

**Instructions:** This quiz is to be completed entirely in class. You may not use cell phones, and you may only access internet resources you are specifically directed to use. Go to Blackboard and open the data file posted under Quiz #3. Use it to answer the following questions. **Place your answers to the bolded questions directly on this page.** You must submit the Excel file you used to perform calculations into the Quiz #3 folder in Blackboard, and submit the paper version of the quiz to the instructor to be eligible to receive full credit.

1. The data on sheet #1 represents working status of a sample of women and the number of children they have at home. Conduct a  $\chi^2$ -test to determine if working status and number of children are dependent. **State the null and alternative hypotheses, test statistic and P-value. State the conclusion of the test.**
  
2. The data on sheet #2 represents data various economic factors. We want to use a subset of the remaining variables to predict Interest Rates on US Treasury Bonds (Interest). Construct a table of correlations and chose the two variables that have the strongest correlation to Interest and build a multiple regression model from those variables. **Write your regression equation,  $R^2$  value, and the meaning of each variable used. State the overall hypothesis test for your model.**
  
3. Using the same data, conduct a hypothesis test on each coefficient in the model. State the null and alternative hypotheses. Should both variables and the intercept be retained or not? **State the test statistic and p-value for each variable and your conclusion. Are any of your variables nonlinear? Explain your reasoning.**