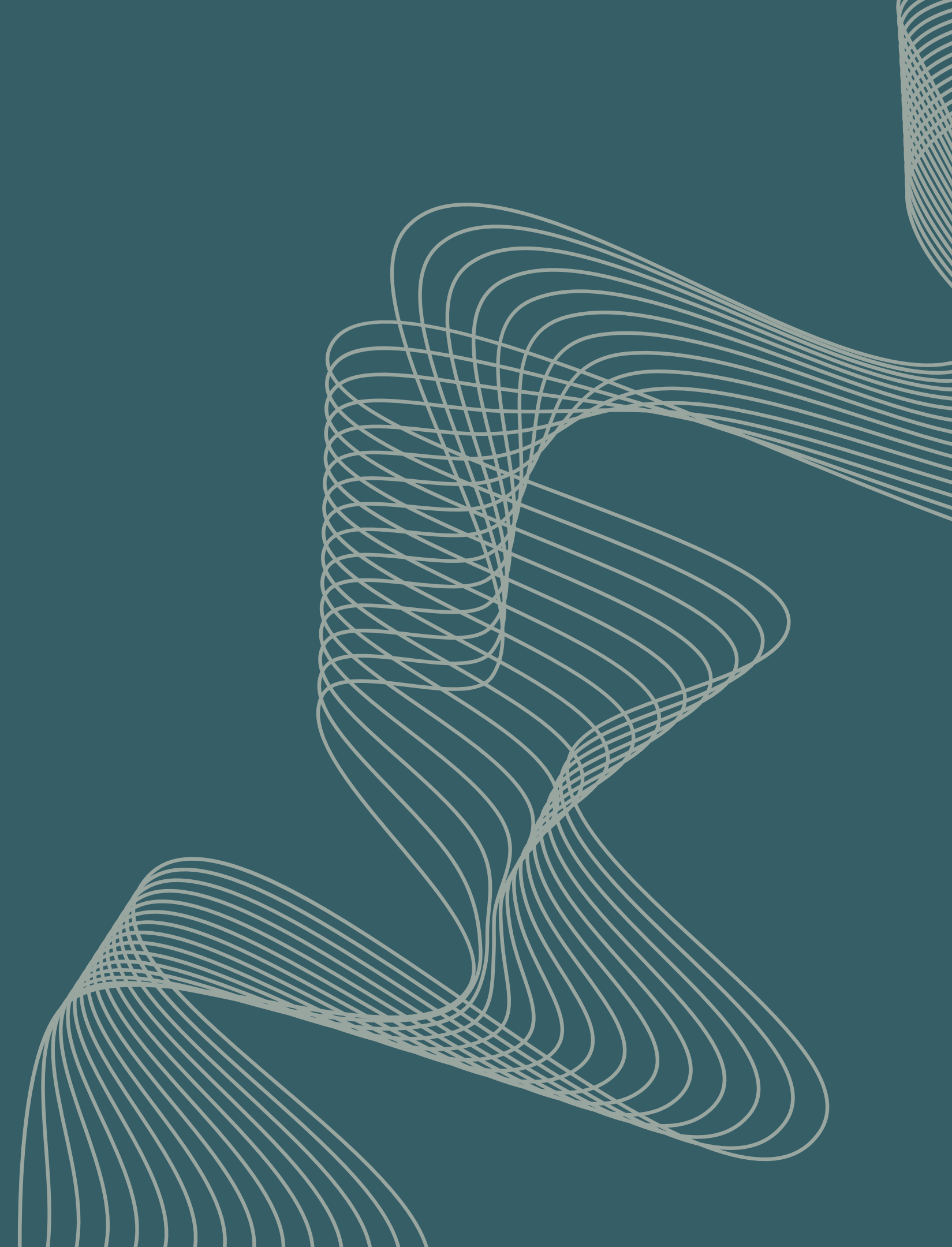MARKETING ANALYSIS

Airbnb

**Group - 9**

Presented by Pawan, Deepak, Garima, Vansh

Introduction

We are given the Airbnb dataset of two countries: **Belgium and Netherlands** and our objective is to understand trends and factors affecting Airbnb bookings in these two countries.

Our main focus will be on:

