

Exploring Equity & Portland's Urban Forest

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Project Overview

- Portland's 2035 Comprehensive Plan is a long-range land use and public facility investment plan to guide future growth and the physical development of the City, and provides a framework of goals and policies designed to help Portland become a prosperous, healthy, equitable and resilient city.¹
- According the Plan's second chapter, Community Involvement, "Environmental justice is borne from the recognition that communities of color, low-income communities, Limited English Proficient (LEP) communities, and Sovereign tribes have been disproportionately impacted from public and private decision-making, including planning, development, monitoring and enforcement, while often being excluded from those decisions themselves."² The included policies seek to extend benefits by ensuring "plans and investments promote environmental justice by extending the benefits associated with environmental assets" and eliminate disproportionate adverse environmental burdens for communities of color, low income populations, and other underserved or underrepresented groups.³
- Utilizing city-provided GIS Data, Census demographic information, and income data provided by Portland State's Institute for Metropolitan studies, this project explores the environmental asset of tree canopy and its distribution in relation to these same at-risk communities, to better understand how and where investment in our urban forest may be implemented to meet the goals and policies of the plan.

Procedure/Methods

The Census block groups were Selected by Location in reference to a RLIS derived Portland city boundary and were maintained for geographic integrity when joining and manipulating demographic and population data, discluded the largely unpopulated Hayden and Government Islands. The 2014 canopy layer (RLIS) was then clipped to the block groups layer and reclassified as a single value in order to calculate the area of the raster. Zonal Statistics as Table was used to calculate area of canopy within each block group, and result was joined to Census demographic data table.. Next, we calculated the population percentages for particular minority populations (Black, Asian, Native American, and Hispanic), using counts for each grouped normalized by the total population within each block group.Choropleth maps were generated to display the spatial distribution across Portland, using a five-class Natural Breaks classification method. The calculated canopy and demographic data was compared using Microsoft Excel to create scatter plots and calculate the correlation coefficient for each group (see Results). The main map displays the percentage of population within Census tracts considered to be "Low-income", data provided by Portland State's Institute for Metropolitan Studies (based on American Community Survey figures), classified in the same manner as the Census demographic data, and visualized with a slight transparency over the RLIS canopy layer in its original form to be used as comparative reference for canopy and non-white population distribution.

