers & entrepreneurs may feel they need to choose between operating in a location then can afford, versus locating in easily accessible areas close to their target populations. There is a need to complement affordable housing with provision of affordable retail space, allowing for more culturally-diverse retail providers.

"I think for me as an immigrant, sometimes I have not always been able to access cultural foods. I know that businesses that cater to ethnic and cultural groups, for example, cannot afford sometimes to set [up] shop close to where we live, right? Oftentimes, you have to drive outside of where you live to a different city to access your cultured foods."

Transportation & Mobility Key Themes

1. **Transit-reliant populations face isolation, delays, and fewer opportunities in parts of the region with lower transit connectivity between job centres -** Transit-reliant populations, such as those employed in low-paying service sector jobs, may find it difficult to travel both within their municipality as well as elsewhere in Metro Vancouver in comparison to those who have access to personal vehicles.

   "I think that on the North Shore, that at least equity in transit access, I think it's lacking. And that's not just for Lonsdale. But going all the way across the region, the North Shore region. So connecting the City and the District of North Vancouver with the District of West Vancouver. there's very few transit connections, and a lot of the service sector that serves those communities takes transit. So it's not a case of 'well, we're a self-sufficient community that does not need any transit.' There are people that rely on it and that the community needs those sectors, but they're not providing equitable access for the people that provide the services that they want."

   - PARTICIPANT, LIVING IN CITY OF NORTH VANCOUVER

2. **Congested transit disproportionately impacts riders with disabilities, medical concerns, or other mobility considerations** – With rapid increases in population growth outpacing local employment creation in some regions, residents are experiencing increasingly crowded SkyTrain commutes. For transit users with visible or invisible disabilities or medical concerns, this may affect their ability to travel. Riders (often women) travelling with young children in strollers are also disproportionately impacted by congested transit. Areas of the region with large populations of racialized, urban Indigenous, recent immigrants, and low-income residents further compounds the inequity of overloaded transit service. Costly distance-based fares exacerbate this issue.

   "The SkyTrain is always full from Surrey, it is very difficult to get a seat. If you are paying a full fare from Surrey, 3 zone, it can become frustrating when you don't get a seat. Especially when you have medical concerns."

   - *PARTICIPANT, LIVING IN CITY OF SURREY*

3. **A lack of transit frequency and reliability impacts economic and social opportunities** – The auto-oriented design of some communities and lack of frequent buses (running every 10 minutes or sooner) makes it difficult to travel from the region's more suburban municipalities, where buses run every 15, 20 or 30 minutes and have long routes. Congested roads often cause buses to arrive earlier or later than expected. The sporadic arrival of buses is an equity issue, especially for those who rely on transit as their main mode of transportation. It impacts the ability to keep appointments, maintain regular work, attend school, and participate in community life.

   "I 100% used the bus [394 express bus] in the morning to go to my office before COVID. But if I miss one bus, for some unforeseen circumstances – maybe the bus broke down, then I have to wait another half-hour. By chance, if that bus broke down or it's out of order, then I have to go walk for another 15 to 20 minutes [to Newton Exchange]. It's the same in the afternoon. When I am coming back from work, at 5 p.m. or 6 p.m., if the bus is gone or I miss it, I have to wait for another half-hour."

   - PARTICIPANT, LIVING IN CITY OF SURREY

4. **Some sub-regions are experiencing rapid growth due to immigration and lower housing costs, but don't have sufficient transit service to address resulting congestion** – Some auto-oriented communities further from urban core areas are experiencing rising congestion due to growth; many of these communities are majority-racialized, with higher levels of new immigrants looking for more affordable housing. The resulting

car dependency may lead to perceived parking shortages in residential parking at the neighbourhood scale, particularly in areas of invisible density such as locations with high numbers of renters living in basement suites.

> *"We live in the City of Surrey and I think it has been getting more crowded with traffic every day. And I think something that the region or city authority has to look into is [residential] parking spaces…most of the parking spaces are super busy. But driving within the City of Surrey, it's really getting a bit of a challenge for most of the people, I think."*

- PARTICIPANT, LIVING IN CITY OF SURREY

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5. **Pedestrian health and safety is concerning in areas with rising vehicle traffic** – In auto-oriented communities with large intersections and rising congestion, pedestrian safety is becoming more of an equity issue for non-driving and transit-reliant populations. Seniors, children and low-income residents are all at greater risk of traffic deaths than other populations. In addition, increased traffic volumes affect localized air pollution which has disproportionate affects on certain populations including children, people with certain health conditions such as heart disease or lung disease (especially asthma), and those who face higher exposure to pollutants such as low-income and racialized residents.

> *"Something that we need to keep an eye on [are] the people that are driving very fast. And I also have seen a couple of experiences where the sidewalk signal is activated and still drivers feel that 'oh, [the pedestrian] is still on the other side of the road so I can turn quickly'. So I think there is some kind of education or something that people need to be aware of if the sidewalk signal is activated. Whether the person is walking a bit slow or they're on the other side, the driver's need to stop on both sides [before turning] until he or she crosses the road very safely."*

- PARTICIPANT, LIVING IN CITY OF SURREY

6. **Lack of amenities at SkyTrain stations and bus exchanges (public washrooms, WiFi) has disproportionate impacts** – Long transit trips that may involve significant waits (15 to 30 minutes) for buses at SkyTrain stations or standalone bus exchanges can stretch the limits of what some people can comfortably do without access to a washroom. Providing washrooms might make these long trips more manageable for women, children, seniors, disabled, or other populations requiring these amenities more frequently. In addition, the provision of WiFi at stations can support safety and connectivity for lower-income transit users who may not have access to mobile data plans.

> *"I was surprised that throughout Vancouver there are not too many services like the Wi-Fi, toilets when waiting in line for buses. But for example, if I want to take a bus, I have to wait at least 15 minutes. And if I miss the bus, I have to wait another 30 or sometimes one hour for the next bus. That's the big issue for me. Especially while waiting. Yeah, I've spent too much time waiting at the bus stop. We really need it especially for women and sometimes for children, for example, if a mother [transits] with her boys or girls and they need to go to the toilet, what can she do, especially on the SkyTrain? Because SkyTrain takes a lot of time for example from [Surrey Central] to Chinatown, it's 40 minutes. So as an adult we can manage it but as children, they cannot manage all that time. It's why most people don't prefer to take transit. Most people buy a car or are trying to buy a car."*

- PARTICIPANT, LIVING IN CITY OF VANCOUVER

7. **Greater focus is needed on enhancing the perception of safety while using transit** – A specific approach to promoting the safety of women, trans and queer, and other non-dominant populations on public transit might be needed, such as targeted communications campaigns and resources as well as increased security. When transit feels unsafe, it limits the ability of women and other populations with non-dominant identities to exercise their right to the city and participate in society to the same extent as men.

"I just heard about something that happened on the SkyTrain, [someone tried] to rob some female and I think I heard about this news and [I'm] just a little bit afraid of that…So we have to just be careful for [safety of women on transit] or have more police or security staff. A lot of passengers need more information about [security, safety]."

- PARTICIPANT, LIVING IN CITY OF VANCOUVER

8. **Racial bias from transit security and employees is experienced in their enforcement of regulations** – When the enforcement of transit regulations is at the discretion of individual transit police and security personnel, there is a potential for racism and other identity-driven biases to influence enforcement decisions. Given the legacies of over policing in Indigenous, Black, and other communities of colour in Metro Vancouver and across Canada, it is imperative that transit police and other security staff are trained in cultural sensitivity and recognizing implicit bias.

"My cousin … she's really Indigenous looking, she's really dark, she's Cree. She has a wheelchair but she was in a scooter. So she was on the SkyTrain and she would plug into the outlet but she would also play her music, which she's not supposed to do. And I think she annoyed the SkyTrain security and so all along her route, they plugged up where you would plug in your scooter. She's stuck there because the outlets were all covered and so she called me and told me the story. So I called "the Skytrain people." And I said, are people allowed to use them [outlets]? And they said yes they are allowed to, only if they're not in people's way. And so I called her up and I'm like, you should be allowed to use them."

- INDIGENOUS PARTICIPANT, CURRENTLY LIVING ON THE TERRITORIES OF QAYQAYT, AND KWIKWETLEM INDIGENOUS NATIONS (CITY OF NEW WEST)

9. **Interests of privileged stakeholders should not supersede those of transit-reliant populations** – Equity considerations must inform the engagement and planning phases of transit projects, so the needs of transit-reliant and low-income populations are not drowned out by powerful interests or more privileged residents.

"I understand the struggle, because they did try to implement the rapid bus through to Dunderave just a few years ago. And it really was the wealthier residents, the business owners on the corridor that opposed it, and it [was cancelled]. So, it's not for lack of trying on the government part, I feel. It's definitely a cultural awareness issue. We need a culture shift in terms of where our priorities should be and what it means to be equitable in our treatment of our neighbours and people that help to build the community, and not just a specific segment of that community."

- PARTICIPANT, LIVING IN CITY OF NORTH VANCOUVER

10. **Sustaining relationships/community is difficult when solely transit-reliant** – Being able to maintain relationships, particularly with members of your cultural community, is vital to wellbeing. This is becoming harder for equity-denied populations during the pandemic, in addition to challenges resulting from the cost and time it takes to transit throughout the region.

"I think the hardest part about all of this, though, was the disconnection from the community. I've lost two friends since COVID started. Not being able to go and see them, you know, to take care of their bodies. To take care of cleaning their apartments, being able to see their kids, being able to gather all of these things were struggles, because we all live so far apart from one another and my one friend died. It was unsafe to take the bus to go and see him. And that was really difficult."

- PARTICIPANT, NISGA'A AND KWAKWAK'AWAKW FIRST NATIONS, LIVING ON SKWXWÚ7MESH (SQUAMISH) LANDS (DISTRICT OF NORTH VANCOUVER).

5. Recommendations

A wealth of data has been produced with this study, and many of the discoveries and findings will continue to emerge as the data is reflected on and analyzed beyond the scope of this project.

Based on an analysis of the quantitative (Baseline Indicator and Inequity Index) and the qualitative (Listening and Learning engagement sessions) data described in the previous two sections, the consultant team has developed the following recommendations:

5. Use a refined definition of social equity.
6. Target three priority areas for action:
    a. Focus policy response on inequity indicators connected to regional growth and land use.
    b. Integrate a selection of social equity indicators into regional growth strategy performance monitoring.
    c. Develop a corporate social equity plan.
7. Employ the "Social Equity Analysis Tool" (SEAT) to evaluate policies under consideration.
8. Begin a review of existing policy by drawing on previously identified gaps.

These are described in more detail in the following sections.

5.1   Social Equity Definition

Before being able to study and address social inequity at the regional scale, a clear, meaningful, and locally-derived definition of social equity is needed. A commonly-held definition ensures that all parties are talking about the same concept when they use the term. It is also important to ensure that indicators are valid and that interventions are addressing the problem they are intended to solve. Part of the Listening & Learning sessions included asking participants to define social equity based on their lived experiences as residents in the Metro Vancouver region. Prior to the sessions, participants were provided with "working" definitions of social equity that MVRD is considering. Participants were asked to respond and reflect on the working definitions to help refine them. This working definition is shown below:

"The promotion of justice and fairness and the removal of systemic barriers that may cause or aggravate disparities experienced by different groups of people. This can include the many dimensions of identity, such as socioeconomic status, ethnicity, sex, age, disability, gender, sexuality, religion, indigeneity, class, and other equity related issues."

Several key themes emerged during the engagement sessions that informed the development of a more refined social equity definition for Metro Vancouver:

- Participants identified a need for greater accountability from MVRD with regard to their equity work, from definitions to evaluation metrics for policies.

- Social equity definitions from authorities like MVRD should not be limited to vague, aspirational messages. Rather, they should be "actionable," and reference what those organizations can and are planning to do to address inequities in society.

"And so when I see the Metro Van definition, they didn't actually say anything about what they themselves can do to achieve equity...What's within your jurisdiction to act? I think we've come too far as a society to accept anything less. Show me the details!"

5.1.1 Proposed Metro Vancouver Social Equity Definition

Social equity in Metro Vancouver is the incorporation of justice and fairness within the region's principles, practices and policies in order to support the development of equitable outcomes for all individuals.

