Community Explorer Mapping Tool User Guide



A resource of the Equitable Engagement Toolkit for local governmental agencies and planners in Oregon.

Primary designed functions

This online data tool was designed with small local governments in mind, who may not have dedicated GIS capacity to conduct detailed demographic analysis. The Community Explorer is designed to visualize the overall distribution of underserved communities as defined by Statewide Administrative Rules, Division 12. However, the Community Explorer expands upon these groups to give a well-rounded and inclusive set of variables (see next page). There are layers of hex (50-acre hexagon) level and aggregate level information up to a state-wide summary of 35 demographic variables.

In addition to rich, layered information at different scales, the tool is designed to meet multiple use cases and planning contexts by allowing filtering by city, county, or selection of a custom geographic area. Secondary filters use number selectors, with a threshold provided for your area of interest.

Finally, the Community Explorer allows for downloading tables for comparison of state, city, and area of interest across each data theme. The equitable engagement toolkit also comes with an accompanying excel template with built-in formulas and conditional formatting for easy comparisons.

EXPLORE

Visualize the overall distribution of underserved communities

Pop-up query the composition of individual units

FOCUS

Primary filter: geography (city, county, or user-drawn area of interest)

Secondary filters: variables of interest (customize based on thresholds within city using one or multiple indicator variables)

REPORT

Export tables

Produce charts and infographics

Variable list

RACE & ANCESTRY

People of Color^{a*} (includes all except non-Hispanic White)

Black or African Americana*

American Indian/Alaskan Nativea*

Hispanic/Latina/o/xa*

Asiana*

Hawaiian/Pacific Islandera*

People of Slavic/Russian ancestry^a

People of Middle Eastern/North African ancestry^a

Sub Saharan African ancestry^a

Caribbean ancestry^a

SOCIAL & ECONOMIC

Low income community members^a ≤ 2x the federal poverty level

People with no college education^a

Households without vehicles^a

People in low food access areas^b

Cost burdened homeowners^a
Low income (<\$50k) + ≥30% of income
to housing

Cost burdened renters^a
Low income (<\$50k), ≥30% of income
to housing

People without health insurance^a

People that are first generation immigrants^a Naturalized citizens & non-citizens

Outdoor workers in workforce^a

HEALTH & ABILITY

People with hearing disability^a

People with vision disability^a

People with cognitive disability^a

People with ambulatory disability^a

People who require electricity dependent durable medical and assistive equipment^c

People with coronary heart diseased

People with asthmad

People with poor mental health status^d Adults with mental health concerns >14 days out of the last 30 days

HOUSEHOLDS & FAMILIES

Households with same-sex couples^a

Households with limited English proficiency^a

Single parents^a

Youth^a Under 18 years old

Elders^a Over 65 years old

People living alone^a

People in rural areas a,e

^{*}Alone or in combination with any other race/ethnicity

^a U.S. Census Bureau, American Communities Survey 5-year estimates, 2022

^b U.S. Department of Agriculture, Food Access Research Atlas, 2021

^c U.S. Department of Health & Human Services, emPower Map, 2024

d U.S. Centers for Disease Control PLACES: Local Data for Better Health, 2021

^e U.S. Census Bureau, Decennial Census, 2020 See Data Catalog for more details.

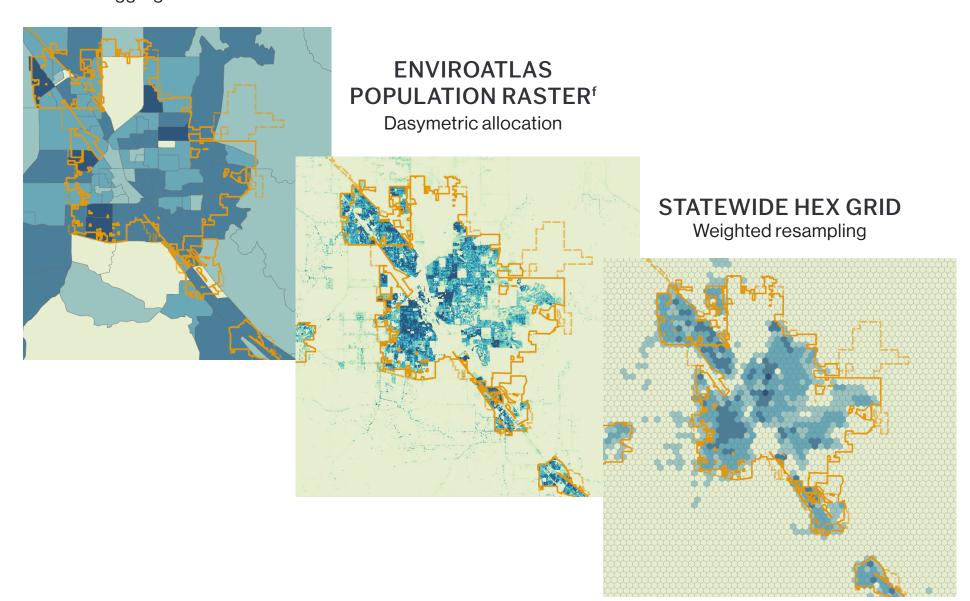
Methods

The Community Explorer is uniquely helpful for planning purposes because it provides estimates at 50-acre hex scale for the entire state of Oregon. This resamples the data from US Census block groups and census tracts and provides a resolution frequently requested by local planners.

This method leverages the fact that we know where people do not live at all. We also know that some areas based on land use are more population dense than others. By eliminating where people don't live, and then predicting that areas of greater density have more people, we can "up-sample" generalized predictions within a given area. This technique is generally called "Dasymetric Mapping," or "Dasymetric Allocation." We used the EPA's EnviroAtlas dasymetric allocation of the 2020 Decennial Census, starting with a 30 meter resolution (raster) estimate of where the total population is distributed across Oregon.

