QMB Exercise 2 - Estimation and Testing

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Introduction

The following report is based on the QMB Exercise 2 - Estimation and Testing. The task description pdf file is bis_ex2-EstimationTesting-20150429.pdf

Requirements

Please make sure that you the following packages loaded in your workspace.

```r
library("dplyr")
library("ggplot2")
library("ggExtra")
library("gridExtra")
```

Data Set

Please make sure you have the file housingrents.csv in the subdirectoy Data in your workspace.

```r
housingrents <- read.csv("./Data/housingrents.csv",sep=";")
```

Data Processing

For analysis purposes it is necessary to convert the rooms and NRE variable to a factor. Furthermore a new variable rps (rent per square meter) is created

```r
housingrents <- mutate(housingrents, rooms = factor(rooms),
  nre = factor(nre,levels=c(0,1),labels=c("no","yes")))
housingrents <- mutate(housingrents,rps = rent/area)
```

Task 1

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Conclusion

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Task 2

Task 2 checks normality of variable rent per square (rps). Additionally t-tests are conducted

a)

In this sub task the normal distribution of the variable rpf the NRE respectively non-NRE appartments are checked. Create two datasets as a first step:

```
nrehousing <- filter(housingrents,nre=="yes")
nonnrehousing <- filter(housingrents,nre=="no")
```

Check normal distribution of rps variable for NRE appartments:

```
p1 <- qplot(x = 1, y = rps, data = nrehousing, xlab = "", geom = 'boxplot') +
        coord_flip(ylim=c(0,60))

p2 <- ggplot(nrehousing, aes(x = rps)) +
        geom_histogram(colour="black", fill="white") +
        coord_cartesian(xlim=c(0,60))

grid.arrange(p1, p2, widths = c(1, 2))
```