- **Room Analysis:** Distribution of rooms based on the Country, Neighbourhood and Type.
- **Price Analysis:** Compare room prices based on the location, type, and duration of stay.
- **International Comparison:** Compare room prices and availability across countries.
- **Correlations and Regression Models.**
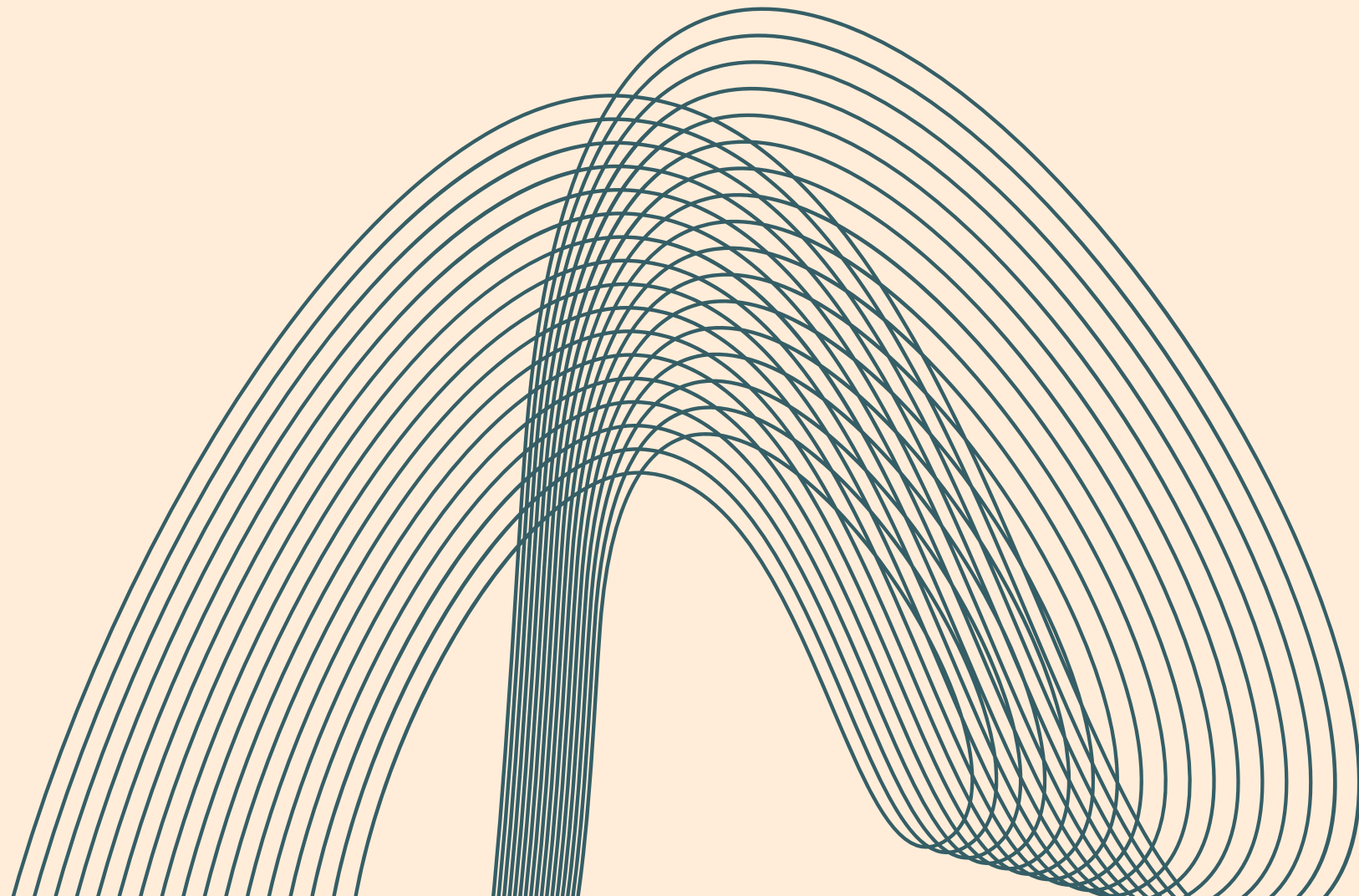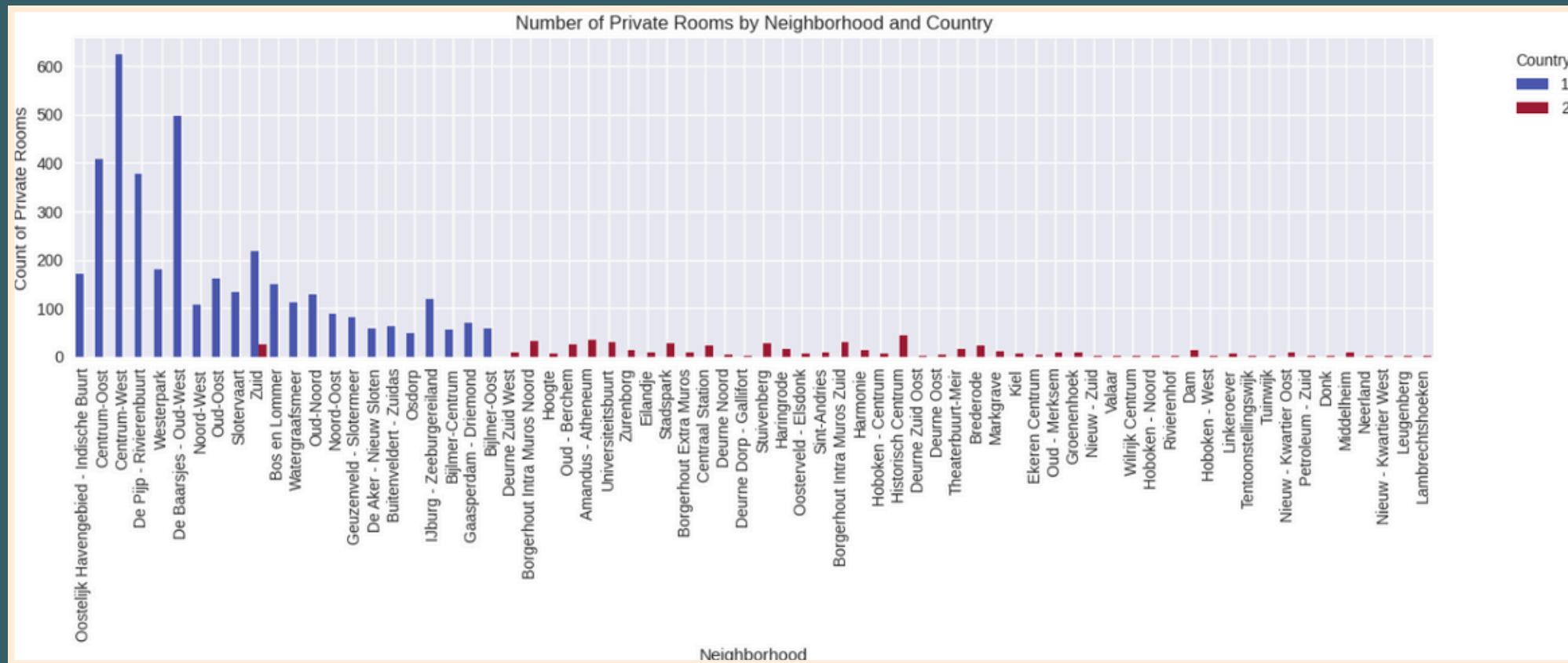
Distribution Of Rooms
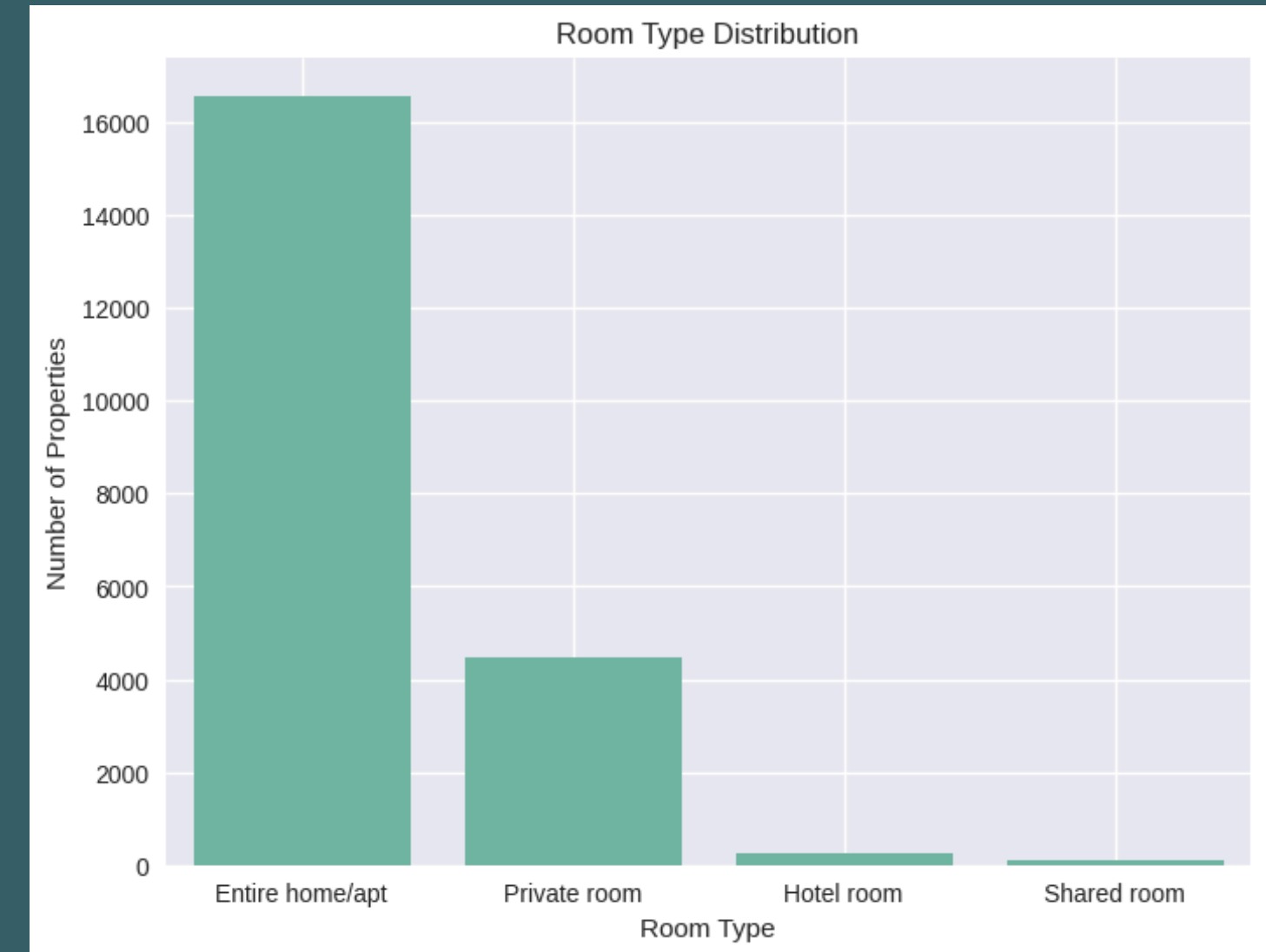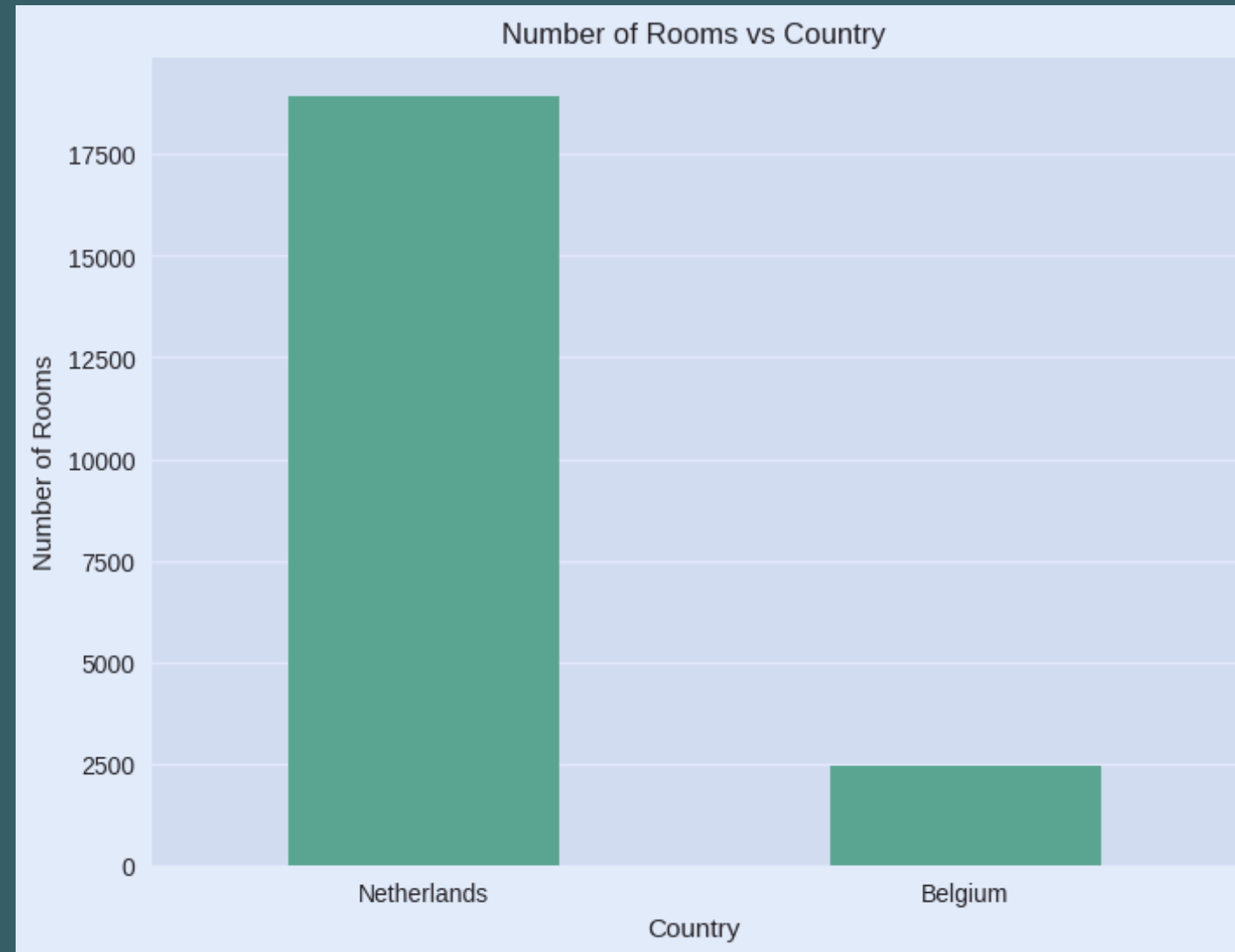
Entire Home/Apt - 16570, Private Rooms - 4466, Hotel Room - 240, Shared Room - 95

- Netherlands has more number of rooms than Belgium.
- In both countries, the number of entire homes/apartments available to rent is the highest, followed by private rooms, and very few of hotel and shared rooms.

