Module 7 Assignment

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Contents

Instructions

You have data from participants who were on one of four types of diets (A, B, C, or D). After three months of dieting, the amount of weight loss was recorded in lb. Determine whether the type of diet was equally effective. Assume $\alpha = .05$. (a) Conduct relevant analyses by hand to obtain the test statistic. (b) Conduct the appropriate analysis in SPSS and R to confirm the test statistic obtained in part a. (c) Write a brief APA style summary of your Results.

A) Conduct Releveant Analyses by hand to Obtain the test statistic

Import Data

```
Diet <- read.csv("Data/weightloss.csv")
str(Diet)
```

```
## 'data.frame':    23 obs. of  2 variables:
##  $ weightloss: int  12 10 13 9 13 9 14 17 22 14 ...
##  $ diet      : int  1 1 1 1 1 1 2 2 2 2 ...
```

After utilizing the 'str()', we can see that the data frame, "Diet", has 23 rows and 2 columns (variables). The two variables are Weightloss and Diet. Both variables are vectors of integers; however, Diet should be treated as a 'factor'. We will convert 'Diet' to a factor and replace the integer vector to its appropriate code: "1" = "A", "2" = "B", "3" = "C", and "4" = "D".

```
Diet$diet <- factor(Diet$diet, labels = c("A", "B", "C", "D"))
str(Diet)
```

```
## 'data.frame':    23 obs. of  2 variables:
##  $ weightloss: int  12 10 13 9 13 9 14 17 22 14 ...
##  $ diet      : Factor w/ 4 levels "A","B","C","D": 1 1 1 1 1 1 2 2 2 2 ...
```

```
levels(Diet$diet)
```

```
## [1] "A" "B" "C" "D"
```

```
summary(Diet)
```

```
##    weightloss    diet
##  Min.   : 9.00   A:6
##  1st Qu.:12.50   B:5
##  Median :14.00   C:7
##  Mean   :14.78   D:5
##  3rd Qu.:17.50
##  Max.   :22.00
```

Examine the Data

```
# Calculate the Descriptive Statistics by Condition
aggregate(weightloss ~ diet, data = Diet, mean)
```

```
##   diet weightloss
## 1    A       11.0
## 2    B       16.4
## 3    C       18.0
## 4    D       13.2
```

```
aggregate(weightloss ~ diet, data = Diet, sd)
```
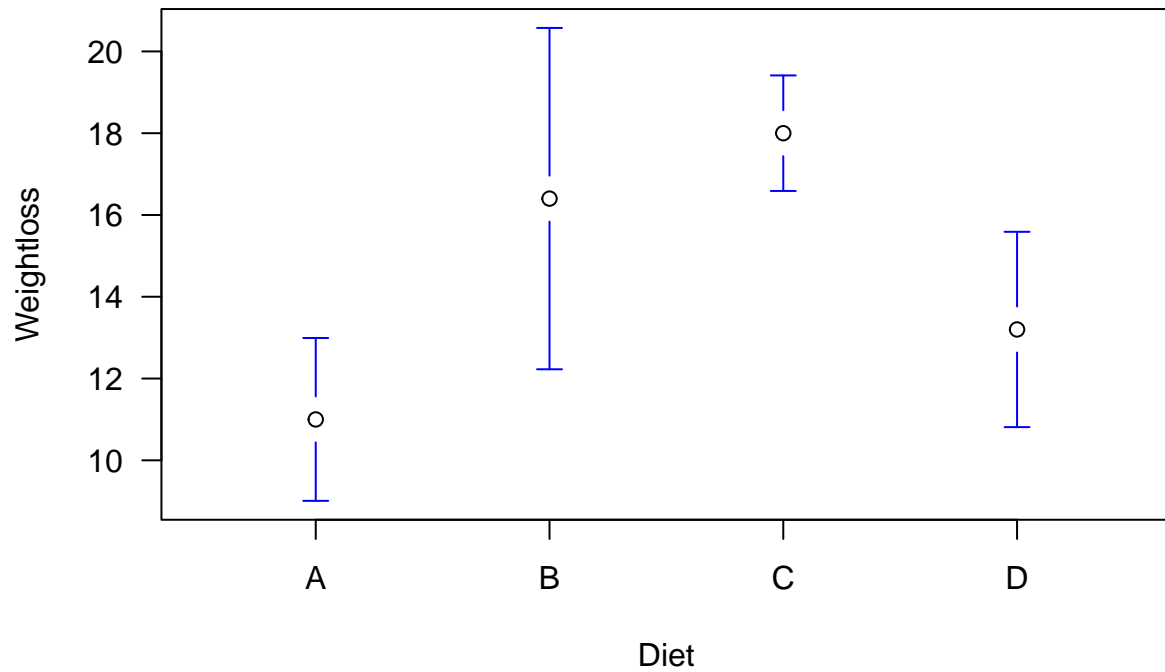
```
##   diet weightloss
## 1    A   1.897367
## 2    B   3.361547
## 3    C   1.527525
## 4    D   1.923538
```

```
# Plot each mean with the confidence interval using the gplots library.
library(gplots)
```

```
##
## Attaching package: 'gplots'
```

```
## The following object is masked from 'package:stats':
##
##     lowess
```

```
plotmeans(weightloss ~ diet, Diet, las = 1,
          ylab = "Weightloss",
          xlab = "Diet",
          n.label = F,
          connect = F)
```


B) Conduct the Appropriate Analyses in SPSS and R to confirm the test statistic

Conduct One-Way Analysis of Variance (SPSS)

Conduct One-Way Analysis of Variance (R)

C) Write a Brief APA Style Summary of Results