Check normal distribution of rps variable for non-NRE appartments:

```
p1 <- qplot(x = 1, y = rps, data = nrehousing, xlab = "", geom = 'boxplot') +
        coord_flip(ylim=c(0,60))

p2 <- ggplot(nrehousing, aes(x = rps)) +
        geom_histogram(colour="black", fill="white") +
        coord_cartesian(xlim=c(0,60))

grid.arrange(p1, p2, widths = c(1, 2))
```
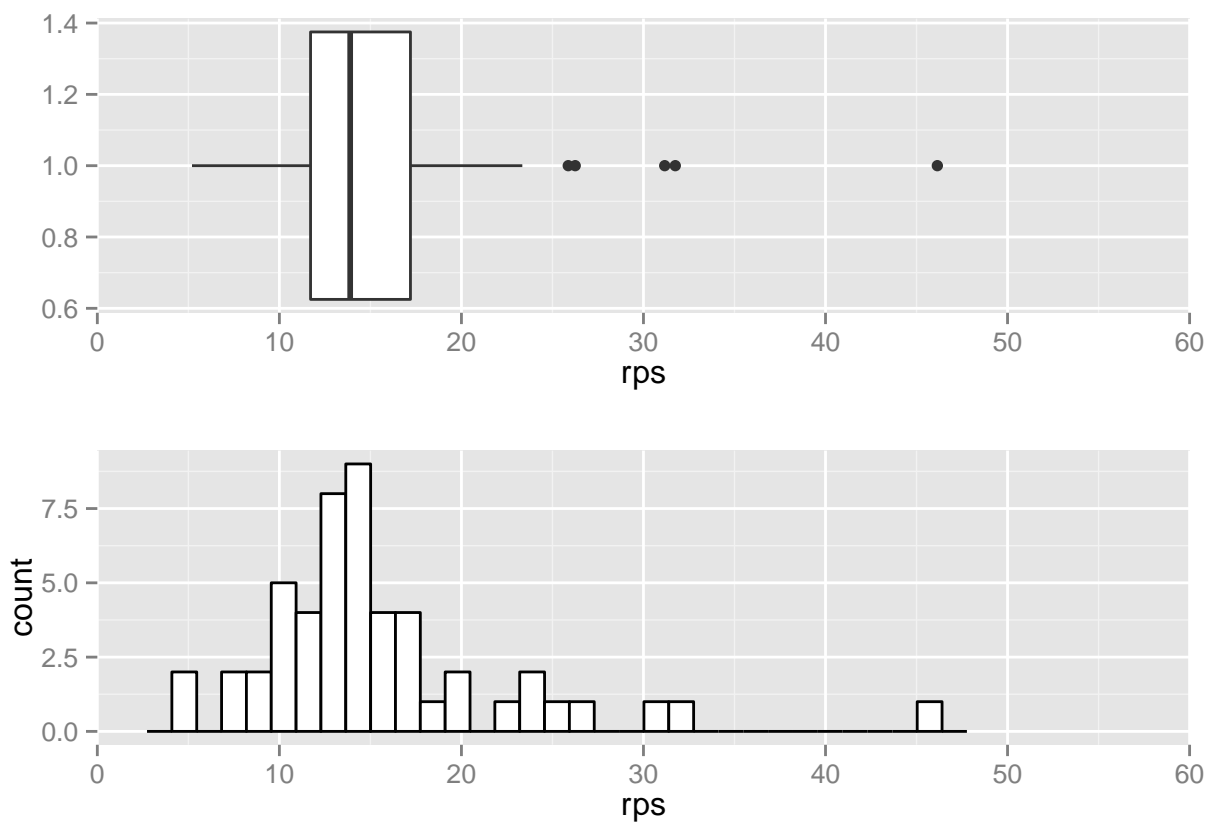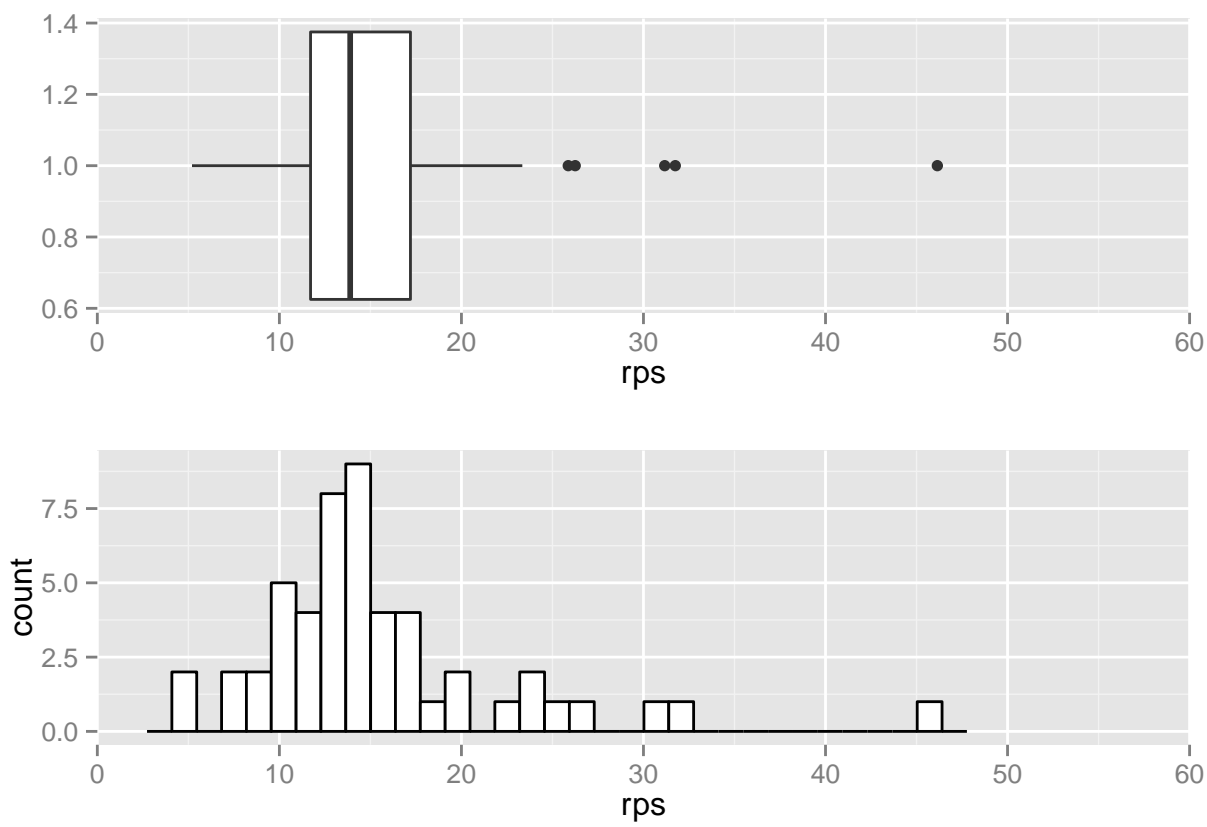
Conclusion

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Figure 1:

Figure 2:

Task 3

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Conclusion

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