

PROJECT PROPOSAL

EPPS 6356: Data Visualization

‘Don’t wait to buy real estate, buy real estate and wait.’

Area:

Real estate has long been considered a sound investment, and for a good reason. It has become a very popular investment instrument over the past few years now. Looking at the fluctuations and drastic increase in the demand of real estate especially when the supply was constrained during the pandemic, it has fascinated me to study the real estate market and analyze it more closely.

In this research paper, we shall study about the various factors on which the real estate housing prices depend; the importance of location, the number of bedrooms and bathrooms in the property, the land size, the year the property was built in and many more. It is essential to understand what and how the real estate housing prices are being influenced. For investors, knowledge of what factors are affecting the housing prices is required to choose the best investment opportunities and for buyers, studying the factors affecting the housing prices and combining them with their requirements in order to get a great deal for themselves is important.

Here, we have the data for *Melbourne Housing Market* for the period *2016 to 2019* with different characteristics that affect the housing prices. This research paper will study this data to develop insights on the real estate market.

Research Statement: *‘Did you make a profitable investment?’*

My research aims to analyze what shall be a profitable investment for real estate investors based on factors like; if the market prices of the location of real estate are going to surge in the near future, which locality is going to undergo developments, what category of houses are in demand now and/or in the upcoming times; condos, townhouse, apartments etc. We shall also determine and analyze the relationship of housing prices over the years with basic elements like number of bathrooms and bedrooms, land size the house covers, geographical location, urban or sub-urban area, what kind of house it is and when was the house built. We will also undergo research on whether the sale of real estate has boomed over the last few years and what trend it will follow in the upcoming times.

Data:

I have collected the data for *Melbourne Housing* from 2016-2019 from Kaggle.com. The data I collected is vast with various characteristics and elements of housing. The data has been modified as per the needs and requirements of the research topic. Various elements have been removed which did not prove to be quite useful for the purpose of research. The data set mainly includes three data types; object, integer and float. The object data type is changed to category in order for the data set to run without errors and to get better outputs. The statistical data will be accompanied by various constructive articles and news reading which will support the explanations developed by my research. Various data visualization techniques will be used to make the outcome of the research quite attractive and self-explanatory.

The industries that seem to be most beneficial from these resources and the data analysis are the real estate industry, the building and construction industry and the architecture industry whose primary focus is investment in housing, renovating them and selling them to the buyers. The home hunters shall also benefit from this research paper as it will provide them with an insight of what factors are affecting the housing prices which can help them modify their search for houses.

Visualization Design:

In order to find a sound investment opportunity for real estate investors in Melbourne we will be doing a price prediction analysis. We will perform data visualization techniques to determine the relationships of different housing characteristics with the price of housing. The research work shall also aim to identify the developing area in terms of real estate by graphical analysis of predictive growth in the future. An idea of what the research project shall include is:

- Firstly, cleaning data against data type, outliers and null value, changing the data type, replacing null values and outliers shall be done.
- Data analysis and visualization for the relationship between:
 1. Price vs Geographical location
 2. Price vs Number of Bathrooms
 3. Price vs Number of Bedrooms
 4. Price vs Land size
 5. Price vs Year Built
 6. Price vs Year Sold
 7. Price vs Type of house sold
 8. Price vs Government Council of the area

- To develop a future insight into the real estate market for the investors and buyers this paper will also predict prices of housing in different geographical locations in the coming years by using predict function of R.
- The research paper aims to make use of all data visualization techniques learnt during the course in order to best represent the data. In this paper we will be using charts like (1) Line Chart (2) Pie Chart (3) Box Plot (4) Scatter Chart (5) Stocked Area Chart (6) Column Chart and other methods as they come into use to present the numerical data in an easy-to-understand manner.
- With all the outcomes and conclusions that we may develop of the above findings, we will study about which elements have the most impact on the housing prices and how are the housing prices changing over the years. It will bring us to a fair idea of what will be a good investment.
- The graphical analysis of different variables with price will provide us a more informative understanding on the impact of respective variable on prices of housing.

Bibliography:

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