Trees versus Income in Seattle, WA

Introduction

According to a research article from the *U.S. Department of Agriculture and Forest Service*, urban trees benefit human health and well-being. However, studies indicate that tree coverage is often inequitably distributed.[1] Generally, socio-economical factors and ethnicity determine how many trees are in a neighborhood.[2] For instance, median household income, house value, and land use correlate with canopy cover presence, tree counts, and tree species.[3]

Problem

Climate projections indicate more extreme heat events in the coming decades. Therefore, scientists expect increased hospital admissions for cardiovascular, kidney, and respiratory disorders and heat-related deaths.[4] Accordingly, municipalities should reallocate resources to poorer neighborhoods and plant and maintain more urban trees.

This study analyzes if Seattle has an inequitably distributed tree coverage and if it should take action to prepare poorer neighborhoods for coming extreme heat events. The data resources are publicly available, e.g., Seattle GeoData, USPS, Google BigQuery Public Data, and listed here. The processing of data took place in Google's BigQuery/SQL application.
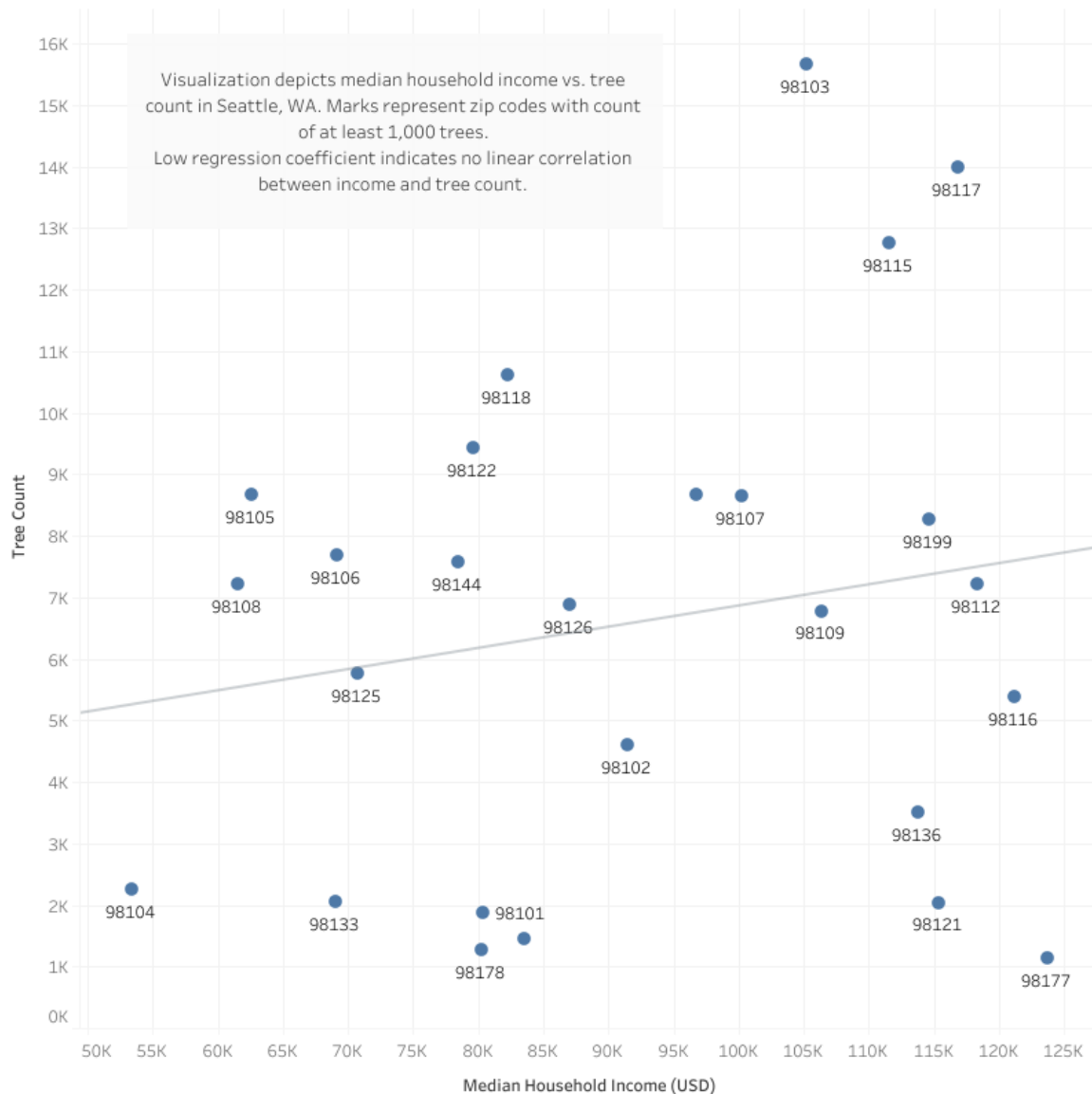
Result

The count of trees is aggregated per median household income and zip code. With a correlation coefficient (r) of 0.03, the results indicate no correlation between tree count and median household income. The following visualization illustrates the findings:

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[1] The tree cover and temperature disparity in US urbanized areas, FS USDA, 2023-01-16 3:06 PM PST
[2] Trees as critical infrastructure, NY Times Opinion, 2023-01-16 3:13 PM PST
[3] Urban forests and social inequality in the Pacific Northwest, FS USDA, 2023-01-16 3:18 PM PST
[4] Temperature Extremes, Centers for Disease Control and Prevention (CDC), 2023-01-16 3:26 PM PST

Visualization depicts median household income vs. tree count in Seattle, WA. Marks represent zip codes with count of at least 1,000 trees.
Low regression coefficient indicates no linear correlation between income and tree count.

Conclusion

The study has not found a correlation between tree count and median household income in Seattle. Therefore, the city's tree coverage appears not to be inequitably distributed. However, the study did not analyze whether the city's tree coverage is sufficient to reduce temperatures during extreme heat events. Accordingly, further studies should be conducted to evaluate how well Seattle's neighborhoods are prepared and if additional action is required.