BS805 Fall 2022 Week 11

Be sure to follow the *Assessment Guideline 1: Writing up Homework* at the end of the syllabus in preparing the homework for submission.

Homework assignments need to be uploaded to Blackboard by November 30th at 2 PM.

In each homework report, be sure to include an introductory and a summary paragraph.

A study was conducted on 500 subjects to examine the anxiety of students studying statistics. The investigators collected data on 23 items (**q01 – q23**) relating to personality and proposed to conduct a series of classical psychometric analyses. The data for this study have been stored in a saved data set, *saq2022.sas7bdat*, that has been posted on Blackboard Learn for the assignment for the class on classical psychometrics via Cronbach alpha, principal component and exploratory factor analyses.

You are to perform the following analyses and interpret the results.

1. Perform a Cronbach alpha analysis of these items.
    a. Does this set of items show good internal consistency reliability? Present specific numeric evidence to support your conclusion.
    b. Do you think that it is possible that this set of items is not unidimensional in nature? If so, why? If not, why not? Again, present specific numeric evidence to support your conclusion.

2. Perform a principal factor analysis of these data using VARIMAX rotation. Use METHOD=PRIN and apply the Kaiser criterion to identify the number of factors.
    a. Can these 23 items be reduced in dimension? If so, how many factors are sufficient to do so? Present a scree plot and specific numeric evidence to support your conclusion.
    b. Which items "loaded high" on which factors? For the factors that you identified, provide a description of what each latent factor is measuring. Output the factors to a new dataset and calculate the correlation of the study questions with the factors to help with this process.