It is the promotion of access to context-appropriate opportunities and representation within systems of power for those that face systemic barriers and are the most negatively impacted by regional decisions, often due to intersecting and compounding factors such as race, ethnicity, Indigeneity, gender, sexuality, religion, age, socio-economic status, and mental or physical disability.

Expanding social equity means developing a region where individuals do not experience discrimination or exclusion from society because of their identities, but instead are welcomed, celebrated, supported and treated with dignity and respect.

5.2 Priority Areas for Action

Determining which inequities are "priority" is a challenging exercise – often, planning staff and front-line workers may have an anecdotal indication of challenges residents are facing. These may include issues such as homelessness, a housing affordability crisis, lack of rental supply, opioid crisis, the highest and the lowest life expectancy rates in the province within the same health authority, child poverty, and lack of transit access and other services in Indigenous communities. In addition, the participants of the Listening and Learning engagement sessions shared many of their own personal priorities for inequities experienced in the region; while a very small sample size, these stories point to direct and lived experience – capturing nuance and a sense of urgency that quantitative data may not catch. The challenge comes in determining the comparative importance when combining different types and levels of representativeness of data, such as was the case in this study.

Responding to the full range of inequity across the region will require collaboration and partnership across governments, sectors, and geographic areas, but it is important to identify elements that MVRD can play a more direct role in affecting through policy and practice. These can be summarized into three areas, shown in detail in the following section:

1. Policy responses focused on inequity indicators connected to regional growth and land use
2. Equity Performance Measures created and monitored as part of *Metro 2050*
3. Corporate social equity plan developed to help guide broader MVRD social equity practice and policy

5.2.1 Focus policy response on inequity indicators connected to regional growth and land use

We decided to focus policy response recommendations on inequities that showed up in both the spatial and narrative analysis, and that could be influenced by regional policy related to land use, growth and transportation. This should be viewed as a starting point, to be refined as additional engagement and research adds to our understanding of the experience of inequity within the region.

Indicators were assessed by both the degree of influence that MVRD has, as well as the degree of variance in the data related to that indicator. A larger variance speaks to a higher level of disparity in the data, pointing to a higher level of inequity. While this is not an exact science, and the analysis rests on all the same limitations and caveats about the data as were presented earlier in this report, it gives a starting point for consideration.

The quantitative data provided through the inequity baseline was then assessed against themes heard from the social equity context experts who participated in the Listening and Learning sessions, and areas where these showed up in both instances (baseline indicators and engagement) were put on a shortlist for prioritization.

The consultant team has identified the following priority inequities connected to regional growth and land use policy. The items are listed in order, starting with the indicator with the highest level of disparity in data and then descending from there.

1. **Rate of Change – demolitions by land use change**
   - *What we heard*: Redevelopment and increasing density often results in the erasure of marginalized people from the neighbourhood, and repeats patterns of historic colonial displacement.
   - *Why it matters*: High anticipated rates of change indicate areas where there will be significant increases in a population or employment in a given area. These increases, unmitigated, may be a warning sign of gentrification, displacement and unaffordability effects.
   - *Areas of highest concern*: Areas with a high rate of demolition by land use change (between 90-100%) are found only in less developed/less urbanized areas within New Westminster, Surrey, South Surrey and Langley.
   - *What MVRD can do*: Land use change demolitions (typically) result from the replacement of one type of structure with another higher density structure, for instance a single detached house changed to a multi-unit building. MVRD stewards the implementation of the regional growth strategy, the collective regional vision for how growth will be focused and land use change will be managed over the long term.

2. **Access to parks and recreation space**
   - *What we heard:* In addition to the presence and distribution of parks and recreation space in communities, work needs to be done to make them feel more welcoming and inclusive.
   - *Why it matters:* Access to parks and recreation space is a factor in positive health outcomes and community belonging. Barriers to park access, park provisioning, and parks programming and quality can all have disproportionate effects on some communities.
   - *Areas of highest concern:* The greatest clustering of poor access (less than 3.7 hectares available) occurs in Langley Township, Maple Ridge and Richmond.
   - *What MVRD can do:* MVRD can influence the location of regional parks, which can also influence the location or allocation of new park space in member municipalities.

3. **Subsidized housing**
   - *What we heard:* Participants shared observations around the different experiences of homelessness throughout the region. There is a need to match supportive, affordable housing and culturally appropriate social services to the demand.
   - *Why it matters:* Subsidized housing contributes to affordable housing options, as well as housing security in the face of urban change.
   - *Areas of highest concern:* Subsidized housing tends to be clustered, with many areas completely without subsidized housing. Areas with greater than 60% of residents in subsidized housing are found in Vancouver's Downtown-Eastside, Surrey (Newton, Metro-Centre and Guildford neighbourhoods) and Burnaby's Cariboo-Armstrong neighbourhood.
   - *What MVRD can do:* Metro Vancouver Housing provides affordable rental homes at below-market rates throughout the region. The regional growth strategy can also include policies supportive of subsidized housing.

4. **Relative access to transit**
   - *What we heard:* The auto-oriented design of some communities and lack of frequent transit access disproportionately impacts transit-depended residents, often racialized, low-income, and women, with long wait times and unreliable scheduling.

- *Why it matters:* Access to transit is an important equity indicator as it signals access to employment (income), education, health, and recreational opportunities for those who cannot drive a personal vehicle due to age, disability, or wealth.
- *Areas of highest concern:* The lowest transit access scores occur in suburban/rural areas not proximate to any major bus or SkyTrain routes.
- *What MVRD can do:* MVRD influences population growth management and major transportation corridors, which in turn affects transit service.

5. **Rate of change – demolitions by replacement**
   - *What we heard:* Displacement through gentrification has considerable social costs, impacting the affordability of housing and thus the ability for cultural communities to stay together and provide mutual assistance.
   - *Why it matters:* High replacement rate generally indicates loss of old, potentially more affordable buildings, as well as the presence of land speculation. Areas which are experiencing a rapid rate of change typically see a loss of affordable rentals as well as significant disruptions to community cohesiveness.
   - *Areas of highest concern:* Replacement rates higher than 4.5% are found in South Surrey north-east of White Rock along King George Blvd and Guildford along Highway 1, as well as in North Vancouver proximate to Iron Workers Bridge. Vancouver's West Point Grey neighbourhood, Kits Point, south Lougheed, just east of Surrey Metro Centre and just north of Langley Town Centre were between 2.5 and 4.5%.
   What MVRD can do: The regional growth strategy can include policies that encourage member jurisdictions to guide redevelopment in such a way to avoid or mitigate for involuntary displacement of renters such as tenant protection and relocation policies.

6. **Housing suitability (overcrowding)**
   - *What we heard:* There is a need for a variety of affordable housing types and sizes across the region. These can't be provided just through massive developments, but rather should include a range of diverse housing initiatives.
   - *Why it matters:* This indicator is a measure of housing size relative to the composition of a household (age, sex, relationships) and can indicate areas where the availability or affordability of housing has created situations where persons cannot live in a dwelling with adequate personal space. It is important to note that the term suitability is highly subjective as the definition prescribed by National Occupancy Standard may not align with cultural preferences and inter-generational living arrangements.
   - *Areas of highest concern:* The greatest percentages of households reporting unsuitable housing, at 25% to 39%, are found in Surrey (Newton, Metro Centre, Guilford) and Burnaby (Metrotown).
   - *What MVRD can do:* The regional growth strategy can include policies that encourage member jurisdictions to plan for culturally-appropriate family-friendly housing choices such as incentives or requirements for more units in a building with multiple bedrooms. MVRD may also have a role to play in policy research and advocacy for more supports for family friendly affordable housing choices.

7. **Employment access (transit)**
   - *What we heard:* Transit-reliant populations, such as those working in the lower-paying service sector, face isolation, delays, and fewer opportunities in some parts of the region with lower transit connectivity between job centres.
   - *Why it matters:* Accessibility to employment and low-cost transportation options relate to economic well-being.

- *Areas of highest concern:* Low ratio scores (indicating poorer transit access) occur in suburban parts of Richmond, Delta, Surrey and Langley as well as Maple Ridge Regional City Centre.
- *What MVRD can do:* Through influencing both relative access to transit and expected employment growth as well as regional employment land use designations, MVRD can impact employment access by transit. TransLink planning for transit stop locations and routes would also impact this measure.

Priority Geographic Locations for Consideration: In addition to the inequity considerations by category presented above, there will also be specific geographic areas of the region that have multiple overlapping equity considerations, some of which may be influenced by MVRD policy and practice. While by no means a comprehensive analysis, the Inequity Index created as part of this study can be used as a starting point for this. Examples of priority areas of inequity related to specific geographic areas *within MVRD's ability to influence policy* include:

- Subsidized housing in Vancouver - Downtown Eastside
- Exposure to flood hazard, and Rate of Change (by Replacement) in Richmond
- Housing suitability (overcrowding) in Guildford

5.2.2 Create and monitor Equity Performance Measures

Measurement and monitoring systems are key to ensuring action. All indicators were evaluated using the following criteria as a framework for inclusion as performance indicators of equity for *Metro 2050*. Each indicator was evaluated by:

- the level of confidence in the data
- if the metric is repeatable for future measurement
- if the metric can be repeated looking at the past
- if the metric is affected by MVRD policy
- if the measure reliably measures inequity.

Each indicator under consideration in this project was evaluated against the criteria above and scores were generated by criterion. A simple, unweighted summary score was generated, representing the sum of all criteria. The following table presents the top ranked indicators in descending order based on the summary score. The table below presents a short-list of indicators that can be functional for evaluation and monitoring of *Metro 2050* moving forward. It should be noted that based on the criteria developed above, all recommended indicators for use as performance metrics are related to conditions as opposed to demographics or population units. This is by design, as two key evaluation criteria measure an indicator's sensitivity to MVRD policy effects, as well as a primary measurement of inequity, both of which are better explained by urban conditions as opposed to population-type indicators.

Table 7: Recommended short list of equity performance measures and their scores

Indicator	Summed Score	Indicator	Summed Score
Urban Tree Canopy	18	Transportation Cost Burden	15
Employment Access (Transit)	16	Unemployment Rate	14
Employment Access (Drive)	16	Income Inequality Ratio	14

Exposure to Flood Hazard	16	Housing Tenure - Renter	14
Average Commute Time	15	Housing Tenure - Owner	14
Subsidized Housing	15	Median Home Value	14
Access to Parks and Recreation Space	15	Relative Access to Transit	14

We suggest choosing 8 to 12 indicators from among the top scores. Eight indicators scored highest, followed by another six that tied for ninth highest scoring. Careful consideration should contribute to the final choice, with particular consideration to which measures are most likely to persist and be used and monitored moving forward. There may be potential to use composite indicators (i.e. bivariate relationships between conditions and populations) as potential indicators for *Metro 2050*. However, complexities inherent in developing a model that captures and evaluates all the potential combinations of indicators is beyond the scope of this project.

5.2.3 Develop a corporate social equity plan

While the process and results of this Social Equity Study can be seen as a positive and tangible step towards incorporating social equity into MVRD's regional growth & land use planning and practices, there is still much to be done. Many of the comments and suggestions heard during the Listening & Learning engagement sessions pointed to the importance of process while engaging in equity work, which goes beyond the scope of this study but nonetheless need to be considered.

A corporate social equity plan would allow the organization to look more comprehensively at social equity, including changes needed at the individual, team, department and systemic level. A broader plan needs to involve deep reflection and internal organizational work, supported by a commitment throughout the organization to invest in the time, learning, and 'infrastructure' necessary for transformational change. A social equity plan for MVRD could include a high-level articulation & definitions related to social equity and related concepts, key priority areas, and implementation plans with actions, timeline, budget, etc. specific to each department.

The Social Equity in Regional Growth Management report (Ecoplan, 2019) provides further guidance around this:

Organizations must account for and be aware of how their own leadership and bureaucratic processes can function as instruments of exclusion. Literature focused on this area identifies that 'systemic barriers' within an organization aggravate disparities within their current operations and often have a history of inequitable decision-making. In order to move towards equitable outcomes, a more thorough investigation of its own practices must be conducted and recognized. Bias built into decision-making and development review processes must be scrutinized.

