

MS 491: Marketing Analytics

A Data-Driven Analysis of Airbnb Hotels in the Netherlands and Belgium

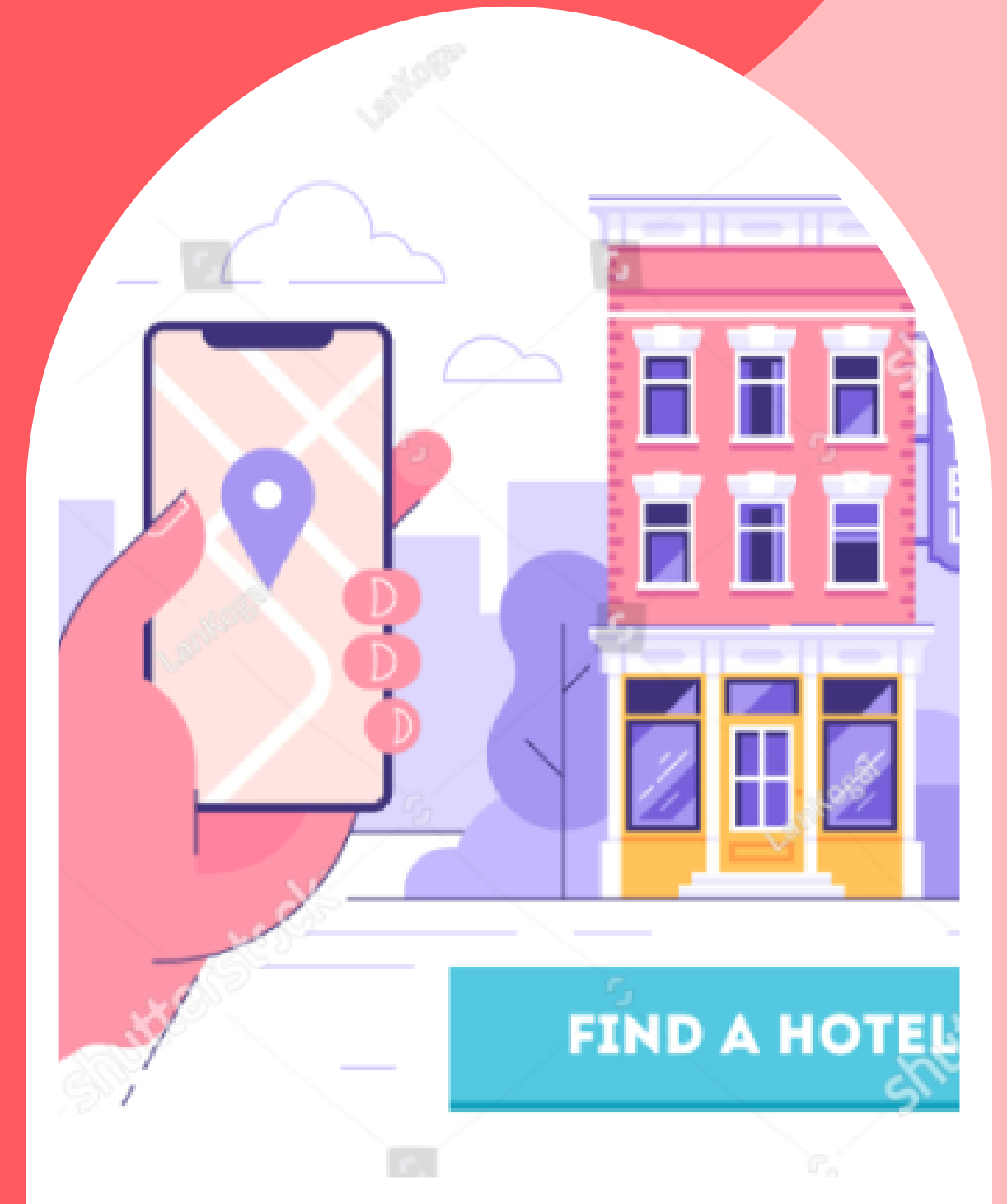
Group 7

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About AirBnb

- An American company founded by Brian Chesky, Joe Gebbia, and Nathan Blecharczyk in 2008.
- Popular online platform connecting people who want to rent their homes/apartments, hotel with travelers looking accomodation.
- Acts as a broker and earns by charging a commission and service fee from every booking.





Features of the Dataset

1. **id**

- Column: A
- Description: ID of the property

2. **name**

- Column: B
- Description: Name of the property

3. **host_id**

- Column: C
- Description: ID of the host

4. **country**

- Column: D
- Description: Dummy variable where
- 1 stands for Netherlands and 2 stands for Belgium

5. **neighborhood**

- Column: E
- Description: Locality or region

6. **latitude**

- Column: F
- Description: Latitude of property

7. **longitude**

- Column: G
- Description: Longitude of the property

8. **room_type**

- Column: H
- Description: Name of the property

9. **price**

- Column: I
- Description: Price per night at the property

10. **minimum_nights**

- Column: J
- Description: Minimum number of nights allowed for a stay

11. **number_of_reviews**

- Column: K
- Description: Number of reviews on the Airbnb

12. **reviews_per_month**

- Column: L
- Description: Average number of reviews per month

13. **calculated_host_listings_count**

- Column: M
- Description: Properties a single host has

14. **room_type**

- Column: N
- Description: Days the property was available in the last year



Statistical Overview

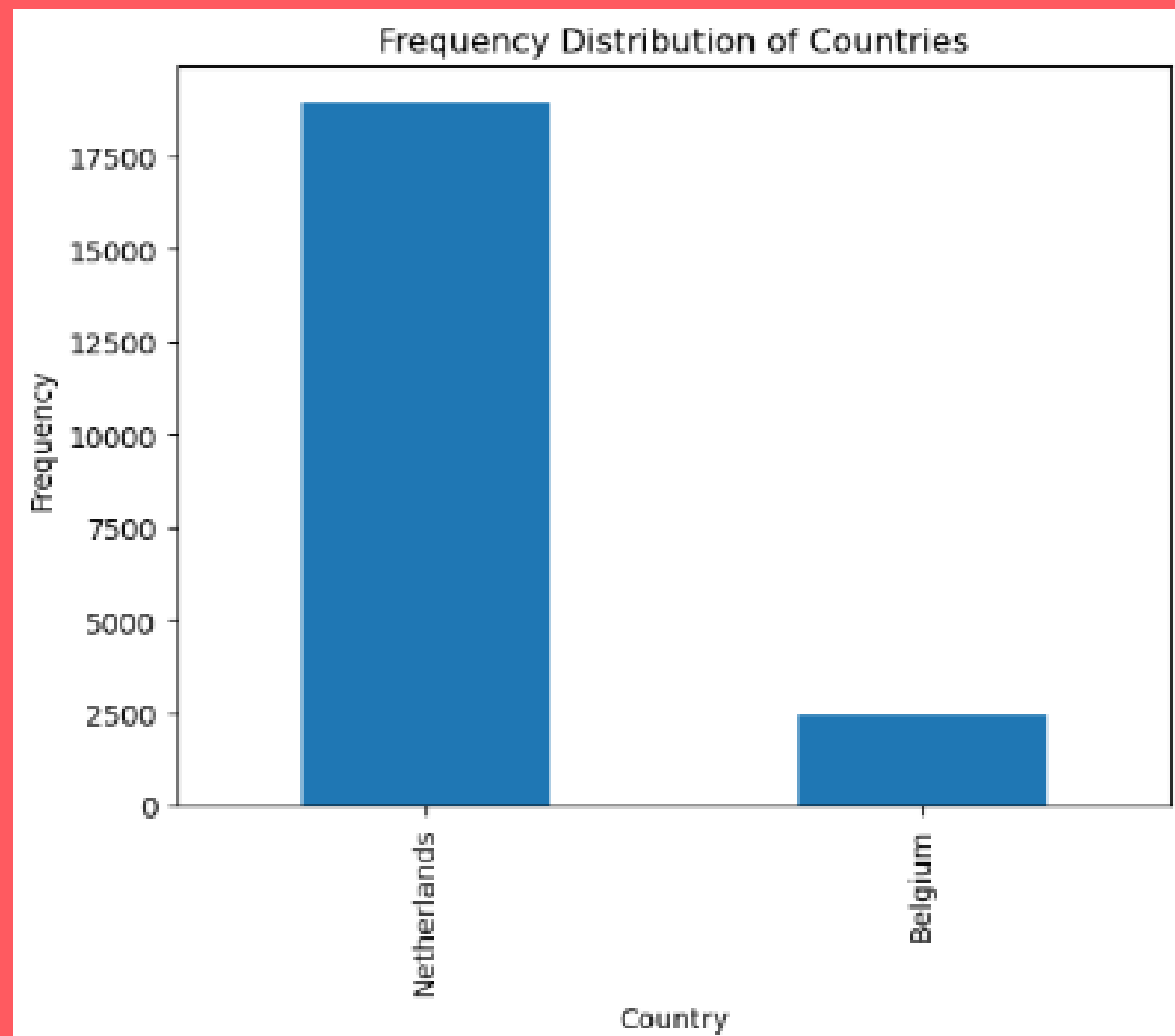
A study of 21,317 Airbnb listings was conducted and the dataset has many variables, so we have categorized the analysis we will be performing:

- General Analysis
- Location Analysis
- Room type Analysis
- Price Analysis
- Host Listings Count Analysis



General Analysis

	price	minimum_nights	number_of_reviews	reviews_per_month	calculated_host_listings_count	availability_365
Count	21371	21371	21371	18600	21371	21371
Mean	154.57	3.730	25.31	77.53	2.68	69.56
Std.	161.14	18.28	54.10	129.73	7.43	117.09
Min	0	1	0	1	1	0
Max	8000	1125	850	4461	85	365

