**Relationships in Real Estate**

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This analysis explores the relationship between home size (in square feet) and the amount of property taxes owed. A random sample of 10 properties from a larger dataset was used to create a scatter plot to visually examine whether larger homes tend to have higher property taxes. The scatter plot shows a positive trend, indicating that as the size of the home increases, the amount of property tax paid also increases.

A strong linear relationship between the two variables is confirmed by a correlation coefficient of 0.77 (77%). Both the p-value for the size variable and the ANOVA F-test p-value are 0.0008, which is well below the 0.05 significance level. This allows us to reject the null hypothesis and conclude that there is sufficient evidence to say property taxes increase with home size.

However, the p-value for the y-intercept is 0.105, which is above the 0.05 threshold. This suggests some uncertainty about the intercept estimate, and it may be worth rerunning the analysis or gathering additional data to clarify this point.

Key data points include the highest property tax of $43,900 for a home with 5,602 sq ft, and the lowest tax of $14,398 for a 1,566 sq ft home. Other data points generally follow the upward trend between these values.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Size* | |  | *Property Taxes* | |
|  |  |  |  |  |
| Mean | 2694.6 |  | Mean | 24641.2 |
| Standard Error | 467.1974 |  | Standard Error | 3481.844 |
| Median | 2324.5 |  | Median | 20076.5 |
| Mode | #N/A |  | Mode | #N/A |
| Standard Deviation | 1477.408 |  | Standard Deviation | 11010.56 |
| Sample Variance | 2182734 |  | Sample Variance | 1.21E+08 |
| Kurtosis | 0.035023 |  | Kurtosis | -0.96202 |
| Skewness | 0.761285 |  | Skewness | 0.846892 |
| Range | 4602 |  | Range | 29502 |
| Minimum | 1000 |  | Minimum | 14398 |
| Maximum | 5602 |  | Maximum | 43900 |
| Sum | 26946 |  | Sum | 246412 |
| Count | 10 |  | Count | 10 |
| Confidence Level(95.0%) | 1056.874 |  | Confidence Level(95.0%) | 7876.478 |

Descriptive statistics provide additional insight into the data distribution. The hypothesis test confidence intervals at 95% show:

• Y-intercept: lower limit = -1825.36, upper limit = 15847.07

• Size coefficient (X variable): lower limit = 3.63, upper limit = 9.45

Using the regression equation y = mX + b, where m is the size coefficient and b is the intercept, we can estimate the property tax for a 1,500 sq ft home. Multiplying 1,500 by the size coefficient and adding the intercept gives a predicted tax value of approximately $16,820.86.