

airbnb prices in European cities

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Introduction

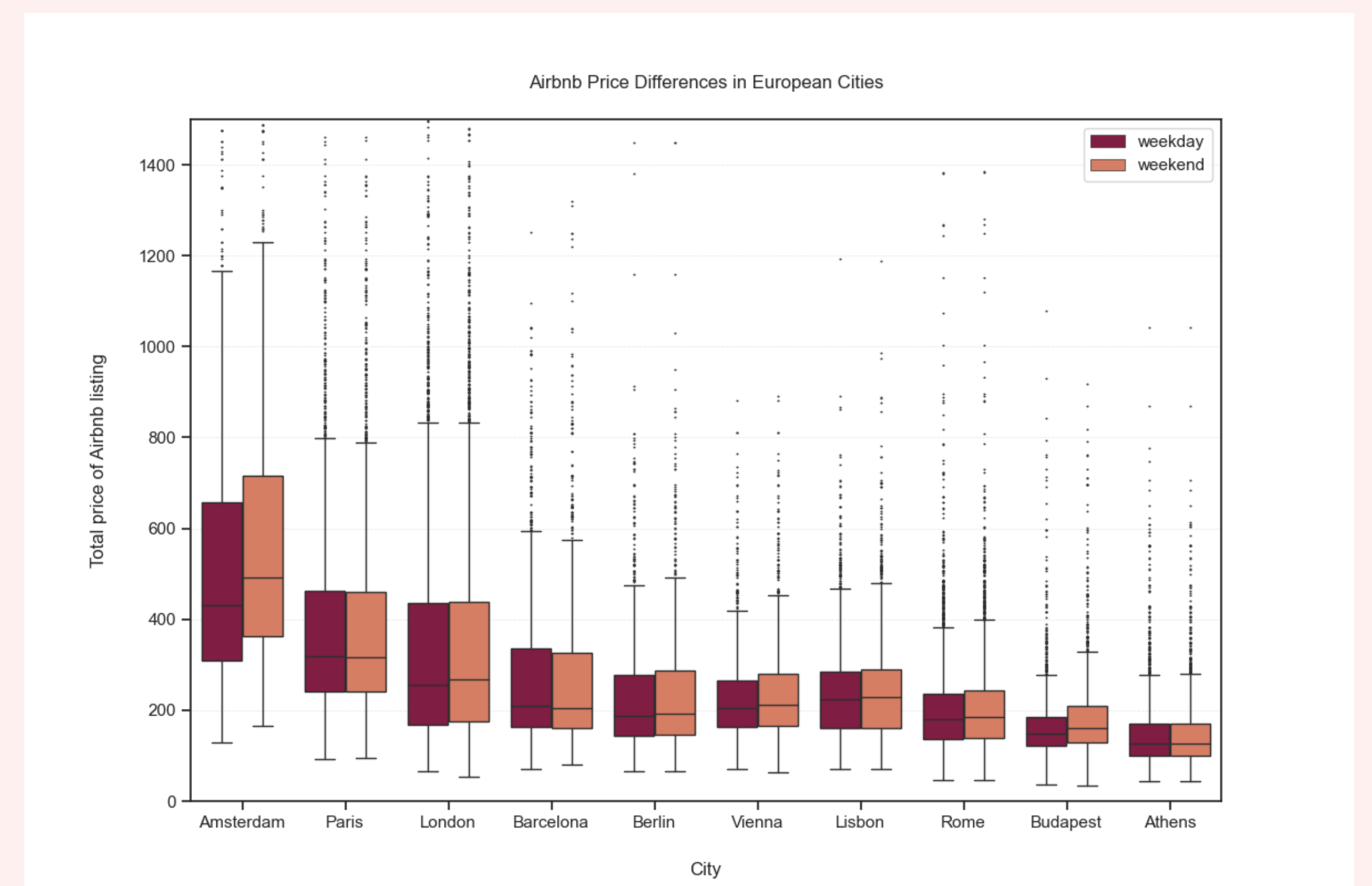
Airbnb has become a prominent player in the hospitality industry and for the hosts or customers, it's crucial to understand the factors that influence housing prices. Our goal was to identify the overall prices and differences depending on whether it's weekday or a weekend. In addition, we aimed to make close to accurate predictions of the housings in one of the cities.

Data

The dataset we are using for this project is from Kaggle. It contains information about the prices in 10 European cities - Amsterdam, Athens, Barcelona, Berlin, Budapest, Lisbon, London, Paris, Rome, and Vienna - during weekends and weekdays.

