# HousePricing

January 31, 2021

## 1 Housing Prices: Can you predict the home sales prices in Melbourne?

```
[1]: import warnings
     warnings.filterwarnings('ignore')
     import pandas as pd
     import numpy as np
     import seaborn as sns
     import matplotlib.pyplot as plt
```

### 1.1 Import the Data

```
[2]: # Remove redundant/unique information
     dfHousePrices = pd.read_csv("house_prices.csv", usecols = ['Suburb', 'Rooms',␣
      ↪'Type', 'Price', 'Method', 'Seller', 'Distance', 'Bedroom', 'Bathroom',␣
      ↪'Car', 'Landsize', 'BuildingArea', 'YearBuilt', 'CouncilArea', 'RegionName',␣
      ↪'PropertyCount', 'Postcode'])
     dfHousePrices.head()
```

```
[2]:        Suburb  Rooms Type    Price Method  Seller  Distance  Postcode  \
     0  Abbotsford      2    h  1480000      S  Biggin       2.5      3067
     1  Abbotsford      2    h  1035000      S  Biggin       2.5      3067
     2  Abbotsford      3    h  1465000     SP  Biggin       2.5      3067
     3  Abbotsford      3    h   850000     PI  Biggin       2.5      3067
     4  Abbotsford      4    h  1600000     VB  Nelson       2.5      3067

        Bedroom  Bathroom  Car  Landsize  BuildingArea  YearBuilt CouncilArea  \
     0        2         1  1.0       202           NaN        NaN       Yarra
     1        2         1  0.0       156          79.0     1900.0       Yarra
     2        3         2  0.0       134         150.0     1900.0       Yarra
     3        3         2  1.0        94           NaN        NaN       Yarra
     4        3         1  2.0       120         142.0     2014.0       Yarra

                   RegionName  PropertyCount
     0  Northern Metropolitan           4019
     1  Northern Metropolitan           4019
     2  Northern Metropolitan           4019
```

```
3  Northern Metropolitan          4019
4  Northern Metropolitan          4019
```

[3]:
```
dfHousePrices.shape
dfHousePrices.describe()
```

[3]:
```
              Rooms         Price      Distance      Postcode       Bedroom  \
count  13580.000000  1.358000e+04  13580.000000  13580.000000  13580.000000
mean       2.937997  1.075684e+06     10.137776   3105.301915      2.914728
std        0.955748  6.393107e+05      5.868725     90.676964      0.965921
min        1.000000  8.500000e+04      0.000000   3000.000000      0.000000
25%        2.000000  6.500000e+05      6.100000   3044.000000      2.000000
50%        3.000000  9.030000e+05      9.200000   3084.000000      3.000000
75%        3.000000  1.330000e+06     13.000000   3148.000000      3.000000
max       10.000000  9.000000e+06     48.100000   3977.000000     20.000000

           Bathroom           Car       Landsize  BuildingArea     YearBuilt  \
count  13580.000000  13518.000000   13580.000000   7130.000000   8205.000000
mean       1.534242      1.610075     558.416127    151.967650   1964.684217
std        0.691712      0.962634    3990.669241    541.014538     37.273762
min        0.000000      0.000000       0.000000      0.000000   1196.000000
25%        1.000000      1.000000     177.000000     93.000000   1940.000000
50%        1.000000      2.000000     440.000000    126.000000   1970.000000
75%        2.000000      2.000000     651.000000    174.000000   1999.000000
max        8.000000     10.000000  433014.000000  44515.000000   2018.000000

       PropertyCount
count   13580.000000
mean     7454.417378
std      4378.581772
min       249.000000
25%      4380.000000
50%      6555.000000
75%     10331.000000
max     21650.000000
```

## 1.2 Clean the Data

[4]:
```
import math
# We need to fill empty values on year built, built area and car
median_year_built = math.floor(dfHousePrices.YearBuilt.median())
median_year_built
dfHousePrices.YearBuilt = dfHousePrices.YearBuilt.fillna(median_year_built)
```

[5]:
```
median_car = math.floor(dfHousePrices.Car.median())
median_car
dfHousePrices.Car = dfHousePrices.Car.fillna(median_car)
```

[6]:

```
median_building_area = math.floor(dfHousePrices.BuildingArea.median())
median_building_area
dfHousePrices.BuildingArea = dfHousePrices.BuildingArea.
 ↪fillna(median_building_area)
```

[7]:

```
# For council area I don't want discrepancies with other location data, so rows␣
 ↪with empty cells will get dropped
dfHousePrices = dfHousePrices[dfHousePrices['CouncilArea'].notna()]
```

[8]:

```
# Delete rows with 0 as landsize
dfHousePrices = dfHousePrices[dfHousePrices.Landsize != 0]
```

[9]:

```
# Check data to see if we all empty cells are filled
dfHousePrices.describe(include='all')
```

[9]:

```
           Suburb         Rooms   Type         Price Method  Seller  \
count       10272  10272.000000  10272  1.027200e+04  10272   10272
unique        305           NaN      3           NaN      5     237
top     Reservoir           NaN      h           NaN      S  Nelson
freq          301           NaN   8033           NaN   7017    1239
mean          NaN      3.068536    NaN  1.142861e+06    NaN     NaN
std           NaN      0.899147    NaN  6.493972e+05    NaN     NaN
min           NaN      1.000000    NaN  1.310000e+05    NaN     NaN
25%           NaN      3.000000    NaN  7.100000e+05    NaN     NaN
50%           NaN      3.000000    NaN  9.675000e+05    NaN     NaN
75%           NaN      4.000000    NaN  1.400000e+06    NaN     NaN
max           NaN     10.000000    NaN  9.000000e+06    NaN     NaN

            Distance      Postcode       Bedroom      Bathroom           Car  \
count   10272.000000  10272.000000  10272.000000  10272.000000  10272.000000
unique           NaN           NaN           NaN           NaN           NaN
top              NaN           NaN           NaN           NaN           NaN
freq             NaN           NaN           NaN           NaN           NaN
mean       10.402434   3102.092971      3.038162      1.570678      1.659073
std         5.578720     91.127321      0.916483      0.707189      0.985341
min         0.000000   3000.000000      0.000000      0.000000      0.000000
25%         6.700000   3044.000000      2.000000      1.000000      1.000000
50%         9.850000   3081.000000      3.000000      1.000000      2.000000
75%        13.000000   3146.000000      4.000000      2.000000      2.000000
max        47.400000   3977.000000     20.000000      8.000000     10.000000

             Landsize  BuildingArea     YearBuilt CouncilArea  \
count    10272.000000  10272.000000  10272.000000       10272
unique            NaN           NaN           NaN          33
top               NaN           NaN           NaN    Moreland
freq              NaN           NaN           NaN        1030
mean       647.930199    141.715375   1965.026967         NaN
```

```
std       4548.807775    101.695480     30.162665         NaN
min          1.000000      0.000000   1196.000000         NaN
25%        258.000000    126.000000   1960.000000         NaN
50%        516.000000    126.000000   1970.000000         NaN
75%        670.000000    137.000000   1970.000000         NaN
max     433014.000000   6791.000000   2018.000000         NaN

                   RegionName  PropertyCount
count                   10272   10272.000000
unique                      8            NaN
top     Southern Metropolitan            NaN
freq                     3303            NaN
mean                      NaN    7304.301889
std                       NaN    4392.989470
min                       NaN     249.000000
25%                       NaN    4019.000000
50%                       NaN    6482.000000
75%                       NaN    9704.000000
max                       NaN   21650.000000
```

[10]:

```
# Run this commands to check for typos on categorical data
unique_types_suburb = set(dfHousePrices['Suburb'].unique())
unique_types_suburb
unique_types_seller = set(dfHousePrices['Seller'].unique())
unique_types_seller
unique_types_council_area = set(dfHousePrices['CouncilArea'].unique())
unique_types_council_area
unique_types_region_name = set(dfHousePrices['RegionName'].unique())
unique_types_region_name
unique_types_type = set(dfHousePrices['Type'].unique())
unique_types_type
# Fortunately, there are no typos and unique values are correct
```

[10]:

```
{'h', 't', 'u'}
```

[11]:

```
dfHousePrices.dtypes
```

[11]:

```
Suburb            object
Rooms              int64
Type              object
Price              int64
Method            object
Seller            object
Distance         float64
Postcode           int64
Bedroom            int64
Bathroom           int64
```

```
Car                float64
Landsize             int64
BuildingArea       float64
YearBuilt          float64
CouncilArea         object
RegionName          object
PropertyCount        int64
dtype: object
```

