City of Seattle Racial and Social Equity Index Users' Guide

KEY INFORMATION AND GUIDANCE

What the Racial and Social Equity (RSE) Index Shows —**The RSE index combines data on race, ethnicity, and related demographics with data on socioeconomic disadvantages and health disadvantages.**

The index is **calculated and mapped at the census tract level to indicate where people of color and other marginalized populations make up relatively large proportions of neighborhood residents.**

Intended Uses—**The RSE Index is a tool to aid in the identification of geographic priorities for City programs, planning efforts, and investments**. The index provides departments with a common foundation of data about neighborhood demographics to help inform and align allocation of resources to advance equity, consistent with the Racial and Social Justice Initiative (RSJI). The City Demographer in the Office of Planning & Community Development (OPCD) created the index in 2017 with involvement of multiple departments.

Composition of the RSE Index—**A map of the RSE Index is provided on page three of this document. The RSE Index is a composite index made up of three equally weighted sub-indices**, as shown below with their component metrics:

- **Race, ELL, and Origins Index**
  - Persons of color
  - English language learners (ELL)*
  - Foreign born*
  (*Weighted by 0.5 in subindex)

- **Socioeconomic Disadvantage Index**
  - Income below 200 percent of poverty
  - Educational attainment less than a bachelor's degree

- **Health Disadvantage Index**
  - Adults w/no leisure-time physical activity
  - Adults with diagnosed diabetes
  - Adults with obesity
  - Adults who report that their mental health is not good
  - Adults with asthma
  - Low life expectancy at birth
  - Adults with one or more disabilities

The RSE Index ranks tracts based on levels of priority and categorizes them into five levels (or "quintiles"), each with near-equal numbers of census tracts. Quintiles are described by "Equity Priority" levels. In applying the index, departments often consider the "Highest" and "Second Highest" to be their equity priority areas.

Data in the index are from the U.S. Census Bureau's American Community Survey (ACS); CDC's PLACES Project; and other sources. Updates produced shortly after decennial census data become available also use that source.

Important Considerations— **The index is best used as a starting point** to be considered along with community input and assets, program information, and other key data relevant to the specific purpose at hand.

In addition to the population characteristics covered in the index; residents' ages would be useful to examine for a program focused on children or older adults. It is often also important to consider factors such as existing population densities and Seattle's growth strategy, which is focused primarily on urban centers and villages (see page 4 of this PDF).It is helpful to keep in mind that there can be much variation within, and not just across, census tracts. Limitations in data available at a neighborhood level precluded incorporating specific metrics to prioritize LGBTQIA+ persons, persons experiencing homelessness, and some other marginalized populations. These populations need to be considered based on program and community-based information.

Maintenance and Updates—OPCD updates the RSE Index roughly once every three years. The most recent update was made in 2023 using the same metrics that were originally included in the index.

How to Access the RSE Index:
- 2023 update:
  - Printable map of RSE Index, 11" x 17" (See page 3 of this PDF)
  - Interactive mapping app, ArcGIS Online feature layer, and SeattleGeoData (all components)
  - Internal GIS Production Server (CITYPLAN.EQUITY_INDEX_DETAILS_23 or Racial and Social Equity Index layer files)
  Note: The 2023 update maps index metrics to census tracts that were updated with the 2020 census.

(continued on next page)

- Previous version (produced in 2019):
  - [Printable map] of RSE Index, 11" x 17" (PDF)
  - [ArcGIS Online] feature layer (all components)
  - Internal GIS Production Server (CITYPLAN.EQUITY_INDEX or Racial and Social Equity Index layer files)

More Details—See the following pages for more on the methods and data used to construct the index, considerations for using the index, and examples of how departments are applying the index to inform their work.

Contact—Email diana.canzoneri@seattle.gov (she/her) or phillip.carnell@seattle.gov (they/them) in OPCD to ask questions, share how you're applying index, or provide input for presenting and guiding use of the index.

Racial and Social Equity Index

The Racial and Social Equity Index, produced by the Office of Planning & Community Development, is a tool to aid in the identification of City planning, program, and investment priorities.

The index is best used as a starting point to be considered with other information relevant to the intended purpose. Read the User Guide at: https://

This index includes:

Race, ELL & Origins
(shares of population who are)
- Persons of color
- English language learners
- Foreign born

Socioeconomic Disadvantage
(shares of population with)
- Income below 200 percent of poverty level
- Educational attainment less than a bachelor's degree

Health Disadvantage
- Adults with no leisure-time physical activity
- Adults with diagnosed diabetes
- Adults with obesity
- Adults who reported mental health not good
- Adults with asthma
- Adults with one or more disability
- Low life expectancy

Legend

- Highest Equity Priority
- Second Highest Equity Priority
- Middle
- Second Lowest
- Lowest

(labels are tract numbers)

Sources:
2017-2021 5-Year American Community Survey Estimates, U.S. Census Bureau;
2020 Decennial Census, U.S. Census Bureau;
modeled estimates published by the Centers for Disease Control' in the PLACES project;
Washington State Department of Health's Washington Tracking Network (WTN);,
and estimates from Public Health – Seattle & King County (based on the Community Health Assessment Tool).

