

Homework 3

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2025-10-23

```
#Create stratified bar charts of text messages by Time
```

```
setwd("/cloud/project")
```

```
#installing the package needed to read an .xlsx file
```

```
#install.packages("readxl")
```

```
#Loading the packages
```

```
library(readxl)
```

```
TM <- read_excel("TextMessages.xlsx")
```

```
is.factor (TM$Group)
```

```
## [1] FALSE
```

```
TM$Group <- as.factor(TM$Group)
```

```
is.factor (TM$Group)
```

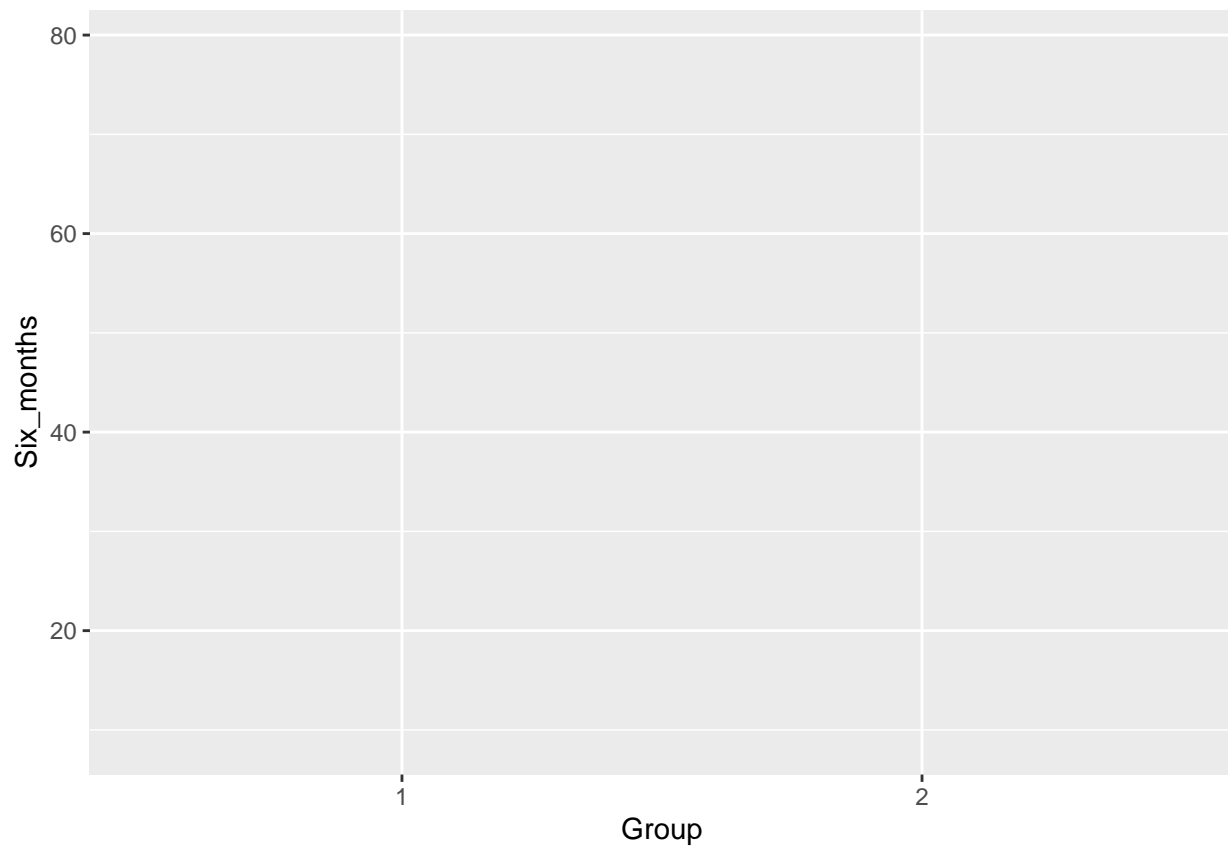
```
## [1] TRUE
```

```
#install.packages("ggplot2")
```

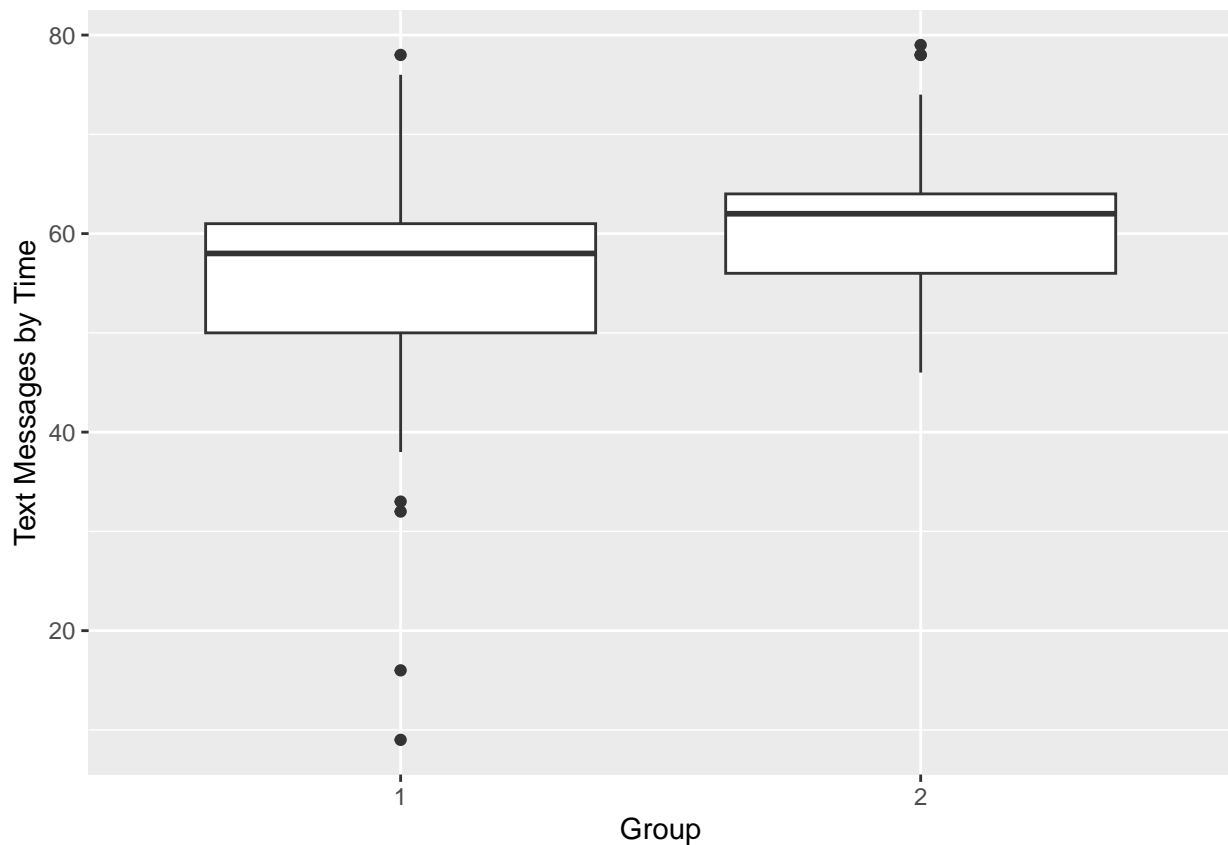
```
library(ggplot2)
```

```
boxplot_TMbyTime <- ggplot(TM, aes(Group, Six_months))
```

```
boxplot_TMbyTime
```



```
boxplot_TMbyTime + geom_boxplot() + labs(x="Group", y="Text Messages by Time")
```



```
#importing the data needed
