Reproducible Research: Peer Assessment 1

Load and process the data

1. Load the data

```
if(!file.exists('activity.csv')){
    unzip('activity.zip')
}
activityData <- read.csv('activity.csv')
```

2. transform interval data

```
#activityData$interval <- strptime(gsub("([0-9]{1,2})([0-9]{2})", "\\1:\\2", activityData$interval), fo
```

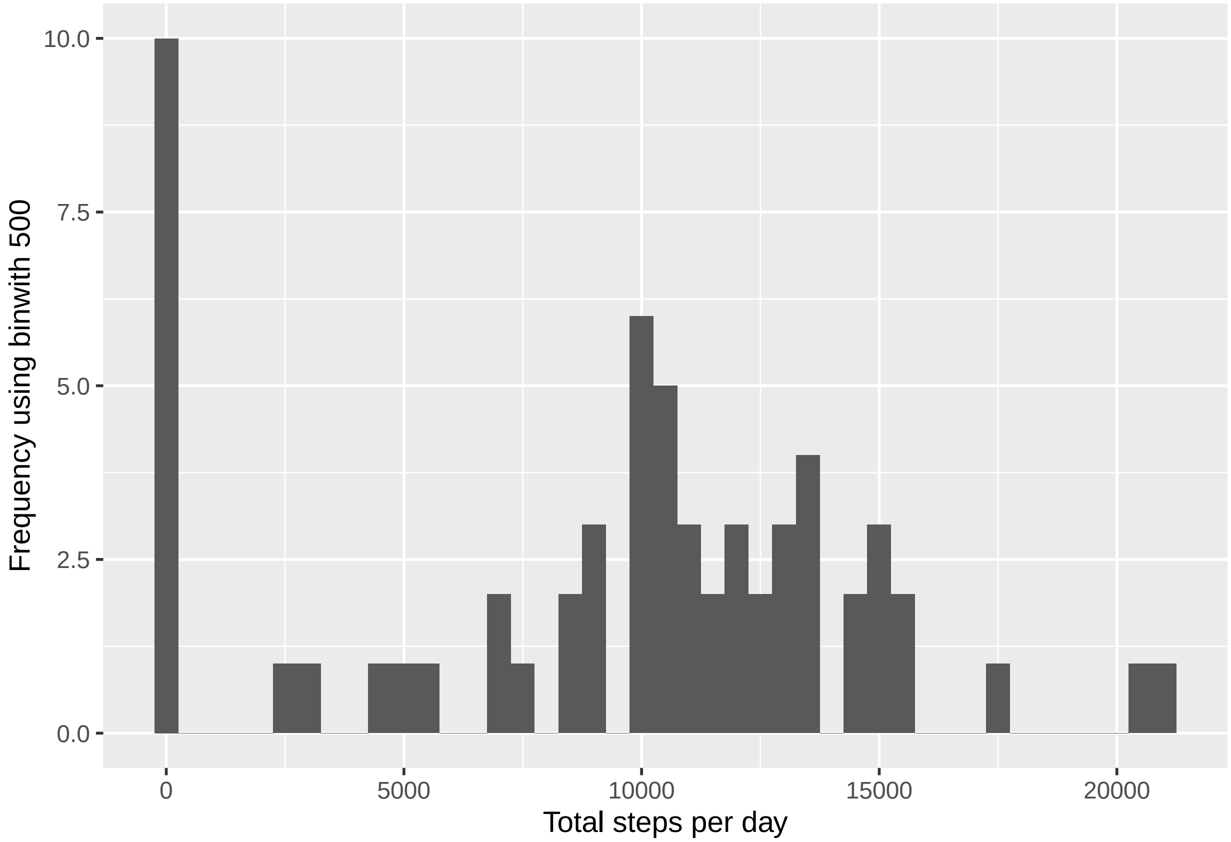
---

mean total number of steps taken per day.

```
stepsByDay <- tapply(activityData$steps, activityData$date, sum, na.rm=TRUE)
```

1. Histogram of the total number of steps taken each day

```
qplot(stepsByDay, xlab='Total steps per day', ylab='Frequency using binwith 500', binwidth=500)
```



2. Mean and median total number of steps taken per day

```
stepsByDayMean <- mean(stepsByDay)
stepsByDayMedian <- median(stepsByDay)
```

