

Rating and Price Analysis of Airbnb Properties in Chicago, NYC, LA, and DC

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Data Sources



Inside Airbnb

Adding data to the debate

INDEPENDENT, NON-COMMERCIAL,
OPEN SOURCE DATA TOOL

**How is Airbnb really
being used in and affecting
your neighborhood?**



Our data sources include Airbnb via an open-source site, Inside Airbnb, providing detailed insights into short-term rental listings such as pricing, amenities, host behaviors, and guest ratings, and Zillow, offering comprehensive real estate data, including property values.

Part 1 - Three City Comparison



- What are some ways in which the AirBNB market varies from market to market?
 - How do price distributions vary?
 - How does the share of single-property to multiple-property hosts vary?
 - How does average home price in a neighborhood correlate with the average AirBNB price in a neighborhood?
 - What amenities appear in top-rated properties?
 - How do property attributes correlate with each other?
 - What are the top-rated neighborhoods?

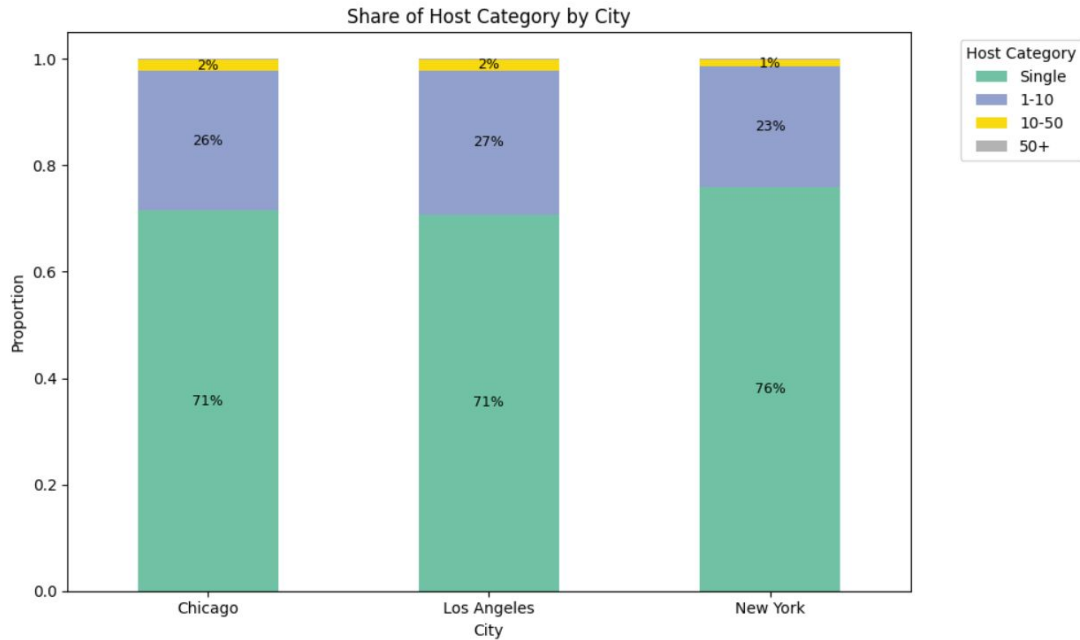


Price Distribution by City



Prices tend to cluster between \$50 and \$150 for each city. Each city has a right skew with a long tail. Prices begin to have major variation past the \$500 mark and were added into their own bin. Los Angeles has a greater share of these 'premium' properties than the other two cities.