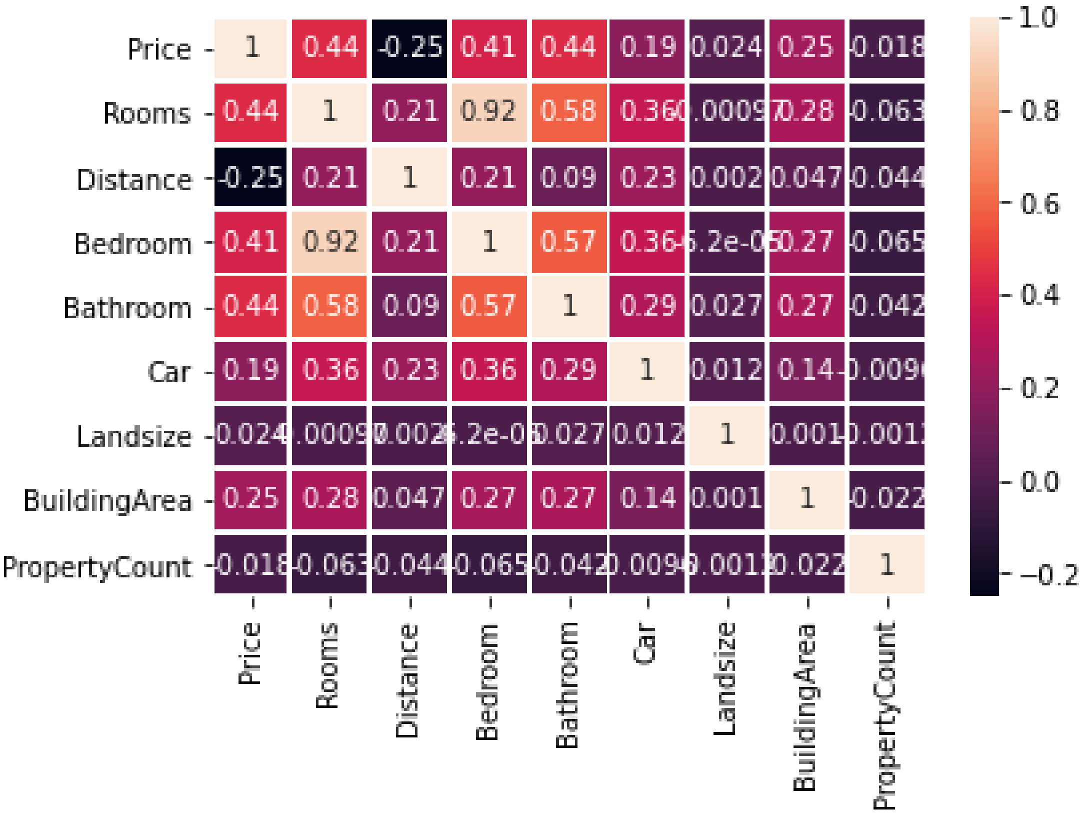
### 1.3 Exploratory Data Analysis - 1st Part

[12]:

```
# Find correlations between continous variables (IV and DV)
X = dfHousePrices[['Price', 'Rooms', 'Distance', 'Bedroom', 'Bathroom', 'Car',␣
 ↪'Landsize', 'BuildingArea', 'PropertyCount']]
sns.heatmap(X.corr(),annot=True,lw=1)
```

[12]:

```
<AxesSubplot:>
```



### 1.4 Build the model - 1st Part

[13]:
```
X = dfHousePrices[['Rooms', 'Distance', 'Bathroom', 'Car', 'Landsize',␣
 ↪'BuildingArea']]
```

[14]:
```
Y = dfHousePrices['Price']
```

[15]:
```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, Y, test_size=0.4,␣
 ↪random_state=101)
print(X_train.shape)
print(X_test.shape)
print(y_train.shape)
print(y_test.shape)
```

```
(6163, 6)
(4109, 6)
(6163,)
(4109,)
```

[16]:
```
from sklearn.linear_model import LinearRegression
model = LinearRegression()
model.fit(X_train,y_train)
```

[16]:
```
LinearRegression()
```

[17]:
```
coeff_parameter = pd.DataFrame(model.coef_,X.columns,columns=['Coefficient'])
coeff_parameter
```

[17]:
```
                Coefficient
Rooms         236505.665574
Distance      -43529.127991
Bathroom      225562.279396
Car            52646.923733
Landsize           2.376645
BuildingArea     531.643953
```

[18]:
```
# Print the intercept
print(model.intercept_)
```

```
360564.808286401
```

[19]:
```
predictions = model.predict(X_test)
predictions
```

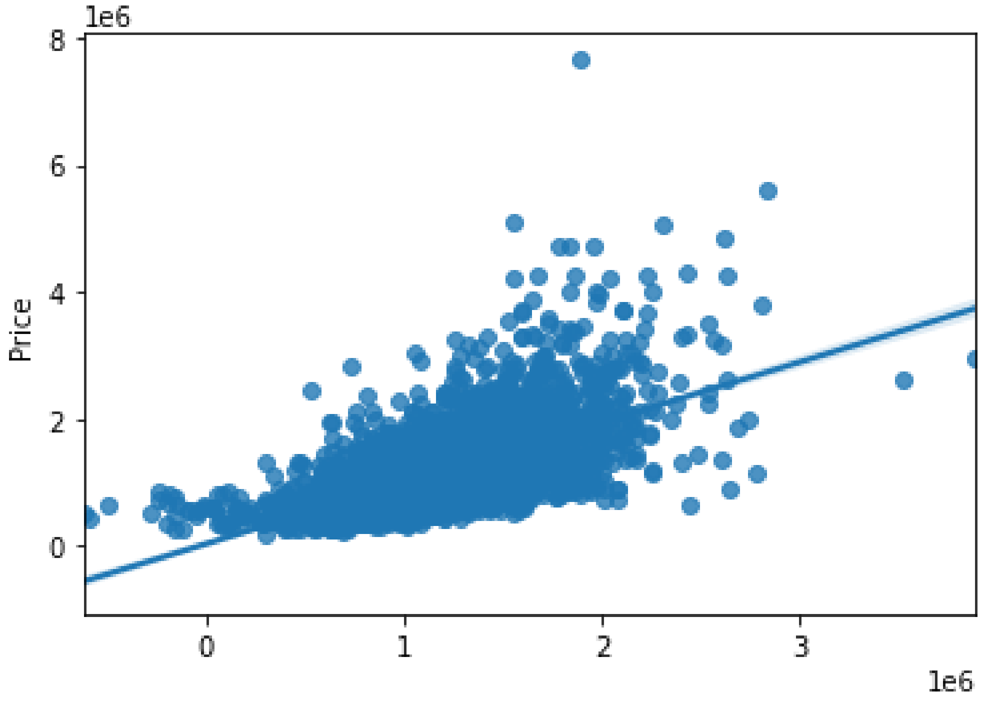
[19]:
```
array([1591207.329957  , 1675408.08757592, 1520493.42450145, …,
       1757506.19761488, 1099322.57289164, 1310125.88500423])
```

[20]:

```
sns.regplot(x=predictions, y=y_test)
```

[20]:

```
<AxesSubplot:ylabel='Price'>
```



[21]:

```
import statsmodels.api as sm
X_train_Sm= sm.add_constant(X_train)
X_train_Sm= sm.add_constant(X_train)
ls=sm.OLS(y_train,X_train_Sm).fit()
print(ls.summary())
```

```
                            OLS Regression Results
==============================================================================
Dep. Variable:                  Price   R-squared:                       0.370
Model:                            OLS   Adj. R-squared:                  0.369
Method:                 Least Squares   F-statistic:                     601.6
Date:                Sun, 31 Jan 2021   Prob (F-statistic):               0.00
Time:                        13:40:34   Log-Likelihood:                -90039.
No. Observations:                6163   AIC:                         1.801e+05
Df Residuals:                    6156   BIC:                         1.801e+05
Df Model:                           6
Covariance Type:            nonrobust
================================================================================
                   coef    std err          t      P>|t|      [0.025      0.975]
--------------------------------------------------------------------------------
```

```
const          3.606e+05   2.59e+04     13.910      0.000     3.1e+05    4.11e+05
Rooms          2.365e+05   9785.812     24.168      0.000    2.17e+05    2.56e+05
Distance      -4.353e+04   1280.785    -33.986      0.000    -4.6e+04    -4.1e+04
Bathroom       2.256e+05     1.2e+04     18.868      0.000    2.02e+05    2.49e+05
Car            5.265e+04   7333.730      7.179      0.000    3.83e+04     6.7e+04
Landsize          2.3766      1.175      2.023      0.043       0.074       4.679
BuildingArea    531.6440     61.678      8.620      0.000     410.733     652.555
==============================================================================
Omnibus:                     3458.236   Durbin-Watson:                   1.971
Prob(Omnibus):                  0.000   Jarque-Bera (JB):            79899.249
Skew:                           2.217   Prob(JB):                         0.00
Kurtosis:                      20.073   Cond. No.                     2.28e+04
==============================================================================

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly
specified.
[2] The condition number is large, 2.28e+04. This might indicate that there are
strong multicollinearity or other numerical problems.
```

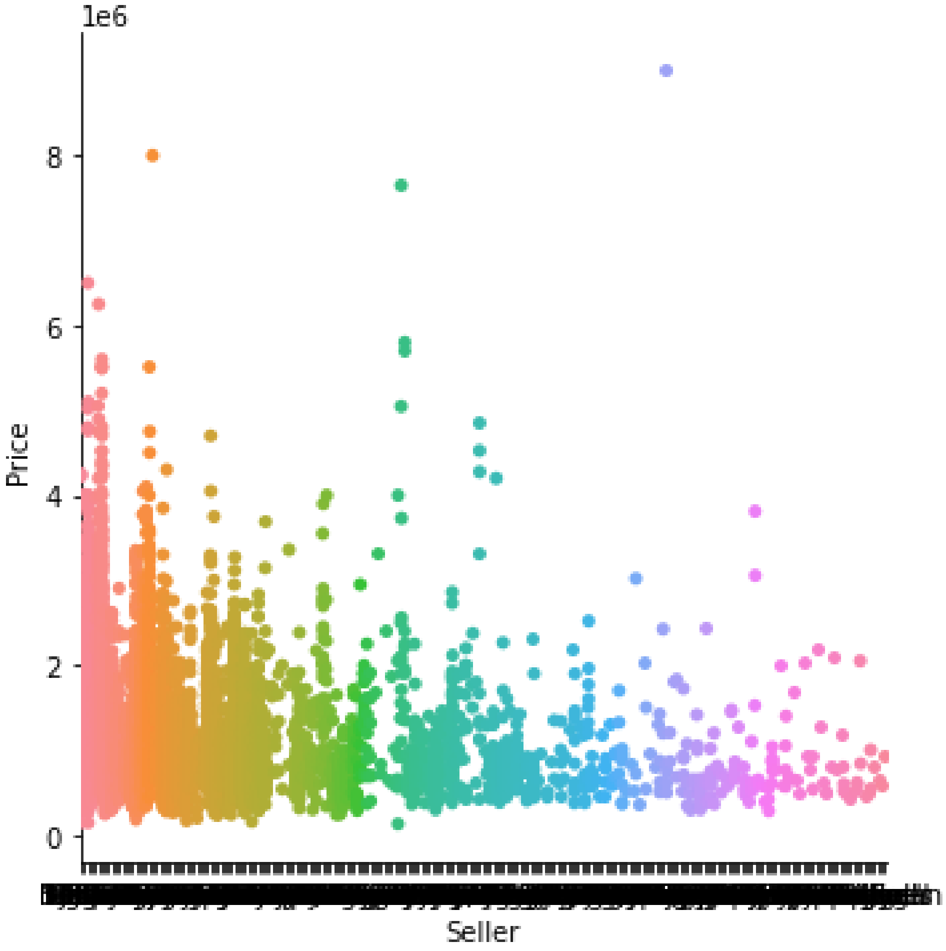
### 1.5 Exploratory Data Analysis - 2nd Part