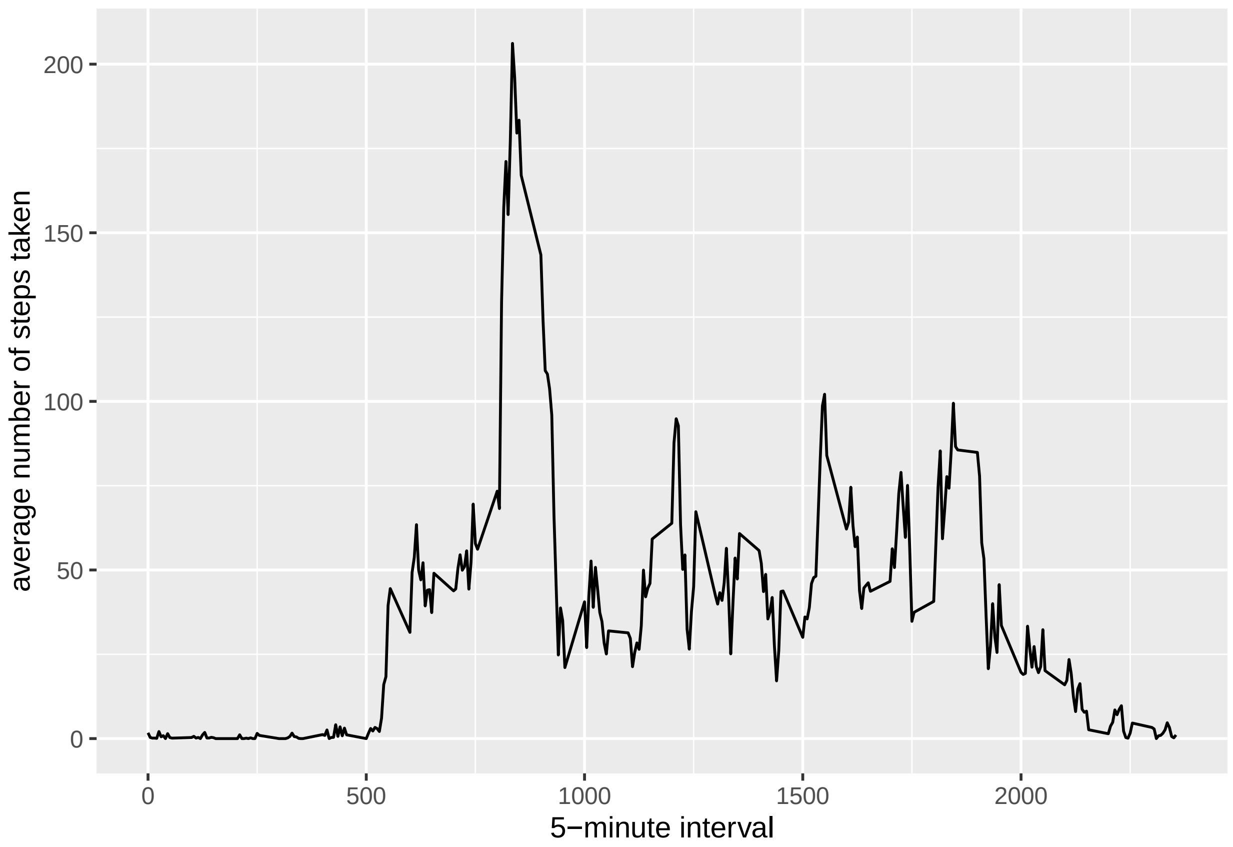
- Mean: 9354.2295082
- Median: 10395

Average daily activity pattern?

```
averageStepsPerTimeBlock <- aggregate(x=list(meanSteps=activityData$steps), by=list(interval=activityDa
```

1. Time series plot

```
ggplot(data=averageStepsPerTimeBlock, aes(x=interval, y=meanSteps)) +
    geom_line() +
    xlab("5-minute interval") +
    ylab("average number of steps taken")
```



2. The 5-minute interval on average across all the days in the dataset that contains the maximum number of steps?

```
mostSteps <- which.max(averageStepsPerTimeBlock$meanSteps)
timeMostSteps <-  gsub("([0-9]{1,2})([0-9]{2})", "\\1:\\2", averageStepsPerTimeBlock[mostSteps,'interval
```

