PA1_template.Rmd

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#1 Code for reading in the dataset and/or processing the data

```
library("data.table")
library(ggplot2)


activityDT <- data.table::fread(input = "activity.csv")
```

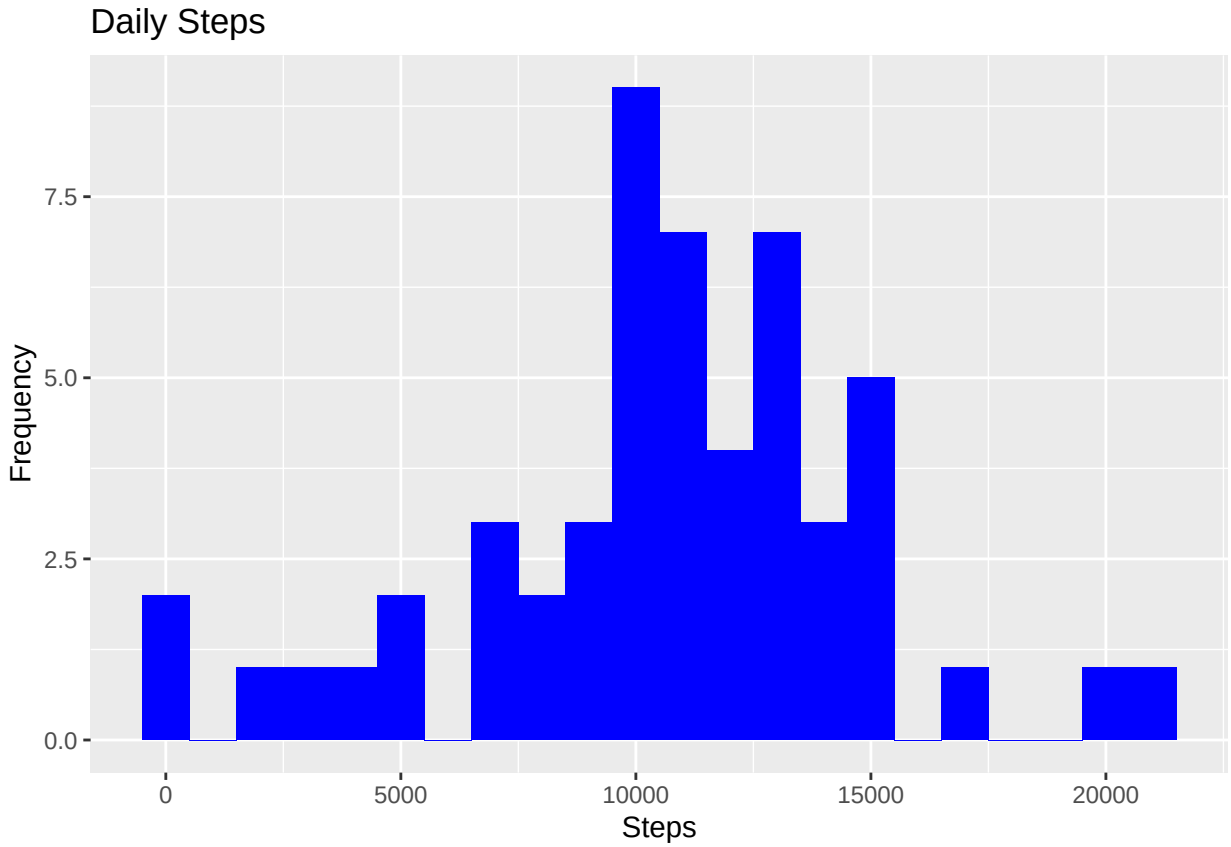
#2 Histogram of the total number of steps taken each day

```
Total_Steps <- activityDT[, c(lapply(.SD, sum, na.rm = FALSE)), .SDcols = c("steps"), by = .(date)]
head(Total_Steps, 10)
```

```
##           date steps
##  1: 2012-10-01    NA
##  2: 2012-10-02   126
##  3: 2012-10-03 11352
##  4: 2012-10-04 12116
##  5: 2012-10-05 13294
##  6: 2012-10-06 15420
##  7: 2012-10-07 11015
##  8: 2012-10-08    NA
##  9: 2012-10-09 12811
## 10: 2012-10-10  9900
```

```
ggplot(Total_Steps, aes(x = steps)) +
  geom_histogram(fill = "blue", binwidth = 1000) +
  labs(title = "Daily Steps", x = "Steps", y = "Frequency")
```

```
## Warning: Removed 8 rows containing non-finite values (stat_bin).
```



