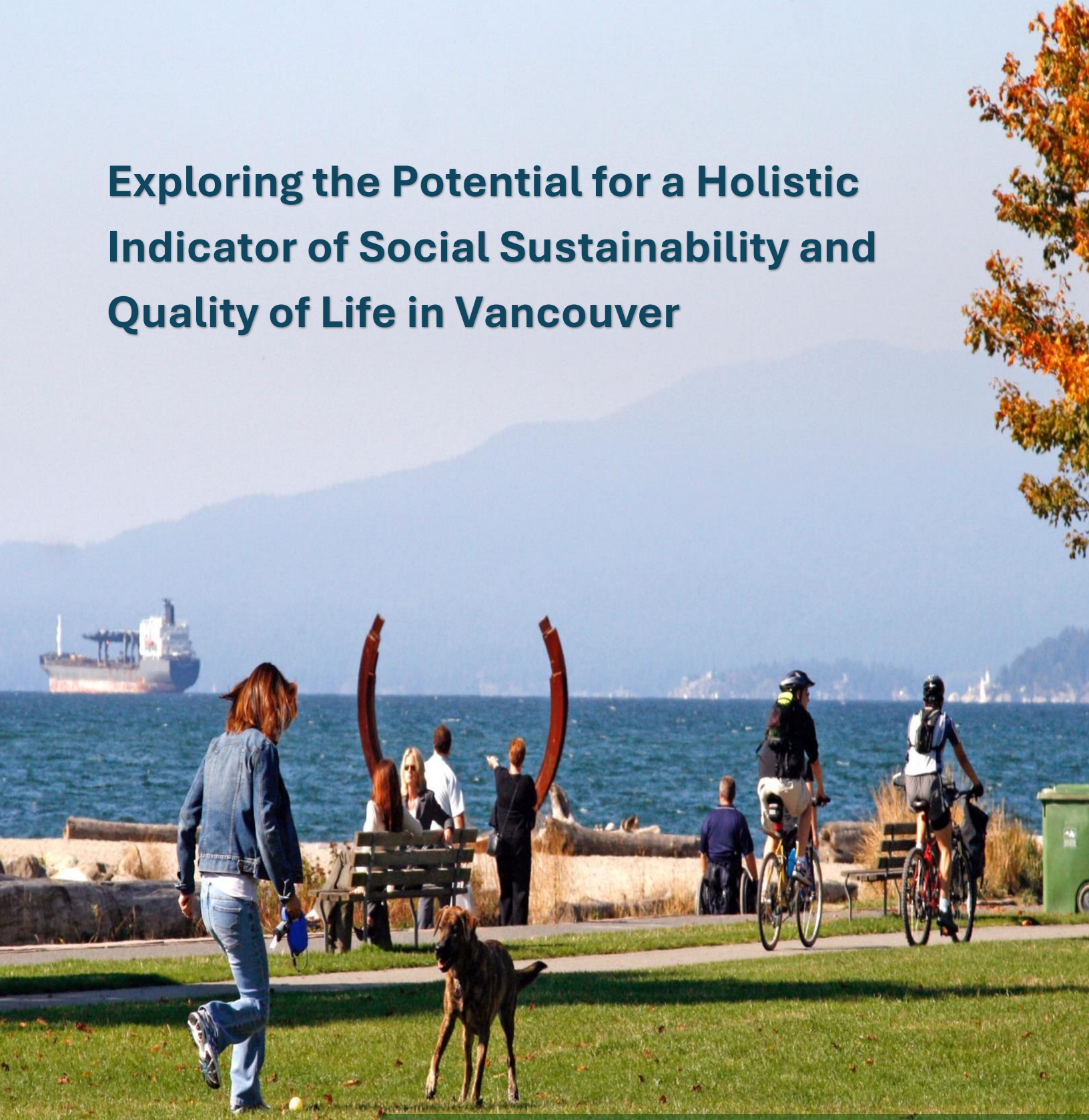
Exploring the Potential for a Holistic Indicator of Social Sustainability and Quality of Life in Vancouver



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Executive summary

This report investigates the feasibility of developing a holistic indicator to assess and communicate the social sustainability and quality of life in Vancouver. Despite the availability of various specific metrics, there is a noted absence of a comprehensive framework that integrates these metrics to provide a singular, actionable view of the city's progress towards its social sustainability goals.

The City of Vancouver currently employs 45 population-level indicators under its Healthy City Strategy, demonstrating the city's commitment to transparent and data-driven governance. However, these indicators, while effective individually, do not collectively provide a complete picture of the city's overall health across various dimensions such as public health, housing, education, and environmental sustainability.

The aim of this research was to identify a holistic indicator that encompasses multiple dimensions of social sustainability to simplify assessments and improve strategic planning.

Through a desktop review of 70 existing indicators and consultations with experts, two models were identified as particularly promising: the Greater London Authority's (GLA) Wellbeing and Sustainability Measure, and the City of Calgary's Equity Index (CEI). These models offer robust frameworks that prioritize equity, accessibility, and stakeholder involvement, aligning closely with Vancouver's urban development goals.

This executive summary highlights the need for an overarching metric that reflects the interdependencies among various domains, ensuring that progress in one area does not undermine another. By leveraging insights from this research, Vancouver can enhance its policy implementation and community engagement, moving closer to achieving a balanced and sustainable urban environment. The proposed holistic indicator will also support the city in benchmarking against other urban centers and refining its strategic initiatives based on quantifiable metrics.

Introduction

Municipalities and governments leverage various indicators and metrics to effectively manage urban planning and governance (Singh et al., 2009). The term "indicator" is broad and can encompass various meanings. For the purpose of this report, we specifically use this term to convey the idea of covering multiple aspects or dimensions of “wellbeing” and “quality of life” in a single measure. These indicators are essential tools that facilitate evidence-based decision-making, allowing city officials to implement policies that align with specific needs and goals (Singh et al., 2009). Additionally, they play a crucial role in monitoring changes across different domains such as social, economic and environmental agents providing a clear measure of performance and outcomes over time (Keser & Gökmen, 2018).
The City of Vancouver's Healthy City Strategy illustrates a practical application of this approach. It employs 45 population-level indicators, with a selected subset of 23 indicators to disseminate to the public through an accessible online dashboard. These indicators are designed to provide actionable insights into the city's progress towards its 13 existing social sustainability goals, which cover a broad spectrum of urban life, including food security, housing affordability, public health, and educational opportunities (Vancouver, n.d.). This transparent and data-driven approach not only fosters accountability but also engages the community by making the information readily available and understandable, and enabling the community to take action that contributes to change.