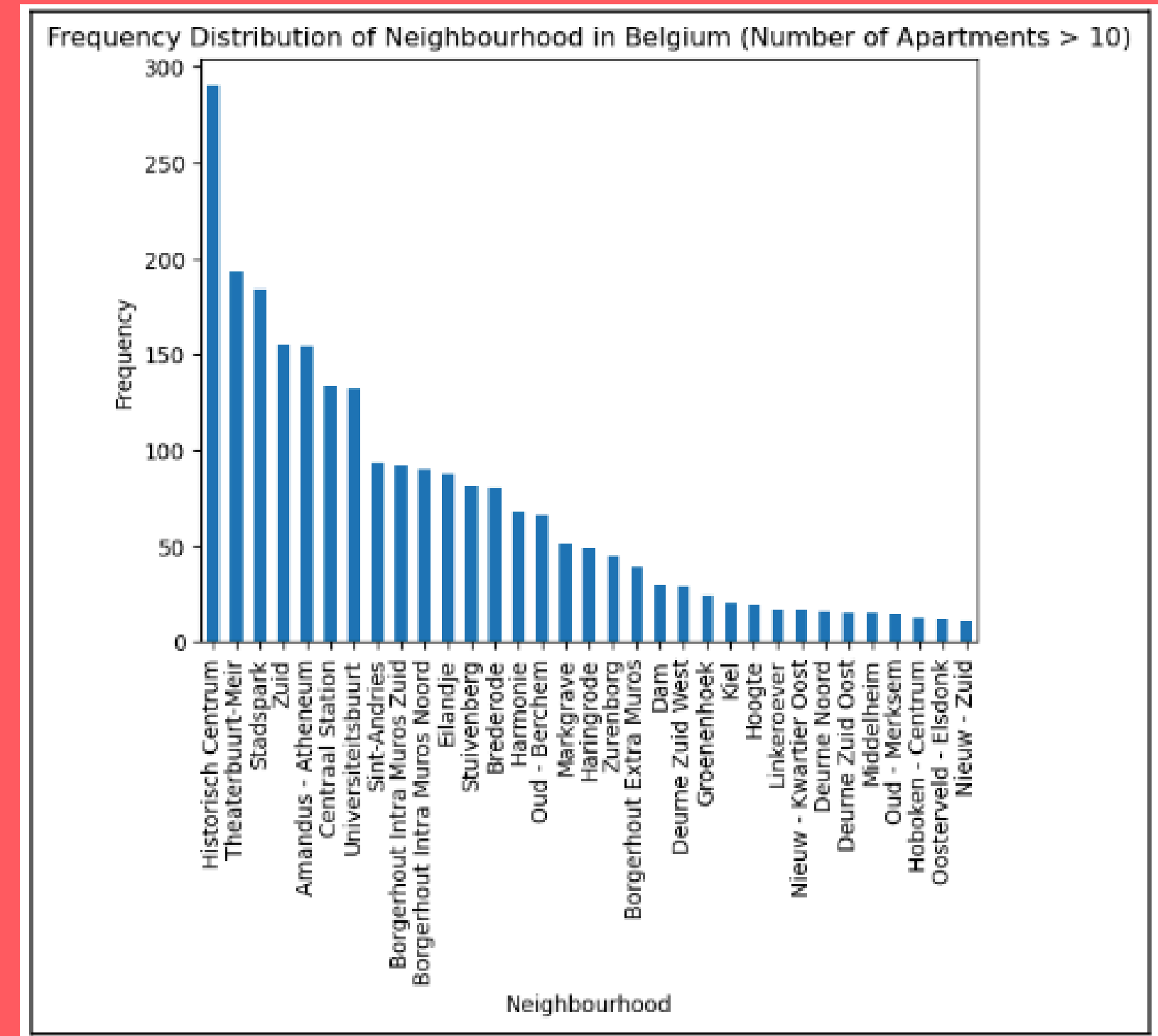
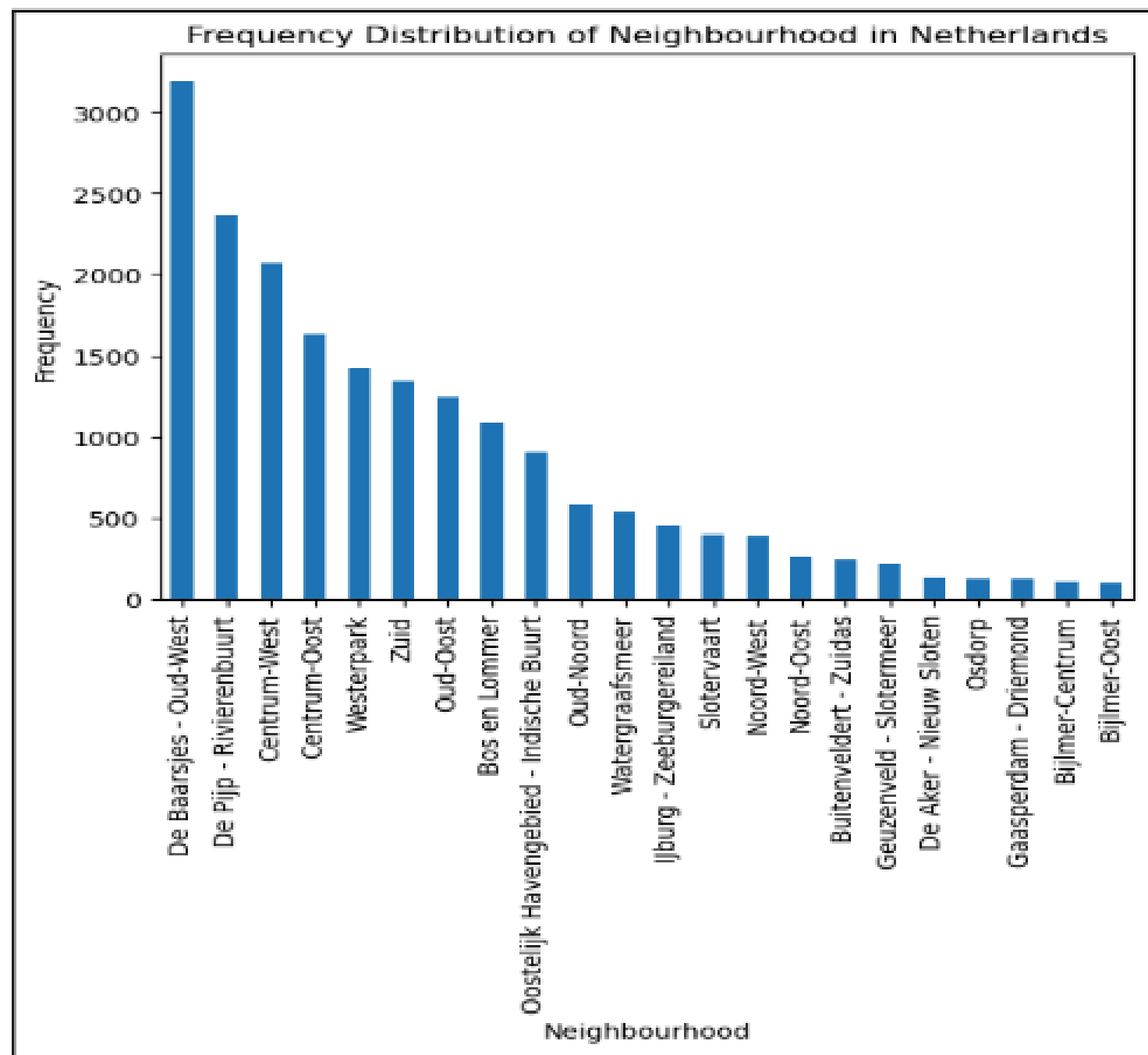


Country	Frequency
Netherlands	18949 (88.89%)
Belgium	2422 (11.11)



Neighbourhood Analysis

- 21 neighborhoods in the Netherlands
- Most Popular: De Baarsjes-Oud-West (3191)
- Least Popular: Bijlmer-Oost (102)

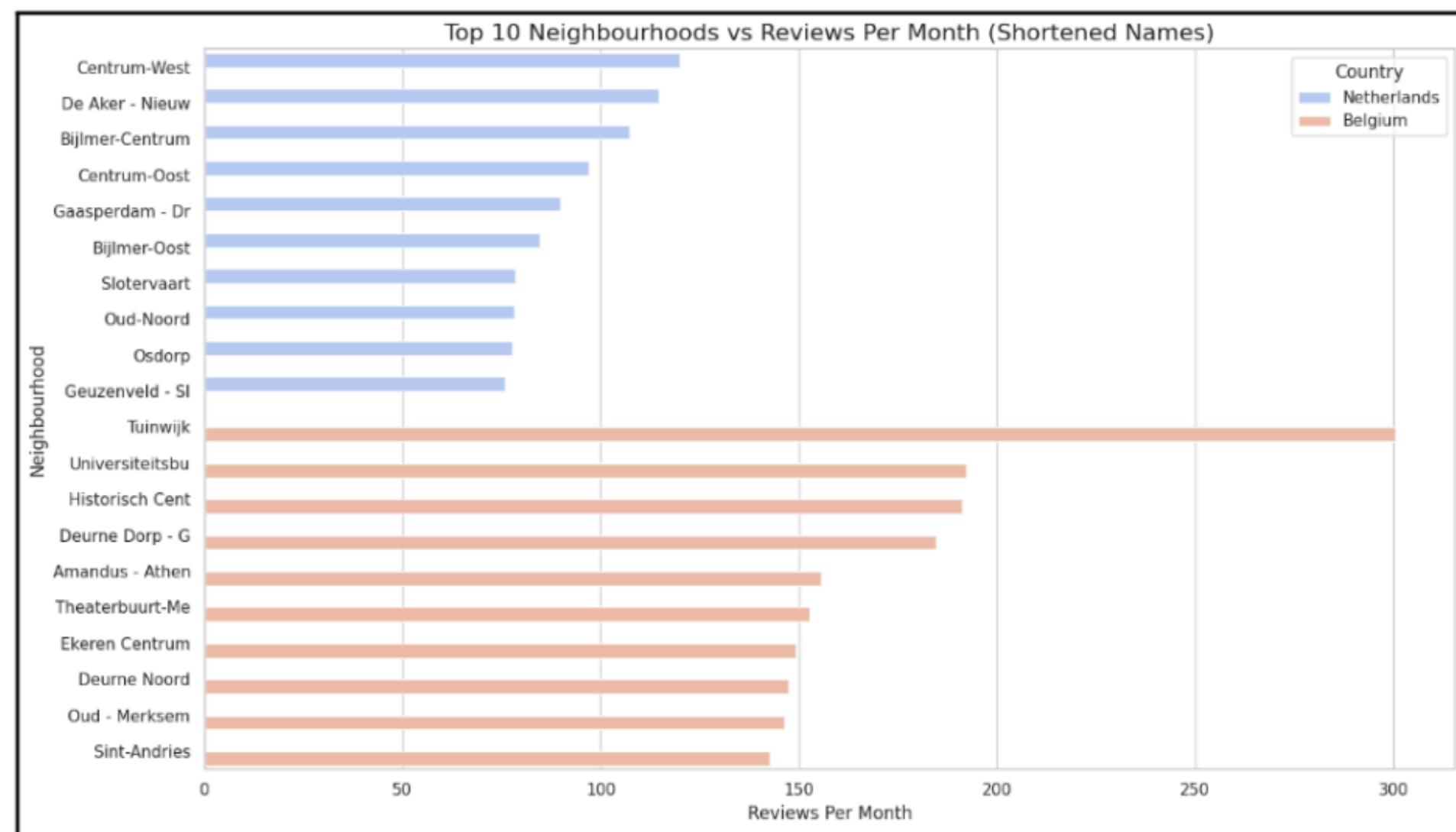
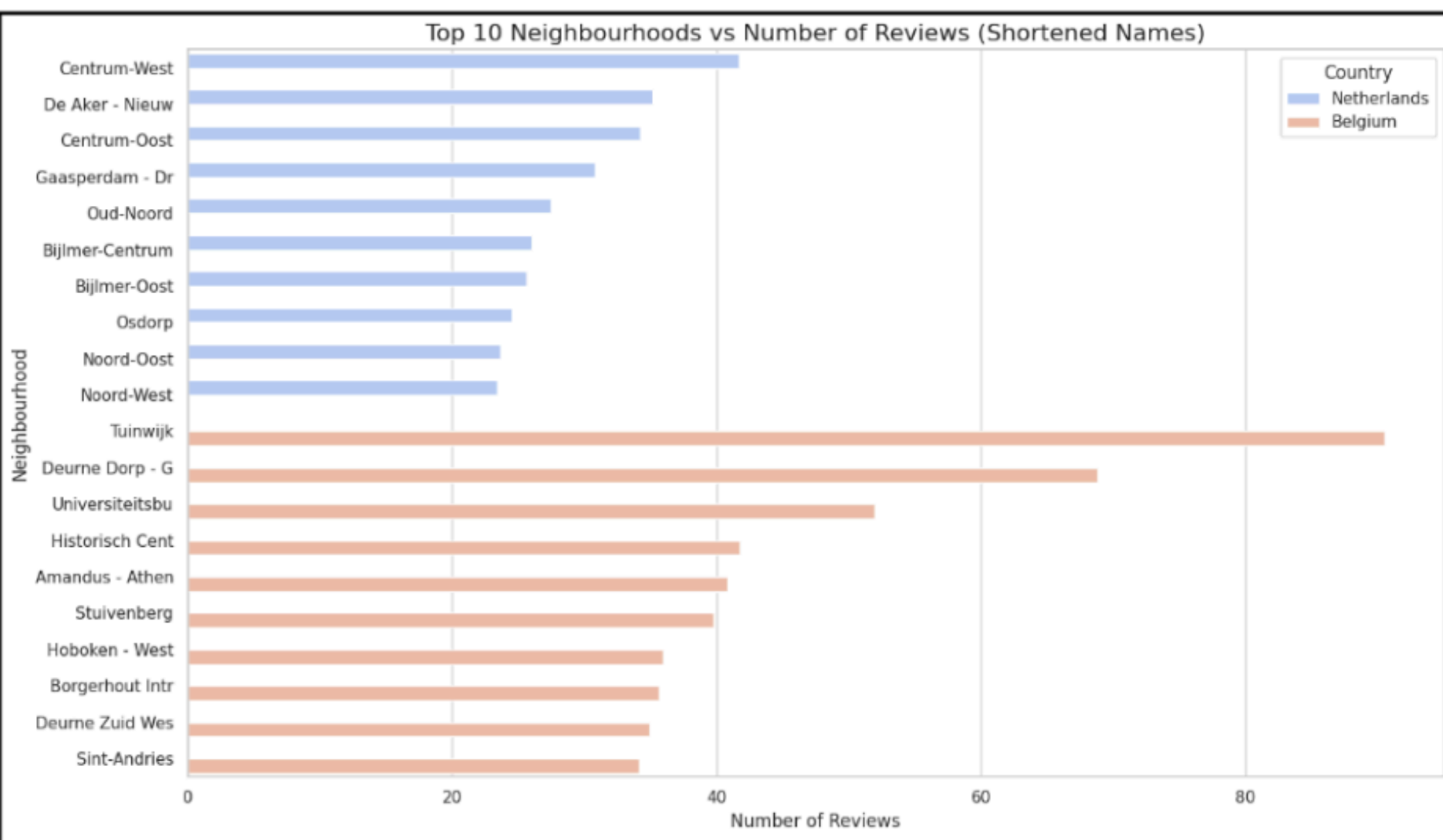