- *Ensure not to create an equity silo within the organization and planning documents.*
- *Involve interdepartmental staff review of non-traditionally "social-related" departments.*
- *Implement external courses for interdepartmental learning and capacity building on equity.*
- *Develop a similar equity training program for municipal partners or an "equity toolbox"*
- *Invite other departments (not just planning) to engagement events involving equity-seeking groups so they can hear about the issues firsthand.*
- *Employ a dedicated staff position to equity building initiatives across policy areas*

- *Develop a set of equity principles to provide more clarity and guidance of internal processes and increase coherence in application across Divisions and Groups.*

Further guidance on developing a social equity plan can be found in Advancing Equity and Inclusion: A Guide for Municipalities.

5.3   Social Equity Analysis Tool

It is important to recognize that assessing social equity should not be limited to one strategy, goal, or policy area, but instead needs to be considered universally. Social equity is too often considered solely within a "social" category, and as a result confined to policy areas with more obvious social components such as affordable housing, childcare or recreation. But social equity needs to be assessed in other (often more "technical") areas as well, such as environment, transportation and climate change, where it is equally important but perhaps not as evident in how social equity applies.

The Social Equity Analysis Tool (SEAT) can help guide staff through key questions while creating or reviewing policies, amendments, or practices in any area of planning. It follows four stages to consider, with a goal of increasing social equity. Each stage is supported by a series of questions, to guide reflection, research, and action towards a more equitable and inclusive region.

Stage 1: Reflection & Representation

Stage 2: Research & Assumption Check

Stage 3: Impacts & Solutions

Stage 4: Measurement & Evaluation

The questions and reflections in this tool were adapted from a review of best practice in equity and inclusion plans across Canada and the USA (see Appendix I).

5.3.1 Undertaking a SEAT Process

Staff are encouraged to work through each stage of the SEAT slowly, thoughtfully, and carefully. It may be helpful to work with a colleague or team. The four stages of the SEAT and their corresponding questions are shown below.

Stage 1: Reflection & Representation

a) Map your own identities, perspectives, and power
b) Consider your bias and stereotypes
c) Identify missing or marginalized perspectives

Reflect on the following questions:

- What are my own cultural perspectives and worldviews, and how is this different from others?
- Where is power causing inequity, and where and whose power can affect potential change to create a more equitable distribution of resources and opportunities?
- Does our team have relevant and relatable experience to the communities that this work will affect?
- Which employees, partners or community agencies with lived experience in these communities can we collaborate with to get other perspectives?
- Am I working with and listening to people whose identities and experiences differ from mine?
- Am I looking for what I don't know?

Stage 2: Research & Assumption Check

a) Collect relevant research and demographic data (quantitative and qualitative)
b) Consider the affected community/ies' environmental, economic, historic and cultural contexts
c) Analyse: What does the data say about the community? What does the community say about the data?

Reflect on the following questions:

- What current statistics or demographic data would help us understand the people or communities that face systemic barriers and inequities in relation to the policy/practice in question?
- How might race, gender, orientation, disability, class, sex, etc. affect the impacts of the proposed policy/practice?
- Will data gathered capture the specific characteristics of the population? (i.e. disaggregated)
- Are we making any assumptions that we need to verify?
- Do the research questions help us identify who may be excluded?
- Is there history – between government and community, or between communities – that we need to consider?
- What equity issues are currently being raised by residents in relation to this policy/practice?
- Have we validated the findings with the community so as to minimize our biases?

Stage 3: Impacts & Solutions

a) Assess how key policies/practices might impact communities that are marginalized, as benefits, burdens and barriers.
b) Refine policies/practice to optimize the benefits and minimize the burdens/barriers on affected communities.
c) Identify mitigation methods to further remove barriers, reduce negative impacts and/or enhance positive impacts of the policy/practice.

Reflect on the following questions:

- What are the social equity concerns related to this policy/practice? (e.g., accessibility, affordability, safety, culture, gender identity, etc.)

- Which social equity opportunity area(s) will the policy/practice primarily impact? E.g. Community Development; Health; Environment; Jobs; Housing
- What benefits, burdens or barriers may result? (potential or actual)
- How will alternative options differ in improving or worsening current social equity conditions?
- How can we address the impacts - both immediate and root causes?
- Where can we lead in the mitigation or enhancements, and where can we partner or advocate?
- What sources exist for resourcing (human and financial) the mitigation or enhancements, both within our organization and with our partners?

Stage 4: Measurement & Evaluation

a) Select appropriate social equity performance measures (example criteria: confidence in data, repeatable, affected by policy/practice, reliably measures equity/disparity)
b) Integrate social equity performance measures into existing monitoring plans.

Reflect on the following questions:

- How will we measure the extent to which the policy/practice contributes to removing barriers or creating opportunities for people who face inequity?
- Do we measure progress against the specific social inequity concerns we identified?
- How do the performance measures report on whether social equity is increasing or decreasing?
- How are the performance measures incorporated into corporate reports?

It is recommended that staff training be developed to support undertaking a SEAT assessment. Training helps staff to understand why they are doing this work, which is a crucial component in building organizational buy-in. Undertaking training as a work team can help staff groups further customize SEAT to their areas of work.

MVRD could also consider requiring a statement on social equity impacts, generated through the SEAT process, for inclusion in all Board reports.

5.4   Initial Policy Content Gaps

The review of *Metro 2040* undertaken as part of the *Social Equity in Regional Growth Management* report (2019) can provide an initial starting point for focusing the review of policy and practice, and should be referred to in conjunction with this Social Equity Study.

Some of these recommendations (Ecoplan, 2019) are included here for reference:

> *Metro 2040 includes discussion of some of the identified equity issues including: access, affordability, health, and opportunity. However, the plan does not directly discuss discrimination, obstacles, or aspects of disparity.*

> *Housing is Metro 2040's policy area with the most equity references. The goal to "Develop complete communities" (Goal 4) is the primary way in which Metro 2040 implicitly supports equity. By developing complete communities, Metro 2040 makes improvements in multiple policy areas, including housing, social services, food, and the environment for all residents. Wellbeing in these policy areas also supports success in other areas of life. However, Metro 2040 does not explicitly discuss how improvements to these policy areas may be inequitably distributed, and that some residents may face greater obstacles than others.*

> *Environmental. There is an emphasis on improving air quality which would benefit all residents. Metro 2040 could specify which communities bear this burden most significantly or which residents may be most greatly impacted by poor air quality then target investment, or policy directed to achieve a more equitable outcome.*

Economy and Employment. Though not mentioned in Metro 2040, plans from other jurisdictions emphasized industrial lands can support a range of skilled to unskilled employment opportunities that can increase additional access to jobs. Mapping transportation networks, employment lands and communities where high proportions of equity-seeking groups live may provide additional insight to access of employment.

Climate. Metro 2040 measures communities' climate change preparedness. Metro 2040 could also consider people and communities most vulnerable to natural hazards resulting from climate change and how to equitably distribute the costs of mitigating and adapting to climate change.

Agriculture. Agricultural policy focuses on protection of rural lands from urban development but does not identify access to land for employment or small-scale agricultural production.

Metro 2040 has a strong monitoring framework, particularly for environmental, economy and employment, and climate policy areas, but does not explicitly mention equity…Currently, equity is not specifically mentioned at the Monitoring level of the plan nor are specific equity-seeking groups emphasized strongly. However, Metro 2040 already tracks several metrics that could contribute to a strong equity monitoring framework.

6. Opportunities for Future Work

The consultants have identified two categories for future work opportunities related to social equity: research and engagement. These are outlined below.

6.1   Research

The Social Equity Study includes the first Inequity Baseline developed for Metro Vancouver, and one of the first of its kind in Canada to bring together the data in this way. To date, an inequity assessment model does not formally exist in Canada and as such this work is exploratory. There are numerous potential opportunities for further research and refinement. These opportunities can be broadly categorized into the following:

1. **Inequity Index Enhancements** - better data collection or more thoughtful approaches to certain indicators.
    a) Currently there are significant gaps in the data for elements such as **health outcomes, mental health and wellbeing**. Many of these elements are collected from two critical data sources: My Health, My Community, and the Provincial COVID-19 population survey. It is our understanding that the MHMC survey will be renewed in 2021 and all elements of that survey should be included in future iterations of this work. The provincial COVID-19 survey represents an excellent opportunity for additional data points at highly refined geographies. We suggest that these data elements be incorporated into future iterations of this work as well. Absent these two data sources, we suggest that MVRD collaborate with appropriate partners on a systematic health and well-being survey that captures these elements in a consistent manner and at a reasonable geographic scale. We recognize that there are considerable costs associated with this type of survey, but without these data points we are missing key descriptors of unequal health outcomes and may miss the presence of highly marginalized populations.
    b) Many **environmental considerations** such as criteria air contaminants, noise pollution, and nuisance areas, for example, are not well explored in this study due to project scope limitations. This is due to the fact that some of these elements do not lend themselves well to survey data but rather require significant modeling and measurement to establish baselines and disturbances. Many of these elements can be constructed or modeled from sensor data over time or with well calibrated models, and should be included in future iterations of this work.
    c) Information with regards to **personal safety, crime, collisions, and policing** are not captured at all in this work. This is due to the fact that most of this information is captured at the local level and by municipal authorities, and may not be publicly available. We encourage MVRD to work with municipalities and provincial agencies to collate crime and safety data in such a fashion that it can be used in a regional study to understand the spatial variability of safety in the region.
    d) **Universal accessibility and ability** are poorly explored in this work due to the fine scale of the data (for example: curb cuts, cross-walks, etc.); moreover, considerable information that is at the street scale is not incorporated into this work. While a systematic examination of every street by a surveyor is out of the question, technologies currently exist that allow for automatic classification of streetscapes through an AI-driven process such as State of Place. While imperfect in its subject application, this type of effort can be used to bring in urban design elements into regional equity work and can help weave in narratives with regards to the urban realm and its impact on social equity.
    e) **Wealth and political power** are also not well explored in this work. While income is incorporated into the baseline, it is a weak descriptor of inequity and should be replaced by an indicator that measures wealth and/or intergenerational stability. Furthermore, voting patterns present a cursory examination of the role of the political process in dictating equity. Some elements that may be useful to strengthen these indicators could include:
        • An assessment of home values and the presence of mortgages at finer geographic scales

- An assessment of pace of change in a neighborhood versus real estate transactions or apartment renovictions
- An assessment of representativeness of local neighbourhood associations versus the demographics of their constituents
- An assessment of political representation versus the demographics of their constituents

f) Finally, the assessment of **displacement and gentrification** could have been strengthened considerably with additional resources and research parameters. Two possible avenues of exploration could include:
- Developing a model of gentrification that measures current or forecasted gentrification as opposed to past gentrification. This type of effort should be instrumental in identifying areas that are vulnerable to rapid changes in neighbourhood composition.
- Developing a more concrete model that accurately predicts displacement from new development. This model should include granular data and rely on market information to predict when, how and what change will occur in an area. These changes can be used to predict social equity impacts which are discussed in the section below.

2. **Inequity Index Extensions** - These are possible future explorations of equity using the inequity baseline. All are grounded in past baseline efforts of the peer jurisdictions we profiled for best practices. They include:

a) **Bottom-up models of equity** - This is a type of work completed by the Cities of Ottawa and Tacoma that incorporates the lived experience of diverse communities in the formulation of an inequity baseline. This could involve a more inclusive engagement process for developing an inequity index. While we consider the inequity baseline presented in the Social Equity Study as sound, our experiences as analysts and professionals with a great deal of privilege can in no way replace or even come close to matching the appreciation of equity that is observed each day by groups facing systemic social inequity and injustice. We strongly recommend that future phases of this work incorporate these voices into subsequent iterations of the inequity baseline.

b) **Equity impact model** - when paired with disaggregate data, inequity index baseline data can be effectively employed as a model for planning work to understand the equity impacts of various land use decisions. However, for this to occur several preconditions must be achieved:
- we must develop a shared notion of unintended consequences and positive and negative equity impacts of urban change. This should necessitate thoughtful study of the real effects of urban planning on disparate populations;
- we must be able to disaggregate data down to a level wherein planning scale decisions can be interpreted beyond abstract considerations of growth and change. This may not be possible at the regional scale due to considerable data requirements as well as the multidimensional nature of equity information. However, a disaggregate data strategy (see below) can be instrumental in preparing a foundation for this type of analysis; and
- we must study past effects and determine if they will be impactful into the future. That means a thoughtful examination of the outcomes of past planning decisions and the resulting impacts to communities. Certain case examples such as the displacement of lower cost rental housing in Burnaby could serve as a starting point for this assessment.

c) **Disaggregate data strategy** - We strongly suggest that to progress the inequity baseline and analysis work in the region, the development of a disaggregate data strategy is required. This type of strategy is necessary to:
- develop data at scales that are functional for planning type decisions;
- maintain the privacy and safety of groups with multiple overlapping equity considerations;
- identify and explore smaller scale communities of interest;

- create guidelines for information dissemination and visualization that protect privacy as well as reduce subjectively in interpretation;
- build trust in data and develop repeatable processes for maintaining high quality equity data over time; and
- prepare a basis by which citizen and community prepared data can be integrated into the authoritative information that is prepared by government and non-profit agencies.