However, while these indicators are valuable for addressing specific areas, they often exist in isolation without a holistic framework to aggregate them. This results in a scattered representation of data that, while insightful on a micro level, lacks a comprehensive perspective to assess the overall progress towards becoming a truly healthy city for all its residents. It would be beneficial to use a unified indicator or composite index that encapsulates the multifaceted nature of such a vision. A unified indicator would not only streamline the assessment of the city’s wide-ranging goals but also enhance

strategic planning by providing a singular reference point that reflects the interconnections and interdependencies among the various domains (Lutz et al., n.d.). This could lead to more integrated and effective policymaking, ensuring that progress in one area does not inadvertently undermine another, and ultimately moving closer to achieving a balanced and sustainable urban environment.

Background

The concept of indicators and composite indices is pivotal for assessing well-being and quality of life across different dimensions and scales, ranging from individual urban centers to global metrics. This is particularly significant in the context of urban health, where such indices provide a structured way to evaluate the complex interplay of socio-economic and environmental factors affecting communities (Freudenberg, 2003).

At its core, an index is constructed by standardizing, normalizing, and scaling various variables so that they can be directly compared and aggregated into a cohesive measurement. For example, the Urban Health Index is an approach that utilizes this method to offer a composite index that can be tailored to each city (World Health Organization, 2014). Cities can use this index to direct policies and monitor urban development progress. This process is essential for achieving sustainable development and enhancing urban prosperity by relying on comprehensive and harmonized data to inform decision-making. However, the creation and use of these indices come with inherent challenges and limitations. Each index or measurement tool offers a specific perspective—whether thematic, integrated, or national—and this can significantly influence the outcomes and interpretations of urban conditions and policies (UN-Habitat, n.d.). The decision on which indicators to include, how they are measured, and their integration into composite indices requires a deep understanding of the underlying dimensions of what is being measured. For instance, while composite indicators provide a simplified and comparative view of complex phenomena like national competitiveness or innovation, they can sometimes oversimplify or misrepresent the realities due

to assumptions about the substitutability of indicator components or the quality of available data (Freudenberg, 2003).
In practice, constructing these indices is fraught with difficulties, including the availability and comparability of data across different contexts. The reliance on less-than-ideal data sources and the potential biases in data collection and interpretation underscore the challenges in developing robust and universally applicable composite indices (Santos & Santos, 2014).
Overall, while composite indices offer valuable insights and facilitate cross-national comparisons and policy benchmarking, they must be carefully designed and continuously monitored to avoid oversimplifications and ensure they provide a meaningful and accurate reflection of the multifaceted nature of development and well-being (OECD, 2008).

Aim and research question

The primary objective of this project is to identify a holistic indicator that evaluates social sustainability and quality of life. This metric will serve as a tool to facilitate simpler assessment and communication regarding the progress of the Strategy. The metric aims to provide a clear, evidence-based answer to the question of whether Vancouver is evolving into a healthier city overall and whether any of these metrics, could be employed in Vancouver using population-level data sources available in Canada. Additionally, we will ensure that the identified metrics are aligned with the City of Vancouver's equity, reconciliation, and accessibility goals.

Methods

Desktop Search Methodology

We conducted a desktop search from June 1st to June 30th across various search engines (e.g., Google), organizational websites, and government documents. Our resources included scientific databases such as the Science Citation Index and the Social Sciences Citation Index (Web of Science), along

with international institutions like the United Nations (UN) and the World Health Organization (WHO). We utilized search terms associated with well-being, including "quality of life," "life satisfaction," "life expectancy," "happiness," and "social sustainability." These were combined with keywords related to measurement, such as "composite index," "metric," "scale," and "measure".

We identified a total of 70 indicators across various domains related to well-being and quality of life. Results were systematically catalogued in an Excel spreadsheet, detailing the source, the organization or research team that developed or implemented the indicator, its definition, and a brief note on the methodology if available.

Selection Process for Indicators

In the next step, we developed a set of inclusion and exclusion criteria and applied these to our comprehensive list of indicators. Our inclusion criteria focused on:

1. Holistic indicators or composite indices that integrate multiple dimensions of quality of life or equivalent concepts.
2. Indicators applicable at various geographic or administrative levels.
3. Indicators that have been previously tested or implemented.
4. Indicators providing clear and meaningful interpretations.
5. Indicators suitable for comparison across different regions, populations, or time periods.

We excluded indicators with irrelevant dimensions, those specific to particular sub-populations or groups, or those outdated with more recent versions available.

This process refined our list to 21 indicators for further evaluation and data extraction. Details on the features and characteristics of the selected indicators were directly extracted from the original sources. A comprehensive list of extracted features, along with inclusion and exclusion criteria, is provided in Appendix A.

Scoring System and Final Evaluation

We focused our assessment on indicators with important features that enhance their credibility, applicability, and alignment with the city's goals. Each indicator was scored on six critical items: (1) use of subjective data, considerations of (2) sustainability, (3) equity, (4) accessibility, (5) reconciliation, and (6) stakeholder engagement. These six features are defined and elaborated in the results section. Each item received a score, contributing to a total maximum score of six. Indicators scoring four or higher were included in a separate list for further analysis.

Soliciting Feedback from Key Informants

In the final round of assessment, we shared our findings with key informants and experts in the field to incorporate their insights and recommendations. These experts were identified and initially contacted by the project mentor, Peter Marriott. Aiming for maximum inclusiveness, we tried to engage experts from various departments, sectors, and jurisdictions, including the BCCDC, the Greater London Authority, the City of Toronto, and the City of Philadelphia, along with the heads of the equity and accessibility sectors from the City of Vancouver's social policy department. A list of organizations and departments contacted for feedback is available in Appendix B.

Findings

Summary of Assessed Indicators

All 21 indicators that were assessed are composite indices. A majority of them encompass three fundamental domains at their core: Health (Wellbeing), Education (Knowledge), and Income (Standard of Living). Several indices also integrate dimensions related to the environment, community and culture, and technology.

Nine indices were developed for implementation at the national level using country-scale databases, while others were designed for sub-national divisions such as provinces, urban areas, cities, and districts. In terms of calculating the composite index, some indices employed an equal weighting strategy, whereas others assigned non-equal weights to each dimension based on its significance, priority, or the reliability of data sources.

To capture each domain and dimension, the indices utilized a variety of measures. Notably, life expectancy at birth (and at other ages) is commonly used in many indices as an indicator of the health and wellbeing of a population. Similarly, gross income per capita at purchasing power parity (PPP) is frequently used to assess the standard of living. Table 1 presents a list of the included indices, and the features extracted.