[22]:

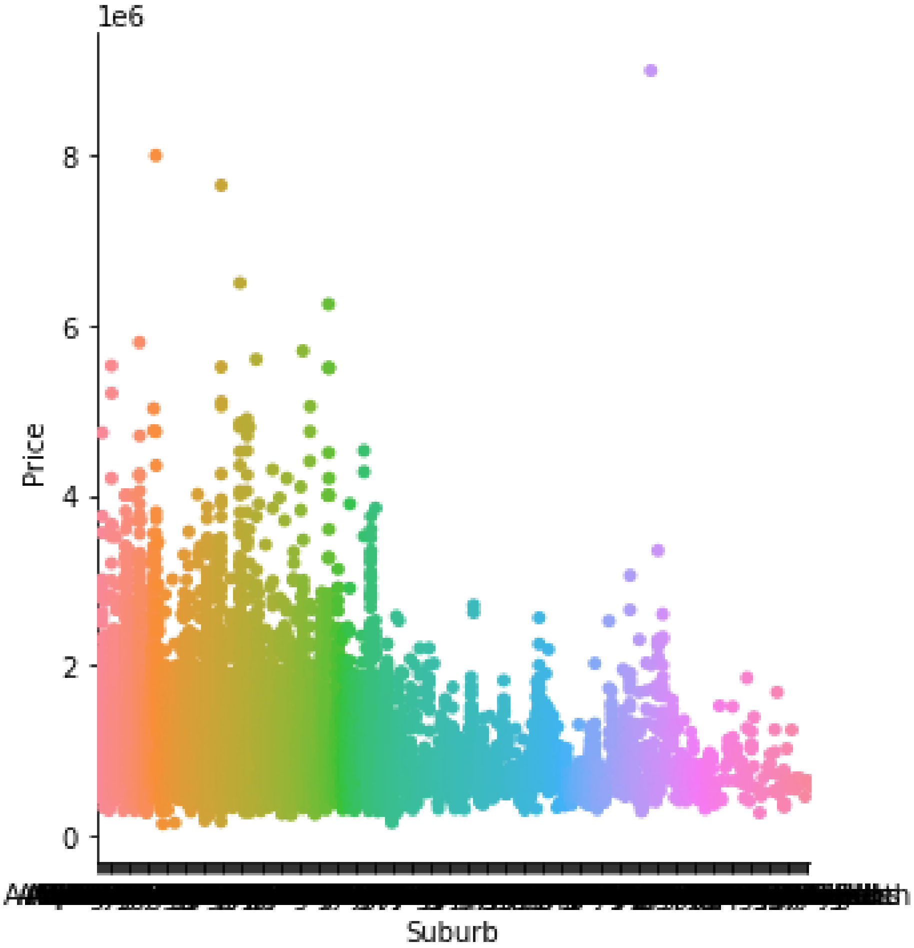
```
sns.catplot(x="Seller", y="Price", data=dfHousePrices, height=5)
```

[22]:

```
<seaborn.axisgrid.FacetGrid at 0x7f829bdd4970>
```

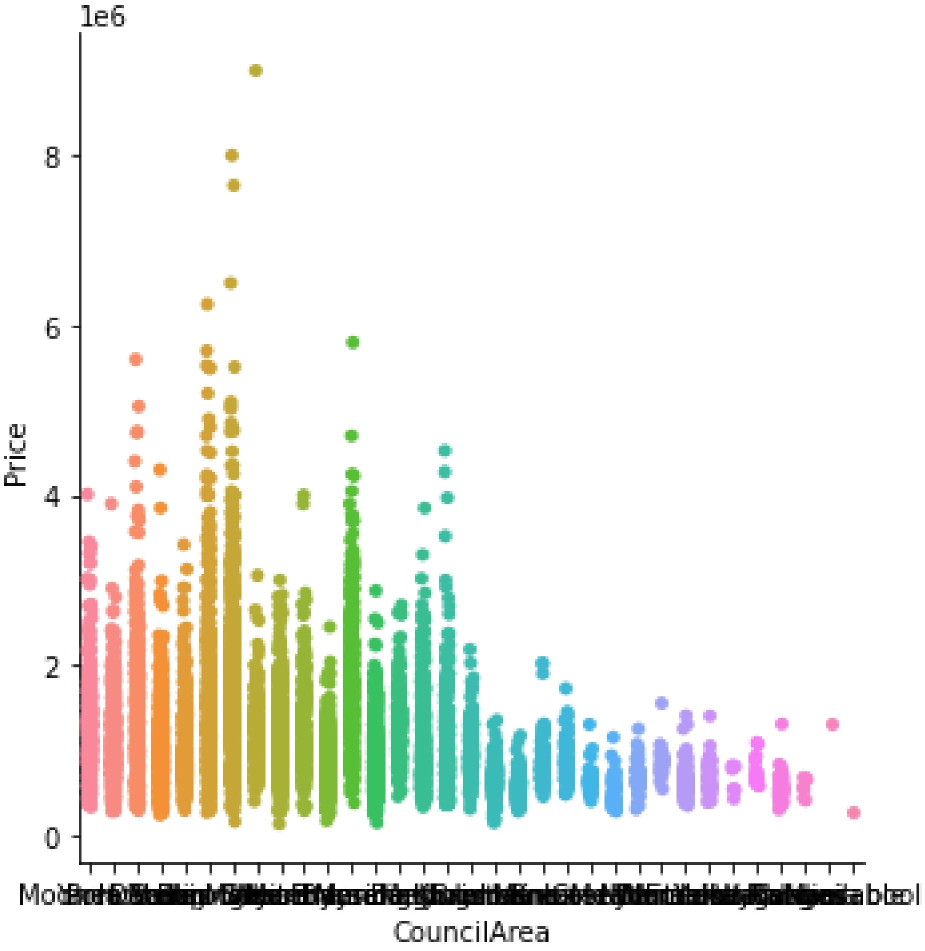


[23]:
```
sns_plot = sns.catplot(x="Suburb", y="Price", data=dfHousePrices, height=5)
# sns_plot.savefig("output.png")
```



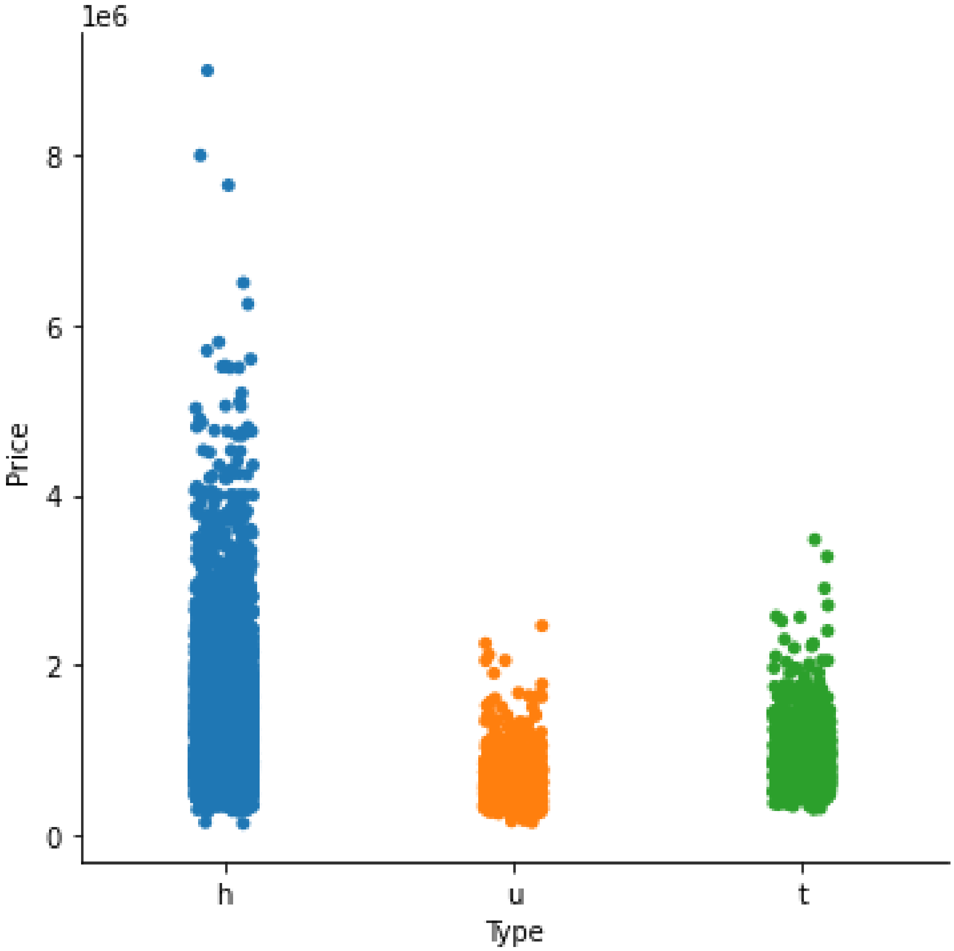
```
[24]: sns.catplot(x="CouncilArea", y="Price", data=dfHousePrices, height=5)
```

```
[24]: <seaborn.axisgrid.FacetGrid at 0x7f829be7a2b0>
```



