

## R Program To Create Plots For Heart Rate

```
library(gdata)
library(xlsx)
path1 = "C:/Users/Devarsh Dani/Desktop/UH/Spring 2017/Statistical methods in research/HW1/Other
Study Data"
pdf("C:/Users/Devarsh Dani/Desktop/HeartRateAllSessions.pdf", height = 15, width = 15)
par(mfrow = c(7,2))
setwd(path1)
dir = grep("T???/??PD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  getwd()
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  reading = reading[order(reading$Time), , drop = FALSE]
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  yvector = reading[, "Heart.Rate"]
  xvector = reading[, "Time"]
  xvector = c(xvector,NA)
  yvector = c(yvector,NA)
  #finalx = sort(xvector,decreasing = FALSE)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
  setwd("../..")
  unlink(dir[i])
  #i=i+1
}
plot(vectorForgraphx[seq(1, length(vectorForgraphx), by=1)], vectorForgraphy[seq(1,
length(vectorForgraphy), by=1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]",
main = "\t\tUncleaned\nHeart rate signal plotting for all PD")
legend("topright",legend = paste("n = ",n))
#is.vector(xvector)
```

## R Program To Create Plots For Heart Rate

```
#vectorForgraphx

setwd(path1)
dir = grep("T??/?PD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  invalidValue1 = which(reading$Heart.Rate < 40)
  invalidValue2 = which(reading$Heart.Rate > 140)
  if(length(invalidValue1) > 0 || length(invalidValue2) > 0) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  yvector = reading[, "Heart.Rate"]
  xvector = reading[, "Time"]
  xvector = c(xvector, NA)
  yvector = c(yvector, NA)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
  setwd("../..")
  unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Breathing Rate [in bpm]",
main = "\t\tCleaned\nHeart rate signal plotting for all PD")
legend("topright", legend = paste("n = ", n))
```

## R Program To Create Plots For Heart Rate

```
setwd(path1)
dir = grep("T???/??RD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  yvector = reading[, "Heart.Rate"]
  xvector = reading[, "Time"]
  xvector = c(xvector,NA)
  yvector = c(yvector,NA)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
  setwd("../..")
  unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all RD")
legend("topright",legend = paste("n = ",n))

setwd(path1)
dir = grep("T???/??RD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
```

## R Program To Create Plots For Heart Rate

```
setwd(dir[i])
fil = list.files(pattern = ".HR")
if(identical(fil, character(0))) {
  setwd("../..")
  unlink(dir[i])
  next
}
reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
names(reading)[1] <- "Time"
names(reading)[2] <- "Heart.Rate"
#reading = reading[-1,]
#row.names(reading) <- 1:nrow(reading)
reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
reading$Time <- as.numeric(as.character(reading$Time))
reading = reading[order(reading$Time), , drop = FALSE]
invalidValue1 = which(reading$Heart.Rate < 40)
invalidValue2 = which(reading$Heart.Rate > 140)
if(length(invalidValue1) > 0 || length(invalidValue2) > 0) {
  setwd("../..")
  unlink(dir[i])
  next
}
yvector = reading[, "Heart.Rate"]
xvector = reading[, "Time"]
xvector = c(xvector, NA)
yvector = c(yvector, NA)
vectorForgraphx = append(vectorForgraphx, xvector)
vectorForgraphy = append(vectorForgraphy, yvector)
n = n+1
setwd("../..")
unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all RD")
legend("topright", legend = paste("n = ", n))

setwd(path1)
dir = grep("T???/??ND", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
```