TextMessages <-read_excel("TextMessages.xlsx")

#to view and print on console window the first 5 observations
head(TextMessages)
```

```
## # A tibble: 6 x 4
##   Group Baseline Six_months Participant
##   <dbl>   <dbl>     <dbl>         <dbl>
## 1     1     52      32             1
## 2     1     68      48             2
## 3     1     85      62             3
## 4     1     47      16             4
## 5     1     73      63             5
## 6     1     57      53             6
```

```
#to output the total number of rows of data
nrow(TextMessages)
```

```
## [1] 50
```

```
#output on the console window displays 50, confirming that our data has 50 rows
```

```
#to view and print the variable names on the console window
names(TextMessages)
```

```
## [1] "Group"      "Baseline"   "Six_months" "Participant"
```

```

#we confirm the 4 variable names from the data description:Group, Baseline, Six_months, and Participant

# PREPARING THE VARIABLES #

#Check if "Group" is a factor
is.factor(TextMessages$Group)

## [1] FALSE

#It is not a factor so we convert it into one
TextMessages$Group <- as.factor(TextMessages$Group)

#Confirm the conversation
is.factor(TextMessages$Group)

## [1] TRUE

#Install ggplot function
#install.packages("ggplot2")

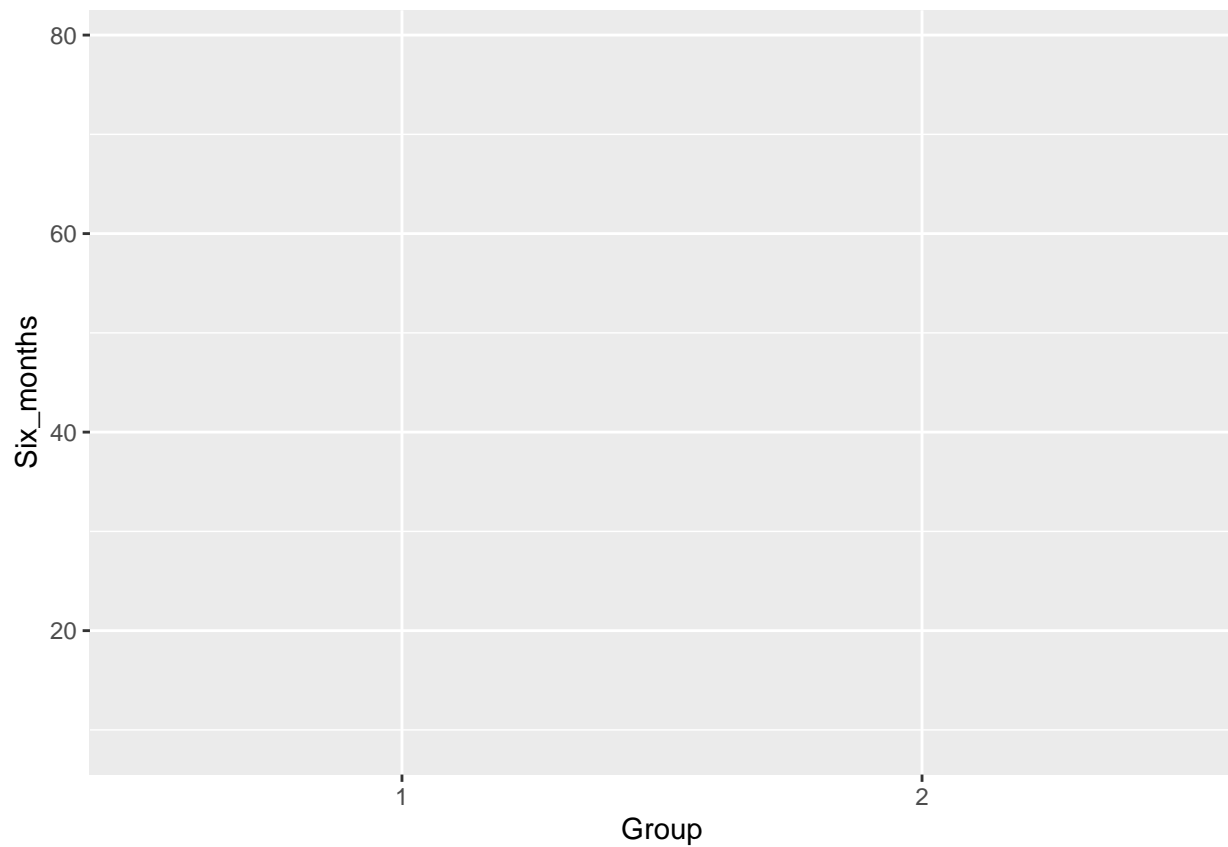
#load the packages
library(ggplot2)

#####
#ERROR BAR PLOT#
#####

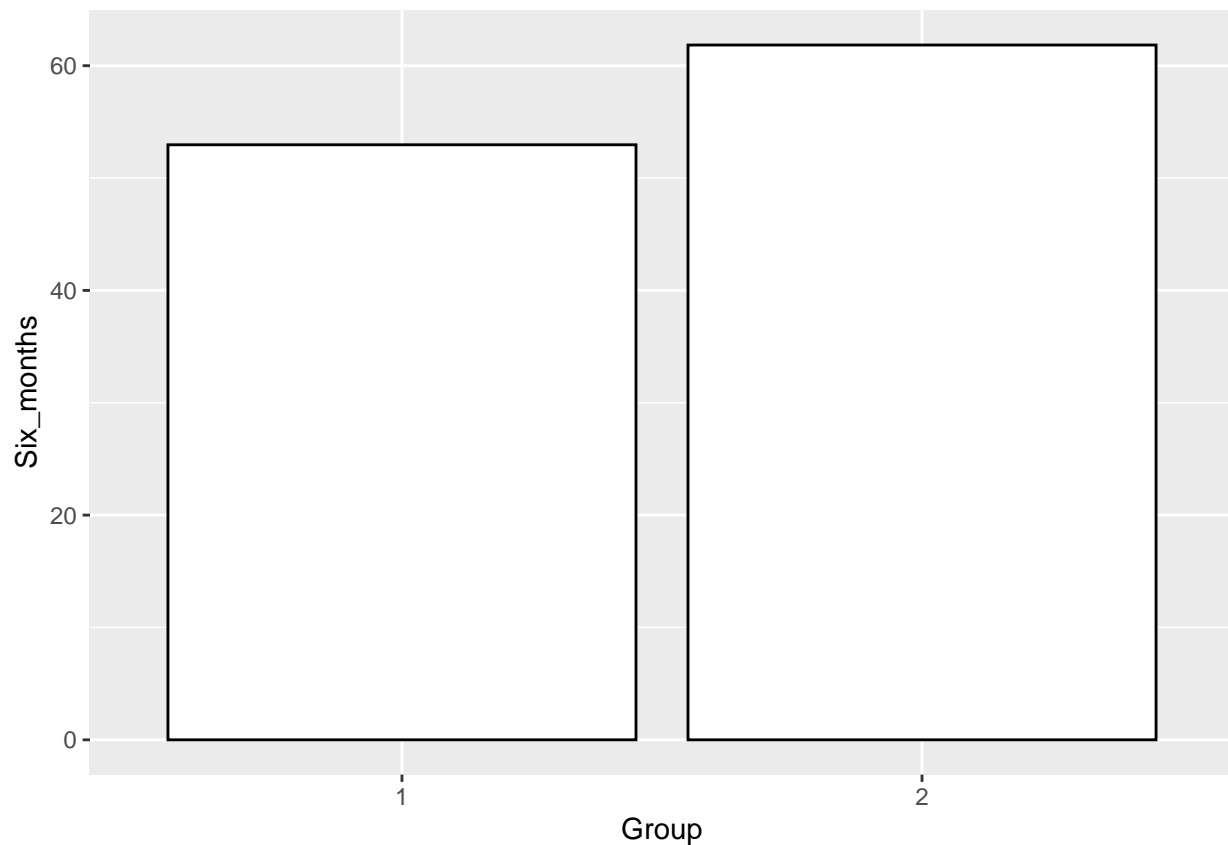
#Create a ggplot object using Group as x-axis and six_months as y-axis
barWithErrors_SixMonthsByGroup <- ggplot(TextMessages, aes(Group,Six_months))

#View the basic x-y axes setup
barWithErrors_SixMonthsByGroup

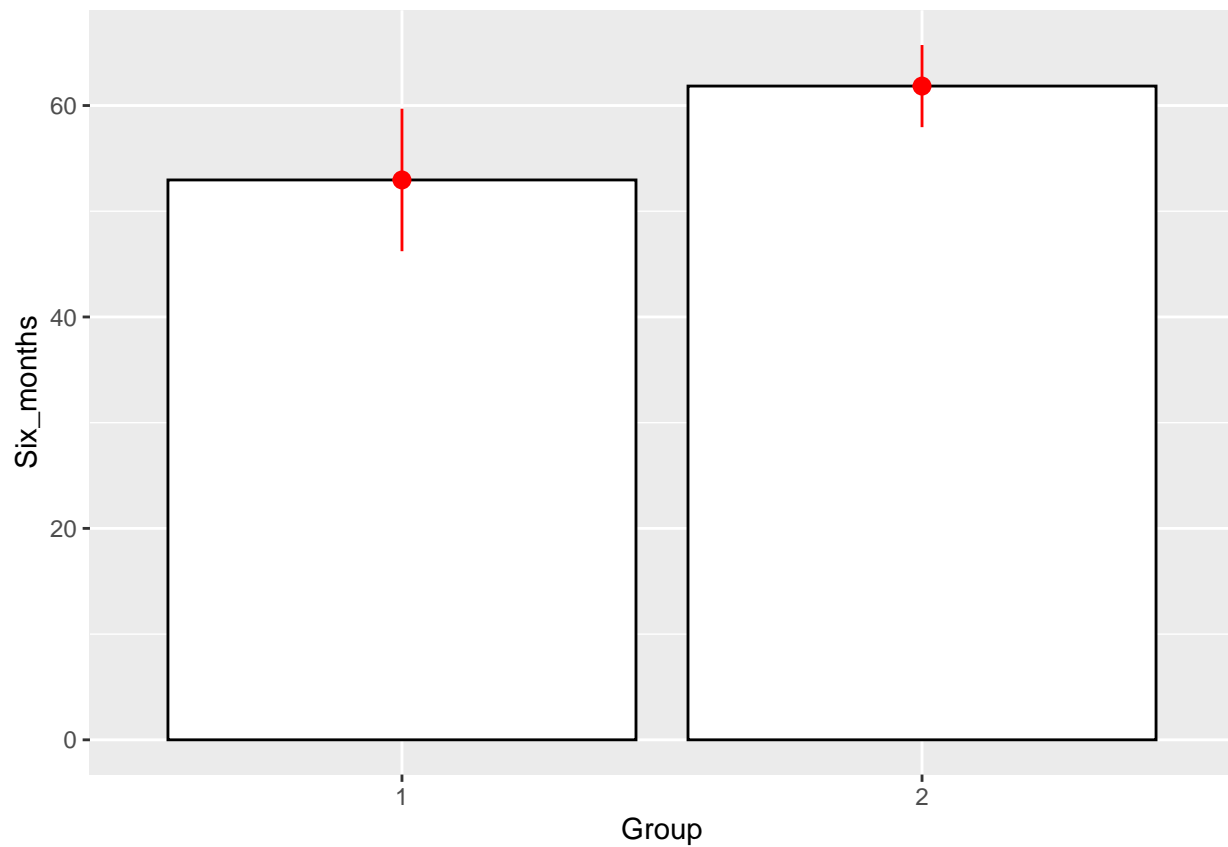
```



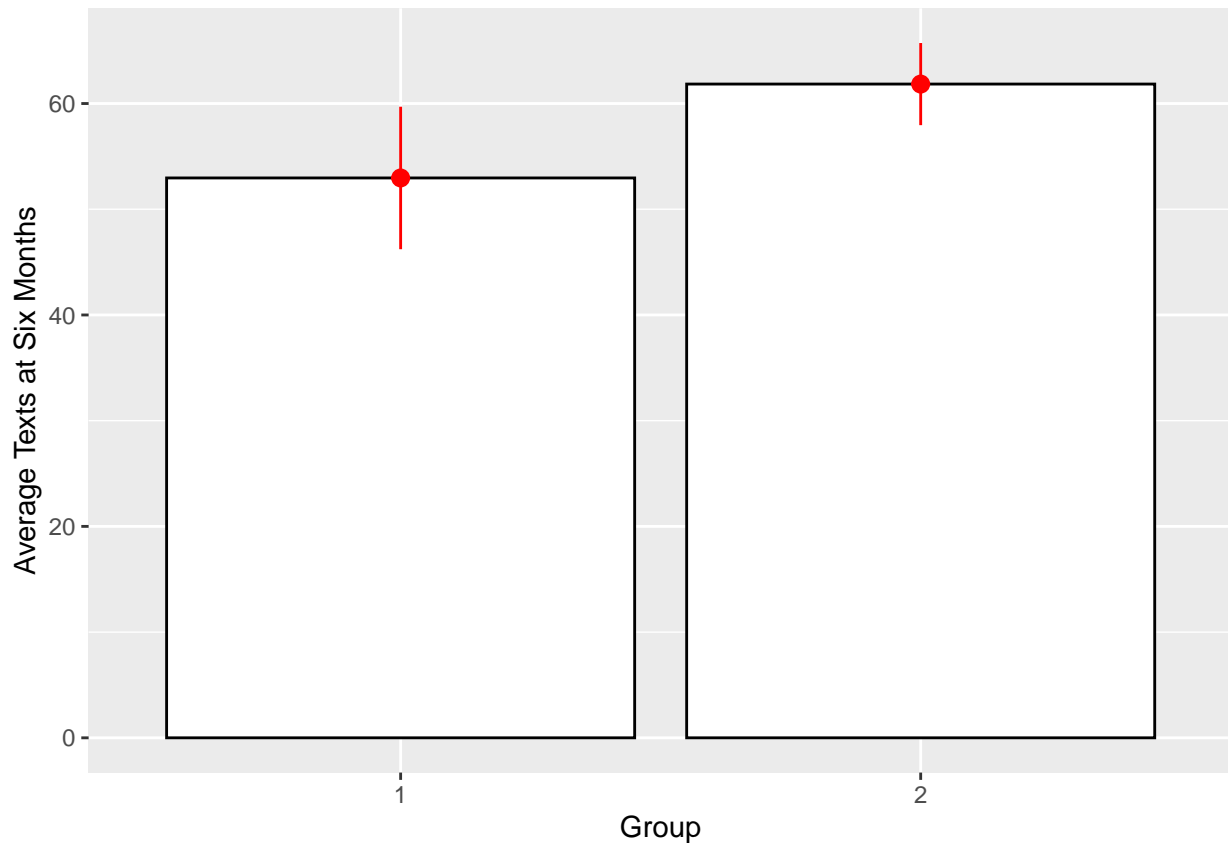
```
#Add the first layer showing bars representing the mean of each group  
