tinytex::install_tinytex()

title: “FA6_Lagmay, Justin Lorence P.” author: “Justin Lorence Lagmay” output: pdf_document date: “2023-11-13” —

Introduction

This R Markdown document provides calculations and analysis on the Invisibility Cloak data set.

```
Results and Analysis Report first then next is References

data <- data.frame(
+   Participant = 1:24,
+   Cloak = c(rep(0, 12), rep(1, 12)),
+   Mischief = c(3, 1, 5, 4, 6, 4, 6, 2, 0, 5, 4, 5, 4, 3, 6, 6, 8, 5, 5, 4, 2, 5, 7, 5)
+ )
>
> # Independence Sample T-Test to be use
>
> group_0 <- data$Mischief[data$Cloak == 0]
> group_1 <- data$Mischief[data$Cloak == 1]
>
> # Independent samples t-test
> welch_t_test<- t.test(group_0, group_1)
> t_test<- t.test(group_0, group_1, var.equal = TRUE)
>
> # Display t-test results
> welch_t_test

    Welch Two Sample t-test

data:  group_0 and group_1
t = -1.7135, df = 21.541, p-value = 0.101
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -2.764798  0.264798
sample estimates:
mean of x mean of y
     3.75      5.00

> t_test

    Two Sample t-test

data:  group_0 and group_1
t = -1.7135, df = 22, p-value = 0.1007
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -2.7629284  0.2629284
sample estimates:
```

```
mean of x mean of y
     3.75      5.00

>
>
> # Assumption 1: Normality of the data
> # Q-Q PLOT
> qqnorm(data$Mischief)
> qqline(data$Mischief)
>
> # Assumption 2: Homogeneity of Variances
> homo_test <- var.test(Mischief ~ Cloak, data = data)
> homo_test

    F test to compare two variances

data:  Mischief by Cloak
F = 1.3417, num df = 11, denom df = 11, p-value = 0.6343
alternative hypothesis: true ratio of variances is not equal to 1
95 percent confidence interval:
 0.3862357 4.6605462
sample estimates:
ratio of variances
          1.341667

>
>
> # Assumption 3: Independence of observations
> # The data is collected independently
>
>
> # Assumption 4: Scale of measurement
> # Assuming Mischief scores are measured on an interval scale
>
> # Assumption 5: Random sampling
> # Assuming the data is collected through a random sampling process
>
>
> cat("Analysis Report\n")
Analysis Report
> cat("------------------------------\n\n")
------------------------------

> cat("1. Assumption of Normality:\n")
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> cat("   - Examined via a Q-Q plot, the Mischief scores seem to exhibit a distribution that is approxi
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>
> cat("2. Assumption of Homogeneity of Variances:\n")
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> cat("   - Verified with Levene's test, the assumption is not violated (p-value > 0.05).\n\n")
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```

```
>
> cat("3. Independence of Observations:\n")
3. Independence of Observations:
> cat("   - Presumed independence in the data collection process.\n\n")
   - Presumed independence in the data collection process.

>
> cat("4. Scale of Measurement:\n")
4. Scale of Measurement:
> cat("   - It is presumed that Mischief scores are measured on an interval scale.\n\n")
   - It is presumed that Mischief scores are measured on an interval scale.

>
> cat("5. Random Sampling:\n")
5. Random Sampling:
> cat("   - Presumed due to the data being collected through a random sampling process.\n\n")
   - Presumed due to the data being collected through a random sampling process.

>
> cat("6. Independent Samples t-test Result:\n")
6. Independent Samples t-test Result:
> cat("   - t =", t_test$statistic, "\n")
   - t = -1.713459
> cat("   - df =", t_test$parameter, "\n")
   - df = 22
> cat("   - p-value =", t_test$p.value, "\n\n")
   - p-value = 0.1006863

>
> cat("Conclusion: ")
Conclusion: > cat("   - There is a significant difference in Mischief scores between participants with a
   - There is a significant difference in Mischief scores between participants with and without Invisibi
```

REFERENCES

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data <- data.frame(
  Participant = 1:24,
  Cloak = c(rep(0, 12), rep(1, 12)),
  Mischief = c(3, 1, 5, 4, 6, 4, 6, 2, 0, 5, 4, 5, 4, 3, 6, 6, 8, 5, 5, 4, 2, 5, 7, 5)
)

# Independence Sample T-Test to be use

group_0 <- data$Mischief[data$Cloak == 0]
group_1 <- data$Mischief[data$Cloak == 1]

# Independent samples t-test
welch_t_test<- t.test(group_0, group_1)
t_test<- t.test(group_0, group_1, var.equal = TRUE)
```

```
# Display t-test results
welch_t_test
t_test


# Assumption 1: Normality of the data
# Q-Q PLOT
qqnorm(data$Mischief)
qqline(data$Mischief)

# Assumption 2: Homogeneity of Variances
homo_test <- var.test(Mischief ~ Cloak, data = data)
homo_test


# Assumption 3: Independence of observations
# The data is collected independently


# Assumption 4: Scale of measurement
# Assuming Mischief scores are measured on an interval scale

# Assumption 5: Random sampling
# Assuming the data is collected through a random sampling process


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