Notes: Language is for population age 5 and older.
Educational attainment is for the population age 25 and over.
Life expectancy is life expectancy at birth.
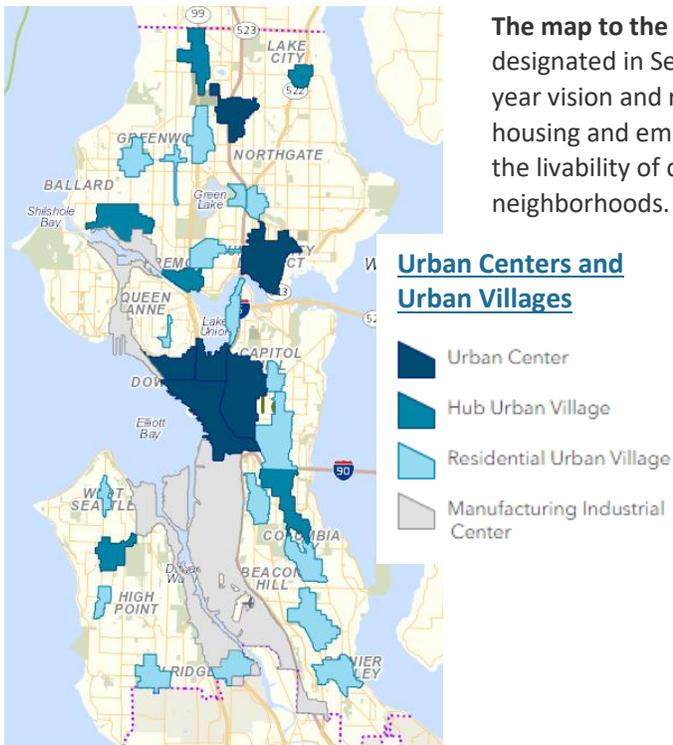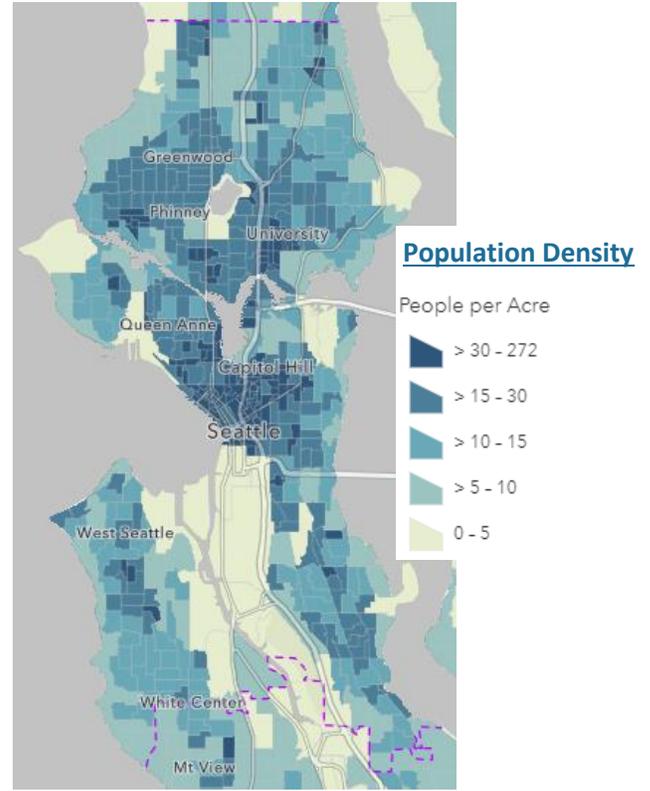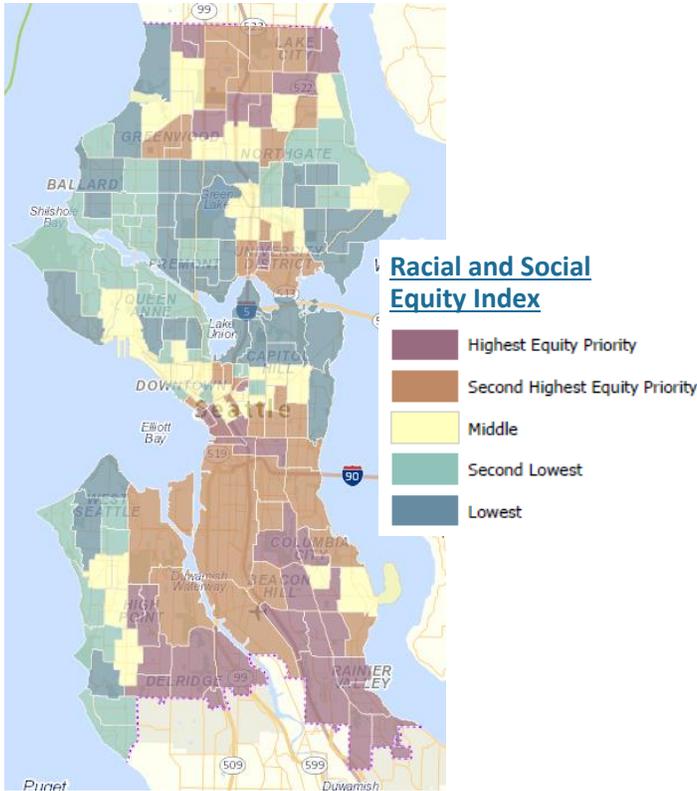Other health measures based on percentages of the adult population.

Map produced by: City of Seattle Office of Planning and Community Development

For more information on the index, including guidance for use, contact Diana Canzoneri, Demographer & Strategic Advisor, diana.canzoneri@seattle.gov