Room Type

Number of Private Rooms by Neighborhood and Country

This shows the quantity of private rooms in Neighbourhood for both Countries

This shows the quantity of Entire Homes/Apt in Neighbourhood for both Countries
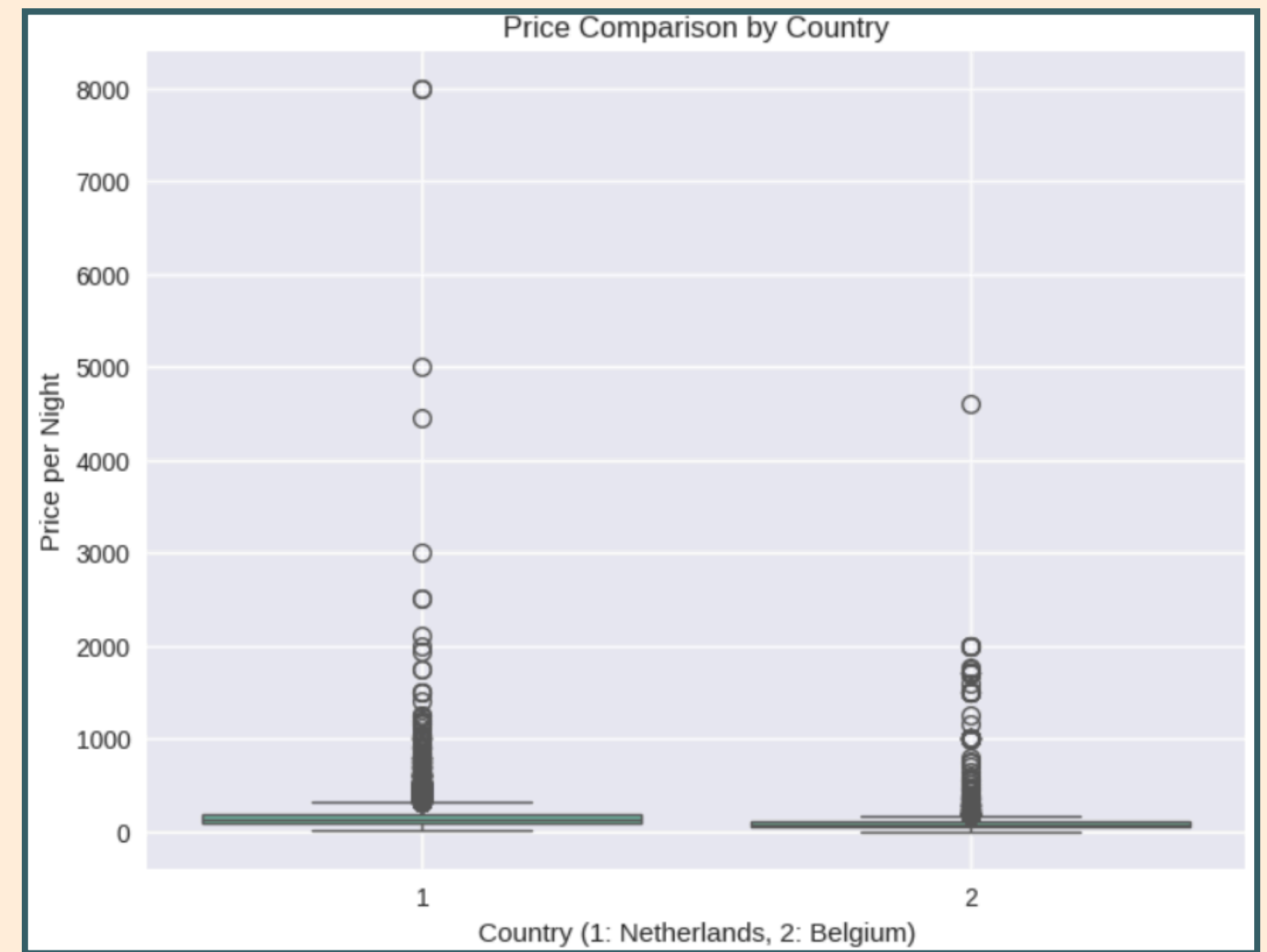
Here's a geographic breakdown of where different types of rooms are concentrated, to help us mark areas of high demand for private accommodations versus entire properties, which could guide pricing strategies or promotional efforts for these regions.

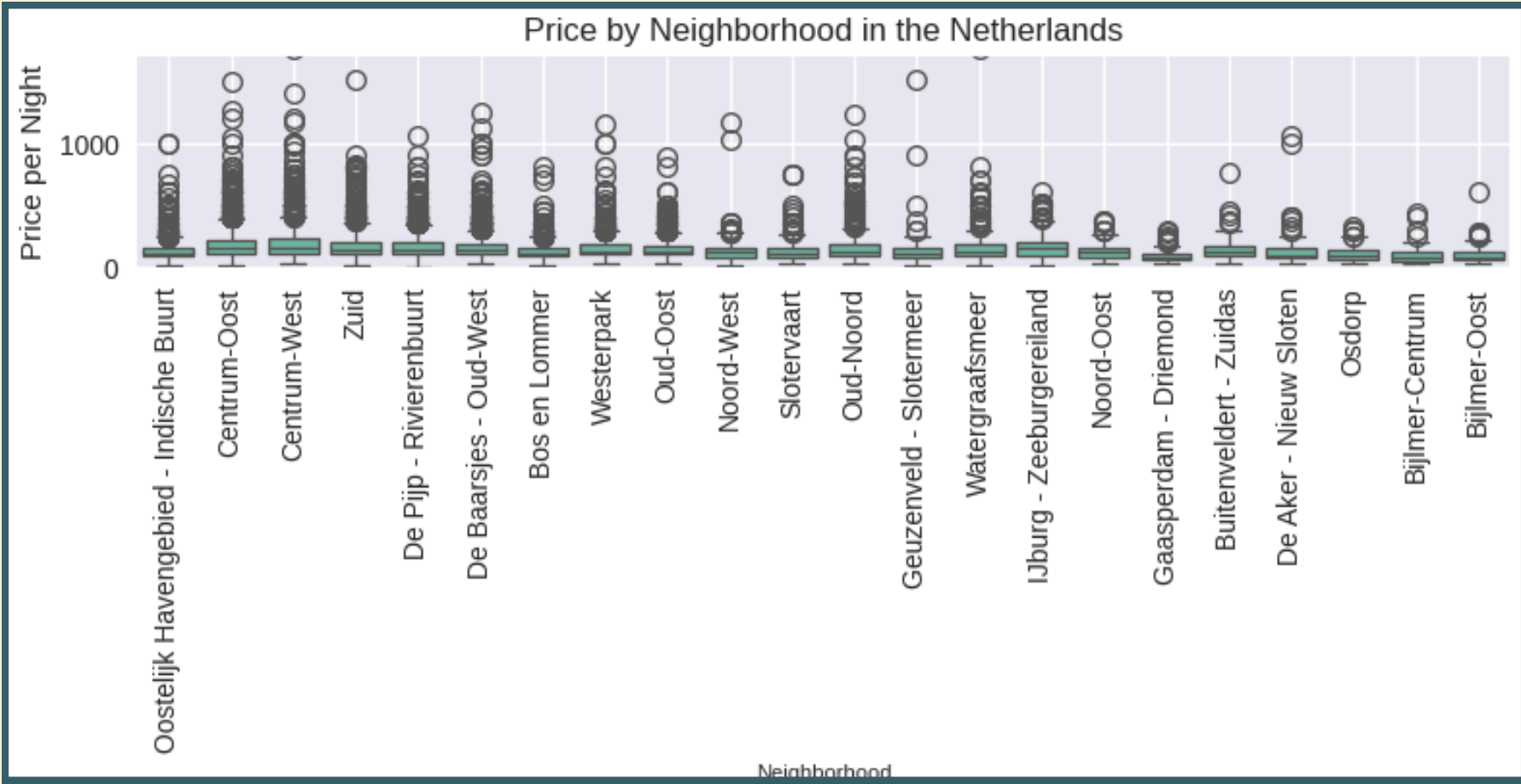Number of Entire Homes by Neighborhood and Country
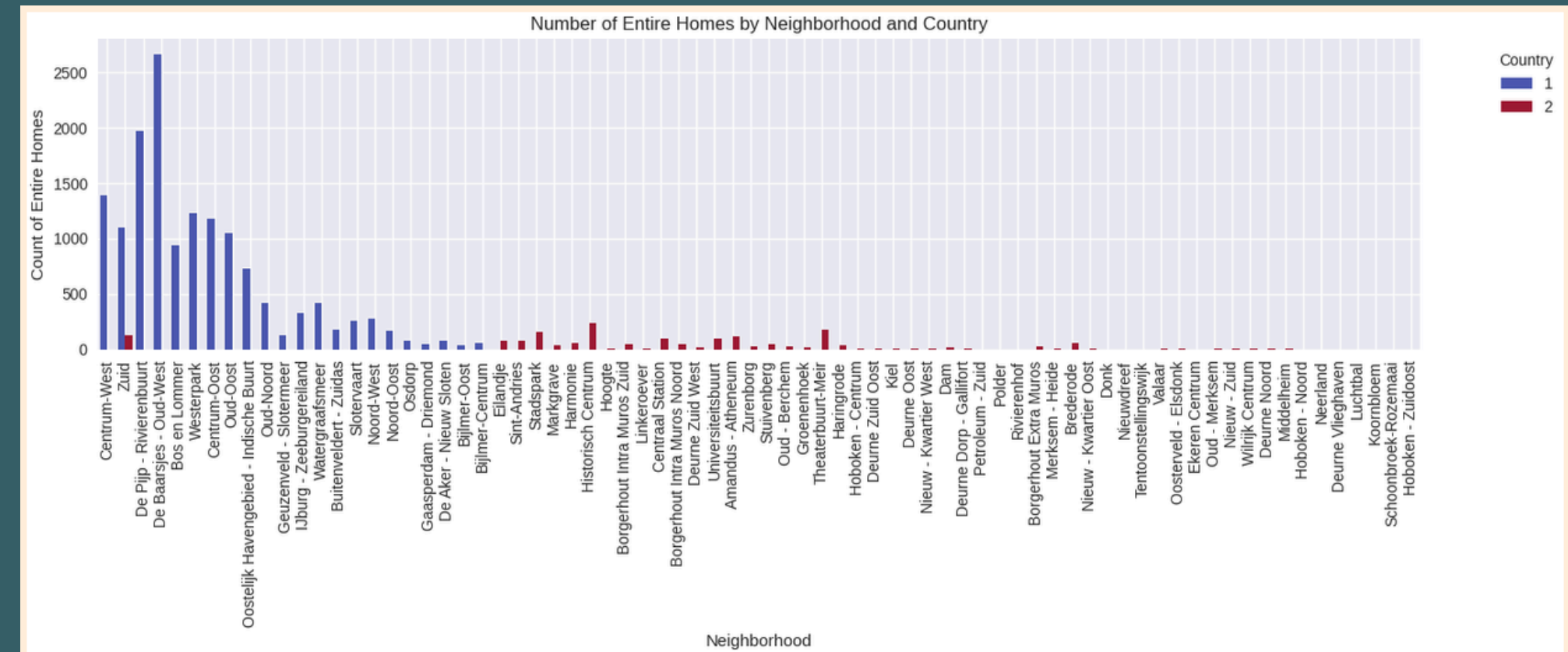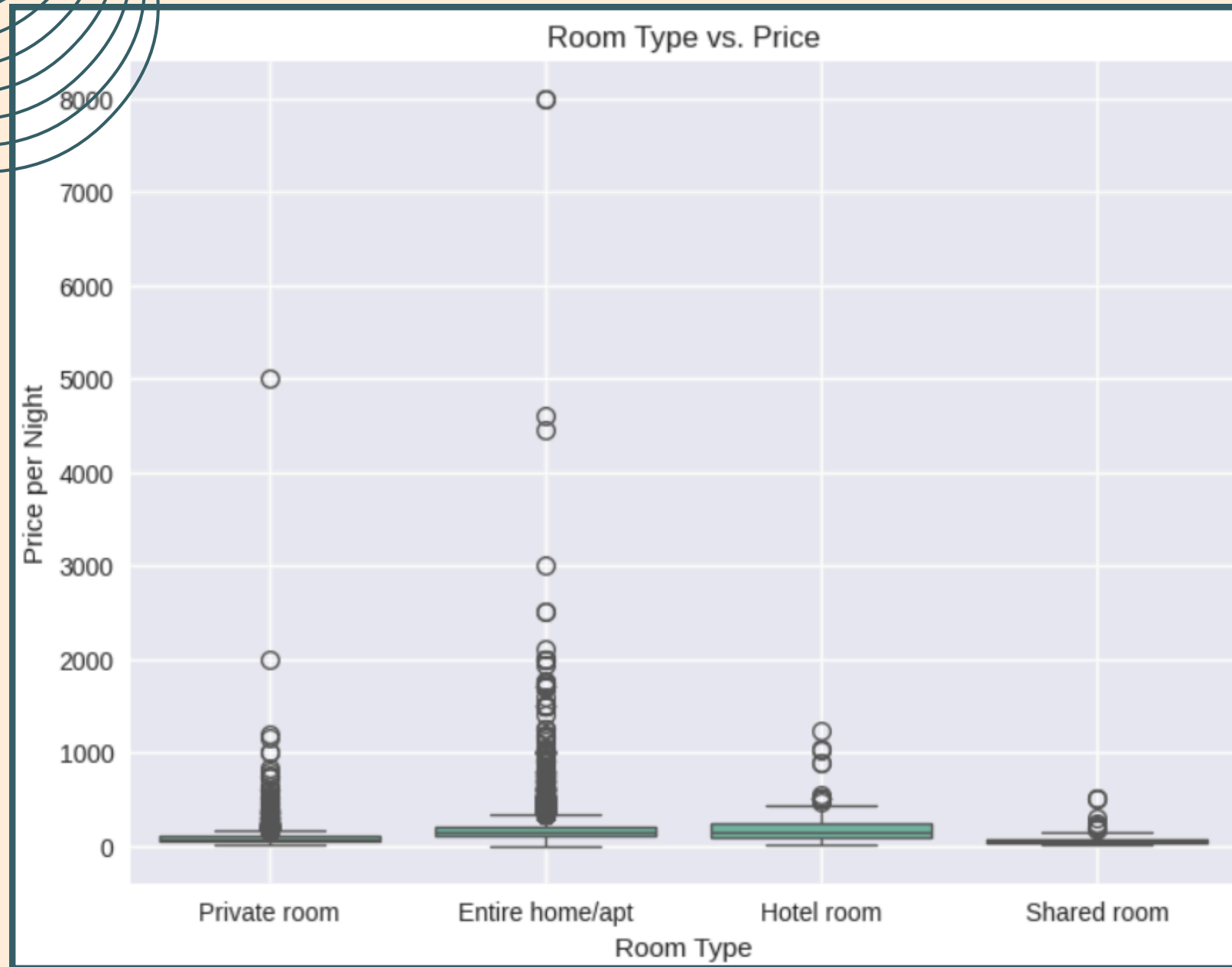
Price Analysis