Host Distribution by City



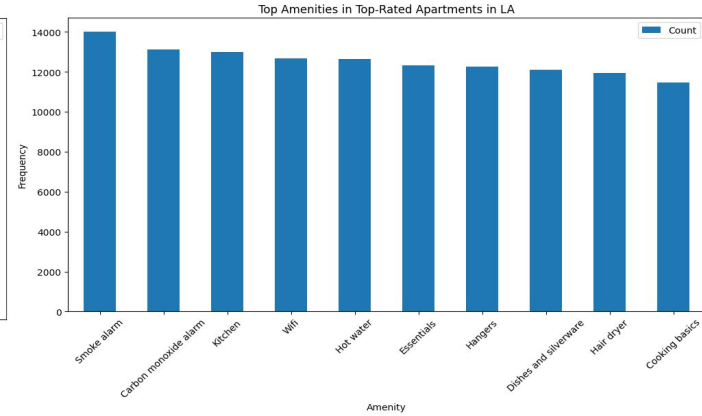
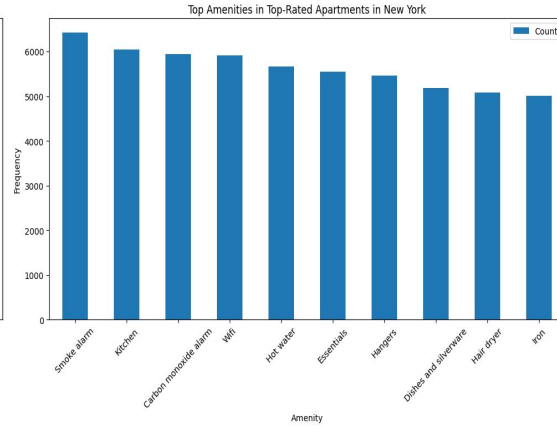
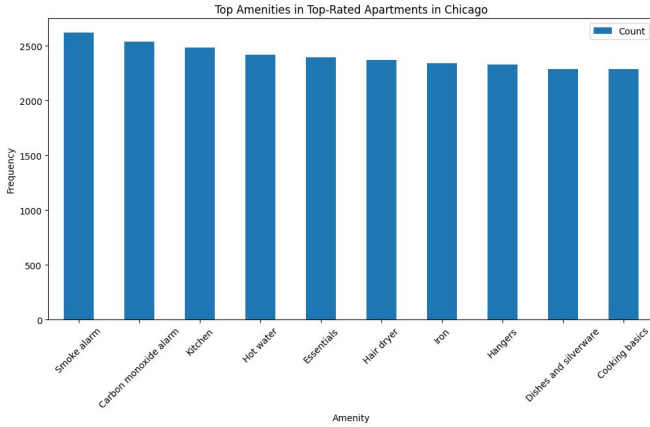
- The distribution of host categories by city is fairly consistent, with single-property owners making up over 70% for each city.
- The vast majority of AirBNB hosts have 10 properties or fewer.

Home Price Relationship to AirBNB Price by Neighborhood



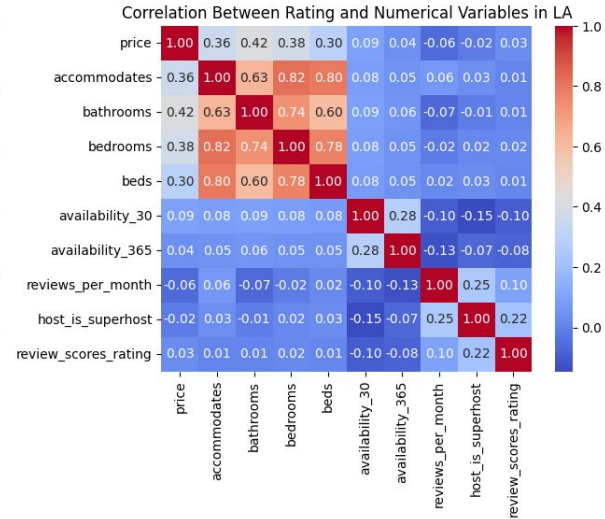
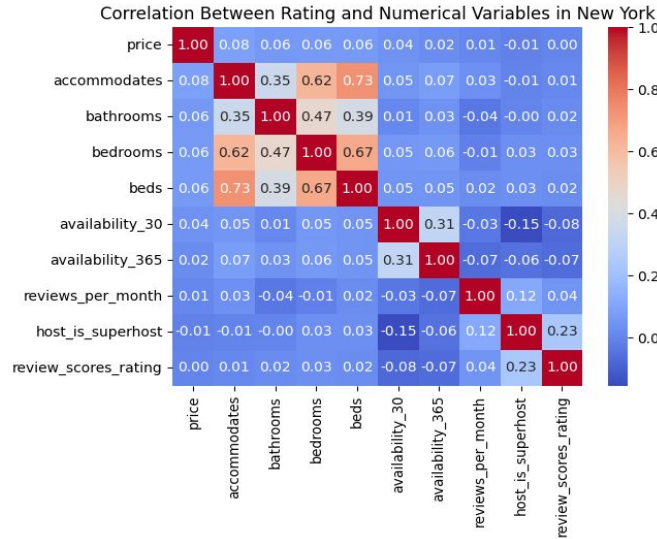
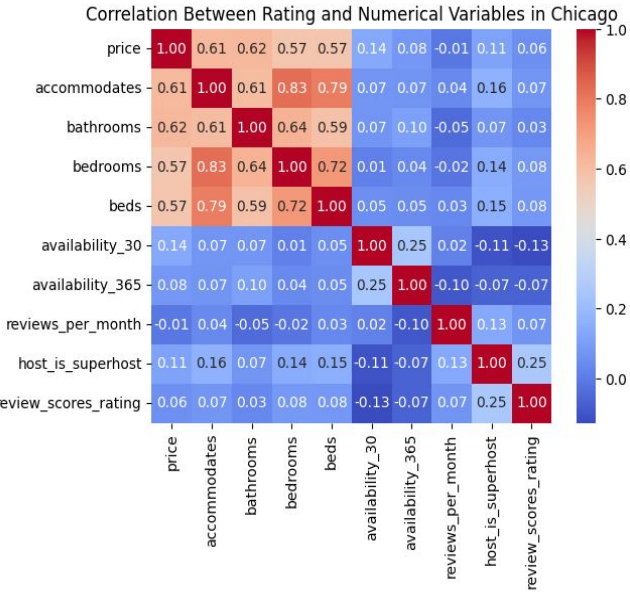
- The relationship in a neighborhood between average home price and average AirBNB rental price is positive as expected, but relatively modest.
- Chicago has no outliers, while New York and Los Angeles have many due to their extremely competitive real estate markets.