- >32 neighborhoods in the Belgium
- Most Popular: Historic Centrum (290)
- Least Popular: Many neighborhoods(<10)



Neighbourhood Analysis

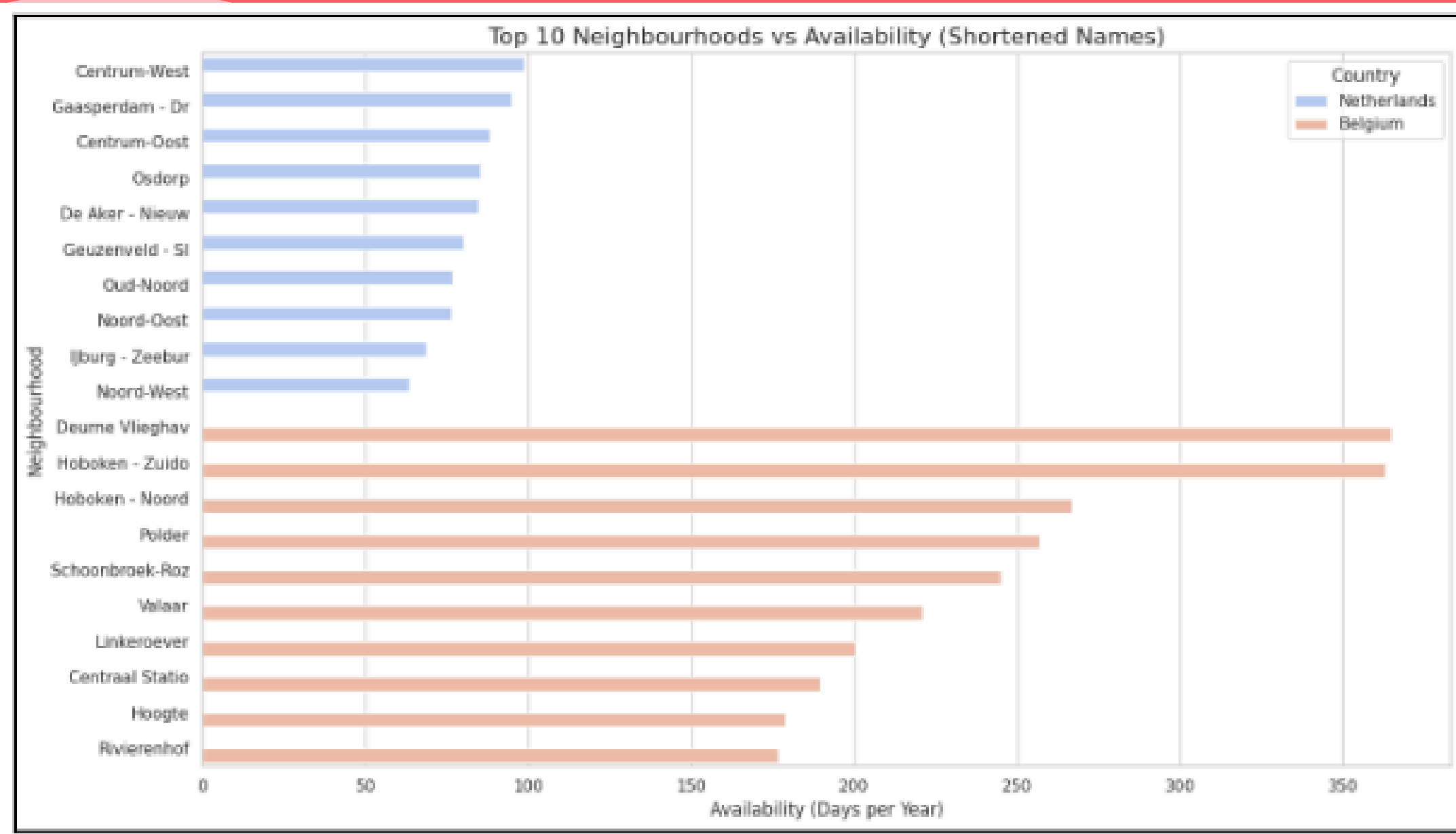
Reviews received by a neighbourhood in Belgium > Reviews received by a neighbourhood in Netherlands



Top 10 Neighborhoods in the Netherlands and Belgium vs. Number of Reviews (left) and Top 10 Neighborhoods in the Netherlands and Belgium vs. Reviews per Month (right)



Neighbourhood Analysis

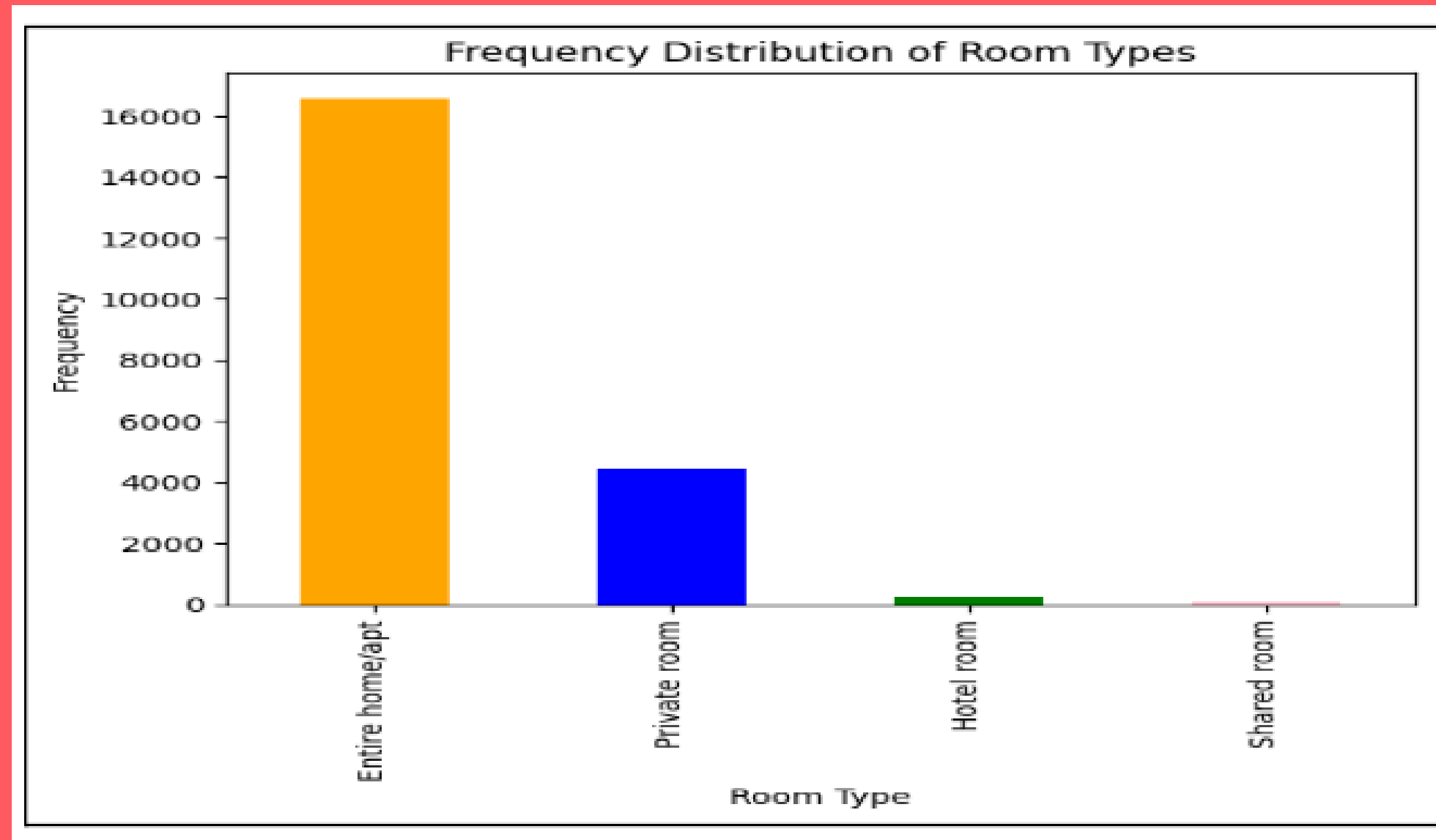


Top 10 Neighborhoods in the Netherlands
and Belgium vs. Availability

- Availability in a neighbourhood in Belgium > Availability in a neighbourhood in Netherlands.
- Netherlands is better for tourist attractions than Belgium.
- High availability shows lower demand and less popularity, possibly because of unappealing neighborhoods, lack of amenities, or negative reviews.
- More neighborhoods in Belgium than in Netherlands (supply greater than demand)



