

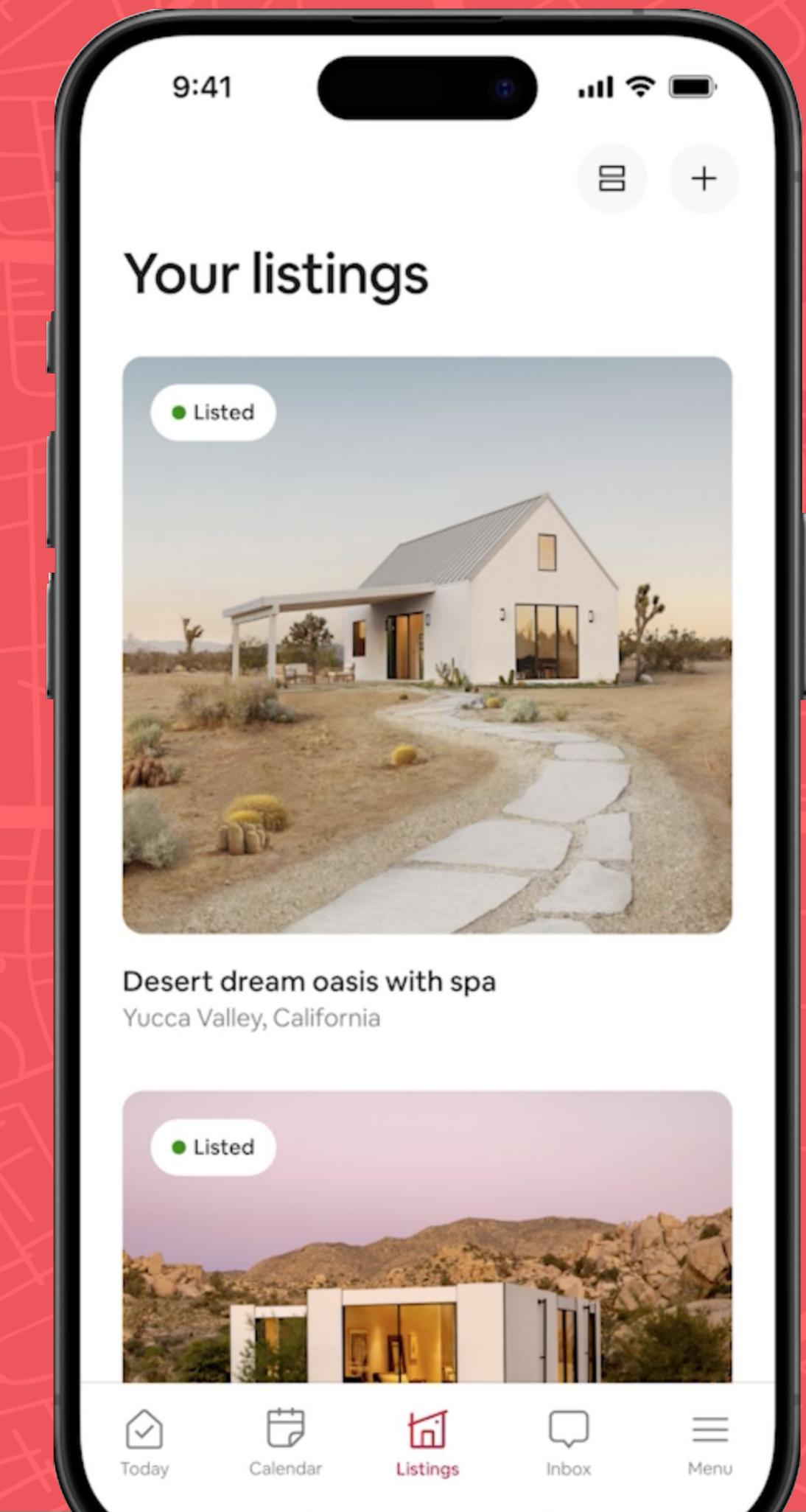


airbnb

STAT 303-1 Final Project

Seoulmates:

Christine Kim, Christine Lee, Seoyeon Yoon, Zindeh Scere





Motivation

Through this analysis, we hope to understand the perspectives of **Airbnb hosts and guests** who choose to stay in the beautiful city of **Chicago**.

- Want for options other than **traditional hotels and beds and breakfasts**
- Airbnb's **popularity** surge during a digital age with **technology**
- **Chicago, IL** as it is close to all of us at Northwestern

Datasets

Chicago Airbnb Data: <http://insideairbnb.com/get-the-data/>

- Listings, Reviews, Calendar



Primary Stakeholders

Hosts

- Main stakeholders
- **Pricing strategies, property types, amenities** to optimize their listings for better **occupancy** and **revenue**

Guests

- **Pricing trends, the neighborhoods with high occupancy rates, and the types of properties available**
- Find the best accommodations in Chicago that meet their **needs** and **budgets**

Secondary Stakeholders

Neighbors

- Residential trends and advocacy around **rental laws** in local neighborhoods.
- Make decisions around the **potential impact** Airbnbs may have in their neighborhoods

City of Chicago

- Generate **revenue** through more **tourism**
- Regulators informed of **impact of short-term rentals** on different neighborhoods
- Influence **policies** around creating laws to maintain **access** to residential housing

Real Estate Investors

- Investors looking to **buy** property
- **Profitability** and other **dynamics** of short-term rentals in different neighborhoods



