MA 2611 Lab 6

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**Problem L.22 and L.23**

bagsWeights <- c(456.1, 454.9, 463.4, 454.4, 439.9, 439.4, 433.6, 454.4, 441.2, 451.7, 451.1, 454.1, 449.7, 450.1, 449.6, 449.8, 448.2, 451.5, 447.9, 449.2, 455.1, 454.5, 459.2, 453.7, 456.5)  
  
confidence\_interval <- t.test(bagsWeights, conf.level = 0.95)  
  
hypothesis\_test <- t.test(bagsWeights, mu = 454, alternative = "two.sided", conf.level = 0.95)  
print(hypothesis\_test)

##   
## One Sample t-test  
##   
## data: bagsWeights  
## t = -2.45, df = 24, p-value = 0.02196  
## alternative hypothesis: true mean is not equal to 454  
## 95 percent confidence interval:  
## 448.0454 453.4906  
## sample estimates:  
## mean of x   
## 450.768

With a 95% confidence level,448.05 oz and 453.5 oz, it can supported that the mean weight of bags being packaged is within the expected weight, 454 oz.

**Problem L.23**

data(faithful)  
  
t.test(faithful$eruptions, mu = 5, alternative = "less")

##   
## One Sample t-test  
##   
## data: faithful$eruptions  
## t = -21.851, df = 271, p-value < 2.2e-16  
## alternative hypothesis: true mean is less than 5  
## 95 percent confidence interval:  
## -Inf 3.602007  
## sample estimates:  
## mean of x   
## 3.487783

Since the p-value is less than 0.05, we have sufficient evidence to reject the null hypothesis: the mean eruption is 5 minutes.The evidence is in the disgruntled visitor’s favor.

**Problem L.24**

prop.test(42, 568, p = 1/20, alternative = "greater")

##   
## 1-sample proportions test with continuity correction  
##   
## data: 42 out of 568, null probability 1/20  
## X-squared = 6.3606, df = 1, p-value = 0.005834  
## alternative hypothesis: true p is greater than 0.05  
## 95 percent confidence interval:  
## 0.05705514 1.00000000  
## sample estimates:  
## p   
## 0.07394366

Since the p-value is 0.005834 is lower than the significance level, 0.01, we reject the null hypothesis. We have sufficient evidence to support that there is potential bias towards ”lucky number” 7. This is different from last lab as the confidence level was not completely greater than 0.05, leading to an indefinite conclusion.