Room Type vs Price

Country vs Price

Price Analysis

Price by Neighborhood in Belgium

Price by Neighborhood in the Netherlands
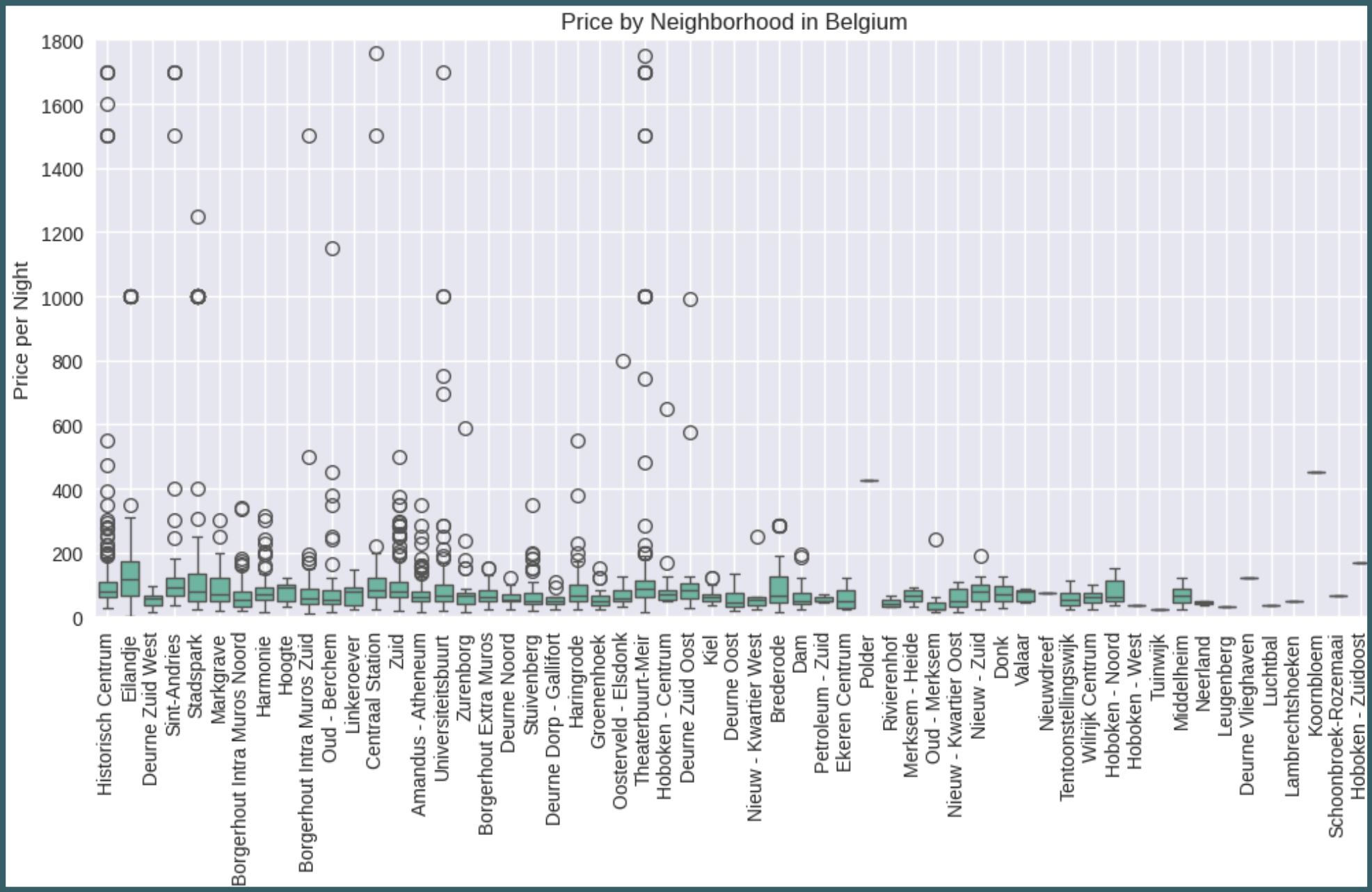
Neighbourhood Location vs Price

Prices tend to spike in popular tourist districts, business hubs, or areas close to major attractions compared to residential districts on the outskirts.

