Data Analysis of Accommodation scenario in Munich

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1. Introduction

1.1 Background

Every year thousands of student flock in Germany to start their higher education, be it Bachelor's, Master's or PhD program. Germany is home to some of the biggest cities in the world, and each one has its own story to tell. Cities all over Germany are perfect for students and can offer them a great life beyond studies. However, what students face in their initial days of arrival in Germany is finding the perfect accommodation. There are a huge number of aspirants joining numerous courses in various institutes, however not many student-dorms or hostels to accommodate them all. Unknown of this fact, after arrival, students spend more time searching for accommodation than focusing on other activities. The accommodation in Germany, especially for international students, is really a huge problem. I, being one of the victims, have tried to analyze the scenario of student-dorm in my current city, Munich.

1.2 Problem

Data that might contribute to this analysis includes the number of student-dorms available across the city, their location, their basic rent including overheads, and the waiting time for their availability. This project aims to analyze the available data and produce a suitable report for the prospective students desiring to pursue their studies in Munich, Germany.

1.3 Interest

Obviously, prospective students who would be interested to pursue their studies in Munich, as well as those who have already arrived but have yet not found an accommodation.

2. Data acquisition and cleaning

2.1 Data sources

Most of the relevant data related with the student-dorms in Munich can be obtained from here, I have already scraped the data and uploaded it into GitHub repository as .csv file as available through the link above. I have also used Foursquare location data to cluster and segment the dorm locations.

2.2 Data cleaning

Data scraped and downloaded from multiple sources were combined into one file.
There are several problems with the datasets, for example, the basic rents were in string format which was to be converted into float by using data wrangling methods for their use. Second, there were a lot of missing values of semester waiting time, basic rent, and Dwelling form, and also the information related to residence and address of the dorm was not in the right format (were merged with other details), so they had to be separated and cleaned before use.. Further, since there were a range of basic rents available, so I used data binning method to convert them into 4 categories and then analyzed them.

3. Exploratory Data Analysis

3.1 Clustering & Segmenting the Munich Central

The clustering and segmentation of Munich Central was done using the Foursquare Location Data. I chose to map all the available student dorms in Munich to depict the clear view of their locations within the radius of 50km and using the search query *"studentenwohnheim"* meaning student-dorm in German. The reason for choosing such a large radius (50000m) is because the student-dorms are spread across the city and also on the outskirts, some at a very large distance. The map below highlights all the student dorms located in Munich. The red mark points the Munich Central area while all the blue marks point the dorm locations.

