

Statistical Study & Analysis Project

Description You will be required to consider two variables and collect data regarding how these two variables relate to each other. Your final report should be typed and neatly organized in the order directed below.

Process Be sure to follow this process:

1. Choose two variables that you would like to compare.
(remember that in class we did height compared to finger length)
2. **Have your choice of variables ok'd by the teacher.**
3. Collect 30 data samples for these variables.
4. Complete the project (order listed below)

Order Your final typed project should be written (laid out) in this order:

1. Title page including title, name, date, and teacher name.
2. Open by giving a brief paragraph description of the study and the variables used.
3. Examine the first Variable (by chart, diagram, picture ... not paragraph form):
 - a. Name the variable
 - b. Give the range, mean, median, and mode for the variable.
 - c. Show the appropriate box and whisker plot for the variable data including:
 - i. The 5-number summary values labeled in the correct location
 - ii. The correct location and size of the interquartile range labeled.
 - d. Show how to find the outliers and name the outliers.
 - e. Throw the outliers out of your data set, recalculate, and show the following:
 - i. Range, mean, median, mode.
 - ii. Box & whisker plot with 5-number summary values labeled.
 - iii. A histogram for this data set.
4. Examine the second Variable (by chart, diagram, picture ... not paragraph form):
 - a. Name the variable
 - b. Give the range, mean, median, and mode for the variable.
 - c. Show the appropriate box and whisker plot for the variable data including:
 - i. The 5-number summary values labeled in the correct location
 - ii. The correct location and size of the interquartile range labeled.
 - d. Show how to find the outliers and name the outliers.
 - e. Throw the outliers out of your data set, recalculate, and show the following:
 - i. Range, mean, median, mode.
 - ii. Box & whisker plot with 5-number summary values labeled.
 - iii. A histogram for this data set.

5. Now examine how the two variables relate to each other (again not in paragraphs):
 - a. Decide which variable is the independent variable
 - b. Draw an accurate scatter plot of the data (or load from TI-83 to computer)
 - c. On one copy of the scatter plot, sketch (by hand) a best fit line.
 - i. Pick and label two accurately estimated points to find the best fit-line.
 - ii. Show the work to find the equation of this estimated best-fit line.
 - d. On a 2nd copy of the scatter plot, accurately sketch the median-median line.
 - i. Be sure to understand that you can use your calculator to find the equation.
 - ii. Label the equation of the median-median line
 - iii. Label the x-intercept and y-intercept of the median-median line.
 - e. On a 3rd copy of the scatter plot, accurately sketch the least-squares line.
 - i. Label the equation of the least-squares line.
 - ii. Label the x-intercept and y-intercept of the least-squares line.
 - iii. Include an accurate graph of the residuals (or load from TI-83 to computer)
 - iv. Find the correlation coefficient.
 - v. Find r^2 and write a paragraph explaining the significance of the number and what it means for your study.
 - f. Write a short paragraph explaining what an appropriate domain and range would be so that your formulas would accurately represent the real-life situation created by your two variables.
6. Write at least 2 paragraphs that examine and summarize the study. Be sure to include:
 - a. Any conclusions that can be made from the study.
 - b. Any criticism that might be given regarding the study.
 - c. Who might find the study useful and why.
7. On the last page of the project, include an organized table showing the data you collected (this table should be the only thing on the last page).