barWithErrors_SixMonthsByGroup +  
  stat_summary(fun = mean, geom = "bar", fill = "White", colour = "Black")
```



```
#Install and load Hmisc (For the creation of error bars)  
#install.packages("Hmisc")  
library(Hmisc)  
  
#To add error bars showing 95% confidence intervals for group means  
barWithErrors_SixMonthsByGroup +  
  stat_summary(fun = mean, geom = "bar", fill = "White", colour = "Black") +  
  stat_summary(fun.data = mean_cl_normal, geom = "pointrange", colour = "Red")
```



```
#Adding descriptive axis labels
barWithErrors_SixMonthsByGroup +
  stat_summary(fun = mean, geom = "bar", fill = "White", colour = "Black") +
  stat_summary(fun.data = mean_cl_normal, geom = "pointrange", colour = "Red") +
  labs(x = "Group", y = "Average Texts at Six Months")
```



```
#Check the mean values per group to help decide y-axis scale
by(TextMessages$Six_months, TextMessages$Group, mean)
```

```
## TextMessages$Group: 1
```

```
## [1] 52.96
```

```
## -----
```

```
## TextMessages$Group: 2
```

```
## [1] 61.84
```

```
# Set custom y-axis limits and tick marks for better readability
```

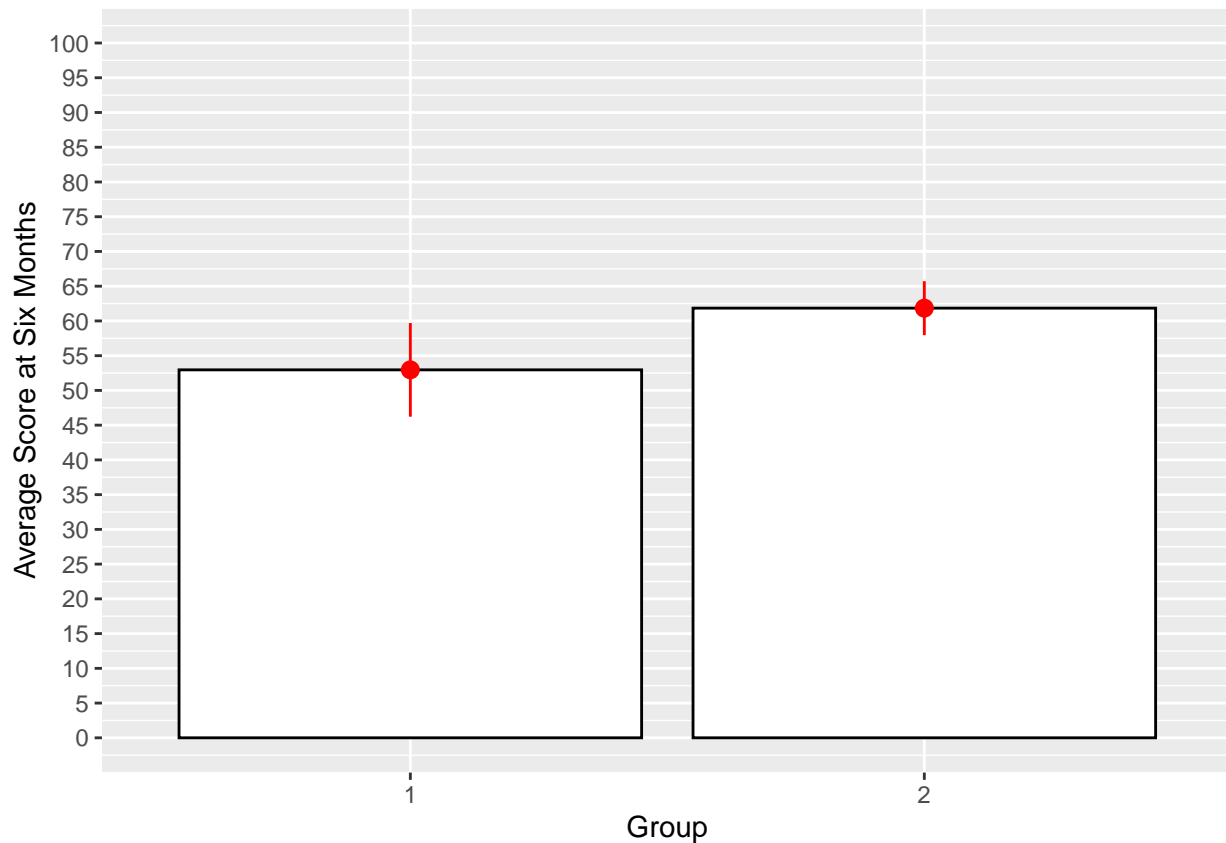
```
barWithErrors_SixMonthsByGroup +
```

```
  stat_summary(fun = mean, geom = "bar", fill = "White", colour = "Black") +
```

```
  stat_summary(fun.data = mean_cl_normal, geom = "pointrange", colour = "Red") +
```

```
  labs(x = "Group", y = "Average Score at Six Months") +
```

```
  scale_y_continuous(limits = c(0, 100), breaks = seq(from = 0, to = 100, by = 5))
```

*#This bar plot by shows the mean Six_months score by Group with red error bars
#Representing 95% confidence intervals. Non-overlapping error bars suggest the
#significant differences between groups.*

```
#install.packages("readr")  
library(readr)
```

```