A good case example for the development of a disaggregate data strategy is the City of Toronto. Their multi-year process to develop a framework for data capture and dissemination should lead to more effective equity impact analysis in the GTA. We believe that MVRD is well positioned to lead the effort to build a disaggregate data strategy and we would be happy to explore this required element with the corporation further.

d) **Regional Equity Explorer -** a potential tool that has considerable utility beyond the static mapping prepared for this baseline, a regional equity explorer can democratize the availability of this information for multiple user groups. For each of the tools highlighted below, it becomes apparent how an interactive user interface coupled with significant documentation and support can allow for these data to be used a variety of user types. That being said, we also note that access to the Internet as well as the computing power necessary to run these applications is limited for some populations so we also support the continued development of static products that can be made available to most populations. High quality examples of these types of tools are available for:
- the City of Tacoma's Equity Index;
- LA County's equity indicator tool; and
- Ottawa's neighbourhood equity map

6.2 Engagement

How MVRD engages with community members, partners, consultants, and other individuals and communities external to the organization is another place where inequity can show up. Much of what we heard and read about as part of the Social Equity Study can inform MVRD engagement practices. While this should not be viewed as a comprehensive set of recommendations around social equity-informed engagement, it can be a starting point. These build on an earlier set of recommendations from the Social Equity in Regional Growth Management report (Ecoplan, 2019), presented below:

- *Develop policy to support engagement of diverse perspectives.*
- *Maintain advisory bodies and innovation groups: equity based working groups, community advisory committees or an ongoing community advisory board, codesign labs*
- *Redefine "the expert" for data collection.*
- *Develop a framework for obtaining data from community members of equity-seeking groups that involves co-development of the process as well as data collection. Pay for these services through an honorarium, hourly or other means.*
- *Reduce barriers to engagement by offering travel subsidy, childcare or reimbursement of costs for childcare, honorarium for community leaders, food at events*
- *Observe best practices for engagement and provide a wide variety of opportunities and outreach to equity-seeking groups for engagement on incorporating equity – focus groups, public opinion surveys, stakeholder forums, online, etc.*
- *Include materials in formats relevant to communities – for example videos, use of multiple languages, and allowing the time needed for engagement and multiple events to build substantial relationships.*
- *Ensure that a wide range of staff be engaged directly with communities, in particular those traditionally less called upon to conduct engagement (e.g. engineering/infrastructure) and not*

just planning, communications or a specific outreach team. [Note: relevant training in respectful engagement techniques would need to accompany this approach]

One theme that strongly emerged throughout this project was the need to take a distinct approach to engaging with Indigenous Peoples. This starts with a fundamental question: How do we move forward on social equity work with the recognition that we are trying to do so on unceded territory? It is recommended that MVRD dedicate adequate resources to undertake a specific and distinct engagement process with rural and urban Indigenous populations to better understand how each community defines social equity, in addition to identifying specific inequities they face.

There is also a need to provide accountability to the public and the community, to demonstrate following through from consultation to impact. This sentiment is eloquently made in a statement by the Urban Indigenous Peoples' Advisory Committee to the City of Vancouver, in a document titled "*Calls for Meaningful Action on Anti-Racism and Reconciliation by Mayor, Council and Civic Departments*" (July 7, 2020): "We see much more attention focused on consultations and dialogue, without the corresponding commitments of action and meaningful change. From our perspective, the continued refrain of 'starting a conversation' and 'engaging in a dialogue' feels disingenuous when we see so little impact resulting from them."

7. Conclusion

Expanding social equity in a society that has developed to privilege some at the expense of others is a complex task. In addition to the legacy of colonialism and institutional racism, inequity in the region is further compounded by rising unaffordability and the reality of climate change, which exacerbate the impacts of structures of oppression. Human-related issues such as social inequities are complex and messy in reality, despite our efforts to set up linear systems to address them. Moving towards a more equitable and just region will require confronting our past, taking an iterative process, learning and evolving as we go, deep and inclusive engagement, and making a commitment to build on earlier steps.

This report provides a snapshot of various inequities present in the region, as well as an approach for continuing to identify and address systemic barriers and issues. It highlights the priority inequities in the region connected to growth and land use policy, and suggests tangible ways to measure the progress of addressing these inequities in the form of recommended Equity Performance Measures. It recommends a refined definition of social equity in Metro Vancouver to help provide clarity and consistency, while a Social Equity Analysis Tool (SEAT) gives MVRD a process to help achieve this. Finally, recommendations for next steps towards improving/increasing social equity through regional growth planning are outlined, including the creation of a corporate social equity plan; additional research opportunities; and engagement recommendations.

More broadly, MVRD's social equity work should strive to remove inequity-producing mechanisms within its jurisdiction, and commit to co-creating equitable outcomes with affected communities. It will mean institutional atonement, made possible through advocacy and shared learning that creates policy and practice which corrects historic wrongs. If equity work is guided by these commitments, it is positioned for success.

Integrating social equity in MVRD's processes and practices will help the organization meet sustainability and liveability objectives of creating complete communities, increasing access to transportation and housing choices, and responding to the impacts of climate change with dignity, respect and justice.

Appendices

I. Literature Review

There have been significant contributions to the understanding of lived experiences of inequity over recent years, with many researchers, writers, professionals and activists sharing stories and meaning in articles, podcasts, books, workshops and lectures. Indigenous, Black, People of Colour, queer, trans, non-binary, two-spirit, lesbian and gay voices - and the intersectional identities these folks inhabit - have surfaced issues and complexities that many in dominant identity groups can and should listen to and learn from.

While these contributions were not explicitly focused on the regional planning context, they provide valuable insight that can be applied in this setting. Key themes and issues have been selected from articles, workshop and lecture notes, and other writing and presented here as part of the Social Equity Study. These key themes from the review of the literature are organized into the following categories:

- Internal Corporate Commitments
- Engagement
- Research + Data
- Planning + Development
- Placemaking

Theme: Internal Corporate Commitments

Organizations should assess internal equity capacity before taking on external work. Understanding more about yourself as an organization will help confront personal and organizational biases, and ensure that space is being made internally for the voices that may not be being heard. Urban planning consultant Tamika Butler recommends asking questions such as: "Who works for the agency? Who are the decision makers? What type of training does the staff do, and what kinds of continuing education are they getting? Is equity being addressed within the agency?" Butler critiques the tendency for agencies to centre conversations about equity out in the community, and not on the agency itself. "To expand these conversations about equity, we must first make sure that our systems are more representative and diverse, bringing more voices to the conversation earlier on," says Butler (S. Gienuzzi, 2019). Placemaking consultant Jay Pitter (2020) recommends reviewing "policies and practices that may be creating invisible barriers for team members from equity-seeking groups to make meaningful contributions within your municipality or organization/firm."

Commitments must be paired with concrete actions. It's not enough to say you or your organization are anti-racist, or are committed to equity. It's about what you are doing. This involves admitting we live in a racist society, and admitting our mistakes and learning from them (I. Kendi, 2020). The City of Seattle uses a racial equity toolkit to ensure racial equity is considered in all projects. The tool is used to determine, for instance, the risk of displacement for different communities and how to mitigate this. Another example might be adding "Equity Impact" as a topic to address in all Board reports, so it is part of agency decision-making.

People in power make policy choices based on their own experiences. Planners can have biases and training as bureaucrats that affect their ability to listen to, understand, and represent the needs of the community. There are barriers to accessing opportunities to hear from different voices, and distortion of facts and stories arising from hearing limited perspectives. When community members don't approve of what is being proposed, it can cause planners to become frustrated as they consider the supposed superiority of their own education, expertise and previous work. It is all the more important to listen to these voices. "Lived experiences should be leveraged and seen as truth, even when planners can't connect with them" (J. Aviles, 2020).

Consider how elements of White (body) supremacy culture may be fundamental to your organization. Trauma specialist and therapist Resmaa Menakem describes the concept of 'White body supremacy' as "the perpetuation of a false narrative that White people are better than people with other skin colors and ethnic backgrounds." It is viewing Whiteness as the status quo, placing White people at the top of a ladder of racial hierarchy while positioning Black populations at the bottom. Many people may view White supremacy only

through the, "narrow lens of the Ku Klux Klan or similar extreme representations of racist harms. While the KKK embodies White supremacy, so too do many other societal norms that are taken for granted" (K. Jagoo, 2020). Understood more broadly, White supremacy culture can be seen as a set of often unspoken norms, beliefs, practices, behaviours, and systems that reproduce the ideology that White people are superior.

Characteristics of White body supremacy are often present within governments and planning organizations, but very difficult to name or identify. They can be used as the default norms without being pro-actively named or chosen by the group using them. Examples of these are taken from Kenneth Jones and Tema Okun (2001), and presented in the table below.

Table 8: Characteristics, consequences, and antidotes to White body supremacy

Characteristics	Consequences of these Characteristics	Antidotes to these Characteristics
Perfectionism	Little appreciation for the work. Often focus on what's wrong rather than identifying what is right, very limited reflection or learning.	Instead: develop a culture of appreciation, learning and shared expectations.
Sense of Urgency	Continued sense of urgency that makes it difficult to take time to be inclusive. Frequently results in sacrificing communities of colour for highly visible results to the benefit of White communities.	Instead: focus on realistic work plans and funding proposals that acknowledge what it means to set goals of inclusivity and diversity.
Defensiveness	Defensiveness to new ideas, resulting in difficulty raising these ideas. Creates an oppressive culture.	Instead: understand the link between defensiveness and fear, and give people credit for their ability to handle more than you might imagine.
Quantity over Quality	All resources of organization are directed toward producing measurable goals. Things that can be measured are more highly valued than things that cannot.	Instead: include process or quality goals in your planning and ways to measure these. Ensure your organization has a values statement that highlights the manner in which you want to do your work.
Worship of the Written Word	Little value given to other ways in which information gets shared. If it's not in a memo, it doesn't exist. Those with strong documentation and writing skills are more highly valued, even in organizations where ability to relate to others is key to the mission.	Instead: recognize contributions and skills of everyone in the organization, such as relationship building. Determine what needs to be written down, and then come up with alternate ways to capture other material.

Only One Right Way	The belief that once people are introduced to the "right way," they will see the light and adopt it. When they do not adapt or change, then something is wrong with them, not with us (those who know the right way).	Instead: accept there are many ways to get to the same goal, and work on ability to notice when people do things differently and how that might improve your approach. When working with communities different than your own, recognize your need to learn about the communities' ways of doing.
Paternalism	Those with power believe in making decisions for and in the interests of those without power, often without understanding the experiences of those for whom they are making decisions for.	Instead: provide clarity on level of responsibility and authority throughout the organization, and include people who are affected by decisions in the decision-making.
Either/Or Thinking	Things are simplified and framed as either/or, good/bad, right/wrong, with us/against us. Creates conflict and increases sense of urgency, with no time to consider alternatives.	Instead: notice when complex issues are being simplified, particularly when stakes seem high or urgent. Slow it down and encourage a deeper analysis.
Power Hoarding	Little, if any, value around sharing power. Power seen as limited, only so much to go around. Those with power are threatened by suggestions for change and feel they are a reflection on their leadership.	Instead: understand that change is inevitable and challenges to leadership can be healthy and productive. Power is not a limited quantity, with only so much to go around.
Fear of Open Conflict	People in power are scared of conflict and try to ignore it or run from it. Those with power equate the raising of difficult issues with being impolite, rude, or out of line. When someone raises an issue that causes discomfort, the response is to blame the person for raising the issue rather than to look at the issue.	Instead: practice role playing conflict resolution before conflict arises, and once a conflict is resolved take the time to revisit it to see how it may have been handled differently. Distinguish between being polite and raising hard issues, and recognize that people shouldn't be required to raise hard issues only in 'acceptable' ways.