Top Amenities



Top-rated apartments ensure safety (smoke and carbon monoxide alarms), essentials (kitchens, hot water, towels), and comfort (hangers, hair dryers). Wi-Fi stands out in Los Angeles, reflecting regional preferences.

Attribute Correlation



Guest ratings show minimal correlation with measurable factors like price or availability but are slightly influenced by superhost status, perhaps demonstrating the importance of host quality over listing characteristics.

Regression Analysis on Rating

CHICAGO

	coef	std err	t	P> t	[0.025	0.975]
const	4.6945	0.016	293.662	0.000	4.663	4.726
price	5.929e-05	3.13e-05	1.895	0.058	-2.05e-06	0.000
accommodates	-0.0014	0.003	-0.431	0.667	-0.008	0.005
bathrooms	-0.0116	0.009	-1.309	0.191	-0.029	0.006
bedrooms	0.0153	0.008	2.034	0.042	0.001	0.030
beds	0.0037	0.004	0.879	0.379	-0.005	0.012
availability_30	-0.0044	0.001	-7.873	0.000	-0.005	-0.003
availability_365	-0.0001	4.79e-05	-2.120	0.034	-0.000	-7.64e-06
reviews_per_month	0.0076	0.002	3.122	0.002	0.003	0.012
host_is_superhost	0.1795	0.010	17.777	0.000	0.160	0.199

NEW YORK

	coef	std err	t	P> t	[0.025	0.975]
const	4.6656	0.012	376.431	0.000	4.641	4.690
price	1.603e-06	3.16e-06	0.507	0.612	-4.6e-06	7.8e-06
accommodates	-0.0029	0.003	-1.059	0.290	-0.008	0.002
bathrooms	0.0119	0.008	1.470	0.142	-0.004	0.028
bedrooms	0.0111	0.006	1.890	0.059	-0.000	0.023
beds	0.0048	0.005	1.026	0.305	-0.004	0.014
availability_30	-0.0011	0.000	-3.531	0.000	-0.002	-0.001
availability_365	-0.0002	3.45e-05	-5.905	0.000	-0.000	-0.000
reviews_per_month	0.0034	0.002	2.106	0.035	0.000	0.007
host_is_superhost	0.2167	0.008	28.520	0.000	0.202	0.232

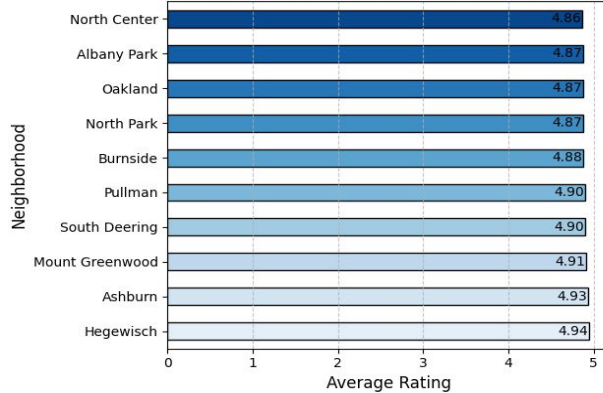
LOS ANGELES

	coef	std err	t	P> t	[0.025	0.975]
const	4.7495	0.008	628.234	0.000	4.735	4.764
price	3.973e-05	5.65e-06	7.026	0.000	2.86e-05	5.08e-05
accommodates	-0.0080	0.002	-4.908	0.000	-0.011	-0.005
bathrooms	-0.0042	0.003	-1.275	0.202	-0.011	0.002
bedrooms	0.0215	0.004	5.661	0.000	0.014	0.029
beds	-0.0007	0.002	-0.304	0.761	-0.005	0.004
availability_30	-0.0021	0.000	-9.191	0.000	-0.003	-0.002
availability_365	-0.0002	2.2e-05	-7.935	0.000	-0.000	-0.000
reviews_per_month	0.0111	0.001	7.954	0.000	0.008	0.014
host_is_superhost	0.1598	0.005	32.535	0.000	0.150	0.169