## R Program To Create Plots For Heart Rate

```
fil = list.files(pattern = ".HR")
if(identical(fil, character(0))) {
  setwd("../..")
  unlink(dir[i])
  next
}
reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
names(reading)[1] <- "Time"
names(reading)[2] <- "Heart.Rate"
#reading = reading[-1,]
#row.names(reading) <- 1:nrow(reading)
reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
reading$Time <- as.numeric(as.character(reading$Time))
reading = reading[order(reading$Time), , drop = FALSE]
yvector = reading[, "Heart.Rate"]
xvector = reading[, "Time"]
xvector = c(xvector, NA)
yvector = c(yvector, NA)
vectorForgraphx = append(vectorForgraphx, xvector)
vectorForgraphy = append(vectorForgraphy, yvector)
n = n+1
setwd("../..")
unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all ND")
legend("topright", legend = paste("n = ", n))

setwd(path1)
dir = grep("T???/??ND", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
```

## R Program To Create Plots For Heart Rate

```
#reading = reading[-1,]
#row.names(reading) <- 1:nrow(reading)
reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
reading$Time <- as.numeric(as.character(reading$Time))
reading = reading[order(reading$Time), , drop = FALSE]
invalidValue1 = which(reading$Heart.Rate < 40)
invalidValue2 = which(reading$Heart.Rate > 140)
if(length(invalidValue1) > 0 || length(invalidValue2) > 0) {
  setwd("../..")
  unlink(dir[i])
  next
}
yvector = reading[, "Heart.Rate"]
xvector = reading[, "Time"]
xvector = c(xvector, NA)
yvector = c(yvector, NA)
vectorForgraphx = append(vectorForgraphx, xvector)
vectorForgraphy = append(vectorForgraphy, yvector)
n = n+1
setwd("../..")
unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all ND")
legend("topright", legend = paste("n = ", n))

setwd(path1)
dir = grep("T???/??CD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1, colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
```

## R Program To Create Plots For Heart Rate

```
reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
reading$Time <- as.numeric(as.character(reading$Time))
reading = reading[order(reading$Time), , drop = FALSE]
yvector = reading[, "Heart.Rate"]
xvector = reading[, "Time"]
xvector = c(xvector, NA)
yvector = c(yvector, NA)
vectorForgraphx = append(vectorForgraphx, xvector)
vectorForgraphy = append(vectorForgraphy, yvector)
n = n+1
setwd("../..")
unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all CD")
legend("topright", legend = paste("n = ", n))

setwd(path1)
dir = grep("T???/??CD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1, colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  invalidValue1 = which(reading$Heart.Rate < 40)
  invalidValue2 = which(reading$Heart.Rate > 140)
  if(length(invalidValue1) > 0 || length(invalidValue2) > 0) {
    setwd("../..")
    unlink(dir[i])
    next
  }
}
```

## R Program To Create Plots For Heart Rate

```
}
yvector = reading[,"Heart.Rate"]
xvector = reading[,"Time"]
xvector = c(xvector,NA)
yvector = c(yvector,NA)
vectorForgraphx = append(vectorForgraphx, xvector)
vectorForgraphy = append(vectorForgraphy, yvector)
n = n+1
setwd("../..")
unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all CD")
legend("topright",legend = paste("n = ",n))
```

```
setwd(path1)
dir = grep("T???/??ED", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  yvector = reading[,"Heart.Rate"]
  xvector = reading[,"Time"]
  xvector = c(xvector,NA)
  yvector = c(yvector,NA)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
}
```



## R Program To Create Plots For Heart Rate

```
setwd("../..")
unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all ED")
legend("topright", legend = paste("n = ", n))

setwd(path1)
dir = grep("T???/??ED", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1, colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  invalidValue1 = which(reading$Heart.Rate < 40)
  invalidValue2 = which(reading$Heart.Rate > 140)
  if(length(invalidValue1) > 0 || length(invalidValue2) > 0) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  yvector = reading[, "Heart.Rate"]
  xvector = reading[, "Time"]
  xvector = c(xvector, NA)
  yvector = c(yvector, NA)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
  setwd("../..")
  unlink(dir[i])
}
```

