Data Analysis 5C Date **09/02/2020**

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1. For exercise 5.2 relating to two types of margarine on serum cholesterol, what have previous experiments demonstrated about concentrations of cholesterol in humans? **It is normally distributed**
2. For the study cited as exercise 5.2 why were the standard deviations of the two groups likely to be similar? **The ranges of the distributions for the two groups are not widely different**
3. Also for this exercise, why was it appropriate to use a *t*-test for independent samples? **The size of each sample was less than 30**
4. What was the Null hypothesis (H_0) for the margarine study being discussed? **The type of margarine provided in the diet of the test subjects has no effect on their serum cholesterol concentrations**
5. Conversely, what was the Alternative hypothesis (H_A)? **The type of margarine provided does have an effect on the test subjects' serum cholesterol concentrations.**
6. Since we could not be sure that the new margarine in this study could cause serum cholesterol to increase or decrease, what type of *t*-test was used for analysis? **A two-tailed for independent samples.**
7. How is the calculated *t*-test labeled in Excel? **T-Stat**
8. For interpretation of the statistical analysis, why do we need to refer to a set of tables for the Student *t*-distribution? **To find what we know as the critical value that determines whether or not the data is statistically significant at the 5% level.**
9. What is the name for the items abbreviated df that we need to know in order to look up the appropriate value within the tables? **Degrees of freedom**
10. If the degrees of freedom df for Student *t*-test independent samples is n-2 and there are 23 observations, what is the df for the samples? **21** (hint: in the critical values table on page 177 of the textbook for this df number, the value for a Two-tailed test, the Level of significance (P) is rounded to 2.080.
11. Because the P value for the analysis of exercise 5.2 was 0.575, what can we conclude about the null hypothesis listed in question 04 above? **We can conclude that we can accept the null hypothesis that there is no difference in cholesterol levels because .575 is much higher than .05**
12. For maintaining variability at as low a level as possible, what was one means of doing so stated by the author on page 121 of the text? **Design an experiment on a paired or matched basis.**
13. For the experiment on examining the efficacy of a new 'long-acting' formulation of aspirin with a standard compressed tablet preparation, how may bias be removed from the experiment? **Adopt a double-blind technique where preparations are administered without experimenter or subject knowing which is being used.**
14. For a calculated paired *t*-test, the degrees of freedom formula is stated how? **It is equal to the number of data pairs minus one.**