EXPLORATORY DATA ANALYSIS

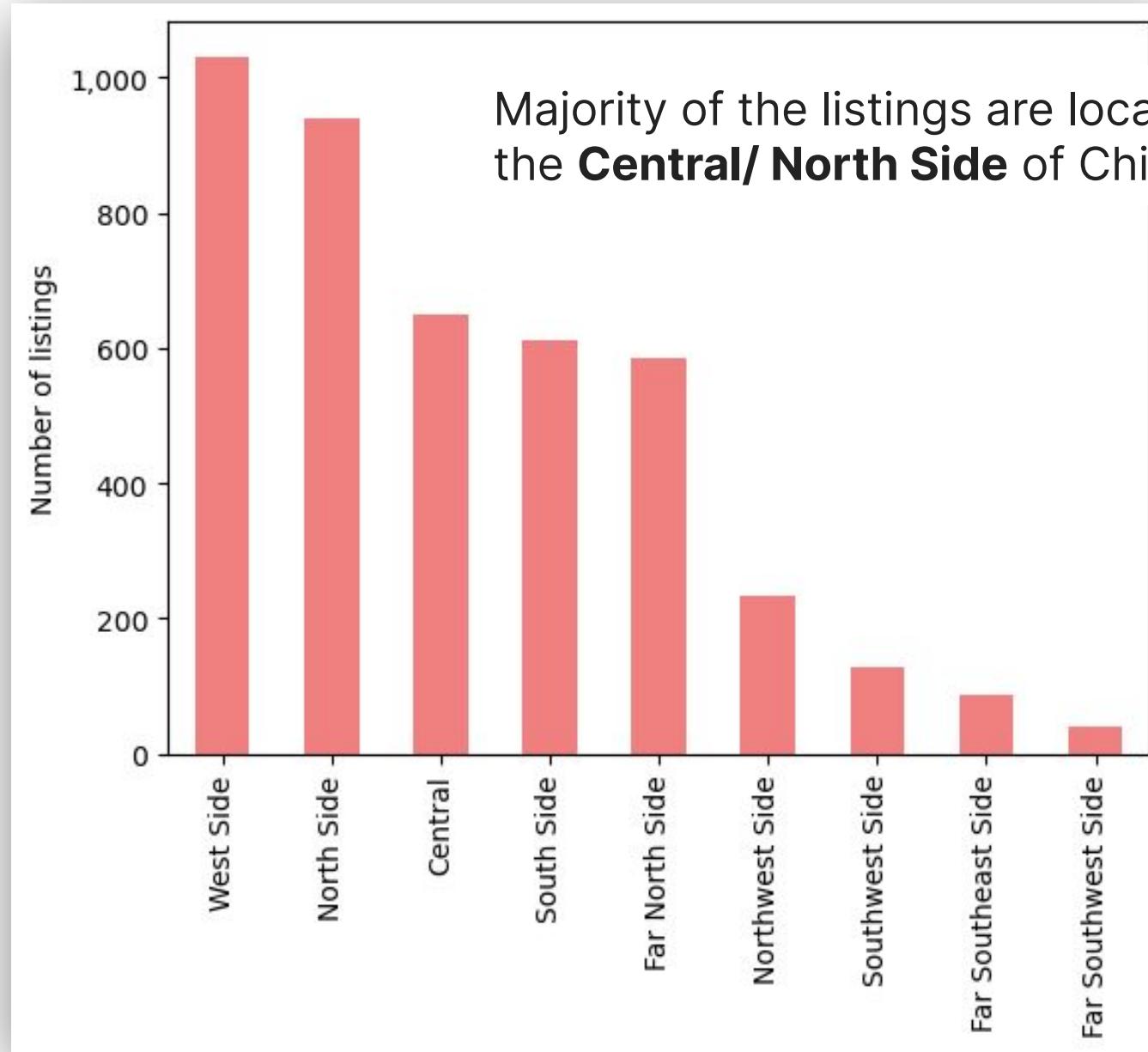
QUESTIONS

Q1

**What is the correlation between the Proximity from
the City and the Price of the Listing?**

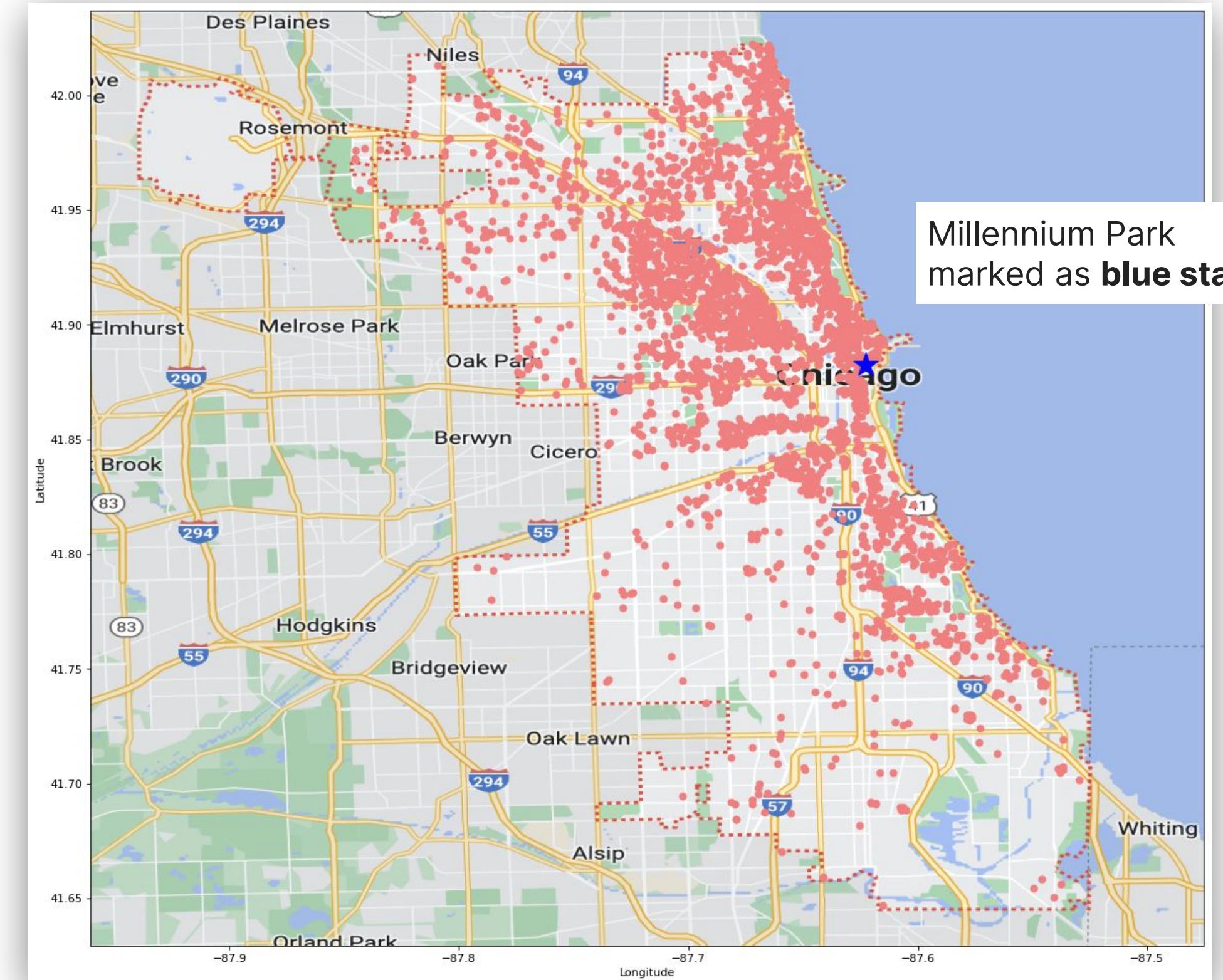


Q1.1: LISTING DISTRIBUTION IN CHICAGO NEIGHBORHOODS

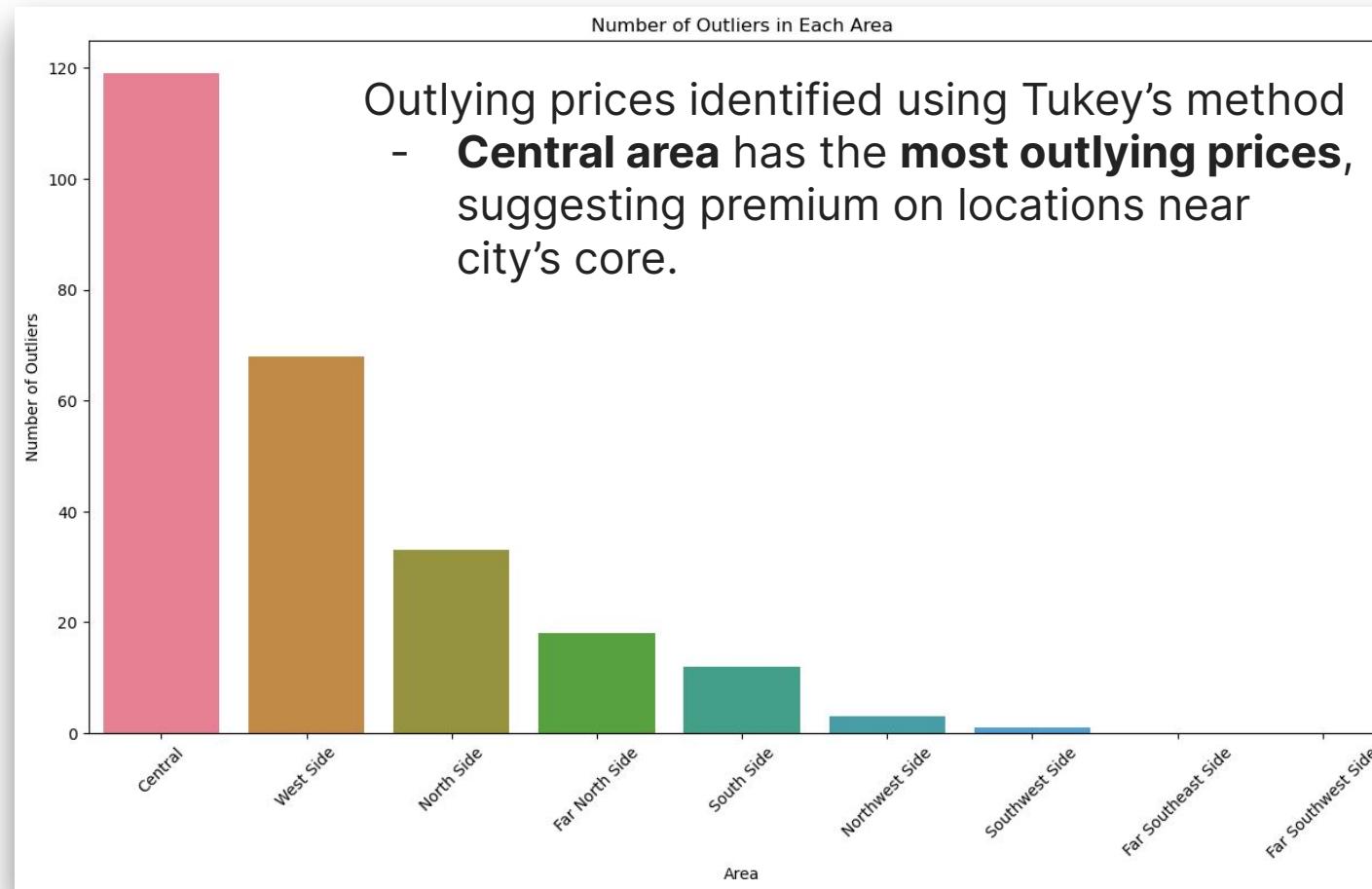


Majority of the listings are located on the **Central/ North Side** of Chicago.