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0   0.5   1   2 Miles
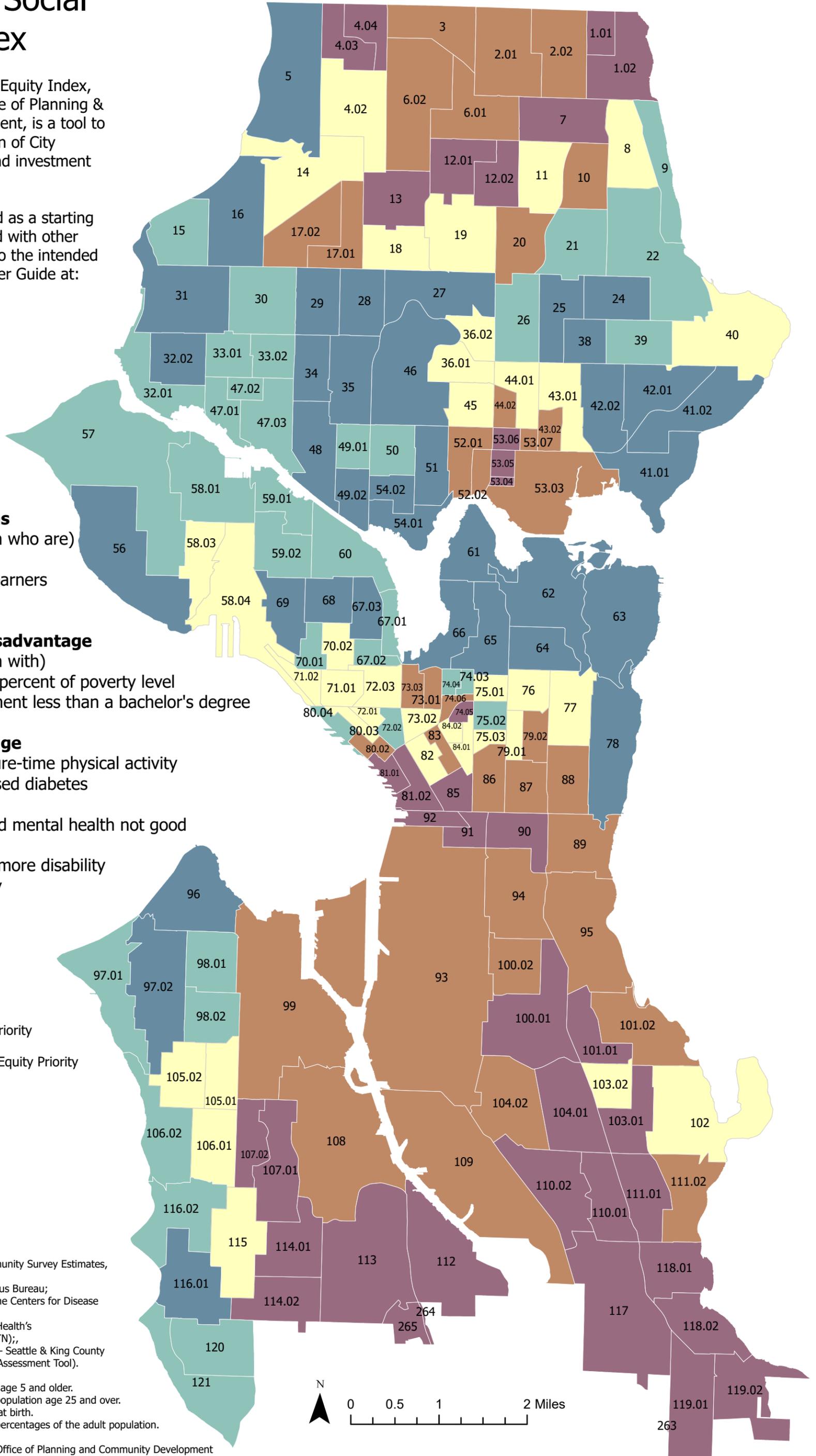
Considering population density and anticipated growth alongside the Racial and Social Equity (RSE) Index: The RSE Index uses data on population characteristics and socioeconomic and health conditions to identify where RSJI priority populations are a relatively large share of the population. The RSE index does *not* show how many people are in an area or how much an area's population is expected to grow.

When evaluating how well the City is serving residents and identifying geographic priorities for allocating City resources, is it is important to consider population density and the City's growth strategy along with the RSE Index.

Racial and Social Equity Index

- Highest Equity Priority
- Second Highest Equity Priority
- Middle
- Second Lowest
- Lowest

Population Density

People per Acre
- > 30 – 272
- > 15 – 30
- > 10 – 15
- > 5 – 10
- 0 – 5

Urban Centers and Urban Villages

- Urban Center
- Hub Urban Village
- Residential Urban Village
- Manufacturing Industrial Center

The map to the left shows the location of urban centers and urban villages designated in Seattle's Comprehensive Plan. The Comprehensive Plan, a 20-year vision and roadmap for Seattle's future, guides the large majority of housing and employment growth to these neighborhoods. The Plan supports the livability of centers and villages by focusing capital investments in these neighborhoods.

The Comprehensive Plan also contains many policies to advance Race and Social Equity, which is one of Plan's four core value.

The City is in the process of updating Seattle's Comprehensive Plan. The updated Plan, "One Seattle," is due in 2024. It will provide the big-picture framework for decisions on how to grow over the next 20 years while supporting neighborhood livability and enhancing equity. As the One Seattle Plan homepage states, "The goal is to make the city more equitable, livable, sustainable, and resilient for today's communities and future residents." Accordingly, City planners are working to improve on the existing Plan by drafting stronger policies to advance equity and exploring new approaches to growth and investment and equity.

DETAILED INFORMATION AND GUIDANCE

The preceding pages provide basic information needed to access and get started using the Racial and Social Equity (RSE) Index.

The following pages provide more details on the inspiration for the index, its intended uses, the considerations involved in developing the index, and the data sources and methods utilized to construct the index. Interspersed with this information, readers will find further notes on things to keep in mind when using the index; we've placed these in text boxes titled "Considerations for using the index."

The final section of the Users' Guide includes links to examples illustrating ways departments are applying the index to help work teams draw inspiration from one another.

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City of Seattle Racial and Social Equity Index Users' Guide

Background, Purpose, and Uses

The City demographer in the Office of Planning & Community Development (OPCD) designed the Racial and Social Equity index (RSE) in 2017 in collaboration with colleagues in several City departments.[1] These departments were seeking a resource combining population-based data and mapping that they, and departments across the City, could use in analyses to advance equity and further the City's Racial and Social Justice Initiative.[2]

The RSE Index addresses this need by providing a common foundation of mapped data to help identify where RSJI priority populations make up a relatively large proportions of neighborhood residents. This is a shared resource that departments can use to inform the design, prioritization, and evaluation of programs, planning initiatives, and investments.   Having this common base keeps departments from having to "reinvent the wheel" and makes it easier to collaborate and align work.

In the years following its development, the RSE Index has been adopted by an increasing number of departments for a variety of purposes. Commonly this has involved using the RSE Index to help identify where new programs, investments, or planning initiatives should focus. Other common uses include overlaying (or underlaying) the index on a map along with locations of capital facilities or program services to identify gaps that need to be filled to ensure that RSE Index priority areas are well-served. Some uses have involved mapping the index along with geospatial data on things that can harm or put populations at risk in order to better understand and reduce disparate impacts.

The final section of the User's Guide links to specific examples illustrating how departments are using the RSE Index. We are gathering more examples and will augment the examples on an ongoing basis. We are planning a companion to the Users' Guide that will profile several uses of the RSE Index in more detail.

> CALL FOR EXAMPLES: HOW IS YOUR TEAM USING THE RSE INDEX?
>
> Contact diana.canzoneri@seattle.gov to share how your team is using the RSE Index to advance equity.