Room Type Analysis

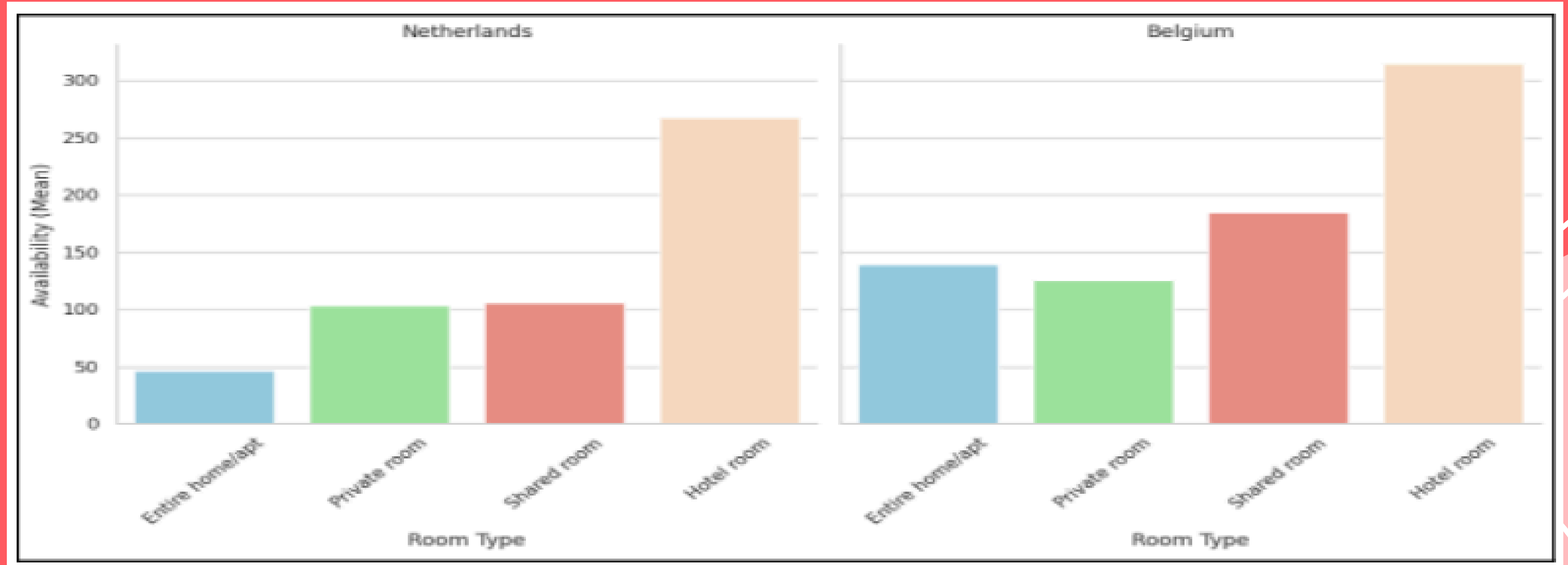


Frequency distribution of room type

- Entire homes and private rooms dominate the Airbnb platform, reflecting the platform's focus on home-like accommodations over commercial hotel stays.
- Hotel rooms and shared rooms are much less common, indicating either lower demand or fewer listings available in these categories.
- This highlights Airbnb's appeal to travelers seeking more intimate or private accommodations compared to traditional lodging options like hotels.