Price Analysis
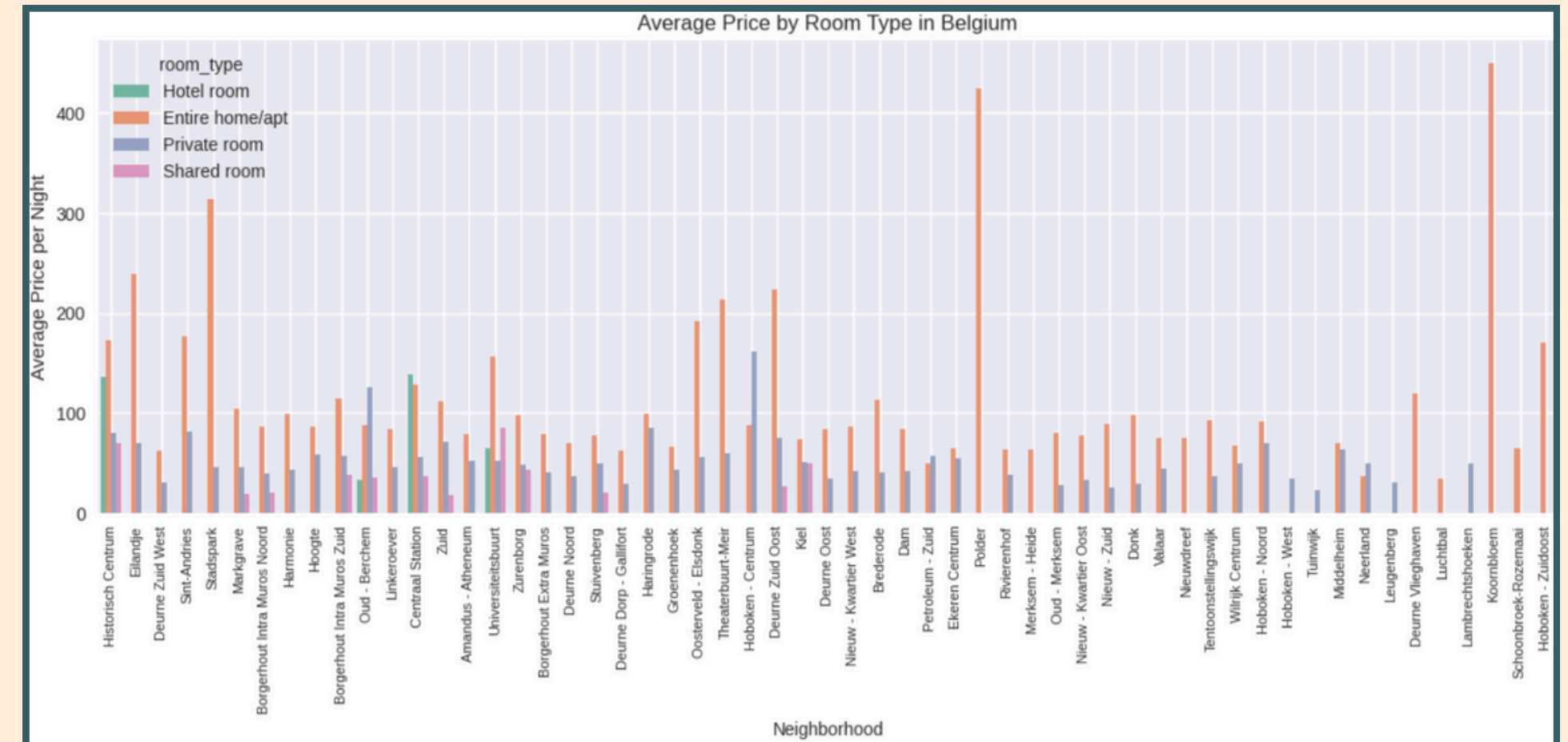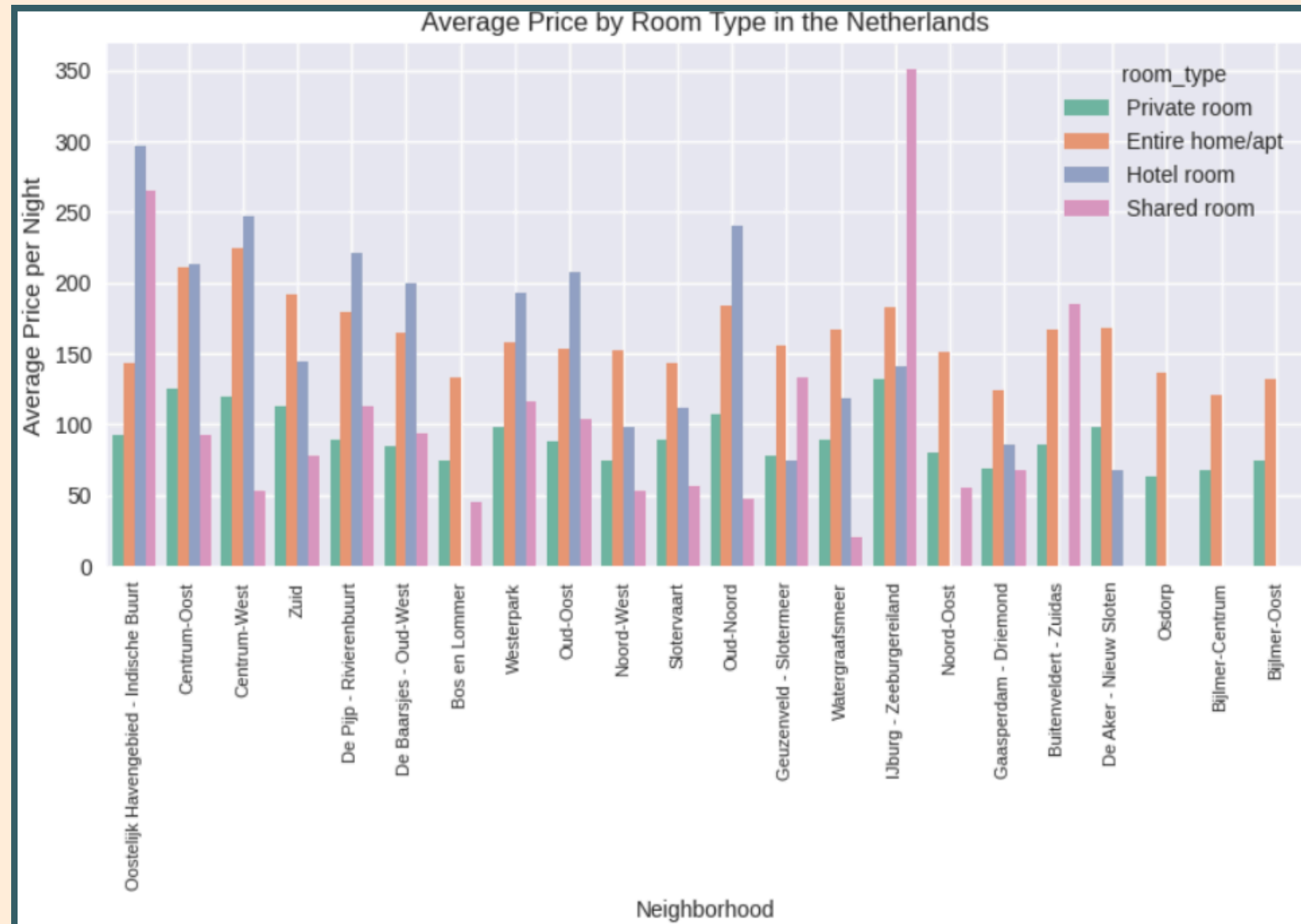
Neighbourhood vs Price for all Room Types

- Entire homes/apartments are the highest priced, with shared rooms as the budget option, indicating demand for premium accommodations in central areas.
- Belgium shows extreme price spikes in some areas, with entire homes and hotel rooms commanding high prices, highlighting strong demand for luxury stays.

Price Analysis

Average Price By Room In Belgium

Room Type	Avg Price
Entire Home/Apt	150.934211
Hotel Room	114.066667
Private Room	58.238182
Shared Room	36.363636

Average Price By Room In Netherlands

Room Type	Avg Price
Entire Home/Apt	173.204598
Hotel Room	205.195556
Private Room	102.903226
Shared Room	98.696885

- The Netherlands has a generally higher price compared to Belgium. This could be due to the Netherlands having more tourist-heavy cities (e.g., Amsterdam) where demand surpasses supply, thereby driving prices higher.

- Entire homes/apartments are priced higher than private or shared rooms. This price difference can be attributed to the increased privacy and space provided by entire homes.

Price Analysis

Min Nights vs. Price
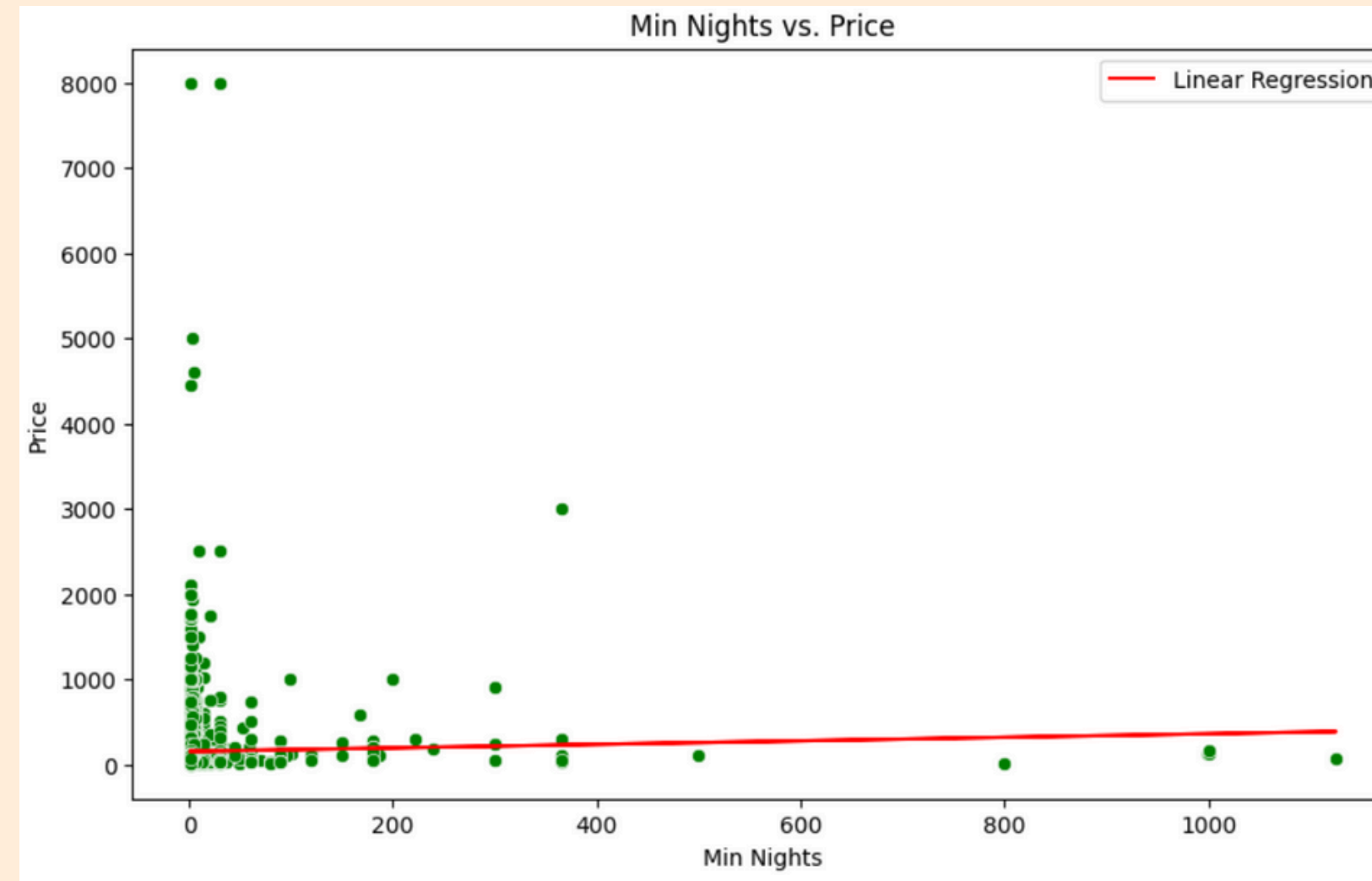
- The linear regression line is almost flat, indicating a very weak or negligible positive correlation between the minimum number of nights and the price. This suggests that the minimum number of nights required does not have a significant impact on the price of the listings.
- The majority of the listings with higher prices (above 1000) are clustered around lower minimum night values (close to 0). This implies that expensive listings tend to have lower minimum stay requirements.