TextMessages <- read_excel("TextMessages.xlsx")
```

```
#View 5 observations  
head(TextMessages, n=5)
```

```
## # A tibble: 5 x 4  
##   Group Baseline Six_months Participant  
##   <dbl>   <dbl>     <dbl>         <dbl>  
## 1     1       52       32           1  
## 2     1       68       48           2  
## 3     1       85       62           3  
## 4     1       47       16           4  
## 5     1       73       63           5
```

```
#View variable names  
names(TextMessages)
```

```
## [1] "Group"      "Baseline"   "Six_months" "Participant"
```

```
#get Descriptive stats
```

```
#install.packages("dplyr")
```

```

library(dplyr)

#summarize messages by group for both time points
summary_stats <- TextMessages %>%
  group_by(Group) %>%
  summarise(
    Mean_Baseline = mean(Baseline, na.rm = TRUE),
    SD_Baseline = sd(Baseline, na.rm = TRUE),
    Median_Baseline = median(Baseline, na.rm = TRUE),
    Mean_SixMonths = mean(Six_months, na.rm = TRUE),
    SD_SixMonths = sd(Six_months, na.rm = TRUE),
    Median_SixMonths = median(Six_months, na.rm = TRUE),
    Count = n()
  )

#print summary stats
summary_stats

## # A tibble: 2 x 8
##   Group Mean_Baseline SD_Baseline Median_Baseline Mean_SixMonths SD_SixMonths
##   <dbl>         <dbl>         <dbl>         <dbl>         <dbl>         <dbl>
## 1     1           64.8           10.7           64           53.0           16.3
## 2     2           65.6           10.8           65           61.8           9.41
## # i 2 more variables: Median_SixMonths <dbl>, Count <int>

# Summary stats to Output File

write.csv(summary_stats, "SummaryStats_TextMessages.csv", row.names = FALSE)

# The summary table outputs summary stats for the text message data
#Standard deviation measures variability, with group 2 having a higher SD

```