Composition of the RSE Index

The Composite Index

The RSE Index is a composite index of three subindices below, each of which include a small number of carefully chosen population characteristics and conditions. The subindices contributing to the RSE Index are named as follows:

- Race, English Language Learner, and Origins Index
- Socioeconomic Disadvantage Index
- Health Disadvantage Index

Each of the three subindices are given equal weight in contributing to the composite index. This is to provide a well-balanced index and make the index easy to understand and use.

The RSE Index, the component subindices, and the metrics making up the subindices are calculated and mapped at the census tract level.

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[1] Departments involved in the initial development in addition to OPCD included the Mayor's Office, the Office for Civil Rights, the Office of Sustainability & the Environment, Seattle Parks and Recreation, and Seattle Public Utilities.

[2] Consistent with the City's Racial Justice Initiative, the City's Comprehensive Plan, the Equitable Development Implementation Plan lays out the need to use racial and social equity data to inform community development initiatives as well as the City's functional plans, budget priorities, program services, and capital investments.

We acknowledge the path breaking work that multiple departments and work groups were conducting prior to 2017 using geographic patterns to inform efforts to advance equity. Examples include the Equity & Environment Initiative Agenda, Parks and Open Space Plan Gap Analysis, Pedestrian Master Plan, Priority Hire, and Growth & Equity Analysis. We were also inspired by the composite index of health and well-being indicators that King County's Communities of Opportunity partnership developed to inform efforts to improve equity across these domains.

The index draws on a small number of metrics based on readily available data to make the index easy to interpret and maintain over time. We stuck to basic indicators to make the index applicable for a broad range of purposes and enable users to supplement the index with data tailored to their work. A great deal of discussion and research was involved in selecting the metrics, including examining other similar indices created by analysts in local, state, and federal government, as well as indices created by nonprofit and university researchers. That said, the metrics in the RSE Index encompass only some of the important characteristics and conditions relevant for equity-focused planning and evaluation.

Users of the index are advised to interpret and apply the RSE Index judiciously and with consideration of other information relevant to the work for which they are using the index. This can include both quantitative data from sources such as the American Community Survey as well as qualitative data. And, consistent with RSJI principles, this should include attention to the expertise and priorities that community members themselves are voicing.

> CONSIDERATIONS FOR USING THE INDEX
> The RSE index should not be applied in isolation. **Any decisions related to designing City initiatives and allocating investments must attend to the expertise and priorities that underserved communities are voicing.**

Several considerations informed our choice to build the RSE Index at the census tract level. Tracts are the most common neighborhood-level geography used by local governments to analyze data. An array of demographic, socioeconomic, and health data relevant for analyzing equity is available at the tract level.[3] However, there can be much variation within, and not just across, census tracts.[4] Users of the index need to be alert to the fact that data aggregated at the tract level may be masking RSJI priority populations who are a large proportion of residents in only part of a tract.

> CONSIDERATIONS FOR USING THE INDEX
> **There can be a great deal of variation in the demographics, socioeconomics, and health of residents within census tracts.** Data mapped at the tract level can mask these patterns.

Many persons who are among the RSJI priority populations that are a focus of the RSE index live in neighborhoods that have lower concentrations of these populations; it is important to complement place-based programs and investments with those serving RSJI priority populations no matter where they live.

Subindices and Individual Metrics

The three subindices making up the RSE Index are described in detail below. This includes identification of the individual metrics in each of the three subindices along with the source and weighting for each metric within the subindices. Unless otherwise noted, each metric in a subindex is given equal weight within the sub-index. This is in part for ease of understanding, and because of the lack of a strong rationale for differential weighting.

Inclusion of the topics and associated metrics in the RSE Index is based foremost on relevance to racial and social equity and is also based on several practical and technical considerations. The latter considerations include ease of use and understanding, feasibility of updating estimates for continued inclusion in the index, and ready availability of the estimates at the Census tract level. Reliability of the estimates at this level was also an important consideration as estimates need to have sufficient reliability to yield an index that is suitable for informing action.

Most of the metrics contributing to the RSE Index are estimates from sample-based surveys. As such, these estimates carry margins of error. Several metrics in the index are from the Census Bureau's American Community Survey (ACS). To enhance reliability, the Bureau releases ACS estimates for census tracts and other small neighborhood areas only as pooled estimates for five-year periods. Still, these estimates can carry substantial margins of error, especially for small population groups. Most of the health-related indicators used modeled estimates are based on a sample-based

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[3] Data for smaller geographic levels is commonly either not readily available or is less reliable than data at the tract level. (The former is the case for health-related metrics, other than disability, in the index.)

[4] For example, in census tracts that border on shorelines particularly affluent populations commonly live near the shoreline, while less affluent people may reside further from the shore. The reverse is often true with census tracts bordering on highways and major roadways. Zoning regulating housing types varies across and within census tracts and affects who is able to live where.

The numerous census tracts splits that the U.S. Census Bureau made with their 2020 decennial update to census boundaries provides for somewhat more detailed geographic resolution in parts of the city. However, masking of fine-grained geospatial demographic and socioeconomic patterns remains a limitation with tract-level data.

survey conducted by the Centers for Disease Control. We examined margins of error when choosing among candidate metrics for potential inclusion in the index; for several indicators, this meant choosing a metric with better reliability even when the metric might did not signal as deep a disadvantage as an alternative metric.[5]

RACE, ENGLISH LANGUAGE LEARNERS (ELL), AND ORIGINS INDEX

The Race, ELL, and Origins index is composed of race and related characteristics measured by the U.S. Census Bureau.

The first component is race/ethnicity, which is based on the combination of two related questions the Census Bureau asks respondents: one regarding whether the person is of Hispanic/Latino ethnicity and the other regarding the person's race. Updates produced shortly after the decennial census use the decennial census as the source for the persons of color metric[6]; for updates later in the decade, we use the ACS for this this metric. The metrics related to English language proficiency and place of birth are derived from ACS.

- **Percentage of population who are people of color**—Weight: 1.0

   Source: Estimates from the U.S. Census Bureau (i.e., decennial census or ACS depending on timing of RSE update). The RSE Index update produced in 2023 uses 2020 decennial census estimates.

