

1. The hypothesis test aims to determine if a significant difference exists in the average weekly time spent on cell phones between male ( $\mu_1$ ) and female ( $\mu_2$ ) college students. The null hypothesis ( $H_0$ ) posits no notable distinction in mean phone usage (" $H_0: \mu_1 = \mu_2$ "), while the alternative hypothesis ( $H_1$ ) suggests a substantial difference (" $H_1: \mu_1 \neq \mu_2$ ").

This test is crucial for identifying meaningful variations in phone usage between genders, addressing concerns and guiding potential interventions. The two-sample t-test is fitting, evaluating if the observed mean difference is statistically significant. A two-tailed test allows openness to detecting higher mean times for either gender.

In summary, the hypothesis test explores gender-specific patterns in cell phone usage, offering valuable insights for intervention and policy development.

2. The p-value gotten is 0.9592 which is greater than 0.05. Therefore, we do not reject the null hypothesis, which means that there is insufficient evidence to claim a significant difference in the mean time spent on cellphones between male and female students.

With this in mind, some recommendations for the researcher are: (1) look into possible educational programs that can promote responsible cellphone usage, (2) implement communication strategies that consider the preferences and habits of both male and female students equally, (3) study campus policies regarding cellphone usage that could be beneficial for all students, (4) analyze possible support services to address that issues that excessive cellphone usage could cause, and more.

- 3.

### **Descriptive Statistics**

	<b>female</b>	<b>males</b>
Valid	50	50
Missing	0	0
Mean	9.700	9.820
Std. Deviation	1.776	2.154
Minimum	6.000	4.000
Maximum	14.000	15.000

4. 95% Confidence Interval for Males: [ 9.229008 , 10.41805 ]

95% Confidence Interval for Females: [ 9.316711 , 10.29113 ]

95% Confidence Interval for the Difference between Means: [ -0.7399966 , 0.7792123 ]

5. The decision to pursue larger sample sizes and additional testing in the examination of time spent on cell phones among college students hinges on several factors. The need for greater precision in estimating population parameters, particularly if existing confidence intervals lack the desired level of accuracy, is a key consideration. Larger sample sizes can also address high variability in the data within each gender group, making it easier to detect smaller differences. Enhancing the statistical power of hypothesis tests is another potential benefit, aiding in the detection of true differences when they exist. Additionally, if specific subgroups within the male or female category are of interest, larger sample sizes within these subgroups may provide more meaningful insights. The generalizability of findings to a broader population, validation of observed patterns over time or in different contexts, and the assessment of practical significance in observed differences are crucial aspects to weigh when deciding on the extent of additional testing. Striking a balance between resource constraints and the need for reliable estimates is fundamental in advancing our understanding of cell phone usage patterns among college students.

6.

## Assumptions Checks

**Assumption 1. Normality.** The Shapiro-Wilk test was utilized to test the normality of the data.

```
[1] "Shapiro-Wilk Test for Normality - Males:"
> print(shapiro_test_males)

Shapiro-Wilk normality test

data:  males
W = 0.97466, p-value = 0.3417

>
> print("\nShapiro-Wilk Test for Normality - Females:")
[1] "\nShapiro-Wilk Test for Normality - Females:"
> print(shapiro_test_females)

Shapiro-Wilk normality test

data:  females
W = 0.96539, p-value = 0.1415
```

**Assumption 2. Homogeneity of Variances.** Levene's test was utilized to assess the homogeneity of variances between male and female groups.

```
[1] "Levene's Test for Homogeneity of Variances:"
> print(levene_test)
Levene's Test for Homogeneity of Variance (center = median)
      Df F value Pr(>F)
group  8  0.7428 0.6536
      42
```

**Assumption 3. Independence.** Assumption of independence is inherent in the study design, assuming each student's response is independent of others.

## Conclusion

### Two Sample t-test

```
data: males and females
t = 0.051237, df = 100, p-value = 0.9592
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.7396375  0.7788532
sample estimates:
mean of x mean of y
 9.823529  9.803922
```

The p-value is 0.9592389 which is greater than 0.05.  
Therefore, we do not reject the null hypothesis.

After doing the two independent samples t-test, the p-value gotten is 0.9592 which is greater than 0.05. Therefore, we do not reject the null hypothesis, which means that there is insufficient evidence to claim a significant difference in the mean time spent on cellphones between male and female students.