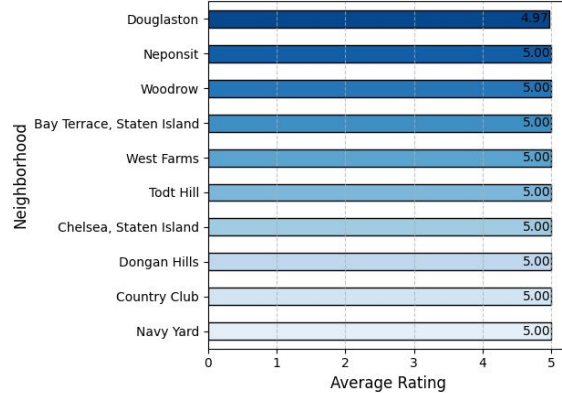
While price, size, availability of host, and superhost status are relevant factors for LA, price is not a significant factor in Chicago. In NY, neither price nor size are significant factors. These differences suggest that users may have different preferences and expectations for places at which they are staying according to the city where they get an Airbnb.

Neighborhood Ratings by City

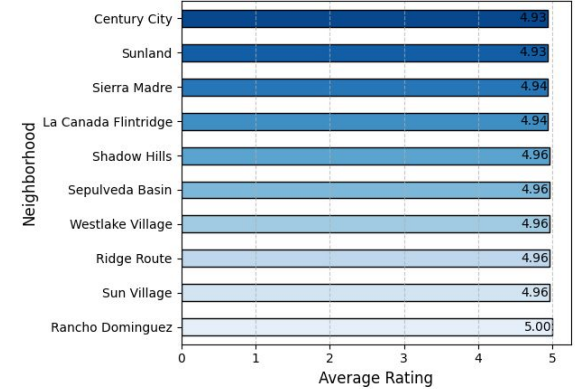
Top 10 Neighborhoods by Average Rating in Chicago



Top 10 Neighborhoods by Average Rating in New York



Top 10 Neighborhoods by Average Rating in LA



Highly-rated neighborhoods tend to be quieter, less tourist-heavy areas, suggesting guests value personalized experiences and tranquil environments over central locations. Host quality appears to be a key factor driving ratings, especially in areas with fewer listings

Part 2 - Exploratory for DC

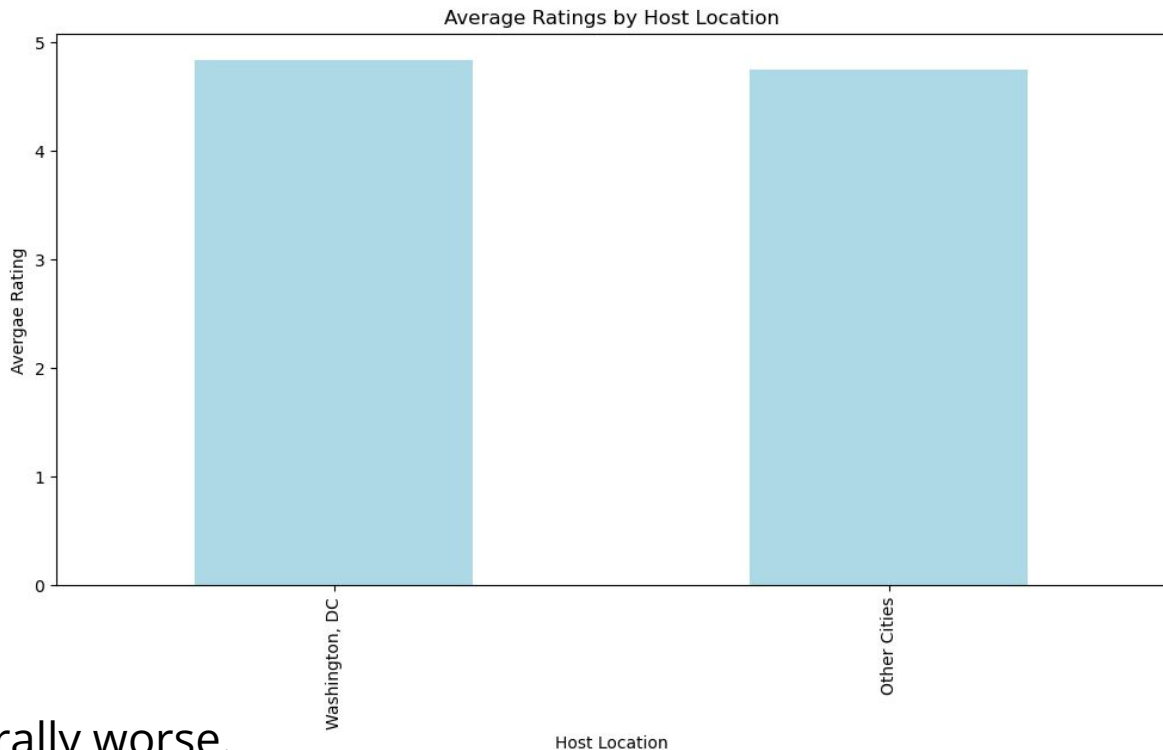
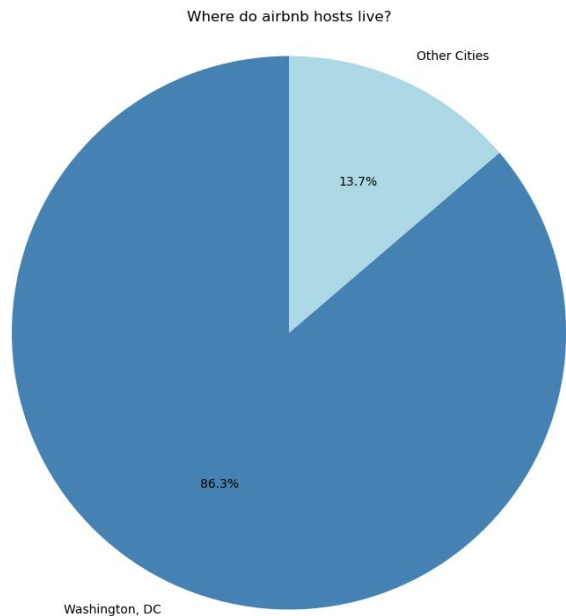
Questions we found answers to:

