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Period 1

25

Purpose of Study

The purpose of this study was to determine whether or not "The number of Cars in a household is related to the number of Video Game Consoles in a household".

Study Design

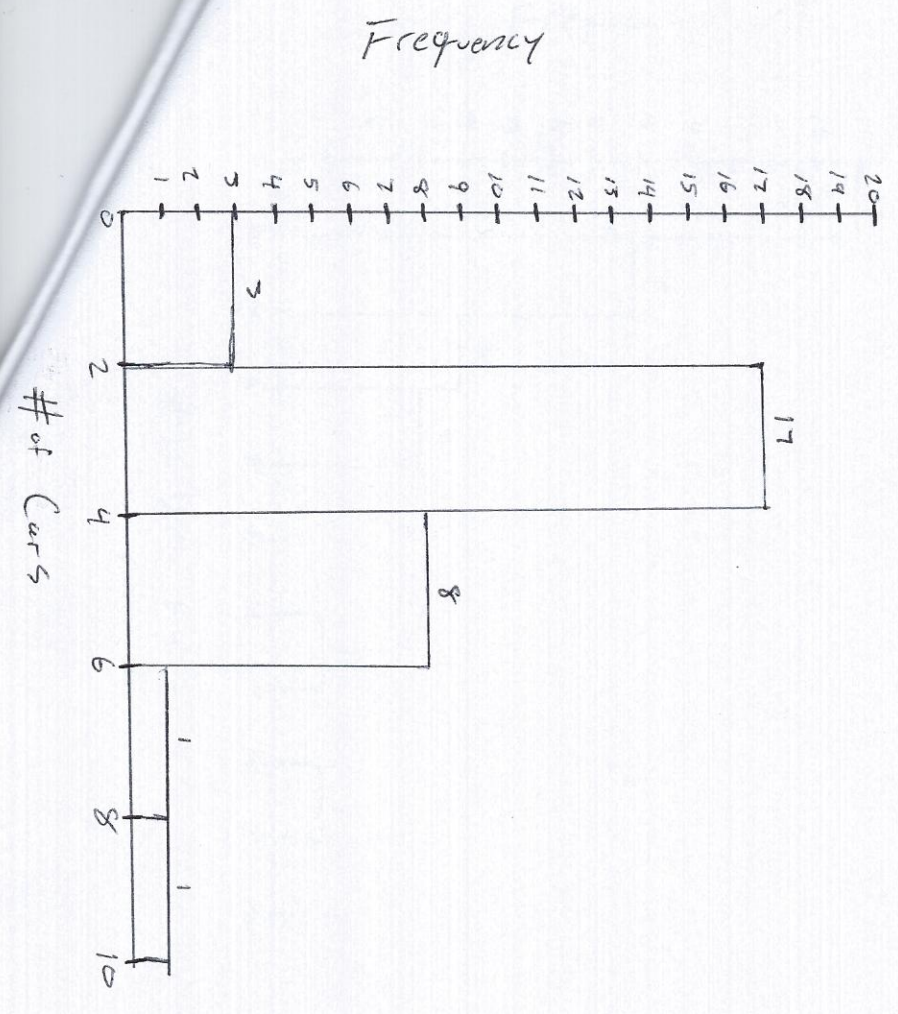
The design of this study was to collect the information from 30 random local individuals. To reduce the margin of error, we were certain *not* to ask multiple members from the same household. When collecting the data we asked "How many cars do you have in your household?" as well as "How many video game consoles do you have in your household?"

Cars	Video Game Consoles
3	5
5	3
5	6
6	18
5	4
3	4
6	7
4	2
4	6
1	1
4	2
6	4
5	3
4	3
4	3
4	3
5	1
4	2
4	1
3	13
9	7
8	7
3	5
4	1
2	2
3	2
3	2
4	2
1	1
4	2

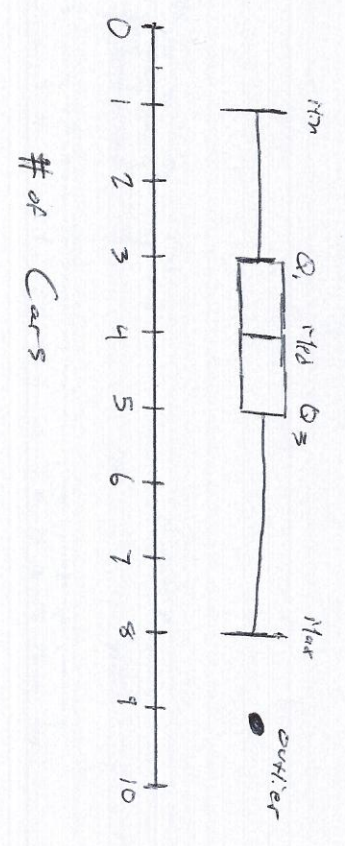
Statistics for 1st Quantitative Variable:
of Cars per household

$\bar{X} = 4.2$ $N_m = 1$
 $S = 1.71$ $Q_1 = 3$
 $Range = 8$ $Med = 4$
 $Mode = 4$ $Q_3 = 5$
 $Outliers: 9$ $Max = 9$