Data Sources

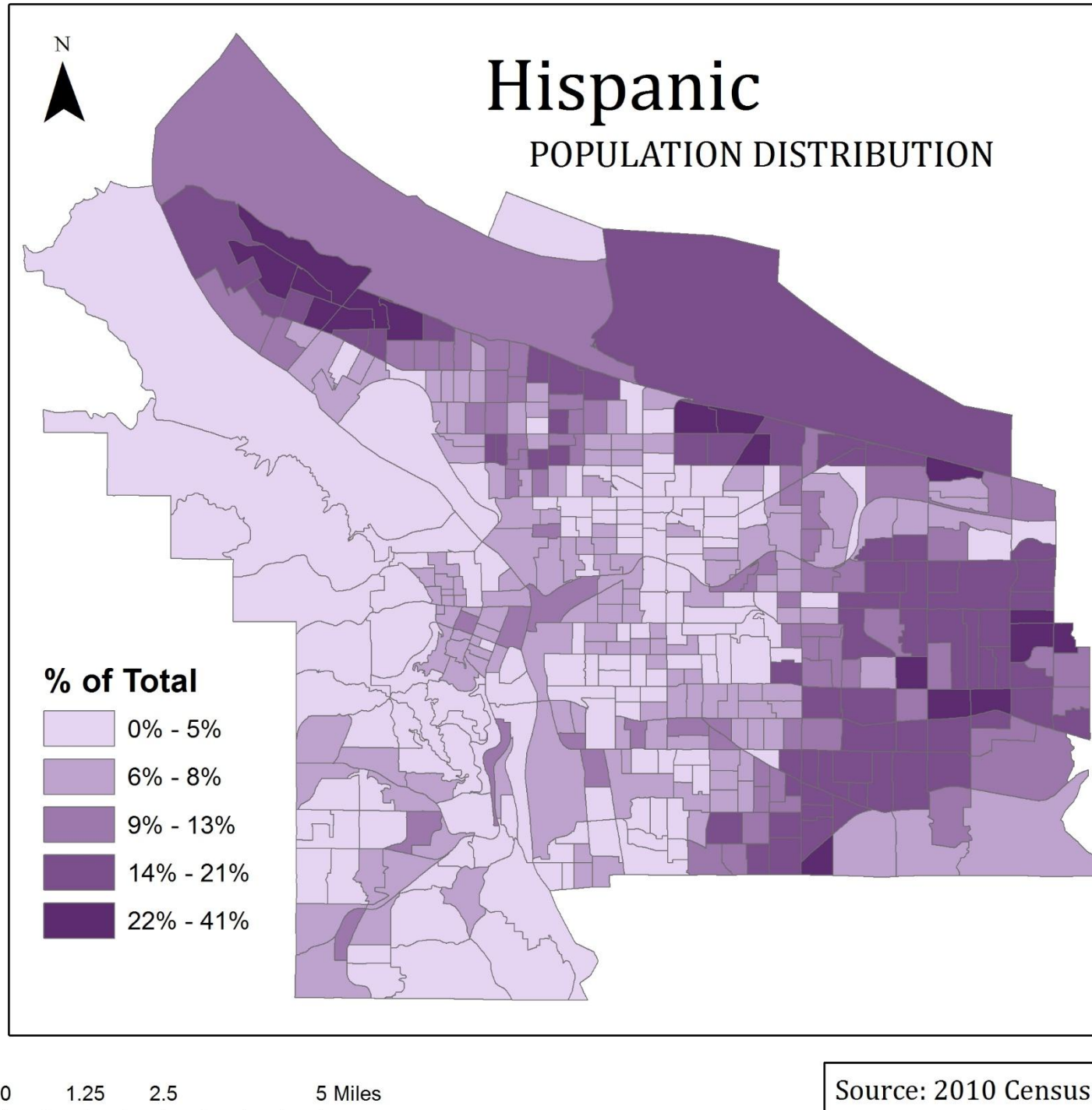
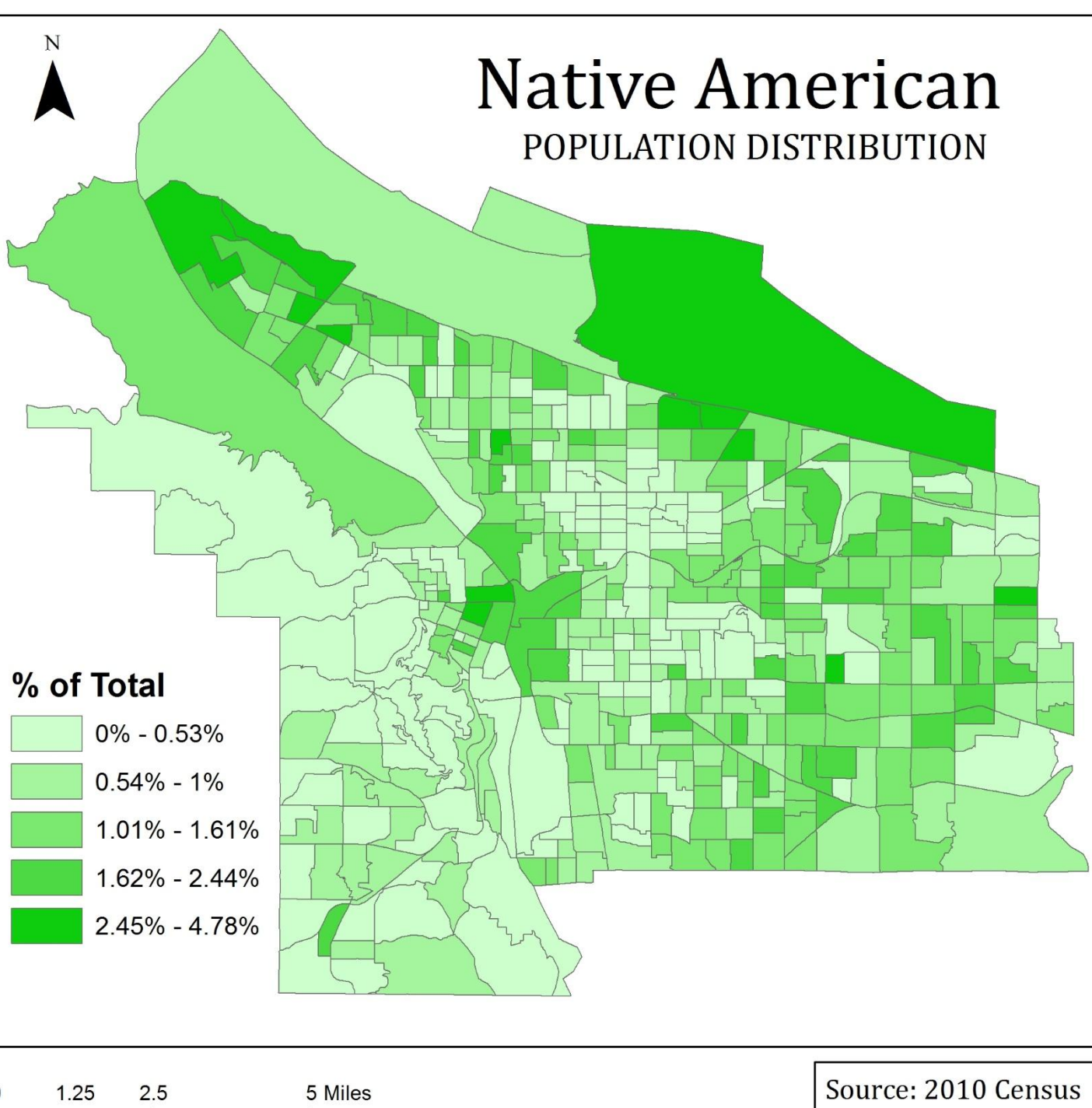
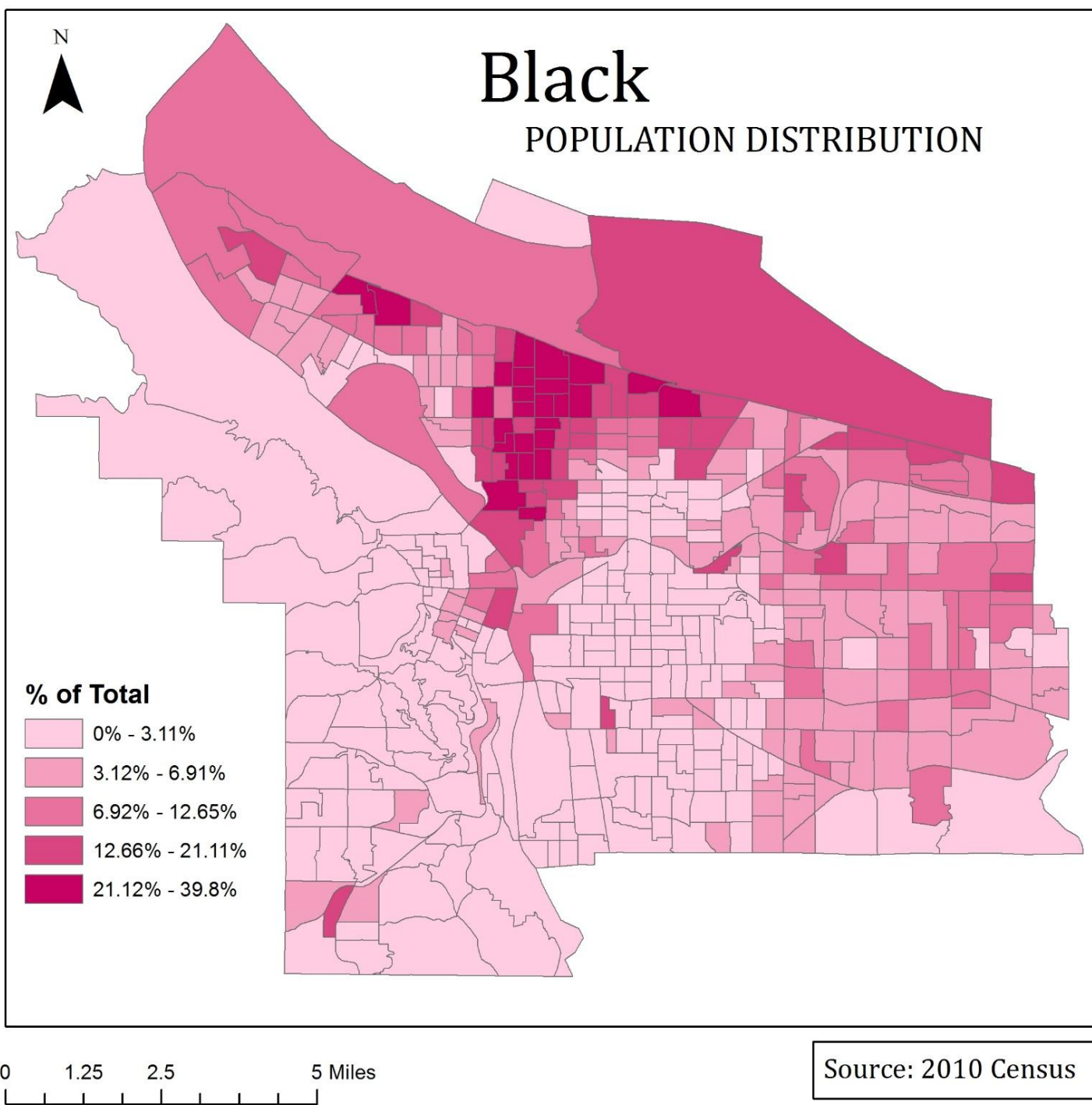
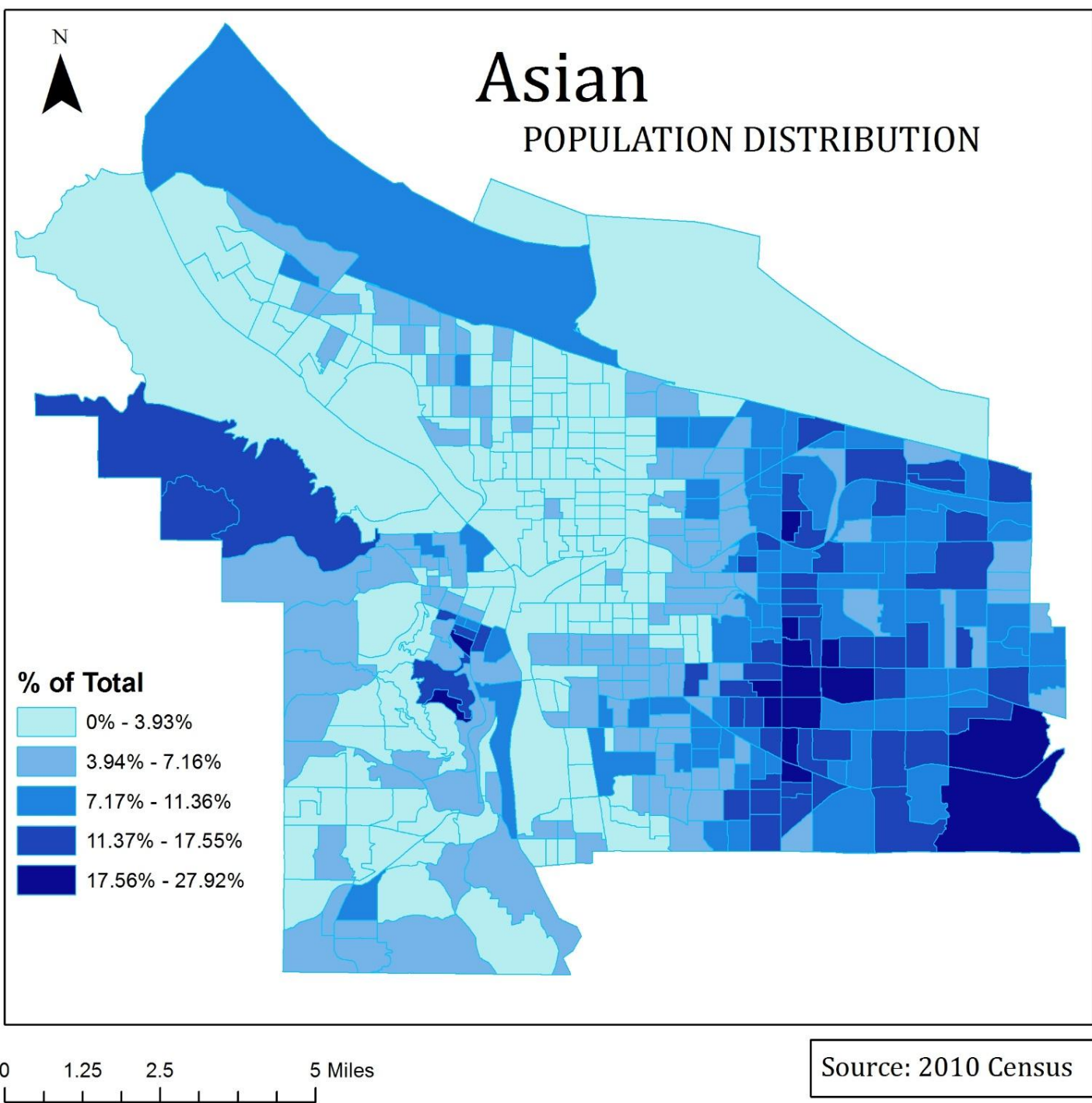
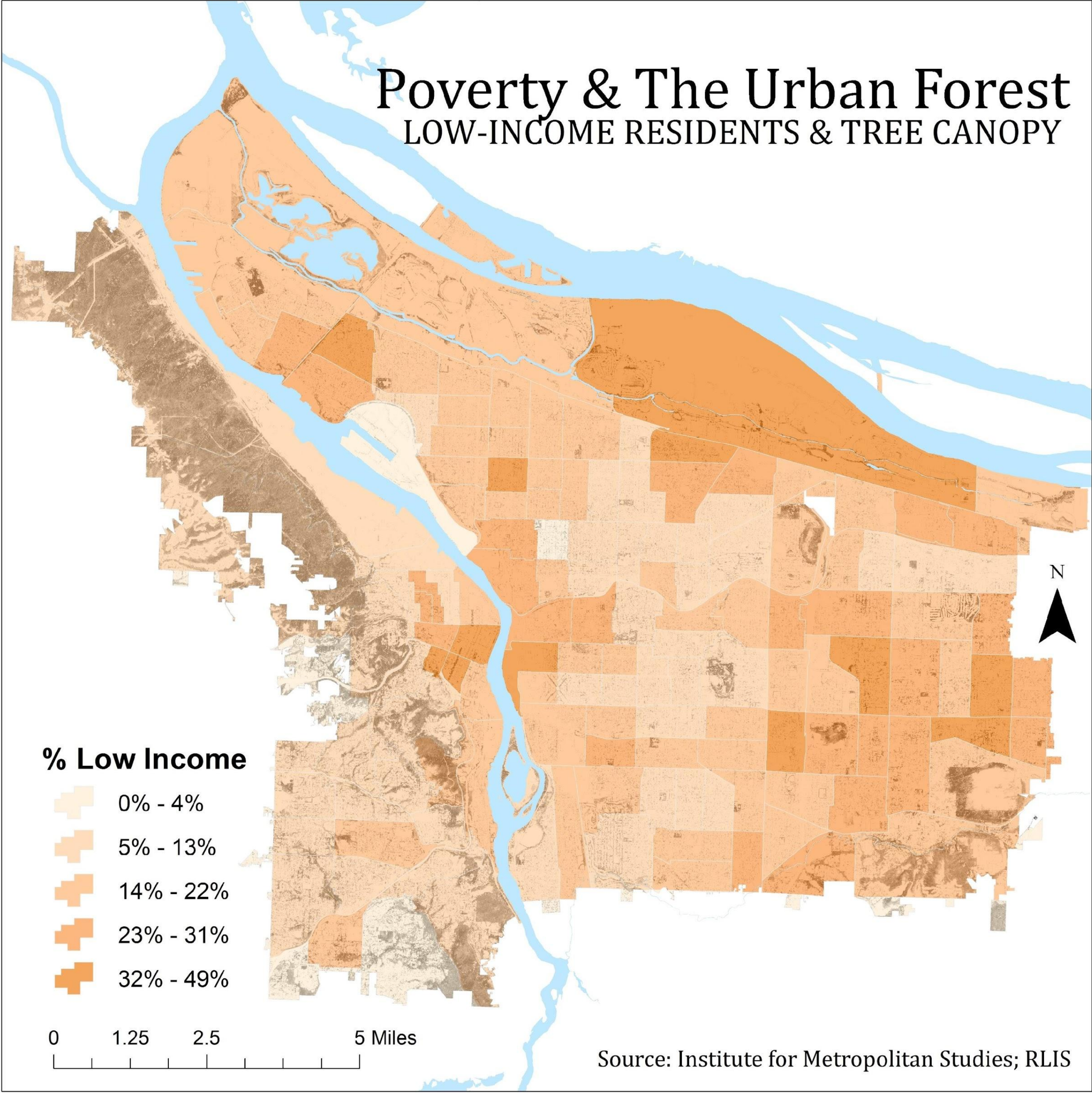


METRO



Institute for
Metropolitan Studies

Portland 2035 Comprehensive Plan:
1. Chapter 1: The Plan (GP1-2) 2. Chapter 2: Community Development (GP2-8) 3. Chapter 2, Policy 2.3-4 (GP2-8)



Results



Conclusion

Our data found that multiple demographic groups had small but not insignificant correlations to canopy cover in their block group; as the percentage of minority population within a given block group rose, the likelihood that that block group would also have a lower canopy cover also rose. Native American populations showed the greatest correlation between their population percentage within a block group and canopy cover, Black and Hispanic population both showed significant correlations. Asian population, while there was a trend, was not as significant. These correlations are more significant given that white population showed the opposite trend. While it was also a minor trend, its correlation was opposite from that of minority populations. Poverty was also measured in relation to canopy cover and this was found to have more significance than any of the individual population densities. Poverty rates were however measured in census tracts rather than block groups so the correlation is not as accurate as our minority population data.

Academic References

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