The EPA EnviroAtlas product was used to create weights that then could be used to make estimates of the 2022 population present in a 50-acre hex using American Communities Survey (ACS) 5 year estimates for 2022a. Estimates for each variable of interest in 2022 (for example persons with Low Incomes) were allocated to hexes using a crosswalk between block groups (and other enumeration geometries such as census tracts) and hexes developed from the 30-meter raster. To do this the 30 meter raster was summed to block groups, census tracts, and hexes. Weights that represent the contribution of each block group to each hex were then created and checked to ensure that all hexes sum back up to their original block groups, and that hexes are correctly composed of their contributing block groups.

US CENSUS^e
Aggregated count



- ^a U.S. Census Bureau, American Communities Survey 5-year estimates, 2022
- ^e U.S. Census Bureau, Decennial Census, 2020
- ^f EPA EnviroAtlas U.S. Environmental Protection Agency, EnviroAtlas Dasymetric Population Allocation, 2020

See Data Catalog for more details.

Dashboard home

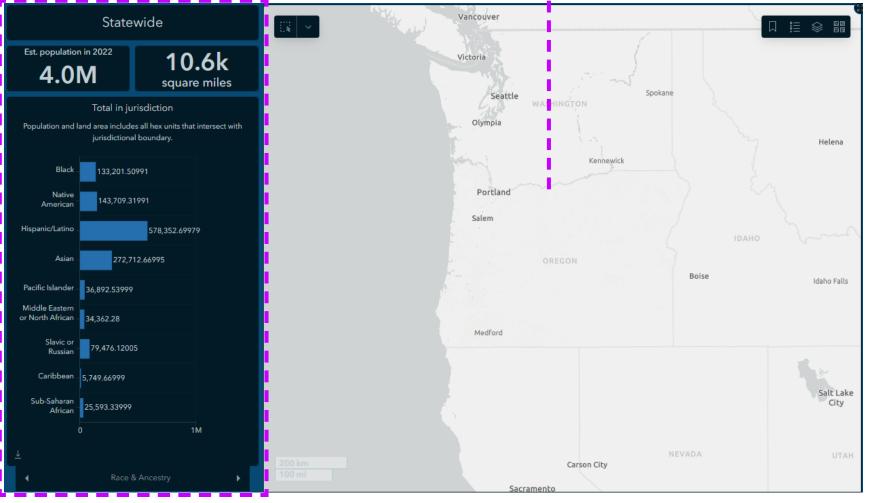


The Community Explorer opens to a splash page with general information

Collapsible sidebar with basic how-to information

Map defaults to state-wide extent

Indicators start and charts default to statewide sums.



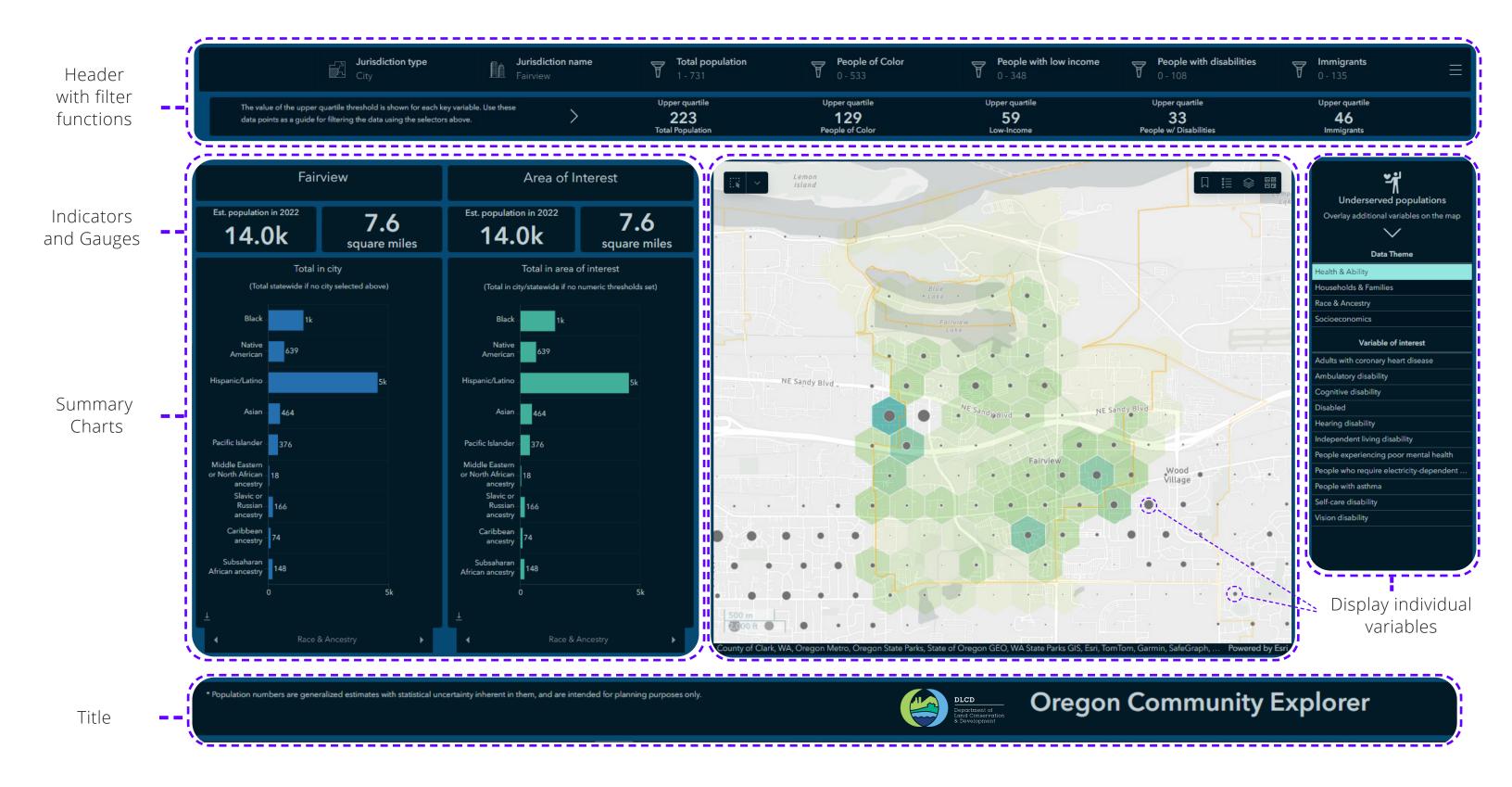
Getting Started 1. Select a city from the dropdown menu at the upper left. This will zoom to the city, filter the hexagon grid showing total population on the map, and update the population information and chart to the far left. The charts are stacked with four different data themes that you can click through. 2. Define an area of interest within your city. Use the number sliders in the tool's header area to filter your area by one or all of the key variables. These actions will limit the hexagon features shown on the map, and update the information under the "Area of Interest" portion of the tool.