1st goal: Identifying overall prices

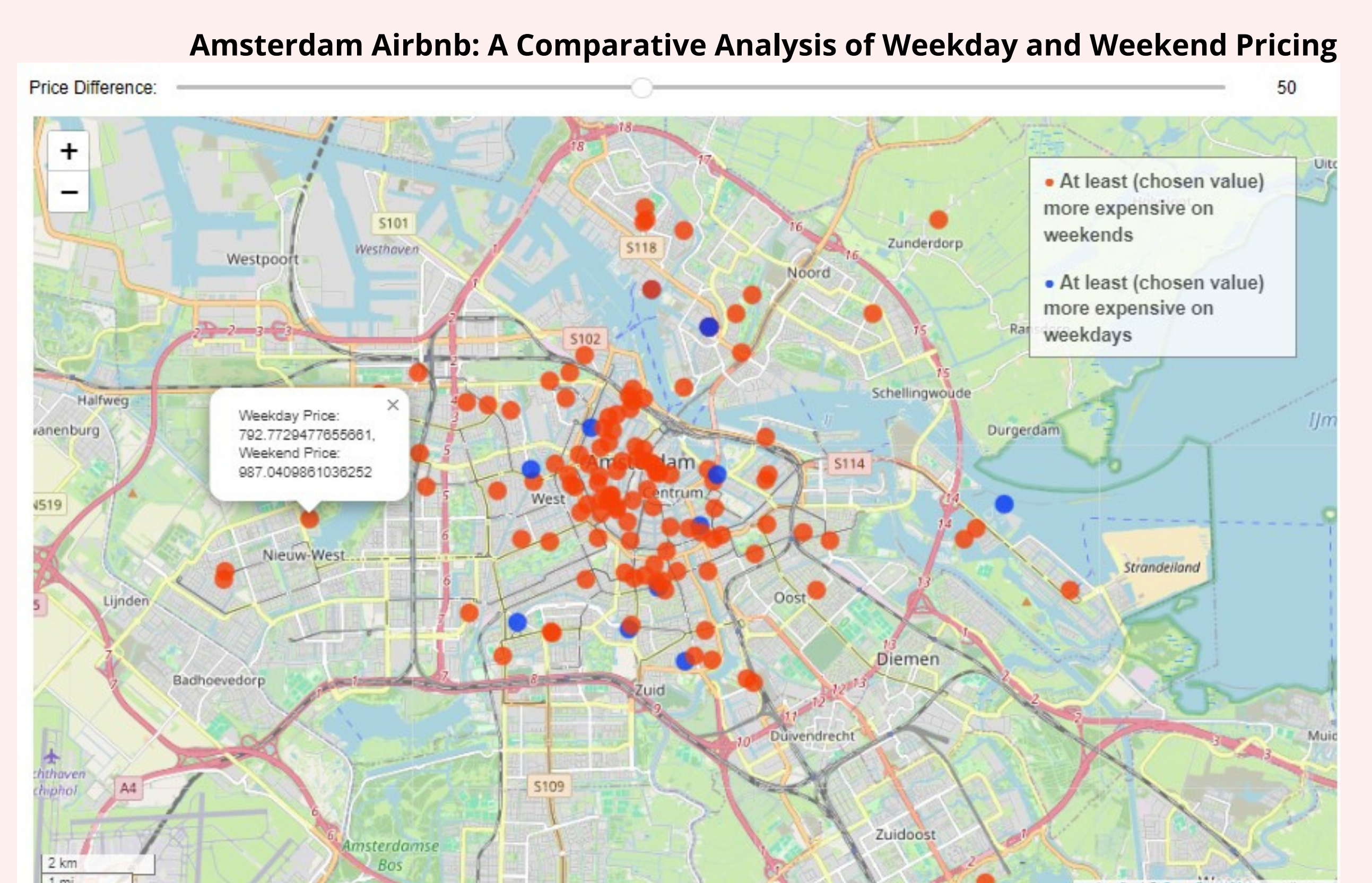
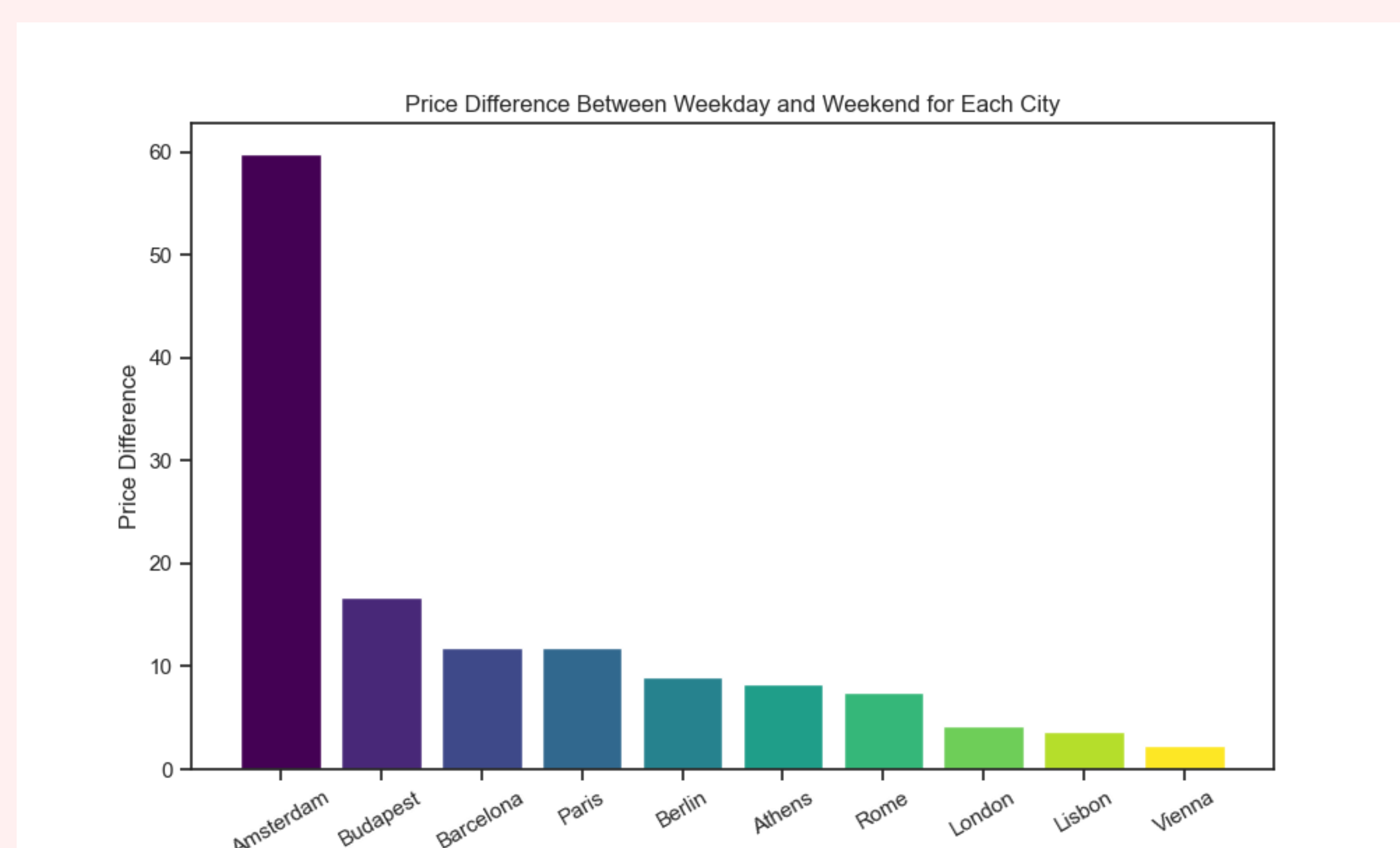
Upon first examination, we discovered that Budapest has the lowest listed accommodation prices, while Athens has the highest. However, when comparing the actual average prices, our analysis revealed that Athens, in fact, has the lowest overall prices on the market. Conversely, Amsterdam not only has the highest prices but also exhibits the largest difference between weekend and weekday prices.