   Note: People of color include persons identifying as a single race other than white alone; persons identifying as multiracial, and persons of any race who are of Hispanic/Latino ethnicity.[7]

- **Percentage of population age five and older who are English language learners**—Weight: 0.5

   Source: ACS estimates from the U.S. Census Bureau. 2021 ACS 5-year estimates are used for the 2023 RSE Index update.

   Notes: The ELL metric refers to the percentage of the population five years of age and older who both speak another language than English at home and who speak English less than "very well."[8]

- **Percentage of population who are foreign born**[9]–Weight: 0.5

   Source: ACS estimates from the U.S. Census Bureau. 2021 ACS 5-year estimates are used for the 2023 RSE Index update.

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[5] For example, for the Socioeconomic Disadvantage Index, we chose to include the share of the population with incomes at or below 200% of poverty rather than the share below 100% of poverty.

[6] Race/ethnicity is the only topic in the RSE Index that is covered in the decennial census as well as the ACS.

[7] Based on these standards, the Census Bureau regards race and Hispanic/Latino ethnicity as separate concepts and asks about these characteristics in two separate questions. Background on how the Census Bureau asked about race and ethnicity in the 2020 Census is here (for race) and here (for Hispanic or Latino origin). (Similar information is here and here for the ACS).

The U.S. Office of Management and Budget (OMB) sets the standards that federal agencies follow in collecting and reporting race and ethnicity data. In January 2023, OMB launched a process to update these standards by publishing an initial set of recommended revisions proposed by an Interagency Technical Working Group.

[8] In the ACS, level of English-speaking ability is identified by survey respondents indicating they speak a language other than English at home.

For the English Language Learners metric, we selected the percentage of the population who speak English less than very well rather than the percentage of households that are linguistically isolated. Choosing a population-based indicator rather than a household indicator for this metric is consistent with the population-based focus of other indicators in the index and enables people in larger households count as much as those in smaller households (While linguistic isolation involves more profound levels of disadvantage, estimates of the prevalence of linguistic isolation have low levels of statistical reliability at neighborhood scales. Choosing a population-based indicator rather than a household indicator for this metric is consistent with the population-based focus of other indicators in the index and enables people in larger households count as much as those in smaller households.)

[9] Foreign-born persons include anyone who was not a U.S. citizen at the time they were born; ACS questionnaires do not ask about immigration status.

In this index, the English language learner[10] and foreign-born population characteristics are each weighted by 0.5, for a combined weight of 1.0. This helps balance the contribution to the index of persons of color born in the U.S. with that of immigrants.

Detailed descriptions for these and other characteristics and conditions covered by the ACS can be found in the ACS Subject Definitions document from the Census Bureau.

SOCIOECONOMIC DISADVANTAGE INDEX

The Socioeconomic Disadvantage Index is comprised of one factor related to income level and one related to level of educational attainment, both from five-year ACS estimates. These are two broad and important indicators of socioeconomic disadvantage with key implications for racial and social equity. Both show substantial disparities by race and ethnicity.

- **Percentage of the population whose income is below 200 percent of poverty level**—Weight: 1.0.

  Source: ACS estimates from the U.S. Census Bureau. 2021 ACS 5-year estimates are used for the 2023 RSE Index update.

  Notes: The Census Bureau identifies poverty status for all people except institutionalized people, people in military group quarters, people in college dormitories, and unrelated individuals under 15 years old. The Bureau uses federal poverty thresholds to derive estimates of individual and family income as a percentage of poverty level. Poverty thresholds are determined on a national basis and do not vary based on local cost of living

- **Percentage of the population age 25 and older with less than a bachelor's degree** —Weight: 1.0

  Source: ACS estimates from the U.S. Census Bureau. 2021 ACS 5-year estimates are used for the 2023 RSE Index update.

Having an income less than 200 percent of the federal poverty threshold is a substantial disadvantage in Seattle and other high-cost cities. Similarly, having less than a college degree is a marked disadvantage in today's economy, especially in Seattle and similar cities where large shares of adult residents have a college degree or higher. We chose these two socioeconomic metrics because they indicate substantial levels of disadvantage while exhibiting greater statistical reliability than metrics available from the ACS that indicate more profound levels of disadvantage (e.g., prevalence of income below 100% of poverty, and lack of high school diploma or equivalent degree).

While comprising key indicators of disadvantage relevant for prioritizing investments, neither the Socioeconomic Disadvantage Index nor the Health Disadvantage Index provide a comprehensive view of these types of disadvantages.

HEALTH DISADVANTAGE INDEX

The Health Disadvantage index is comprised of broad indicators of people's health and well-being, along with a metric indicating disability status. In choosing topics for this sub-index, we included several that are especially sensitive to—and have direct implications for—the way we invest in public facilities and plan for Seattle's built environment.

> CONSIDERATIONS FOR USING THE INDEX
> **The RSE index is best used as a starting point to be considered along with additional data relevant to the specific purpose at hand.**
>
> For example, for programs designed to serve children or adults, other demographic characteristics to consider would include data on residents' ages. For a transportation program, additional factors to consider along with the RSE index could include households' access to a vehicle or modes that people are using to get to work. For analyses informing investments, it is often important to consider the level of displacement risk in a neighborhood and the strategies that can be used to help ensure than new investments do not exacerbate these risks.)
>
> In addition; it is often also important to consider factors such as population density and anticipated growth.

By including health-related factors we incorporate key aspects of people's well-being that are commonly related to, but not entirely captured by, socioeconomic status. Including health-related factors is also a way of factoring in disparate levels and aspects of disadvantage and advantage experienced by persons of different races and ethnicities.

Including health-related factors also helps to counteract the skewing we would otherwise see for some areas where a large share of residents are young adults. Young adults are generally more racially diverse than older populations. Young adults also tend to have lower incomes, including in areas that contain large concentrations of college students with good future earnings prospects. On the other hand, most forms of health challenges and disability are more common among older people. Including indicators related to health disadvantage and disability makes the RSE Index a well-rounded index spanning equity considerations across the age spectrum.[11]

> **CONSIDERATIONS FOR USING THE INDEX**
> While including health disadvantage and disability related factors helps make the index well-rounded and applicable across the life cycle, none of the estimates in the RSE Index are adjusted for age.
>
> **Users should be aware that the ages and demographic profile of tract residents may be contributing to differences seen between tracts.**

The metrics in the Health Disadvantage index are listed below. Additional details on follow this list.