Several indices incorporated some form of subjective data into their calculations. By subjective data, we refer to self-reported information collected from residents through surveys or interviews. Subjective data gathers personal perceptions, ideas, experiences, and feelings, as opposed to relying on statistics and administrative databases, such as GDP, mortality rates, and graduation rates (Organisation for Economic Co-operation and Development (OECD), 2013). The use of subjective data aligns with the city's goals of accounting for individual agency and self-determination. It also provides a complementary understanding of specific domains and helps avoid the shortcomings of purely objective measures, which may not reflect the nuanced realities of the community.

Most of the included indices considered aspects of sustainability, which can be defined as the balance of environmental, social, and economic factors to ensure long-term health and viability(City of Vancouver, 2005). These indices addressed equity considerations by integrating parameters to measure the inequity gap among at-risk groups.

Among all, Community Well-Being index (CWBI) is the only indicators that included measures of decolonization and reconciliation practices by

considering the gaps between First Nations and non-Indigenous communities in Canada.

In terms of community and stakeholder engagement, only two indices (GLA and CEI) stated in their documentation that stakeholders and community leaders were involved in index development process (Boakye-danquah, n.d.; Greater Lonon Authority, 2023).

Selected Indicators

After our final assessment of the eligible indicators, we selected two that stood out for their relevance, feasibility, and alignment with the city's goals:

- GLA Wellbeing and Sustainability Measure
- Calgary Equity Index (CEI)

These indicators were identified as having significant potential for adoption by the City of Vancouver when developing a holistic indicator. Notable features include comprehensive coverage of core domains related to wellbeing and social sustainability, the inclusion of subjective data, a strong emphasis on equity and accessibility, and the involvement of stakeholders and community members during the development stages. Details of our final evaluation according to 6 critical features are presented in Table 2

Data sources

The indicators primarily drew on data sources such as national statistics and census data, economic figures, population-level health information, and surveys, alongside data from international organizations including the OECD, WHO, UN, and World Bank, both at country and regional levels. In Canada, the two indicators from our final list utilized national statistics and census data. For health-related metrics, one indicator relied on national surveys, including the Canadian Community Health Survey (CCHS) and the National Population Health Survey (NPHS), while the other was based on administrative health data, such as provincial insurance plans and hospital admissions records.

The Calgary Equity Index (CEI) employed the Early Development Instrument (EDI) from Alberta to evaluate developmental health of young children. For income assessment, it used the City of Calgary Subsidy Assistance Management System (SAMS) database. Public safety data were captured through records from the Calgary Police Services (CPS). Accessibility measures were derived from the Open Data Portal, which compiles data collected and managed by The City of Calgary. The importance of Calgary's data is highlighted by the likelihood that similar databases are available in Vancouver, given that both are Canadian municipalities.

However, the availability and accuracy of data remain key concerns when relying on information collected by various institutions and departments. National data can pose challenges when applied to city-specific indicators, as they often lack granularity at the geographic level required. Additionally, identifying relevant variables or metrics that align with a city's specific needs can be difficult if they are not addressed in national datasets. Ensuring the accuracy of the information is also complex, particularly when evaluating the rigor of data collection methods and the reliability of self-reported data.

Feedback from Informants

We had the valuable opportunity to engage with key informants and benefit from their insightful feedback on our approach and findings. Our conversations provided crucial perspectives on the conceptualization of accessibility and equity and the availability of data.

Accessibility

One informant emphasized the importance of defining accessibility in a more inclusive manner when discussing indicators and metrics. It was suggested that accessibility could be conceptualized as the "ability to meet daily needs," which ensures representation of people with physical and mental disabilities, or "activity-limited individuals."
We explored indices such as the Calgary Equity Index (CEI) and its alignment with our framework, particularly in terms of accessibility. It was noted that

the "Access to Community Spaces" dimension of the CEI predominantly captures the able-bodied population. On the other hand, the "Population Health" dimension may cover some aspects of accessibility according to our broader definition. Among the assessed indicators, the Health-Adjusted Life Expectancy (HALE) measure, which evaluates eight attributes of self-reported health status—vision, hearing, speech, ambulation, dexterity, emotion, cognition, and pain—seems appropriate for identifying activity-limited individuals. However, it falls short of capturing their self-rated well-being and the extent to which they can meet their daily needs.

The availability of a suitable indicator or database that effectively identifies activity-limited individuals and assesses their well-being and quality of life was also a key topic of discussion. It became evident that there is a significant scarcity of indicators, metrics, and data sources in this area. The question of whether we can adequately capture this information using available datasets remains unresolved.

Equity

Another informant recommended that our approach to equity should be as inclusive as possible, recognizing that equity encompasses not only gender disparities but also inequities related to age, race/ethnicity, socioeconomic status, and disabilities.

In the context of Vancouver, it was suggested that we prioritize indicators for labor market participation and purchasing power parity over others like the education gap or maternal mortality, which may be less relevant in this setting. We also discussed the interconnectedness of social inclusion, diversity, and equity and how high-level indicators such as "sense of belonging" and "democratic engagement" could be used to capture the level of equity within a population. The importance of using subjective data, such as surveys or qualitative data collection, to measure these dimensions was highlighted. However, the feasibility challenges associated with gathering reliable subjective data, particularly concerning sense of belonging and accessibility, were acknowledged.

Applications of a Holistic Indicator in a Major City

We had a productive conversation to learn more about the Wellbeing and Sustainability Indicator developed by a major city's social policy department. This index, though not fully implemented at the policy level due to some challenges, is still useful for tracking progress. While it might not be ready for benchmarking, it can still be applied to monitor changes over time.

A standout feature of their index is the consultation with key stakeholders and community members at the development stage. They conducted focus group discussions and online surveys to gather input from various community representatives who may be underrepresented. This approach provides an equity and diversity lens to ensure that the metrics effectively capture and address existing inequities.

To assess disparities within a specific domain, they conducted a demographic breakdown of the data, considering factors such as age, gender, disability, ethnicity, deprivation quintile, and religion. A combination of objective and subjective data sources were employed, since relying on only subjective or objective data may jeopardize the accuracy of the measure.

In terms of accessibility, the accessibility and affordability of public transport within the "Accessible Services and Safe Neighborhoods" domain was evaluated. However, it was noted that the index does not specifically address accessibility for people with disabilities.

It was also pointed out that the Wellbeing Index does not prioritize any particular domain or dimension; all seven domains are equally weighted. The decision to assign higher weights to domains considered more critical should depend on contextual factors. It was recommended that we consult with local stakeholders before making any judgments on which domains should be prioritized or carry more weight.

