#Readin Bankomatdatensatz

bank <-read.table("http://www.trutschnig.net/Datensatz.txt",head=TRUE)

summary(bank)

#Readin RTR data (see https://www.netztest.at/de/Test for Background)

address <- url("http://www.trutschnig.net/RTR2015.RData")

load(address)

summary(RTR2015)

library(plotly)

library(dplyr)

Scatter

Galaxy = filter(RTR2015, device == "Galaxy Note 10.1")

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl, name = "default")

BUT: plot\_ly(Galaxy, x = ~op\_name, y = ~rtr\_speed\_dl, name = "default")

plot\_ly(Galaxy, x = ~ rtr\_speed\_ul, y = ~rtr\_speed\_dl)%>%

add\_markers(alpha = 0.9, name = "alpha")

plot\_ly(data = Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl, color = ~op\_name)

plot\_ly(data = Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl, color = ~op\_name, colors = c("red","green","blue"))

plot\_ly(Galaxy, x = ~longitude, y = ~rtr\_speed\_dl, name = "default")

subplot(

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl, name = "default"),

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl) %>%

add\_markers(alpha = 0.2, name = "alpha"),

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl) %>%

add\_markers(symbol = I(1), name = "hollow")

)

subplot(

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl, name = "default"),

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl) %>%

add\_markers(alpha = 0.9, name = "alpha"),

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, y = ~rtr\_speed\_dl) %>%

add\_markers(symbol = I(2), name = "hollow")

)

Line Plots

plot\_ly(Galaxy, x = ~longitude, y = ~rtr\_speed\_dl) %>%

add\_lines(color = ~op\_name)

plot\_ly(Galaxy, x = ~longitude, y = ~rtr\_speed\_dl, type = 'scatter', mode = 'lines')

Histograms and Bars

plot\_ly(RTR2015, x = ~op\_name) %>% add\_histogram()

plot\_ly(RTR2015, x = ~op\_name, color = ~device\_platform) %>% add\_histogram()

plot\_ly(RTR2015, x = ~op\_name, y =~rtr\_speed\_dl, color = ~device\_platform) %>% add\_bars(name = method)

plot\_ly(RTR2015, x = ~longitude, y =~rtr\_speed\_dl, color = ~device\_platform) %>% add\_bars()

plot\_ly(RTR2015, x = ~rtr\_speed\_dl, color = ~device\_platform) %>% add\_histogram(name = "plotly.js")

p1 <- plot\_ly(RTR2015, x = ~rtr\_speed\_dl) %>% add\_histogram(name = "plotly.js")

speed\_hist <- function(method = "FD") {

h <- hist(RTR2015$rtr\_speed\_dl, breaks = method, plot = FALSE)

plot\_ly(x = h$mids, y = h$counts) %>% add\_bars(name = method)

}

subplot(

p1, speed\_hist(), speed\_hist("Sturges"), speed\_hist("Scott"),

nrows = 4, shareX = TRUE

)

plot\_ly(RTR2015, x = ~rtr\_speed\_dl, color = ~op\_name) %>%

add\_histogram()

plot\_ly(RTR2015, x = ~device\_has\_lte, y= ~device, color = ~op\_name) %>%

add\_bars() %>%

layout(barmode = "stack")

Boxplots

plot\_ly(Galaxy, y = ~rtr\_speed\_ul, type = "box") %>%

add\_trace(y = ~rtr\_speed\_dl)

plot\_ly(Galaxy, x = ~rtr\_speed\_ul, type = "box") %>%

add\_trace(x = ~rtr\_speed\_dl)

p <- plot\_ly(Galaxy, y = ~rtr\_speed\_dl, color = I("blue"),

alpha = 0.1, boxpoints = "suspectedoutliers")

p1 <- p %>% add\_boxplot(x = "Overall")

p2 <- p %>% add\_boxplot(x = ~op\_name)

subplot(

p1, p2, shareY = TRUE,

widths = c(0.2, 0.8), margin = 0

) %>% hide\_legend()

p = filter (RTR2015, device\_platform == “Android” | device\_platform == “iOS”)

plot\_ly(p, x = ~rtr\_speed\_dl, y = ~interaction(op\_name, device\_platform)) %>%

add\_boxplot(color = ~op\_name) %>%

layout(yaxis = list(title = ""), margin = list(l = 100))

Heatmaps

Galaxy = filter(RTR2015, device == "Galaxy Note 10.1")

plot\_ly(Galaxy, x = ~longitude, y = ~latitude, z = ~rtr\_speed\_dl, type = "heatmap")

plot\_ly(RTR2015, x = ~op\_name, y = ~nw\_cat, z = ~rtr\_speed\_dl, type = "heatmap")

plot\_ly(RTR2015, x = ~mymd, y = ~op\_name, z = ~rtr\_speed\_dl, type = "heatmap", colorscale="Greys")

plot\_ly(RTR2015, x = ~mymd, y = ~op\_name, z = ~rtr\_speed\_dl,colors = colorRamp(c("red", "green")), type = "heatmap")

plot\_ly(RTR2015, x = ~op\_name, y = ~nw\_cat, z = ~rtr\_speed\_dl, colors = colorRamp(c("red", "yellow")), type = "heatmap")

plot\_ly(RTR2015, x = ~device\_platform, y = ~nw\_cat) %>%

add\_histogram2d()

plot\_ly(RTR2015, x = ~device\_platform, y = ~rtr\_speed\_dl) %>%

add\_histogram2d()

Exercises

Choose some other devices and visualize the correlation between download-Speed and Ping.

Galaxy = filter(RTR2015, device == "Galaxy S3")

plot\_ly(Galaxy, x = ~rtr\_speed\_dl, y = ~rtr\_ping, name = "default"

Starting from those data where op\_name = “Apple” – create a histogram showing the distribution of rtr\_ping - create a barplot of nw\_cat and rtr\_Speed\_dl – create stacked bars which in addition also contain the device platform

Apple = filter(RTR2015, op\_name == "Apple")

p1 <- plot\_ly(Apple, x = ~rtr\_ping) %>% add\_histogram(name = "plotly.js")

ping\_hist <- function(method = "FD") {

h <- hist(Apple$rtr\_pingl, breaks = method, plot = FALSE)

plot\_ly(x = h$mids, y = h$counts) %>% add\_bars(name = method)

}

subplot(

p1, speed\_hist(), speed\_hist("Sturges"), speed\_hist("Scott"),

nrows = 4, shareX = TRUE

)

plot\_ly(Apple, x = ~nw\_cat, y= ~rtr\_speed\_dl) %>%

add\_bars()

plot\_ly(Apple, x = ~nw\_cat, y= ~rtr\_speed\_dl, color = ~device\_platform) %>%

add\_bars() %>%

layout(barmode = "stack")

Use Boxplots to compare the Upload-Speed of devices that have LTE and the ones that don´t

yes = filter(RTR2015, device\_has\_lte == "TRUE")

no = filter(RTR2015, device\_has\_lte == "FALSE")

p1 = plot\_ly(yes, x = ~rtr\_speed\_ul, type = "box")

p2 = plot\_ly(no, x = ~rtr\_speed\_ul, type = "box")

subplot(p1,p2)

Create a heatmap visualising the connection of nw\_cat, mymd and rtr\_speed\_ul

plot\_ly(RTR2015, x = ~nw\_cat, y = ~mymd, z = ~rtr\_speed\_ul, type = "heatmap")