- **Percentage of adults engaging in no leisure-time physical activity**—Weight: 1.0

  Source: modeled estimates from the Centers for Disease Control and Prevention (CDC) PLACES project. The 2023 RSE Index uses estimates from the PLACES 2022 release based on Behavioral Risk Factor Surveillance System (BRFSS) 2020 data.

- **Percentage of adults with diagnosed diabetes**—Weight: 1.0

  Source: modeled estimates from the CDC PLACES project. The 2023 RSE Index uses estimates from the PLACES 2022 release based on BRFSS 2020 data.

- **Percentage of adults with obesity**—Weight: 1.0

  Source: modeled estimates from the CDC PLACES project. The 2023 RSE Index uses estimates from the PLACES 2022 release based on BRFSS 2020 data.

- **Percentage of adults reporting mental health is not good for ≥ 14 days out of month**—Weight: 1.0

  Source: modeled estimates from the CDC PLACES project. The 2023 RSE Index uses estimates from the PLACES 2022 release based on BRFSS 2020 data.

- **Percentage of adults who currently have asthma**—Weight: 1.0

  Source: modeled estimates from the CDC PLACES project. The 2023 RSE Index uses estimates from the PLACES 2022 release based on BRFSS 2020 data.

- **Life expectancy at birth, reverse-scored in the index as Low life expectancy**—Weight: 1.0

  Sources: Washington Department of Health (DOH) Center for Health Statistics; data accessed via the DOH Washington Tracking Network data portal for the time period 2016-2020. (Health Reporting Area estimates calculated by Public Health—Seattle & King County assigned to census tracts with suppressed data.)

  Notes: Life expectancy is the only metric in the RSE Index for which higher values contribute to lower equity priority and disadvantage scores. This is also the only metric in the index that does not refer to the percentage of population with a particular characteristic or condition.

- **Percentage of the noninstitutionalized adult population with one or more types of disability**—Weight: 1.0

  Source: ACS estimates from the U.S. Census Bureau. 2021 ACS 5-year estimates are used for the 2023 RSE Index update.

In selecting the topics for the Health Disadvantage index, we included those with estimates available at the census tract level from one or more of the sources listed above.

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[11] Still, it is important to know that none of the estimates of prevalence contributing to the RSE Index are age-adjusted. When comparing census tracts, users of the index should be aware that demographic characteristics including (but not limited to) age profile of tract residents may be contributing to the differences observed between tracts.

The source for most of the Health Disadvantage Index metrics is PLACES (Population Level Analysis and Community Estimates), a collaborative project of the CDC, CDC Foundation, and the Robert Wood Johnson Foundation. (PLACES is an expansion of the "500 Cities Project.") PLACES estimates the prevalence of population-based health outcomes and risk factors for census tracts and other small areas to help communities identify key health issues facing neighborhoods. These small area estimates are modeled based on data collected by the CDC's Behavioral Risk Factor Surveillance System (BRFSS).[12]

The life expectancy at birth statistics are from the Washington Tracking Network (WTN) data portal. As documented in the WTN data portal, life expectancy at birth is "the number of years a newborn can expect to live if the current age-specific death rates remain constant." Life expectancy statistics rely on death certificate data collected by the Washington DOH and analyzed by DOH's Center for Health Statistics. The 2023 RSE Index update uses the most recent tract-level life expectancy estimates available from DOH at the time; these are from the period 2016 to 2020. As such, the life expectancy estimates in the 2023 update of the RSE Index reflect only a small part of the direct and indirect impact of the COVID-19 pandemic.[13]

The U.S. Census Bureau redraws boundaries of some census tracts with each decennial census as needed to conform to population size criteria. The rapid population growth that Seattle experienced between the 2010 and 2020 censuses necessitated splitting many census tracts. At the time of the 2023 RSE Index update, the estimates from the PLACES project and the life expectancy estimates from the WA state DOH were still being reported according to 2010 census tract boundaries. When compiling index data from these sources we therefore needed to assign the split tracts estimates from their 2010 parent census tracts.

The disability metric in the RSE Index is from the Census Bureau's ACS. The ACS asks respondents about six types of disability that can make it difficult for people to fully participate in activities in or outside one's home.[14] These include hearing difficulty, seeing difficulty, cognitive difficulty, difficulty walking or climbing stairs, difficulty dressing or bathing, and difficulty doing errands such as shopping or visiting a doctor's office.

For health-related metrics other than disability (which, as noted, is available from the ACS), we limited ourselves to topics included in the Community Health Indicators that Public Health—Seattle & King County (PHSKC) reports on regularly for Health Reporting Areas (HRAs). Practical considerations informed this decision. The HRA-level estimates provided in the PHSKC Community Health Indicators can be drawn upon when metrics from other sources are suppressed for specific tracts. Additionally, in case the PLACES project or the Washington Tracking Network discontinue publishing tract-level estimates for the estimates in the RSE index, we reasoned that PHSKC's HRA-level estimates would likely still be available as a source for our index.

Estimates of life expectancy in the WTN are suppressed for some tracts due to issues with reliability of the estimates.[15] We assigned HRA-level estimates from PHSKC (for the same time period) to these tracts. (This was the only metric for which such substitution was necessary for the 2023 update of the RSE Index.) HRAs in Seattle generally

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[12] The PLACES project website includes the PLACES one-page fact sheet, data portal, measure definitions, and more. The modeling methodology is included; in brief, the PLACES methodology involves applying a regression model that uses the CDC's BRFSS data on health conditions and risks and that incorporates demographic and socioeconomic data to generate estimates for each topic. As of the PLACES 2022 release, measures included in the PLACES project are all based on the BRFSS core questions, i.e., questions included on the BRFSS questionnaire for all states on an annual or every other year cadence. (Basic information about BRFSS survey conducted in 2020 is provided in the Behavioral Risk Factor Surveillance System Overview for that year. The Historical Questions Database details all topics in the BRFSS.)