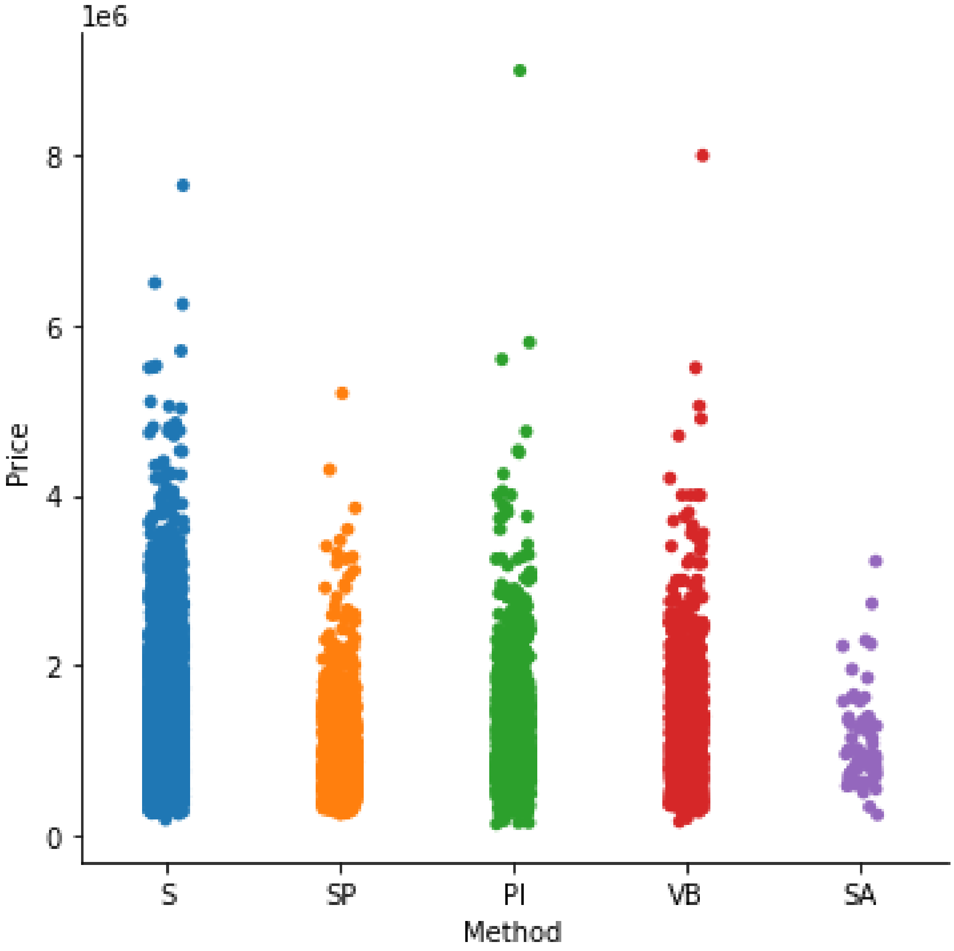
```
[25]: sns.catplot(x="Type", y="Price", data=dfHousePrices, height=5)
```

```
[25]: <seaborn.axisgrid.FacetGrid at 0x7f829fe0f130>
```



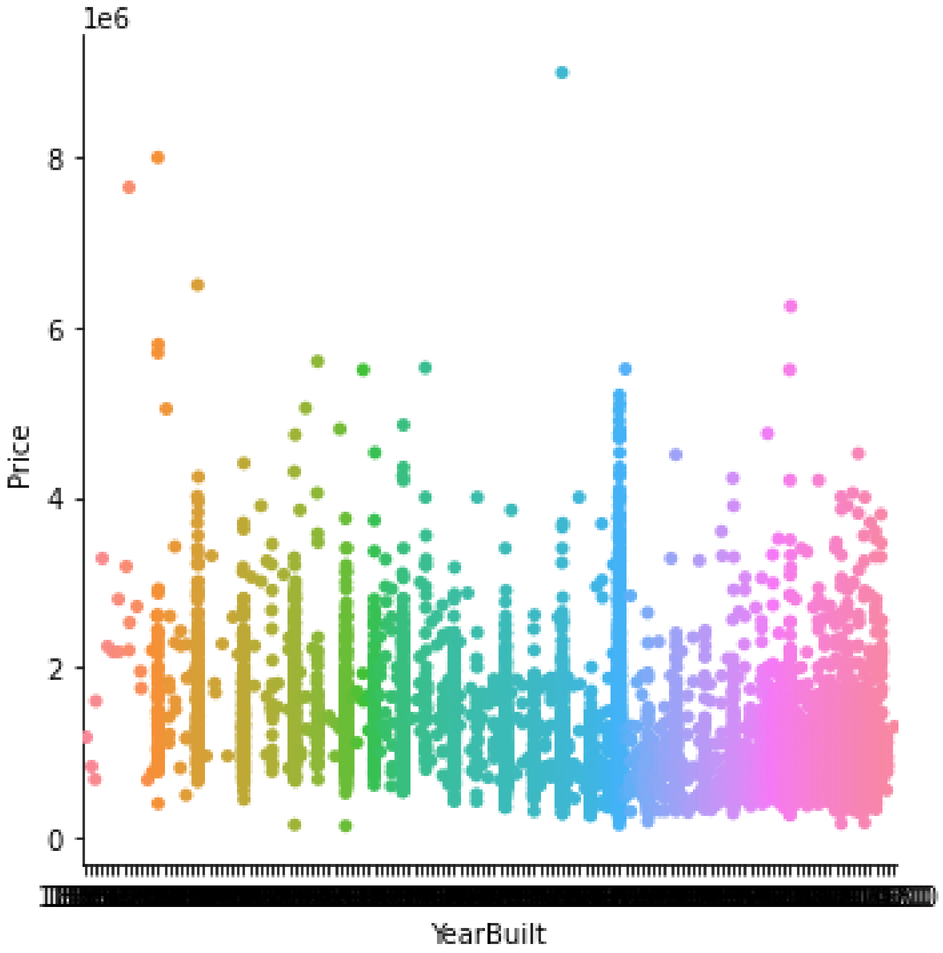
[26]:
```
sns.catplot(x="Method", y="Price", data=dfHousePrices, height=5)
```

[26]:
```
<seaborn.axisgrid.FacetGrid at 0x7f829cdbe790>
```



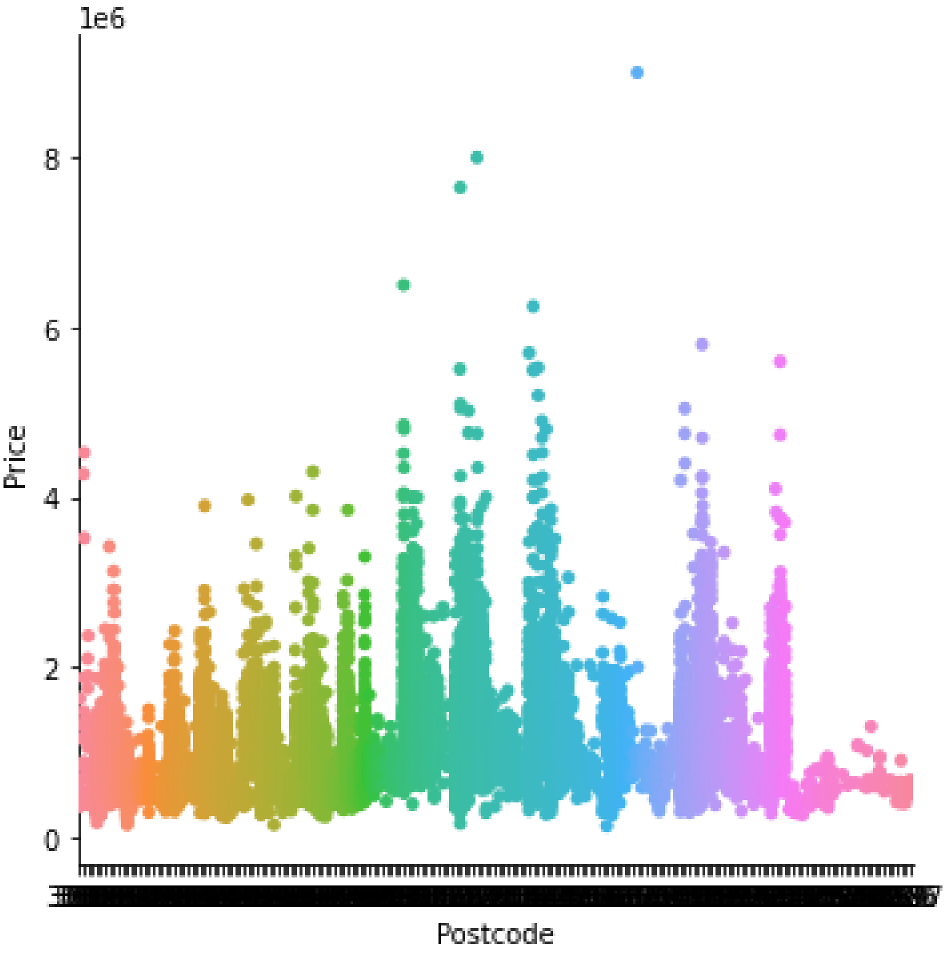
[27]:
```
sns.catplot(x="YearBuilt", y="Price", data=dfHousePrices, height=5)
```

[27]:
```
<seaborn.axisgrid.FacetGrid at 0x7f82a0a38310>
```



```
[28]: sns.catplot(x="Postcode", y="Price", data=dfHousePrices, height=5)
```

```
[28]: <seaborn.axisgrid.FacetGrid at 0x7f82a0a382b0>
```