Histogram



Boxplot

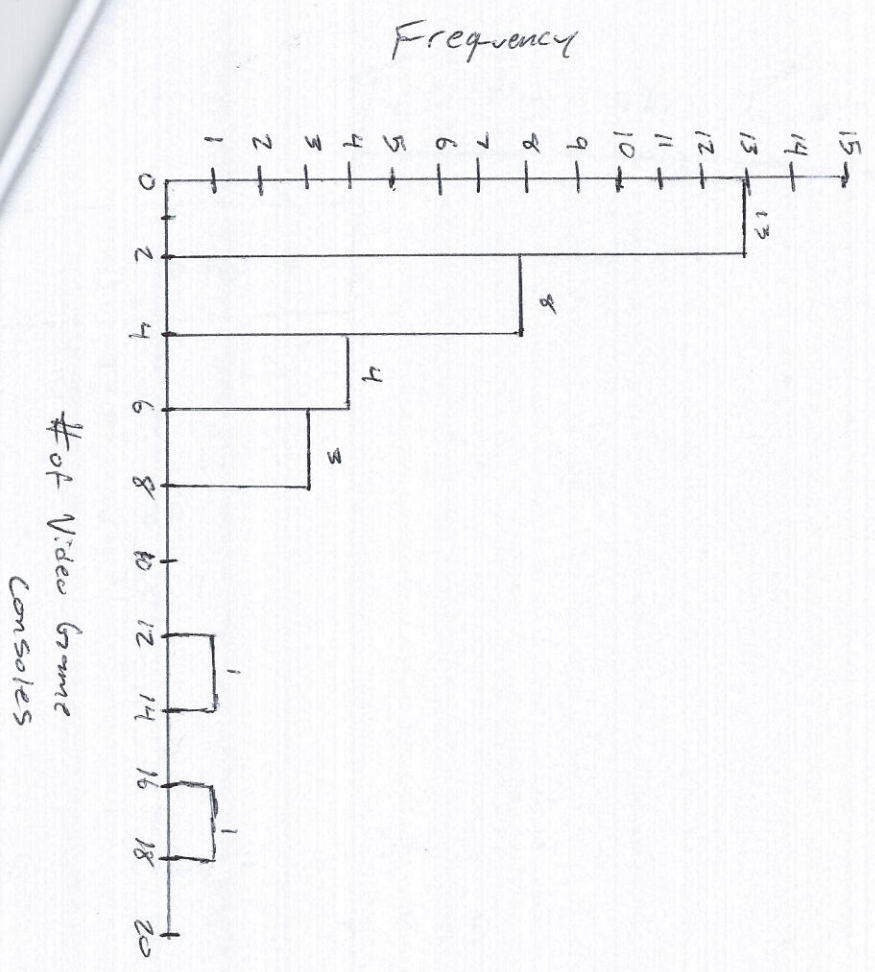


Statistics for 2nd Quantitative Variable:

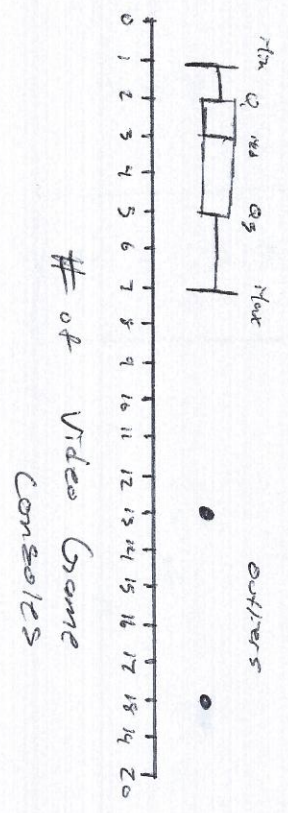
of Video Game Consoles per household

- $\bar{X} = 4.06$
- $S = 3.69$
- Range = 17
- Mode = 2
- Outliers: 15, 18
- $n_{11} = 1$
- $Q_1 = 2$
- $Med = 3$
- $Q_3 = 5$
- $n_{18} = 18$