#3 Mean and median number of steps taken each day

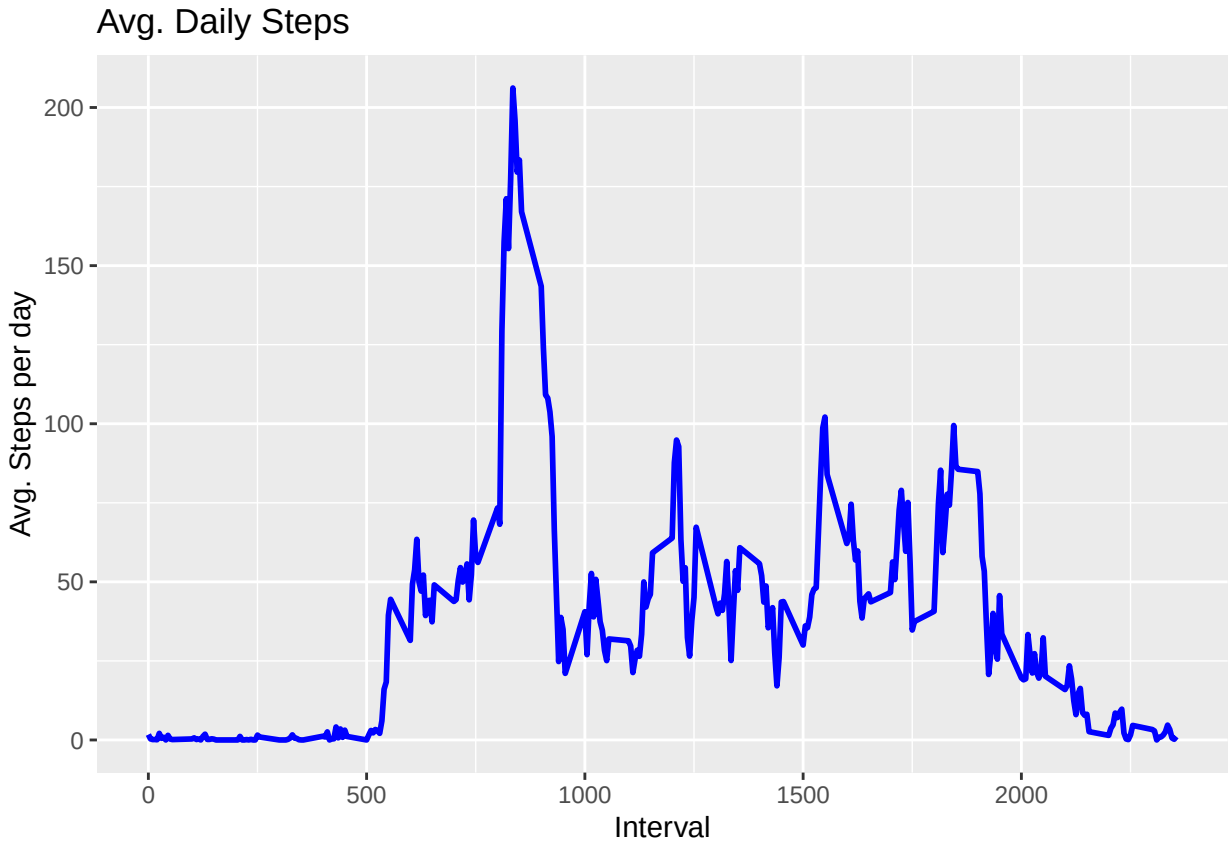
```
Total_Steps[, .(Mean_Steps = mean(steps, na.rm = TRUE), Median_Steps = median(steps, na.rm = TRUE))]
```

```
##    Mean_Steps Median_Steps
## 1:   10766.19        10765
```

#4 Time series plot of the average number of steps taken

```
IntervalDT <- activityDT[, c(lapply(.SD, mean, na.rm = TRUE)), .SDcols = c("steps"), by = .(interval)]

ggplot(IntervalDT, aes(x = interval , y = steps)) + geom_line(color="blue", size=1) + labs(title = "Avg
```



#5 The 5-minute interval that, on average, contains the maximum number of steps

```
IntervalDT[steps == max(steps), .(max_interval = interval)]
```

```
##    max_interval
## 1:          835
```

#6 Code to describe and show a strategy for imputing missing data

```
activityDT[is.na(steps), .N ]
```

```
## [1] 2304
```

#Devise a strategy for filling in all of the missing values in the dataset. The strategy does not need to be sophisticated. For example, you could use the mean/median for that day, or the mean for that 5-minute interval, etc.

```
activityDT[is.na(steps), "steps"] <- activityDT[, c(lapply(.SD, median, na.rm = TRUE)), .SDcols = c("st
```

#Create a new dataset that is equal to the original dataset but with the missing data filled in.

```
data.table::fwrite(x = activityDT, file = "tidyData.csv", quote = FALSE)
```

#7 Histogram of the total number of steps taken each day after missing values are imputed