[29]:

```
#dfHousePrices['Suburb'] = dfHousePrices['Suburb'].astype('category')
#dfHousePrices['Type'] = dfHousePrices['Type'].astype('category')
#dfHousePrices['Method'] = dfHousePrices['Method'].astype('category')
#dfHousePrices['Seller'] = dfHousePrices['Seller'].astype('category')
#dfHousePrices['CouncilArea'] = dfHousePrices['CouncilArea'].astype('category')
#dfHousePrices['RegionName'] = dfHousePrices['RegionName'].astype('category')
```

### 1.6 Build the model - 2nd Part

[30]:

```
# List independent variables
X = dfHousePrices[['Rooms', 'Distance', 'Bathroom', 'Car', 'Landsize',␣
 ↪'BuildingArea', 'PropertyCount', 'Type', 'Method', 'Seller', 'CouncilArea',␣
 ↪'RegionName']]
# Add dummy vars for cat vars
X = pd.get_dummies(data=X, drop_first=True)
# New dataframe
X.head()
```

[30]:
```
   Rooms  Distance  Bathroom  Car  Landsize  BuildingArea  PropertyCount  \
0      2       2.5         1  1.0       202         126.0           4019
1      2       2.5         1  0.0       156          79.0           4019
2      3       2.5         2  0.0       134         150.0           4019
3      3       2.5         2  1.0        94         126.0           4019
4      4       2.5         1  2.0       120         142.0           4019

   Type_t  Type_u  Method_S  …  CouncilArea_Wyndham  CouncilArea_Yarra  \
0       0       0         1  …                    0                  1
1       0       0         1  …                    0                  1
2       0       0         0  …                    0                  1
3       0       0         0  …                    0                  1
4       0       0         0  …                    0                  1

   CouncilArea_Yarra Ranges  RegionName_Eastern Victoria  \
0                         0                            0
1                         0                            0
2                         0                            0
3                         0                            0
4                         0                            0

   RegionName_Northern Metropolitan  RegionName_Northern Victoria  \
0                                 1                             0
1                                 1                             0
2                                 1                             0
3                                 1                             0
4                                 1                             0

   RegionName_South-Eastern Metropolitan  RegionName_Southern Metropolitan  \
0                                      0                                 0
1                                      0                                 0
2                                      0                                 0
3                                      0                                 0
4                                      0                                 0

   RegionName_Western Metropolitan  RegionName_Western Victoria
0                                0                            0
1                                0                            0
2                                0                            0
3                                0                            0
4                                0                            0

[5 rows x 288 columns]
```

[31]:
```
# Dependent variable
Y = dfHousePrices['Price']
Y
```

[31]:
```
0        1480000
1        1035000
2        1465000
3         850000
4        1600000
          …
12206    1050000
12208    1285000
12210     525300
12211     750000
12212    2450000
Name: Price, Length: 10272, dtype: int64
```

[32]:
```
# Create the test set
X_train, X_test, y_train, y_test = train_test_split(X, Y, test_size=0.4,␣
 ↪random_state=101)
print(X_train.shape)
print(X_test.shape)
print(y_train.shape)
print(y_test.shape)
```

```
(6163, 288)
(4109, 288)
(6163,)
(4109,)
```

[33]:
```
# Perform the regression
model = LinearRegression()
model.fit(X_train,y_train)
```

[33]:
```
LinearRegression()
```

[34]:
```
# Print the intercept
print(model.intercept_)
```

```
595512.4755647061
```

[35]:
```
# Print all other parameters
coeff_parameter = pd.DataFrame(model.coef_,X.columns,columns=['Coefficient'])
coeff_parameter
coeff_parameter.to_csv (r'/Users/alejandrogleason/Downloads/Coefficents.csv ')
```

[36]:
```
predictions = model.predict(X_test)
predictions
```

[36]:
```
array([1403836.26372661, 1325754.30293877, 1221592.32567192, …,
       1564572.91262582,  940903.69314997, 1046661.74272207])
```

