**Beachside Analysis Report**

**Question 1**

1. **Provide an average overall summary of house prices in Beachside**

|  |  |
| --- | --- |
| *Price $000* | |
|  |  |
| Mean | 886.575 |
| Standard Error | 29.66344 |
| Median | 852 |
| Mode | 811 |
| Standard Deviation | 324.9467 |
| Sample Variance | 105590.3 |
| Kurtosis | -0.14778 |
| Skewness | 0.426005 |
| Range | 1569 |
| Minimum | 192 |
| Maximum | 1761 |
| Sum | 106389 |
| Count | 120 |

The table above shows the summary statistics of house prices in Beachside. The statistics show that the average prices of houses in the area is $ 886.675 while the median price is $852. Most houses in the area cost $811,000. The minimum price of a house in Beachside is $192000 while the maximum price is $1,761,000. The difference between the maximum and minimum house price in the area is $1,569.

1. **The media articles focus on median house prices and not the mean. I have never been able to understand why this is. Surely the “average” is the “average”. Can you provide a straightforward answer?**

The media focuses on house prices and not the mean because house prices tend to have as skewed distribution such that there are few houses that are cheaper.

1. **Provide an accurate estimate of the average house price for all houses in Beachside.**

The estimate of the average house price for all houses in Beachside is $886,675

1. **Likewise, what is the estimation of the proportion of all houses in Beachside that are $1 million and more**.

The proportion of all houses in Beachside that are $1 million or more is 0.358333

**Question 2**

**House prices vs condition/suburb**

1. **If you can please supply me with a brief summary on the condition of houses in beachside**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Suburb A | Suburb B | Suburb C | Total |
| Very Poor | 4 | 4 | 7 | 15 |
| Poor | 15 | 14 | 11 | 40 |
| Good | 21 | 9 | 12 | 42 |
| Excellent | 6 | 6 | 11 | 23 |
| Total | 46 | 33 | 41 | 120 |

Majority of houses in Beachside are either in Good or poor condition. Similarly, there are a fewer house that are either excellent or good condition when compared to the total number of houses in the area. The large number of houses are in good condition while the least number of houses are in very poor condition.

1. i) Does there appear to be any differences among the suburbs in terms of condition?

Ho: The group means of houses are the same

Ho: The group means are not the same



Suburb A has 46 houses, Suburb B has 33 houses while Suburb C has 41 houses. Suburb C has largest number of houses that are in very poor condition; similarly, it has the largest number of houses that are in excellent condition. Suburb A has the largest number of houses that are in poor and good condition. The P value for the ANOVA is 0.699864, and it is statically not significant at 0.05 significance level. Therefore, we fail to reject the null hypothesis that the group mean of houses in beachside are the same.

**ii.) Does there appear to be any differences in house prices by condition in Beachside?**

Ho: The group means of house prices are the same

Ho: The group means of house prices are not the same



The average price of houses that are in very poor, poor, Good, and Excellent condition is $754,600, $808,700, $870,381 and $1,137,652. The average prices indicate that houses prices depends on the house condition, for example, houses that are in excellent condition are the most expensive. The p-value for the analysis of variance is 0.000186, which is statistically significant. Henceforth, we reject the null hypothesis that the group means of house prices are the same.

1. **It is widely believed that higher house prices are being driven by those seeking good rental investments. Is there any basis on these?**



The correlation of house price and rental return is - -0.40384. The regression result show that when rental return increases by 1, house prices decreases by -111.425. Therefore, houses prices and rental returns have a negative relationship such that house prices decrease when rental return increases.

**Question 3**

**Concerns Raised by real estate agents and developers.**

I had a recent meeting with representatives from other real estate companies and developers. During the meeting these representatives made several claims that I am suspicious of and hence I would like to investigate the claims listed below.

1. **They state that weekly rent in Beachside is more than $570, and hence rated as the most unaffordable area to live in Melbourne metropolitan and surrounding suburbs. Is that true for all houses in Beachside.**

Ho: The weekly rent in Beachside is more than or equal to $570,000

Ho: The weekly rent in Beachside is less than $570,000



The average weekly rent in Beachside is $604,333. The t statistic is 1.66096 while the t critical value for one-tail is 1.6577. The p-value for one tail test is 0.0497, which is statistically significant; henceforth, we reject the null hypothesis that weekly rent in Beachside is more than or equal to $570,000 in favor of the alternative hypothesis.

1. **It was also mentioned that there was a lack of development across the Beachside are as at least 80% of houses are 10 years or older. I think this claim is false. Is there any evidence to suggest that is below 80%?**

The proportion of houses that 10 years or old is 78.33%. Therefore, the claim that there is a lack of development across beachside as at least 80% of houses are 10 years or old is false.

**Question 4**

**Future Surveys**

**Finally, I am interested in your opinion about future surveys for the purpose of comparisons and tracking house prices and rental availability. In particular, I want to be able to estimate the average house price to within $50,000 and the true proportion of vacant houses in the market to within 3%. Are you able to advise me on the required sample size that satisfies both of these criteria?**

|  |  |
| --- | --- |
| Confidence Level | 95% |
| Mximum Error Margin for House Prices | $50 |
| Maximum Erroe Margin for proportion of Vacant Houses | 3% |
| STDEV of House Prices | 324.9466579 |
| Proportion of Vacant Houses | 0.108333333 |
| Propotion of houses that cost $50,000 (P) | 0 |
| z.Score | 1.644853627 |
| q | 1.00 |
| n | 0 |

There is no house in the Beachside that is costing $50,000 or less. Henceforth, the sample size that satisfies all the criteria in the question is 0.