[13] Single-year, state-level life expectancy estimates for Washington show that life expectancy increased most years since 2000 but fell in 2020, wiping out more than 10 years of gains.

[14] In describing the conceptual framework used for measuring disability, the ACS subject definitions note that disabilities are "the product of interactions among individuals' bodies; their physical, emotional, and mental health; and the physical and social environment in which they live, work, or play," with disability existing "where this interaction results in limitations of activities and restrictions to full participation at school, at work, at home, or in the community."

[15] As noted in the WTN data portal, "life expectancy calculations can fluctuate considerably in smaller populations or populations experiencing low or no deaths for the year(s) being calculated." Estimates for life expectancy in the WTN are suppressed for tracts "with a population (for the 5 years combined) of <5000 or a result with a Standard Error >2 or a record of <50 deaths for the time period."

correspond well with groups of Census tracts. This correspondence enables us to interpolate and assign HRA-level estimates to census tracts in circumstances where tract-level estimates are not available.[16]

Dataset Organization

The available RSE Index dataset contains the data necessary to calculate the index. These data are encompassed by the following data types:

- "Population" (fields beginning with "POP") – numerators and denominators used to calculate percentage shares from estimates in the ACS and decennial Census.

- "Shares" (fields beginning with "PCT") – the percentage of population in a tract with the specified characteristic or condition.

- "Life Expectancy" (field beginning with "LIFE") – the life expectancy metric.

- "Percentile" (fields beginning with "PTL") – the tract's percentile for a certain metric when compared to tracts citywide.

In addition, the dataset contains outputs including scores, percentiles and quintiles:

- Index "Score" (fields ending with "SCORE") – the score a tract has for the composite and subindices.

- Index "Percentile" (fields ending with "PERCENTILE") – the tract's composite and subindex percentiles, as determined by individual scores.

- Index "Quintile" (fields ending with "QUINTILE") – the tract's composite and subindex Equity Priority quintiles, as determined by the subindex percentile.

The RSE Composite Index table contains the full dataset. Subindex datasets contain only data necessary to calculate each subindex, and do not contain population numerator and denominator variables.

Calculation of the RSE Index and Component Sub-indices

This section describes steps for compiling the estimates and performing calculations to produce the RSE index. To help make these steps easy for the reader to follow, we provide specific examples of the calculations based on some of the estimates in the 2023 update of the RSE Index.

The first step in compiling the index involves downloading census tract-level estimates for the metrics in each of the three sub-indices. We do this for all census tract entirely or partially contained within Seattle, including the tracts with populated area overlapping Seattle's southern city limits.

For the estimates associated with each metric, we then identify each tract's percentile[17] on that metric relative to the Seattle tracts located entirely within the city.[18] We use the "PERCENTRANK.INC" formula in Microsoft Excel to obtain the percentile. This function identifies the tract's percentile from the 0th percentile to the 100th percentile inclusive of lowest and highest estimates.

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[16] For the 2023 update, we continued to use PHSKC's 2012 HRA vintage with boundaries determined after the 2010 decennial census. PHSKC is currently updating the HRAs informed by 2020 decennial census population data and boundaries.

[17] The construction of the index involves calculating percentiles and dividing the tracts into quintiles based on the percentiles. We decided not to incorporate Z scores in constructing the index for several reasons. Application of Z scores requires that the underlying data are normally distributed, but we were certain that this would hold for all the metrics contributing to the index. We also wanted the construction of the index to be easy for users to understand. This was in part so that users could easily replicate the index and, if they desired, created tailored versions of the index incorporating additional indicators relevant to their work. We did perform a sensitivity analysis on the original index created in 2017 to see if use of Z scores would substantially alter the ranking of tracts in the index; we found very little difference in results.

[18] Only very small portions of census tracts 263, 264 and 265 are located within Seattle. Given this, we did not want these tracts to influence the index scores and percentiles calculated for tracts citywide . All tracts' index scores and percentiles are based on their ranking relative to the tracts located entirely within the city.

For example, consider the share of each tract's population who are people of color, which is one of the metrics in the Race, ELL, and Origins sub-index. In the 2023 RSE Index update, the tract with the lowest estimated percentage is tract 63 where people of color are estimated to comprise about 17.4% of the population, while the tract with the highest percentage is tract 110.02 where people of color are roughly 89.3% of the population. In this case, tract 63 is at the 0th percentile and tract 110.02 is at the 100th percentile.)

Once we have the census tract percentiles for all of the metrics in a sub-index, we calculate each tract's score on that subindex by taking the weighted average of that tract's percentiles for those metrics.

As described above, tract 110.02 at the 100th percentile for the share of tract residents who are people of color. An estimated 36.7% of tract 110.02's population five years of age and older speak a language other than English at home and speak English less than very well, which places this tract at roughly the 99th percentile on the ELL metric. An estimated 49.1% of the tract's population is foreign born, placing the tract at roughly the 98th percentile on that metric.

To obtain tract 110.02's score on the Race, ELL, and Origins subindex, we calculate the weighted average of these percentiles. As mentioned previously for the Race, ELL, and Origins subindex, the people-of-color metric has a weight of 1.0 while the ELL metric and the foreign-born metric are each weighted by half. (This is the only subindex within which metrics have variable weights.)

Tract 110.02's Race, ELL, and Origins sub index score = average of (1 x 1.00), (.5 x .988), and (.5 x .982) = .994

We then identify each tract's percentile for the applicable subindex score.

For example, tract 110.02's score of .994 on the Race, ELL, and Origins sub-index, places it at the 98th percentile.

Once we have the scores and percentiles for each tract on all three subindices, we calculate the tract's score on the composite RSE Index by taking the average of that tract's three subindex percentiles.

Tract 110.02's percentiles are as follows:

- Race, ELL, and Origins Index: 98th percentile

- Socioeconomic Disadvantage Index: 100th percentile

- Health Disadvantage Index: 89th percentile

Averaging these three percentiles provides tract 110.02's composite score on the RSE index score:

Tract 110.02's RSE composite index score = average of .94, 1.00, and .886 = .960

Finally, we calculate each tract's percentile on the RSE composite index and assign quintiles to the tracts based on the percentiles as follows.

