MACT 3223 PROJECT -1

This is a group work project with three members in each group. The goal of this project is to know how to use different statistical inference techniques to analyze and interpret a real dataset obtained from a sample, draw conclusions about the population, and make informed data analysis decisions.

Project instructions:

You should submit a report that includes 4 main sections:

1- ***Introduction.***
Describe your dataset, outline your research objectives, and define the methodology you plan to employ.

2- ***Descriptive statistics section:***
In this section you should provide a summary and analysis of the main characteristics of your dataset using different measures, tables and graphs with interpretations.

3- ***Inferential statistics (explain all methods applied).***

Choose **at least 4 variables** from your data set and **for each variable** do the following

a) For each variable, choose one parameter of interest and suggest a good point estimator and calculate its value. Explain -based on what you have studied concerning the properties of estimators- why the chosen estimators could be considered as good ones? (Note: You should use different population parameters; such as mean, proportion, and variance)

b) Get an interval estimate at 95% confidence level for each parameter proposed in (a) and interpret your results.

c) Choose two main variables in your dataset and get a **point and interval estimates** (with 0.05 significance level) for the difference between the means/proportions of 2 different groups.
(For example: the mean age difference between males and females). Can we say that one group has higher mean than the other one?

d) Formulate 3 claims that your research team would lie to test about the population characteristics. State the claim in the form of a null and alternative hypotheses, test your hypothesis and state if you should reject or fail to reject the null hypothesis at 0.05 significance level.

4- ***Conclusion with main findings and decisions***
In this chapter the main findings of your research should be presented. Also, provide your perception regarding possible implications, decisions or areas for improvements

Remark: Be precise and organized; this will be taken into consideration.