 Alternatively, you can further filter your area of interest by making direct selections on the map using the marquee and lasso tools.

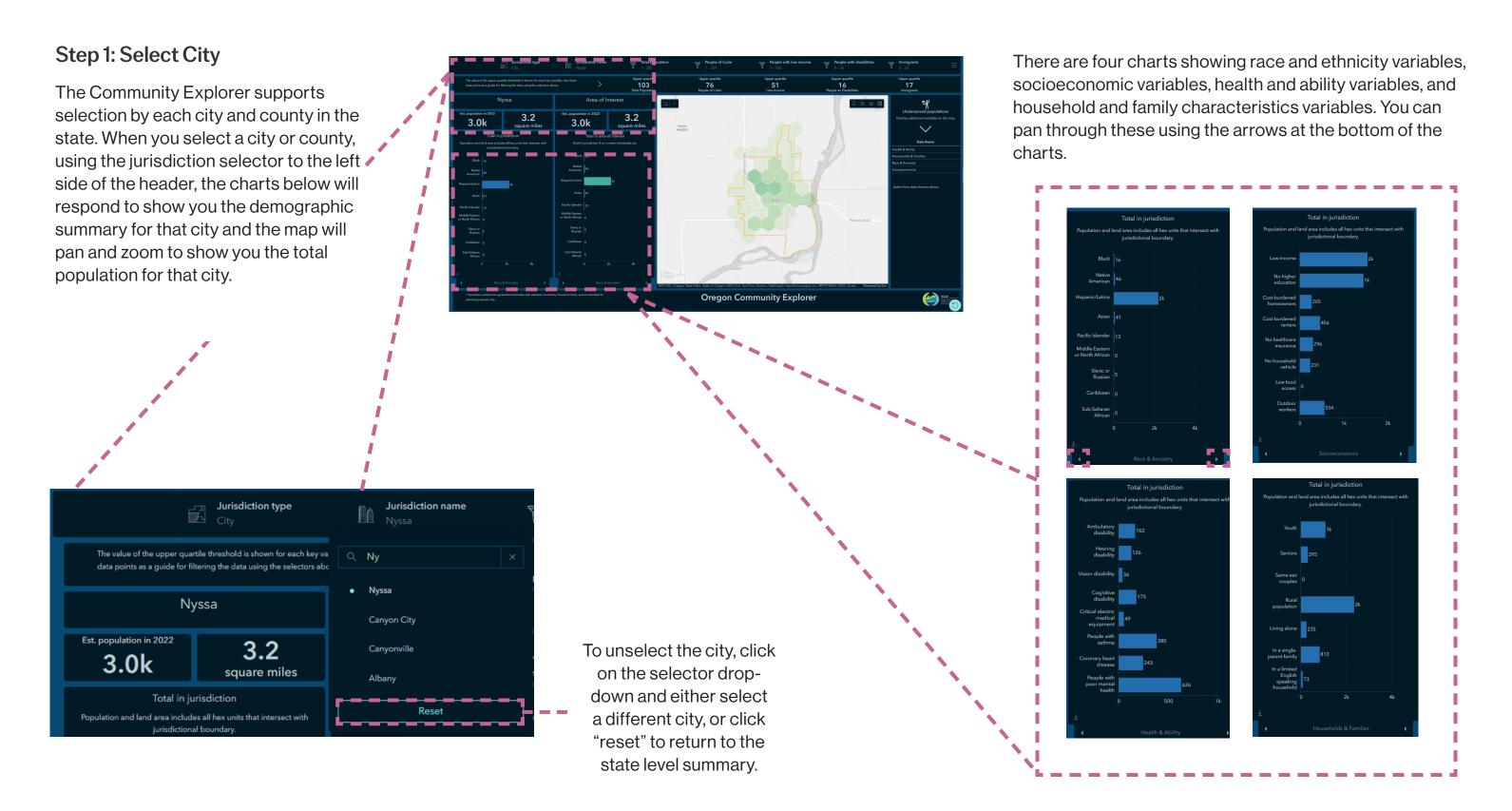
- 4. To visualize the distribution of other variables besides total population, select a "Data theme" and "Variable of interest" to the right of the map. These are filtered by city, but not by the number selectors.
- Export simple summary tables of the city as a whole and your area of interest by clicking the download button in the bottom left corner of each chart.

To do a more general investigation, simply skip step one above. You can zoom and pan the map directly, or zoom to each county using the map bookmarks.

