Rental Price Analysis in Dublin (WIP)

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1 Introduction

This report presents an analysis of rental prices in Dublin, Ireland. The aim of this project is to gain insights into the rental market in Dublin by conducting descriptive statistics and geospatial analysis, as well as predictive analysis. I will explore various aspects of the data, including rental price distributions, property types, bedroom and bathroom distributions, and geospatial patterns. Finally, I will conduct a simple machine learning model to try to predict rental prices in Dublin. Overall, this project is a practical exercise in data analysis and visualization, helping me to acquire and master the tools and skills needed for my potential career.

2 Descriptive Statistics

2.1 Data Preparation

In the "Data Preparation" phase, I loaded and cleaned the dataset to ensure its suitability for analysis. This process involved handling missing values and converting data types as needed. Cleaning the data is a critical initial step to ensure that my subsequent analyses are based on reliable and complete information.

2.2 Summary Statistics

Looking at the Summary Statistics printed out above gives us some vakuable insight on the rental price situatuion in Dublin.

Statistic	Value
Min	480.000
1st Qu.	1650.000
Median	1950.000
Mean	2152.741
3rd Qu.	2400.000
Max	15000.000

Table 1: Summary Statistics of Rental Prices in Dublin

The mean value of monthly rent across properties in Dublin is €2,152.741. The cheapest property is a furnished house on Mountjoy Street in North Dublin city at €480 per month. The most expensive properties are houses located in Ballsbridge at €15,000 a month.

2.3 Distribution of Rental Prices

We can examine the distribution of Rental Prices. From Figure 1 we can observe what seems to be similar in shape to a normal distribution, with most observations clustered inside one standard deviation (€984) of the mean. A small number of properties are more spread out to the right of the mean, with values in the €5,000-10,000 range and two outliers at €15,000.

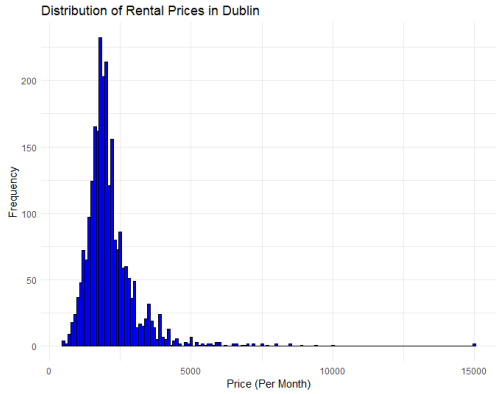


Figure 1: Distribution of Rental Prices in Dublin

2.4 Box Plot of Rental Prices by Property Type

Our dataset contains information for four different property types: Apartments, Flats, Houses and Studios. Box plots allow us to visualize potential differences in the summary statistics between these different types.

We see that houses have the largest interquartile range, followed by apartments. They both have the most outliers, the most expensive properties in Dublin seem to be houses followed by apartments, with many observations outside the box plot. Houses have the longest whiskers, most of the data is located in the €500-5,000 range. Apartments and flats both have some low outlier observations. Overall, flats and studios have the lowest median value and rather short boxes and whiskers. They are the cheaper form of accomodation.

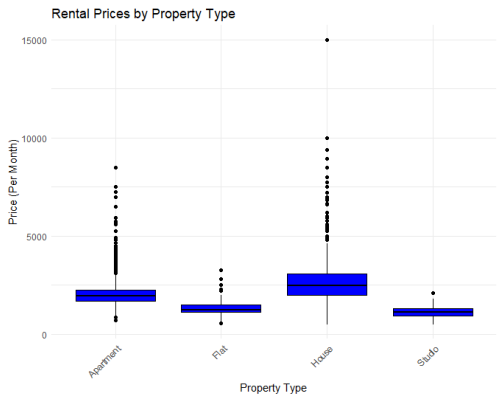


Figure 2: Rental Prices in Dublin by Property Type

2.5 Average Rental Prices by Furnishing Type

We see that surprisingly, the average price for an unfurnished property is higher by about 50 percent, although this might be slightly skewed by the presence of a number of very expensive unfurnished properties along with an overall smaller sample size of unfurnished properties. Important to note the dataset contains a lot of "furnished or unfurnished" entries which do not tell us much about the furnishing.

