**Results and Graphs (Housing Market Prediction)**

The numberings are according to the Code sections.

**Section 1.**

Application

Description automatically generated

Displaying the first 5 rows of the Dataset after importing it.

**Section 2.**

Table

Description automatically generated

The above shown values are the Sum of the NULL values in the respective attributes.

Diagram

Description automatically generated with low confidence

The Graph shown above are the outliers present in each different attribute required for the further implementations.

**Section 3.**

Graphical user interface

Description automatically generated with medium confidence

It is the result after training the data to prepare for the Random Forest Regression.

**Section 4.**

A picture containing table

Description automatically generated

Result of the creating replacement values for the NULL attributes.

**Section 5.**

Table

Description automatically generated with medium confidence

Here we have edited all the outliers on the training data

**Section 6.**

Graphical user interface, application, table

Description automatically generated

Graphical user interface, text, application

Description automatically generated

These are the MAPE and MSE values. Since the MSE and MAPE values are 0.04657 and 16.8% respectively then the prediction was not bad so we can use this model to fill the NULL price values with approximated values.

**Section 8.**

A picture containing graphical user interface

Description automatically generated

The MAPE shown above indicates that we have 17.4% of error in our train model of filling the NULL price values with approximate values. Since the error in only about 17.4% this model has worked as intended. And the data shown on the below table are the result of the Random Forest model.

Graphical user interface, text, application

Description automatically generated

**Section 9.**

**9.1 : The Price fluctuations of different type of properties listed**.Graphical user interface, chart, line chart

Description automatically generated

As in the above graph, we can say that the Houses are the most expensive ones, then Townhouse, and then Duplex. The price of both Duplex and Townhouse were quite stable and consistent throughout the time period.

**We can say that along 2017 the price is quite unpredictable for all the attributes. Also, at every beginning of each year, the prices of the properties decline.**

**9.2 : The geographical mapping** Chart, scatter chart

Description automatically generated

Chart, scatter chart

Description automatically generated

The Graphs shown above are the Housing Locations and the Suburb Locations on the geographical map. If we look at the 1st graph we can see that there are more number of house than duplex or Townhouses available in Melbourne. And in the 2nd graph we can see the representation of the number of duplex and townhouses in each region.

* 1. **: The Price fluctuations in different regions** Chart, histogram

     Description automatically generated

Chart, line chart

Description automatically generated

As we can see in the 1st graph, The prices of the properties at Southern Metropolitan spiked around October - November 2017 which means Buying property around that time isn't really a good idea and the prices of the properties at South-Eastern Metropolitan got lower and was similar in range as Northern and Western Metropolitan starting from June - July 2017.

In the 2nd graph shown above we can see there a more fluctuations between July to November 2017in the Victoria area of Melbourne

**In Conclusion:**

The most important factor that contributes to the price of a property is its distance to the city center and the area it is located at. The price of the property always declines around January or February of each year in Melbourne.

If you are looking for a cheap property located close to Melbourne City Business District (CBD), Western Metropolitan is the cheapest region. But if you are looking for the cheapest property in Melbourne and do not really have a concern about its distance to CBD, then Western Victoria will be a suited place..