**Week 4 Project - STAT 3001**

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Instructions: To complete this project, you will need the following materials:

* STAT DISK User Manual (found in the classroom in Doc Sharing)
* Access to the internet to download the Stat Disk program.

**Part I. Analyze Data**

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| **Instructions** | **Answers** |
| 1. Open the file **Passive and Active Smoke** using menu option **Datasets** and then **Elementary Stats, 13th Edition**. This file contains some information on the continine levels in smokers, nonsmokers exposed to smoke (ETS), and nonsmokers not exposed to smoke (No ETS). How many observations are there in this file?
 | The file Passive and Active smoke has 40 observations for the 3 variables listed.  |
| 1. What would you expect to find relative to the continine level in the groups?
 | I would expect the levels on continine to be increased in those who actively smoke, decreased in people who are exposed to second hand smoke and none in people who do not smoke and are not exposed to second hand smoke. |

**Part II. Descriptive Statistics**

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| 3-6 Generate descriptive statistics for No ETS, Smokers and ETS groups and complete the following table. Round mean and standard deviation to 3 decimal places. | Variable | Sample Mean | SampleStandard Deviation | Sample Size |
| No ETS | 60.575 | 138.083 | 40 |
| Smokers | 172.475 | 119.498 | 40 |
| ETS | 16.35 | 62.533 | 40 |
| 7. Did you get the results you expected here? Explain why. | Yes, the results are basically what I expected. Smokers had the highest levels of continine due to the increased intake. Smokers exposed to smoke had a decreased amount of continine and nonsmokers had the lowest amount of continine due to the least exposure to smoke. |
| 8. Which of the three groups experienced the MOST variation? How do you know? |  |

**Part III. Confidence Intervals**

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| 9. Generate a 90% interval for the mean of the No ETS group. Paste your results here. |  |
| 10. Generate a 90% interval for the mean of the Smoker group. Paste your results here. |  |
| 11. Generate a 90% interval for the mean of the ETS group. Paste your results here |  |

12. Create a graph below by illustrating all three confidence intervals on one graph using the tools in your word processor (example below). Stat Disk cannot do this for you. Create your graph and turn the font red. For this process, I just used the dashes and wrote a scale below the axes.

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|  Here is an example, but it is not based on the data you are analyzing: Case 1 14---------------------42 Case 2 35-------------------------70 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 0 20 40 60 |
|  Your Solution:  |
| 13. Based on the confidence intervals shown above, what conclusion can you draw about whether the exposure to smoke leads to higher continine levels? Why? |  |

**Part IV. Hypothesis Testing**

14. Your researcher’s claim is that the continine level for the ETS group is not equal to zero. Compose a hypothesis test with a level of significance of .05 to test your claim.

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| Step 1. Determine parameter of interest and compose null and alternative hypotheses. |  |
| Step 2. Determine the sample mean, sample standard deviation, and sample size. [Hint: You recorded these previously in Part II, #3-6] |  |
| Step 3. Determine the likelihood that the population mean is actually not equal to 0 by completing a Hypothesis Test: One Mean in STAT DISK. Use significance of **0.05**. Remember to change the pulldown option in Stat Disk to agree with the alternate hypothesis. Paste your results here. |  |
| Step 4. State your conclusion. Your conclusion statement should include the p-value and level of significance to phrase your conclusion. |  |

15. For your second hypothesis test, your researcher’s claim is that the continine level in the NO ETS group is greater than zero. Perform a hypothesis test using a significance level of .01 to test your claim.

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| Step 1. Determine parameter of interest and compose null and alternative hypotheses. |  |
| Step 2. Determine the sample mean, sample standard deviation, and sample size. [Hint: You recorded these previously in Part II, #3-6] |  |
| Step 3. Determine the likelihood that the population mean is actually greater than 0 by completing a Hypothesis Test: One Mean in STAT DISK. Use significance of **0.01**. Remember to change the pulldown option in Stat Disk to agree with the alternate hypothesis. Paste results here. |  |
| Step 4. State your conclusion. Your conclusion statement should include the p-value and level of significance to phrase your conclusion.  |  |

16. Answer the following questions based on the above hypothesis test.

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| 1. What is the p-value for the hypothesis test in #15 and what does it represent? (Look at page 383 in the text)
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| 1. Given that your data, hypotheses, and p-value do not change, what would need to be different in order for you to REJECT the null hypothesis? (What do you compare to make your rejection decision?)
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Submit your final draft of your Word file by going to Week 4, Project, and follow the directions under Week 4 Assignment 2. Please use the naming convention "WK4Assgn2+first initial+last name" as the Submission Title.