Dashboard anatomy



Use Case 1: Explore your City

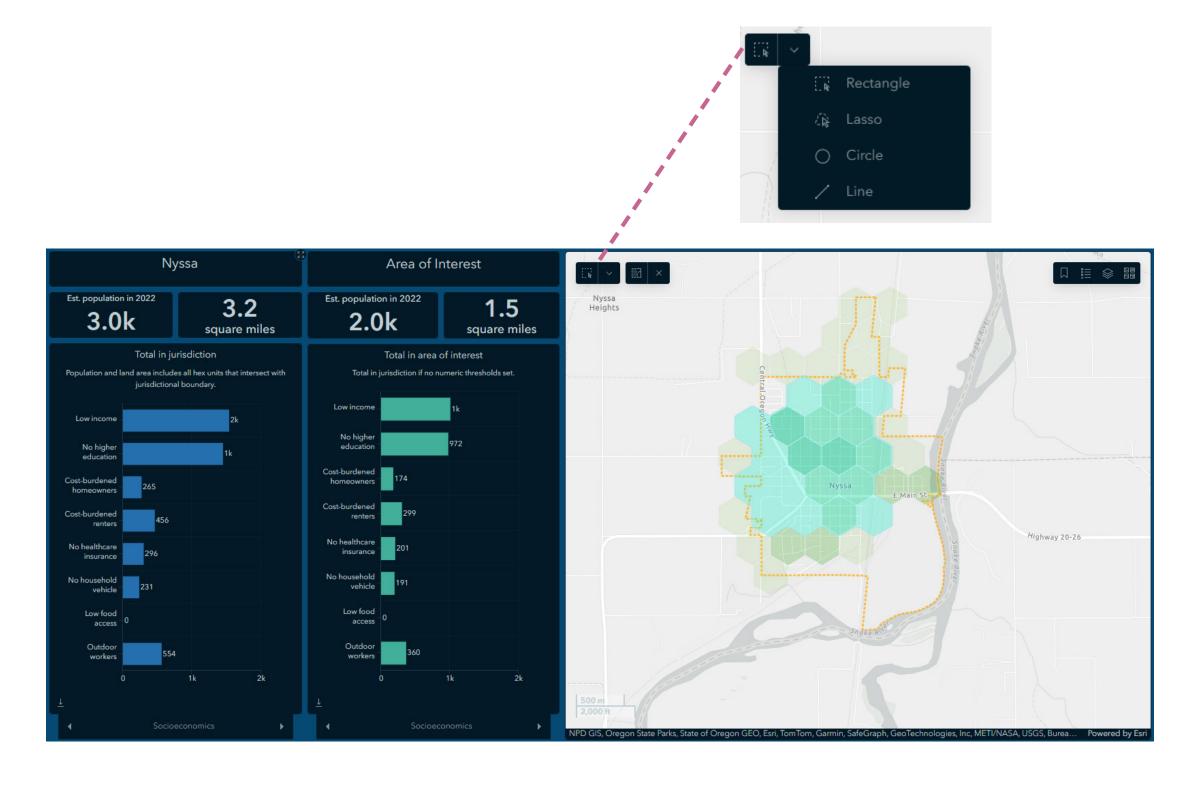


Use Case 1: Explore your City

Step 2: Select a Focal Area

The map's selector features available in the top left corner of the map. They give you a few options to select a custom area, including rectangle, lasso, circle, and line. Click the drop-down to select your preferred selection tool, then interact with the map to select a focus area.

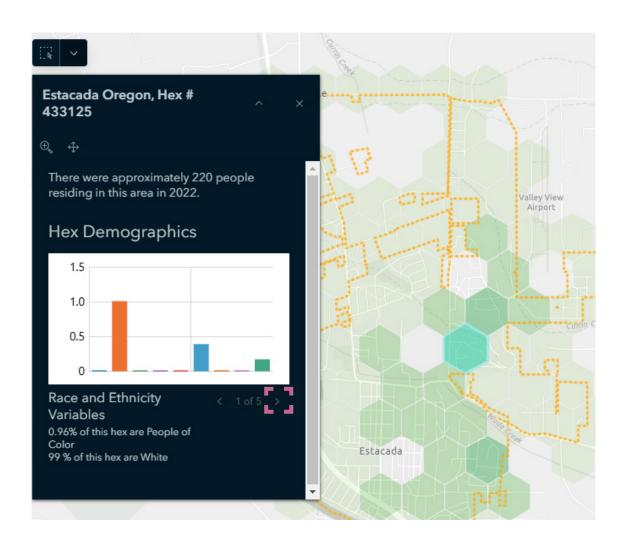
There are two sets of charts on the left side of the dashboard. When you make a selection on the map, it changes the set of charts on the right side to help compare your selection to the city as a whole.



Use Case 1: Explore your City

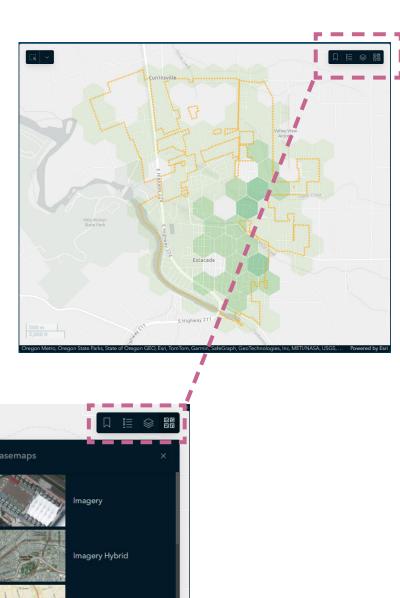
Step 3: Investigate Specific Hexes

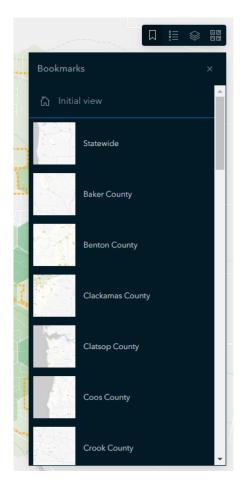
When you click on a specific hex, it will pop-up similar charts showing the percent demographic breakdown of each hex. Similar to the city and area of interest summaries, the hex level summary has four charts summarizing the four demographic themes that can be panned through using the arrow on the bottom.