[37]:
```python
X_train_Sm= sm.add_constant(X_train)
X_train_Sm= sm.add_constant(X_train)
ls=sm.OLS(y_train,X_train_Sm).fit()
print(ls.summary())
```

```
                            OLS Regression Results
==============================================================================
Dep. Variable:                  Price   R-squared:                       0.647
Model:                            OLS   Adj. R-squared:                  0.632
Method:                 Least Squares   F-statistic:                     43.38
Date:                Sun, 31 Jan 2021   Prob (F-statistic):               0.00
Time:                        13:41:18   Log-Likelihood:                -88251.
No. Observations:                6163   AIC:                         1.770e+05
Df Residuals:                    5912   BIC:                         1.787e+05
Df Model:                         250
Covariance Type:            nonrobust
================================================================================
=========================
                                            coef    std err          t
P>|t|      [0.025      0.975]
--------------------------------------------------------------------------------
-------------------------
const                                  5.955e+05   4.16e+05      1.432
0.152    -2.2e+05    1.41e+06
Rooms                                   1.66e+05   8395.134     19.776
0.000     1.5e+05    1.82e+05
Distance                              -4.078e+04   2538.180    -16.069
0.000   -4.58e+04   -3.58e+04
Bathroom                               1.612e+05   9845.656     16.372
0.000    1.42e+05     1.8e+05
Car                                    5.364e+04   5894.641      9.099
0.000    4.21e+04    6.52e+04
Landsize                                  1.6659      0.914      1.822
0.068      -0.126       3.458
BuildingArea                            370.5476     47.550      7.793
0.000     277.331     463.764
PropertyCount                            -1.7820      1.607     -1.109
0.268      -4.933       1.369
Type_t                                -3.535e+05      2e+04    -17.699
0.000   -3.93e+05   -3.14e+05
Type_u                                -4.371e+05   1.81e+04    -24.153
0.000   -4.73e+05   -4.02e+05
Method_S                               1.016e+05   1.73e+04      5.875
0.000    6.77e+04    1.36e+05
Method_SA                              8.764e+04    6.9e+04      1.271
0.204   -4.75e+04    2.23e+05
Method_SP                              5.968e+04   2.28e+04      2.612
```

```
0.009    1.49e+04    1.04e+05
Method_VB                              2.413e+04   2.46e+04      0.979
0.328   -2.42e+04    7.24e+04
Seller_ASL                              3.62e+04   5.04e+05      0.072
0.943   -9.52e+05    1.02e+06
Seller_Abercromby's                    9.141e+05   4.61e+05      1.983
0.047    1.06e+04    1.82e+06
Seller_Ace                            -9.826e+04   5.82e+05     -0.169
0.866   -1.24e+06    1.04e+06
Seller_Alexkarbon                     -1.767e+05   4.27e+05     -0.414
0.679   -1.01e+06     6.6e+05
Seller_Allens                          9.008e-08   6.02e-07      0.150
0.881   -1.09e-06    1.27e-06
Seller_Anderson                        3.008e+04   5.04e+05      0.060
0.952   -9.59e+05    1.02e+06
Seller_Appleby                        -4.748e+05   5.85e+05     -0.812
0.417   -1.62e+06    6.72e+05
Seller_Aquire                         -9.531e+04   5.88e+05     -0.162
0.871   -1.25e+06    1.06e+06
Seller_Ascend                         -7.818e+04   5.82e+05     -0.134
0.893   -1.22e+06    1.06e+06
Seller_Ash                            -1.759e-07   3.03e-06     -0.058
0.954   -6.12e-06    5.77e-06
Seller_Asset                           4080.7008   5.87e+05      0.007
0.994   -1.15e+06    1.16e+06
Seller_Assisi                          3.405e-07   1.53e-06      0.222
0.824   -2.66e-06    3.34e-06
Seller_Australian                     -2.313e+05   5.83e+05     -0.397
0.691   -1.37e+06    9.11e+05
Seller_Barlow                          6.609e+04   4.31e+05      0.154
0.878   -7.78e+05     9.1e+05
Seller_Barry                          -8.681e+04   4.13e+05     -0.210
0.833   -8.96e+05    7.22e+05
Seller_Bayside                        -2.988e+04   5.05e+05     -0.059
0.953   -1.02e+06     9.6e+05
Seller_Bekdon                         -1.788e+05   4.41e+05     -0.405
0.685   -1.04e+06    6.86e+05
Seller_Beller                         -4.624e+05   4.46e+05     -1.038
0.299   -1.34e+06    4.11e+05
Seller_Bells                          -8939.5364   4.21e+05     -0.021
0.983   -8.35e+05    8.17e+05
Seller_Better                         -1.987e+05   5.82e+05     -0.342
0.733   -1.34e+06    9.42e+05
Seller_Biggin                         -8.958e+04   4.14e+05     -0.216
0.829   -9.01e+05    7.22e+05
Seller_Blue                            6.719e+05   5.82e+05      1.155
0.248   -4.69e+05    1.81e+06
Seller_Bowman                          5.403e+04   5.87e+05      0.092
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0.927    -1.1e+06    1.21e+06
Seller_Brace                          -1.575e+05   5.82e+05     -0.271
0.787    -1.3e+06    9.83e+05
Seller_Brad                           -5.527e+04   4.14e+05     -0.134
0.894   -8.66e+05    7.56e+05
Seller_Buckingham                     -4.739e+04   4.23e+05     -0.112
0.911   -8.77e+05    7.82e+05
Seller_Bullen                          1.858e+05   5.82e+05      0.319
0.749   -9.55e+05    1.33e+06
Seller_Burnham                         6.289e+04   4.23e+05      0.149
0.882   -7.67e+05    8.93e+05
Seller_Buxton                          -1.01e+05   4.13e+05     -0.244
0.807   -9.12e+05     7.1e+05
Seller_Buxton/Find                     1.396e+05   5.83e+05      0.239
0.811      -1e+06    1.28e+06
Seller_C21                            -4.596e+04   4.21e+05     -0.109
0.913   -8.72e+05     7.8e+05
Seller_Caine                           9.009e+05   4.52e+05      1.992
0.046    1.45e+04    1.79e+06
Seller_Calder                          4.404e+04   5.82e+05      0.076
0.940    -1.1e+06    1.18e+06
Seller_Carter                         -7.291e+04    4.8e+05     -0.152
0.879   -1.01e+06    8.68e+05
Seller_Castran                         7.693e+05   4.35e+05      1.769
0.077   -8.34e+04    1.62e+06
Seller_Cayzer                          2.051e+04   4.26e+05      0.048
0.962   -8.14e+05    8.55e+05
Seller_Century                        -9.898e-08   7.98e-07     -0.124
0.901   -1.66e-06    1.47e-06
Seller_Chambers                       -8.403e+04   4.45e+05     -0.189
0.850   -9.57e+05    7.89e+05
Seller_Changing                        -1.99e+05   5.83e+05     -0.342
0.733   -1.34e+06    9.43e+05
Seller_Charlton                        -9.49e+04   4.76e+05     -0.199
0.842   -1.03e+06    8.39e+05
Seller_Chisholm                       -8.553e+04    4.2e+05     -0.204
0.839   -9.08e+05    7.37e+05
Seller_Christopher                    -2.187e+05   4.61e+05     -0.474
0.635   -1.12e+06    6.85e+05
Seller_Clairmont                       1.745e-07   8.61e-07      0.203
0.840   -1.51e-06    1.86e-06
Seller_Collins                         1.403e+05   4.22e+05      0.333
0.739   -6.87e+05    9.67e+05
Seller_Community                      -4188.8962   5.87e+05     -0.007
0.994   -1.16e+06    1.15e+06
Seller_Compton                         -3.02e+05   5.82e+05     -0.519
0.604   -1.44e+06    8.39e+05
Seller_Conquest                        2084.0956   5.82e+05      0.004
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0.997   -1.14e+06    1.14e+06
Seller_Considine                      -1.581e+05   4.33e+05     -0.366
0.715   -1.01e+06     6.9e+05
Seller_Coventry                       -5.226e+05   5.82e+05     -0.897
0.369   -1.66e+06    6.19e+05
Seller_Craig                           6.391e+04   5.82e+05      0.110
0.913   -1.08e+06     1.2e+06
Seller_Crane                           -2.36e+05   5.81e+05     -0.406
0.685   -1.37e+06    9.03e+05
Seller_D'Aprano                       -4.738e+04   4.61e+05     -0.103
0.918    -9.5e+05    8.56e+05
Seller_Daniel                         -6.407e-08   1.29e-07     -0.497
0.619   -3.17e-07    1.88e-07
Seller_Darren                           5.08e+04   4.25e+05      0.119
0.905   -7.83e+05    8.84e+05
Seller_David                          -1.798e+05   5.82e+05     -0.309
0.757   -1.32e+06    9.61e+05
Seller_Del                            -8.312e+04   5.07e+05     -0.164
0.870   -1.08e+06    9.12e+05
Seller_Dingle                         -2.287e+05   4.38e+05     -0.522
0.601   -1.09e+06    6.29e+05
Seller_Dixon                          -1.125e-07   3.82e-06     -0.029
0.977   -7.61e-06    7.38e-06
Seller_Domain                         -4.771e+05   5.04e+05     -0.946
0.344   -1.47e+06    5.12e+05
Seller_Douglas                        -5.119e+04   4.17e+05     -0.123
0.902   -8.69e+05    7.66e+05
Seller_Edward                         -1.643e+05   4.38e+05     -0.375
0.708   -1.02e+06    6.94e+05
Seller_Elite                           7.327e+05   5.82e+05      1.260
0.208   -4.07e+05    1.87e+06
Seller_Eview                          -5.592e+04    4.2e+05     -0.133
0.894   -8.79e+05    7.67e+05
Seller_FN                              -1.28e+05   4.37e+05     -0.293
0.770   -9.85e+05    7.29e+05
Seller_First                          -6.039e+04   4.76e+05     -0.127
0.899   -9.93e+05    8.72e+05
Seller_Fletchers                       -2.11e+04   4.14e+05     -0.051
0.959   -8.33e+05    7.91e+05
Seller_Fletchers/One                  -1.149e-07   1.06e-06     -0.109
0.913   -2.19e-06    1.96e-06
Seller_Frank                           8.815e+04   4.26e+05      0.207
0.836   -7.47e+05    9.24e+05
Seller_Free                           -1.025e+04   5.84e+05     -0.018
0.986   -1.16e+06    1.14e+06
Seller_GL                             -2.892e+04   4.33e+05     -0.067
0.947   -8.78e+05     8.2e+05
Seller_Gardiner                       -3.772e+04   5.82e+05     -0.065
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0.948   -1.18e+06     1.1e+06
Seller_Garvey                          6.157e+04   5.81e+05      0.106
0.916   -1.08e+06     1.2e+06
Seller_Gary                           -1.118e+05   4.16e+05     -0.269
0.788   -9.27e+05    7.03e+05
Seller_Grantham                       -1.341e-08   1.16e-06     -0.012
0.991   -2.29e-06    2.26e-06
Seller_Greg                            1.476e+05   4.15e+05      0.355
0.722   -6.66e+05    9.62e+05
Seller_Gunn&Co                        -1.272e+04   4.46e+05     -0.028
0.977   -8.88e+05    8.62e+05
Seller_HAR                            -9.269e+04   4.25e+05     -0.218
0.827   -9.25e+05     7.4e+05
Seller_Hall                            1.403e+06   4.54e+05      3.093
0.002    5.14e+05    2.29e+06
Seller_Ham                             5.909e+04   5.83e+05      0.101
0.919   -1.08e+06     1.2e+06
Seller_Harcourts                      -1.145e+05   4.15e+05     -0.276
0.783   -9.28e+05       7e+05
Seller_Harrington                     -2.189e+05   4.31e+05     -0.508
0.611   -1.06e+06    6.26e+05
Seller_Haughton                       -2.551e+05   4.27e+05     -0.598
0.550   -1.09e+06    5.81e+05
Seller_Hayeswinckle                   -1.838e+05   5.83e+05     -0.315
0.753   -1.33e+06     9.6e+05
Seller_Hodges                         -9.753e+04   4.16e+05     -0.235
0.815   -9.13e+05    7.18e+05
Seller_Holland                         -2.18e+05   4.76e+05     -0.458
0.647   -1.15e+06    7.14e+05
Seller_Homes                          -1.567e+05   5.81e+05     -0.269
0.788    -1.3e+06    9.83e+05
Seller_Hooper                          3.628e+05   5.04e+05      0.720
0.472   -6.25e+05    1.35e+06
Seller_Hoskins                         1.119e+04   4.77e+05      0.023
0.981   -9.25e+05    9.47e+05
Seller_Hunter                         -1.252e+05   4.53e+05     -0.277
0.782   -1.01e+06    7.62e+05
Seller_Iconek                         -1.684e+04   4.78e+05     -0.035
0.972   -9.53e+05    9.19e+05
Seller_J                              -1.636e+05   4.41e+05     -0.371
0.711   -1.03e+06    7.01e+05
Seller_JMRE                           -2.455e+05   5.05e+05     -0.486
0.627   -1.24e+06    7.45e+05
Seller_JRW                            -2.774e-08   7.58e-07     -0.037
0.971   -1.51e-06    1.46e-06
Seller_Jas                             2.656e+04   4.15e+05      0.064
0.949   -7.87e+05    8.41e+05
Seller_Jason                           5.584e+04   4.43e+05      0.126
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0.900   -8.12e+05    9.24e+05
Seller_Jellis                          8.767e+04    4.13e+05      0.212
0.832   -7.22e+05    8.97e+05
Seller_Jim                             3.244e+05    5.93e+05      0.547
0.584   -8.38e+05    1.49e+06
Seller_Joe                             4.831e-07    8.95e-07      0.540
0.589   -1.27e-06    2.24e-06
Seller_Johnston                       -7.017e+05    5.81e+05     -1.207
0.227   -1.84e+06    4.38e+05
Seller_Kay                             4.201e+05    4.17e+05      1.008
0.313   -3.97e+05    1.24e+06
Seller_Kaye                           -2.366e-07    3.01e-06     -0.079
0.937   -6.14e-06    5.66e-06
Seller_Keatings                        2.148e-07    1.19e-06      0.181
0.857   -2.11e-06    2.54e-06
Seller_Kelly                            1.05e+06    5.82e+05      1.805
0.071   -9.04e+04    2.19e+06
Seller_Ken                            -1.542e+04    5.06e+05     -0.030
0.976   -1.01e+06    9.77e+05
Seller_LITTLE                         -3.071e+05    4.25e+05     -0.723
0.470   -1.14e+06    5.25e+05
Seller_LJ                             -3.327e+04    4.26e+05     -0.078
0.938   -8.69e+05    8.02e+05
Seller_LLC                             5.528e+05    5.85e+05      0.945
0.345   -5.94e+05     1.7e+06
Seller_Langwell                       -5.586e+05    5.82e+05     -0.960
0.337    -1.7e+06    5.82e+05
Seller_Leading                        -1.288e+04    5.05e+05     -0.026
0.980      -1e+06    9.77e+05
Seller_Leased                          5.051e+04    5.81e+05      0.087
0.931   -1.09e+06    1.19e+06
Seller_Leeburn                         4.909e+05    5.05e+05      0.973
0.331   -4.98e+05    1.48e+06
Seller_Leyton                         -6.374e-08    3.85e-06     -0.017
0.987   -7.61e-06    7.48e-06
Seller_Lindellas                       6.603e+05    4.38e+05      1.508
0.132   -1.98e+05    1.52e+06
Seller_Love                           -1.052e+05    4.17e+05     -0.253
0.801   -9.22e+05    7.11e+05
Seller_Lucas                           3.264e+05    5.82e+05      0.560
0.575   -8.15e+05    1.47e+06
Seller_Luxton                         -1.105e+05    5.81e+05     -0.190
0.849   -1.25e+06    1.03e+06
Seller_M.J                             6.247e-09    5.05e-07      0.012
0.990   -9.83e-07    9.95e-07
Seller_MICM                           -2.098e+05    4.53e+05     -0.463
0.643    -1.1e+06    6.79e+05
Seller_Maddison                       -2.244e+05    5.04e+05     -0.445