Listings are **densely** populated around the **Central/ North/ Northwest area** and gets less dense as it becomes farther away from downtown.



Q1.2: PRICE COMPARISON FOR EACH AREA (PRICE OUTLIERS ADJUSTED)

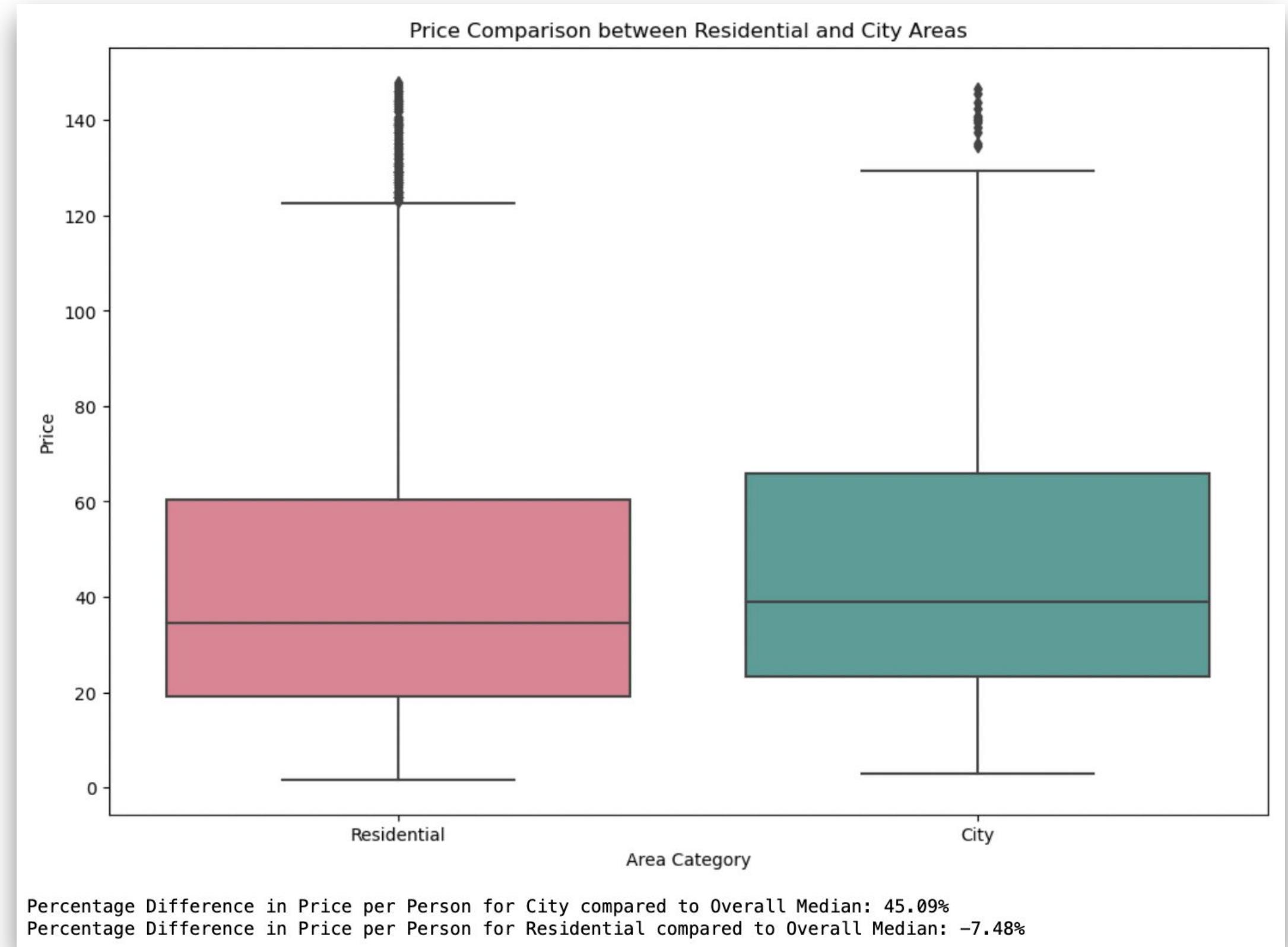


Box and whisker plot

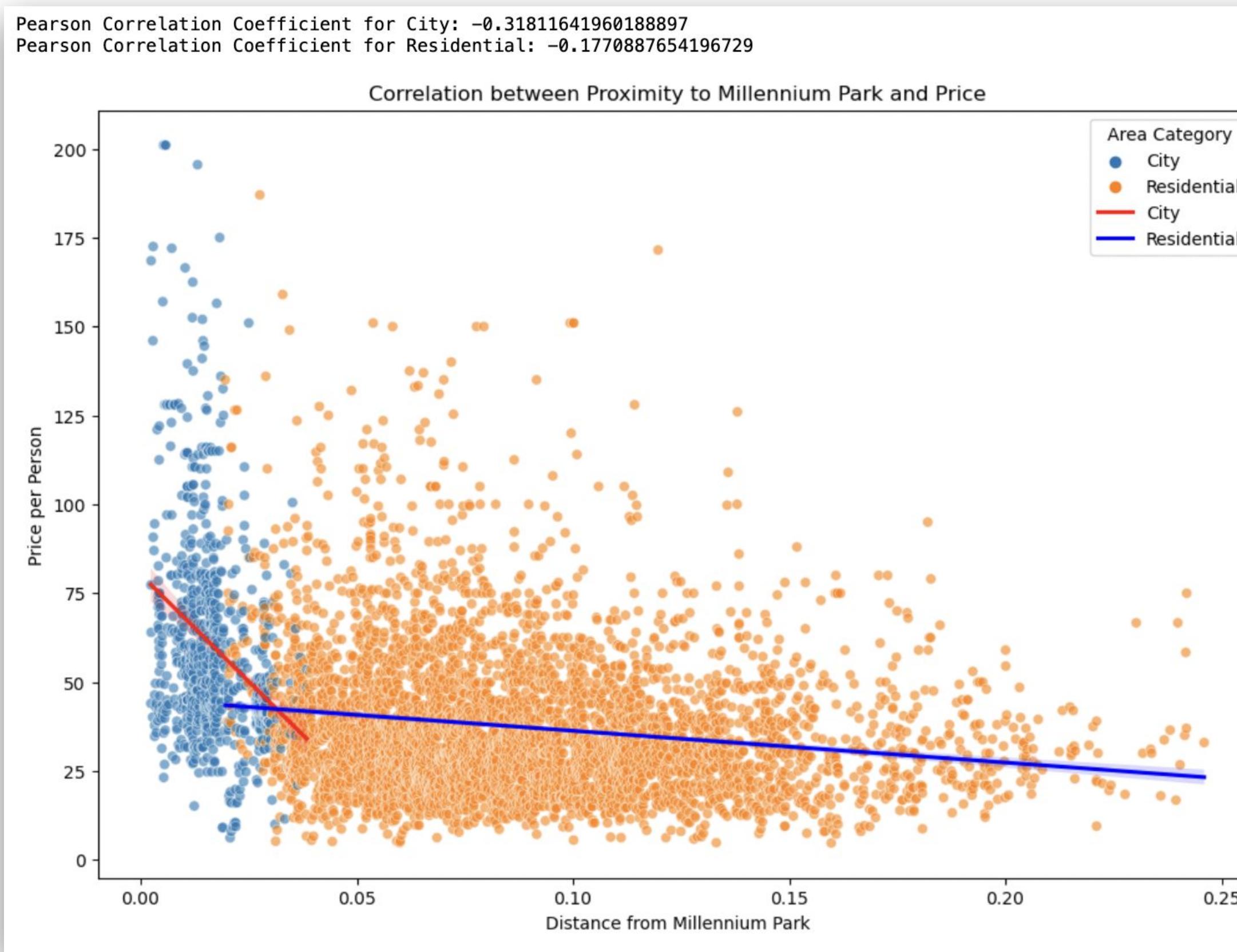
- City has a **higher overall median price**
- City has **wider Interquartile Range (IQR)**: Central area has a more **diverse range of prices**