Price Analysis

Netherlands:

Before Outlier Removal: **€157.96**

After Outlier Removal: **€137.66**

Conclusion: The average price was notably inflated by outliers. Once these outliers were removed, the average price decreased by about €20, highlighting that certain properties with excessively high prices were distorting the data.

Belgium:

Before Outlier Removal: **€128.09**

After Outlier Removal: **€72.09**

Conclusion: The impact is even more pronounced in Belgium, where the average price fell by around €56. This indicates that several high-priced properties did not accurately represent the general market conditions.

Price Analysis

- Analyzing price differences based on room type and country can help Airbnb make adjustments to its pricing strategies. If the Netherlands consistently has higher prices, Airbnb can market Belgium as a more budget-friendly option while adjusting prices based on demand in premium locations.
- Airbnb can determine where to encourage hosts to list their properties or focus promotional campaigns by identifying which neighborhoods have the highest prices and demand.
- Recognizing and eliminating outliers leads to a more precise representation of average market prices. This information could assist Airbnb in avoiding misleading potential customers or hosts by inaccurately estimating market trends using extreme listings.

Availability Analysis
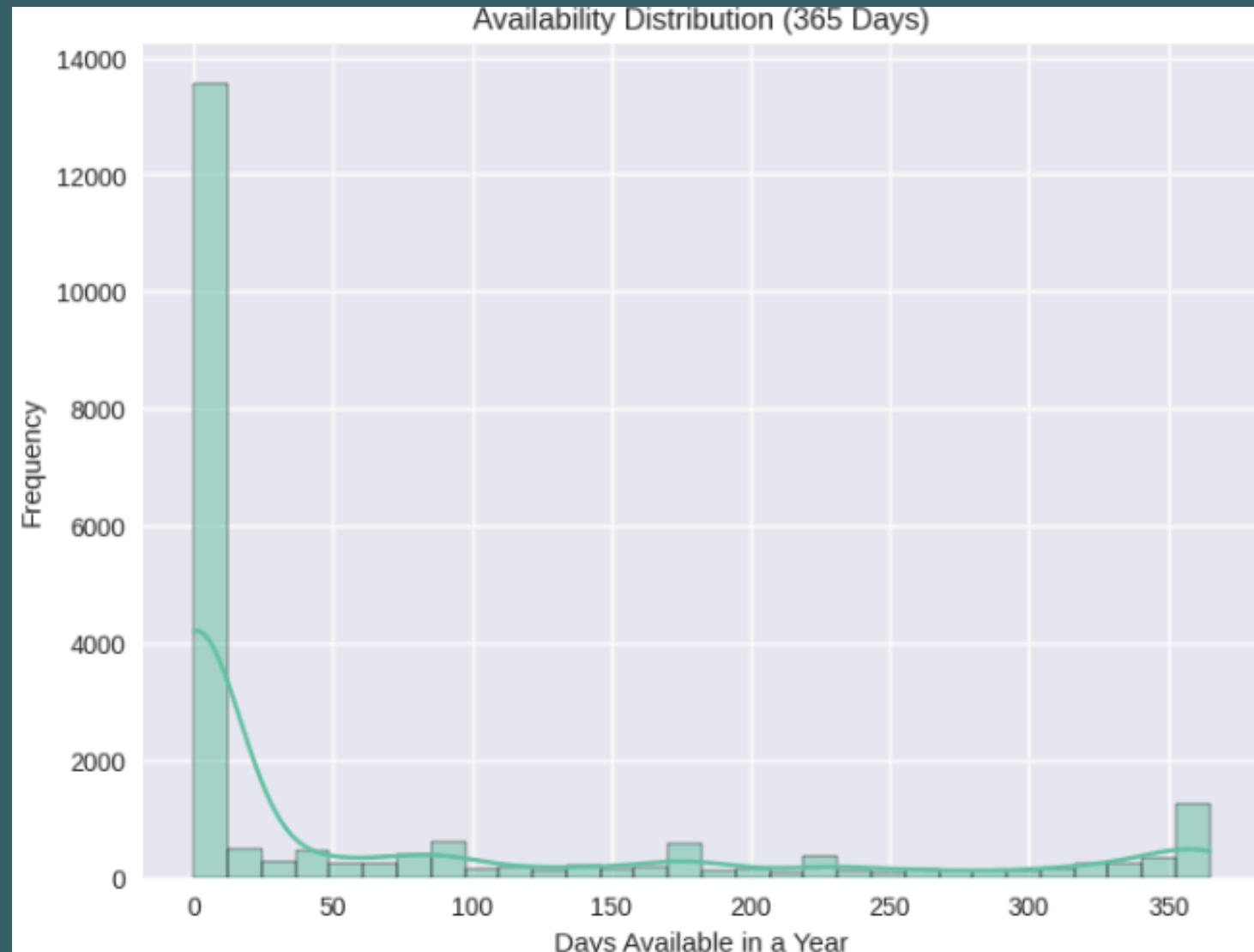
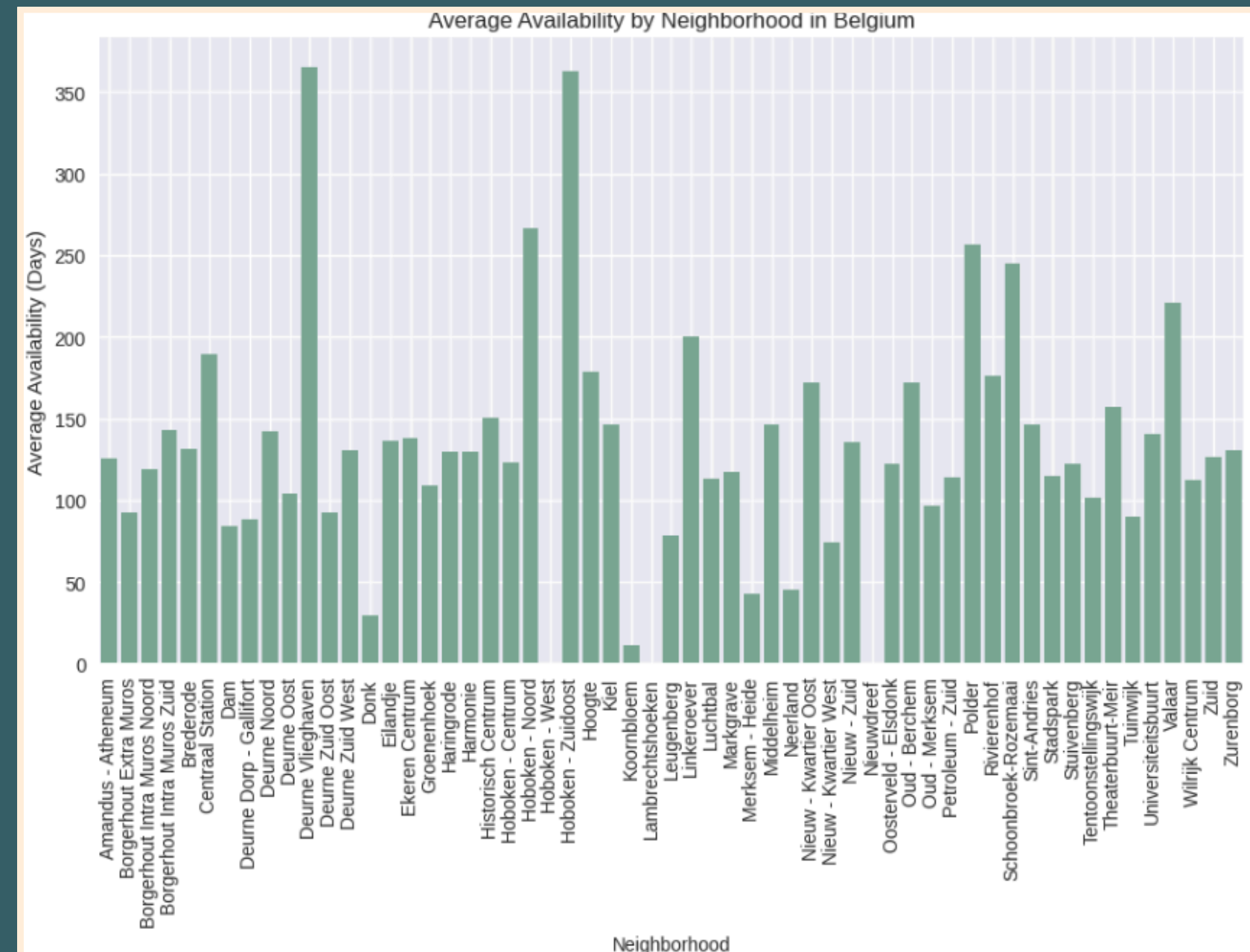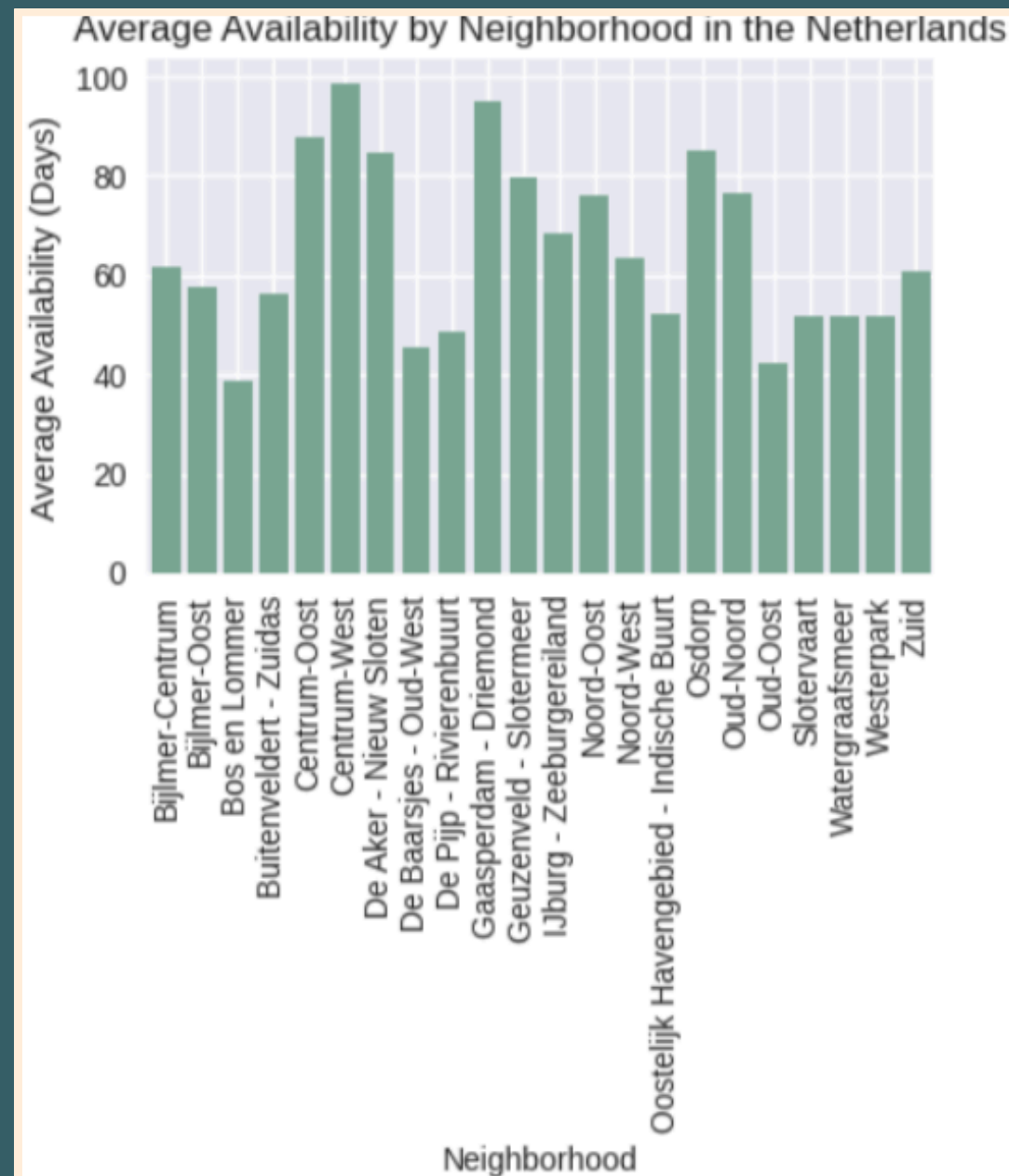*Frequency of Availability of rooms with days*
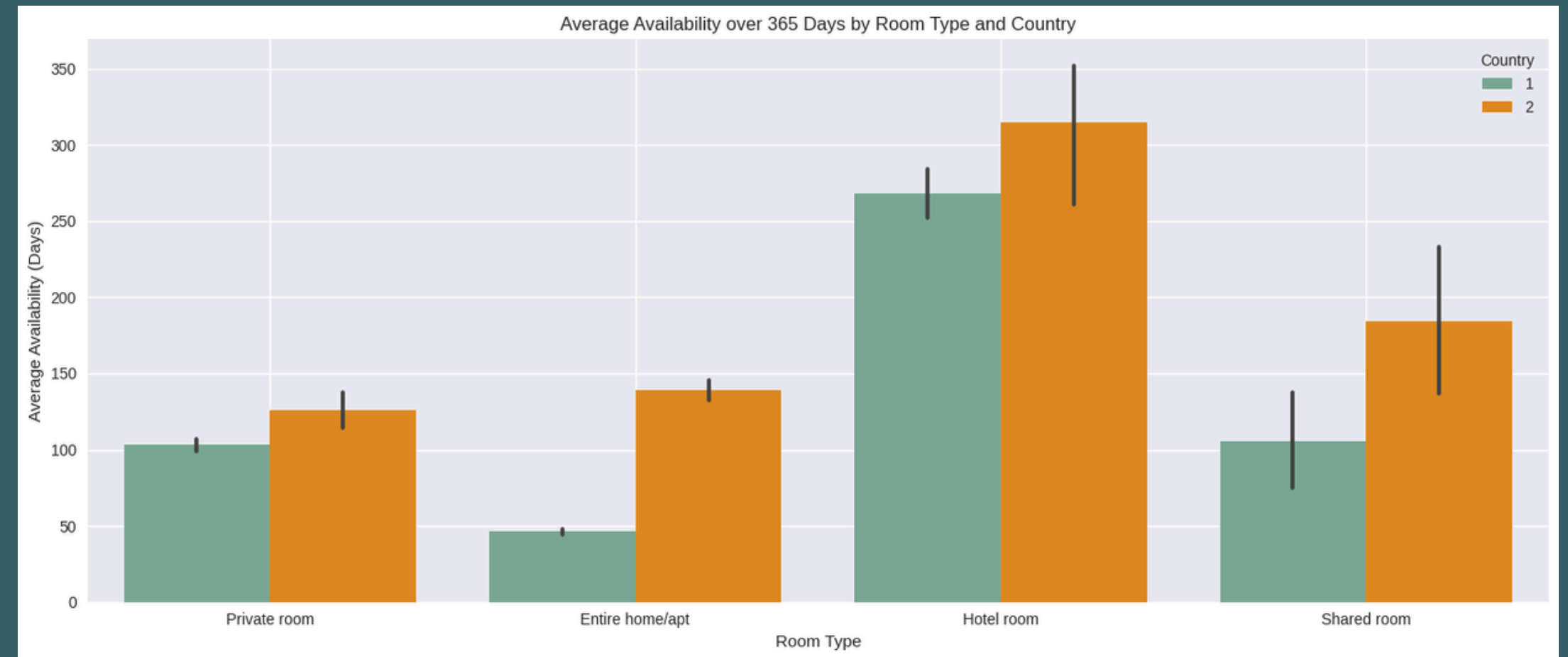
Availability of type of rooms in different countries

