

## Lab Assignment #9 ANOVA

1. We would like to know if tall people, short people, and middle-height people differ significantly on their head circumference.  
We define “tall” as being in the top 25% of the students (178cm and above), “short” as being in the bottom 25% (163cm and below) and “middle-height” as being the middle 25% (165cm to 170cm), and use  $\alpha=0.05$ .
  - a. Conduct an ANOVA in SPSS. Copy and paste the ANOVA results. What do the results tell you?
  - b. Perform t-tests between every possible combination of groups (hint: there are three) and paste your output for each into your assignment.
    - i. We are statistically conservative people - adjust your  $\alpha$  using a Bonferroni correction. What is your Bonferroni-adjusted  $\alpha$ ?
    - ii.
    - ii. What do the t-tests tell you about the differences between each of the two-group pairs? Based on your results from 1a, is this a surprise? Why or why not?
  - c. Calculate the effect size ( $\eta^2$ ). What does this mean?
  - d. Let's say we suspect another variable of interacting with height to predict head circumference. What might this variable be? Why?
2. Consider the ANOVA assumptions.
  - a. Which do you think would be easiest to meet, and why?
  - b. Which do you think would be most difficult to meet, and why?