1. How does a host living in DC fare against one who doesn't live on site?
2. Why is one neighborhood particularly expensive?
3. Factors that affect Airbnb Ratings
4. Factors that affect Airbnb Prices
5. Optimizations - What words resonate better with customers

Process:

- Cleaned Data | Found Summary statistics for Nominal and Categorical
- Data Analysis for Q1-5

Where do DC hosts live? Does it affect their ratings?



MIA Hosts' Listings perform generally worse.

- Non-regular Upkeep | - Less On site activity

Top 10 Neighbourhoods, D.C. by Price

Top 10 Neighbourhoods in Washington D.C. by Mean Price

Colonial Village, Shepherd Park, North Portal Estates

Southwest Employment Area, Southwest/Waterfront, Fort McNair, Buzzard Point

Cathedral Heights, McLean Gardens, Glover Park

Near Southeast, Navy Yard

Downtown, Chinatown, Penn Quarters, Mount Vernon Square, North Capitol Street

Georgetown, Burleith/Hillandale

Historic Anacostia

Douglas, Shipley Terrace

Wheaton, Barnaby Woods, Chevy Chase

West End, Foggy Bottom, GWU

While prices fair
between 200-300 USD
for most
neighbourhoods,

But, one stands out.

Curiously, we learnt
why!

What is special about Colonial Village?