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0.656   -1.21e+06    7.64e+05
Seller_Mandy                          -1.894e+05   5.05e+05     -0.375
0.708   -1.18e+06    8.01e+05
Seller_Marshall                        2.492e+05   4.13e+05      0.603
0.547   -5.61e+05    1.06e+06
Seller_Mason                          -5.829e+05   5.13e+05     -1.137
0.255   -1.59e+06    4.22e+05
Seller_Matthew                        -2.842e+04   5.05e+05     -0.056
0.955   -1.02e+06    9.61e+05
Seller_Max                             1.499e+05   5.08e+05      0.295
0.768   -8.45e+05    1.15e+06
Seller_McDonald                         3.75e+04   4.24e+05      0.089
0.929   -7.93e+05    8.68e+05
Seller_McGrath                         9396.4741   4.15e+05      0.023
0.982   -8.04e+05    8.22e+05
Seller_McLennan                        4.241e+05   5.88e+05      0.721
0.471   -7.28e+05    1.58e+06
Seller_Melbourne                       2.281e+05   4.51e+05      0.505
0.613   -6.57e+05    1.11e+06
Seller_Metro                          -1.141e+05   5.87e+05     -0.194
0.846   -1.26e+06    1.04e+06
Seller_Miles                           7.806e+04   4.16e+05      0.188
0.851   -7.37e+05    8.93e+05
Seller_Millership                     -3.988e+04   4.63e+05     -0.086
0.931   -9.47e+05    8.67e+05
Seller_Mindacom                        4.292e+05   6.08e+05      0.706
0.480   -7.63e+05    1.62e+06
Seller_Mitchell                        4.446e+05   5.83e+05      0.762
0.446   -6.99e+05    1.59e+06
Seller_Moonee                         -2.482e+05   4.22e+05     -0.588
0.556   -1.08e+06    5.79e+05
Seller_Morleys                        -4.431e+05   5.82e+05     -0.761
0.447   -1.58e+06    6.98e+05
Seller_Morrison                       -8.076e+04    4.3e+05     -0.188
0.851   -9.24e+05    7.63e+05
Seller_Naison                          1.314e-07   1.05e-06      0.125
0.901   -1.93e-06    2.19e-06
Seller_Nardella                       -4.181e+05   5.82e+05     -0.718
0.473   -1.56e+06    7.24e+05
Seller_Nelson                         -3.811e+04   4.13e+05     -0.092
0.926   -8.47e+05    7.71e+05
Seller_New                            -2.107e+05   5.82e+05     -0.362
0.717   -1.35e+06     9.3e+05
Seller_Nguyen                           1.92e-07   9.46e-07      0.203
0.839   -1.66e-06    2.05e-06
Seller_Nicholls                       -2.438e+05   5.95e+05     -0.410
0.682   -1.41e+06    9.23e+05
Seller_Nicholson                      -1.449e+05   5.04e+05     -0.288
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0.774   -1.13e+06    8.43e+05
Seller_Nick                             1.346e+05   4.25e+05      0.317
0.751   -6.98e+05    9.67e+05
Seller_Noel                            -9.946e+04   4.15e+05     -0.240
0.811   -9.13e+05    7.14e+05
Seller_North                            2.059e+05   5.81e+05      0.354
0.723   -9.34e+05    1.35e+06
Seller_O'Brien                          1.854e+04   4.23e+05      0.044
0.965    -8.1e+05    8.47e+05
Seller_O'Donoghues                     -9.175e+04   4.41e+05     -0.208
0.835   -9.56e+05    7.73e+05
Seller_Oak                              8.476e+04   5.83e+05      0.145
0.884   -1.06e+06    1.23e+06
Seller_Obrien                           2.472e+05   4.78e+05      0.517
0.605   -6.89e+05    1.18e+06
Seller_One                             -5.586e+04   4.75e+05     -0.118
0.906   -9.86e+05    8.75e+05
Seller_Only                             2.397e+05   5.18e+05      0.463
0.643   -7.75e+05    1.25e+06
Seller_Oriental                        -1.216e+05   5.83e+05     -0.209
0.835   -1.26e+06    1.02e+06
Seller_Owen                             3.396e-07   1.99e-06      0.171
0.865   -3.56e-06    4.24e-06
Seller_PRDNationwide                    1.506e+05   4.86e+05      0.310
0.756   -8.01e+05     1.1e+06
Seller_Pagan                           -1.564e+05   4.52e+05     -0.346
0.729   -1.04e+06     7.3e+05
Seller_Parkes                          -3.254e+04   4.76e+05     -0.068
0.946   -9.67e+05    9.02e+05
Seller_Parkinson                       -2.669e+05   5.82e+05     -0.458
0.647   -1.41e+06    8.75e+05
Seller_Paul                              9.33e+04   4.52e+05      0.207
0.836   -7.92e+05    9.78e+05
Seller_Peake                           -3.839e-07   1.66e-06     -0.232
0.817   -3.63e-06    2.87e-06
Seller_Peter                           -9.821e+04   4.29e+05     -0.229
0.819    -9.4e+05    7.44e+05
Seller_Philip                          -4.709e+04   4.21e+05     -0.112
0.911   -8.72e+05    7.78e+05
Seller_Pride                            -1.35e+05   4.61e+05     -0.293
0.770   -1.04e+06    7.69e+05
Seller_Prime                            2.769e-07   8.57e-07      0.323
0.747    -1.4e-06    1.96e-06
Seller_Private/Tiernan's                8.567e+04   5.82e+05      0.147
0.883   -1.05e+06    1.23e+06
Seller_Prof.                           -1.536e+05   4.41e+05     -0.348
0.728   -1.02e+06    7.11e+05
Seller_Property                        -2.972e+04   5.81e+05     -0.051
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0.959   -1.17e+06    1.11e+06
Seller_Propertyau                     1.969e-07   2.99e-07      0.658
0.510    -3.9e-07    7.83e-07
Seller_Purplebricks                  -1.286e+05   4.22e+05     -0.305
0.760   -9.55e+05    6.98e+05
Seller_R&H                           -2.146e-08   3.82e-07     -0.056
0.955   -7.71e-07    7.28e-07
Seller_RE                             1.033e+05   5.04e+05      0.205
0.838   -8.85e+05    1.09e+06
Seller_REMAX                          4.648e+04    5.1e+05      0.091
0.927   -9.53e+05    1.05e+06
Seller_RT                             1.606e+05   4.15e+05      0.387
0.699   -6.54e+05    9.75e+05
Seller_RW                            -5.979e+04   4.18e+05     -0.143
0.886   -8.79e+05    7.59e+05
Seller_Raine                         -1.144e+05   4.16e+05     -0.275
0.783   -9.29e+05       7e+05
Seller_Raine&Horne                   -6.804e+05   5.83e+05     -1.168
0.243   -1.82e+06    4.62e+05
Seller_Ray                           -1.338e+05   4.13e+05     -0.324
0.746   -9.43e+05    6.75e+05
Seller_Re                            -2.796e+05   5.04e+05     -0.554
0.579   -1.27e+06    7.09e+05
Seller_Real                           4.349e+05   5.82e+05      0.748
0.455   -7.05e+05    1.58e+06
Seller_Red                            4.221e+05   5.05e+05      0.837
0.403   -5.67e+05    1.41e+06
Seller_Redina                         1.078e+05   5.82e+05      0.185
0.853   -1.03e+06    1.25e+06
Seller_Reed                           6.795e-08   5.99e-07      0.113
0.910   -1.11e-06    1.24e-06
Seller_Reliance                       4.557e+04   5.09e+05      0.089
0.929   -9.53e+05    1.04e+06
Seller_Rendina                       -3.359e+04    4.2e+05     -0.080
0.936   -8.58e+05     7.9e+05
Seller_Ristic                        -9.754e+04   5.06e+05     -0.193
0.847   -1.09e+06    8.94e+05
Seller_Rodney                        -5.057e+05   4.76e+05     -1.062
0.288   -1.44e+06    4.28e+05
Seller_Ross                           -1.46e+06   5.83e+05     -2.502
0.012    -2.6e+06   -3.16e+05
Seller_Rounds                        -4.439e+05   5.83e+05     -0.761
0.447   -1.59e+06       7e+05
Seller_Ryder                         -1.765e+05   5.94e+05     -0.297
0.766   -1.34e+06    9.88e+05
Seller_S&L                           -1.828e+04   4.52e+05     -0.040
0.968   -9.04e+05    8.67e+05
Seller_Schroeder                      3.995e+05   5.85e+05      0.683
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0.494   -7.46e+05    1.55e+06
Seller_Scott                          -7.011e-09   1.67e-08     -0.420
0.674   -3.97e-08    2.57e-08
Seller_Sell                              3.1e+05   5.82e+05      0.532
0.594   -8.32e+05    1.45e+06
Seller_Sotheby's                       1.293e+06   4.61e+05      2.804
0.005    3.89e+05     2.2e+06
Seller_Steveway                         2.16e-07   1.24e-06      0.174
0.862   -2.22e-06    2.65e-06
Seller_Stockdale                      -1.448e+05   4.15e+05     -0.349
0.727   -9.59e+05    6.69e+05
Seller_Sweeney                        -5.291e+04   4.15e+05     -0.128
0.899   -8.66e+05     7.6e+05
Seller_Sweeney/Advantage              -1.693e-07   7.28e-07     -0.233
0.816    -1.6e-06    1.26e-06
Seller_TRUE                            -6.37e-08   8.17e-07     -0.078
0.938   -1.67e-06    1.54e-06
Seller_Thomas                         -4.147e+05   5.82e+05     -0.713
0.476   -1.56e+06    7.26e+05
Seller_Thomson                        -2.445e+05   4.27e+05     -0.572
0.567   -1.08e+06    5.93e+05
Seller_Tiernan's                      -1.005e-07    4.6e-07     -0.218
0.827      -1e-06    8.02e-07
Seller_Tim                            -2.873e+05   4.45e+05     -0.645
0.519   -1.16e+06    5.86e+05
Seller_Trimson                         1.015e+04   4.52e+05      0.022
0.982   -8.76e+05    8.97e+05
Seller_Triwest                        -7.826e+04   5.06e+05     -0.155
0.877   -1.07e+06    9.15e+05
Seller_U                              -1.084e+05   4.69e+05     -0.231
0.817   -1.03e+06     8.1e+05
Seller_Upper                           8.438e-08   1.54e-07      0.546
0.585   -2.18e-07    3.87e-07
Seller_VICProp                         8.118e+05   5.04e+05      1.609
0.108   -1.77e+05     1.8e+06
Seller_Veitch                         -1.387e-07    1.4e-07     -0.991
0.322   -4.13e-07    1.36e-07
Seller_Vic                            -8.712e+04   5.82e+05     -0.150
0.881   -1.23e+06    1.05e+06
Seller_Victory                         8.304e-08   3.76e-07      0.221
0.825   -6.54e-07     8.2e-07
Seller_Village                           6.4e+04   4.16e+05      0.154
0.878   -7.52e+05     8.8e+05
Seller_W.B.                           -9739.7169   5.05e+05     -0.019
0.985      -1e+06    9.81e+05
Seller_WHITEFOX                        1.379e+05   5.82e+05      0.237
0.813      -1e+06    1.28e+06
Seller_Walsh                           1.086e-07   2.72e-07      0.399
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0.690   -4.25e-07    6.42e-07
Seller_Walshe                         -2.609e+04   4.41e+05     -0.059
0.953    -8.9e+05    8.38e+05
Seller_Weast                           6.674e-08   4.56e-07      0.146
0.884   -8.27e-07     9.6e-07
Seller_Weda                            1.927e+05   4.76e+05      0.405
0.686    -7.4e+05    1.13e+06
Seller_Weston                         -1.876e+05   5.82e+05     -0.322
0.747   -1.33e+06    9.53e+05
Seller_Westside                       -3.947e+05   5.06e+05     -0.780
0.435   -1.39e+06    5.97e+05
Seller_White                          -2.922e-08   3.09e-08     -0.945
0.344   -8.98e-08    3.14e-08
Seller_Whiting                        -3.294e+05   4.61e+05     -0.715
0.475   -1.23e+06    5.74e+05
Seller_William                        -2.518e+05   4.62e+05     -0.546
0.585   -1.16e+06    6.53e+05
Seller_Williams                       -1.906e+04   4.18e+05     -0.046
0.964   -8.38e+05       8e+05
Seller_Wilson                         -5.953e+04   4.42e+05     -0.135
0.893   -9.25e+05    8.06e+05
Seller_Win                            -2.194e+05   4.62e+05     -0.475
0.635   -1.13e+06    6.87e+05
Seller_Woodards                       -7.268e+04   4.14e+05     -0.175
0.861   -8.85e+05     7.4e+05
Seller_Xynergy                         3.683e-09   4.96e-09      0.742
0.458   -6.05e-09    1.34e-08
Seller_YPA                            -1.094e+05   4.14e+05     -0.264
0.791    -9.2e+05    7.01e+05
Seller_Zahn                           -3.961e-09   8.56e-09     -0.463
0.643   -2.07e-08    1.28e-08
Seller_buyMyplace                     -1.164e+05   5.04e+05     -0.231
0.817   -1.11e+06    8.72e+05
Seller_hockingstuart                  -1.138e+05   4.13e+05     -0.276
0.783   -9.23e+05    6.95e+05
Seller_hockingstuart/Barry             5.551e+04   5.81e+05      0.096
0.924   -1.08e+06    1.19e+06
Seller_iProperty                      -9.421e+04   5.83e+05     -0.162
0.872   -1.24e+06    1.05e+06
Seller_iSell                           1.352e+05    4.6e+05      0.294
0.769   -7.68e+05    1.04e+06
Seller_iTRAK                          -8.852e+04   4.56e+05     -0.194
0.846   -9.81e+05    8.04e+05
CouncilArea_Bayside                    8.728e+05   6.17e+04     14.157
0.000    7.52e+05    9.94e+05
CouncilArea_Boroondara                 6.791e+05   5.64e+04     12.043
0.000    5.69e+05     7.9e+05
CouncilArea_Brimbank                   -9.05e+04   8.47e+04     -1.068
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0.285   -2.57e+05    7.56e+04
CouncilArea_Cardinia                   3.406e+05   2.81e+05      1.213
0.225    -2.1e+05    8.91e+05
CouncilArea_Casey                      1.944e+05   1.43e+05      1.359
0.174   -8.61e+04    4.75e+05
CouncilArea_Darebin                    1.242e+05   6.03e+04      2.061
0.039    6052.889    2.42e+05
CouncilArea_Frankston                  5.906e+05   1.24e+05      4.778
0.000    3.48e+05    8.33e+05
CouncilArea_Glen Eira                  4.921e+05   5.81e+04      8.471
0.000    3.78e+05    6.06e+05
CouncilArea_Greater Dandenong          7.637e+04   1.17e+05      0.654
0.513   -1.53e+05    3.05e+05
CouncilArea_Hobsons Bay                8.495e+04   8.93e+04      0.952
0.341      -9e+04     2.6e+05
CouncilArea_Hume                      -6.181e+04   7.28e+04     -0.849
0.396   -2.05e+05    8.09e+04
CouncilArea_Kingston                    4.28e+05   7.12e+04      6.011
0.000    2.88e+05    5.68e+05
CouncilArea_Knox                       2.398e+05   7.74e+04      3.100
0.002    8.82e+04    3.92e+05
CouncilArea_Macedon Ranges             6.248e+05    2.9e+05      2.155
0.031    5.64e+04    1.19e+06
CouncilArea_Manningham                 1.588e+05   4.66e+04      3.409
0.001    6.75e+04     2.5e+05
CouncilArea_Maribyrnong               -6.788e+04   8.74e+04     -0.776
0.438   -2.39e+05    1.04e+05
CouncilArea_Maroondah                  3.076e+05   7.72e+04      3.985
0.000    1.56e+05    4.59e+05
CouncilArea_Melbourne                  1.862e+05   6.46e+04      2.882
0.004    5.95e+04    3.13e+05
CouncilArea_Melton                    -1.843e+05   1.12e+05     -1.644
0.100   -4.04e+05    3.55e+04
CouncilArea_Monash                     4.125e+05   5.58e+04      7.387
0.000    3.03e+05    5.22e+05
CouncilArea_Moonee Valley              1.295e+05   8.04e+04      1.612
0.107    -2.8e+04    2.87e+05
CouncilArea_Moorabool                          0          0        nan
nan           0           0
CouncilArea_Moreland                  -6638.8805   5.75e+04     -0.116
0.908   -1.19e+05    1.06e+05
CouncilArea_Nillumbik                  4.254e+04   1.05e+05      0.406
0.685   -1.63e+05    2.48e+05
CouncilArea_Port Phillip               4.941e+05    6.3e+04      7.843
0.000    3.71e+05    6.18e+05
CouncilArea_Stonnington                6.852e+05   5.96e+04     11.491
0.000    5.68e+05    8.02e+05
CouncilArea_Unavailable                        0          0        nan
```

