

| Square Footage | Bedrooms | Bathrooms | Housing Price |
|----------------|----------|-----------|---------------|
| 1500           | 3        | 2         | 250000        |
| 2000           | 4        | 2.5       | 300000        |
| 1800           | 3        | 2         | 280000        |
| 2200           | 4        | 3         | 320000        |
| 1900           | 3        | 2.5       | 290000        |
| 2100           | 4        | 3         | 310000        |
| 1600           | 3        | 2         | 260000        |
| 2300           | 4        | 3.5       | 330000        |
| 1700           | 3        | 2.5       | 270000        |
| 2400           | 4        | 3.5       | 340000        |
| 2000           | 3        | 2         | 280000        |
| 2500           | 4        | 4         | 350000        |
| 2200           | 3        | 2.5       | 290000        |
| 2800           | 4        | 4         | 360000        |
| 2300           | 3        | 3         | 300000        |
| 2700           | 4        | 4         | 370000        |
| 2400           | 3        | 3         | 310000        |
| 2800           | 4        | 4.5       | 380000        |
| 2500           | 3        | 3         | 320000        |
| 2900           | 4        | 4.5       | 390000        |

### 1. Descriptive Statistics

| Square Footage     |              | Bedrooms           |          | Bathrooms          |              | Housing Price      |           |
|--------------------|--------------|--------------------|----------|--------------------|--------------|--------------------|-----------|
| Mean               | 2220         | Mean               | 3.5      | Mean               | 3.05         | Mean               | 315000    |
| Standard Error     | 88.4267158   | Standard Error     | 0.114708 | Standard Error     | 0.18460484   | Standard Error     | 8956.971  |
| Median             | 2250         | Median             | 3.5      | Median             | 3            | Median             | 315000    |
| Mode               | 2000         | Mode               | 3        | Mode               | 3            | Mode               | 300000    |
| Standard Deviation | 365.5035147  | Standard Deviation | 0.512989 | Standard Deviation | 0.82557947   | Standard Deviation | 40985.74  |
| Sample Variance    | 154421.0528  | Sample Variance    | 0.263168 | Sample Variance    | 0.681576947  | Sample Variance    | 1.681E+09 |
| Kurtosis           | -0.72984998  | Kurtosis           | -2.23529 | Kurtosis           | -4.816892962 | Kurtosis           | -0.746502 |
| Skewness           | -0.145245938 | Skewness           | 0        | Skewness           | 0.369461546  | Skewness           | 0.327331  |
| Range              | 1400         | Range              | 1        | Range              | 2.5          | Range              | 140000    |
| Minimum            | 1500         | Minimum            | 3        | Minimum            | 2            | Minimum            | 250000    |
| Maximum            | 2900         | Maximum            | 4        | Maximum            | 4.5          | Maximum            | 390000    |
| Sum                | 44400        | Sum                | 70       | Sum                | 65           | Sum                | 6300000   |
| Count              | 20           | Count              | 20       | Count              | 20           | Count              | 20        |

### 2. Visualize relationship between variables

Square Footage and Housing Price



Bedrooms and Housing Price



Bathrooms and Housing Price



### 3. Perform Multiple Linear Regression

#### SUMMARY OUTPUT

| Regression Statistics |             |
|-----------------------|-------------|
| Multiple R            | 0.960059711 |
| R Square              | 0.921618233 |
| Adjusted R Square     | 0.976509149 |
| Standard Error        | 6140.765158 |

#### ANOVA

|            | df | SS          | MS        | F           | Significance F |
|------------|----|-------------|-----------|-------------|----------------|
| Regression | 3  | 28690456040 | 9.57E+09  | 264.2751787 | 7.75818E-14    |
| Residual   | 16 | 60344895.1  | 3771556.0 |             |                |
| Total      | 19 | 28750805000 |           |             |                |

|                | Coefficients | Standard Error | t Stat   | P-value     | Lower 95%   | Upper 95%   | Lower 95.0% Lower 95.0% |
|----------------|--------------|----------------|----------|-------------|-------------|-------------|-------------------------|
| Intercept      | 96723.206    | 15087.55468    | 6.416793 | 8.61874E-06 | 64709.01512 | 128707.3969 | 64709.02 128707.4       |
| Square Footage | 48.89826157  | 9.352355171    | 5.218939 | 8.4588E-05  | 30.36247144 | 68.43382392 | 30.36246 68.43381       |
| Bedrooms       | 15117.54209  | 4351.711951    | 3.473939 | 0.003131227 | 5892.361683 | 24342.8603  | 5892.366 24342.8        |
| Bathrooms      | 18882.26736  | 5195.683114    | 3.6445   | 0.003105611 | 7253.93013  | 30530.60458 | 7253.93 30530.6         |

### 5. Prediction

|                      |             |
|----------------------|-------------|
| Intercept            | 96723.206   |
| Square Footage slope | 48.89826157 |
| Bedrooms slope       | 15117.54009 |
| Bathrooms slope      | 18882.26736 |

#### Predict the Housing Price for a new property with the following characteristics:

|                |      |
|----------------|------|
| Square Footage | 2000 |
| Bedrooms       | 3    |
| Bathrooms      | 2.5  |

#### Predicted Housing Price =

Intercept + (Square Footage x  
Slope of Square Footage) +  
(Number of Bedrooms x Slope of  
Bedrooms) + (Number of  
Bathrooms x Slope of  
Bathrooms)

Predicted Price = 96723.21 +  
(2000 x 48.89804) + (3 x 15117.58)  
+ (2.5 x 18882.27)

Predicted Housing price 286422.6937