Week 2 tasks

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library(MASS)  
  
#намираме първо всички стойности в колоната Smoke  
unique(survey$Smoke)

## [1] Never Regul Occas Heavy <NA>   
## Levels: Heavy Never Occas Regul

#Задача 1  
#вероятноста случайно избран човек да е редовен пушач  
sum(survey$Smoke %in% c('Regul', 'Heavy'), na.rm = TRUE)/nrow(survey)

## [1] 0.1181435

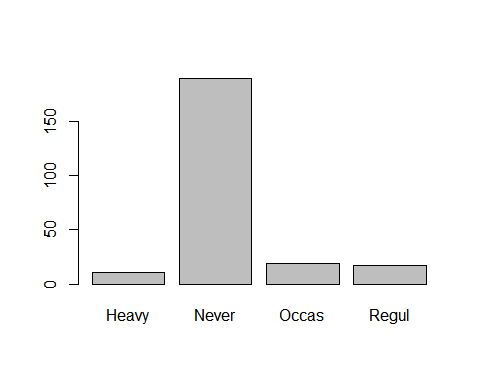
maleSmokers = sum(survey$Smoke %in% c("Regul", "Heavy") & survey$Sex == 'Male', na.rm = TRUE)  
  
#вероятността случайно ибзбран човек да е мъж и редовен пушач  
maleSmokers/nrow(survey)

## [1] 0.07594937

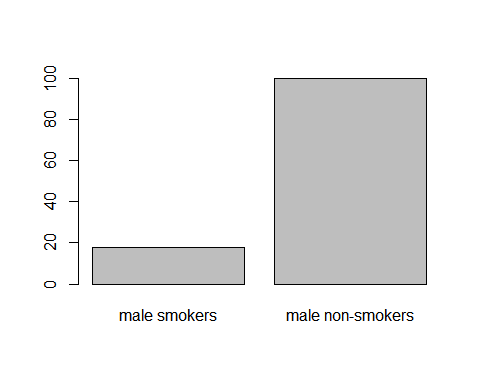
#броят на всички мъже  
maleNumber = sum(survey$Sex == 'Male', na.rm = TRUE)  
  
#вероятността случайно избран мъж да е редовен пушач  
prob = maleSmokers/maleNumber  
  
#броят на всички редовни пушачи  
regulOrHeavyCount = sum(survey$Smoke %in% c('Regul', 'Heavy'), na.rm = TRUE)  
  
#вероятноста случайно избран редовен пушач да е мъж  
maleSmokers/regulOrHeavyCount

## [1] 0.6428571

#Зад 2  
#барплот на броя на типовете пушачи  
barplot(table(survey$Smoke))



#пушене в зависимост от пола  
barplot(c(maleSmokers, maleNumber - maleSmokers), names.arg = c('male smokers', 'male non-smokers'))



#Зад 3  
#некви статистики  
summary(survey$Height)

## Min. 1st Qu. Median Mean 3rd Qu. Max. NA's   
## 150.0 165.0 171.0 172.4 180.0 200.0 28

heightMean = mean(survey$Height, na.rm = TRUE)  
heightSd = sd(survey$Height, na.rm = TRUE)  
  
  
maleHeights = survey[survey$Sex == 'Male', 'Height']  
summary(maleHeights)

## Min. 1st Qu. Median Mean 3rd Qu. Max. NA's   
## 154.9 172.8 180.0 178.8 185.0 200.0 13

sd(maleHeights, na.rm = TRUE)

## [1] 8.380252

femaleHeights = survey[survey$Sex == 'Female', 'Height']  
summary(femaleHeights)

## Min. 1st Qu. Median Mean 3rd Qu. Max. NA's   
## 150.0 162.6 166.8 165.7 170.0 180.3 17

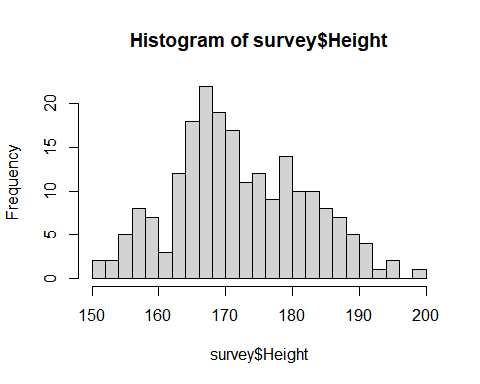
sd(femaleHeights, na.rm = TRUE)

