Statistics Coursework

Investigate what influences the price of a second hand car:

Introduction

During this maths coursework I will be investigating the factors that may affect the price of a second hand car I decided to choose 30 random cars from a database of 100 cars and use graphs to prove my hypotheses. I chose 30 cars as I will have enough data to make hypotheses, but choosing more than 30 cars would be too much data to use. To choose my random 30 cars I did a method called 'Random Sampling' I did this method by pressing shift ran# on my calculator which gave me a random number, multiplying that number by 100 and then rounding it up to the nearest whole number. To do my graphs I used a computer to be more accurate. I did this by highlighting the data I wanted to use and selecting the new chart button. On my scatter graphs there were three cars that showed up as anomalies as they were further apart from the rest of the data because of this I repeated my scatter graphs for every hypothesis. I have included both sets of graphs in my work.

Hypothesis 1

The higher the mileage the lower the value of the car.
I expect my graphs to show that the greater the mileage the lower the value of the car.
To investigate this hypothesis I used a bar chart and scatter graph (see graphs)
From my results I can see that the number of owners does affect the price of a car.
I worked out the mean for my results by adding up my used car price data and my number of owners data and then adding the
two figures together and dividing the final total by 30 as I have 30 cars overall, I worked out the mean is 6015.2
Here is my working out:

Price When Second Hand (£)	Owners
5999	1
6999	1
3995	1
1000	4
850	3
3695	3
1195	3
1995	1
1495	3
6995	2
1295	1
1595	1
2595	1

4700	1
37995	1
6795	1
5795	1
6995	2
14999	1
13500	1
3995	2
7995	1
4976	2
3495	2
1664	3
2574	2
2497	2
14735	2
2995	2
4995	2
= 180403	= 53

180403 + 53 = 180456
180456 / 30 = 6015.2

I also worked out the mode, median and range of my results and included them on p 16

Hypothesis 2
Age of car affects price
The older the car the lower the price of the car
I expect my graphs to show that the older the car gets the value of the car becomes less. To investigate my hypothesis I used a Scatter Graph Diagram and Bar Chart (See Graphs)
From my results I can see that the age of the car does lower the price of the car. I also did a bar graph focusing on the number of owners a car has and the age of the car from the bar graph we can see that the older a car is the more owners it will have which will contribute to the low price of the car. I also worked out the mean for my results by adding up my used car price data and writing it down, adding up my car age data and writing it down and then adding up the two numbers and dividing it by 30 as I have 30 cars overall. I worked out the mean is 6019.5333333* (*recurring) This is my working out:

Price When Second Hand (£)	Age
5999	2
6999	4
3995	4
1000	10
850	10
3695	7

1195	9
1995	8
1495	9
6995	6
1295	6
1595	9
2595	7
4700	5
37995	8
6795	1
5795	3
6995	5
14999	1
13500	1
3995	7
7995	4
4976	4
3495	6
1664	10
2574	9
2497	8
14735	9
2995	6
4995	5
= 180403	=183

180403 + 183 = 180586
180586/30 = 6019.533333*
I also worked out the median, mode and range of this data, which is on p16

Hypothesis 3
Engine size affects price of car
The greater the engine size the greater the price of the car.
I expect my results to show that the bigger the engine the more expensive the car will be. To investigate my hypothesis I used a scatter diagram (see graph)
From my results we can see that the greater the size of the engine the greater the price of the car.
I also worked out the mean of my data by I adding up my used car price data and the engine size data and then added the two figures together and divided the final total by 30 as I have 30 cars overall, I worked out the mean is 6061.826667
Here is my working out:

Price When Second Hand (£)	Engine
5999	1.8
6999	2.3
3995	1.2
1000	1.4
850	1.6
3695	1.4

1195	2
1995	1.2
1495	1.2
6995	1.8
1295	1.5
1595	1.1
2595	1.4
4700	1.8
37995	2
6795	1.2
5795	1.8
6995	2
14999	1.8
13500	2
3995	1.9
7995	2
4976	1.4
3495	1.2
1664	1
2574	2
2497	1400
14735	6.7
2995	1.3
4995	1.8
= 180403	= 1451.8

180403+ 1451.8 = 181854.8

181854.8/30 = 60601.826667

I also worked out the median, mode and range of my data and have included it in page16

Conclusion

On my scatter graphs there were three cars that showed up as anomalies as they were further apart from the rest of the data which was clustered together, this could be because a number of reasons either there is a typing error or mistake or those particular cars are a different type of car from the other data, because of this I had to do my scatter graphs again but I have included both sets in my work.

To improve my sets of results I could of used a wider range of data or used primary data, which I went out and researched myself instead of using secondary data, which was data that I had received, which had already been researched and collected by another person.

For my second hypothesis I could have used more accurate data by showing the cars age in months and years and not just in years as a car
can be sold before it becomes a year older.