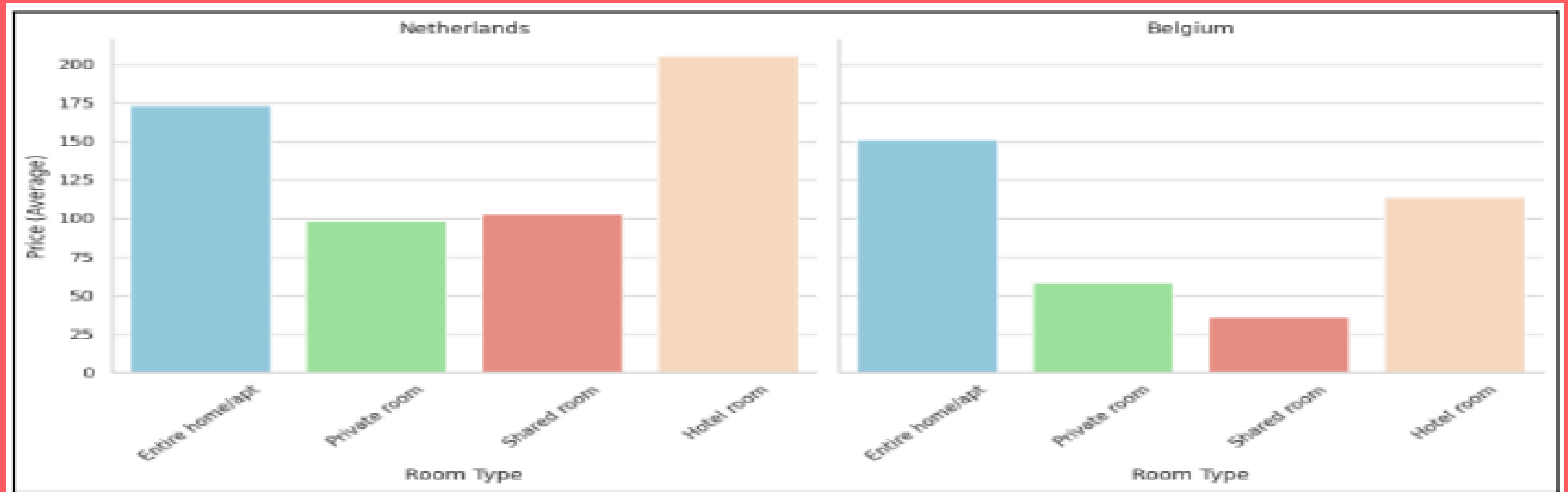
Room Type Analysis



Mean availability of different Room Types in the Netherlands and Belgium



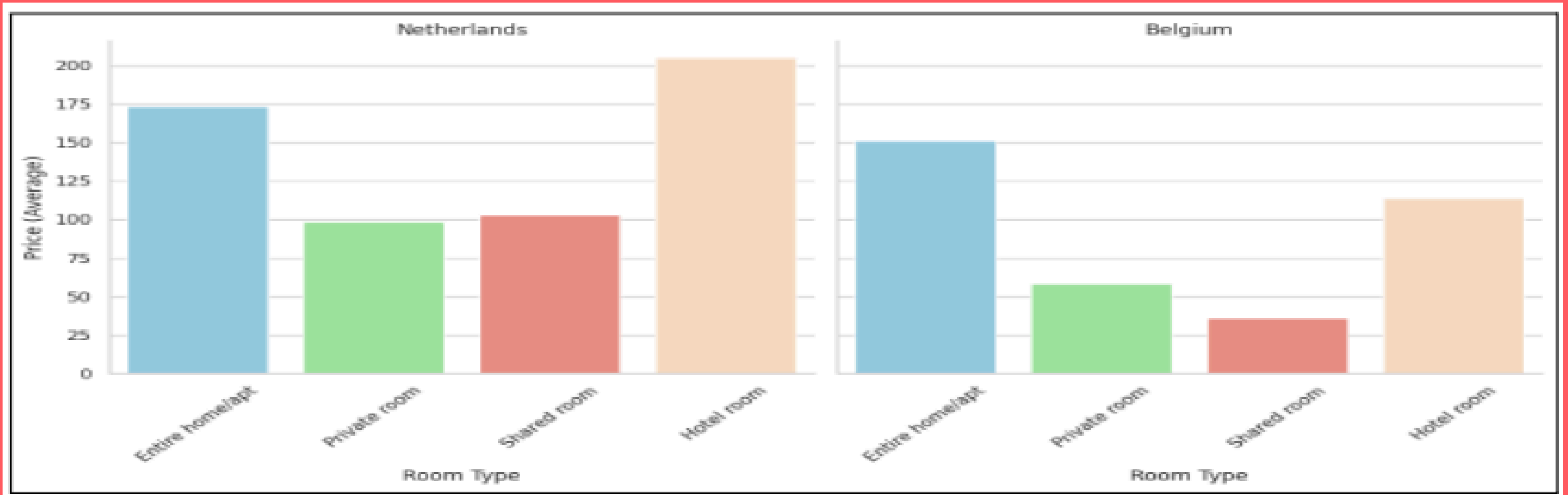
Room Type Analysis



Average price of different Room Types in the Netherlands and Belgium



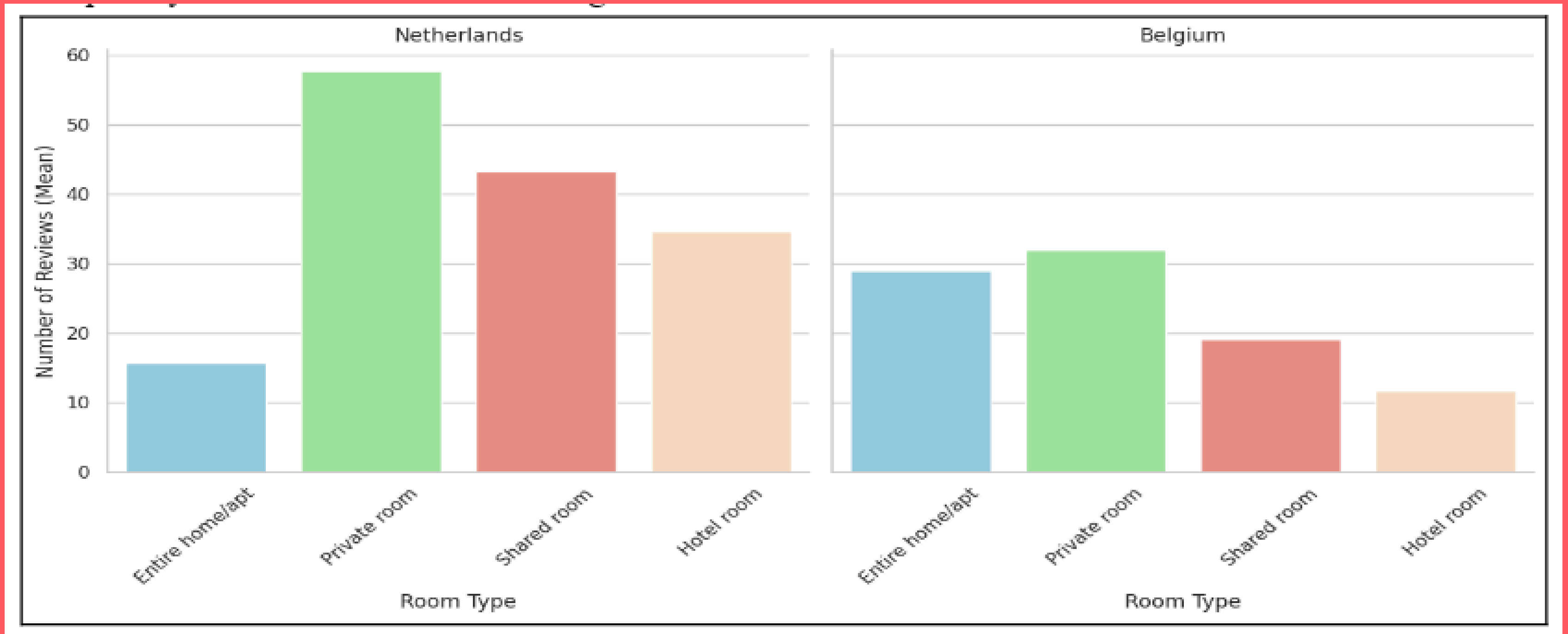
Room Type Analysis



Mean Minimum Nights Requirement different Room Types in the Netherlands and Belgium



