Lab Challenge 08 – Hypothesis Testing, One Parameter

Due Date: 11:59 pm, day before next class

Each challenge is graded out of 2 points:

- 0 points – no attempt or no progress to a solution
- 1 point – challenge not fully completed or completed with major errors
- 2 points – challenge fully completed with at most a small error

Deliverables

1. A single pdf document containing your solutions to the challenges you completed.
2. An RStudio file (.R extension) containing a *complete* script used to generate your results.

Challenges

Import the data "F2021_MATH_1350_Data.xlsx" from Learning Hub (Unit 08 module). Even though this data is only for MATH 1350 students, for the purpose of this lab we will consider this group of students to be a simple random sample of all BCIT students.

For each of the following hypothesis tests, you must:

- state the correct null hypothesis (H_0) and alternative hypothesis (H_1)
- extract the appropriate variable and filter out any NA values
- visually display the data using either a barplot or a histogram (with appropriate labels)
- compute relevant sample statistics (n, $\bar{X}$, s, $\hat{p}$)
- verify the *conditions* required by the hypothesis test
- compute the appropriate test statistic (z or t)
- compute the P-value
- state your conclusion as a full sentence, referencing the terms of the original claim

1. Let $p =$ the proportion of BCIT students who say (or *would* say) "Yes" or "Sometimes" when asked if they wear glass. Test the claim that p is *more than* 50%.

2. Let $\mu =$ the mean height of BCIT students. Test the claim that μ *equals* 175 cm.

3. Test the claim that the mean number of Siblings of a BCIT student is *at least* 1.