

1. A sample of $N = 50$ people from a population with mean equal to 50 is given a treatment. After treatment, we find a sample mean of $\bar{X} = 51$ with $SS = 27,220$. Does the treatment result in larger scores compared to the general population?

(a) explicitly define \mathcal{H}_0 and \mathcal{H}_1 .

(b) calculate the observed t -score

(c) calculate the resulting Bayes factor

(d) calculate the posterior probability of the “winning” model.

2. A sample of $N = 16$ individuals is selected from a population with mean 70 and given a treatment. After treatment, the sample mean is found to be $\bar{X} = 63.4$ with $SS = 960$. Does the treatment result in smaller scores compared to the general population?

(a) explicitly define \mathcal{H}_0 and \mathcal{H}_1 .

(b) calculate the observed t -score

(c) calculate the resulting Bayes factor

(d) calculate the posterior probability of the “winning” model.