**Analysis of the prices of Second-hand Cars**

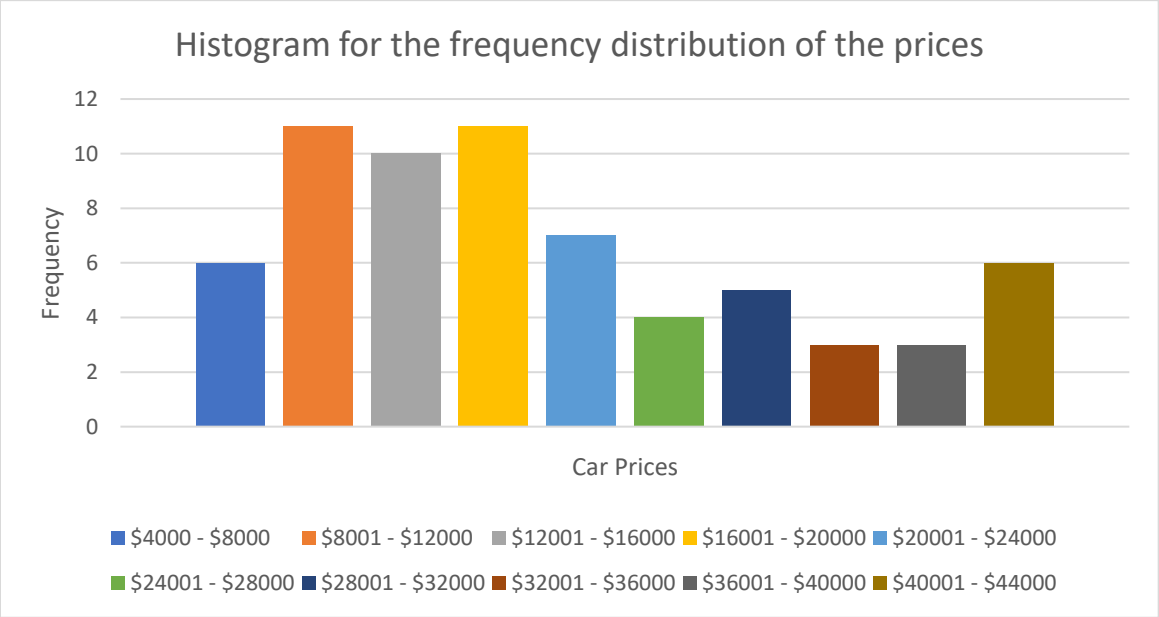
Frequency distribution table of the data

Population Data

| **Class Interval** | **Frequency** | **Cumulative Frequency** | **Boundaries** | **Midpoint** | **Relative Frequency** | **Percent Distribution** |
|---|---|---|---|---|---|---|
| $4000 - $8000 | 6 | 6 | $3999.5 - $8000.5 | $6,000 | 0.091 | 9.10% |
| $8001 - $12000 | 11 | 17 | $8000.5 - $12000.5 | $10,000 | 0.167 | 16.70% |
| $12001 - $16000 | 10 | 27 | $12000.5 - $16000.5 | $14,000 | 0.152 | 15.20% |
| $16001 - $20000 | 11 | 38 | $16000.5 - $20000.5 | $18,000 | 0.167 | 16.70% |
| $20001 - $24000 | 7 | 45 | $20000.5 - $24000.5 | $22,000 | 0.106 | 10.60% |
| $24001 - $28000 | 4 | 49 | $24000.5 - $28000.5 | $26,000 | 0.061 | 6.10% |
| $28001 - $32000 | 5 | 54 | $28000.5 - $32000.5 | $30,000 | 0.076 | 7.60% |
| $32001 - $36000 | 3 | 57 | $32000.5 - $36000.5 | $34,000 | 0.045 | 4.50% |

| | | | | | | |
|---|---|---|---|---|---|---|
| $36001 - $40000 | 3 | 60 | $36000.5 - $40000.5 | $38,000 | 0.045 | 4.50% |
| $40001 - $44000 | 6 | 66 | $40000.5 - $44000.5 | $42,000 | 0.091 | 9.10% |

Histogram of the data




**Summary statistics of the data**

Mean = 15985.07

Trimmed Mean = 15426.23 with a 5% Trim

Median = 14000

Midrange = 22250

Modes = $8001 - $12000, $16001 - $20000 with frequencies of 11 each.

Variance = 94848258.7

Standard deviation = 9739.01

Weighted Mean = 20606.06

The data source chosen for analysis is the price of second-hand cars which was taken from kaggle.com which is an established site that is well known for its reliable datasets. The motivation was towards analysis of market prices of used cars and revealing how the price averages and ranges.

The summary statistics provides clues to the central tendency and distribution range of second-hand car prices. The arithmetic mean, the trimmed mean, and the median are, in fact, three senseful calculations even if each uses a different justification. The mean, which was obtain by summing all price values and dividing the result with the total number of observations, generates an average price of $15985.07. In contrast, the trimmed mean, one is taken inside 5% of the extreme values, ends up being slightly lower than this one by coming up with a figure of $15426.23. This adjustment therefore minimizes the displacement by an outlier, which leads to the mean as an estimate of the central tendency. While the median aligns closely to the trimmed mean, this is an indication of the consistency in central tendency estimation, despite differing methodologies. Such overall view characterizes a more detailed picture of the spread of second-hand car prices, thus granting market makers essential information about this sector.

**Sample data analysis**

Mean = 15242.42

Standard deviation = 10655.19

T-test = -0.4004

p-value = 0.6915

The mean price of the population is $15,985.07, slightly higher than the mean price of the sample, which is $15,242.42. However, with a significance level of 0.05, the p-value obtained from the t-test is 0.6915, which is greater than 0.05. Therefore, we fail to reject the null hypothesis, indicating that there is no significant difference between the mean prices of the population and the sample. This shows that the sample data can be a representation of the population.