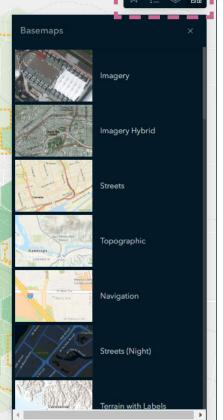


Step 4: Other Features to Explore

The map has a few features to help you navigate on the top right including bookmarks to help you navigate to a specific county, layer control, and different options for base maps.





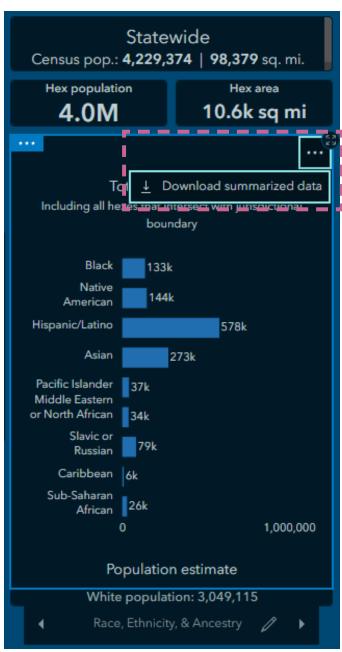


Use Case 2: Compare Your City/Planning Area to the State

You can download tables with the information shown on the demographic summary charts using the download button on the bottom left of each Summary Chart. This is useful if you would like to compare the diversity of your area of interest with that of your chosen city or to the state, or create your own figures. The data downloads as a .csv file.

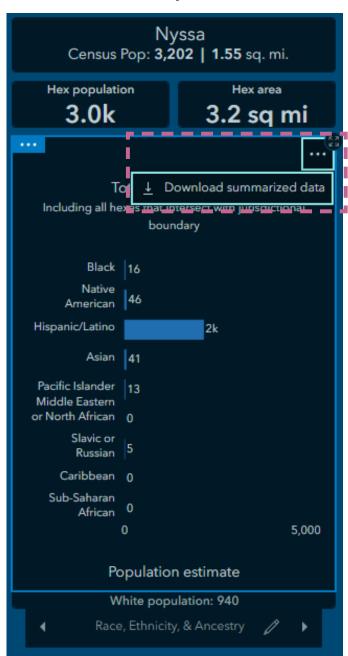
Step 1: Download Tables at the statewide level

To get statewide data, export data from charts before specifying a jurisdiction.



Step 2: Download tables for your planning area

Refer to the previous section for instructions on how to do this. Download tables for your area of interest.



This workflow can be followed to compare a focal AOI with the jurisdiction in which it is found.

To do so, first select the city or county and then define a focal AOI as directed in other steps, and then download the summary tables.

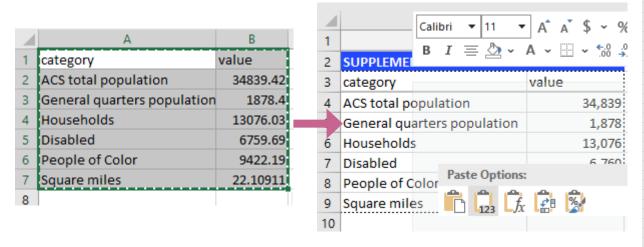
Use Case 2: Compare Your City/Planning Area to the State

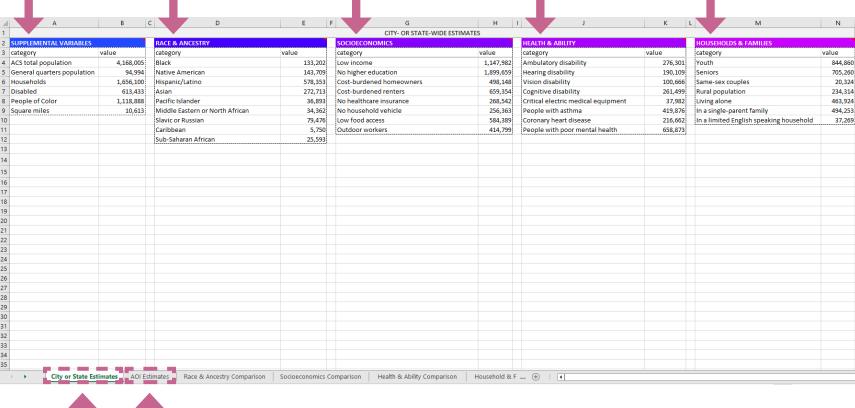
Use the provided Excel template to compare the counts in the downloaded data.

Step 3: Paste in values from each export table

The first two worksheets house the variable estimates. Copy and paste these values from the map tool export .csv files (they should already be in the correct order).

Do this for each variable theme (Supplemental, Race & Ancestry, Socioeconomics, Health & Ability, Households & Families)





And each scale of comparison (City/State, AOI)

Use Case 2: Compare Your City/Planning Area to the State

Use the provided Excel template to compare the counts in the downloaded data.

Step 4: Compare Proportion, Density, and Percent of Population

The four comparison worksheets are populated with formulas based on the estimate data.