Individualism	Competition is more highly valued than cooperation. Little experience or comfort working as part of a team, as well as delegating work to others.	Instead: include ability to delegate and to work as part of a team within performance and hiring evaluations.
Progress is Bigger, More	Observed in systems of accountability and ways we determine success. Progress is an organization which expands (adds staff, adds projects) or develops the ability to serve more people (regardless of how well they are serving them).	Instead: ensure any cost-benefit analysis includes full costs i.e. cost in morale, credibility, use of resources. Include process goals in planning, around how you want to work not just what you want to do.
Objectivity	The belief that there is such a thing as being objective or free from bias. The belief that emotions are inherently irrational and should not inform decision-making or group process.	Instead: recognize everybody has a world view that affects the way they understand things, and push yourself to sit with the discomfort that arises when people are expressing themselves in ways that are not familiar/the same as yours. Assume everybody has a valid point.
Right to Comfort	The belief that those with power have a right to emotional and psychological comfort while scapegoating those who cause discomfort. Equating individual acts of unfairness against White people with systemic racism experienced by People of Colour.	Instead: understand discomfort is at the root of all growth and learning, and welcome it. Don't take everything personally.

Theme: Engagement

Equity as a process, not so much a destination. We can't just tick it off a "to do" list - we need to put continued effort and energy towards the equity process. A good way of doing this is to commit to engaging the community throughout the whole planning process, not just during the lead-up to a decision. Consider what it would look like for planners to build an engagement strategy for every phase of a project - predesign, design, construction, and evaluation (J. Aviles, 2020).

Incorporate Social Equity Context Experts in any new project. While it may challenge traditional timelines and ways of engaging, it is critical to commit to the inclusion of people with lived experience throughout a project process. Recognize that this way of working, based on building trust and relationships, takes time, effort and open communication - no matter who is involved. Some key principles learned through the experience of the City of Kelowna during their "Journey Home Strategy to End Homelessness" (BC Healthy Communities, 2020) include:

- Compensate people for their contributions.

- Use a convener rather than a facilitator, to allow for a more peer-based dynamic and to create an atmosphere of trust and sharing without direction or influence by project staff.
- Note-taking can be triggering, bringing to mind writing in files during intake at institutions. Consider using a graphic facilitator to take visual notes instead. Another benefit of this approach is that it accommodates various levels of literacy and English language fluency.
- Choose meeting locations that are neutral spaces, rather than hosting at the offices of the project owner.
- An inclusive process should not limit the number of people who can attend.
- Invest in relationship-building between disparate groups, and in less formal settings such as sharing a meal.

Jay Pitter (2020) also highlights the benefits of incorporating context experts: "Lived experience experts are...the keepers of important place-based stories and rituals. When this form of knowledge is coupled with professional expertise and translated into design, programming and policy decisions—community transformation processes are more harmonious and productive."

<u>Theme: Research + Data</u>

Use data and research to challenge racist misconceptions. Black, Brown and Indigenous people are disproportionately poor. Dominant society may attribute this to something inherently "wrong" with the group rather than an outcome of systemic oppression. These racist ideas prevent people from seeing the true source of the inequity: racist policies and compounding historic injustices. Consider these stereotypes when proposing new policies or projects, and bring the data and research that negates these into the conversation preemptively (I. Kendi, 2020)

Humanize data collection by including stories and context. Inequities and lived experiences aren't simply captured in statistics, but stories, too. Without context, datasets can easily be misinterpreted, or even manipulated. Tamika Butler stresses the need to "take a step back and make it about people and say, 'This is what the data shows us about our community. This is what it means'...For example, imagine a project aimed at shortening the run-time of a [transit] route. It's possible to reach the goal by [looking at the data and] cutting a stop that has a high dwell time. But why does that stop have longer dwell time? Maybe it's near a senior center and by cutting the stop, older adults would have to walk farther to get to the bus. Numbers are necessary, but a holistic approach is ideal" (S. Gienuzzi, 2019).

When sharing data, include asset-based stories and give context for disparities. We need to not only focus on disparities, but on stories of strength and resilience, too. "Often, quantitative research focuses through a lens that measures and reports on the disparities of Indigenous Peoples, rather than highlighting positive successes in healing, health and wellness...The deficit lens undermines Indigenous Peoples' self-confidence and stigmatizes them with labels" (R. Wuttunee, 2019). When discussing inequities that affect Indigenous Peoples, include a discussion on the systemic barriers that have caused these inequities. Wuttunee states, "Indigenous Peoples are aware their communities have higher incarceration rates, suicide rates, poverty and addiction than the rest of Canada. However, they may not know or understand why these conditions exist for them, especially the younger population, which in turn affects their self-worth...Information about Indigenous health in mainstream research is usually presented without sufficient context. When context about Indigenous health data is not provided, there is insufficient information needed to make sense of the facts highlighted."

Incorporate cultural protocols of the Indigenous nations involved in the research. This is a matter of respect for the culture and diversity of the host nation. It is also a way to decolonize by demonstrating "a willingness to acknowledge the procedures and processes of another cultural community as equally valid and worthy" (R. Wuttanee, 2019). There are many Indigenous Peoples, some living inside and many outside their traditional territory, within Metro Vancouver. Rachel Wuttanee shares an Indigenous approach to following protocols in this urban context: "Ask the host nations for guidance on protocols, as this is still their unceded, ancestral, and

traditional territory. Indigenous Peoples live their daily routines with their own cultural protocols but ultimately respect, acknowledge and follow the protocols of the nations on whose land they are on."

<u>Theme: Planning + Development</u>

Urban densification plans need to offer more options than just high-priced condos or neglected public housing. Jay Pitter (2020) compares two forms of density: *Dominant density* is "designed by and for predominantly White, middle-class urban dwellers living in high-priced condos...with large parks, generous pedestrian infrastructure, and proximity to jobs and services." *Forgotten density* includes "factory dorms, seniors' homes, tent cities, Indigenous reserves, prisons, mobile home parks, shelters, and public housing...with common characteristics such as ageing infrastructure, over-policing, predatory enterprises like cheque-cashing businesses, inadequate transportation options, and sick buildings." Density can bring benefits to a community, such as improved walkability, economic opportunity, social networks, and land use efficiencies. But we need to work with racialized communities and other social equity context experts to co-create the parks, housing, markets and streets that make up the developments to ensure that those benefits are share equitably. Pitter suggests the need to focus on "access to green space and culturally responsive amenities, accommodating middle-to-lower income residents and diverse housing types, transit-supportive densities, and rehabilitating aging building infrastructure without displacing entire communities." This approach will ensure communities are not only planned in a healthy and sustainable manner but are also inclusive of racialized and other marginalized populations who are often displaced through high-density condo developments.

Gentrification and displacement occurring from Transit-Oriented Development (TOD) is not an accident or an anomaly. This is a deeply entrenched structural issue that is happening more and more often. We need to consider how to counter this - to ensure the benefits of TOD are shared by everyone including Indigenous people, People of Colour, women, and other social equity context experts, some of whom may be existing residents; for TOD to centre local assets and hidden routes of long-standing communities; and to provide mechanisms for ensuring moderate to low-income residents remain "in place" amid TOD (J. Pitter, 2019).

"Revitalization" can mean the systematic and deliberate destruction of place-based communities. White neighbourhoods are often pointed to as the highest point of livability, while predominantly Black and Indigenous communities are frequently seen as requiring infrastructure and design innovations that can result in displacement and increased surveillance, achieved through "Eyes on the Street" design and often, increased police presence (A. Yasin, 2020). These revitalization processes are often initiated to make Black and Indigenous neighbourhoods more inviting to White residents and easier to police, rather than increasing livability for existing populations.

<u>Placemaking</u>

Be wary of "pop up urbanism" and pilot projects. These pilots and experiments often occur in low-income communities, and circumvent thoughtful and participatory community engagement in service of quick-build projects. These projects override public feedback processes that are necessary for community support, and can exclude entire communities (D. Thomas, 2020).

White planners view placemaking as an important liveability goal. For Black, People of Colour and Indigenous, this can feel very different. The intersectional realities of identity, including race, gender, ability and age, concretely shape our experience of public spaces. Jay Pitter (2020) argues that this is why "even the most well-designed public space can elicit an infinite number of experiences within and across diverse groups." The notions of "placemaking" for BIPOC communities can include legacies such as 'place as watchtower to track and police the movement of BIPOC people'; 'place as quarters for forced labourers'; 'place as the severing of kinship ties'; 'place as routes designed to confine movement.' Planners and urbanists need to consider how our history of city building has gotten us to a point where Black community members are more likely to be harassed and killed in public spaces by public officials (J. Pitter, 2020). In the words of Amina Yasin (2020), quoting Dr. Ibram Kendi: "Since cities were built on stolen lands by stolen people, there is 'no such thing as a non-racist idea' when it comes to urbanism." Placemaking initiatives must be interrogated from a social equity perspective

with special attention paid to recognizing and protecting places that are already special or important to various groups.

CPTED and 'Eyes on the Street' can uphold inequity. Crime Prevention Through Environmental Design (CPTED) and similar urbanist principles can uphold and enforce biases that criminalize Black, Indigenous and People of Colour - and poor people of all races - by portraying these groups as 'out of place' in public space. Furthermore, current CPTED practices may not result in improved safety for Black, Indigenous, and People of Colour. We need to acknowledge the historic and linked relationship between public space, enforcement and racism. "Cities and neighbourhoods across North America developed by ensuring that social and public interactions became institutionalized and regulated through racial segregation. As a result, many White neighbourhoods and residents are shielded from the type of police violence experienced in Black, racialized and Indigenous communities...This shows up repeatedly when Black people make use of their right to 'White spaces,' resulting in being policed in their homes or common areas by predominantly White neighbours who assert their ownership and intended use" (A. Yasin, 2020).

Vision Zero needs to mean zero BIPOC lives lost on streets, including due to police violence. Vision Zero is typically regarded as a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy mobility for all. However, planners need to spend as much energy fighting for human rights as we do fighting cars. In the words of Dr. Destiny Thomas (2020), "Until Black people are no longer being hunted down by vigilantes, white supremacists and rogue police, private vehicles should be accepted as a primary mode of transportation." This can include investing in trauma-informed urban design (with a goal of creating physical spaces that promote safety, well-being and healing), housing, youth development, equitable transportation and non-displacement policies, and restructuring "neighbourhood watch" programs as "neighbourhood care" programs (A. Yasin, 2020).

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Equity and Inclusion Policy Assessment Tools

List of documents and sources referred to while developing the SEAT

- Advancing Equity and Inclusion: A Guide for Municipalities
- City of Edmonton: The Art of Inclusion. Our Diversity & Inclusion Framework
- City of Ottawa Equity & Inclusion Lens
- City of Seattle Racial Equity Toolkit (Race & Social Justice Initiative)
- City of Toronto Equity Lens
- City of Vancouver (conversations with staff)
- Equitable Development Principles & Scorecard
- Global Diversity & Inclusion Benchmarks: Standards for Organizations Around the World
- LA County Metro Equity Platform Framework
- PlanH Equity Action Guide
- King County Equity Impact Review

II.   Developing the Inequity Baseline

<u>Key Elements of an Inequity Baseline</u>

1. **Purpose and Best Practice -** Based on our review of inequity baseline best practices from peer jurisdictions, we noticed that the most common purpose of an equity baseline is to assist planners and social policy practitioners in their efforts to understand and address disparities in their localities. GIS makes it possible to provide a high-level overview of inequity indicators. With that in mind, it should be noted that the inequity baseline cannot be used to replace community consultation; rather, it can be used as a tool to identify trends that can then be confirmed through inclusive public consultation and on-the-ground participatory research.