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nan           0           0
CouncilArea_Whitehorse                 3.469e+05   4.88e+04      7.112
0.000    2.51e+05    4.43e+05
CouncilArea_Whittlesea                 2.655e+04   7.42e+04      0.358
0.721   -1.19e+05    1.72e+05
CouncilArea_Wyndham                   -1.335e+05   9.97e+04     -1.338
0.181   -3.29e+05    6.21e+04
CouncilArea_Yarra                      2.188e+05   6.43e+04      3.405
0.001    9.28e+04    3.45e+05
CouncilArea_Yarra Ranges               9.894e+04   2.08e+05      0.475
0.635   -3.09e+05    5.07e+05
RegionName_Eastern Victoria             2.56e+05   1.79e+05      1.427
0.154   -9.57e+04    6.08e+05
RegionName_Northern Metropolitan      -1.485e+05   5.46e+04     -2.721
0.007   -2.56e+05   -4.15e+04
RegionName_Northern Victoria           2.239e+05   1.55e+05      1.447
0.148   -7.95e+04    5.27e+05
RegionName_South-Eastern Metropolitan -2.656e+04   6.17e+04     -0.430
0.667   -1.48e+05    9.44e+04
RegionName_Southern Metropolitan       -1.65e+05    4.4e+04     -3.747
0.000   -2.51e+05   -7.87e+04
RegionName_Western Metropolitan       -1.694e+05   7.96e+04     -2.129
0.033   -3.25e+05   -1.34e+04
RegionName_Western Victoria            2.142e+05   1.73e+05      1.241
0.215   -1.24e+05    5.52e+05
==============================================================================
Omnibus:                     3689.264   Durbin-Watson:                   1.997
Prob(Omnibus):                  0.000   Jarque-Bera (JB):           127784.945
Skew:                           2.295   Prob(JB):                         0.00
Kurtosis:                      24.830   Cond. No.                     7.69e+20
==============================================================================

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly
specified.
[2] The smallest eigenvalue is 7.65e-31. This might indicate that there are
strong multicollinearity problems or that the design matrix is singular.
```

### 1.6.1 Alejandro Gleason Méndez - ag77698