Rooms which are available for fewer number of days (like 1-3 days) have the highest frequency of getting booked compared to the rooms which are available for more number of days and even if Netherlands have the larger distribution of rooms still Belgium have more rooms available for booking than Netherlands.

Availability Analysis

Availability of rooms in different countries in different Neighbourhood

Rooms with higher availability (over 180 days) may indicate lower demand in certain neighborhoods or less popular property types. Conversely, rooms that are booked more frequently (available for fewer days) could be in high-demand areas or offer better amenities.

Availability Analysis

Average Price in Neighborhoods with More than 180 Days of Availability
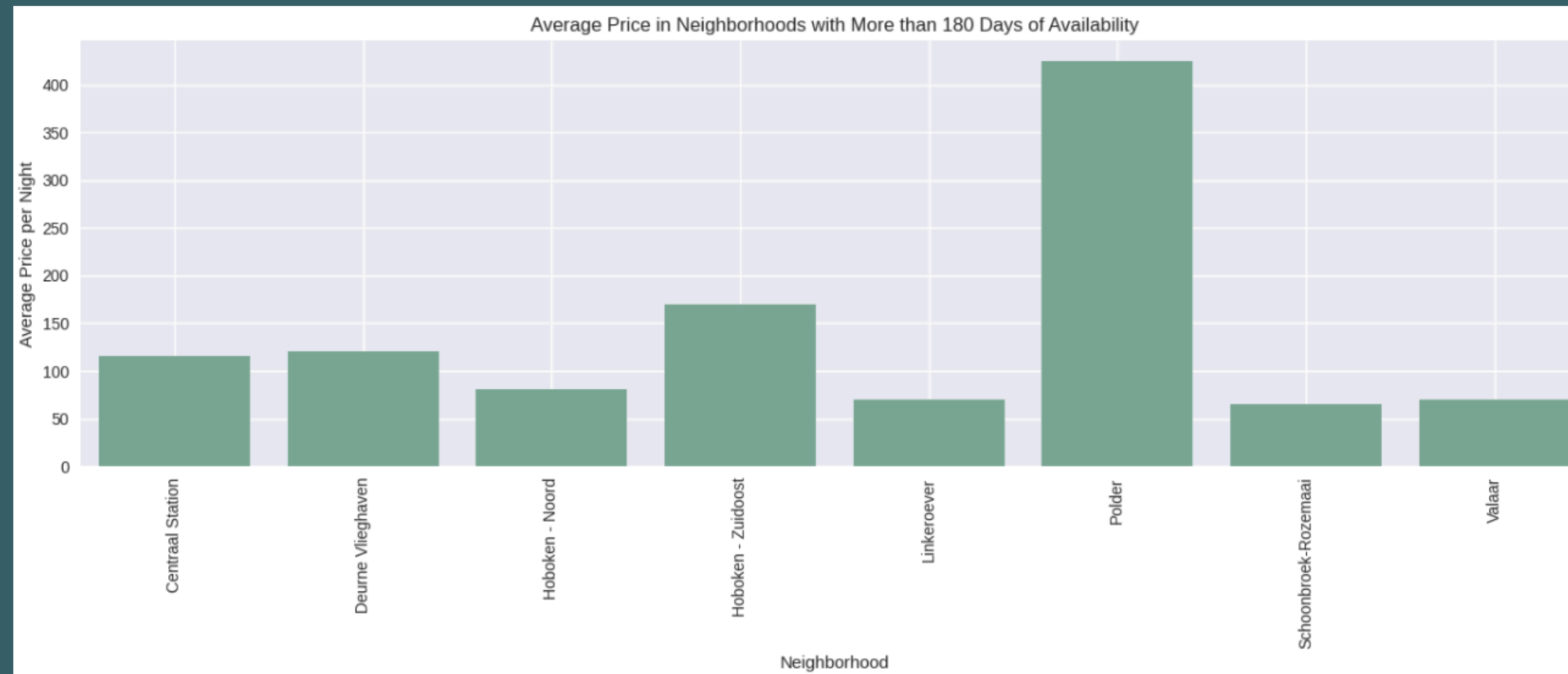
Avg Price of rooms which are Available for more that 180 Days

