

Arts/ Sci 2R06/ Assignment 3 Solution

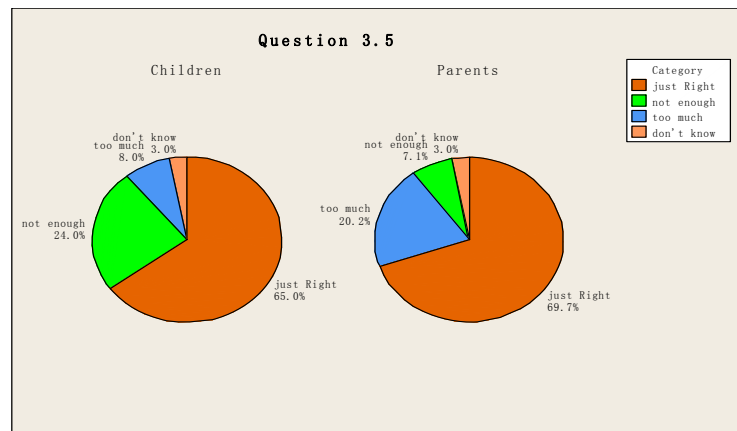
3.5

a) The population of interest is the population of responses to the question about free time for all parents and children in the United States. The sample is the set of responses generated for the 198 parents and 200 children in the survey.

b) The data can be considered bivariate if, for each children interviewed, we record the person's relationship (Parent or Child) and their response to the question (just the right amount, not enough, too much, don't know). Since the measurements are not numerical in nature, the variables are qualitative.

c) The entry in a cell represents the number of people who fell into that relationship-opinion category.

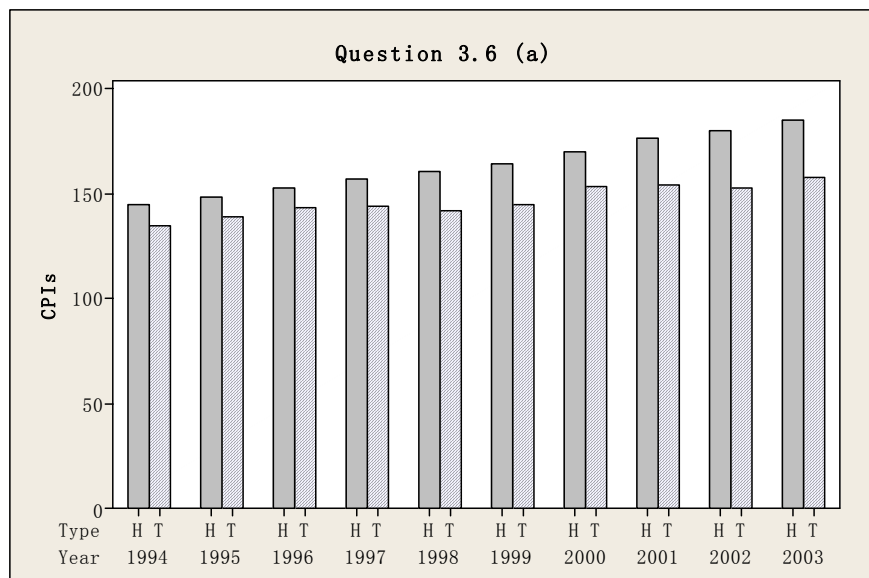
d) A pie chart is created for both the "parent" and the "children" categories. The size of each sector angle is proportional to the fraction of measurements falling into that category.



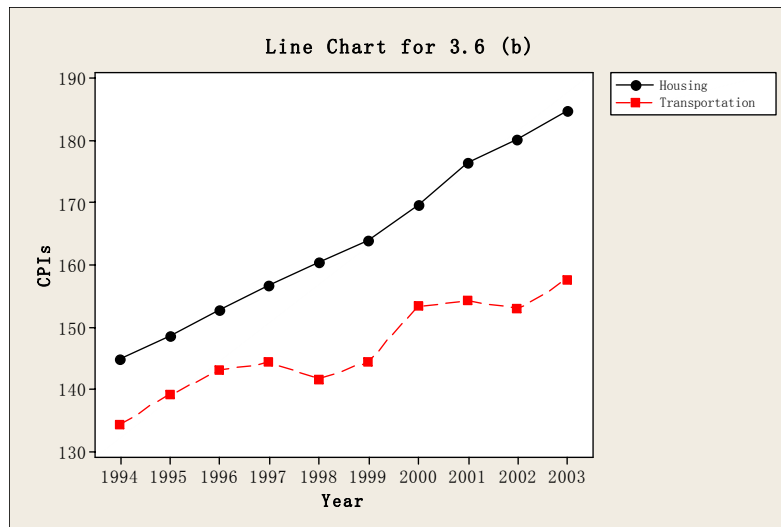
e) Either stacked or comparative bar charts could be used, but since the height of the bar represents the frequency of occurrence (and hence is tied to the sample size), this type of chart would be misleading. The comparative pie charts are the best choice.