## R Program To Create Plots For Heart Rate

```
}
```

```
plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all ED")
legend("topright", legend = paste("n = ", n))
```

```
setwd(path1)
dir = grep("T???/??MD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1, colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time),, drop = FALSE]
  yvector = reading[, "Heart.Rate"]
  xvector = reading[, "Time"]
  xvector = c(xvector, NA)
  yvector = c(yvector, NA)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
  setwd("../..")
  unlink(dir[i])
}
```

```
plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all MD")
legend("topright", legend = paste("n = ", n))
```

```
setwd(path1)
```

## R Program To Create Plots For Heart Rate

```
dir = grep("T???/??MD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  invalidValue1 = which(reading$Heart.Rate < 40)
  invalidValue2 = which(reading$Heart.Rate > 140)
  if(length(invalidValue1) > 0 || length(invalidValue2) > 0) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  yvector = reading[, "Heart.Rate"]
  xvector = reading[, "Time"]
  xvector = c(xvector, NA)
  yvector = c(yvector, NA)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
  setwd("../..")
  unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all MD")
legend("topright", legend = paste("n = ", n))

setwd(path1)
dir = grep("T???/??FD", list.dirs(), value = TRUE)
```

## R Program To Create Plots For Heart Rate

```
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
    setwd("../..")
    unlink(dir[i])
    next
  }
  reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
  names(reading)[1] <- "Time"
  names(reading)[2] <- "Heart.Rate"
  #reading = reading[-1,]
  #row.names(reading) <- 1:nrow(reading)
  reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
  reading$Time <- as.numeric(as.character(reading$Time))
  reading = reading[order(reading$Time), , drop = FALSE]
  yvector = reading[, "Heart.Rate"]
  xvector = reading[, "Time"]
  xvector = c(xvector, NA)
  yvector = c(yvector, NA)
  vectorForgraphx = append(vectorForgraphx, xvector)
  vectorForgraphy = append(vectorForgraphy, yvector)
  n = n+1
  setwd("../..")
  unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all FD")
legend("topright", legend = paste("n = ", n))

setwd(path1)
dir = grep("T??/?FD", list.dirs(), value = TRUE)
unlink(path1)
vectorForgraphx = NULL
vectorForgraphy = NULL
n=0
i=1
for(i in 1:length(dir)) {
  setwd(dir[i])
  fil = list.files(pattern = ".HR")
  if(identical(fil, character(0))) {
```

## R Program To Create Plots For Heart Rate

```
setwd("../..")
unlink(dir[i])
next
}
reading = read.xlsx(fil, sheetIndex = 1,colIndex = 2:3)
names(reading)[1] <- "Time"
names(reading)[2] <- "Heart.Rate"
#reading = reading[-1,]
#row.names(reading) <- 1:nrow(reading)
reading$Heart.Rate <- as.numeric(as.character(reading$Heart.Rate))
reading$Time <- as.numeric(as.character(reading$Time))
reading = reading[order(reading$Time), , drop = FALSE]
invalidValue1 = which(reading$Heart.Rate < 40)
invalidValue2 = which(reading$Heart.Rate > 140)
if(length(invalidValue1) > 0 || length(invalidValue2) > 0) {
  setwd("../..")
  unlink(dir[i])
  next
}
yvector = reading[, "Heart.Rate"]
xvector = reading[, "Time"]
xvector = c(xvector, NA)
yvector = c(yvector, NA)
vectorForgraphx = append(vectorForgraphx, xvector)
vectorForgraphy = append(vectorForgraphy, yvector)
n = n+1
setwd("../..")
unlink(dir[i])
}

plot(vectorForgraphx[seq(1, length(vectorForgraphx), 1)], vectorForgraphy[seq(1,
length(vectorForgraphy), 1)], lty = 1, type = "l", xlab = "Time [in sec]", ylab = "Heart Rate [in bpm]", main
= "Heart rate signal plotting for all FD")
legend("topright", legend = paste("n = ", n))

dev.off()
```