Histogram



Boxplot



Testing The Correlation

$$r = 0.396$$

$$\bar{x} = 4.2$$

$$s_x = 1.71$$

$$\bar{y} = 4.06$$

$$s_y = 3.69$$

$$\hat{y} = b_1 x + b_0$$

$$b_1 = r \cdot \frac{s_y}{s_x}$$

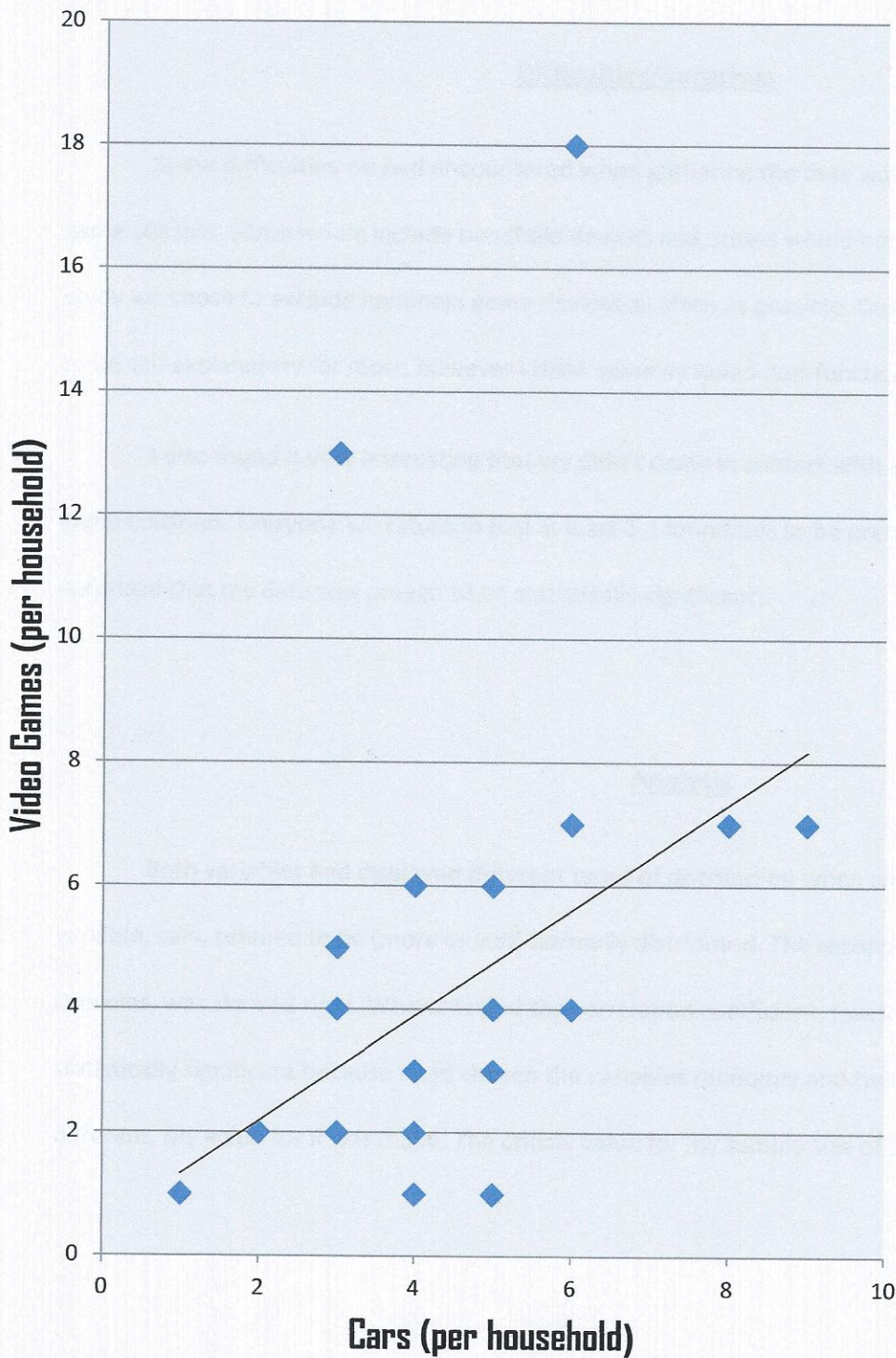
$$b_0 = \bar{y} - b_1 \bar{x}$$

$$b_1 = 0.396 \left(\frac{3.69}{1.71} \right) \\ = 0.855$$

$$b_0 = 4.06 - (0.855)(4.2) \\ = 0.47$$

$$\hat{y} = 0.86x + 0.47$$

Cars VS Video Game Consoles (per household)



--- Line of Regression

$$y = 0.8561x + 0.4709$$
$$R^2 = 0.157$$
$$R = 0.396$$

Data Collection:

Difficulties/Surprises

Some difficulties we had encountered when gathering the data was what qualified as a video game console. Some would include handheld devices and others would not. For the purpose of our study we chose to exclude handheld game devices as often as possible. Describing the vehicles seemed to be self explanatory for most, however I think some included non-functioning vehicles.

I also found it very interesting that we didn't come in contact with anyone who has zero video game consoles. Everyone we talked to had at least 1. I found this to be pretty interesting. I was also surprised that my data was proven to be statistically significant.

Analysis

Both variables had displayed different types of distribution when analyzed individually. The first variable, cars, seemed to be (more or less) normally distributed. The second variable, video game consoles, was skewed right. When I tested the correlation coefficient, I wasn't expecting the result to be statistically significant because I had chosen the variables randomly and their distributions were so different. My value for R was 0.396. The critical value for my sample size of 30, from table II, was 0.361.

Interpretation and Conclusion

My conclusion is that the data I have collected is indeed statistically significant. In a way I have been able to answer yes to my research question. Although there may be many different factors coming into play in this study, some lurking and some not, I think that the most dominant factor is money and size of family. As the income per family increases, the more likely it is that the number of cars and video game consoles will increase also. In the same respect, as the number of family members of members of a household increases, the more likely it is that there will be more vehicles and more video game consoles. This is most likely not true in most cases and areas, but it turns out that it is a little bit true for our area in Sandy, Utah.