Comparison of median prices vs. Overall listing median price

- **City** listings tends to be **45% more expensive**
- **Residential** listings tends to be **7% cheaper** than overall



Q1.3: CORRELATION BETWEEN PRICE AND PROXIMITY FROM THE CITY



Correlation Coefficient for City: -0.3181

Correlation Coefficient for Residential: -0.1771

- **Negative correlation:** As the distance from Millennium Park increases, the price per person tends to decrease.
- **City Magnitude:** -0.3181 (weak to moderate); discernible downward trend
- **Residential Magnitude:** -0.1771 (weak); still exists a tendency

→ **Correlations exist but are not strong:**
 distance to the city is an important factor, but other factors may also influence the price.

RECOMMENDATIONS

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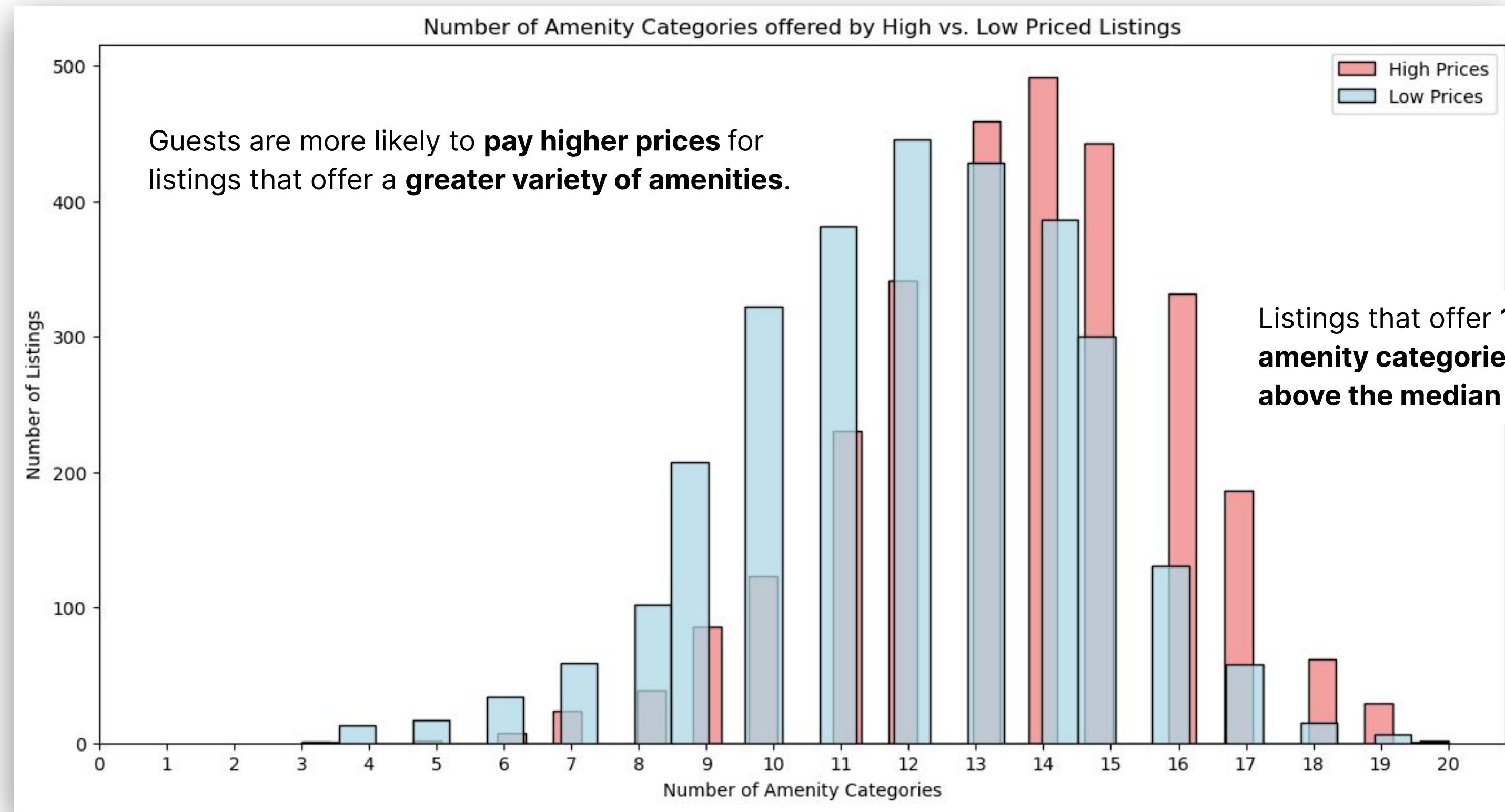