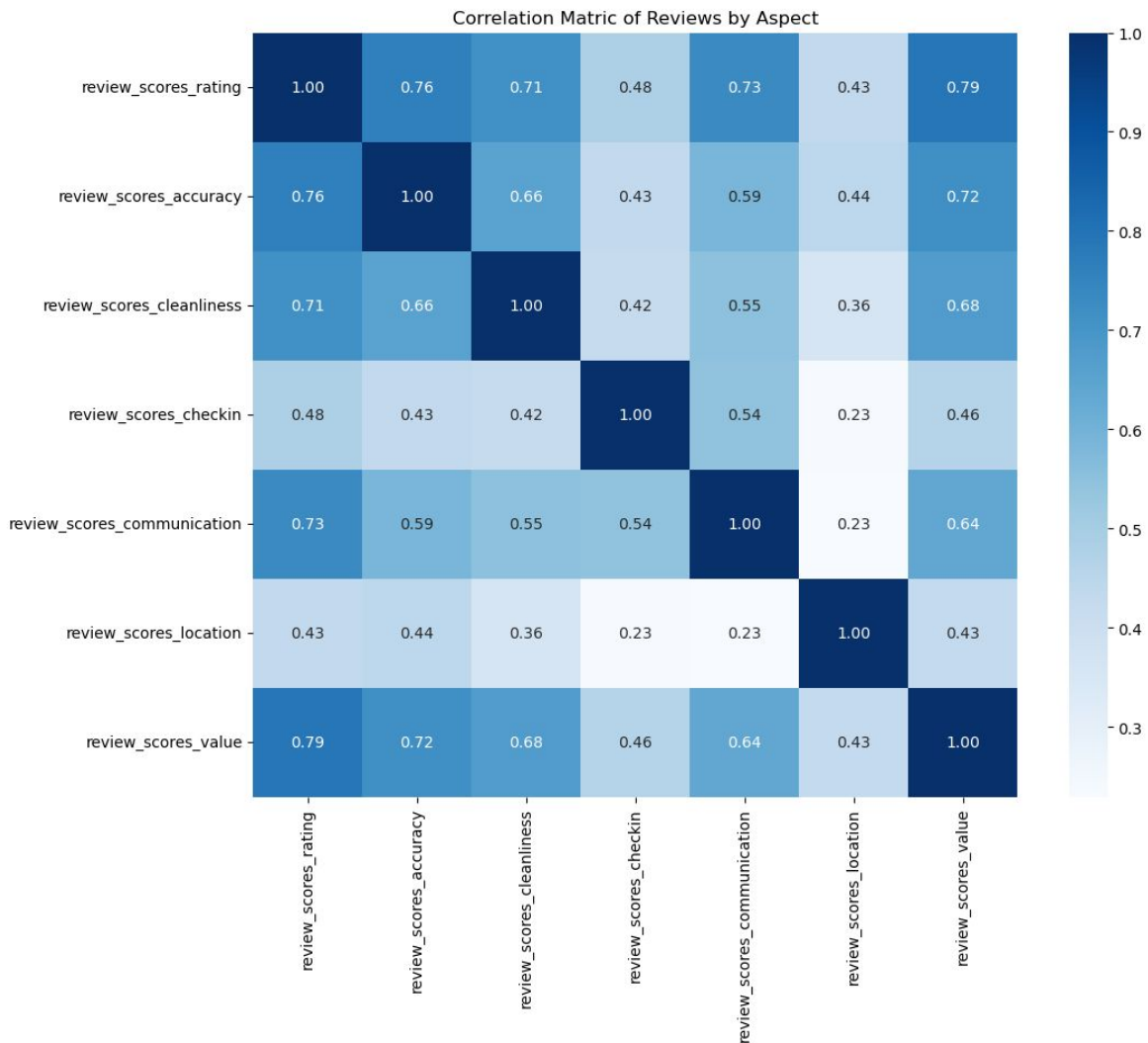
Factors that Affect Airbnb Ratings

People respond more to

- Accuracy in descriptions
- Value of Money
- Cleanliness

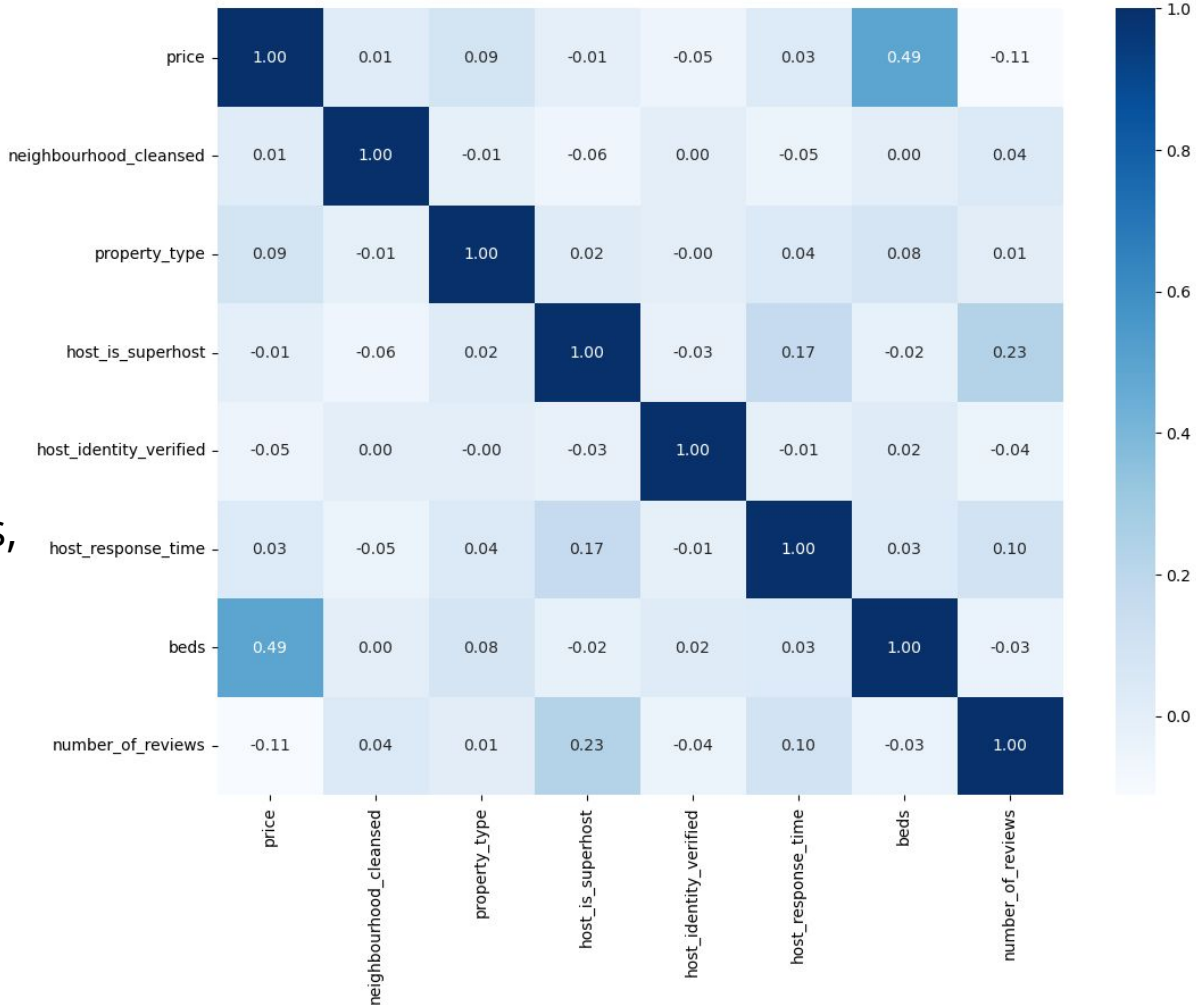
People respond lesser to

- Location
- Communication



Factors that Affect Airbnb Prices

Price = **f** {neighbourhood, property type, superhost status, verified host, active host, beds, number of reviews}