3.6

a)



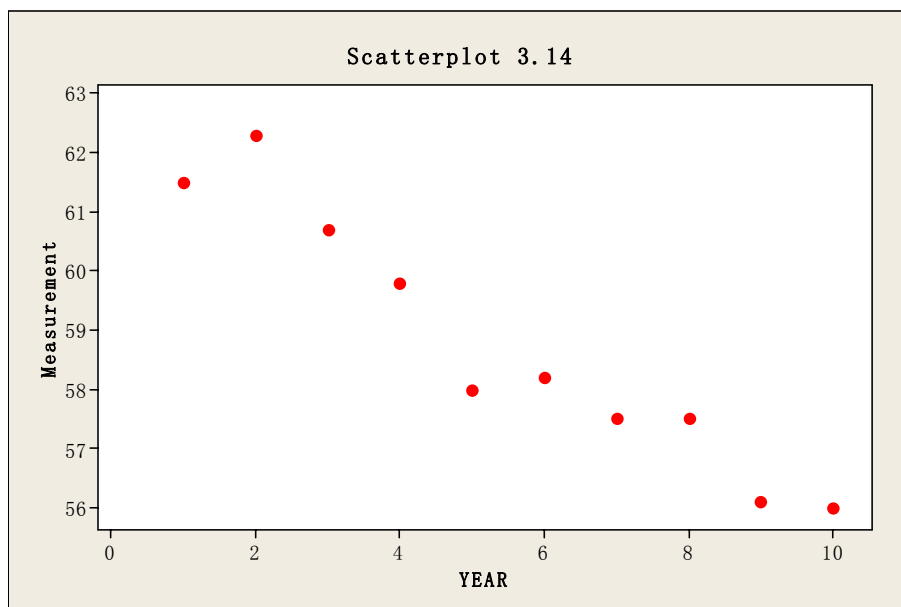
b)



c) Based on the two graphs in parts a and b, we can see the price of living in the United States for housing is higher than transportation in the past decade. Compare this two different charts, the line chart is the most effective.

3.14

a)



b) There appears to be a negative relationship between year and measurement; that is, as year increases, measurement decreases.