Q2

**Are there associations between Amenities and other
attributes of the listing?**

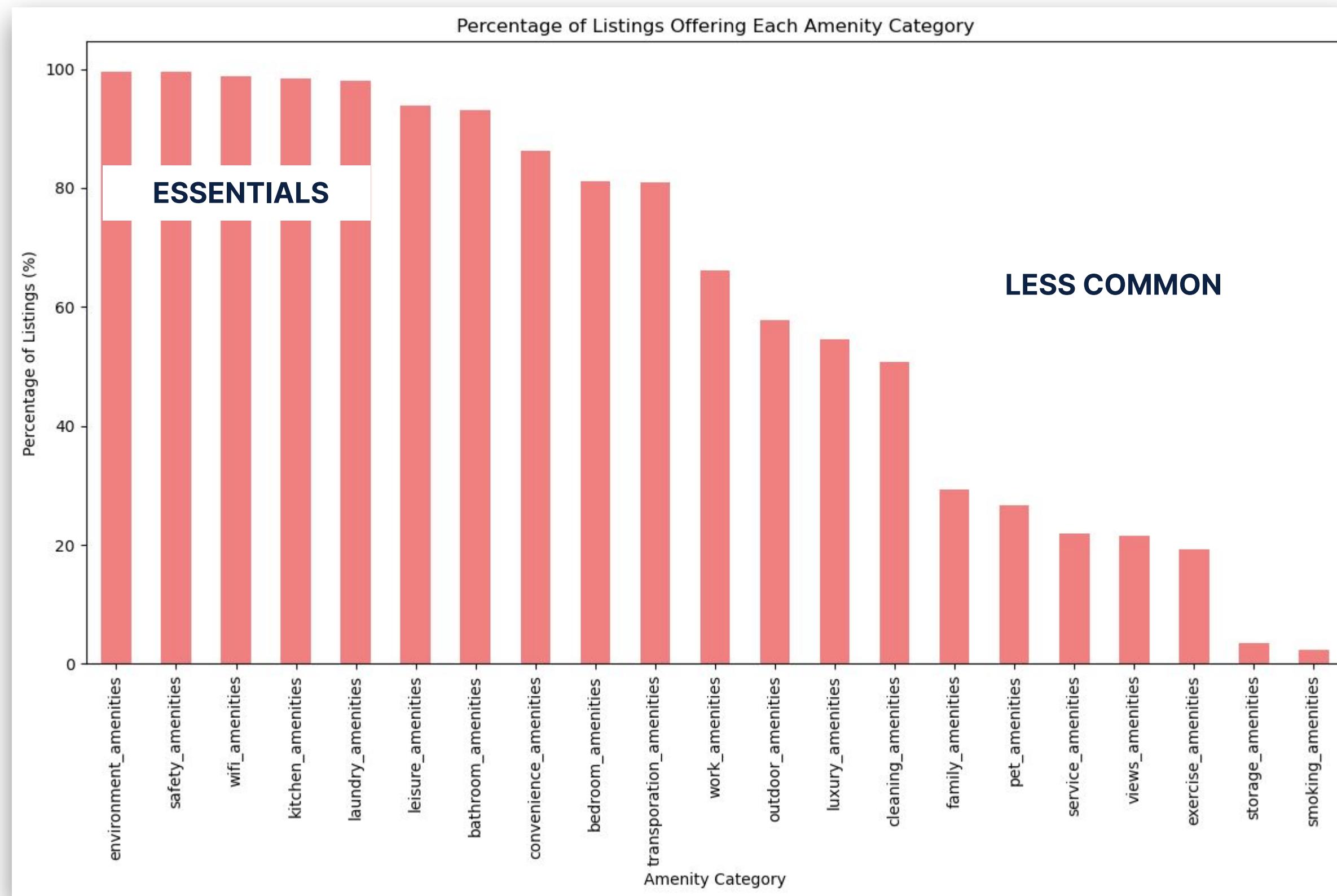


Q2.1: VARIETY OF AMENITIES OFFERED VS LISTING PRICES



"High": above the median
"Low": below the median

Q2.2: PREVALENCE OF EACH AMENITY CATEGORY



Amenities including:

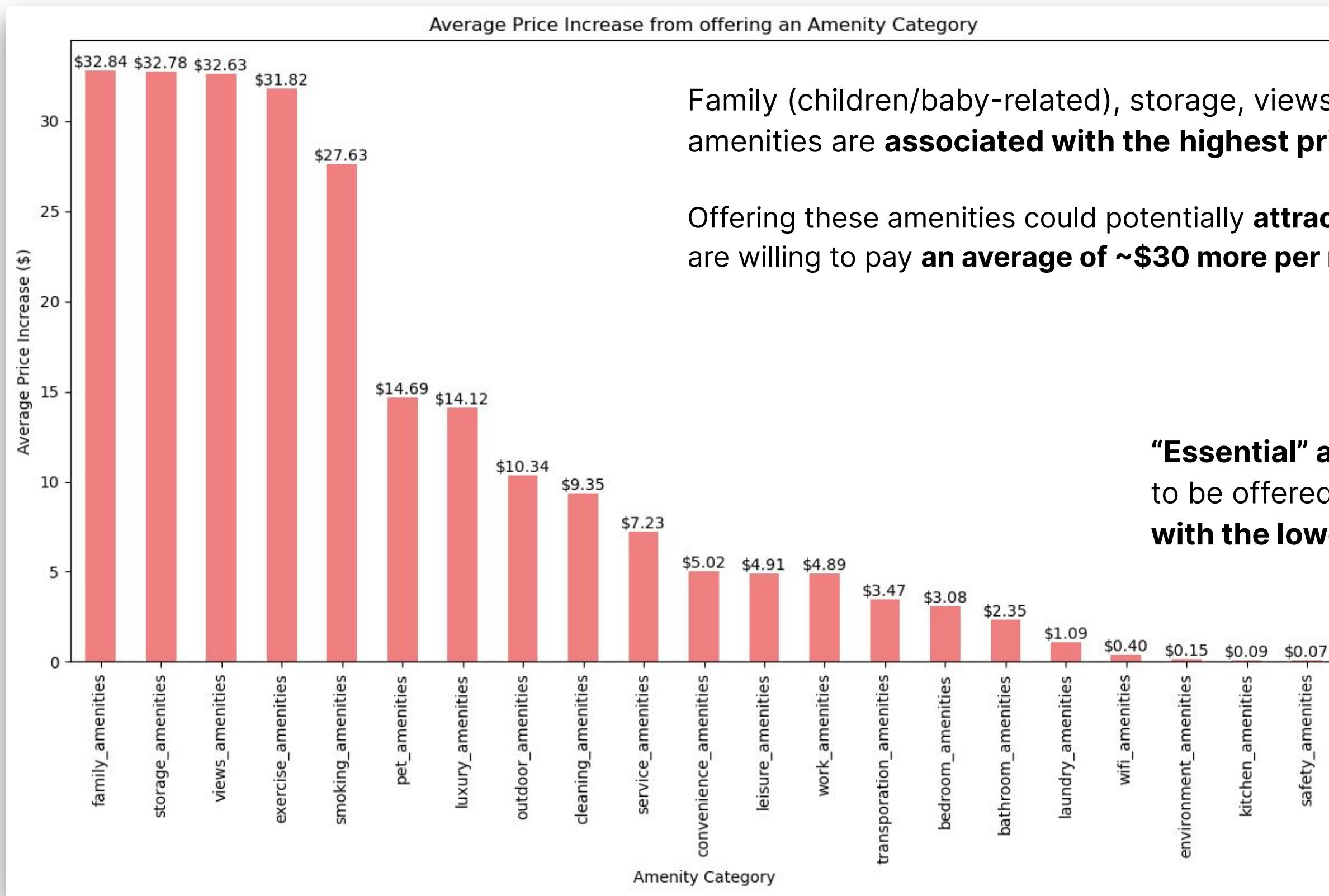
- Environmental controls (AC/Heating),
- Safety features (smoke alarm, fire extinguisher, etc.),
- Wi-Fi,
- Kitchen amenities (dishes, silverware, microwave, etc.)

Nearly ubiquitous across all listings

This suggests that these amenities are considered **essential** by most hosts.

Then, **out of the less common amenities, which ones should the host prioritize offering to maximize return on investment?**

Q2.3: AVERAGE PRICE INCREASE ASSOCIATED WITH OFFERING AN AMENITY CATEGORY VS NOT



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R2 Hosts should first ensure that **essential amenities** (environmental controls, safety, wifi, kitchen amenities) are provided, then consider offering the **most value-adding amenities** (family-friendly, views, storage, exercise equipment) at an **increased price point (~\$30)**.