2nd goal: Exploring prices between weekdays and weekends

As stated before, Amsterdam is the city with the biggest gap between the weekdays and weekend prices, with a significant difference of 59.81 euros.

To illustrate this, we developed an interactive map of Amsterdam that visualizes the Airbnb price differences between weekdays and weekends for each listing. The listings that are highlighted exhibit a price difference equal to or greater than a user-selected threshold between weekdays and weekends.

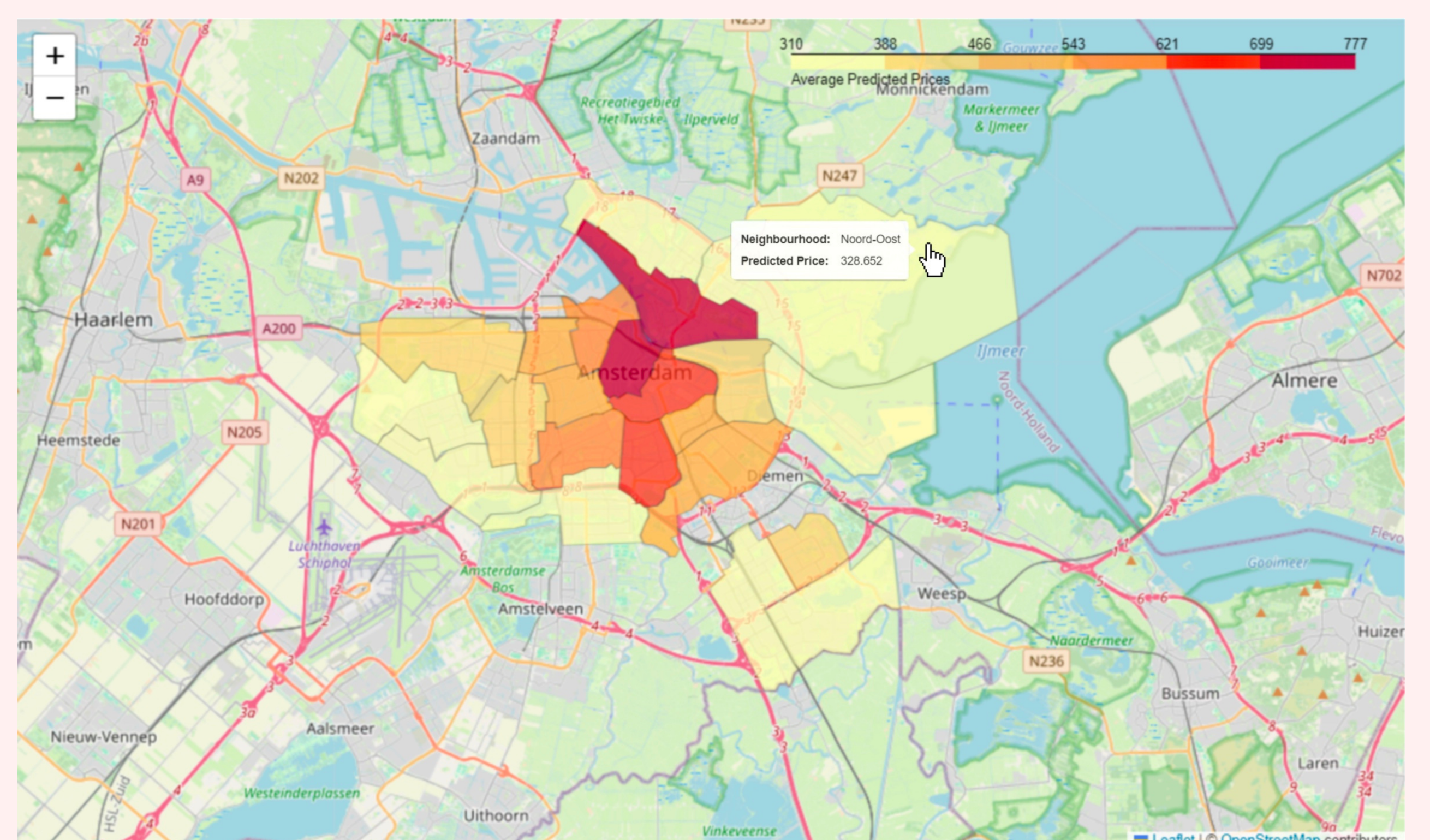


3rd goal: Predicting prices based on features in Amsterdam city

Method: Gradient Boosting Regressor

Data: 20% for testing, 80% for training

Calculated R^2 was 0.9475, indicating that the model accounts for 94.75% of the variability in Airbnb prices. While the Mean Absolute Error (MAE) was 77.75 and Root Mean Squared Error (RMSE) was 120.61, this is reasonable given the significant variation in listing prices. The overall predictions are generally considerable. For visualization, we developed a color-coded map showcasing Amsterdam neighbourhoods that displays the average price range based on our prediction model.



Amsterdam Airbnb: Predicted Price Distribution Across Neighbourhoods