Summary and Recommendations

We were able to identify two holistic indicators—the Greater London Authority's (GLA) measure and the City of Calgary's Equity Index (CEI)—that have the potential for adaptation by the City of Vancouver to address specific

local needs. These indicators encompass a broad spectrum of domains and dimensions critical to assessing the overall well-being of an urban area. The primary strengths of these indicators include their alignment with the city's goals, particularly in terms of equity and accessibility. Both indicators incorporate subjective data, with the GLA measure utilizing it more extensively than the CEI. Additionally, they benefit from the input of an advisory group and community members during their development phases, enhancing the relevance and inclusiveness of the indices.
There is potential for enhancing these holistic indicators by incorporating elements that specifically engage and account for Indigenous peoples and communities.

Regarding data sources, despite variations in data availability and types, it is feasible to identify analogous data sources within Vancouver that can employ similar measures. For example, the administrative health registries used by the CEI, , have alternatives in BC such as Medical Services Plan (MSP) physician billing data and the Discharge Abstract Database (DAD) accessible through Population Data BC (PopData). Additionally, the Early Development Instrument (EDI), which collects data on various aspects of well-being among children and youth, is also being consolidated in Vancouver and is accessible through PopData (*Early Development Instrument - Overview*, 2021).

In this project, we have initiated the development of an indicator intended to assess the well-being and quality of life of residents in Vancouver, which may serve as a benchmark for future evaluations. Initial findings show the existence of analogous holistic indicators currently employed in various contexts, which is promising. This implies that, with sufficient resources, it is feasible to create a comprehensive index that encompasses all essential aspects of well-being in Vancouver, with an emphasis on equity, accessibility, and reconciliation.

The examples that we presented can guide the city's next actions. This should include establishment of a framework through collaboration with

stakeholders, city councilors, and community members to refine and enhance the existing models. Furthermore, experts in relevant fields should be consulted to provide advice on available databases and necessary data collection.

Finally, it is imperative to formulate a method to communicate this index effectively to the public, ensuring that it is interpretable and beneficial for all community members.

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Tables

Table 1. Included Holistic Indicators and their Key Features

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
Human Development Index (HDI)	1. Health (Wellbeing) 2. Education (Knowledge) 3. Income (Standard of living)	1. the life expectancy at birth (years) 2. combination of the mean years of schooling that 25 year old's have received, together with the expected years of schooling for a pre-school child 3. the real gross national income per capita at purchasing power parity (PPP)	National data	equal weighting	The index ranks countries on a score between 0 & 1 The closer to 1, the higher the level of economic development & the better the standard of living	Human development	Country
Inequality adjusted HDI (IHDI)	1. Health 2. Education 3. Income with equity considerations	1. the life expectancy at birth (years) by gander 2. combination of the mean years of schooling that 25 year old's have received, together with the expected years of schooling for a pre-school child by gender 3. the real gross national income per capita at purchasing power parity (PPP) and male and female shares	National data	Unclear	difference between the HDI and IHDI can be expressed as a percentage and represents the loss in potential human development due to inequality	differences in human development that exist in a country as opposed to the average human development	Country

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
Gender Inequality Index (GII)	1. Reproductive health 2. Empowerment 3. The labour market	1. the (inverse of the) maternal mortality ratio and the (inverse of the) adolescent fertility rate 2. the share of parliamentary seats held by each sex and attainment at secondary or higher educational level 3. the labor market participation rate for each gender	United Nations Development Programme (UNDP). Human development data	the first aggregation is by a geometric mean across dimensions; these means, calculated separately for women and men, are then aggregated using a harmonic mean across genders.	Countries are graded on a scale of 0 to 1 The lower the value the better the inequality between men and women, and vice-versa	Gender inequities	Country
Happy Planet Index (HPI)	1. Wellbeing 2. Life expectancy 3. Ecological footprint	1. how residents of a country rate their quality of their overall lives on a scale of 0-10 2. average life expectancy at birth 3. the average impact that a resident of a country places on environment and expressed using standardized unit global hectare (GHA) per person	Survey data	HPI Score = (wellbeing * life expectancy) / ecological footprint	Countries are ranked by how efficiently they deliver long, happy lives using the earth's scarce resources in a sustainable way	Sustainable wellbeing	Country

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
Human Poverty Index (HPI-2 for developed – OECD countries)	1. Well-being 2. Knowledge 3. Standard of living	1. probability at birth of not surviving to the age of 60. 2. percentage of adults lacking functional literacy skills 3. percentage of the population living below the poverty line, which is defined as those below 50% of median household disposable income, and social exclusion, which is indicated by the long-term unemployment rate.	national statistics agencies, surveys, and international organizations	Health (1/3), Education (1/3), Standard of Living (1/3)	within a range of 0 to 100	elements of deprivation in a country	Country
Years of Good Life (YoGL)	1. Total life expectancy 2. Capable longevity a. being out of absolute poverty b. being able to read and comprehend a sentence c. having no severe activity limitation 3. Overall life satisfaction	1. life expectancy at age 50 calculated through standard demographic life table methods 2a. World Bank poverty line for upper-middle income countries of US$5.50 purchasing power parity (PPP) per day 2b. several tests of cognitive ability from Survey of Health, Ageing and Retirement in Europe (SHARE) 2c. Physical health is assessed based on a chair stand test, for which respondents are asked to rise from a chair without using their arms, after confirming that they felt safe to do so	1. Eurostat life tables 2 & 3. 2013 Survey of Health, Ageing and Retirement in Europe (SHARE) which provides high-quality microlevel information on health, well-being, and socioeconomic characteristics for the population 50+	a binary variable is generated that indicates whether an individual is above the critical threshold in all dimensions or not. This binary variable is then aggregated by country, gender, and 5-y age group using cross-sectional survey weights	Years	Long-term human well-being as the ultimate end of sustainable development	Country

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		3. Life satisfaction is assessed via a standard 10-step Likert scale based on the question "On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?" Individuals are considered to have positive life satisfaction if they rate their life satisfaction to be larger than					
Health-adjusted life expectancy (HALE)	Health expectancy 1. Life expectancy (mortality) 2. Health status (morbidity)	1. life table data for males and females for each year to calculate life expectancy at birth and at different ages 2. a. Health Utilities Index Mark 3 (HUI3) measures eight attributes of self-reported health status: vision, hearing, speech, ambulation, dexterity, emotion, cognition, and pain b. The percentages of people living in private households and in health-related institutions	1. provincial and territorial mortality data from the Vital Statistics–Death Database and population estimates 2. a. Canadian Community Health Survey (CCHS) National Population Health Survey (NPHS) b. Census of Population	The life expectancy information from each three-year set of complete life tables by sex was weighted by the number of life-years lived at a particular age x using the mean HUI3 for that age.	Years	Quality of life and Health status	Country
OECD Better Life Initiative	Material Condition 1. Housing 2. Income	1. share of disposable income remaining after housing costs 2. household net adjusted disposable	Data collected by OECD and from international organizations (EU-	Equally-weighted arithmetic mean of all	scale from 0 to 10	Multidimensional nature of well-being to help monitor	Country