   Second, we noted that the best equity baselines were constructed from the ground up, through strategic consultation with social equity context experts[1] (people with lived experience of inequity, based on one or more intersecting characteristics of their identity). Data selection and interpretation were done collaboratively between the GIS practitioners and populations most affected through this process. While this was not the case for this project, as this work is exploratory in nature, we strongly suggest that subsequent steps involve extensive consultation with members of the community to evaluate, confirm and prioritize addressing intersecting social inequities at a regional level. To further address historical under-representation in decision-making, there should be an emphasis placed on centering Black, Indigenous and People of Colour professionals to guide the equity building work with their communities, and within the organization.

2. **Uses -** An inequity baseline or index can be used in a number of ways, such as:
   a. To identify communities who may have compromised adaptive capacity and higher sensitivity to many hazards such as communicable disease (such as COVID-19), extreme heat, air pollutants, flooding and/or sea-level rise, water pollutants;
   b. To prioritize locations or groups for short, medium and long-term plans, investments, programs, interventions and / or policies;
   c. To support and supplement public and professional consultation for the construction of an overall equity framework;
   d. To create benchmarks for the region using indicators for ongoing measurement of progress / performance;
   e. To identify the presence, or determinants of, social inequity including environmental racism, sexism, ableism, ageism, displacement and gentrification, housing instability, rapid urban change, and/or volatile economic systems, and lack of access to clean drinking water, etc.;
   f. To understand and mitigate the impacts of planning decisions as they pertain to social wellbeing of existing and future residents.

3. **Baseline construction -** Our general method to construct the baseline followed the best practice of the City of Oakland, which is a leader in equity and social justice planning practice. The general steps presented below conform to the work plan used for this project:
   a. Research best practices and consult with other equity practitioners in the region;
   b. Research regional inequities (i.e. the conditions of equity), those who experience those inequities (populations), and the region's policy priorities;

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[1] We prefer the term "social equity context experts" over the term "equity-seeking group" for this project. The phrase "equity-seeking" overburdens those who are already impacted by systemic inequities to drive the rationale for equity building. Working towards equity means positioning those that hold systemic power as "equity-sharing" groups, thus balancing and including all the necessary actors for socially equitable outcomes for all to be possible and attainable.

    c. Create draft equity considerations and inequity concerns, based on the research in Steps a and b;

    d. Solicit feedback from a range of stakeholders, including community members, advocacy groups, government agencies, and regional and municipal leadership. (In future, this step should include community workshops.) Due to the limited nature of the project, learning from others was limited to the following groups:

        i. Regional equity practitioners;

        ii. Regional land use and transportation planners; and

        iii. Literature review of secondary sources: leaders in equity and social justice.

    e. Revise the draft baseline in accordance with the feedback received;

    f. Test the indicators through targeted case examples;

    g. Revise the baseline and solicit additional feedback as needed;

    h. Finalize the tool and publish findings.

4. **Integrity and Success -** There are significant technical as well as ethical requirements to produce a high-quality baseline. Below are some important considerations for our work:

    a. Indicators should be measurable and demonstrable on an ongoing basis and at a regional scale; differentiating and impactful (diverse and relevant); grounded in social and environmental justice theory; and relevant to the core vision and mission of Metro Vancouver and member municipalities;

    b. Indicators selected should be approachable, comprehensible, accessible and relevant to the general public and especially to social equity context experts;

    c. Indicators should lend themselves to consistent interpretation in future years to establish a sense of direction and progress as well as to highlight the effects of well-intentioned policy; and

    d. Indicators should lend themselves to respectful and intersectional interpretation, without adding to existing subjective bias or implicit value judgements.

5. **Ethics of the data -** Equity data, especially data that pertains to specific populations with multiple equity concerns, can be leveraged to reconcile past harms and mitigate the effects of future decisions. However, this same data can be used to benefit those least at risk, or to override populaces with potentially fewer tools or reduced capacity to withstand the forces of urban change. For instance, data could be used to identify areas where community opposition to new developments may be low due to the presence of multiple intersecting social inequities. Practitioners who use this equity/inequity baseline will benefit from using it from a position of empathy and in-depth understanding and with a goal of addressing the impacts of inequities across the region.

Inequity Baseline Best Practice Review

Table 9: List of equity studies and indices consulted for inequity baseline best practices review.

Study	Link to Resource	Year of Work	Scale
Oakland Equity Index	Oakland Equity Index	2018	Municipal
City of Tacoma - Equity Baseline	City of Tacoma - Equity Baseline	2019	Municipal
Boston Social Vulnerability Indices	Boston Social Vulnerability Indices	2016	Municipal
City of Vancouver Impacted Populations	In Process	2020	Municipal
City of Ottawa	Neighbourhood Equity Index	2019	Municipal
LA County Equity Index	LA County Equity Index	2016	Regional
King County Equity Index	King County Equity Index	2017	Regional
California HPI	California HPI	2020	State
Opportunity Index	Opportunity Index	2020	National
Health Equity Index	Health Equity Index	2020	National
National Equity Atlas	National Equity Atlas	2020	National

Inequity Baseline Assumptions and Limitations

1. Data Sources

Statistics Canada - Census

Statistics Canada collects Census data every 5 years, with the latest available Census being published in 2016. While this data's age may not always accurately represent our changing communities, it is currently the most comprehensive and reliable source of information on the region. Comparison with future Censuses is useful to determine changes and, eventually, trends. While it is currently the most comprehensive demographic research available, there are many facets that are not surveyed whatsoever or are not surveyed at a sufficiently granular scale, such as same-sex couples, and as such may only tangentially address equity concerns. Moreover, Census data is limited in scope as it is collected only one day a year every five years. We would also like to highlight that the Census survey from 2016 was not an inclusive process and as such many important populations were erased from the data. For example, the Census limits lone-parent families to male or female-headed, but does not explicitly include transmen, transwomen, or non-binary individuals.

In instances where the data originates from the Census, the original data title used by Statistics Canada is used and where appropriate an alternative data title may be included in brackets.

My Health My Community

The My Health, My Community data is from the 2014 and was completed by over 33,000 participants in Vancouver Coastal and Fraser Valley health authority regions, which is a small fraction of the total population in the region. The survey was designed to reach as many people as possible, being provided across several media and in several languages. The data collection process utilized quotas to attempt to cover a statistically broad range across ages, genders, educational backgrounds, and ethnicities and numbers were adjusted to fairly distribute representativeness.

Early Development Instrument - UBC Human Early Learning Partnership

The Early Development Instrument (EDI) is a questionnaire completed by kindergarten teachers from across British Columbia for all children in their classes. The [questionnaire](#) measures five core areas of early child development that are known to be good predictors of adult health, education and social outcomes. The EDI analysis has been repeated six times since 2004, with the most recent reporting occurring between 2017-2019.

2. Limitations: Indicators Omitted from the Inequity Baseline due to Lack of Data

LGBTQIA2+ Community

The lesbian, gay, bisexual, trans, queer, intersex, asexual and two-spirit (LGBTQIA2) communities in British Columbia experience numerous and intersectional inequities relating to employment, healthcare and economic factors, among others. This inequity is further exacerbated when other factors, such as age, income, ethnic identity and access to health care intersect with gender identity and sexual orientation. While inequities are experienced differently by each of the LGBTQIA2 communities, it is generally accepted that they are all social equity context experts. However, there is a lack of publicly available data available to incorporate these populations into this baseline study.

Additional Omissions

Other key indicators or proxies omitted due to lack of data, scope, or granularity of available data were:

- Health - such as: life expectancy, health insurance (employment with benefits), preventable hospitalizations, hospitalizations from chronic disease, disabilities, substance abuse, infant mortality, premature death, and COVID-19 related data
- Environment - such as: clean air, projected extreme heat (climate change projections), food insecurity, brownfield or contaminated sites, proximity to nuisance areas (heavy industrial, freeway), proximity to major transportation corridors, noise
- Crime and safety - data on crime is unavailable at the regional scale. Data on collisions involving pedestrians or cyclists in conjunction with traffic volume, or incidents aboard public transit
- Education - such as: graduation rates, milestone grade proficiencies, chronic absenteeism, teacher turnover, teacher experience, teacher representation of student population

3. Granularity

The data inputs for this study were available at a variety of different scales/granularity. For the purpose of our analysis, the study unit was defined as the Transportation Analysis Zone (TAZ). Many of the data sources were available at varying levels of detail, such as at the dissemination area (Census) or neighborhood (My Health, My Community). While the best available data to support this report, finer scale information through public engagement would benefit the study and improve the precision of the analysis.

III. Data Dictionary for Inequity Indicators

Metro Vancouver Equity Study - Data Dictionary						
Indicator	Units/Type	Data Source	Link	Variable(s) Used	Proportional To (Census)	Notes
1. Visible Minority	Percentage	Census, 2016	Census Profile 2016	__Total_visible_minority_population	Total__Visible_minority_for_the_population_in_private_households	
2. Indigenous Identity	Percentage	Census, 2016	Census Profile 2016	__Aboriginal_identity	Total__Aboriginal_identity_for_the_population_in_private_househo	
3. Seniors	Percentage	Census, 2016	Census Profile 2016	__65_years_and_over	Total__Age_groups_and_average_age_of_the_population__100percent_	
4. Children	Percentage	Census, 2016	Census Profile 2016	__0_to_14_years	Total__Age_groups_and_average_age_of_the_population__100percent_	
5. Single Parent Families	Percentage	Census, 2016	Census Profile 2016	__Total_loneparent_families_by_sex_of_parent	Total_number_of_census_families_in_private_households__100percen	
6. Female-Headed Households	Percentage	Census, 2016	Census Profile 2016	_____Female_parent_1	Total_number_of_census_families_in_private_households__100percen	
7. Ethnic Diversity Index	Index from 0 to 1	Census, 2016	Census Profile 2016	_____South_Asian; _____Chinese; _____Black; _____Filipino; _____Latin_American; _____Arab; _____Southeast_Asian; _____West_Asian; _____Korean; _____Japanese; __Not_a_visible_minority	Total__Visible_minority_for_the_population_in_private_households"	
8. Median Age	Integer (age)	Census, 2016	Census Profile 2016	Median_age_of_the_population	N/A	
9. No Knowledge of Official Languages	Percentage	Census, 2016	Census Profile 2016	__French_only; __English_only; __English_and_French	Total__Knowledge_of_official_languages_for_the_total_population_	Sum subtracted from 1
10. Median Household Income	Dollar CAD	Census, 2016	Census Profile 2016	__Median_total_income_of_households_in_2015_dollar	N/A	
11. Poverty Ratio - Low Income Measure (LIM)	Percentage	Census, 2016	Census Profile 2016	Prevalence_of_low_income_based_on_the_Lowincome_measure_after_ta	N/A	
12. Unemployment Rate	Percentage	Census, 2016	Census Profile 2016	Unemployment_rate	N/A	
13. High Paying Jobs Index	Index from 0 to 1	Census, 2016	Census Profile 2016	Single digit codes from: Employment Income Statistics (7), Occupation - National Occupational Classification (NOC) 2016 (193A), Work Activity During the Reference Year (9) and Sex (3) for the Population Aged 15 Years and Over in Private Households of Canada, Provinces and Territories and Census Metropolitan Areas, 2016 Census - 25% Sample Data	N/A	Proportion of high paid residents located from NOCs codes from Census and high paid job location extrapolated from TransLink commute data
14. Income Inequality Ratio	Ratio	Census, 2016	Census Profile 2016	_____In_the_eighth_decile; _____In_the_second_decile	Total__Economic_family_income_decile_group_for_the_population_in	
15. Expected Employment Growth	Percentage	Metro Vancouver Targets, 2016 and 2050	None	N/A	N/A	
16. Housing Cost Burden	Percentage	Census, 2016	Census Profile 2016	__Spending_30percent_or_more_of_income_on_shelter_costs	Total___Owner_and_tenant_households_with_household_total_income_	
17.Housing Tenure - Renters 18. Housing Tenure - Owners	Percentage	Census, 2016	Census Profile 2016	__Renter; __Owner	Total___Owner_and_tenant_households_with_household_total_income_	
19. Median Home Value	Dollar CAD	Census, 2016	Census Profile 2016	__Median_value_of_dwellings__dollar_	N/A	
20. Housing Suitability (Overcrowding)	Percentage	Census, 2016	Census Profile 2016	__Not_suitable	Total__Private_households_by_housing_suitability__25percent_samp	

