The Story of the Emerald City

A Visual Exploration of Four Seattle Neighborhoods Using Airbnb Data

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A Brief Overview…

- In our ETL project, we create database using the Seattle Airbnb data in multiple CSV files
- The resulting database includes a schema made up of four tables:
    - Listing information
    - Host information
    - Reviews information
    - Property availability information
- Using this database, we create a visual dashboard of four of Seattle's neighborhoods:
    - Queen Anne (245 listings)
    - Central Area (318 listings)
    - Downtown (449 listings)
   - Beacon Hill (102 listings)

The Neighborhoods

Queen Anne

- **Population:** 43,433
- **Median Income:** $97,017
- **Racial Demographics:** White (83.18%), Black (1.54%), Asian (7.75%), Native American (0.29%), Mixed (6.54%), Other (0.71%)
- **History:** Popular spot for the city's early economic and cultural elite to build their mansions; Name originates from the architectural style typical of many of the early homes
- **Known for:** Home to 29 official Seattle landmarks including 12 historic houses
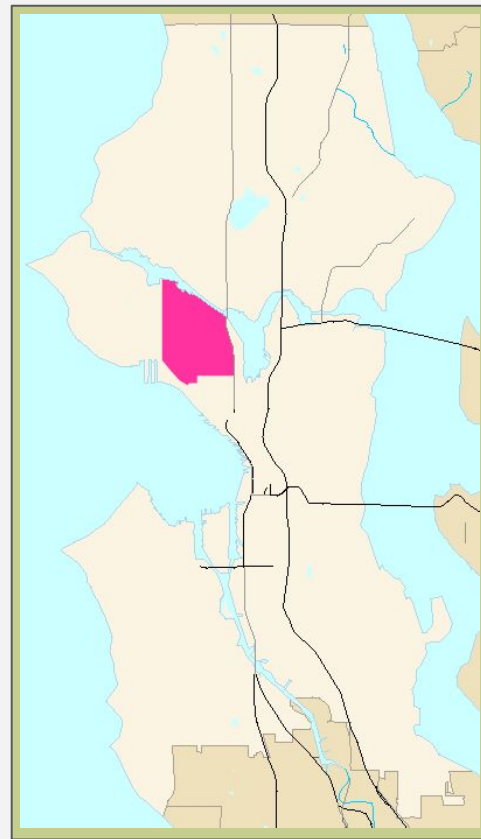
Central Area

- **Population:** 48,559
- **Median Income:** $96,733
- **Racial Demographics:** White (64.35%), Black (14.80%), Asian (10.29%), Native American (0.69%), Native Hawaiian (0.61%), Mixed (5.67%), Other (3.59%)
- **History:** During early 1960s, was a hotbed for the Seattle civil rights movement; The Black Panther Party also used the neighborhood as a staging area for their movement
- **Known for:** One of Seattle's most racially and ethnically diverse neighborhoods; Was once the center of Seattle's black community and a major hub of African-American businesses
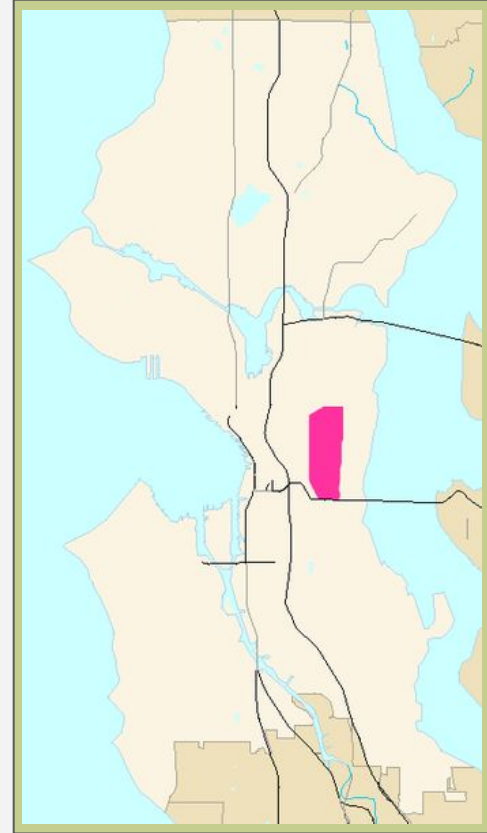
Downtown

