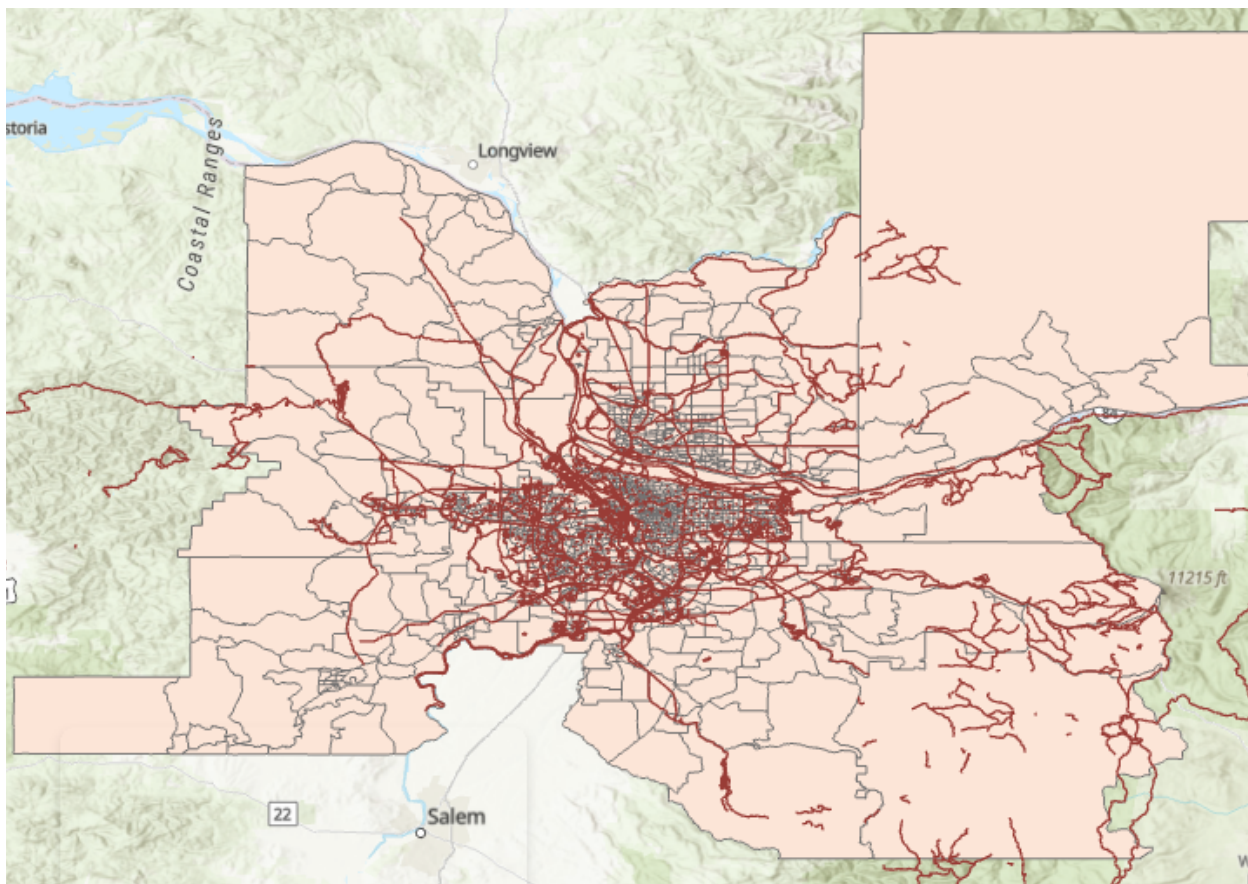


# Racial Equity in Access to Regional Trails in Portland, Oregon



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## INTRODUCTION

The purpose of this study was to analyze racial equity in regards to trail accessibility using trail and census block data provided by Portland Metro. Racial equity is measured as the percentage of the population for each demographic group that has a trail within walking distance as defined in this study. The percentages are derived from the proportion of area within the defined accessible area boundary in relation to the total area of the tracts and demographic groups population. The results surprisingly suggest that minority demographic groups have more trail access to the total population which is 78% compared to 86% and 81% for the Black and Hispanic populations respectively. The reason for these unexpected results is further discussed in this report.

## DATA

1. Trails (metadta:a <https://gis.oregonmetro.gov/rlis-metadata/#/details/2404>)
2. Census Block 2022 (metadata:  
<https://gis.oregonmetro.gov/rlis-metadata/#/details/2589>)

## METHOD

For the purpose of this study, trail accessibility is defined as being half a mile (2,640 feet) from any trail segment with an “open” status. This distance is assumed to be reasonable for a person to walk and is commonly used in Planning literature defining walking distance accessibility (1, 2, 3). This distance of 2,640 feet is used to make a buffer around every trail segment to identify the areas that have accessibility to a trail; then, the ST\_Union method is used to avoid overcounting the areas that overlap.

The block group 2010 data contains information about the population number for various demographic groups which can be used in conjunction with the areas with trail accessibility to determine the proportion of the area with trail access in relation to the area of the census tract. Then, the population with trail access can be determined by using this proportion multiplied by the total population number for each demographic group in each census tract, as shown in Figure 1.

$$Proportion = \frac{area\ with\ trail\ access}{census\ tract\ area} = \alpha$$

$$\text{Population with trail access for each census tract} = Pop_{\text{trail}} = \sum_1^n (\alpha \times \text{Population}_{\text{census tract}})$$

*n: count of intersections of the area with trail access for each census tract*

Figure 1 - Algorithm for proportion and population for each census tract.

However, one cannot simply compare the population with trail access numbers for each demographic to analyze racial equity because the population numbers can vary wildly between the different demographic groups. Therefore, this racial equity study uses the percentages of the population of each demographic group that have trail accessibility. In order to accomplish this, the model adds up all the population values for all census tracts and divides the result by the summation of the population for all census tracts and then multiplies the value by a 100 as depicted in Figure 2.

$$\text{Percent of population with trail access} = \frac{\sum_1^n (Pop_{\text{trail-demographic group}})}{\sum_1^n (Pop_{\text{demographic group}})} \times 100$$

*n: count of census tract*

Figure 2 - Algorithm for percentage of population with trail access in Portland Metropolitan area for each demographic group.

## RESULTS

The model results are shown in the table below:

Percentage of Population with Trail Accessibility	
Total Population	78.30
White	77.15

Black	85.66
Indian American	78.20
Asian	84.50
Other Race	81.96
Two Race	80.62
Hispanic	81.57

## DISCUSSION

The results appear to suggest that a larger percentage of minorities such as Black, Asian and Hispanic have trail access in comparison to the total population. This finding is surprising given that historically these demographic groups have been marginalized (4, 5).

This model assumes that the population for the different demographic groups are homogeneously distributed within each census tract. Therefore, in order to gain confidence in the results presented above, this assumption would need to be verified. However, many studies may suggest the opposite, that is that segregation happens at a neighborhood scale within the census tracts (6, 7, 8). This theory could be tested by using the same algorithms used in this model but using populations based on the neighborhoods instead of the census tracts.

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