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
	3. Job Quality of Life 4. Education 5. Health 6. Environment 7. Community 8. Civic engagement 9. Safety 10. Work life balance 11. Life satisfaction	income, USD at 2017 PPPs*, per capita + median net wealth, USD at 2016 PPPs 3. employed people aged 25-64, as a share of the population of the same age 4. programme on International Students Assessment (PISA) mean scores 5. number of years a newborn can expect to live 6. share of urban population with access within 10 minutes' walking 7. social interactions hours per week 8. share of registered voters who cast votes 9. homicides Age-standardised rate, per 100 000 population 10. time allocated to leisure and personal care, hours per day 11. Life satisfaction mean value on a 0-10 scale	SILC, National Statistical Office, Gallup World Data on life evaluation)	eleven dimensions		progress and design people-centred policies	
Urban Health Index (UHI)	1. Health 2. Environment 3. Geography 4. Economics	Flexible to the choice of developing team	Potential sources: Demographic and Health Surveys (DHS)	The UHI formula assigns equal	scale from 0 to 1	map the disparities in health determinants	Urban area

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
	5. Socio-demographics		National vital statistics systems Surveys from national agencies such as Ministries of Education, Health, Labor, Statistics, and municipal surveillance data	weight to each indicator		and outcomes in urban areas	
Calgary Equity Index (CEI)	1. Economic opportunity 2. Human and social development 3. Physical environment and infrastructure 4. Population health 5. Governance and civic engagement	1. Core housing need rate + Low-income measure after tax rate (50% of the median household income after tax, adjusted for household size) + Unemployment rate (The number of unemployed persons who are 25 or older and in the labour force who are seeking work) + Youth low-income transit pass sales (age standardized rate of low-income youth transit pass sales) 2. Early Development Instrument (EDI) vulnerability in two or more domains + High school graduation rate (percentage of students who completed high school in 2020 after first entering grade 10 in 2018) + All violence incidents (including domestic-related violence)	1. Statistics Canada, City of Calgary Subsidy Assistance Management System (SAMS) database 2. 2016 EDI collection in Alberta, Alberta Education, Calgary Police Services (CPS) police records management system 3. Open Calgary data portal: Calgary Parks Sites, Calgary Parks Off-Leash areas 4. Alberta Health Care Insurance	weights for each of the indicators are derived using the factor loadings for each indicator	Score ranges from 0 to 100	Monitoring and identifying disparities in equity across communities	Community Service Areas (CSAs)

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		aggregated by start date of the incident and standardized by 100,000 population + The percentage of persons ages 25-64 who have completed a postsecondary certificate, diploma or degree in 2016 + all non-violent crime targeting property, and is comprised of theft (including of and from vehicles, shoplifting and general theft), breaking and entering, property damage, fraud and arson, standardized by 100,000 population 3. Access to community spaces (number of community spaces (includes libraries, community centres, & indoor recreation facilities) standardized by 100,000 population) + Access to green space (percentage of municipal land area covered by green spaces (parks)) + percentage of population within walking distance (800m) to healthier food stores + Bike Score® + Transit Score® + Walk Score®: Walk Score® 4. Chronic obstructive pulmonary disease (COPD) prevalence + Diabetes	Plan (AHCIP) Physician Claims Data, DAD and Registry Files, Alberta Health Location Registry, Alberta Health Postal Code Translator File (PCTF), Civic Census population data by age band for 2014 (35-44, 45-54, 55-64, 65-74, 75+) 5. City of Calgary Subsidy Assistance Management System (SAMS) database.				

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		prevalence + Mental illness prevalence, age standardized + proportion of individuals over the age of 12 who reported perceiving their own health status as being either very good or excellent (%) 5. Municipal voting rate (percentage of eligible voters who voted in the last civic election (2021))					
Social Progress Index (SPI)	Basic Needs 1. Nutrition and medical care 2. Water and sanitation 3. Housing 4. Safety Foundations of Wellbeing 1. Basic education 2. Information and communications 3. Health 4. Environmental quality Opportunity 1. Rights and voice 2. Freedom and choice 3. Inclusive	Full list available at https://www.socialprogress.org/2024-social-progress-index/	United Nations or the World Bank to non-governmental organisations such as Freedom House or academia-based institutions such as Varieties of Democracy or Institute of Health Metrics and Evaluation, global surveys, such as Gallup's World Poll	Unclear	Score ranges from 0 to 100	global social performance	Country

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
	society 4. Advanced education						
Community Well-Being index (CWBI)	1. Education 2. Labour force activity 3. Income 4. Housing	1. high school completion rates + university completion 2. employment 4. housing quantity (i.e., crowding), housing quality	Census of Population for 1981 to 2006, 2016 and 2021 2011 National Household Survey	Unclear	range from a low of zero to a high of 100	Socio-economic well-being of communities in Canada Gaps between First Nations and non-Aboriginal communities	census subdivisions (CSDs)
Sustainable Society Index (SSI)	Human well-being 1. Basic needs 2. Health 3. Personal and social development Environmental well-being 1. Nature and environment 2. Natural resources 3. Climate and energy Economic well-being	1. sufficient food and drink, safe sanitation 2. Healthy life, clear air and water 3. Education, gender equality, income distribution, good governance 4. Air quality and biodiversity 5. Renewable water sources 6. Renewable energy and greenhouse gases 7. Organic farming and genuine savings 8. Gross domestic product, employment and public debt	Unclear	scores of the indicators are aggregated into scores of each category, using the geometric average	scale of 0–10	Sustainability in its broad sense, comprising human well-being, environmental well-being, and economic well-being	regions, provinces, country

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
	1. Transition 2. Economy						
Canadian Well-being Index (CWI Canada)	1. Community vitality 2. Democratic engagement 3. Education 4. Environment 5. Healthy populations 6. Leisure and culture 7. Living standards 8. Time use	1. Percentage of population that reports somewhat or very strong sense of belonging to community + Percentage of population volunteering without pay for a charitable or non-profit organisation (i.e., volunteer rate) + Percentage of population that reports having no close friends + Percentage of population that made a donation in the past year to a charitable or non-profit organisation + Percentage of population that feels safe from crime walking alone in their area after dark + Crime Severity Index + Percentage of population experiencing discrimination in past 5 years based on ethno-cultural characteristics + Percentage of population that believes most or many people can be trusted 2. Percentage of voter turnout at federal elections + Ratio of registered to eligible voters +	National Population Health Surveys Statistics Canada	each indicator is assigned an equal weight	mean of percentage change rate ratios scale	multidimensional construct of human wellbeing	national and provincial

