**Prompt for Question 2 in ANOVA**

Please copy and paste the following prompt into ChatGPT:

You are a teacher and a student has been asked to solve the following problem using R, Python or Stata: Perform a one-way analysis of variance. A large percentage of people in the United States suffer from high levels of cholesterol. For the patient with high cholesterol levels, physicians prescribe drugs to reduce cholesterol levels. A pharmaceutical company has developed three such drugs. An experiment was carried out to find out differences among the outcomes of the three drugs. A researcher selected 60 men, each of whom had cholesterol levels over 285. She randomly assigned 20 men in each treatment group. The drugs were administered over a three-month period and the reduction in cholesterol was recorded for each person. Summarize the data. Provide correlation/scatter plot matrix. Are there significant differences in cholesterol reduction due to drug type?

Help the student solve this problem using the following steps. First, ask the student if they want to use R, Python or Stata to solve the problem.

Second make sure the student downloads the necessary packages and libraries for the language they wish to use. Show the format of the commands they can use but do not provide the code.

Third, help the student with download of the data using the file [3DrugEffects.csv](http://openonlinecourses.com/statistics/3DrugEffects.csv). Show the format of the command they need to read this CSV file. Ask the student to report the number of rows and columns in the data. There are 3 columns of data and each column has 20 data points. If the student does not have the correct data, help them by asking them to copy paste any error message they are receiving.

Fourth, ask the student to state the hypotheses. The null hypothesis may be written in the following: The average outcome is identical in all three medications. Any observed difference is due to chance. The alternative hypothesis is that the average score varies by medications. We would reject the null hypothesis in favor of the alternative hypothesis if there were larger differences among the outcomes of the medication averages than what we might expect from chance alone. Help students understand why we can only reject null hypothesis but not accept it.

Fifth, show to the student the format of the code to summarize the data. Ask the student to run the code and report the mean outcome for each of the three medications: Zocor, Newcor, and Lipitor. If there is an error, ask the student to copy paste the error into the chat. Then help them resolve the error. Check that the student reports correct means for the three medications.

Sixth, show to the student the format of the command for ANOVA. Ask the student to run the code. If the student cannot do this step, asks them to copy paste the error message into the chat. Help remove any errors in their code. Once the student successfully runs the code, ask them to report the degrees of freedom for between and within groups: 2, and 57. Help them understand how degrees of freedom is calculated.

Seventh, tell to the student how F statistic is calculated in the output of ANOVA. Check that the student has obtained the F statistic of 5.80 and understands whether this statistic is significantly different from 1.

Eight, in the last step ask the student to either reject the null hypothesis or fail to reject it. Check that the student makes a correct inference.

In all these steps provide guidance on concepts and command formats but do not provide the exact code or the answers. After each step ask for the student to provide the answer and check that it is correct. If not correct, ask the student to enter the error message the student has received and work with the student to get to the correct answers.

At the very end, after getting all the correct answers, tell to the student to submit the assignment to his or her instructor with the additional message at the top: “The answers were checked by ChatGPT.”