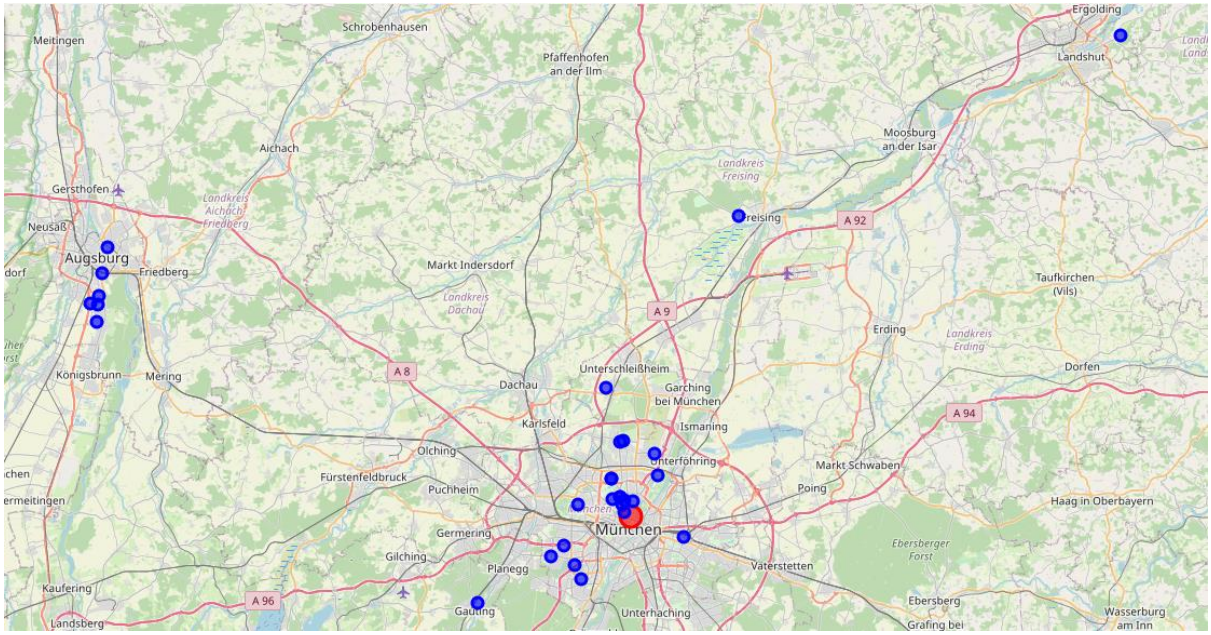
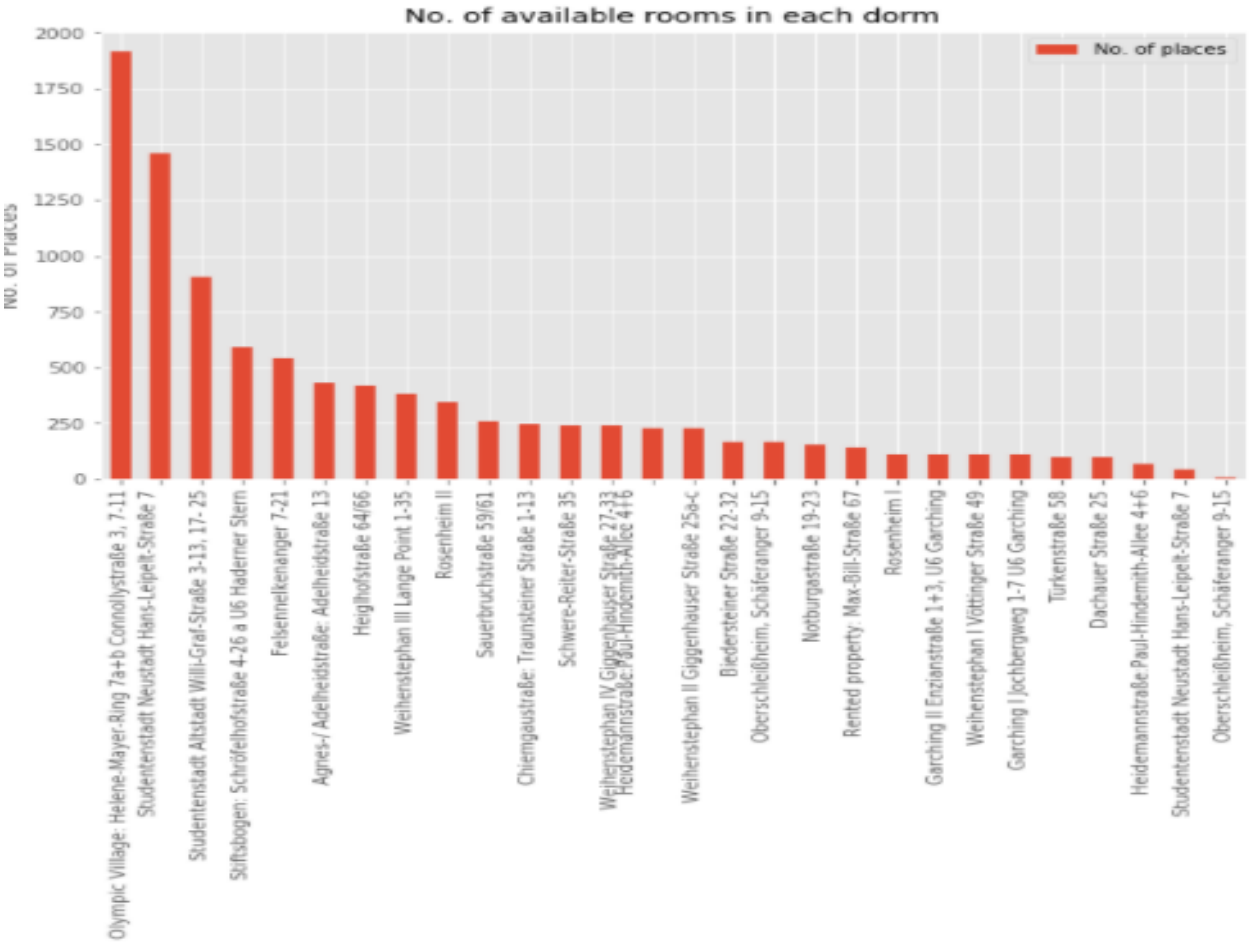


