Week 4 lab code – gk

#

# GK

# Week 4 - Lab

# Layouts in R

#

#

#

# Create dummy data

x<-1:24

y<-rnorm(length(x))

# runif - generate (n=length(x)) random values between 2 and 9,,

# note: n is = 24

#

A <- runif(n=length(x),min = 2, max = 9)

A

A <- A+y^2

A

B <- sample(c("D","w"),size = length(x), replace = T)

B

#par(mfrow= c(1,3))

#par(mfrow= c(3,1))

#par(mfrow= c(2,2))

#par(mfrow= c(3,2))

#par(mfrow= c(3,3))

#par(mar=c(5.1,4.1,4.1,2.1))

my.par<-par()

my.par$mar

#par(mar=c(3,3,3,3)) small margin, larger plot

#par(mar=c(2,2,2,2))

#par(mar=c(8,8,8,8)) large margin, smaller plot

# default par(mar=c(5.1,4.1,4.1,2.1)) bottom left top right

# reset all ,, pars()s get reset every time a new device is open

# so you can do dev.off()

# https://bookdown.org/ndphillips/YaRrr/plot-margins.html

# https://www.r-graph-gallery.com/74-margin-and-oma-cheatsheet.html

# par(mfrow= c(3,1))

barplot(A,names.arg=1:length(x), col="palegreen4")

mtext("freqs",side =2, line=2)

plot(x,y,type="l",bty = "n", xaxt = "n"

, ylab = "",xlab="", lwd = 2

, ylim = c(2\*min(y),2\*max(y)),col="black")

mtext(text="Hourly Rate", side = 3, line = 1, cex = 1.3)

mtext("Volume", side = 2, line = 2)

par(mar=c(4,0,4,4),bty="n") #bottom,left,top,right

boxplot(A ~ B, col = "purple")

#

# set or configure plot area

# layout function

# ?layout

M <- matrix(

c(1,1,3

,1,1,3

,2,2,3)

,nrow = 3, byrow = T

)

M

# https://www.statmethods.net/advgraphs/layout.html

# restore par(mfrow = c(1,1))

layout(M)

layout.show(3)

par(mar=c(5,4,0,2)) #bottom,left,top,right

barplot(A,names.arg=1:length(x), col="palegreen4")

mtext("freqs",side =2, line=2)

par(mar=c(0,4,4,2)) #bottom,left,top,right

plot(x,y,type="l",bty = "n", xaxt = "n"

, ylab = "",xlab="", lwd = 2

, ylim = c(2\*min(y),2\*max(y)),col="black")

mtext(text="Hourly Rate", side = 3, line = 1, cex = 1.3)

mtext("Volume", side = 2, line = 2)

par(mar=c(4,0,4,4),bty="n") #bottom,left,top,right

boxplot(A ~ B, col = "purple")

#4

#pie(table(B),col=c("yellow","tan"))

attach(mtcars)

layout(matrix(c(1,1,2,3), 2, 2, byrow = TRUE))

layout.show(3)

hist(wt)

hist(mpg)

hist(disp)

##############

fileName <- "sales.csv"

# or

fileName <- file.choose()

sales <- read.csv(file=fileName, header=TRUE, sep=",",stringsAsFactors = F)

# and do some aggragations.

# we will reuse this code later

dat.1 <- tapply(sales$units.sold, list(sales$wine), sum)

dat.2 <- tapply(sales$income, list(sales$wine), sum)

dat.1 # units sold

dat.2 # income

M <- matrix(

c(1,1,1

,1,1,1

,2,2,2)

,nrow = 3, byrow = T

)

M

layout(M)

layout.show(2)

par(mar = c(.5,5,4,1), cex.lab = .8)

barplot(dat.2, xaxt = "n", las = 2,col="palegreen4")

mtext(text = "income", side = 2, line = 4, adj = 0)

mtext(text = "Income on Units sold", side = 3, line = 1, cex = 1.3)

par(mar = c(6,5,0,1), cex.lab = .8)

bar.out <- barplot(dat.1, xaxt = "n", las = 2,col="palegreen1")

mtext(text = "units sold", side = 2, line = 4, adj = 0)

axis(side = 1, at = bar.out, labels = gsub(" ", "\n", names(dat.2)), las = 2)

colnames(sales)

# now we can see that the screen has been broken up into 2 unequal parts.

# the division is the same as the matrix M

# in that the first plot takes up the space where the 1s are in the

# matrix and the second plot takes up the space where the 2s are

# lets quickly make some new data

dat.3 <- tapply(sales$units.sold, list(sales$type), sum)

dat.3

dat.4 <- tapply(sales$units.sold, list(sales$rep.region), sum)

dat.4

dat.5 <- tapply(sales$units.sold, list(sales$year), sum)

dat.5

# here I am adding a new column to the matrix

M <- matrix(

c(1,1,1,3

,1,1,1,4

,2,2,2,5)

,nrow = 3, byrow = T

)

