

Lab 11

Name here

T-test

For this question, we will use classical t-tests and Bayesian analogues.

1. Use the OK Cupid dataset and test the following claim, the mean height OK Cupid respondents reporting their body type as **athletic** is different than 70 inches.

```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.2 --
## v ggplot2 3.4.0      v purrr  1.0.1
## v tibble  3.1.8      v dplyr  1.1.0
## v tidyr   1.3.0      v stringr 1.5.0
## v readr   2.1.2      v forcats 0.5.2
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()

okc <- read.csv('http://www.math.montana.edu/ahoegh/teaching/stat408/datasets/OKCupid_profiles_clean.csv')
okc.athletic <- okc %>% filter(body_type == 'athletic')
```

- a. (4 points)

Use a t-test `t.test()` to answer this research question. Print statistical output **AND** summarize your results in writing.

- b. (8 points)

Use a Bayesian t-test (specified in JAGS) to answer this research question. Assume that your ROPE is 1/4 inch. Print statistical output, create a data visualization, **AND** summarize your results in writing.

2. Now consider whether there is a height difference between OK Cupid respondents self-reporting their body type as “athletic” and those self-reporting their body type as “fit”

```
okc.fit <- okc %>% filter(body_type == 'fit')

t.test(okc.athletic$height, okc.fit$height)

##
## Welch Two Sample t-test
##
## data: okc.athletic$height and okc.fit$height
## t = 15.55, df = 9702.9, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## 0.9954687 1.2826521
```

```
## sample estimates:  
## mean of x mean of y  
## 69.66950 68.53044
```

a. (4 points)

Use a t-test `t.test()` to answer this research question. Print statistical output **AND** summarize your results in writing.

b. (8 points)

Use a Bayesian t-test (specified in JAGS) to answer this research question. Assume that your ROPE is 1/4 inch. Print statistical output, create a data visualization, **AND** summarize your results in writing.