- Most Steps at: 8:35

Missing values

1. The total number of missing values in the dataset

```
numMissingValues <- length(which(is.na(activityData$steps)))
```

- Number of missing values: 2304

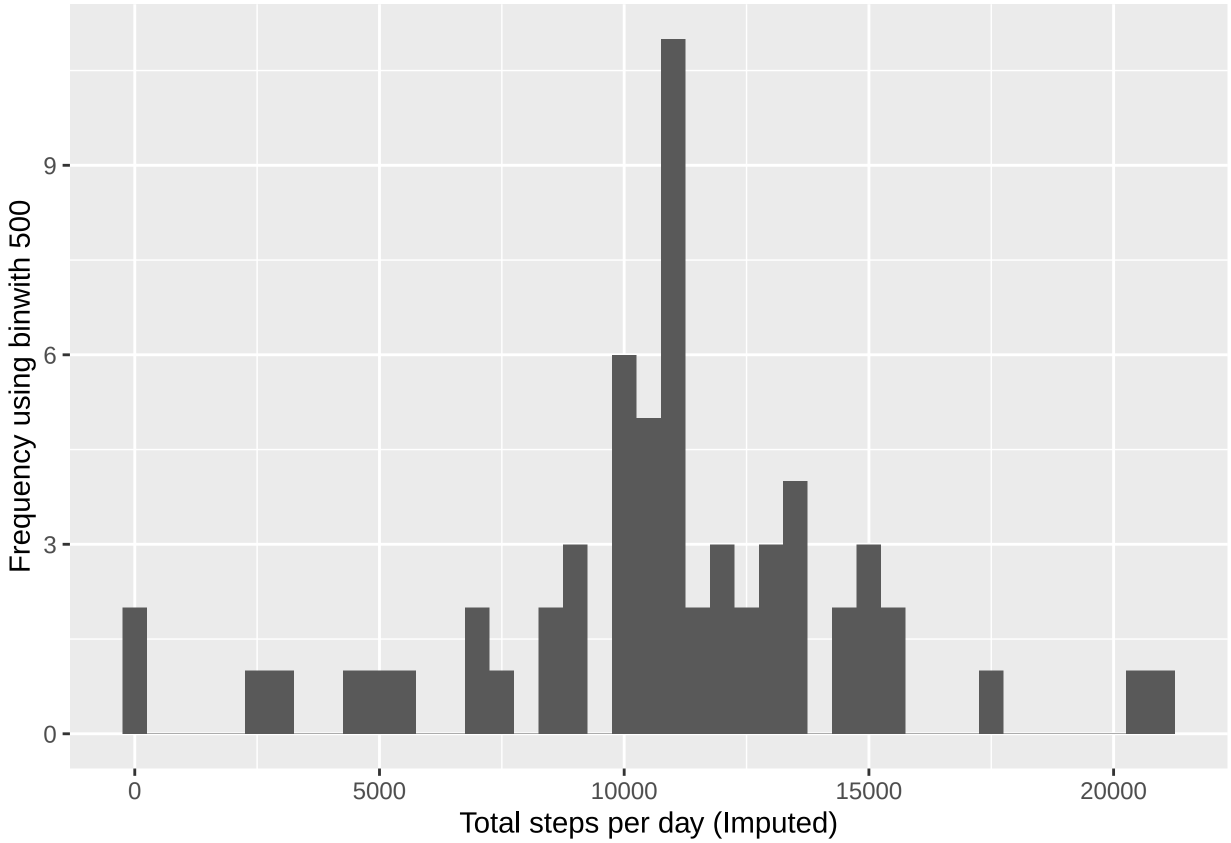
2. Devise a strategy for filling in all of the missing values in the dataset.

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

```
activityDataImputed <- activityData
activityDataImputed$steps <- impute(activityData$steps, fun=mean)
```

4. Histogram of the total number of steps taken each day

```
stepsByDayImputed <- tapply(activityDataImputed$steps, activityDataImputed$date, sum)
qplot(stepsByDayImputed, xlab='Total steps per day (Imputed)', ylab='Frequency using binwith 500', binw
```



… and Calculate and report the mean and median total number of steps taken per day.

```
stepsByDayMeanImputed <- mean(stepsByDayImputed)
stepsByDayMedianImputed <- median(stepsByDayImputed)
```

- Mean (Imputed): 1.0766189×10^4
- Median (Imputed): 1.0766189×10^4

Are there differences in activity patterns between weekdays and weekends?