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Q3

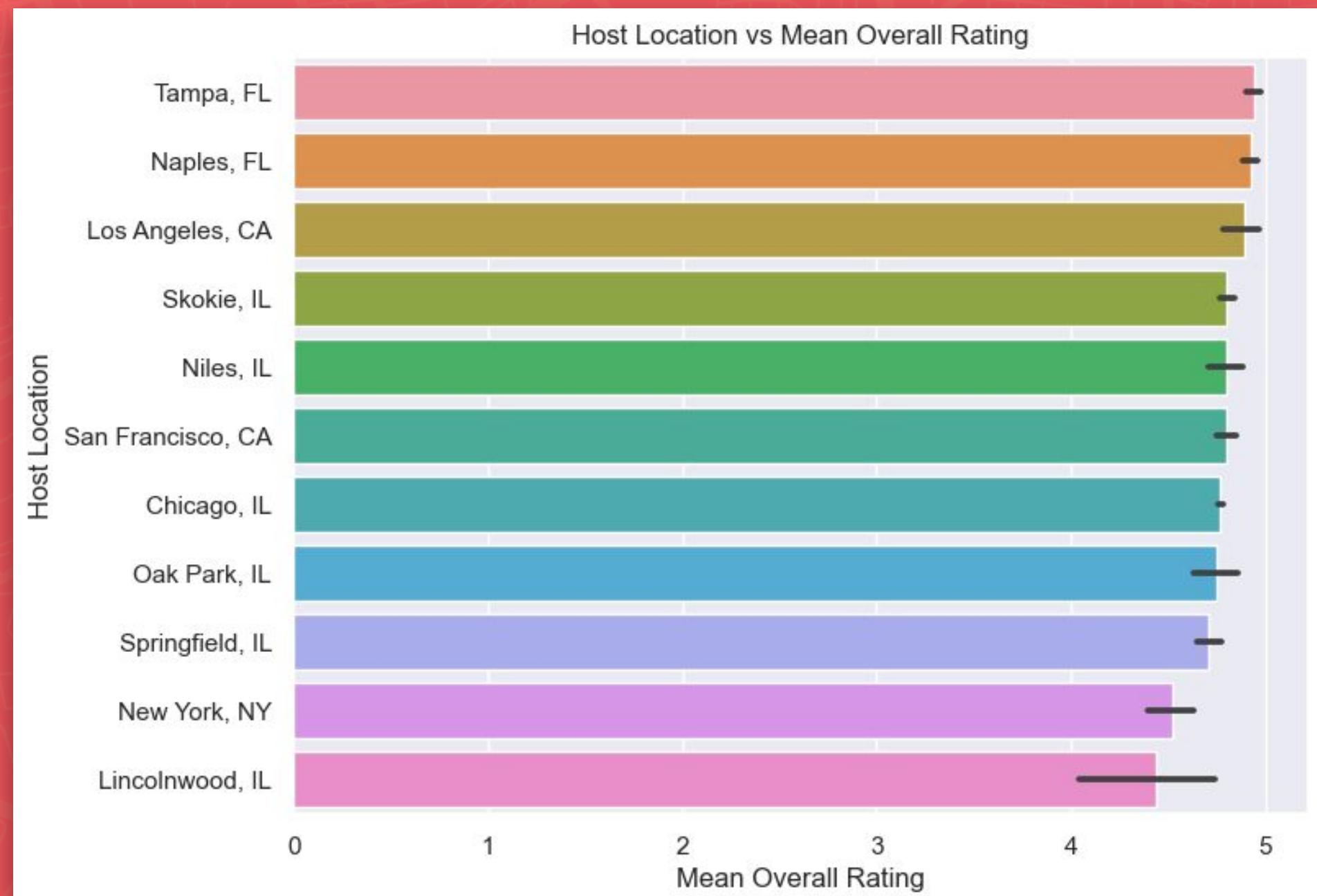
**Are there associations between Host Attributes and
Booking Satisfaction?**



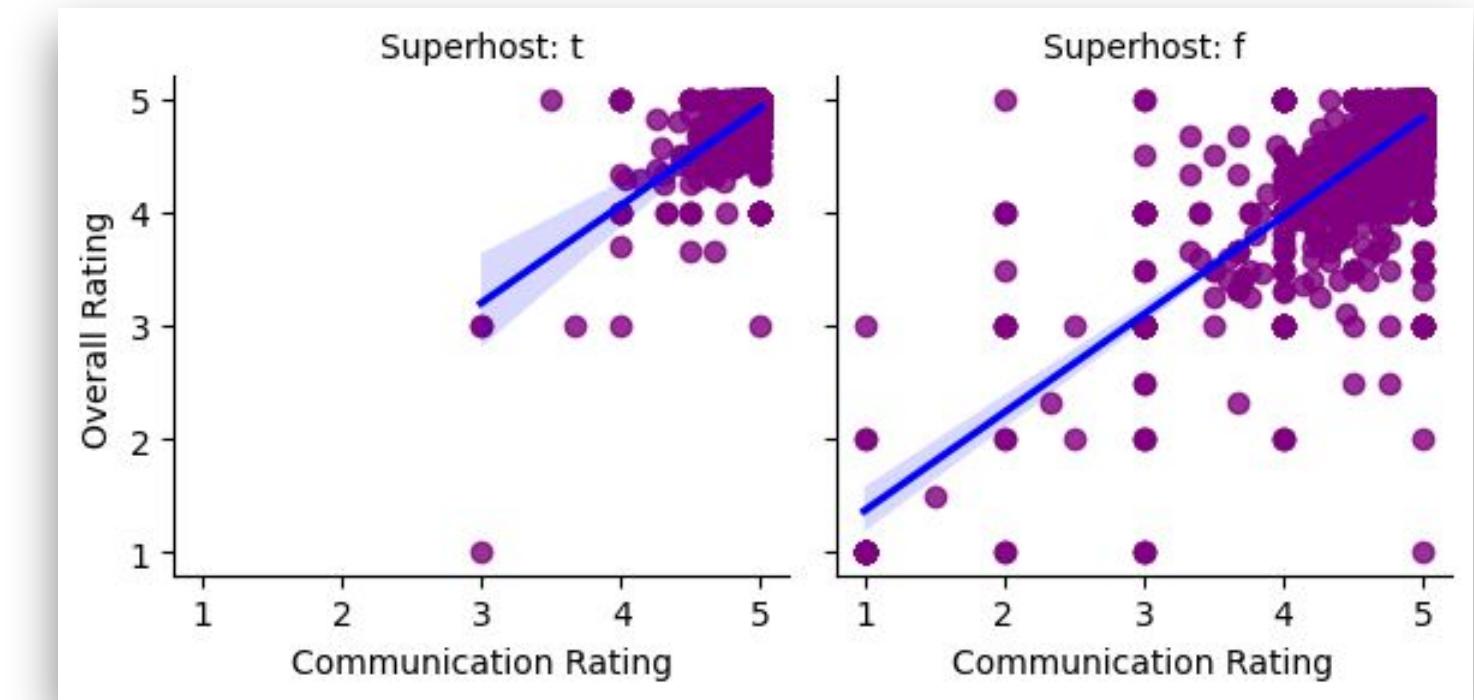
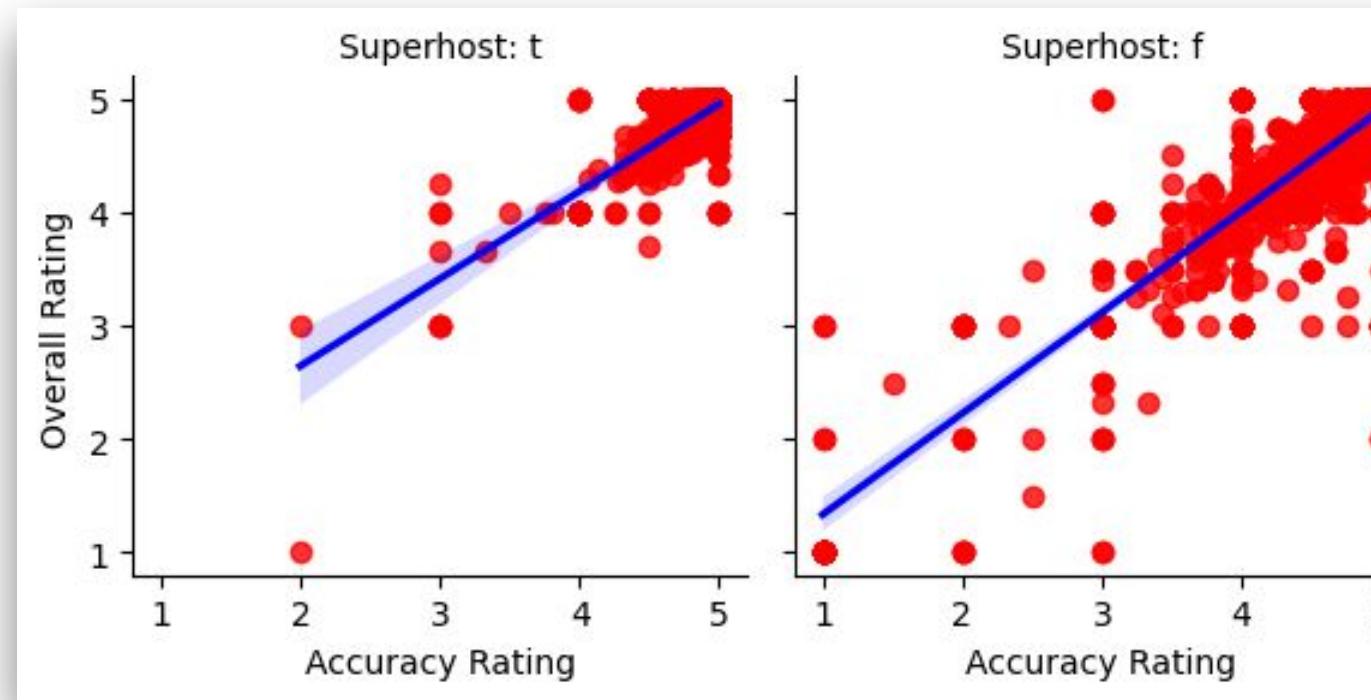
Q3.1: LOCATION VS OVERALL RATING

Being in the same city as listing does not guarantee stronger reviews.