Total number of steps taken per day

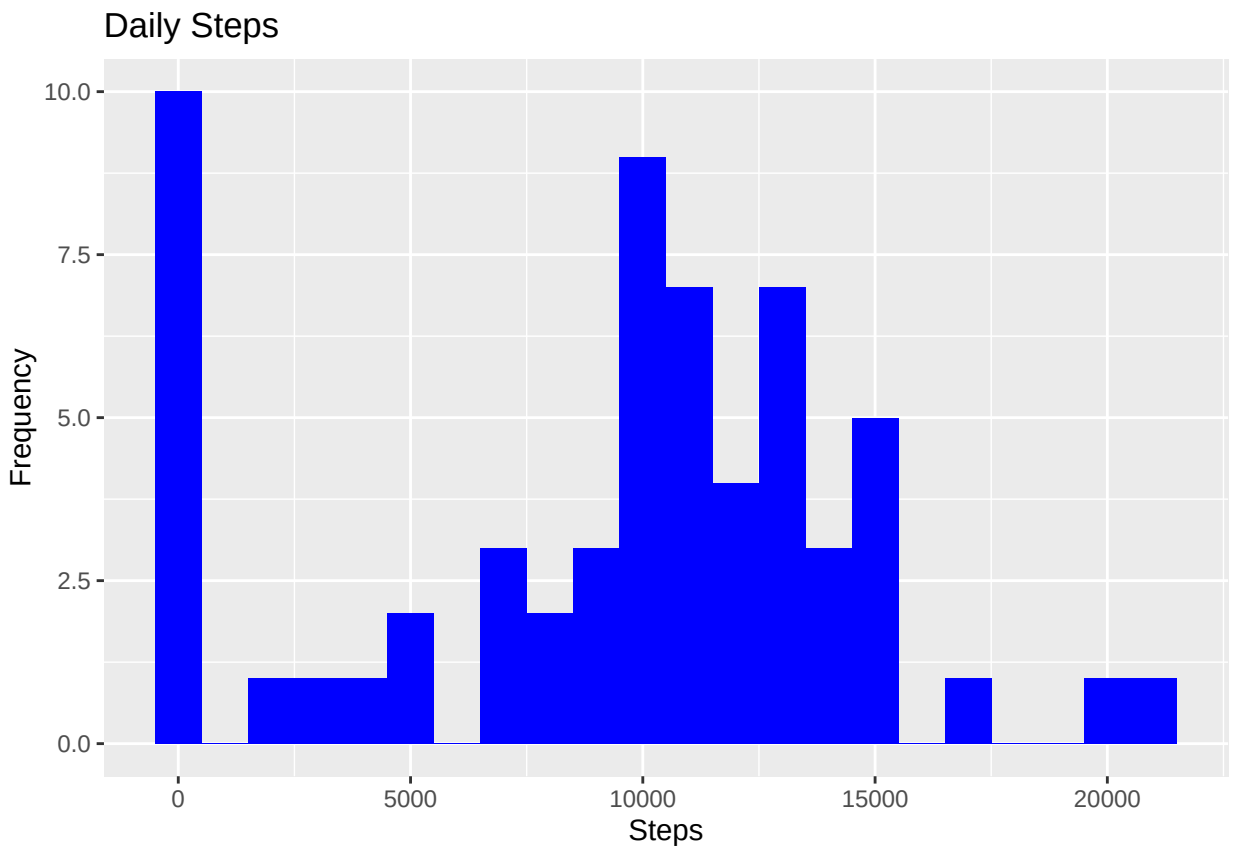
```
Total_Steps <- activityDT[, c(lapply(.SD, sum)), .SDcols = c("steps"), by = .(date)]
```

mean and median total number of steps taken per day

```
Total_Steps[, .(Mean_Steps = mean(steps), Median_Steps = median(steps))]
```

```
##    Mean_Steps Median_Steps
## 1:    9354.23        10395
```

```
ggplot(Total_Steps, aes(x = steps)) + geom_histogram(fill = "blue", binwidth = 1000) + labs(title = "Da
```



8 Panel plot comparing the average number of steps taken per 5-minute interval across weekdays and weekends

```
activityDT <- data.table::fread(input = "activity.csv")
activityDT[, date := as.POSIXct(date, format = "%Y-%m-%d")]
activityDT[, `Day of Week`:= weekdays(x = date)]
activityDT[grepl(pattern = "Monday|Tuesday|Wednesday|Thursday|Friday", x = `Day of Week`), "weekday or
activityDT[grepl(pattern = "Saturday|Sunday", x = `Day of Week`), "weekday or weekend"] <- "weekend"
activityDT[, `weekday or weekend` := as.factor(`weekday or weekend`)]
head(activityDT, 10)
```

```
##     steps       date interval Day of Week weekday or weekend
##  1:    NA 2012-10-01        0      Monday            weekday
##  2:    NA 2012-10-01        5      Monday            weekday
##  3:    NA 2012-10-01       10      Monday            weekday
##  4:    NA 2012-10-01       15      Monday            weekday
##  5:    NA 2012-10-01       20      Monday            weekday
```

```
##  6:    NA 2012-10-01       25      Monday            weekday
##  7:    NA 2012-10-01       30      Monday            weekday
##  8:    NA 2012-10-01       35      Monday            weekday
##  9:    NA 2012-10-01       40      Monday            weekday
## 10:    NA 2012-10-01       45      Monday            weekday
```

#9

```
activityDT[is.na(steps), "steps"] <- activityDT[, c(lapply(.SD, median, na.rm = TRUE)), .SDcols = c("st
IntervalDT <- activityDT[, c(lapply(.SD, mean, na.rm = TRUE)), .SDcols = c("steps"), by = .(interval, `
ggplot(IntervalDT , aes(x = interval , y = steps, color=`weekday or weekend`)) + geom_line() + labs(titl
```