- **Population:** 12,264
- **Median Income:** $81,872
- **Racial Demographics:** White (64.59%), Black (9.98%), Asian (14.06%), Native American (1.75%), Native Hawaiian (0.25%), Mixed (6.39%), Other (2.99%)
- **History:** Starting in the late 1960s, Downtown has been filled with dozens of skyscrapers and most famously for changing the Seattle skyline, the Columbia Center in 1985
- **Known for:** The central business district of Seattle
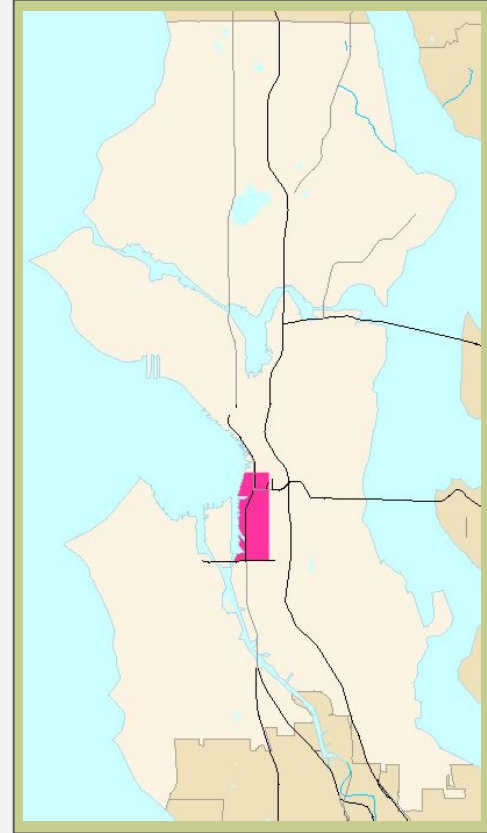
Beacon Hill

- **Population:** 13,390
- **Median Income:** $66,700
- **Racial Demographics:** White (22.3%), Black (12.2%), Asian (52.8%), Hispanic/Latinx (7.1%), Mixed (5.2%), Other (0.5%)
- **History:** Nicknamed "Boeing Hill" in the 1950s and 60s due to the number of residents who worked in the nearby Boeing airplane factory; Term fell out of use when many Boeing employees moved to the suburbs and Asian immigrants took their place
- **Known for:** Former home to Amazon.com world headquarters; Present home to the Seattle Division of the Department of Veteran Affairs' Puget Sound Health Care System
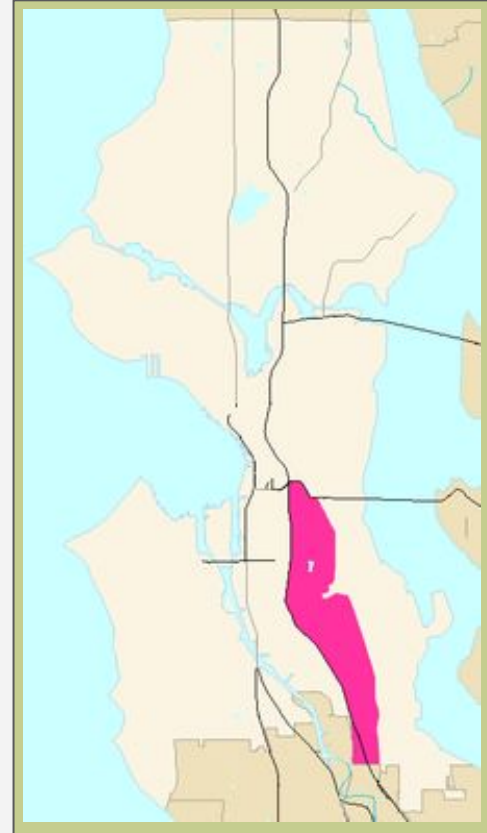
The Dashboard

Tools Used

- Back end database:
  - SQLite
- Front end:
  - HTML
  - CSS
  - JavaScript
- Retrieve data from back end:
  - Python:
    - SQLAlchemy
    - Flask
- Charts:
  - JavaScript libraries:
    - Plotly
    - ZingChart
- Deploying application:
  - Heroku

The Dashboard

- One toggle with four options:
  - Queen Anne
  - Central Area
  - Downtown
  - Beacon Hill
- Four color schemes:
  - Red
  - Green
  - Purple
  - Orange
- Three sections:
  - Listings
  - Reviews
  - Hosts

- 13 displays:
  - Six pie charts
  - Three tables
  - Two histograms
  - One boxplot
  - One word cloud

We use the dashboard to answer a few questions

Queen Anne is known as a very wealthy neighborhood. Are its Airbnb prices higher than in other neighborhoods?