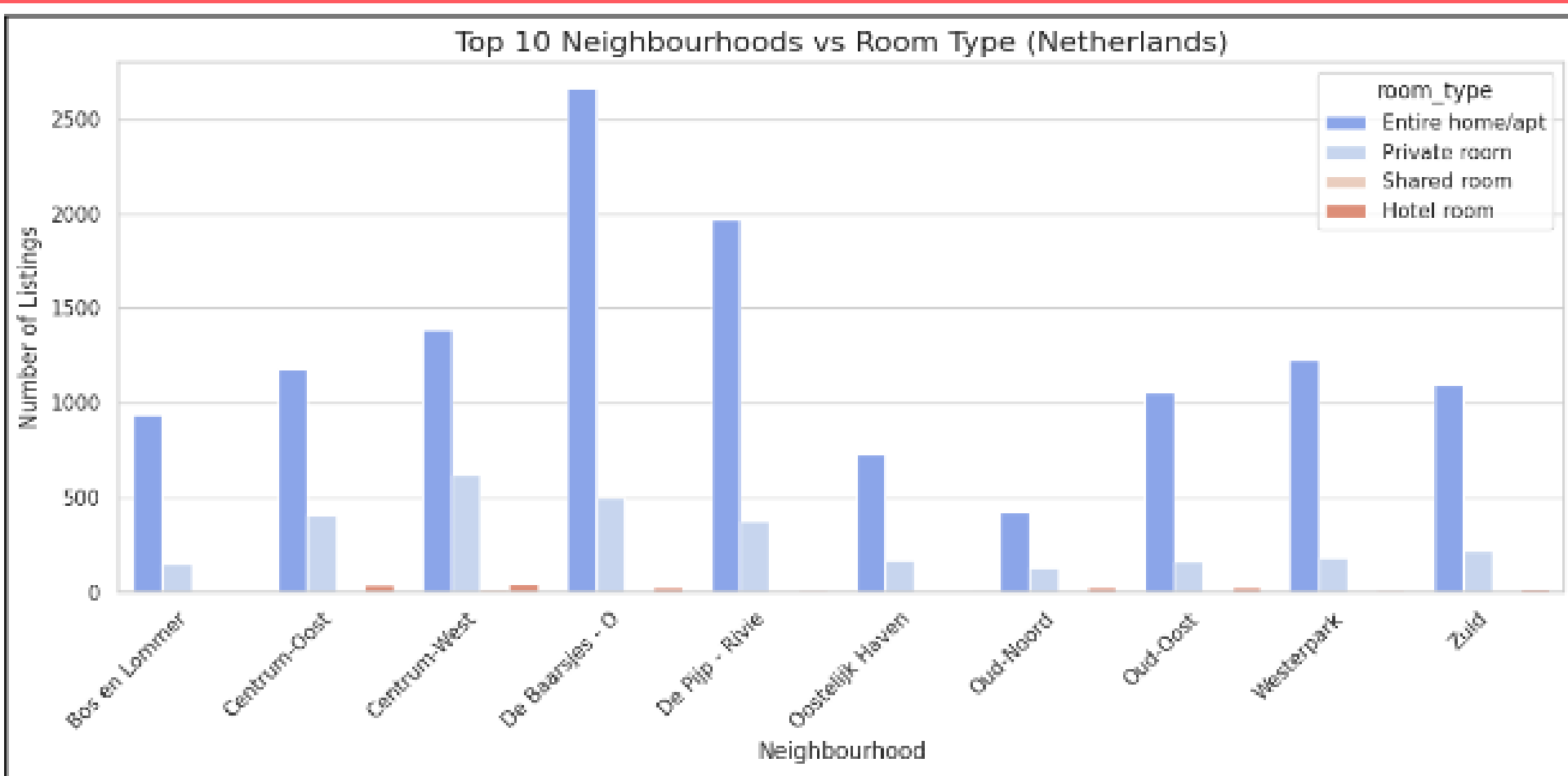
Room Type Analysis



Mean number of Reviews Room Types in the Netherlands and Belgium

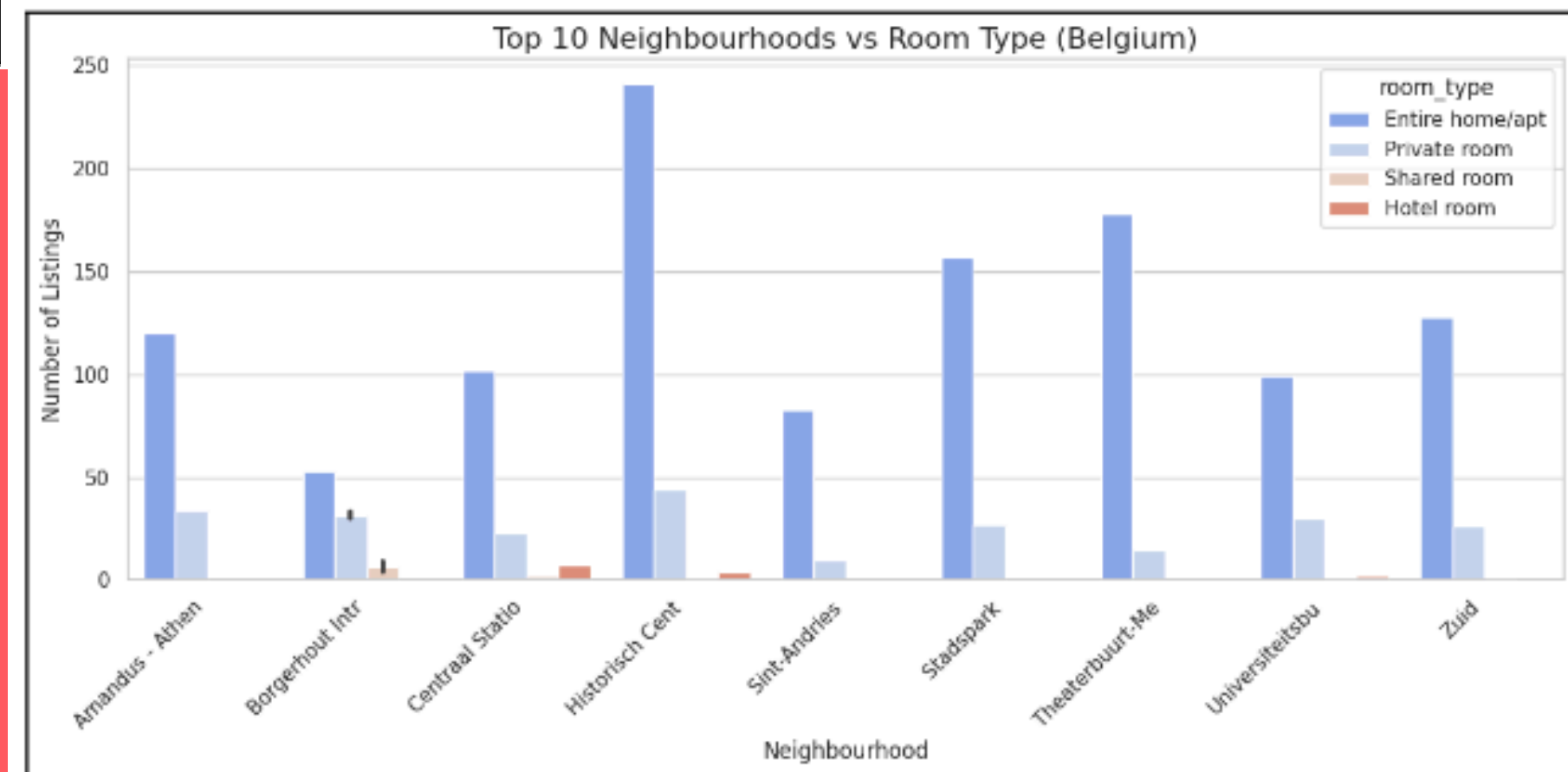


Room Type Analysis



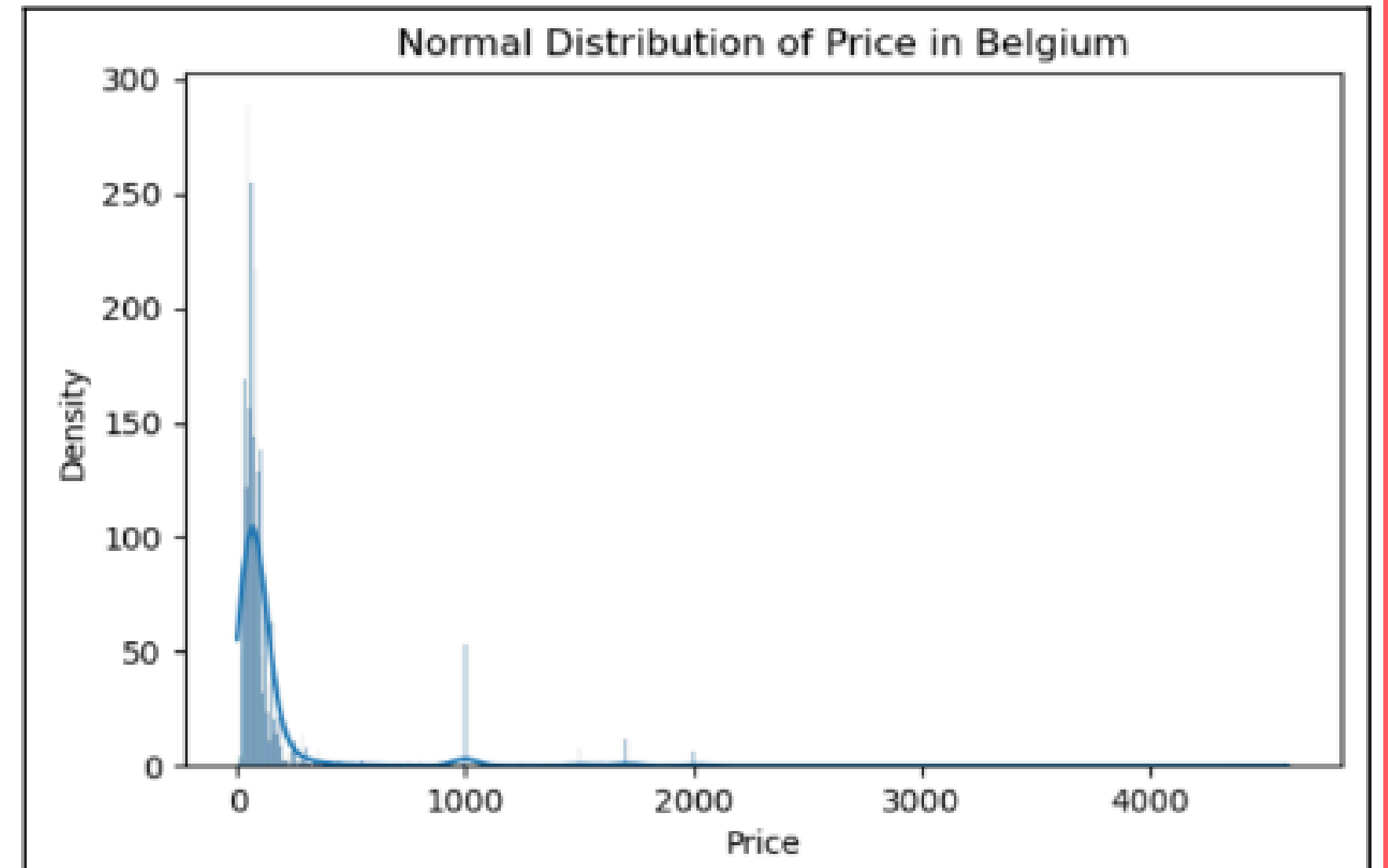
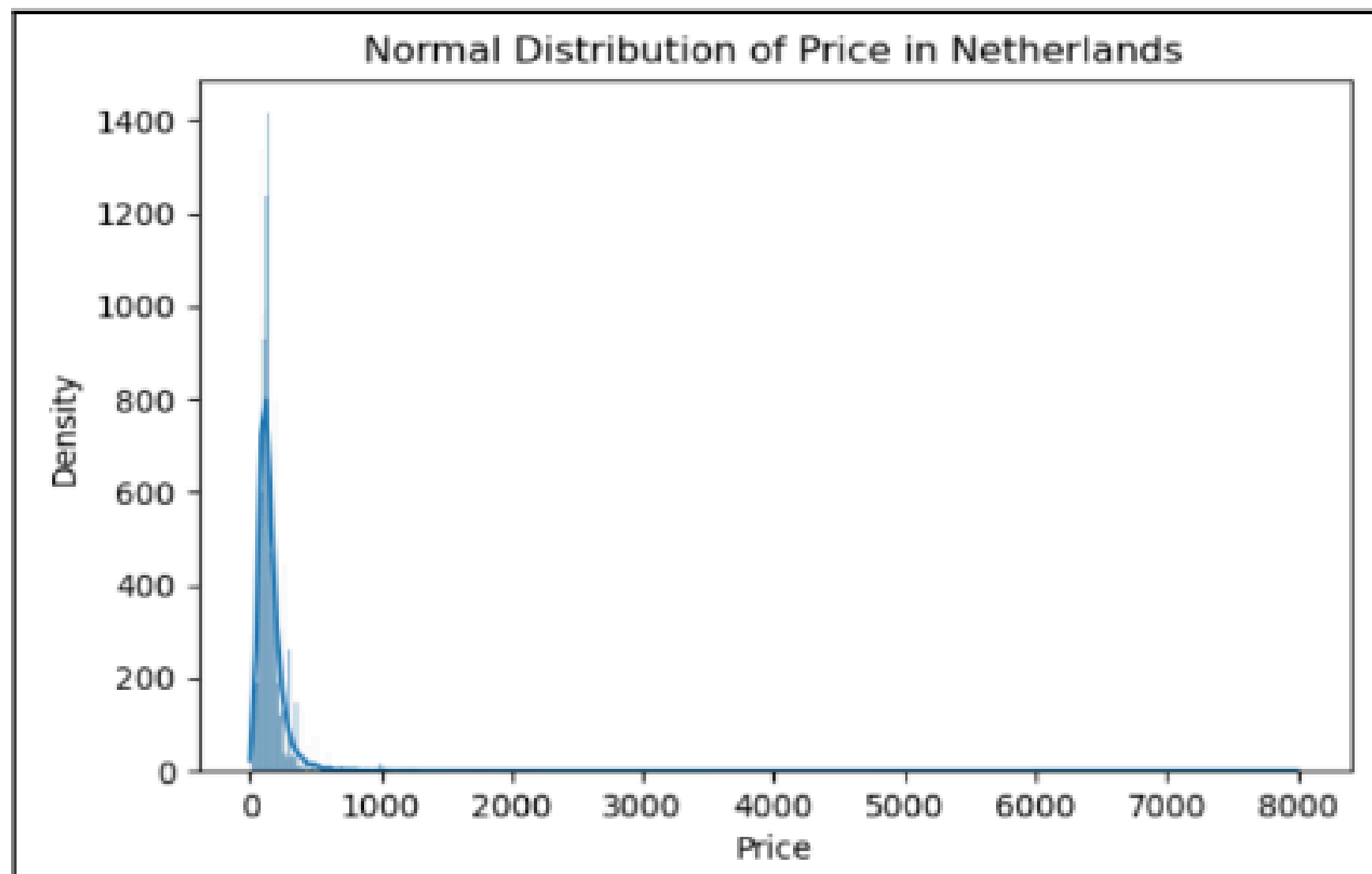
- De Baarsjes-Oud-West Neighborhood of Netherlands has the highest number of entire homes/apartments. (2666).
- Highest private rooms (625) in the Centrum-West neighborhood

- Historisch Cent Neighborhood of Belgium has the highest number of entire homes/apartments. (241).
- Highest private rooms (63) in the Borgerhout Intr neighborhood



Price Analysis

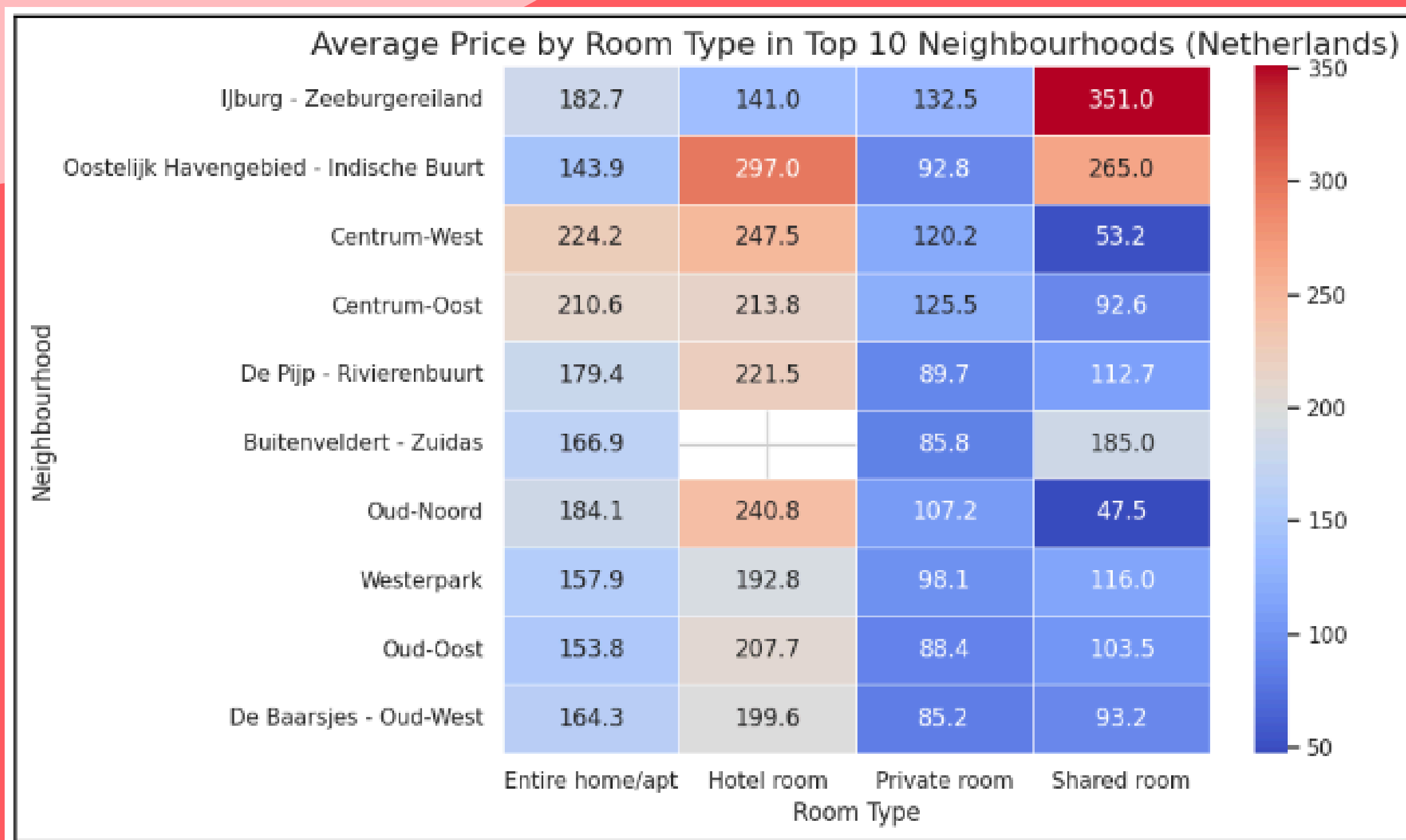
While both countries offer a majority of budget-friendly Airbnb options, the Netherlands provides a wider range of pricing, extending into higher-priced luxury accommodations as compared to Belgium.