M

layout(M)

layout.show(5)

par(mar = c(.5,5,4,1), cex.lab = .8)

barplot(dat.2, xaxt = "n", las = 2, col="palegreen4")

mtext(text = "income", side = 2, line = 4, adj = 0)

mtext(text = "Income on Units sold", side = 3, line = 1, cex = 1.3)

par(mar = c(6,5,0,1), cex.lab = .8)

bar.out <- barplot(dat.1, xaxt = "n", las = 2,col="palegreen1")

mtext(text = "units sold", side = 2, line = 4, adj = 0)

axis(side = 1, at = bar.out, labels = gsub(" ", "\n", names(dat.2)), las = 2)

# reset mar

par(mar = c(1,1,1,1))

pie(dat.3)

pie(dat.4)

pie(dat.5)

# "Fonts, axis, par and pdf"

#

# # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

# pdf(file=fname, width=3.5, height=8, pointsize=9)

# replot everything

# dev.off()

# png()

# https://www.statmethods.net/advgraphs/parameters.html

# https://www.statmethods.net/advgraphs/trellis.html

# ok. fonts. Well, r does an anful lot of things well, but fonts are kind of klunky.

# we will be changing some par settings, so lets store the defaults

# first, delete all plots and clear the plot space.

my.par <- par()

my.par

# you can look through the whole object to see the different settings.

# access parts of the data

my.par$adj

my.par$family

my.par$mar

# ok, so lets change some fonts.

# lets start with some data and a plot

n <- 500

x <- abs(rnorm(n, 6, 2))

y <- x^(2) + rnorm(n, 0, 2 \* x)

plot(x, y)

# par contains some font related values

my.par$font # 1 plain text (the default), 2 to bold face, 3 to italic and 4 to bold italic. Also, font 5 is expected to be the symbol font

plot(x, y, main = "Fiddling with fonts in R", xlab = "some x lab text", ylab = "y lab text")

plot(x, y, main = "Fiddling with fonts in R font = 2", xlab = "some x lab text", ylab = "y lab text", font = 2)

plot(x, y, main = "Fiddling with fonts in R font = 3", xlab = "some x lab text", ylab = "y lab text", font = 3)

plot(x, y, main = "Fiddling with fonts in R font = 4", xlab = "some x lab text", ylab = "y lab text", font = 4)

plot(x, y, main = "Fiddling with fonts in R font = 5", xlab = "some x lab text", ylab = "y lab text", font = 5)

my.par$font.axis # https://www.statmethods.net/advgraphs/parameters.html

my.par$font.lab

my.par$font.main

# so we can make the axis bold, lables italic and main both

plot(x, y, main = "Fiddling with fonts in R", xlab = "some x lab text", ylab = "y lab text", font.axis = 2, font.lab = 3, font.main = 1)

# because I set these in the call to plot, they aren't set by default

plot(x, y, main = "Fiddling with fonts in R", xlab = "some x lab text", ylab = "y lab text")

my.par$family

# family holds the name of a font family for drawing text.

# "serif", "sans" and "mono", and the Hershey font families are also available.

plot(x, y, main = "Fiddling with fonts in R HersheyGothicEnglish", xlab = "some x lab text", ylab = "y lab text", family = "HersheyGothicEnglish")

demo(Hershey)

help("Hershey")

par(family = "mono")

plot(x, y, main = "Fiddling with fonts in R mono", xlab = "some x lab text", ylab = "y lab text")

par(family = "serif")

plot(x, y, main = "Fiddling with fonts in R serif", xlab = "some x lab text", ylab = "y lab text")

par(family = "sans")

plot(x, y, main = "Fiddling with fonts in R sans", xlab = "some x lab text", ylab = "y lab text")

plot(1:10,1:10,type="n")

windowsFonts(

A=windowsFont("Arial Black"),

B=windowsFont("Bookman Old Style"),

C=windowsFont("Comic Sans MS"),

D=windowsFont("Symbol"),

E=windowsFont("Chiller")

)

text(2,2,"Hello World Default")

text(3,3,family="E", "Hello World from chiller")

text(4,4,family="A","Hello World from Arial Black")

text(5,5,family="B","Hello World from Bookman Old Style")

text(6,6,family="C","Hello World from Comic Sans MS")

text(7,7,family="D", "Hello World from Symbol")

# install.packages("extrafont")

library(extrafont)

# must install https://www.ghostscript.com/download/gsdnld.html

# C:/Program Files/gs/gs9.26/bin/gswin64c.exe

# Sys.setenv(R\_GSCMD = "C:/Program Files/gs/gs9.26/bin/gswin64c.exe")

font\_import() # once

# or

loadfonts(device="win") #Register fonts for Windows bitmap outputfonts()

fonts()

plot(x, y, main = "Fiddling with fonts in R", xlab = "some x lab text", ylab = "y lab text")

plot(x, y, main = "Fiddling with fonts in R Chiller", xlab = "some x lab text", ylab = "y lab text", family = "Chiller")

plot(x, y, main = "Fiddling with fonts in R Wingdings 3", xlab = "some x lab text", ylab = "y lab text", family = "Wingdings 3")