21. Gentrification Score	Index from 0 to 1	Census 2016, Census 2006	[Census Profile 2016]	2016:
				  Under $10,000 (including loss)
				  $10,000 to $19,999
				  $60,000 to $69,999
				  $70,000 to $79,999
				  $80,000 to $89,999
				  $90,000 to $99,999
				  $100,000 and over
				  University certificate, diploma or degree at bachelor level or above
				Average household size
				  Average monthly shelter costs for rented dwellings ($)
				  Median total income of households in 2015 ($)
				
				2006:
				Average number of persons in private households
				Median household income $
				  Average gross rent $
				    Bachelor's degree
				    University certificate or diploma above bachelor level
				  Under $1,000
				  $1,000 to $2,999
				  $3,000 to $4,999
				  $5,000 to $6,999
				  $7,000 to $9,999
				  $10,000 to $11,999
				  $12,000 to $14,999
				  $15,000 to $19,999
				  $60,000 and over
					N/A	[Census 2006]

22. Subsidized Housing	Percentage	Census, 2016	[Census Profile 2016]	__percent_of_tenant_households_in _subsidized_housing_1	N/A	
23. Rate of Change - Demolitions by Replacement	Rate	Metro Vancouver, 2016 and 2050	None	N/A	N/A	
24. Rate of Change - Demolitions by Land Use Change	Rate	Metro Vancouver, 2016 and 2050	None	N/A	N/A	
25. No Post-Secondary Education	Percentage	Census, 2016	[Census Profile 2016]	__No_certificate_diploma_or_degree _1; __Secondary__high__school_diploma _or_equivalency_certificate	Total__Highest_certificate_diplo ma_or_degree_for_the_populati on1	
26. Early Childhood Development - Language and Cognitive Development - Vulnerable Children	Percentage	Human Early Learning Partnership (UBC), 2017-2019	[HELP EDI, Feb 2020]	PCTLANRI_7	N/A	
27. Early Childhood Development - Communication Skills - Vulnerable Children	Percentage	Human Early Learning Partnership (UBC), 2017-2019	[HELP EDI, Feb 2020]	PCTCOMRI_7	N/A	
28. Access to Parks and Recreation Space	Hectares	Open Trip Planner, Province of BC Local Parks and Greenspaces	[Parks]	N/A	N/A	
29. Urban Tree Canopy	Percentage	Metro Vancouver LiDAR 2014-2017	[Tree Canopy]	N/A	N/A	
30. Access to Grocery Stores	Distance (km)	Food Flow Study, Dunn and Brad Street business data, 2018	None	N/A	N/A	Data provided by Metro Vancouver
31. Urban Heat Island	Degrees Celsius	USGS, August 2020	https://earthexplorer.usgs.gov/ LANDSAT C1 Analysis Ready Data (US Landsat 4-8 ARD)	N/A	N/A	File name: LC08_CU_003000_20200814_20 200825_C01_V01_ST
32. Exposure to Flood Hazard	Percentage	Census 2016, Metro Vancouver	None	N/A	N/A	Data provided by Metro Vancouver
33. Relative Access to Transit	Index from 0 to 1	Statistics Canada Proximity Measures, 2020	[Proximity Measure Database, April 2020]	prox_idx_transit	N/A	This raw measure is normalized 0 to 1 across Canada. It was re-normalized 0 to 1 across the region for this study.
34. Average Commute Time	Minutes	Census 2016	[Census Profile 2016]	__Less_than_15_minutes; __15_to_29_minutes; __30_to_44_minutes; __45_to_59_minutes; __60_minutes_and_over	Total__Commuting_duration_fo r_the_employed_labour_force_ aged_15_	The centre point of each range was used in calculating the final overall average for this study.
35. Transportation Cost Burden	Percentage	Environics, 2020	None	caspendingfacts_hstr001s_a (2020 HHs Exp:Transportation: Average) caspendingfacts_hstt001_a (2020 HHs Exp:Tot Expenditure: Average)	Average transportation spend to total average household spend	ArcGIS Online (Geoenrichment)

36. Average Transportation Spend	Dollar	Environics, 2020	None	caspendingfacts_hstr001s_a (2020 HHs Exp:Transportation:	ArcGIS Online (Geoenrichment)
37. Jobs Accessible Within 45 Minutes by Car	Count	Metro Vancouver Employment , Open Trip Planner	None	N/A	Data provided by Metro Vancouver
38. Jobs Accessible Within 45 Minutes by Transit	Count	Metro Vancouver Employment, Open Trip Planner	None	N/A	Data provided by Metro Vancouver
39. Ratio of Employment Access Within 45 Minutes: Transit/Car	Ratio	Metro Vancouver, Open Trip Planner	None	N/A	Data provided by Metro Vancouver
40. Voter Turnout 2017	Percentage	Province of BC Open Data 2017, Crown Corporations and Agencies - Elections BC	Elections BC, 2018	PARTICIPATION, REGISTERED_VOTERS, AGE_GROUP, ED_ABBREVIATION	N/A	Voter turnout calculated by electoral district
41. Youth Voter Turnout 2017	Percentage	Province of BC Open Data 2017, Crown Corporations and Agencies - Elections BC	Elections BC, 2018	PARTICIPATION, REGISTERED_VOTERS, AGE_GROUP, ED_ABBREVIATION	N/A	Voter turnout calculated by electoral district
42. Four or More Persons to Confide In	Percentage	My Health My Community, 2014	My Health My Community, 2014	4+ people to confide in or turn to for help	N/A	
43. Strong Sense of Community Belonging	Percentage	My Health My Community, 2014	My Health My Community, 2014	Strong sense of community belonging	N/A	
44. Long Term Residency (Mobility Status)	Percentage	Census, 2016	Census Profile 2016	__Nonmovers	Total__Mobility_status_5_years_ago__25percent_sample_data	
45. Sense of Safety	Percentage	My Health My Community, 2014	My Health My Community, 2014	Feel safe walking after dark	N/A	
46. Access to Primary Healthcare	Index from 0 to 1	Statistics Canada Proximity Measures, 2020	Proximity Measure Database, April 2020	prox_idx_health	N/A	This raw measure is normalized 0 to 1 across Canada. It was re-normalized 0 to 1 across the region for this study
47. General Health	Percentage	My Health My Community, 2014	My Health My Community, 2014	General health – excellent/very good	N/A	
48. Mental Health	Percentage	My Health My Community, 2014	My Health My Community, 2014	Mental health – excellent/very good	N/A	
49. Chronic Conditions (1+)	Percentage	My Health My Community, 2014	My Health My Community, 2014	One or more chronic conditions	N/A	

IV.   Principal Component Analysis (PCA) Methodology

A PCA is a statistical process that helps to make sense of multiple potentially co-related variables. In general, principal component analysis is a very technical, mathematical function. For the most usefulness and readability, the results of the PCA were used to calculate an inequity index score - a single value to be used as a tool for focusing the eye to areas with multiple indicators overlapping independently and highlighting areas for deeper analysis.

The consultant team feels that PCA is the best method for producing an Inequity Index for the following key reasons:

1. There is no agreed-upon model for mapping intersecting social inequities and/or disparities at the regional level. As such, a new composite model cannot generally be completed without introducing subjectivity and value-based considerations for the indicators. As an example, it may be impossible to suggest that overcrowding is more or less of an equity/inequity concern than absence of green space without introducing individual bias;
2. To avoid introducing additional subjective bias as well as to avoid the prioritization of one target group over another, a data-agnostic approach such as PCA is preferred as it reduces the universe of indicators to a set that best describes the variations in the data without placing a value judgement on any one particular indicator; and
3. When many inequity concerns are cross-correlated, the PCA approach is designed to correct for correlation between indicators and reduces the set to the most valuable elements. This is crucial as it is important that we do not overload any one index with many closely related considerations.

Using PCA to calculate an inequity index is a more valuable technique than simply scaling and indexing the data. For example, an inequity index could have been created simply by scaling (standardizing) the values from each indicator to be equal to between 0-1, then adding the scores for each indicator. This would create a score that would simply indicate areas that had the most overlapping high scores (dark purple areas) between all maps. However, as many inequity variables are cross-correlated, this approach would not account for relationships between variables. The PCA approach is designed to account for correlation between indicators and reduces the set to the most valuable elements, or in other terms, the variables that account for the most variance (or disparity) are identified and statistically weighted in the final index score. This is crucial as it is important that we do not overload any one index with many closely related considerations.

We ran a total of three PCAs, outlined in Table 2, with different themed variables and subsequently calculating three equity indices: an overall PCA with all forty-nine indicators, a demographics PCA to highlight areas that may have multiple equity-seeking populations, and a conditions PCA to highlight areas that may have multiple equity issues. The results are summarized and discussed in the body and tables of this appendix below.

Table 2. Principal component analyses performed for equity baseline project.

PCA	Equity Theme
A	All indicators
B	All condition-related indicators
C	All demographics/identity-related indicators

The workflow used for each inequity index is shown below. The first step in this process was to normalize raw data to a scale range of zero to one, as is necessary for PCA computation. This allows data variables that are of different measurements, such as percentages or dollar values, to be comparable. This was accomplished

using minimum-maximum normalization. In addition, data was reclassified so that the directionality of equity scoring was the same for all variables, where a higher value indicated greater equity concern.
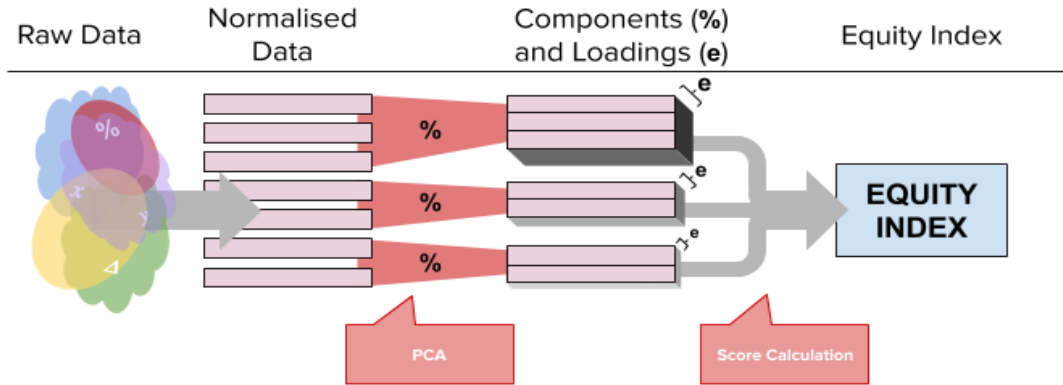

Figure A. Workflow of Equity Index calculation. PCA is used to group normalised data and calculate component percentages (**%**) and loadings (**e**). Component percentages refer to similarity of variables to one another. Loadings refer to the weight of the component relative to other components in the score calculation process.

Once normalised, the data undergoes a PCA. Any normalised data that has missing values will have the missing values imputed as the average of the variable. The PCA outputs include (1) components, and (2) loadings. The components determine the similarity of variables, based on the variance of the data. This means variables that have similar effects on the variance and direction of variance, which is important as datasets that are statistically similar will not be overemphasized. The data is grouped in the PCA based on how much they contribute to each component. Loadings show the degree of correlation of each component. A component with a larger loading value means that the component heavily influenced the PCA and largely characterised the data. Components with small loading values will have had smaller influence in the PCA and therefore characterise the data less. The final step is to calculate the equity index from the identified component and loading values, as well as the component data in its raw form, as shown in Equation 1. This calculation involves first multiplying all raw data for each component by the respective component percentage. These multiples are then summed and multiplied by the component loading value. These steps are repeated for each variable grouping (or principle component). The outputs are then normalised and summed to result in an aggregate indexed value for each spatial unit (equation 2). The indexed value highlights areas with overlapping and more PCA-influential equity concerns.

(1)
$$PC_n = \Sigma(raw_v * contribution_v) * loading\ value$$

(2)
$$Equity\ Index\ =\ PC_n + PCn + 1$$

Where PC_n is the principal component for group n; Raw_v is the raw data for variable v; $contribution_v$ is the contribution value for variable v; and $loading\ value$ is the loading value for the principal component.

V. Inequity Baseline Indicator Descriptive Statistics

The following table is a summary of the main statistics for each indicator. The type of indicator is listed to show how the values should be understood. The percentage shown in the column "Percentage of MV Population in Most Affected TAZs" represents the percentage of the Metro Vancouver population within TAZs that measured in the bottom or top 10% of the measure, depending on which is considered the least equitable.

