Proposal: Rent Prices in Seattle

DATA 450 Capstone

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1 Introduction

The topic that I will be covering for my capstone project is Housing affordability in the city of Seattle WA. At some point in everyone's life, they will need to research places to live. My goal for this project is to make that process easy by creating a housing cost dashboard that breaks down housing costs in the city of Seattle by neighborhood. There will be two primary datasets that I will be using. Housing Tenure and Costs- Seattle Neighborhoods, and Incomes Occupations and Earnings - Seattle Neighborhoods. I will use these datasets to compare the costs of renting vs owning in Seattle on a neighborhood by neighborhood basis. I will also show how affordable each neighborhood is to the people who live there by using the income data.

2 Dataset

City of Seattle. (n.d.). Housing Tenure and Costs - Seattle Neighborhoods Dataset Seattle (2024a). https://data-seattlecitygis.opendata.arcgis.com/datasets/SeattleCityGIS::housing-tenure-and-costs-seattle-neighborhoods

This dataset is data from the American Community Survey that is compiled and published by the city of Seattle WA. The variables that I am interested in using are:

- Neighborhood Name
- Occupied Housing Units: The number of housing units that are occupied
- Owner Households: Count of households that own the home
- Renter Households: Count of households that pay rent

- Gross Rent as a Percentage of Household Income xx to yy%: Count of renters whose rent falls into a certain range of their household income. Separated into 5% bins
- Gross Rent: Count of household rent that falls into a certain range (USD). $500 bin size
- Owner Costs: Count of ownsership costs that fall into a certain range (USD). $500 bin size
- Owner housing units without mortgage

City of Seattle. (n.d.-b). Incomes Occupations and Earnings - Seattle Neighborhoods Dataset Seattle (2024b). https://data-seattlecitygis.opendata.arcgis.com/datasets/SeattleCityGIS::incomes-occupations-and-earnings-seattle-neighborhoods/explore

- Household Income: Count of the income levels of neighborhood households.
- Aggregate 12 Month income: Income(USD) of entire neighborhood
- Total Households: Total number of households in neighborhood

3 Data Acquisition and Processing

The data is in a usable state and will not require any cleaning.

4 Research Questions and Methodology

1. Which neighborhoods are the most affordable for renters in Seattle? To answer this I will combine columns in a neighborhood to find the number of households in each neighborhood that are paying 35% or less of their monthly income in rent. Then I will compare this to the total number of households that are renting in the neighborhood to find the percentage of households that are paying an affordable ammount for rent. I will rank the neighborhoods in descending order and display the results in a bar plot. The result will show which neighborhoods have the highest proportion of residents that have an affordable rent cost.
2. Overall is renting or owning more popular? Are there any neighborhoods that deviate from the city-wide choice? To find the answer, I will find the sum of the number of renting households as well as the sum of the number of owning households. I will compare these to find the proportion of renting to owning in the city. Then I will perform this calculation on each neighborhood and create a sorted bar chart. I would like to add a horizontal dashed line to denote the city-wide preference.

3. Which neighborhood should someone live in based on their housing budget? To answer this I would like to make a dashboard that has the neighborhoods of Seattle on the map as cells that can be colored in. The reader will select a desired rent range then a heatmap will be generated. The colors will correspond to the concentration of homes in that neighborhood that are in budget. The reader could also select between rent and ownership costs.
4. Is Owning or Renting more affordable in Seattle? This will follow a similar process to Question 1 however the cutoff for affordable will be below 25% instead of 35%. Chase Bank reccomends mortgage payments should be no more than 28% of your income, so I will say 25% and below is 'affordable'.
5. Does higher income lead to housing becoming more affordable? I would like to use the income data to compare the income levels of each neighborhood to the rate of households living in affordable homes. Is lifestyle creep a factor? If so, at what point does it stop being a factor? I will answer this question by first calculating the mean household income per neighborhood. Then, I will create a scatter plot with mean income on the x axis and affordability proportion on the y axis. Finally, I will apply a line of best fit so the reader can visualize the overall trend in the data.

5 Work plan

Week 4 (2/10 - 2/16):

- Research Dashboard Techniques - (2 Hours)
- Question 1 (4 Hours)

Week 5 (2/17 - 2/23):

- Render Dashboard with map of Seattle Neighborhoods (7 Hours)

Week 6 (2/24 - 3/2):

- Question 2 (2 Hours)
- Quetion 4 (2 Hours)
- Dashboard Layout Planning (3 Hours)

Week 7 (3/3 - 3/9):

- Dashboard implementation (3 Hours)
- Presentation prep and practice (4 hours)

Week 8 (3/10 - 3/16): *Presentations given on Wed-Thu 3/12-3/13.*

- Poster prep (4 hours)
- Presentation peer review (1.5 hours)
- Polish Visualizations (1.5 hours)

Week 9 (3/24 - 3/30): *Poster Draft 1 due Monday morning 3/24 at 9am. Poster Draft 2 due Sunday night 3/30.*

- Peer feedback (2 hours)
- Poster revisions (1.5 hours)

Week 10 (3/31 - 4/6): *Final Poster due Sunday 4/6.*

- Peer feedback (1.5 hours)
- Dashboard (3 hours)
- Poster revisions (2 hours)

Week 11 (4/7 - 4/13):

- Question 5 (3 Hours)
- Dashboard (3 Hours)

Week 12 (4/14 - 4/20):

- Begin Blog Post Draft (4 hours)

Week 13 (4/21 - 4/27): *Blog post draft 1 due Sunday night 4/28.* [All project work should be done by the end of this week. The remaining time will be used for writing up and presenting your results.]

- Draft blog post (4 hours).
- Finalize dashboard (4 hours)

Week 14 (4/28 - 5/4):

- Peer feedback (3 hours)
- Blog post revisions (4 hours)
- [Do not schedule any other tasks for this week.]

Week 15 (5/5 - 5/8): *Final blog post due Tues 5/7. Blog post read-throughs during final exam slot, Thursday May 8th, 8:00-11:20am.*

- Blog post revisions (2 hours)
- Peer feedback (2 hours)
- [Do not schedule any other tasks for this week.]

6 References

[The bibliography will automatically get generated. Any sources you cite in the document will be included. Other entries in the `.bib` file will not be included.]

Seattle, City of. 2024a. “Housing Tenure and Costs - Seattle Neighborhoods.”
———. 2024b. “Incomes Occupations and Earnings - Seattle Neighborhoods.”