Bayesian Statistics

Tarleton State University — Homework 1

1. Using the Big-5 dataset from the video, consider the degree of association between calculate the correlation between Extraversion and Agreeableness.
   - Write formal definitions of the two models to be compared in a hypothesis test ($\mathcal{H}_0$ and $\mathcal{H}_1$).
   - Calculate the Pearson correlation coefficient, and report the p-value.
   - What does this p-value tell you about your two models? Which model do we prefer after observing the data?
   - Report a 95% confidence interval for ρ.
   - What can you conclude from these analyses?
   - What happens to the p-value when you select "Correlated positively" from the "Alt. Hypothesis" menu? Try to explain why the p-value changes the way it does.
2. Open the "College Success" dataset in the JASP Data Library (you'll find it in the same collection as the Big-5 data). Use the correlation test to answer the following question: *Which is the better predictor of college success (as measured by GPA): the math SAT score, or the verbal SAT score?*. Be sure to report the models being compared, the test statistic(s) of the observed data (i.e., the Pearson correlation(s)), and the p-value(s). What do you conclude?