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		Percentage of population that volunteers for a law, advocacy or political group + Gap in percentage turnout between older and younger voters + Percentage of MP's budget dedicated to communications to constituents + Percentage of women in federal Parliament + Percentage of population that reports being fairly or very satisfied with way democracy works in Canada + Percentage of population with quite a lot or a great deal of confidence in federal Parliament 3. Average annual Canadian undergraduate tuition fees ($2022) + Percentage of Bachelor's degree students with debt after graduation + Percentage of children aged 0 to 5 years for whom there is a regulated centre-based child care space + Percentage of adults 25 years of age and older participating in education-related activities + Percentage of 25 to 29 year olds in labour force completing high school + Percentage of 25 to 64 year					

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		olds in population with a university degree + Average expenditure per public school student ($2020) + Ratio of students to educators in public schools 4. Air pollution in fine particulate matter emissions (megatonnes) + Absolute greenhouse gas emissions (GHGs) (megatonnes of CO2 per year) + Primary energy production (terajoules) + Residential energy use (terajoules per 1,000 households) + Drinking water from water plants per capita served (cubic metres) + Percentage of people who volunteered in conservation or protection of environment/wildlife activities + Total farmland (hectares) + Forest regeneration: Area planted (hectares) 5. Percentage of population self-rating their overall health as very good or excellent + Percentage of population reporting diagnosis of diabetes + Life expectancy at birth in years + Percentage of population self-rating their					

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		mental health as very good or excellent + Percentage of population who perceive most days to be quite a bit or extremely stressful + Percentage of population 12 years and older reporting occasional or daily smoking + Percentage of population that received influenza immunization in past year + Percentage of population with a regular medical doctor 6. Percentage of population engaged in moderate to active daily physical activity + Average percentage of time spent on previous day in social leisure activities + Average percentage of time spent on previous day in arts and culture activities + Average number of hours in past year volunteering for culture/recreation organisations + Total expenditures in past year on all culture/recreation as a percentage of total household expenditures + Average attendance per performance in past year at all performing arts + Average visitation per site in past year to all					

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		National Parks/National Historic Sites + Average nights away per trip in past year on vacation trips to destinations within Canada over 80km from home 7. After-tax median income of economic families and persons not in an economic family ($2020 constant dollars) + Gini coefficient (a measure of income gap) + Percentage of households paying 30% or more of average monthly household income on housing + Percentage of population that is moderately or severely food insecure + Employment rate + Incidence of long-term unemployment (52 weeks or more) + Average number of consecutive months person has worked for current employer + Percentage of population living in poverty (based on Low Income Measure After Tax LIM-AT) 8. Percentage of labour force participants 25 years of age and older working more than 50 hours per week + Percentage of labour force working less than 30 hours					

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		per week, not by choice + Average daily amount of time spent with friends (minutes per day) + Percentage of population 15 years and older with long commutes to work (over 45 minutes) + Percentage of labour force with regular, weekday work hours + Percentage of individuals in population working for pay with flexible work hours + Percentage of population 15 years and older working full-time reporting high levels of time pressure + Percentage of Canadians who report 7 to 9 hours of good quality essential sleep					
Gross National Happiness Index (GNH Bhutan)	1. Living standards 2. Education 3. Health 4. Ecological diversity and resilience 5. Community vitality 6. Time-use 7. Psychological well-being 8. Good Governance 9. Cultural	1. Per capita income + Assets +Housing 2. Literacy + Schooling + Knowledge + Value 3. Self-reported health + Healthy days + Disability + Mental health 4. Wildlife damage + Urban issues + Responsibility towards environment Ecological issues 5. Donation (time & money) + Safety + Community relationship + Family 6. Work + Sleep	GNH survey	The nine domains are equally weighted, within each domain, the objective indicators are given higher weights while the subjective and self-reported indicators are	It runs from 0 to 1	happiness and wellbeing	National and districts

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
	resilience and promotion	7. Life satisfaction + Positive emotions + Negative emotions + Spirituality 8. Political participation + Services + Governance performance + Fundamental rights 9. Zorig chusum skills (artistic skills) + Cultural participation + Speak native language + Driglam Namzha (the Way of Harmony)		assigned far lighter weights			

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
City Development Index (CDI)	Social 1. Demographic dynamism 2. Social Welfare 3. Health and safety 4. Environment Economic 5. Economic wealth 6. Development 7. Openness 8. Work life Education and Culture 9. Education 10. Human capital 11. Connectedness 12. Diversity and participation	1. Family Sustainability (Ratio of crude marriage rate to crude divorce rate) + Population Reproduction (Fertility rate per 1,000 women (aged 15-45)) + Life Expectancy (Life expectancy at birth) + Infant Mortality (Mortality rate per 1,000 live births) + Age Dependency (Ratio of the population over the age of 65 to the active population) 2. Poverty (Rate of population living under the national poverty line) + Automobile Ownership (Number of automobiles per 1,000 people) + Cost of Living (Average housing rental value (PPP)) + Comfortable Public Transportation (Length of rail system(meters) per 1,000 people) 3. Access to Health (Number of doctors and hospital beds per 1,000 people) Traffic Accident Fatalities (Number of deaths from traffic accidents per 100,000 people) + Work Safety (Number of deaths from occupational accidents per 100,000 employees) +	databases of international organizations such as the UN, OECD, ILO, World Bank, UNESCO, Eurostat, as well as from the statistical offices of countries and cities	the weight of a variable is directly proportional to the standard deviation of that variable and inversely proportional to the correlation value between it and the other variables. The final stage combined the indicators using the weighted arithmetic average method while calculating the index score. Thus, the weight of a dimension was obtained by adding the weights of the indicators making up that dimension, and the weight of a domain	range of 0-100	city development	City

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		Suicide (Number of suicides per 100,000 people) + Intentional homicides (Number of homicides per 100,000 people) 4. Recycling (Recycling rate of municipal solid waste) + Air Quality (PM2.5 ratio in the air) + Electricity Consumption (Residential electricity consumption per capita (kWh)) + Water Consumption (Residential water consumption per capita (m3)) 5. GDP Per Capita (Gross city product per capita (USA Dollars, PPP)) + Income Equality (Gini coefficient) + Household Debt (Ratio of household debt to GDP) + Inflation (Average price increase (end of year)) 6. Investment (Ratio of gross fixed capital formation to GDP) + Economic Transformation (Share of tertiary sector in GDP) + Female Labor Force Participation (Female labor force participation in the active population) + Taxation (Ratio of collected taxes to GDP) 7. Diversity in Work Life		was obtained by adding the dimensions that make up that domain.			