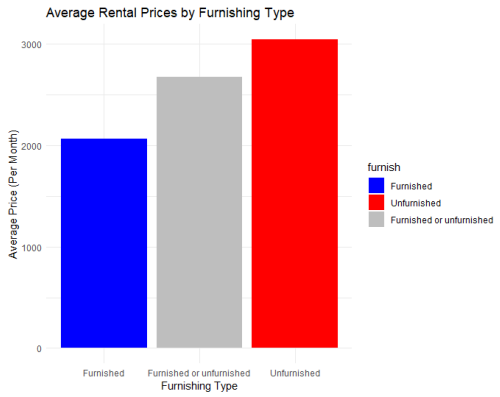
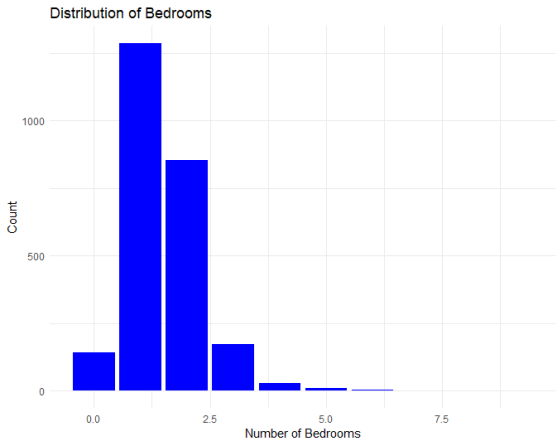


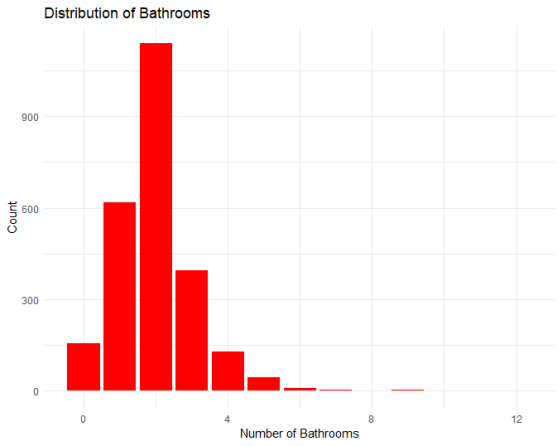
Figure 3: Average Rental Prices by Furnishing

2.6 Bedroom and Bathroom Distributions

Analyzing bedroom and bathroom distributions can give us insight on the property market in Dublin. Bedroom and bathroom means are approximately 1.5 and 2 respectively, with observations seemingly normally distributed around the means. A couple of outliers exist with 5+ bedrooms and 7+ bathrooms.



(a) Distribution of Bedrooms



(b) Distribution of Bathrooms 2

Figure 4: Distributions

2.7 Relationship between Bedrooms, Bathrooms, and Prices

Plotting the relationship between amenities and prices can help us understand the combinations of bedrooms and bathrooms that maximize prices in Dublin. Anything above 5 bathrooms will lead to a great increase in price, with the priciest properties having more than 7 bathrooms. The cheapest properties seem to be in the 2 by 2 box in the bottom left of the plot.

Figure 5: Relationship between Bedrooms, Bathrooms and Prices

2.8 Common Bedroom and Bathroom Combinations

A heatmap of the most common combinations of bedrooms and bathrooms can be a useful tool to help us understand the prices in the rental market. Figures 5 and 6 can be used together to give us an idea about the most comoon combinations, and how these are priced.

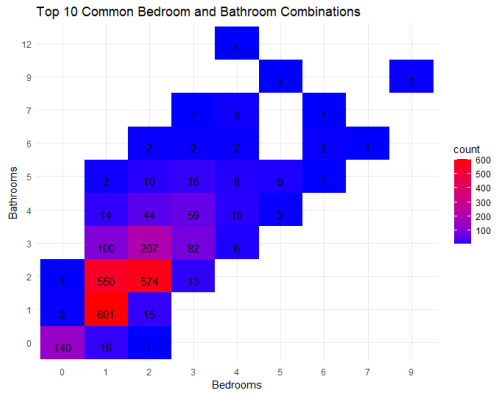


Figure 6: Most common combinations of Bedrooms and Bathrooms

3 Geospatial Analysis

3.1 Data Preparation

3.2 Geospatial Visualization

3.3 K-means Clustering