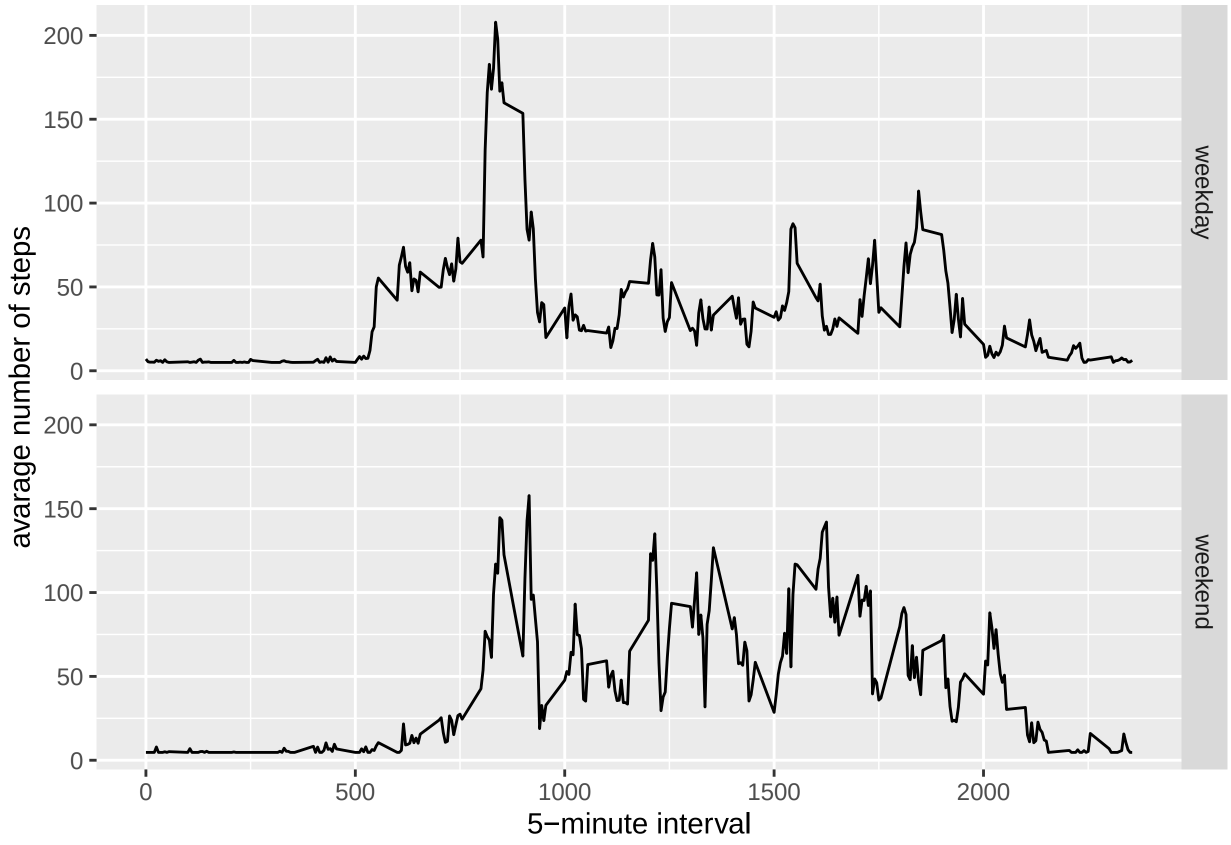
1. Create a new factor variable in the dataset with two levels ??? ???weekday??? and ???weekend??? indicating whether a given date is a weekday or weekend day.

```
activityDataImputed$dateType <-  ifelse(as.POSIXlt(activityDataImputed$date)$wday %in% c(0,6), 'weekend
```

2. Panel plot containing a time series plot

```
averagedActivityDataImputed <- aggregate(steps ~ interval + dateType, data=activityDataImputed, mean)

ggplot(averagedActivityDataImputed, aes(interval, steps)) +
    geom_line() +
    facet_grid(dateType ~ .) +
    xlab("5-minute interval") +
    ylab("avarage number of steps")
```


weekday
weekend
avarage number of steps
5−minute interval