

Writing Assignment Description

For this writing assignment, you are required to analyze a given dataset, apply statistical concepts you learned in this class, and present your results in an effective and professional manner. The assignment is 15% of your final grade. Following are the rules for the assignment:

- The assignment must be submitted individually. You are welcome to work in groups, but each student must submit his or her own assignment. If a student is found to have plagiarized from any source, that student will receive a grade of 0 for the assignment and an **F** for the class.
- It is due on May 14, 2021 by 11:59 p.m. There will be absolutely no extensions to this deadline, and late assignments will not be accepted.
- You will submit two files for this assignment:
 1. An Excel file that contains your calculation.
 2. A Word file that contains your results, and interpretations.
- You will upload your files on BlackBoard in the designated folder.

In your Word file:

- Put your full name, course name, semester, and “Writing Assignment: the name of your data file” at the top of the first page.
- Use font: Times New Roman, size: 12 pts, and spacing: 1.5.
- When answering each question, number each one followed by your Excel results, and interpretation. Position your tables, graphs, and charts in an organized way. Graphs should have proper titles, axis labels, legends (if applicable) and should be easy to read.
- **Word file without the Excel results would not receive any credit for charts.**
- This file should NOT exceed 4 pages.
- Name your word file as “Lastname.Firstname.Result_221”.

In your Excel file:

- Show all your calculations. You can use different worksheets in the same Excel file.
- Name your file as “Lastname.Firstname.Calculation_221”.

Using the dataset “Wage”, answer the following questions:

1. Find the mean, median, sample variance, and sample standard deviation for the following variables: *WAGE*, *AGE*, *EDUC*, and *EXPER*.
2. Create a histogram using the data for *WAGE*. Use the Sturges’ rule to calculate how many bins you should include. In your result file, you must include a frequency table with bin limits, relative frequencies, and cumulative frequencies, along with your chart output. Discuss the shape of the histogram. What does it tell you about distribution of wage?
3. Calculate skewness of the distribution of *WAGE*. Does it support your interpretation of the shape from the previous question? Explain.
4. Do a scatterplot of *IQ* and *WAGE*, where $X = IQ$ and $Y = WAGE$. In your result file, include the plot and a discussion of the plot.
5. Do a scatterplot of *EXPER* and *WAGE*, where $X = EXPER$ and $Y = WAGE$. In your result file, include the plot and a discussion the plot.
6. Calculate the covariance and correlation coefficient between (1) $X = IQ$ and $Y = WAGE$, and (2) $X = EXPER$ and $Y = WAGE$. Interpret the two correlation coefficients.
7. Calculate the confidence intervals for population mean of *WAGE* for 90%, 95%, and 99% confidence levels, assuming that the dataset given is a sample and population standard deviation is unknown.
8. Do two-tailed hypothesis tests of $\mu = 1100$ for *WAGE* at 1%, 5%, and 10% significance levels.
9. The city claims that the population mean for *WAGE* is less than \$1100. Conduct hypothesis tests at 1%, 5%, and 10% significance levels to test that claim, assuming that the dataset is a sample and population standard deviation is unknown.
10. Can you reject the null hypothesis in both questions (7) and (8)? Explain.