## [1] 6.151777

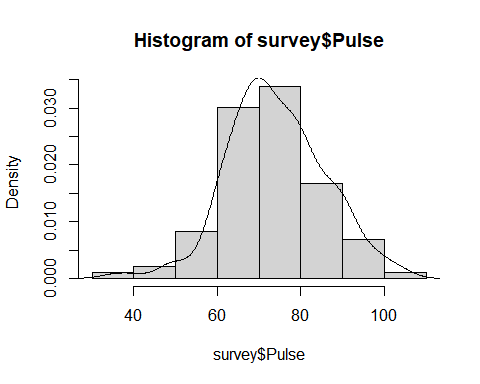
#каква част от студентите се различават от ср. височина с <= 1 стандартно отклонение?  
sum(abs(survey$Height - heightMean) <= heightSd, na.rm = TRUE)/sum(!is.na(survey$Height))

## [1] 0.6842105

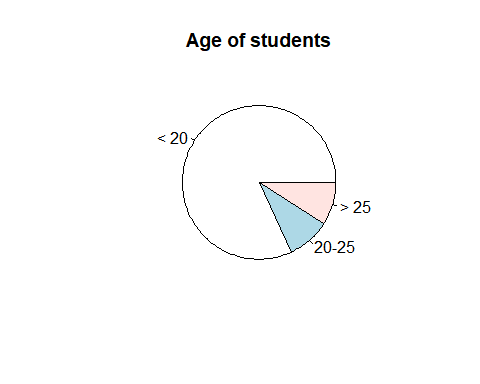
#Зад 4  
hist(survey$Height, breaks = 20)



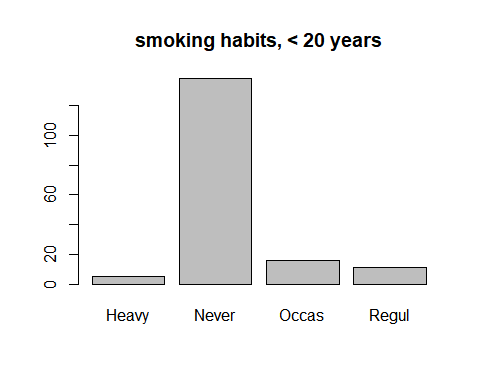
#Зад 5  
#хистограма на пулса на студентите  
hist(survey$Pulse, prob = TRUE)  
  
#графика плътността на разпределението на пулса   
lines(density(survey$Pulse, na.rm = TRUE))



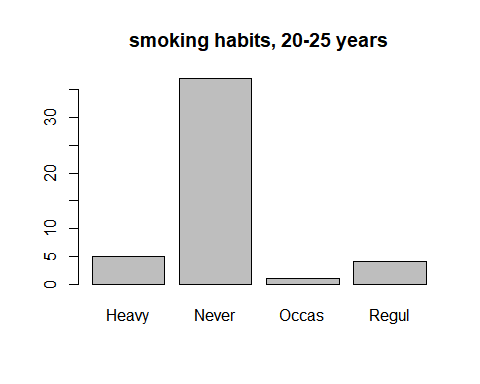
#Зад 6  
group1 = survey[survey$Age < 20,]  
group2 = survey[survey$Age >= 20 & survey$Age < 25,]  
group3 = survey[survey$Age >= 25,]  
  
pie(x = c(nrow(group1), nrow(group3), nrow(group3)), labels = c('< 20', '20-25', '> 25'), main = 'Age of students')



barplot(table(group1$Smoke), main = 'smoking habits, < 20 years')



barplot(table(group2$Smoke), main = 'smoking habits, 20-25 years')



barplot(table(group3$Smoke), main = 'smoking habits, > 25 years old')

