



Linear Regression for Business Statistics

Example (Home_Prices.xlsx)



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Given this file, develop a relationship between,

- *Price of house*
- Average number of rooms
- Annual income
- Property tax rate
- % taxable property that is commercial

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$$Price = \beta_0 + \beta_1 Rooms + \beta_2 Income + \beta_3 Tax_Rate + \beta_4 \%_Commercial$$

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- *Price of house*
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- *Annual income*
- *Property tax rate*
- *% taxable property that is commercial*

$$\text{Price} = \beta_0 + \beta_1 \text{Rooms} + \beta_2 \text{Income} + \beta_3 \text{Tax_Rate} + \beta_4 \% \text{Commercial}$$

22102.33	15765.27	0.4891	-3435.26	-212.19
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Ques: Interpret the various estimated coefficients.



Linear Regression for Business Statistics

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↑

For every 1% cut in the property tax rate, the home prices would tend to increase by 3435 dollars.

Linear Regression for Business Statistics

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For every 1% cut in the property tax rate, the home prices would tend to increase by 3435 dollars.

The Mayor claims...

For every 1% cut in the property tax rate, the home prices should increase by 5000 dollars.

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For every 1% cut in the property tax rate, the home prices would tend to increase by 3435 dollars.

The Mayor claims...

For every 1% cut in the property tax rate, the home prices should increase by 5000 dollars.

Ques: Can your reject/not-reject this claim made by the Mayor.

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$$Price = \beta_0 + \beta_1 Rooms + \beta_2 Income + \beta_3 Tax_Rate + \beta_4 \%_Commercial$$

β_0	β_1	β_2	β_3	β_4
22102.33	15765.27	0.4891	-3435.26	-212.19

The coefficient for β_3 (Tax_Rate) is -3435.26, which is circled in red with a red arrow pointing to it.

For every 1% cut in the property tax rate, the home prices would tend to increase by 3435 dollars.

The Mayor claims...

For every 1% cut in the property tax rate, the home prices should increase by 5000 dollars.

Ques: Can your reject/not-reject this claim made by the Mayor.



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Step 1 : Formulate Hypothesis:

$$H_0: \beta_3 = -5000$$

$$H_A: \beta_3 \neq -5000$$

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Step 2 : Consider the 95% confidence interval for β_3

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Conclusion:

- Since -5000 falls in the confidence interval, hence do not reject the Null hypothesis.
- The Mayor's claim may be true.