Reviews

Reviews per Month by Room Type

Price vs Number of Reviews

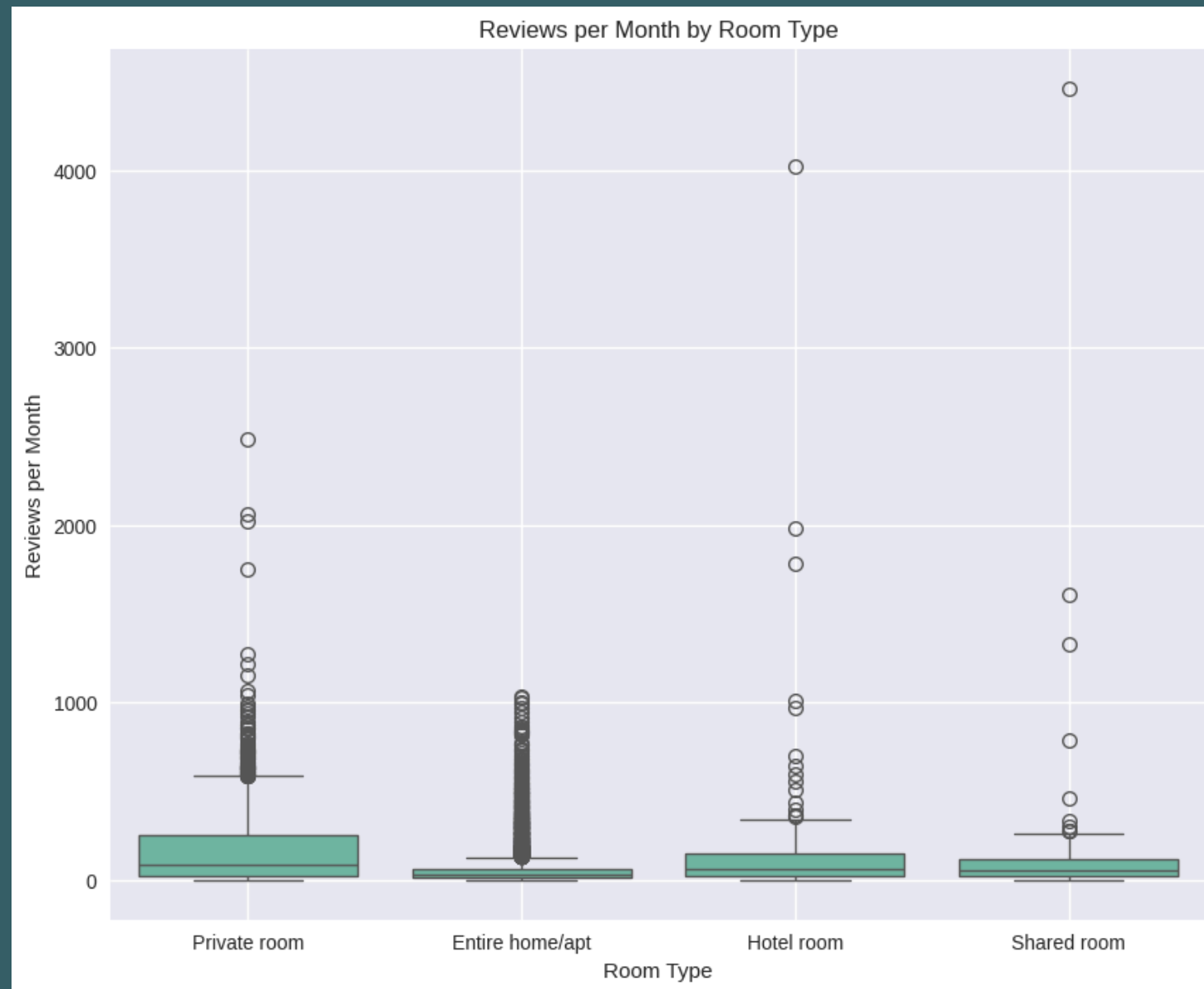Private rooms receive the highest number of reviews per month, indicating strong demand compared to entire homes, hotel rooms, and shared rooms, which have fewer reviews.

Lower-priced listings (under €500) receive the most reviews, highlighting that affordability significantly drives guest interaction and engagement.

Correlation

Correlation Matrix of Key Variables

- Most variables, including minimum nights, number of reviews, and availability, show only weak correlations with price, suggesting that these factors alone are not strong predictors of listing prices.
- The number of reviews is strongly correlated with reviews per month (0.75), indicating that frequently booked properties tend to accumulate more reviews over time.
- The weak correlations imply that Airbnb should consider more complex models or additional factors to better predict prices and optimize revenue strategies.

Regression Model

Predicted vs Actual Prices (Multiple Regression)
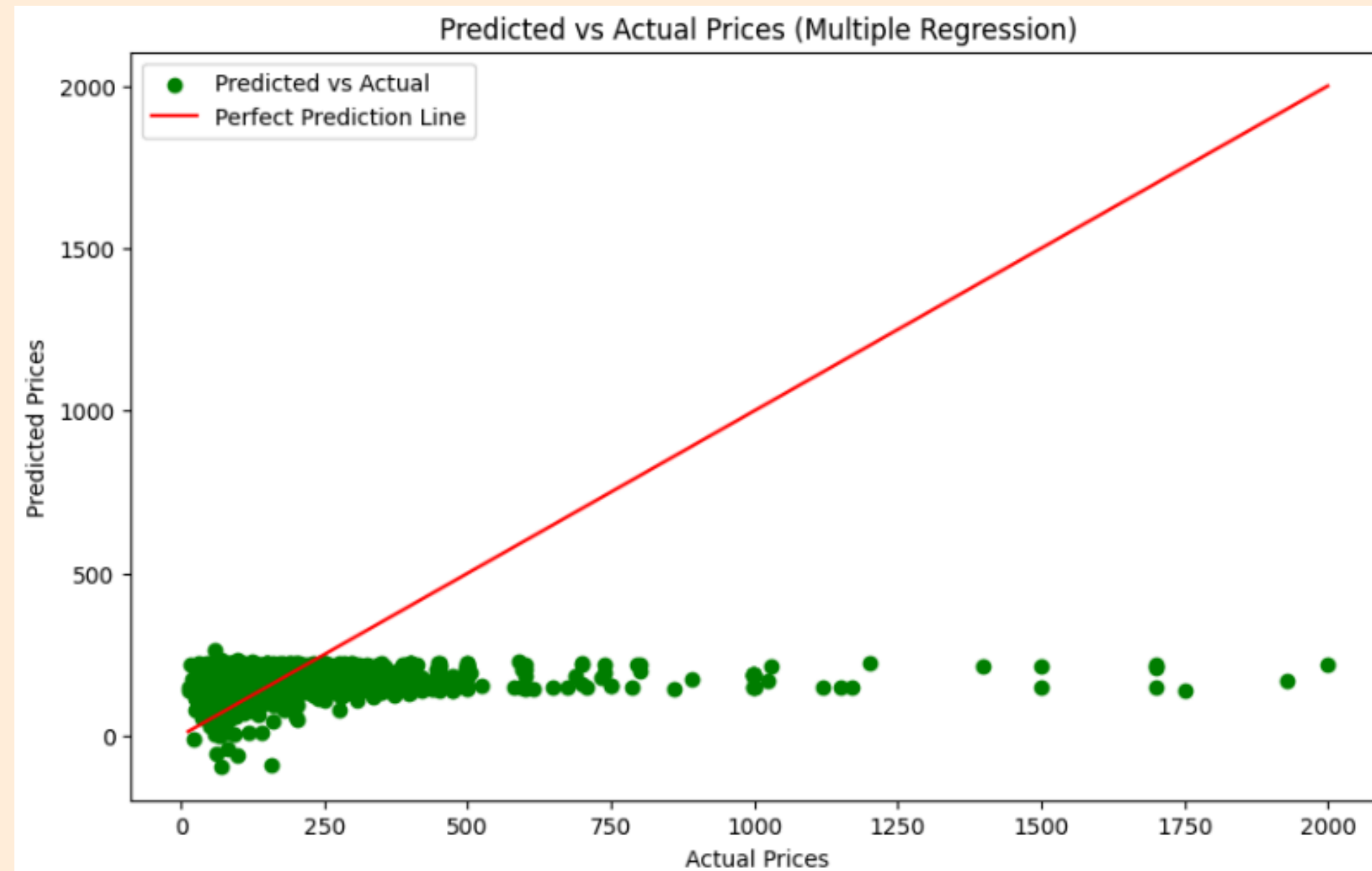
- There are variations, particularly in more expensive listings, where the model tends to underestimate the real price. This might suggest that the linear model has difficulty accurately representing the variability in more expensive listings.
- Because the linear regression model demonstrates signs of underfitting, particularly in higher price ranges, considering more advanced models like decision trees, random forests, or gradient boosting could uncover non-linear relationships between features and price for improved prediction accuracy.

Conclusion

In conclusion, our analysis of Airbnb listings in Belgium and the Netherlands reveals critical insights that can guide strategic decisions.

- The Netherlands has a higher number of rooms available compared to Belgium, with entire homes and apartments being the most common accommodation type.

- For travelers seeking private rooms, Centrum-West emerges as the top location, while De Baarsjes is ideal for those looking for apartments.

- Interestingly, the price comparison shows that some private rooms are priced similarly to apartments, reflecting their value in central locations.

- Entire homes/apartments and hotel rooms command the highest prices, especially in high-demand neighborhoods like Centrum-West and Oosterparkbuurt - Indische Buurt, whereas shared rooms remain the most budget-friendly option, owing to their reduced privacy.

- These findings equip Airbnb with valuable insights to refine pricing models, enhance targeted marketing, and better manage inventory, ensuring a competitive edge in meeting diverse customer needs across various markets.

Thank You