In fact, based on the top 10 host locations, being **outside** of the listing city has a *stronger correlation* with higher overall ratings.



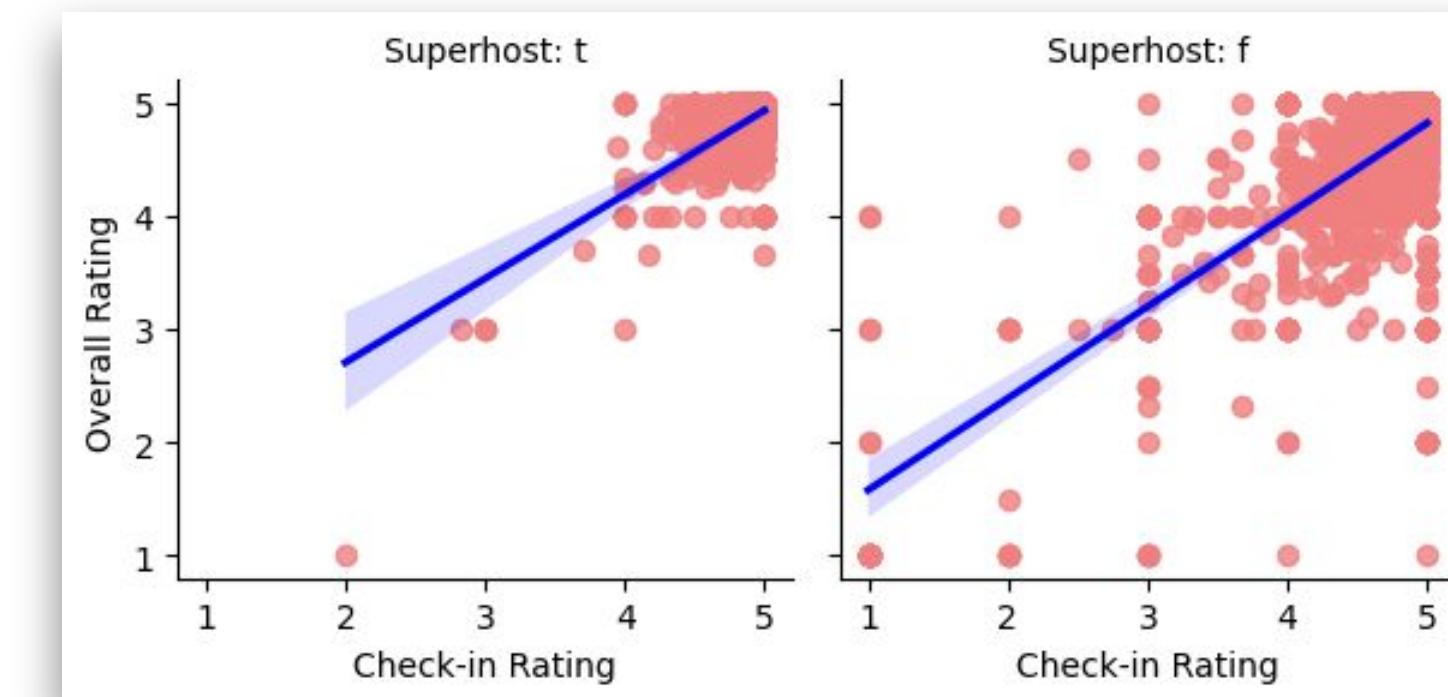
Q3.2: IMPACT OF BEING A SUPERHOST



Qualifications for a superhost:

- Receiving **positive reviews**
- Being **responsive**
- Avoiding **cancellations**

Being a superhost has the *strongest correlation* (relative to other host attributes) on customer booking satisfaction. This is likely due to the effort put in by hosts.

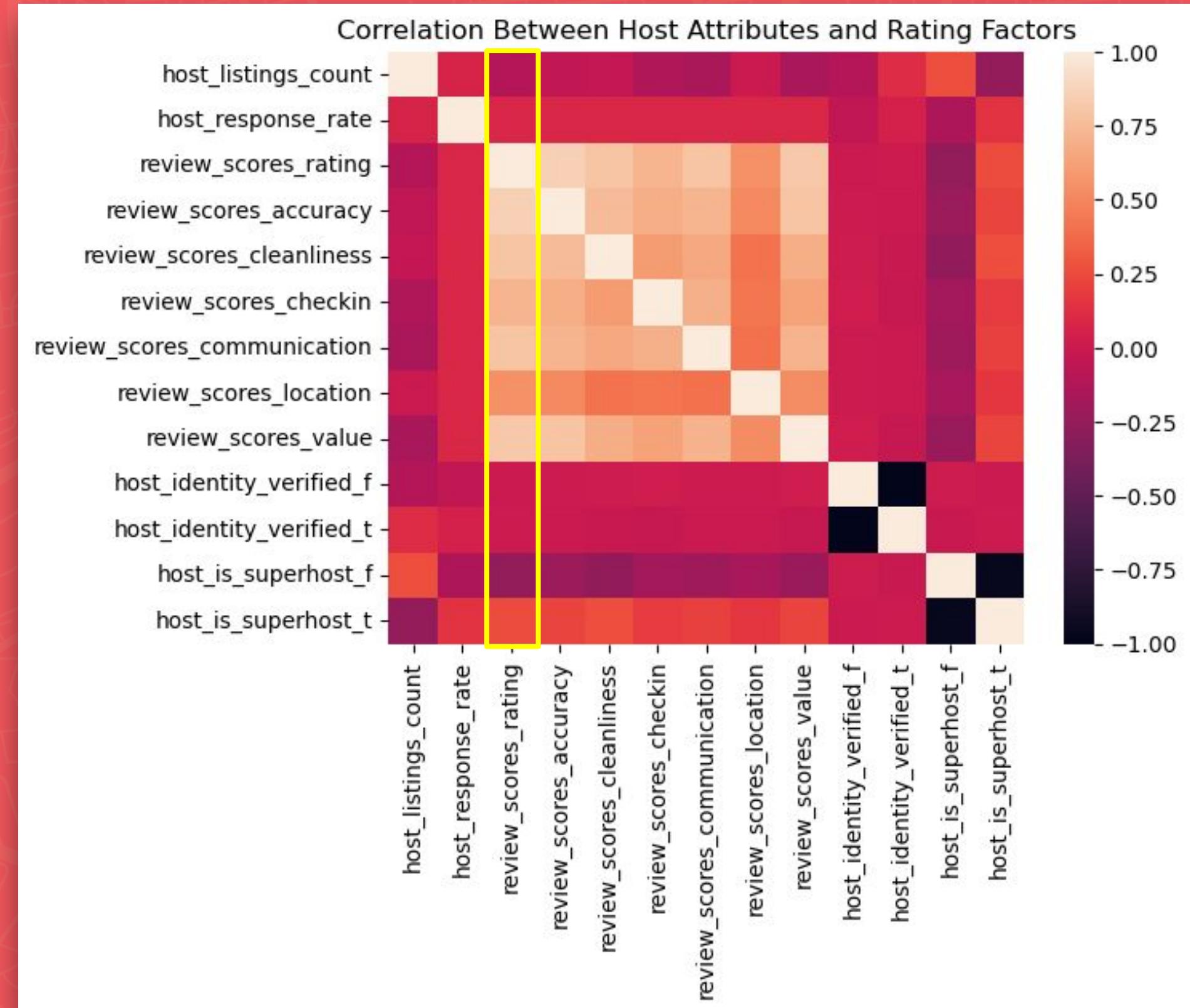




Q3.3: REVIEW FACTORS VS BEING A SUPERHOST

However, *relative to other review factors*, the relationship between being a superhost and booking satisfaction diminishes.