Fig.1 Location of student dorms across Munich city

3.2 Observing the No. of places available

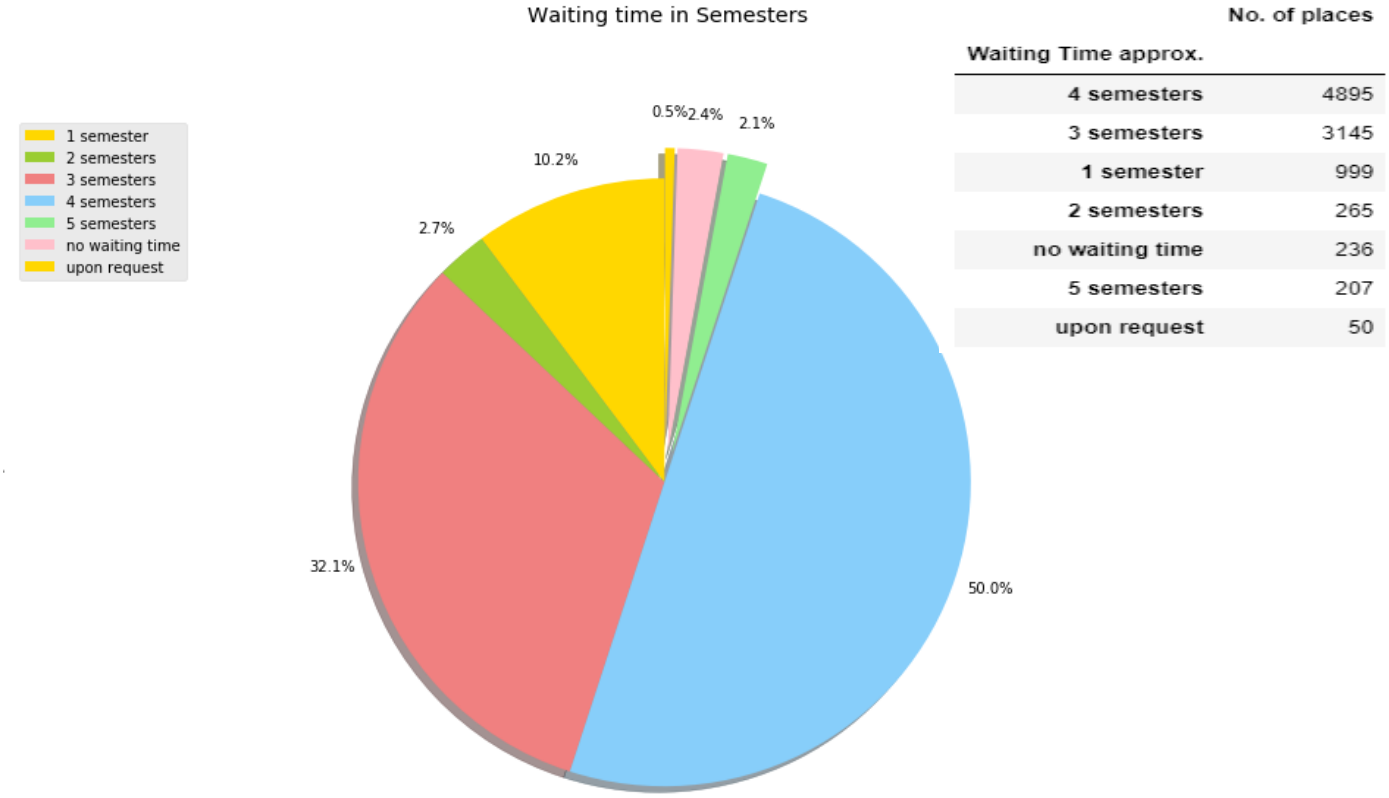
It is a very clear sign that more the number of rooms available in the dorm, better are the chances of students to get a fixed place there. So, my first observation is simply the total number of places in each dorm versus the number of dorms. It is clear from the bar-chart that Olympic Village has the highest number of available rooms, followed by Studentenstadt Neustadt and Studentenstadt Altstadt.