Listing Price Distributions

Queen Anne:

Central:

Downtown:

Beacon Hill:

Listing Price Percentiles

Queen Anne:

Airbnb Listing Prices (USD)

25th Percentile: 95
50th Percentile: 120
75th Percentile: 189
Max: 975
Mean: 161.59
Min: 38

Central:

Airbnb Listing Prices (USD)

25th Percentile: 75
50th Percentile: 99.5
75th Percentile: 150
Max: 500
Mean: 125.92
Min: 35

Downtown:

Airbnb Listing Prices (USD)

25th Percentile: 105
50th Percentile: 139
75th Percentile: 175
Max: 999
Mean: 154.48
Min: 35

Beacon Hill:

Airbnb Listing Prices (USD)

25th Percentile: 60
50th Percentile: 74.5
75th Percentile: 104
Max: 399
Mean: 89.06
Min: 30

Queen Anne generally has expensive Airbnb listings. Even though Downtown has a slightly higher median listing price than Queen Anne, Queen Anne has a robust, long right tail of expensive listing prices (max listing price is > $900).

Beacon Hill is less densely populated than other neighborhoods. Do its Airbnb listings contain proportionally fewer apartments and more houses than other neighborhoods?
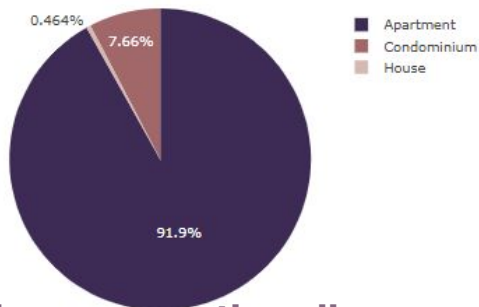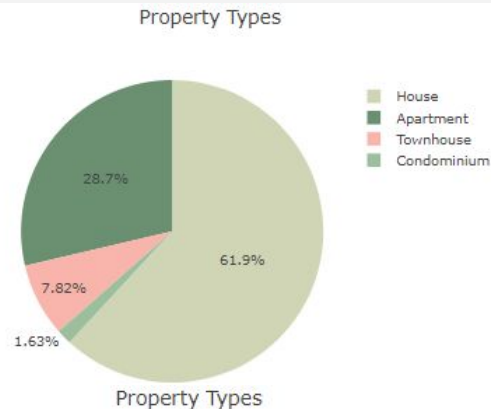

some people without brains do an awful lot of talking, don't they?

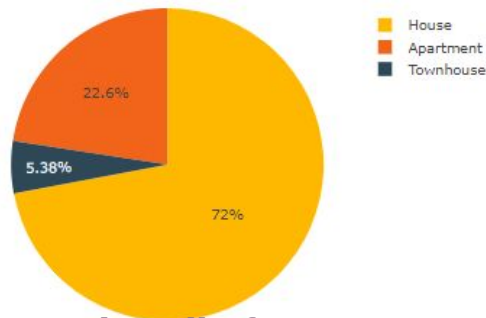# Property Types

Queen Anne:
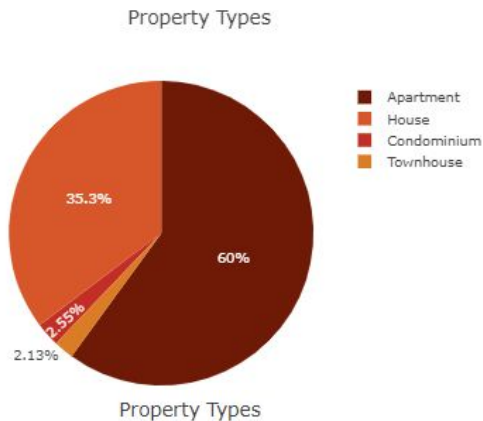
Central:

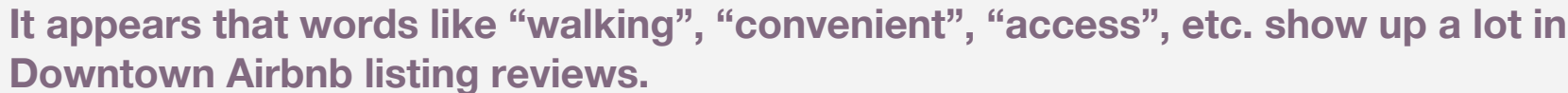

Downtown:

Beacon Hill:

Beacon Hill has proportionally more house listings and proportionally fewer apartment listings than all other neighborhoods.