Instead, **cleanliness, listing accuracy, checkin, and communication** seem to have stronger correlation to booking satisfaction.



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R3 Hosts should focus on **clear communication**, **listing description accuracy**, **smooth check-ins**, and **cleanliness** of their listings to be **72-85% more likely** to receive strong booking satisfaction.



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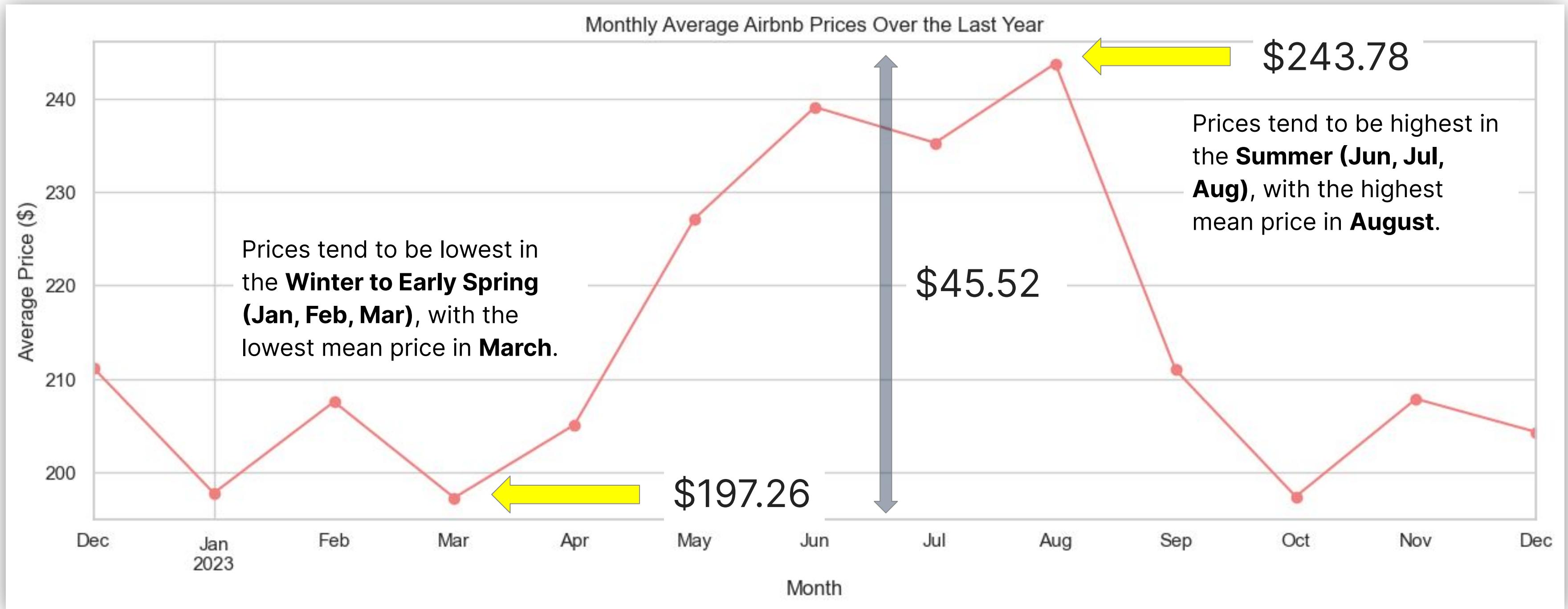
How are Seasonal trends related to Pricing?



Q4.1: MONTHLY PRICE TRENDS



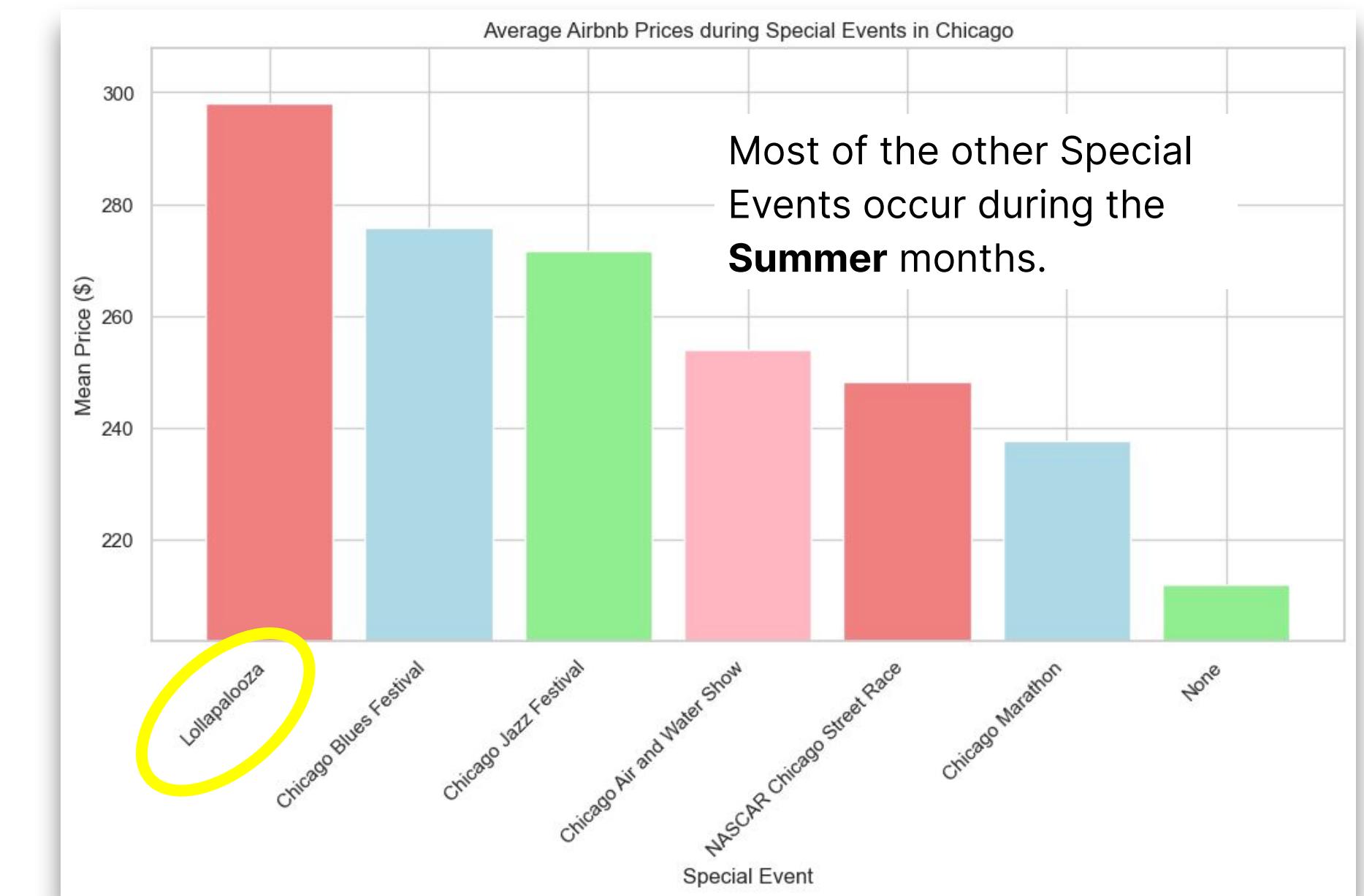
Q4.1: MONTHLY PRICE TRENDS



Q4.2: SEASONAL PRICE TRENDS



The highest mean price occurs during **Summer Vacation** (~\$238).



The highest mean price occurs during **Lollapalooza** (~\$297).

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- R4** Guests can save up to \$45/day if they book for **Winter/Early Spring**, especially near **Easter**. Then, they can save money by **avoiding** booking during the **Summer** when prices are the highest, although many of Chicago's Special Events occur during the summer.

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[Link to Chicago Airbnb Data](#)



**THANK YOU!
QUESTIONS?**