The Price of Proximity: Housing Affordability and Rail Transit Access in New Jersey

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Introduction

In today's world, urban planning decisions must balance two crucial factors: **affordability** and **accessibility**. Housing affordability determines where people can live based on their financial resources, while accessibility reflects the ease of reaching essential services like transit, schools, and jobs. At 39 North Labs, we conducted a comprehensive analysis to uncover how these factors intersect in urban communities.

Our **Affordability vs. Accessibility Analysis** quantifies these metrics across New Jersey census tracts, offering actionable insights for policymakers, urban planners, and housing advocates.

Objectives of the Analysis

This analysis aimed to answer the following questions:

1. How do housing affordability and accessibility to public transit vary across New Jersey census tracts?
2. What are the trade-offs between these factors, and where do they align?
3. How can this information guide equitable urban planning policies?

Methodology

Data Sources

We used the following datasets:

Census Data: Median home values and population demographics.

Public Transit Data: Locations of railroad stops across New Jersey.

Geospatial Boundaries: Census tract shapefiles.

Key Metrics

To assess affordability and accessibility, we created two indices: - **Affordability Score**: Normalized median home values, with lower-cost areas receiving higher scores. - **Accessibility Score**: Normalized distances to the nearest railroad stop, with shorter distances receiving higher scores.

Housing Affordability was defined based on New Jersey's median salary of $90,000, equating to an affordable home being around $386,000, however to account for error, affordability was defined as housing equal to or below $400,000.

Transit Accessibility was defined as living 5 or less miles from the nearest railroad stop which equates to about an hour walk or 10 minute drive.

Scoring and Categorization

Each census tract received a composite Affordability-Accessibility Index:

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The weight α determines the emphasis placed on accessibility versus affordability.
For example, setting α = 0.5 gives equal importance to both factors.
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In this analysis, α was set to 0.5, ensuring that affordability and accessibility were given equal weight.

Therefore, the maximum value each category (**Affordable and Accessible)** could receive is 0.5, added together would give a maximum value of 1.0. Meaning that the higher the index score, the more affordable and accessible a census tract would be.

Tracts were classified into four categories:

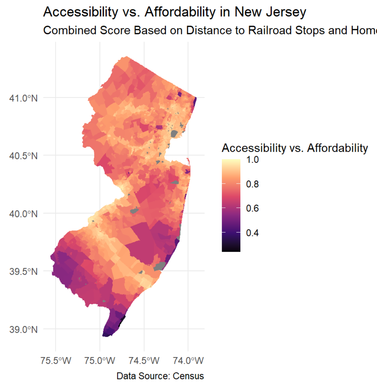
1. **Affordable & Accessible**

2. **Affordable & Non-Accessible**

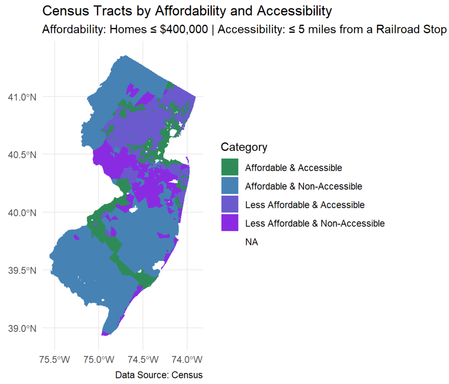
3. **Less Affordable & Accessible**

4. **Less Affordable & Non-Accessible**

Below index scores by census tracts were visualized on a map of New Jersey:



Below census tracts are categorized in one of the four **Accessible vs. Affordable** categories:

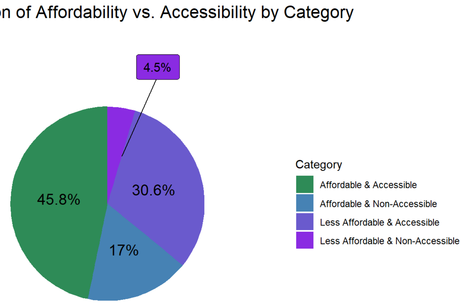


Population vs. Affordability-Accessibility

Population Trends

Using population data, we analyzed how many people live within each affordability-accessibility category. These results reveal equity considerations and help identify which groups benefit most from accessibility and affordability.

Visualization



Key Findings:

- **Affordable & Accessible Areas**: 45.8% of the total population resides here, with diverse racial and socioeconomic representation.
- **Affordable & Non-Accessible Areas**: 17.0% of the population lives here, predominantly in rural and suburban tracts.
- **Less Affordable & Accessible Areas**: 30.6% of the population resides in these urban centers with excellent transit but higher housing costs.
- **Less Affordable & Non-Accessible Areas**: 4.5% of the population faces both high housing costs and poor accessibility.