Racial and Social Equity Composite Index Quintiles

- Highest Equity Priority: 80th percentile and higher

- Second Highest Equity Priority: 60th percentile up to 80th percentile

- Middle: 40th percentile up to 60th percentile

- Second Lowest: 0th percentile up to 20th percentile

- Lowest: 0th percentile up to 20th percentile

For example, tract 110.02's score of .960 on the RSE composite index, places it at the 99th percentile and the highest equity priority quintile.

Future Enhancements to the RSE Index

OPCD has received feedback from staff in several departments, include those responsible for capital facilities, that greater geographic detail than tract-level would be helpful for some of the purposes for which they use the RSE Index. OPCD will be developing a version of the index that incorporates data from the decennial census and ACS at the block group level.[19] We will be producing this as an experimental data product later in 2023 and will work with data users to evaluate issues and tradeoffs associated with using the block group level version of the index. One of these tradeoffs is that the greater geographic resolution gained at the block group level comes with the downside of reduced reliability.

We are also aware that the service areas of Seattle City Light and Seattle Public Utilities both extend beyond Seattle City limits. OPCD has received requests to extend the RSE Index to cover these departments' entire service areas and we are hoping to accommodate these requests.

About the RSE Index Team

Long-range planning staff in OPCD coordinate and maintain the RSE Index.

- Diana Canzoneri, City Demographer and Strategic Advisor, designed the index with advice and collaboration of colleagues in multiple departments.

- Phillip Carnell, who joined OPCD in 2022 as our Planning & Equity Data Analyst, coordinates ongoing updates of the index, as well as enhancements to the mapping app and index feature layers.

- Oeuyown Kim, who worked with OPCD as graduate student intern in 2021, designed and documented the process for automating large parts of the work involved in updating the RSE Index. This included coding in R, using RStudio, to run APIs to download data and populate a macro-enabled Excel spreadsheet with estimates needed to calculate the index metrics.

- Jennifer Pettyjohn, Senior Planner and GIS Analyst, produced the original RSE Index GIS layers and mapping app on ArcGIS online, and administers and troubleshoots GIS data layers that OPCD has published on ArcGIS Online and made available on City servers.

Diana (she/her) *diana.canzoneri@seattle.gov* ***and Phillip (they/them)*** *phillip.carnell@seattle.gov* ***are the main contacts for the RSE index.*** We are available to answer questions on the design of the index, discuss potential enhancements to the index and associated tools, and provide advice on incorporating the RSE Index into analyses. Phillip can also help users with technical questions related to the GIS data layers and accessing the index.

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[19] More specifically, this version of the index will include block-group level data for the topics in the index that come from the decennial census and ACS. Sources used for other topics in the index do not generally provide data below the tract level; for these topics, block groups will be assigned the values for the tracts that contain them.

Examples: How Departments Are Using The RSE Index

Following is a list with links to reports, webpages, dashboards, and more illustrating how departments are using the index. We've divided these into two sets of examples—those involving monitoring, evaluation, and reporting, and those involving focusing of programs, plans, and investments.

As noted earlier in this User's Guide, OPCD will be updating these examples periodically. We are also planning a companion to the Users' Guide that will profile several uses of the RSE Index in more detail.

Please contact diana.canzoneri@seattle.gov to share additional examples. We would love to feature how you have used the index to help others draw information and ideas from your work.

Monitoring, evaluation, and reporting

- **Office of Planning & Community Development (OPCD)**: Monitoring how RSE priority areas are doing on **Equitable Development Community Indicators** of **housing**, **livability**, **transportation**, and **economic wellbeing**.

- **City Budget Office (CBO)**: Evaluating how well **Seattle Rescue Plan** programs funded w/federal $s are reaching communities in high priority areas of the city.

- **Office of Sustainability and the Environment (OSE):** OSE's **Climate Portal** visualizes indicators of climate-related emissions at the neighborhood level; the dashboards overlay these indicators on maps with the RSE Index to help assess progress towards the One Seattle Climate Justice Agenda.

- **Seattle Department of Transportation (SDOT):** **Title VI Environmental Justice Accomplishment Reporting** using RSE Index to show how SDOT is engaging EJ communities.

- **Seattle Public Library (SPL)**: **Analysis informing policy to eliminate fines**

- **Seattle Public Utilities (SPU):** Evaluating reach of **Adopt-A-Street** volunteer program

The index is commonly used for focusing programs, plans, and investments:

Focusing programs, plans, and investments

- **Seattle Parks & Recreation (SPR):**

    - **AMWO System Equity Project** mapping app to inform allocation of maintenance hours and prioritize service in historically disadvantaged areas (featured in NRPA online learning resources)

    - Prioritizing where to focus:

        - **Rec'N the Streets** programming

        - **Training on outdoor learning** for afterschool program leaders

- **Department of Neighborhoods (DON)** and **Seattle Department of Transportation:** Targeting solicitation and selection of **Neighborhood Street Fund Program** project ideas

- **Office of Sustainability and the Environment:** Prioritizing **Energy Benchmarking technical support** to under-resourced neighborhoods

- **Seattle Public Utilities:** Integrating equity considerations into risk assessments and planning for a variety of **Drainage and Wastewater** systems challenges. Includes use in SPU's **Shape Our Water Plan**

- **OPCD, SPR, DON, OSE, SDOT and SPU:** Identifying priority areas for new public space by overlaying a comprehensive public space map with the RSE Index in **Outside Citywide**

- **Seattle Department of Transportation:** Helping prioritize **Vision Zero** efforts based on disproportionately high fatal and serious pedestrian crash rates in RSE priority areas

- **COVID-19 Response, Reopening, and Recovery**

    - **Seattle Department of Transportation:**

        - Applying the RSE Index as a one of several criteria for prioritizing levy-funded projects in the **Move Seattle COVID-19 Impact Assessment**

        - **Focusing efforts to help communities with reopening and recovery** to combat the disproportionate impacts of the pandemic on communities of color: COVID-19 case rates (50%), Race and Social Equity Index (25%), Displacement Risk Index (25%)

    - **Office of Economic Development:** RSE index used—along w/data on displacement risk, COVID-19 cases rates, COVID case rates, and business impacts—to allocate **Neighborhood Economic Recovery Fund** grants.