Seattle is notorious for bad traffic, but downtown is extremely walkable and close to numerous tourist destinations. Do its Airbnb listing reviews emphasize its walkability/accessibility?
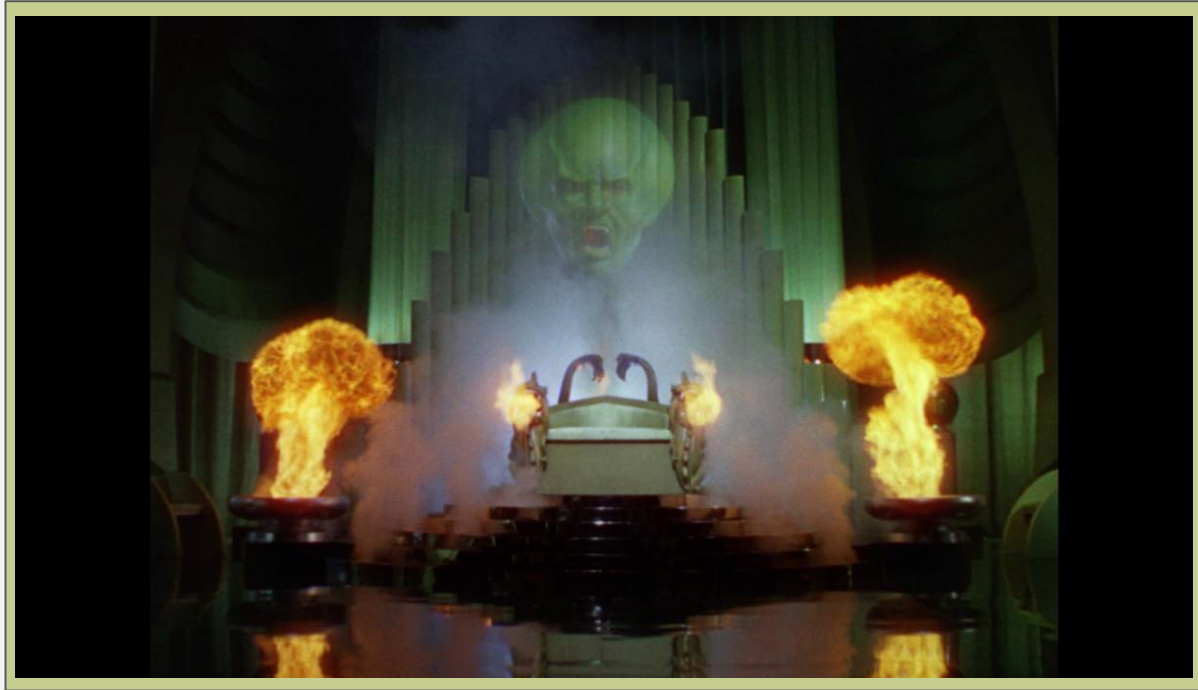
Review Wordclouds

Queen Anne:

Central:

Downtown:

Beacon Hill:

It appears that words like "walking", "convenient", "access", etc. show up a lot in Downtown Airbnb listing reviews.

Live Demo

Links to the Application

- **Application Code:** https://github.com/mileslucey/airbnb_dashboard
- **Deployed Application:** https://airbnb-dashboard-seattle.herokuapp.com/

Sources

- https://statisticalatlas.com/neighborhood/Washington/Seattle/Beacon-Hill/Overview
- http://www.city-data.com/neighborhood/Queen-Anne-Seattle-WA.html
- https://www.point2homes.com/US/Neighborhood/WA/Seattle/Downtown-Seattle-Demographics.html
- https://www.areavibes.com/seattle-wa/downtown/demographics/
- http://www.city-data.com/neighborhood/Central-Area-Seattle-WA.html