

Inferential Statistics in R

Homework 4

SOC 201 - Research Methods

April 25, 2017

Directions

The data for this assignment is a default dataset already loaded into R named **mtcars**.

Suppose you are interested in determining whether cars with a V engine or a straight engine are more powerful on average. Using the **mtcars** dataset, address this issue by 1) stating a null and alternative hypothesis, 2) identifying which transmission type is more powerful in our sample by comparing their mean horsepowers, and 3) determining whether this difference is statistically significant at the 95% significance level using a difference of means test.

In the dataset **mtcars**, the variable "vs" signifies the engine type (V engine = 0, straight engine = 1)

What you need to to turn in:

- 1) Script file with all your code
- 2) A printed document with your answers. Thorough answers will include the means for each group (manual vs automatic), a clearly stated null and alternative hypothesis, and the p-value for the significance test.

Example

Suppose you are interested in determining whether automatic or manual cars are more powerful on average. Using the **mtcars** dataset, address this issue by 1) stating a null and alternative hypothesis, 2) identifying which transmission type is more powerful in our sample by comparing their mean horsepowers, and 3) determining whether this difference is statistically significant at the 95% significance level using a difference of means test.

- 1) **H₀**: There is no difference in power between automatic and manual transmission efficiencies.
H₁: Automatic cars are more powerful than manual cars

1) Manual cars (mean= 160) have a greater average mean horsepower than automatic cars (mean= 127)

2) There is no statistically significant difference between the average horsepower for manual and automatic cars (p-value =0.221)