AP STATISTICS: Minitab

CONFIDENCE INTERVALS

I sent an email out last evening via a google form (recommended over survey monkey by the way…) to the entire upper school at MB (not including faculty). Answer the following questions below.

*Choose 3 items from the survey that you want to examine more closely (you must do at least one* *categorical variable and at least one quantitative variable). You will be doing examinations of the data for the 3 variables of your choosing. Follow the directions below and put your results into a word document. When you are done, email me your results at byoung15@gmail.com*

**Part 1: Complete the following for 3 variables of your choosing**

1. Title the variable of interest.
2. For the variable, identify the parameter of interest (i.e. we are interested in the mean amount for time spent doing homework for ALL upper school MB students).
3. Note that the conditions are met (note that we are violating the independence condition and the SRS condition). Don’t worry… it will be OK.
4. Calculate descriptive statistics for the variable (you may do this using an output from Minitab). For a quantitative variable find the mean and standard deviation. For a categorical variable, calculate the sample proportions (i.e. 83% have an iPhone, 2% have a Samsung Galaxy).
5. Display your data using a graphical display (circle graph or bar chart for a categorical variable and histogram or boxplot for a quantitative variable).
6. Calculate confidence intervals for the parameter of interest (note that for a variable like favorite drink from Lower Dwares you can simply report confidence intervals for the drinks that are most popular if you like).
7. Interpret your interval (don’t forget to include CONTEXT – i.e. what is it that you were after again – oh yeah… the fish from part 1.)

\*\*Note: you might have some issues with our data collection methods – for example, it’s a convenience sample. It has voluntary response bias. It probably suffers from under-coverage… the list goes on. The reality is that this is often the most reasonable way to collect data and the results might be a bit biased, but they are still telling.

**Part 2: Examine a relationship between 2 variables. Choose a relationship that you think might be interesting to examine further (see below for a few examples)**

Do girls spend more time doing homework than boys? Or do 9th graders have less iPhones than 12th graders?

To examine the first question, I could do the following:

1.) I could compare the mean number of hours that boys spend doing homework and compare it to the mean time that girls spend doing homework.

2.)I could do a confidence interval for just the boys and then a separate confidence interval for just the girls. If the intervals don’t overlap, it is likely that one group spends a different amount of time doing homework.

3.) I also might do a side-by-side boxplot to display my results visually.

4.) Finally, I would interpret my findings.

What you need to do?

1. Provide descriptive statistics comparing the two groups (i.e. boys and girls for HW time for example).
2. Calculate confidence intervals for the separate groups.
3. Provide a graphical display of the differences.
4. Interpret your findings.