Table 10. Summary statistics for each indicator

Indicator	Type	Mean	Min.	Max.	Relative Standard Deviation (+/- relative to the mean)	Percentage of MV Population in Most Affected TAZs	Relative Ranking of Variance (of 48)
Visible Minority	Proportion	0.47	0	0.99	51%	12%	23
Indigenous Identity	Proportion	0.03	0	0.91	148%	8%	7
Seniors	Proportion	0.16	0	0.68	49%	8%	24
Children	Proportion	0.14	0	0.28	33%	12%	32
Single Parent Families	Proportion	0.15	0	0.43	35%	8%	31
Female-Headed Households	Proportion	0.12	0	0.43	39%	8%	29
Ethnic Diversity Index	Index	0.49	0.06	0.87	32%	10%	34
Median Age	Age	41.87	0	69.72	15%	8%	44
No Knowledge of Official Languages	Proportion	0.12	0.01	0.39	36%	11%	30
Median Household Income	Currency	79,987.07	0	188,198.53	29%	9%	35
Poverty Ratio - Low Income Measure (LIM)	Proportion	0.17	0	0.66	52%	10%	22
Unemployment Rate	Proportion	0.06	0	0.22	40%	8%	28
High Paying Jobs Index	Index	0.08	0.01	1	106%	3%	10
Income Inequality Ratio	Proportion	1.33	0.04	8.5	66%	10%	17
Expected Employment Growth	Proportion	0.52	-0.68	52.55	411%	11%	2
Housing Cost Burden	Proportion	0.31	0	0.74	33%	8%	33
Housing Tenure - Renters	Proportion	0.34	0	1.04	59%	9%	18
Median Home Value	Currency	964,260.25	0	3,959,019.41	67%	10%	16
Housing Suitability (Overcrowding)	Proportion	0.07	0	0.39	75%	12%	12
Gentrification Score	Index	0.27	0	1	55%	8%	20
Subsidized Housing	Proportion	0.07	0	0.83	184%	8%	5
Rate of Change - Demolitions by Replacement	Proportion	0.01	0	0.09	101%	9%	11
Rate of Change - Demolitions by Land Use Change	Proportion	0	0	1	1242%	9%	1
No Post-Secondary Education	Proportion	0.08	0	0.52	74%	11%	13
Early Childhood Development - Language and Cognitive Development - Vulnerable Children	Proportion	0.1	0.01	0.25	48%	8%	25
Early Childhood Development -	Proportion	0.16	0.04	0.33	40%	10%	27

Communication Skills - Vulnerable Children							
Access to Parks and Recreation Space	Area	35.58	0	819.47	273%	6%	4
Urban Tree Canopy	Proportion	0.22	0	1	107%	8%	9
Access to Grocery Stores	Distance	1,707.39	55.57	16,150.99	68%	8%	14
Urban Heat Island	Temperature	30.69	29.46	31.44	1%	8%	49
Exposure to Flood Hazard	Proportion	0.1	0	1	279%	11%	3
Relative Access to Transit	Index	0.07	0	1	170%	5%	6
Average Commute Time	Time	25.7	15.31	33.67	9%	10%	46
Transportation Cost Burden	Proportion	0.11	0.06	0.27	21%	12%	40
Average Transportation Spend	Currency	14,175.22	0	74,565.21	43%	9%	26
Jobs Accessible Within 45 Minutes by Car	Count	21.26	1	29	24%	8%	39
Jobs Accessible Within 45 Minutes by Transit	Count	9.63	0	23	68%	2%	15
Ratio of Employment Access Within 45 Minutes: Transit/Car	Proportion	0.42	0	1	58%	8%	19
Voter Turnout 2017	Proportion	0.60	0.47	0.72	8%	9%	47
Youth Voter Turnout 2017	Proportion	0.58	0.5	0.66	6%	10%	48
Four or More Persons to Confide In	Proportion	0.45	0	0.61	18%	10%	41
Strong Sense of Community Belonging	Proportion	0.55	0.29	0.75	16%	9%	43
Long Term Residency (Mobility Status)	Proportion	0.55	0.05	0.88	25%	7%	36
Sense of Safety	Proportion	0.58	0.21	0.83	25%	9%	37
Access to Primary Healthcare	Index	0.08	0	1	144%	7%	8
General Health	Proportion	0.51	0.34	0.73	18%	10%	42
Mental Health	Proportion	0.58	0.4	0.8	12%	11%	45
Chronic Conditions (1+)	Proportion	0.27	0	0.43	24%	8%	38

VI. Listening & Learning Session Detailed Agenda

TITLE	DESCRIPTION
SESSION OPENS Grounding + Territorial Acknowledgment	Luna opens in Teochew (Ancestral Language)
INTRODUCTIONS	Share with us your name and the identities you lead with, as much as you want. Share with us where you are located at the moment. Describe your favourite food from your culture. Where do you go to get the food that most nourishes you?
SELF-CARE AND SAFER SPACE	Support each other's right to privacy and confidentiality. Move up, Move up Listening/Speaking Role It's ok to have Zoom awkwardness Take intentional breaths for hard and vulnerable moments It is ok to not feel ok. Reach out if needed. Water, snacks, comfort and grounding things around you Hold space with each other - Be present with each other
BODY AS STORY Reflection Tool	Participants given a writing prompt tool to reflect on questions asked. "Before you start, take a deep breath for be still for 1 min. What sensations in your body are coming up for you? Note these sensations down. Example "I feel a sense of urgency and it's kind of making my back ache a little" After noting the sensation, take another deep breath, and another. Write down what might be coming up for you. Use describing words - "I see", "I feel", "I hear", 'I experience"
SOCIAL EQUITY DISCUSSION Whole Group	Question 1: Social equity is a word that we are hearing a little more often. Organizations like MVRD and TL are also responding to this call to infuse social equity and transform their practices. If someone ask you what social equity really is to you, what might you express?
Breakout Group	Question 2: Where does inequity show up in your life in regards to where you live? i.e. your home, your neighbourhood, where you do your shopping, recreation, etc Question 3: Where does inequity show up in how you get around? i.e. travel patterns, transit, mobility/connectivity, etc
Whole Group	Question 4: In your words, what would it feel like to live/work/learn/play/travel, etc. in a fair and equitable region?
BREAK	
SOCIAL INEQUITY INDEX DISCUSSIONS	Social Inequity Index maps Open group reflection
RECOMMENDATIONS & NEXT STEPS	Last comments, recommendations and next steps.
SESSION CLOSE	

VII.   Developing the Listening & Learning Engagement Sessions

Priorities for Participant Selection

In recruiting participants to the Listening and Learning Sessions, the consultant team decided to prioritize recruitment of two identity groups that are generally the least likely to be heard or represented through planning processes: racialized people and those who identify as Lesbian, Gay, Bisexual, Trans, Queer, 2 Spirit (LGBTQ/2S). The intersectional nature of identity meant that engagement participants could also have identities related to other equity-denied groups (women, people with low income, people with disabilities etc.)

The decision to prioritize participants who self-identify as racialized as well as LGBTQ/2S within the engagement activities was informed by the context of Metro Vancouver as well as wider systemic issues. In the 2016 Census, the visible minority population (48.9%) of the Vancouver Census Metropolitan Area (CMA) exceeded the European Canadian population (48.6%) for the first time. Furthermore, the Aboriginal population of the region accounted for 2.5% of all residents. While the majority of residents living in Metro Vancouver belong to racialized communities, Census data reveals that racialized communities are not evenly distributed throughout the region.
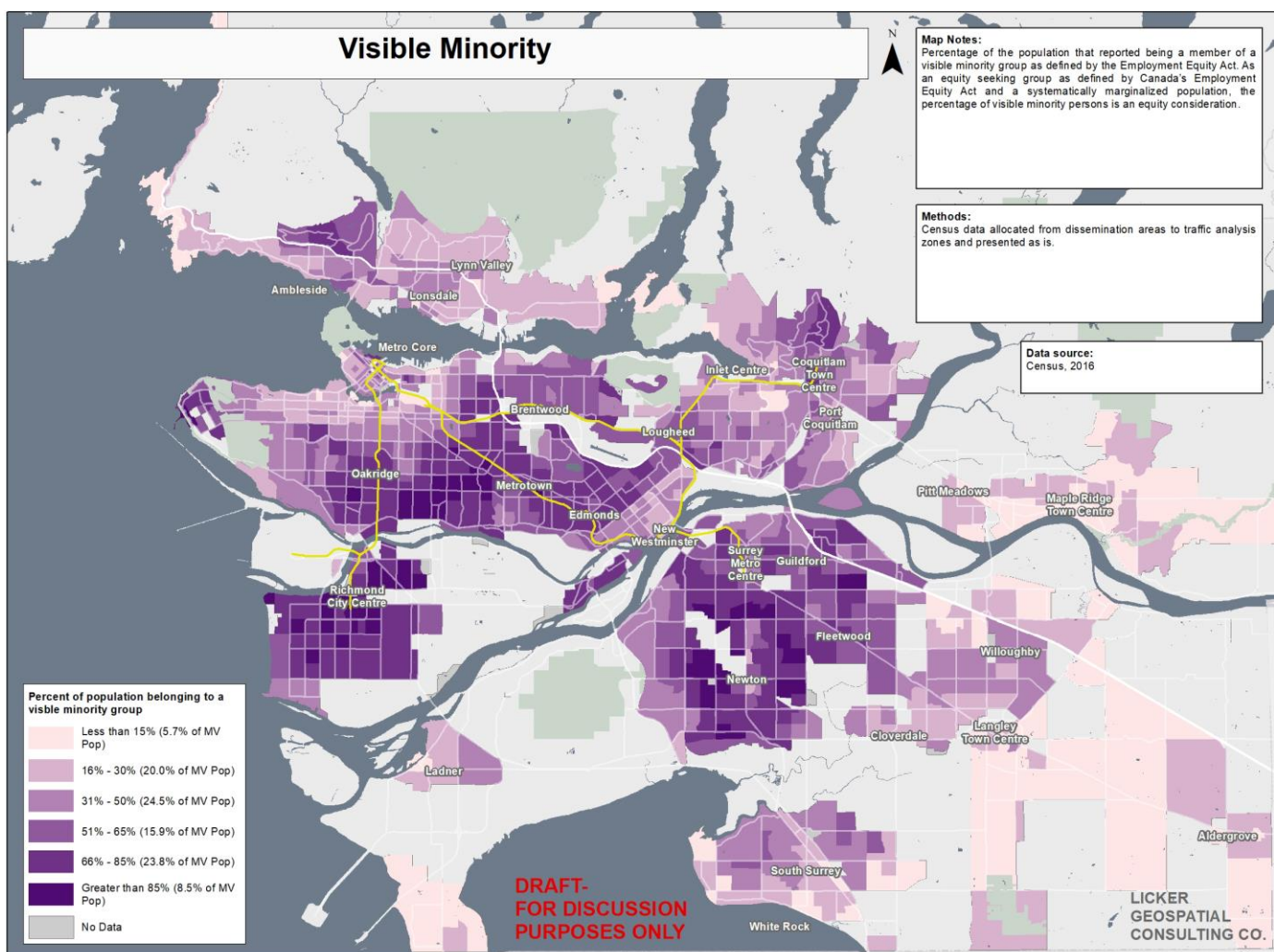
Where racialized populations live in the region has significant implications for regional growth and transportation planning, from access to employment, leisure and natural areas, to walkability and proximity to rapid transit.

The legacy of colonization, both in the planning of Metro Vancouver and at all levels of Canadian society, coupled with systemic racism (e.g. racial wage gap, rental and job market discrimination) and increasing reports of racist violence in the region (verbal and physical incidents), makes it imperative that regional and transportation planning authorities prioritize engagement and relationship-building with racialized communities.

In addition, Canadian Census data on non-dominant gender and sexual identity are limited to regional level statistics on Same-Sex Households (Common-Law Relationships, Marriages, and Parents). This data gap, coupled with the disproportionate discrimination, homelessness, health impacts and violence experienced by self-identified LGBTQ2S populations, makes it important to prioritize engaging this population.

VIII.   High-Resolution Indicator Maps

See following pages.