From the bar-chart, one can infer that the top 3 dorms i.e., Olympic Village, Studentenstadt Neustadt, and Studentenstadt Altstadt should be a definite option of the students while applying for the dorms. The chances are high that they will get a fixed place in these dorms.

3.3 The ordeal of Waiting period

Due to the high number of applicants for dorms, the fresh students must wait for 2, 3, or sometimes 4 semesters to get a fixed place. Only some students are fortunate enough to get a room in the first semester itself. This analysis will clearly depict how long the students must wait before they are allocated their own room. Sometime the waiting period is so long that the students graduate without even getting the dorm and shifting from one place to another month after month.

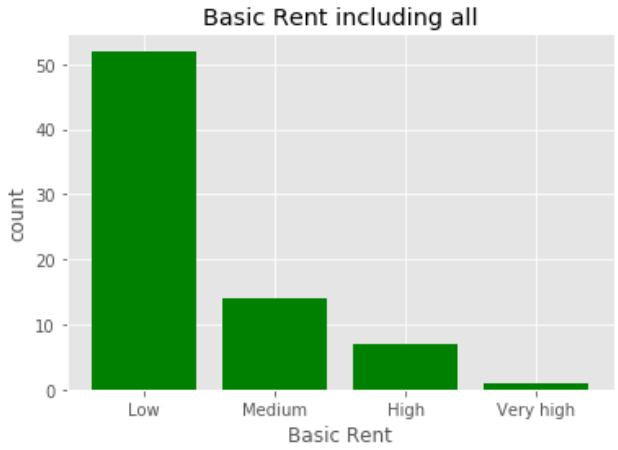


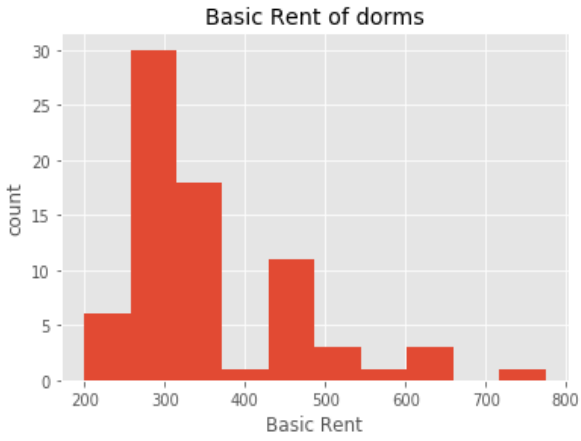
Waiting Time approx.	No. of places
4 semesters	4895
3 semesters	3145
1 semester	999
2 semesters	265
no waiting time	236
5 semesters	207
upon request	50

One can clearly infer from the above pie chart the ordeal of the waiting period. Almost 50% of the student dorms have the waiting period of 4 semesters, which is a real problem for the prospective students, especially international students as they must search their accommodation even before arriving in the city and are often trapped by the scammers.

3.4 Money is always a problem

One reason the students are eagerly waiting for a fixed place in dorm is the finances. Munich, apart from having dearth of places to accommodate students, is also the most expensive city in Germany. Therefore, the cheapest accommodation that one can afford are the student dorms. This section gives the analysis of the basic price estimates of different types of accommodation available across the city.





The above plots depict three different ways to analyze the data related with Basic rent. The bar-chart on the bottom left has been obtained by data binning of rent list into 4 different categories, showing that the basic rent of most of the dorms fall under low rent category. Similarly, the histogram on the right provides the exact detail of dorms with

their rent. The reason I chose to plot a box plot along is that it is very easy and simple to get the maximum information from a single plot. It shows that the minimum rent is around 270€, and median rent being around 330€. However, there is one outlier at around 780€.

4. Conclusions

In this study, I analyzed the various factors associated with the chances of a student getting a student-dorm in Munich. I analyzed the relationship between the waiting period of the dorm with the number of dorms available, and visualized the data using various python inbuilt data visualization tools. I also used Foursquare location data to the highlight the dorms in and around the Munich city. This analysis could be useful to the aspiring students willing to study in Munich with a little knowledge of accommodation scenario here. While applying for the dorms, they can go for the ones with maximum no. of rooms and be prepared to wait for a long period before finally getting a fixed place. Finally, the cost of living in Munich surges with the increase in room rent, so choosing the dorm wisely could save finance to a great extent.