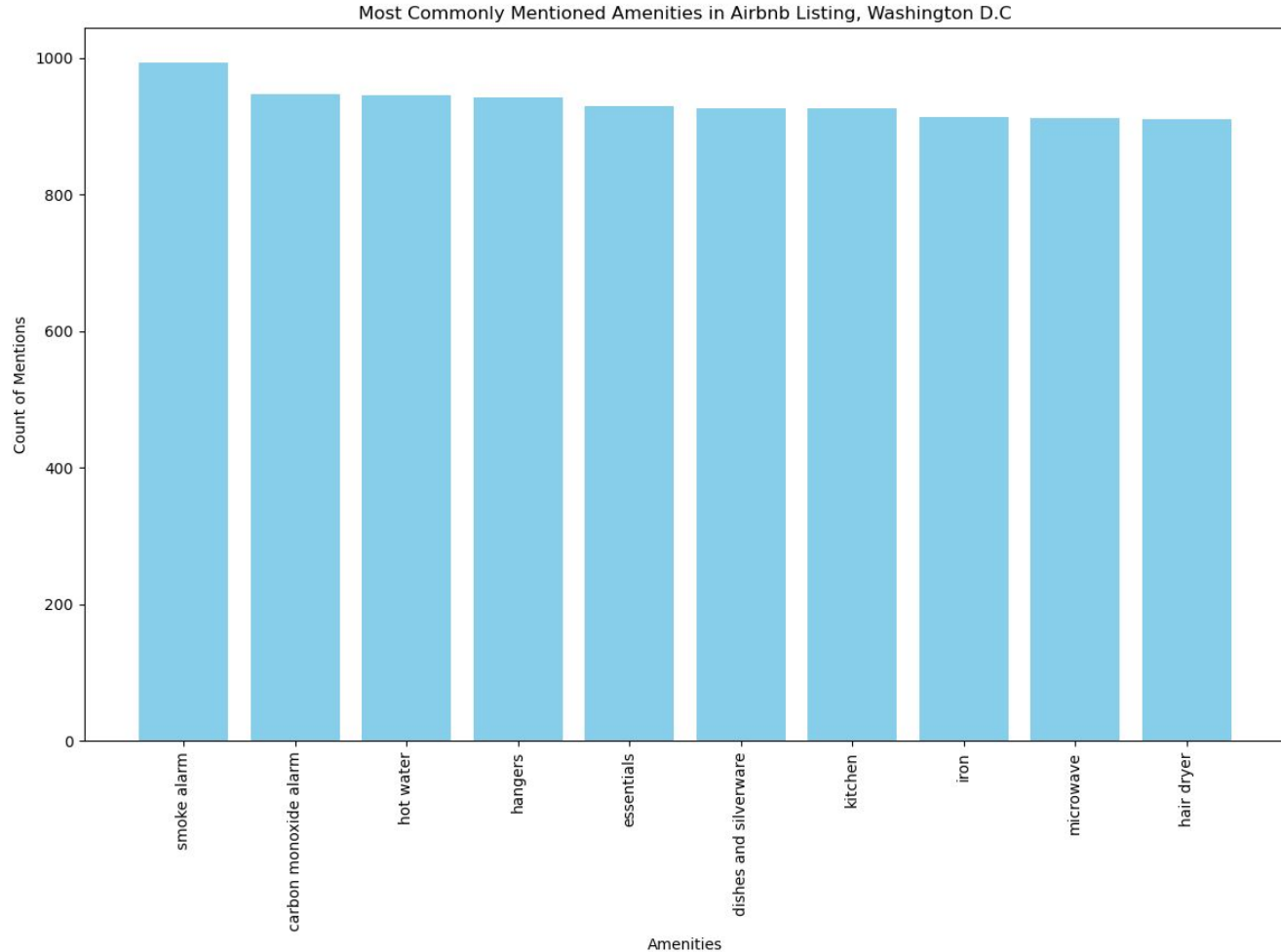


Optimizations

Checking for Airbnbs
with rating ≥ 4.9

We found that most
featuring amenities
included

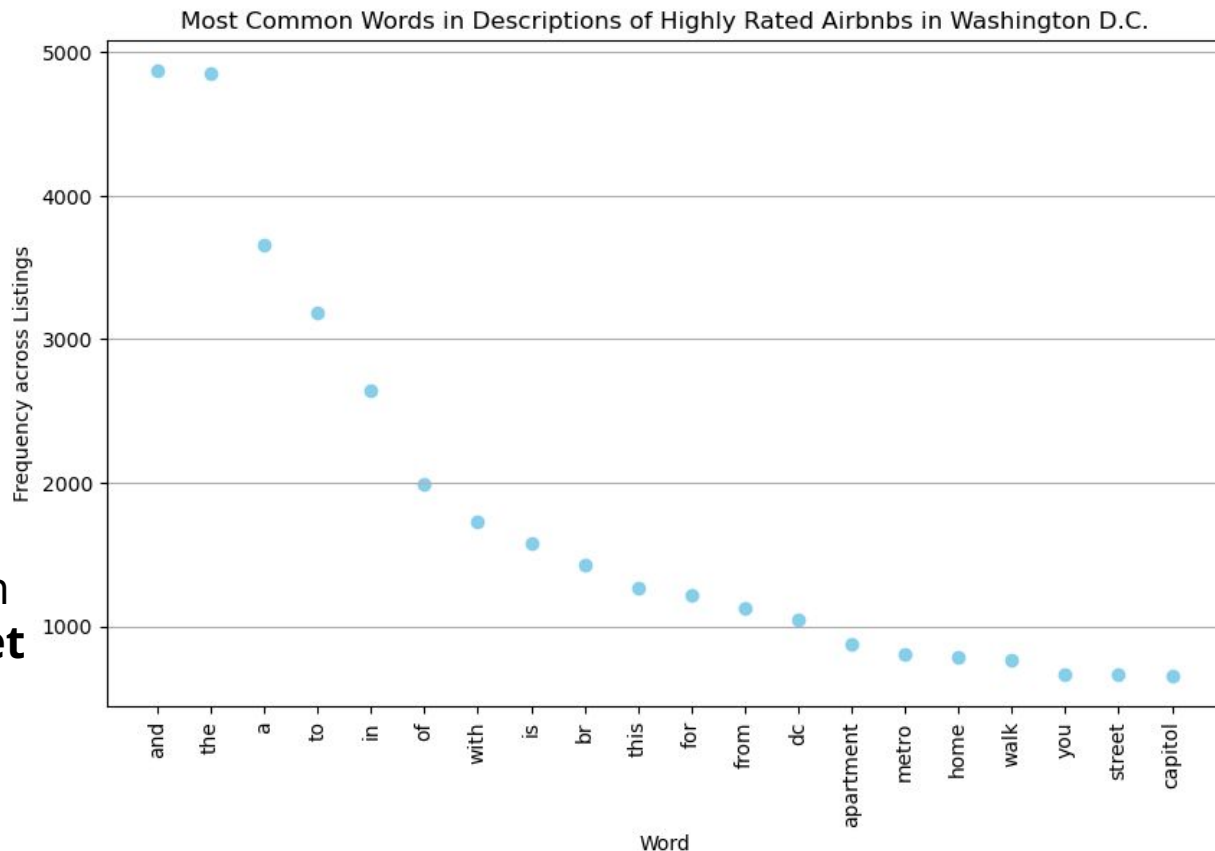
1. **Kitchenette** and
related items
2. Irons and
Essentials



Optimizations

Checking for Airbnbs with rating ≥ 4.9 ,
We found that most common descriptions included:

1. **Bedroom** information
2. Locational information
 - i. Closest **Street**
 - ii. **DC** Area
 - iii. **Metro** Connectivity



Title Optimizations

We found that most titles included:

1. **Locational** information
2. **Apartment Design** information
3. Closeness to **Capitol Area**