Each tab (Race & Ancestry, Socioeconomics, Health & Ability, Households & Families) shows the proportion of the state-wide (or city-wide, if comparing city to focal area) population represented in your city or focal area, the population density (people per square mile) of each variable in the state vs. the city/ focal area, and the % of total population in the state vs. the city/ focal area.

When the difference is more than 10 people (in density) or 1% (in percentages), it is flagged with a red or green arrow indicating a positive or negative difference.

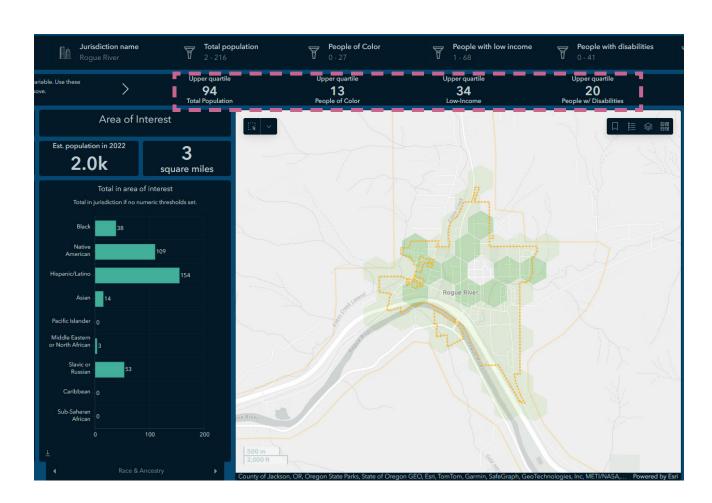
\mathcal{A}	A	В	С	D	E	F	G	Н	1	J		K
1	Variable		Proportion of city or state pop. represented in		Population Density (people per square mile)			% of popu	oulation (variable over total)			
2			AOI		City/State	AOI	Difference		City/State	AOI	Diffe	erence
3	Black		0.5%		12.6	28.5	16.0		3.2%	1.8%	▼	-1.4%
4	Native American		1.3%		13.5	82.1	68.5		3.4%	5.2%		1.8%
5	Hispanic/Latino		1.1%		54.5	280.5	226.0		13.9%	17.8%		3.9%
6	Asian		0.3%		25.7	41.1	15.4		6.5%	2.6%	_	-3.9%
7	Pacific Islander		0.7%		3.5	11.3	7.8		0.9%	0.7%		-0.2%
8	Middle Eastern or North African ancestry		0.4%		3.2	6.0	2.8		0.8%	0.4%		-0.4%
9	Slavic or Russian ancestry		0.5%		7.5	18.5	11.0		1.9%	1.2%		-0.7%
10	Caribbean ancestry		0.0%		0.5	0.0	-0.5		0.1%	0.0%		-0.1%
11	Subsaharan African ancestry		0.8%		2.4	8.8	6.4		0.6%	0.6%		-0.1%

*Focal area and area of interest (AOI) are equivalent

Use Case 3: Set Focal Areas Based on Data Thresholds

Step 1: Select city or pan to area and select on map

As you select a city, the indicators under the top header labeled "Upper Quartile" update to show the count for each variable for which 25% of the city's hexes are above and 75% are below. These counts provide a rational threshold, which can be useful for identifying focal areas for engagement. As you select thresholds using the number selectors above, these indicators showing the upper quartile do not change, but stay at the city level.



Step 2: Choose which indicators you would like to use

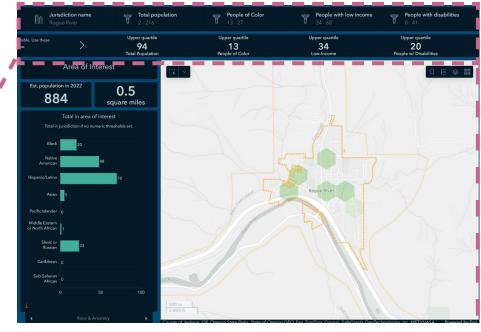
Depending on your project, you may want to use some or all of the indicators to help select focal areas within your area of interest. The options are total population, number of people of color, number of low-income people, number of people with disabilities, and number of immigrants.

