**Research Design and Statistics 2021-22**

**Assignment Two: Late Summer Resit**

This assignment uses a hiring data set that contains job applicants’ responses to a questionnaire measuring two components of extraversion, enthusiasm and sociability, for each participant. In addition, three questions are included that measure the candidate’s level of engagement once hired and three questions measuring their levels of job performance once hired. We do not have the actual items, only the questions, so your conclusions will be made here solely on statistical criteria.

The answers to the extraversion questions were measured *before* they were hired and are self-reports. The measures of engagement and job performance were both taken 3 months *after* their hire date and are managerial ratings. The only demographic variable we have is gender. The structure is as follows.

1. Gender (male 0, female 1)
2. Enthusiasm1 to Enthusiasm 6 (1 strongly disagree to 5 strongly agree)
3. Sociability1 to Sociability6 (1 strongly disagree to 5 strongly agree)
4. Engage1 to Engage3 (1 strongly disagree to 5 strongly agree)
5. Task1 to Task3 (1 strongly disagree to 5 strongly agree)

Q1. Undertake appropriate data cleaning and screening and report your results. Report only what is necessary to convince the reader that you have done an effective job.

* 5 marks

Q2. Undertake a factor analysis to check the dimensionality of the personality question responses. Also complete a principal component analysis. Compare the solutions and provide an explanation for any differences you see.

* 10 marks

Q3. The organization started using this extraversion questionnaire in hiring under the expectation that scores on the extraversion questionnaire would predict task performance. What evidence is there from your analyses that personality is a predictor of task performance? Use *factor scores* for your analyses

* 5 marks

Q4. How will you check if there is any bias against females due to use of the test? Conduct and report the appropriate analyses.

* 15 marks

Q5. In explaining why extraversion and/or its subscales predict performance, a consultant explained that higher levels of extraversion lead to higher levels of engagement, and in turn, higher levels of engagement lead to higher levels of task performance. What evidence is there for this mediation effect in the data? Again, use scale composites for your analyses (i.e., the average of all items for each scale).

* 15 marks