Normal distribution of price in the Netherlands and Belgium



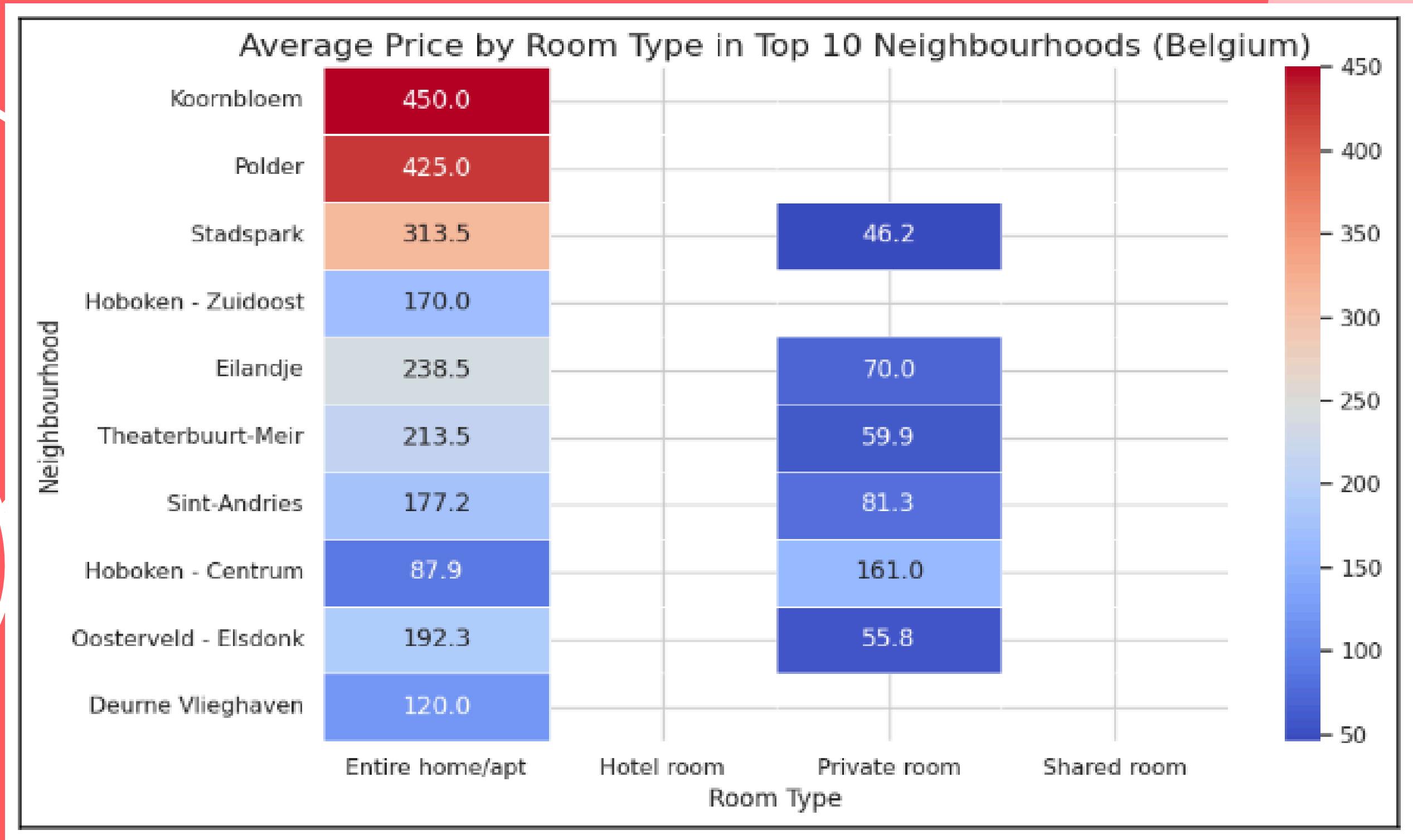
Price Analysis



Average price by room type in the Top 10 Neighborhoods in the Netherlands



Price Analysis



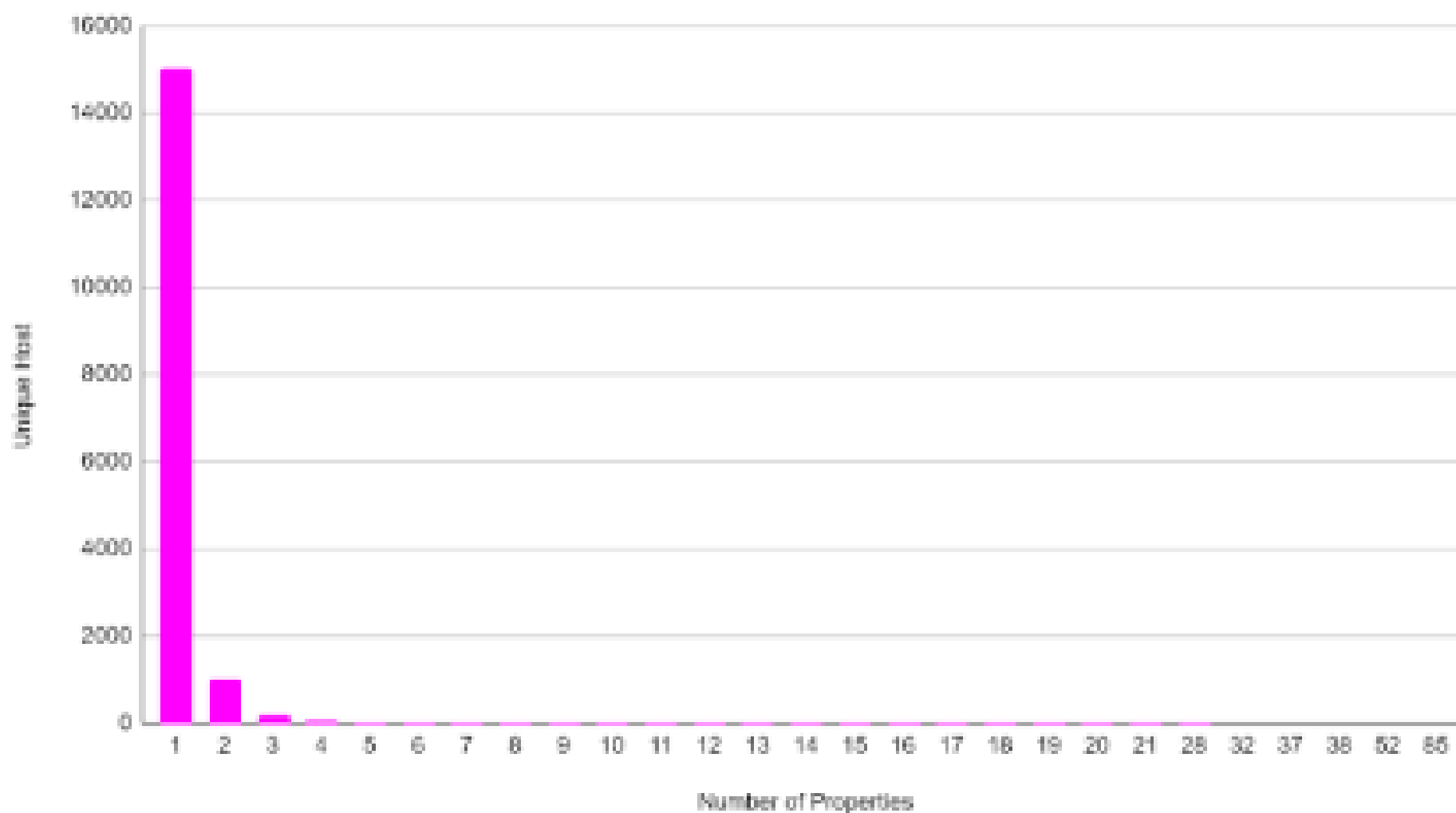
Average price by room type in the Top 10 Neighborhoods in Belgium

Host Listings Count Analysis

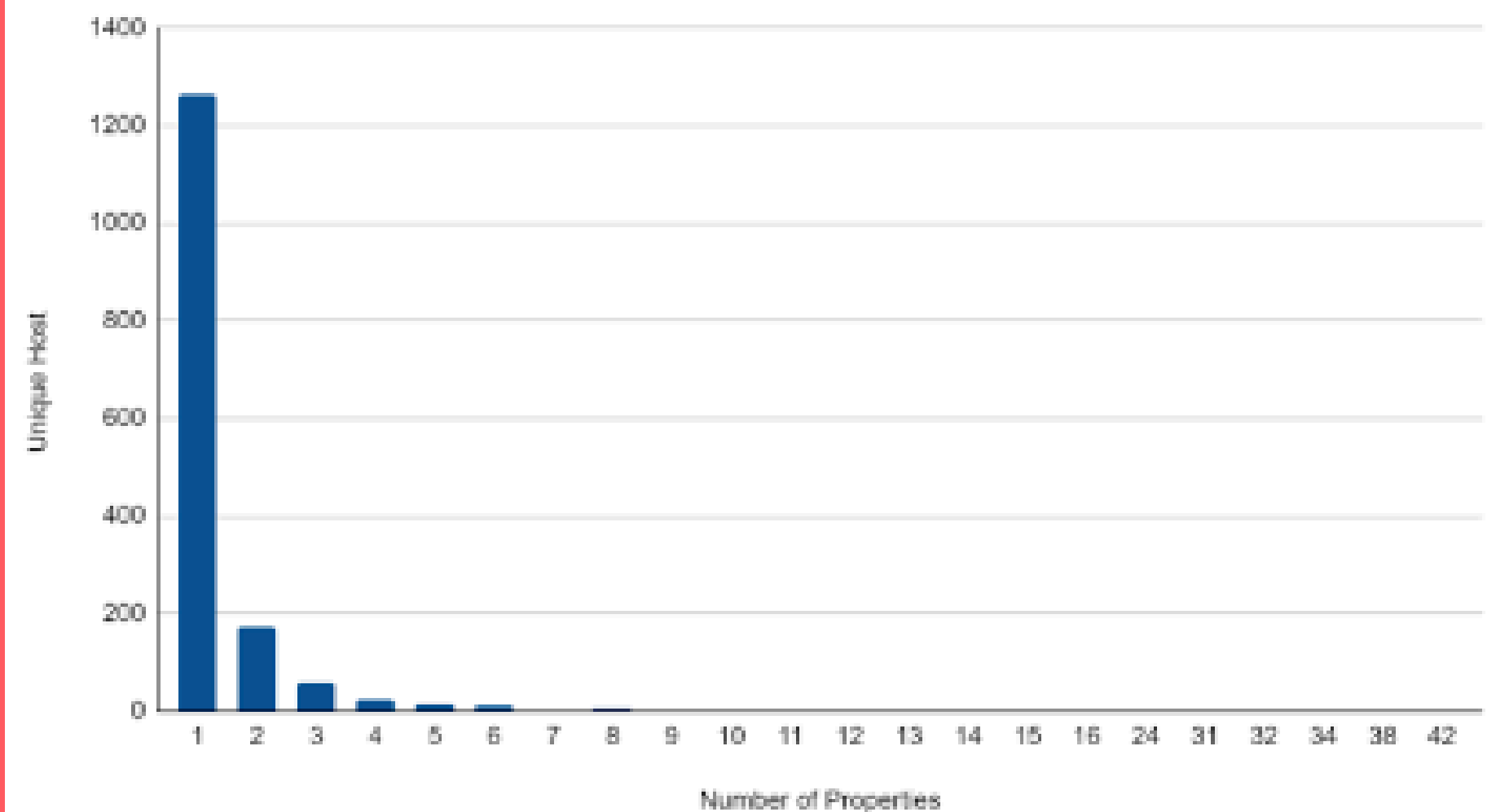
Single-property hosts:

- Netherlands is 15019 (91.63% of the total unique hosts in the Netherlands (16391))
- Belgium is 1265 (80.62% of the total unique hosts in Belgium (1569))

Distribution of Properties Managed by Unique Host in Netherlands

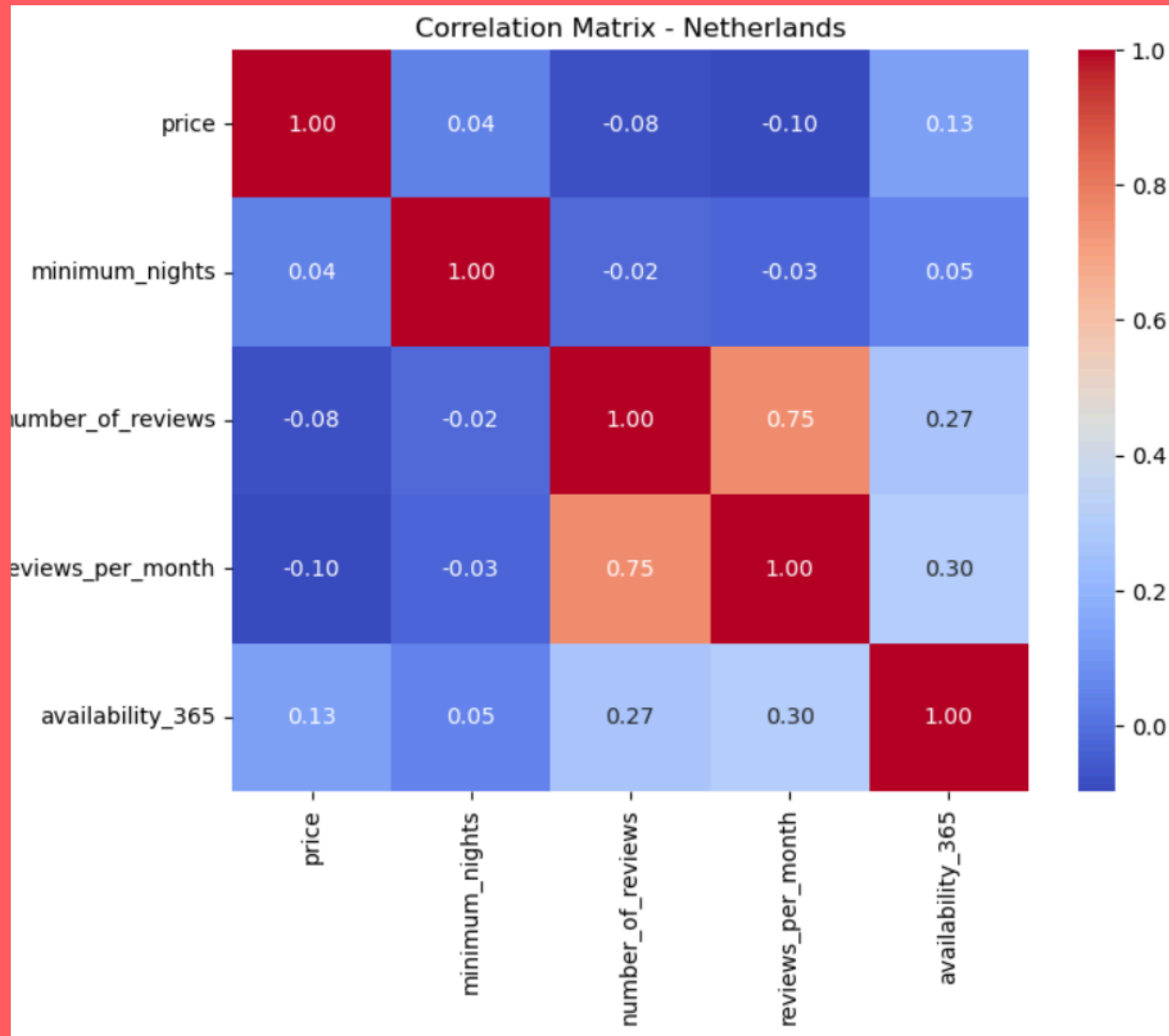


Distribution of Properties Managed by Unique Host in Belgium



Average price by room type in Top 10 Neighborhoods in the Netherlands and Belgium

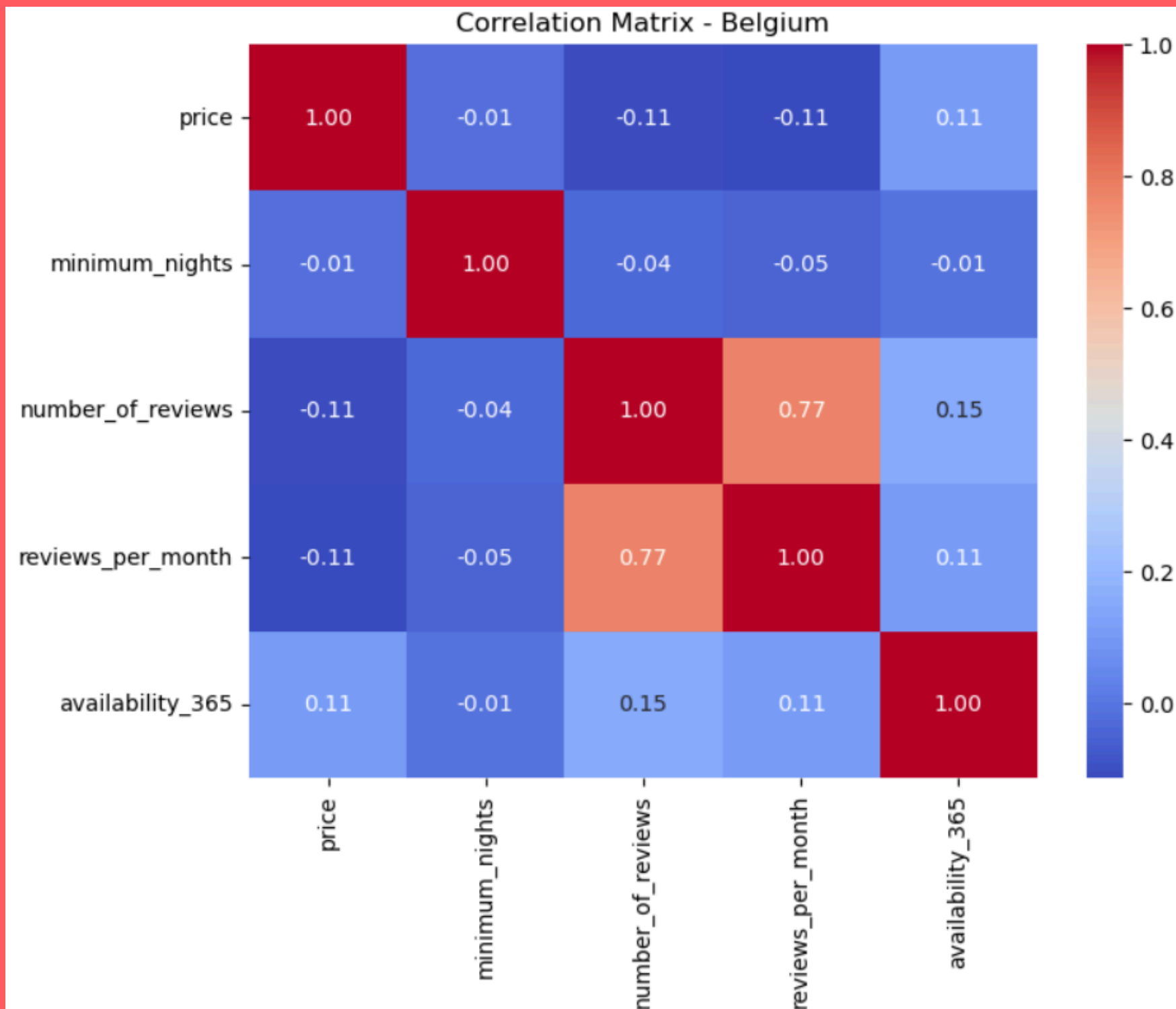
Correlation Matrix



- Weak or no strong correlation between price and any of the other variables. The highest correlation is with availability (0.13), indicating a slight positive relationship.
- The number of reviews and reviews per month shows a high positive correlation (0.75), indicating that listings with more overall reviews also tend to get frequent monthly reviews.
- Correlations between minimum nights and other variables like reviews are very weak (around -0.03 to 0.05), indicating little to no direct relationship.

Coorelation Matrix of Netherlands

Correlation Matrix



Coorelation Matrix of Belgium

- Weak or no correlation exists between price and other variables like minimum nights or reviews, suggesting that pricing decisions are likely based more on location, property type, or host preferences .
- Strong +ve correlation in Number of Reviews and Reviews per Month (0.77), indicates that listings with a higher total number of reviews tend to have a higher rate of reviews per month.
- Correlations between minimum nights and other variables like reviews are very weak (around -0.04 to -0.05), indicating little to no direct relationship.

Inference

- The Netherlands has a significantly larger share of Airbnb accommodations (88.89%) than Belgium (11.10%), indicating a more mature and popular Airbnb market.
- In terms of location and Neighborhood Dynamics, the Netherlands features a more concentrated Airbnb market, with fewer neighborhoods having more accommodation than Belgium, which has a wider distribution of accommodations across more neighborhoods.
- Belgium has higher availability of room types but fewer reviews than the Netherlands, suggesting lower demand or less frequent bookings.
- In both countries, the majority of Airbnb hosts manage only one property, indicating a market dominated by individual hosts rather than large-scale commercial players.



Conclusion

- Our analysis is aimed at helping property hosts understand market dynamics to optimize rental strategies.
- The analysis primarily focuses on tangible metrics like pricing, availability, and room types, providing key insights into Airbnb's market presence and operational performance.
- The study does not delve deeply into customer behavior, preferences, or satisfaction, which are critical to understanding overall market dynamics.
- Number of reviews plays a critical role in influencing consumer choices.
- Hosts should actively manage their online presence, encourage reviews, and respond to feedback to boost guest satisfaction and enhance the appeal of their listings.



Thank You!