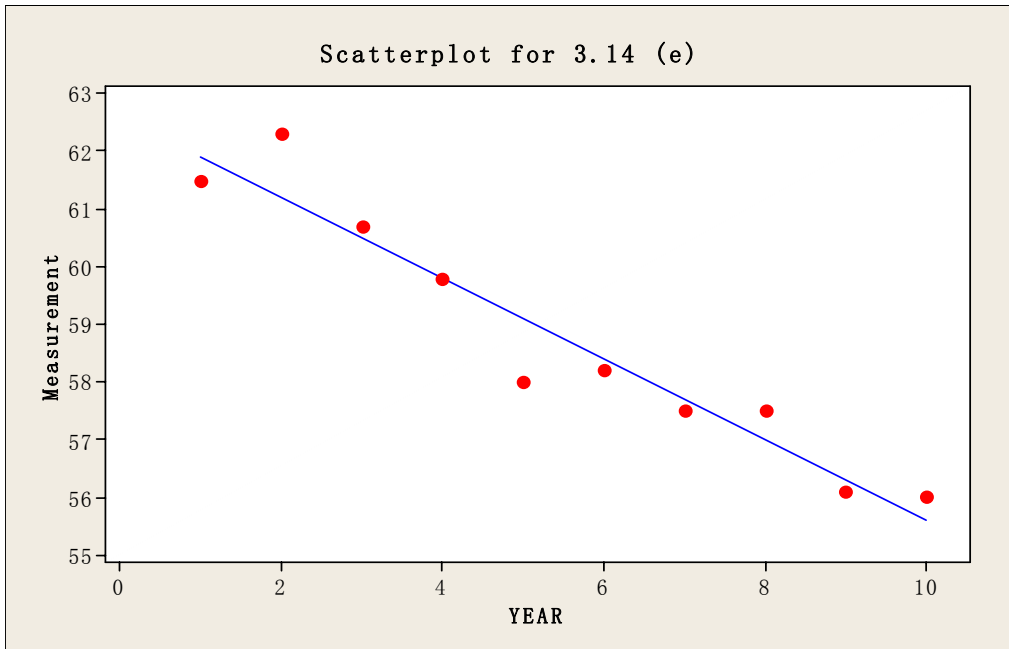
c) $r = S_{xy}/S_x S_y = -0.96324$

d) By definition, $b = r (S_y/S_x) = -0.96324 (2.202/3.0276) = -0.701$

and $\bar{y} = 58.76$, $\bar{x} = 5.5$, then $a = \bar{y} - b\bar{x} = 62.6$

Therefore, the best line is $y = 62.6 - 0.701x$.

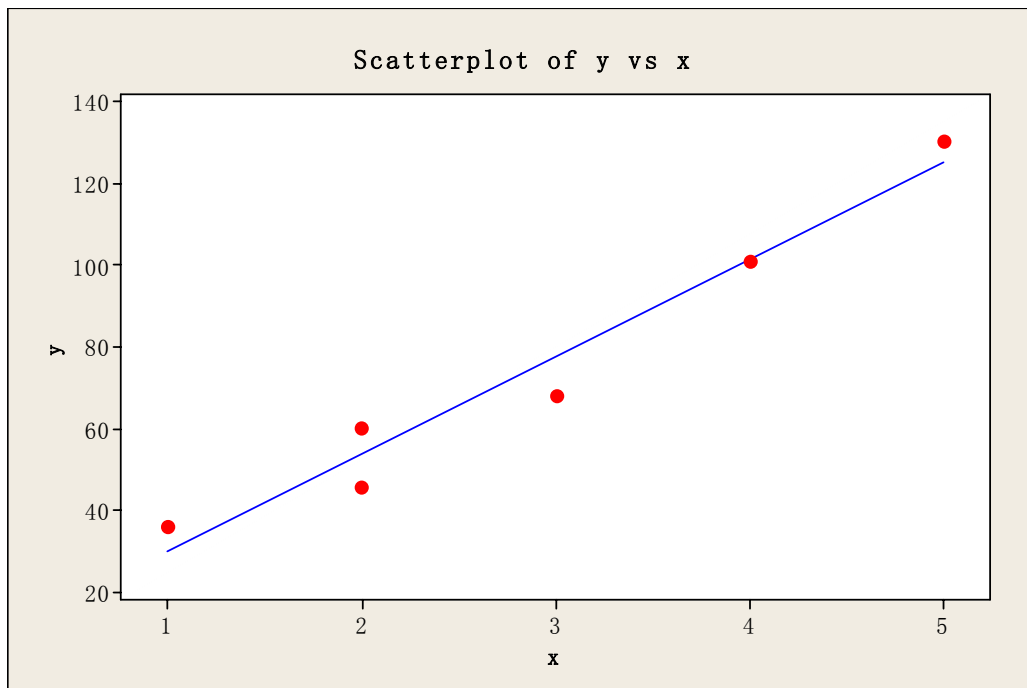
e)



3.15

a) $Y = 6.11 + 23.8 X$

b)



Yes, the line summarizes the information in the data points.

c) $y = 148.91$ when $x = 6$, No, I will not use the fitted line to estimate this amount since a household (x) of six is out of the range from one to five.

3.26

- a) There appear to be a positive relationship between the first weekends's gross and the total gross.
- b) Yes. Since the fitted value is large compare to other movies.
- c) The dot for Pearl Harbor represents the movie with the best opening weekend. But, it didn't have the highest total gross.
- d) Yes. It helps to explain its position in relation to the other data points since the movie has one more day to generate money, it would place a little higher than the other movies.