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		(Percentage of foreigners in the labor force) + Foreign Direct Investment (Ratio of foreign direct investment stock to GDP) + Economic Connection (Ratio of total foreign trade to GDP) + Foreign Trade Balance 8. Employment Structure (Share of tertiary sector in employment) + Labor Force Participation (Labor force participation rate in the population over 15 years of age) + Unemployment (Unemployment rate) + Qualified Labor (Percentage of the workforce with a university or higher-learning institution degree) 9. Enrollment (General enrollment rate) + Population in universities (Percentage of higher education students in the population) + Quality of Education (Number of students per teacher in primary and secondary schools) 10. Population with Higher Education (Educational attainment: Those aged 25+ with at least one post-secondary degree (%,					

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
		cumulative) + Number of Researchers (Percentage of those working in R&D who are researchers) + R&D Expenditures (R&D expenditures to GDP (%)) + Intellectual Property (Number of intellectual property applications (patents, registered trademarks) per 100,000 people) 11. Connectivity (Ratio of the number of passengers within 80 km of the city airport(s) to the total population) + Attractivity (Number of overnight tourists) + Internet Quality (Average Internet speed (Mbps)) + Popularity (Google search trends index score) 12. Student Diversity (Percentage of foreign students in higher education) + Political Participation (Voter turnout) + Demographic Diversity (Non-citizens' share of the total population)					

GLA Wellbeing and Sustainability Measure	1. Good employment and opportunities to succeed 2. Having a decent home 3. Being healthy 4. Positive connections and belonging 5. Accessible services and safe neighbourhoods 6. Improving our environment 7. Feeling financially secure	1. Proportion of employees in secure employment + Proportion of employees earning above the London Living Wage + Average Attainment 8 Score 2. Proportion of new London housing meeting the Decent Homes Standard + Proportion of London households' income remaining after subtracting housing costs (median) + Proportion who have kept up with rent or mortgage payments without any difficulties in the last six months + Number of households owed a prevention or relief duty + Number of rough sleepers 3. Healthy life expectancy at birth (years) + Proportion of Londoners who do not have a long-lasting health condition or illness that reduces their ability to carry out day-to-day activities + Proportion of Londoners reporting low or very low levels of anxiety + Rate of Londoners aged under 18 attending community or outpatient hospital services for mental health issues (per 100,000) + Proportion of Londoners reporting high or very high levels of life	1. ONS Annual Population Survey, DfE, GLA adult learners participation, DfE Early Years and Childcare Survey, Lloyds Bank Essential Digital Skills for Life, ONS Labour Force Survey 2. DLUHC English Housing Survey, GLA polling / YouGov, DLUHC Statutory Homelessness, CHAIN rough sleeper reports, Ofcom Technology Tracker, Care Quality Commission Care data with ratings 3. Public Health Outcomes Framework, ONS Annual Population Survey, DfE Children in Need 4. DCMS Community Life Survey, ASCOF - Adult Social Care	All domains are equally weighted	Percentage	understanding a wide range of different elements of the experience of living and working in London	Yes

	satisfaction 4. Proportion of Londoners who reported meeting up in person with family members or friends about once a week or more often + Proportion of people who use care services who reported that they had as much social contact as they would like + Proportion of Londoners who never feel lonely + Proportion of Londoners who feel they belong to their neighbourhood very or fairly strongly + Proportion of population not experiencing a hate crime in the last year + Proportion who agree that this local area is a place where people from different backgrounds get on well together 5. Proportion of population not experiencing mid or high-level violence against persons or rape in the last year + Proportion who feel very safe or fairly safe walking alone in their local area after dark + Average number of retail category types appearing in London's high streets within a borough + Proportion of GP appointments that take place within 14 days of booking +	Analytical Hub - NHS Digital, Mayor's Office for Policing and Crime, (MOPAC) Hate Crime Dashboard, MOPAC Public Attitude Survey, Active Lives survey 5. Metropolitan Police Service (MPS), GLA High Streets Data Partnership - based on Local Data Company, NHS Digital, London Travel Demand Survey or ONS Living Costs and Food Survey, Historic England Count data 6. London Atmospheric Emissions Inventory 2019 data, London Tree Canopy Cover, Leeds University, ReLondon and London Councils consumption-based emissions,		

	TfL public transport accessibility levels + Proportion of total household expenditure not spent on public transport 6. Weighted air quality index combining NO2 and PM2.5 concentrations + Greenspace proximity and quality index compiled of quality green cover, blue cover, and tree canopy cover 7. Proportion of households not in relative poverty (after housing costs)- percentage of individuals in households with equivalized income after housing costs measure below 60% national median + Proportion of households /Londoners aged 16+ that are food secure + Proportion of households up-to-date with all household bills	Ministry of Housing, Communities & Local Government, DEFRA, Tranquil City Index - Defra Strategic Noise Mapping Round 3 (2017) and DfT Airport noise exposure contours 7. DWP Family Resources Survey, London level data from DWP's Households Below Average Income (HBAI)

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
Urban Sustainable Development Index (USDI)	1. Energy and climate 2. City planning 3. Local economy 4. Social welfare	1. GHG emissions + air pollution + final energy consumption 2. Clean water accessibility + public transport + waste collection and management + green spaces 3. GDP per capita + labor productivity + unemployment rate 4. Life expectancy index + public health index + education index	United Nations Development Program (UNDP) database OECD statistics World Bank database	equal weighting for composite index, weights may be differentiated for each dimension	from 0 to 1	Socio-economic and environmental impacts of planned development strategies	City
ITU-T Smart Sustainable Cities (SSC)	<u>Economy</u> 1. Information & communication technologies (ICT) 2. Productivity 3. Infrastructure <u>Environment</u> 4. Environment 5. Energy <u>Society and Culture</u> 6. Education, Health, Culture 7. Safety, Housing, Social inclusion	full list available at https://jimdo-storage.global.ssl.fastly.net/file/cab4bf1a-bf55-4c9f-8a01-c4d76c16eb77/U4SSC-Sustain%20Plan-New.pdf	international resources (e.g., UN Statistical Division, World Bank, OECD etc.) and the evaluated KPI city data	Using the principal component analysis it is possible to derive endogenously weights for the KPI	Unclear	assess the achievement of sustainable development goals	City

