Assignment: Individual Assignment (Homework) – Part A

This component has 20% weightage in the course, and this is the first part of the Individual Assignment.

Deliverables:

1. A pdf document with relevant answers.
2. The R file or excel file used for solving the assignment.

Instructions for the assignment:

Homework-1:

The Current Population Survey (CPS), undertaken by the U.S. Census Bureau, periodically conducts a variety of surveys on a variety of topics. In this example we look at a cross- section of 1,289 persons interviewed in March 1995 to study the factors that determine hourly wage (in dollars) in this sample.16 Keep in mind that these 1,289 observations are a sample from a much bigger population. We will consider these 1289 observations as a population for our purpose.

The variables used in the analysis are defined as follows:
Wage**:** Hourly wage in dollars, which is the dependent variable.

The explanatory variables, or regressors, are as follows:
Female**:** Gender, coded F for female, M for male
Nonwhite**:** Race, coded N for non-white workers, W for white workers
Union**:** Union status, coded M if in a union member, N otherwise
Education**:** Education (in years)
Exper**:** Potential work experience (in years), defined as age minus years of schooling *minus 6. (It is assumed that schooling starts at age 6.)*
Age: Age of the worker

The Questions:

1. Calculate the correlation between the variables, Wage, Education and Exper and comment on the correlation coefficients.

2. Fit a multiple regression equation with Wage as the dependent variable and all the other variables (except Age) as independent variables. (This is Regression Equation 1)

3. Comment on the R2, F-test and individual p values of the coefficients with respect to Regression Equation 1

4. Fit a multiple regression equation with Wage as the dependent variable and all the other variables (including Age) as independent variables. Explain the results.

5. Find out if the two variables, Education and Exper have any interaction effect with respect to Gender, Race and Union Status

6. Use Stepwise method to fit a regression equation with Wage as the dependent variable and all other variables, including interaction variables as independent variables (This is Regression Equation 2)

7. Interpret each of the regression coefficients of Regression Equation 2

8. Test whether the Normality assumption with respect to errors of Regression Equation 2 is satisfied

9. Is there a gender bias in the wage rate?

10. Is there any advantage of union membership to those with higher education?

Note: The data is available in 'Data for Homework-1.xlsx' file. **Kindly read the 'Variable Description' sheet for understanding the assignment better.**

General Instructions:

1. This is an individual assignment.
2. Do NOT submit .zip files otherwise the submission will not be considered.
3. Late submission is applicable as per the course outline.
4. Please name your files properly and make sure your name and PGID is added to every submission made for this assignment.
5. The honour code for this submission is **0N**.
6. **Please remember that you cannot copy-paste the content even if the coding scheme is 0N.**

Deadline: 17th July 2021, 11:55 pm