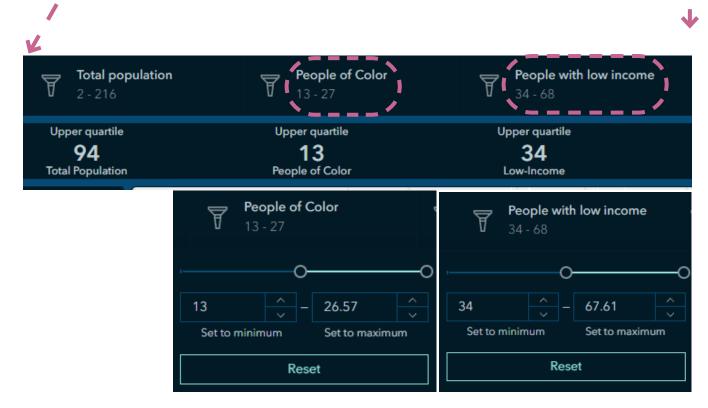


Use Case 3: Set Focal Areas Based on Data Thresholds

Step 3: Use the Number Selector to include hexes that fall within that value

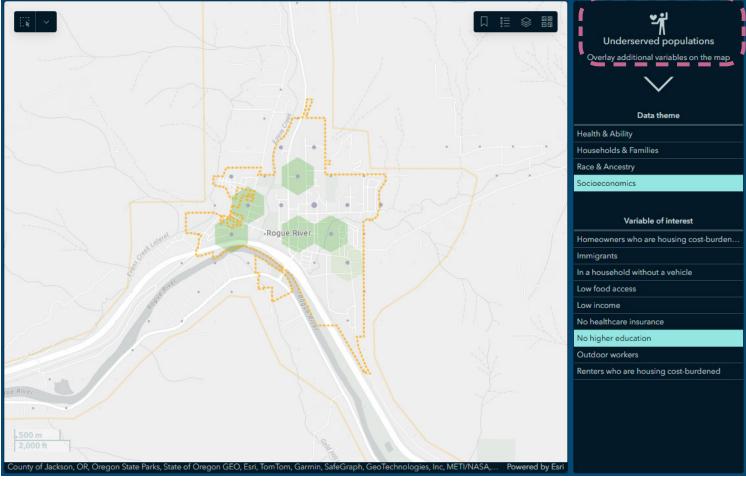
The number selectors above the upper quartile indicators represent the range of values within the city. These ranges update when you select a city, or an area on the map. If you set the number selector to the upper quartile value, you are selecting hexes that are the top 25% of the distribution of that variable on the map and summary charts. You can stack selectors to create some intersectional focal areas.





Step 4: Compare distribution of variables of interest to your focal area

The Community Explorer by default displays a choropleth* map of the total population along a yellow- green- blue color ramp. However, you can overlay the distribution of any of the variables on top of this base. To do this, go to the "Underserved populations," section on the right and select a data theme from the list. The variables within that data theme will appear below. Clicking on a variable will display proportional circles for each hex, sized according to the variable's count, allowing you to compare your area of interest with its surroundings. The circles are scaled relative to the maximum value within the data theme in the state. This tool helps you to investigate the distribution of each variable, however, for comparing counts across variables, we recommend using the charts and data downloads referenced earlier in this guide rather than this overlay tool.



*A choropleth map is thematic map where areas are shaded or colored in proportion to a quantitative variable such as population, in this case total population

Tips

Tip #1: Performance in rendering

If you have a slow internet connection, or are mapping a large area and experience slow rendering, refresh the page, then go into layer options and turn off layers "Household and family variables", "Health and Ability variables", "Race and Ancestry Variables", and "Socioeconomic variables." These feed to the underserved population overlay to the right of the dashboard, but are not needed for the main function of the dashboard. Only one needs to be on at a time to display that specific data theme. Turn these only selectively when you want to display one of these data theme overlays.

Tip #2: Add to your spatial selection on the map

After you select your first selection, click again on the selector (rectangle, lasso, circle, or line), then hold 'Shift' while selecting on the map to add to your previous selection.

Tip #3: Make a dashboard element bigger

You can full screen the map, or any of the charts or indicators using the expand button that appears when you hover over the top left corner of the element.

Tip # 4: Unselect underserved population overlay

If you want to reset the overlay (to show no overlay) re-click the variable you previously selected to unselect it.

Tip # 5: Reset All

After you make any adjustments to the map, there is a reverse arrow that appears in the bottom, right corner of the map. This arrow resets any map, category, or number selectors and returns to the default home page.

Tip # 6: Shift/Click/Drag to Zoom

You can zoom into a specific area of the map by holding "Shift," then clicking and dragging to outline a rectangle area you would like to zoom into.

Tip #7: Margins of Error

The American Communities Survey (ACS) and PLACES small area estimations have uncertainty associated with because these surveys are based on a sample of the total population. Margins of error (MOE) are communicated as a range of values that are likely to be the true value within a certain confidence interval. Low population areas generally have higher margins of error because there are fewer survey responses in these areas. For this project, margins of error were minimized by using ACS 5 year wrap up, and by aggregating estimates of total population from a 30-meter raster to a 50-acre hexagon. When areas where specific population estimates are low, it is important to be cautious with these estimates, since the margins of error can be higher than the estimated counts.

Resources

EJ EnviroAtlas Dasymetric Toolbox

https://www.epa.gov/enviroatlas/dasymetric-toolbox

For more information on dasymetric mapping and documentation on the 2020 dasymetric allocation of the decennial census.

Census Reporter

https://censusreporter.org/

To easily look up information about any variable or topic.

Margins of Error for the ACS

https://www.census.gov/content/dam/Census/library/publications/2018/acs/acs_general_handbook_2018_ch07.pdf

PLACES FAOs

https://www.cdc.gov/places/faqs/index.html

See Data Catalog for details on sources.

Theme	Variable	Source Agency	Source Name	Source Table Identifier	Year	Enumeration geometry	Universe
General or Intermediate	Family Households	US Census Bureau	American Community Survey ^a	B11016	2022	Block group	Household
General or Intermediate	Family Population	US Census Bureau	American Community Survey ^a	B09019	2022	Block group	Person
General or Intermediate	Group Quarters Pop	US Census Bureau	American Community Survey ^a	B09019	2022	Block group	Person
General or Intermediate	Household Pop	US Census Bureau	American Community Survey ^a	B09019	2022	Block group	Person
General or Intermediate	Households	US Census Bureau	American Community Survey ^a	B11016	2022	Block group	Household
General or Intermediate	Total Population	US Census Bureau	American Community Survey ^a	B03002	2022	Block group	Person
Health & Ability	Coronary heart disease among adults aged >=18 years	US Centers for Disease Control	PLACES: Local Data for Better Health ^d	PLACES data release	2021	Census tract (2010)	Person >=18
Health & Ability	Disability status	US Census Bureau	American Community Survey ^a	B18101	2022	Census tract	Person
Health & Ability	Disability status (ambulatory difficulty)	US Census Bureau	American Community Survey ^a	B18105	2022	Census tract	Person
Health & Ability	Disability status (cognitive difficulty)	US Census Bureau	American Community Survey ^a	B18104	2022	Census tract	Person
Health & Ability	Disability status (hearing difficulty)	US Census Bureau	American Community Survey ^a	B18102	2022	Census tract	Person
Health & Ability	Disability status (independent living difficulty)	US Census Bureau	American Community Survey ^a	B18107	2022	Census tract	Person
Health & Ability	Disability status (self-care difficulty)	US Census Bureau	American Community Survey ^a	B18106	2022	Census tract	Person
Health & Ability	Disability status (vision difficulty)	US Census Bureau	American Community Survey ^a	B18103	2022	Census tract	Person