Index	Dimensions or Domains	Measures	Data sources	Weighting	Unit/range	Scope	Geographical Scale
Global Cities Outlook (GCO)	1. Personal well-being 2. Economics 3. Innovation 4. Governance	1. safety, healthcare, inequality, and environmental performance 2. long-term investments and gross domestic product 3. entrepreneurship through patents, private investments, and incubators 4. proxy for long-term stability through transparency, quality of bureaucracy, and ease of doing business	Sources are derived from publicly available, city-level data	1. Personal well-being (25%) 2. Economics (25%) 3. Innovation (25%) 4. Governance (25%)	Rank and score are determined by totaling the weighted averages of each dimension to yield a score on a scale of 0 to 100, with 100 being perfect.	assess the extent to which cities are able to attract, retain, and generate global flows of capital, people, and ideas + potential future performance	City

Table 2. Assessment of Holistic Indicators Based on 6 Critical Features

INDEX	SUBJECTIVE DATA	SUSTAINABILITY	EQUITY	ACCESSIBILITY	RECONCILIATION	STAKEHOLDER ENGAGEMENT	SCORE OUT OF 6
HUMAN DEVELOPMENT INDEX (HDI)	No	No	No	No	No	No	0
INEQUALITY ADJUSTED HDI (IHDI)	No	No	Yes	No	No	No	1
GENDER INEQUALITY INDEX (GII)	Unclear	No	Yes	No	No	No	1
HAPPY PLANET INDEX (HPI)	Yes	Yes	No	No	No	No	2
HUMAN POVERTY INDEX (HPI-2 FOR DEVELOPED – OECD COUNTRIES)	No	No	No	No	No	No	0
YEARS OF GOOD LIFE (YOGL)	Yes	Unclear	No	Yes	No	No	2
HEALTH-ADJUSTED LIFE EXPECTANCY (HALE)	Yes	No	Yes	Yes	No	No	3
OECD BETTER LIFE INITIATIVE	Yes	Yes	Yes	Unclear	No	Unclear	3
URBAN HEALTH INDEX (UHI)	Possible	Possible	Yes	Possible	No	Possible	1
CALGARY EQUITY INDEX (CEI)	Yes	Yes	Yes	Yes	No	Yes	4
SOCIAL PROGRESS INDEX (SPI)	Unclear	Yes	Yes	Yes	No	Unclear	3

COMMUNITY WELL-BEING INDEX (CWBI)	Unclear	Unclear	Yes	No	Yes	Unclear	2
SUSTAINABLE SOCIETY INDEX (SSI)	Unclear	Yes	Yes	No	No	No	2
CANADIAN WELL-BEING INDEX (CWI CANADA)	Yes	Yes	Yes	No	No	No	3
GROSS NATIONAL HAPPINESS INDEX (GNH BHUTAN)	Yes	Yes	Unclear	Yes	No	No	3
CITY DEVELOPMENT INDEX (CDI)	No	Yes	Yes	No	No	No	2
GLA WELLBEING AND SUSTAINABILITY MEASURE	Yes	Yes	Yes	Yes	No	Yes	5
URBAN SUSTAINABLE DEVELOPMENT INDEX (USDI)	No	Yes	No	No	No	No	1
ITU-T SMART SUSTAINABLE CITIES (SSC)	Yes	Yes	Yes	Unclear	No	Unclear	3
GLOBAL CITIES OUTLOOK (GCO)	Unclear	Yes	No	No	No	No	1

Appendices

Appendix A. Protocol for Exploring Quality of Life and Well-being Indicators

Characteristics of the Indicator:

1. **Dimensions**: Specific dimensions or domains of quality of life (or equivalent concepts) (e.g., health, education, income, environment, social relationships) covered by the indicator
2. **Sustainability**: Whether the indicator includes measures of sustainability (e.g., environmental impact, resource usage, long-term viability).
3. **Subjectivity**: whether it accounts for subjective well-being (e.g., personal satisfaction, happiness, life fulfillment).
4. **Accessibility**: Whether it addresses accessibility issues (e.g., availability of services for people with disabilities, infrastructure for making people with disabilities capable of meeting their needs).
    - If obesity and anti-fat bias is being considered
5. **Equity**: Whether it considers equity and diversity (e.g., inclusivity, representation of different groups, cultural appropriateness).
6. **Scope**: The primary purpose and intended scope of the indicator (e.g., overall quality of life assessment, targeted policy evaluation, comparison across jurisdictions).
7. **Weighting**: The methods used for weighting different dimensions and aggregating them into a composite index.
8. **Data**: Data sources used for the indicator (e.g., census statistics, surveys, geographic information)
9. **Unit**: The value range (e.g., 0-100) and unit of the final composite indicator.
10. **Scale**: The geographic or administrative level at which the indicator is applied (e.g., national, regional, city/municipality).
11. **Stakeholder Engagement:** whether stakeholder engagement was part of the development process (e.g., involving community members, indigenous partners, policymakers).

Other information that will be extracted:

1. Definition provided for the indicator
2. Methods for index calculation and data used
3. Organization, department, or research team that developed the indicator

4. Date when the indicator was first introduced/developed
5. Setting (geographical, contextual)
6. Source website or paper

Inclusion Criteria:

1. Must be a comprehensive measure that integrates multiple dimensions of quality of life.
2. Should encompass a range of quality of life (or equivalent concepts) dimensions.
3. Applicable to geographic or administrative levels.
4. Should have been tested or implemented in a pilot study or previous research.
5. The results of the indicator should provide clear and meaningful interpretation.
6. Should be capable of comparison across different regions, populations, or time periods.

Exclusion Criteria:

1. Indicators that are not relevant to quality of life or its dimensions.
2. Indicators that are specific to a particular sub-population or group, unless they can be generalized.
3. Indicators that are outdated and a more recent version is available.

Appendix B. Informant Engagement Plan

Department, Organization	Field of expertise
Health Equity and Determinants of Health, Population & Public Health BC Centre for Disease Control	Expert contact in BC health datasets, analyses, indicators, and application to policy
Vancouver Coastal Health	Expert contact in health data specific to Vancouver Coastal Region and locally available datasets
Greater London Authority Public Health	Expert contact in developing visuals and applying holistic indicators to policy
Research Scholar University of Vienna	Expert at developing and applying YoGL (years of good life) concept in Europe
Social Policy City of Vancouver	Lead for City of Vancouver Accessibility Strategy and expert on how disability is conceptualized in datasets
Social Policy City of Vancouver	Lead for City of Vancouver Equity Framework implementation and expert on ensuring equity perspective in datasets and indicators