Theme	Variable	Source Agency	Source Name	Source Table Identifier	Year	Enumeration geometry	Universe
Health & Ability	People who require electricity dependent durable medical and assistive equipment	US Department of Health & Human Services	emPower Map ^c	zipcodes-data- power-dependent- devices-dme	2024	Zip Code	Person
Health & Ability	People with asthma	US Centers for Disease Control	PLACES: Local Data for Better Healthd	PLACES data release	2021	Census tract (2010)	Person >=18
Health & Ability	People with poor mental health	US Centers for Disease Control	PLACES: Local Data for Better Health ^d	PLACES data release	2021	Census tract (2010)	Person >=18
Health & Ability	People without health insurance coverage	US Census Bureau	American Community Survey ^a	B27010	2022	Block group	Person
Households & Families	Households with limited English proficiency	US Census Bureau	American Community Survey ^a	C16002	2022	Block group	Household
Households & Families	People in rural areas	US Census Bureau	American Community Survey ^a and Decennial Census ^e	UAC20	2022	Block	Person
Households & Families	People living alone	US Census Bureau	American Community Survey ^a	B09021	2022	Block group	Person >=18
Households & Families	Same-sex couples	US Census Bureau	American Community Surveya	B09019	2022	Block group	Person
Households & Families	Seniors (ages 65+)	US Census Bureau	American Community Survey ^a	B01001	2022	Block group	Person
Households & Families	Single parents	US Census Bureau	American Community Surveya	B11003	2022	Block group	Family
Households & Families	Youth <18	US Census Bureau	American Community Surveya	B01001	2022	Block group	Person
Race, Ancestry, & Immigration	American Indian/Alaska Native (in combination with any other race/ethnicity)	US Census Bureau	American Community Survey ^a	B02010	2022	Block group	Person

Theme	Variable	Source Agency	Source Name	Source Table Identifier	Year	Enumeration geometry	Universe
Race, Ancestry, & Immigration	Asian (in combination with any other race/ethnicity)	US Census Bureau	American Community Survey ^a	B02011	2022	Block group	Person
Race, Ancestry, & Immigration	Black or African American (in combination with any other race/ethnicity)	US Census Bureau	American Community Survey ^a	B02009	2022	Block group	Person
Race, Ancestry, & Immigration	Hispanic/Latina/o/x (in combination with any other race/ethnicity)	US Census Bureau	American Community Survey ^a	B03002	2022	Block group	Person
Race, Ancestry, & Immigration	Immigrants, including undocumented immigrants	US Census Bureau	American Community Survey ^a	B05001	2022	Census tract	Person
Race, Ancestry, & Immigration	Middle Eastern/North African (in combination with any other race/ethnicity)	US Census Bureau	American Community Survey ^a	B04006	2022	Census tract	Person
Race, Ancestry, & Immigration	Pacific Islander (in combination with any other race/ethnicity)	US Census Bureau	American Community Survey ^a	B02012	2022	Block group	Person
Race, Ancestry, & Immigration	People of Color	US Census Bureau	American Community Survey ^a	B03002	2022	Block group	Person
Race, Ancestry, & Immigration	Slavic/Russian Ancestry	US Census Bureau	American Community Survey ^a	B04006	2022	Census tract	Person
Race, Ancestry, & Immigration	White alone	US Census Bureau	American Community Survey ^a	B03002	2022	Block group	Person
Socioeconomics	Educational attainment	US Census Bureau	American Community Survey ^a	B15003	2022	Block group	Person >=25
Socioeconomics	Households without vehicles available	US Census Bureau	American Community Survey ^a	B25044	2022	Block group	Occupied Housing Units

Theme	Variable	Source Agency	Source Name	Source Table Identifier	Year	Enumeration geometry	Universe
Socioeconomics	Low and moderate income homeowners - cost burdened	US Census Bureau	American Community Survey ^a	B25106	2022	Census tract	Occupied Housing Units
Socioeconomics	Low and moderate income renters - cost burdened	US Census Bureau	American Community Survey ^a	B25106	2022	Census tract	Occupied Housing Units
Socioeconomics	Low food access	US Department of Agriculture	Food Access Research Atlasb	Current version data download	2019	Census tract (2010)	Persons
Socioeconomics	Low income community members (ratio of income to poverty <2.0)	US Census Bureau	American Community Survey ^a	C17002	2022	Block group	Person
Socioeconomics	Number of outdoor workers in workforce	US Census Bureau	American Community Survey ^a	C24010	2022	Block group	Person

Data Sources

- ^a U.S. Census Bureau, American Communities Survey 5-year estimates, 2022. https://www.census.gov/programs-surveys/acs/technical-documentation/table-and-geography-changes/2022/5-year.html
- ^b U.S. Department of Agriculture, Food Access Research Atlas, 2021. https://www.ers.usda.gov/data-products/food-environment-atlas/
- ^c U.S. Department of Health & Human Services, emPower Map, 2024 https://empowerprogram.hhs.gov/empowermap
- d U.S. Centers for Disease Control PLACES: Local Data for Better Health, 2021. https://www.cdc.gov/places/index.html
- e U.S. Census Bureau, Decennial Census, 2020
- ^f EPA EnviroAtlas U.S. Environmental Protection Agency, EnviroAtlas Dasymetric Population Allocation, 2020 https://www.epa.gov/enviroatlas/dasymetric-toolbox