Game data visualization (R)

##Library data loding

=================================================================

# Visualizations

library(hrbrthemes)

library(gganimate)

library(gapminder)

library(babynames)

library(ggthemes)

library(cowplot)

library(ggplot2)

# Data Manipulation

library(dplyr)

# Statistics

library(DescTools)

==================================================

# Loading the database

data <- read.csv("C:/Users/priya/Desktop/Game Research/gamedata/vgsales.csv", stringsAsFactors = FALSE)

# Removing the Rank column

data$Rank <- NULL

# Filtering only the records of interest for this study, removing the records with Year = NaN and records with the year above 2016

data <- data[data$Year != "N/A" & data$Year != "2017" & data$Year != "2020", ]

data$Year <- factor(data$Year)

# Viewing the first 6 DataFrame records

head(data, 6)

==================================================================

summary(data)

=================================================================

## 2.Discriptiv analysis

#A.Frequency Distribution

# year : year -> year of the game release

freq\_year <- data.frame(cbind(Frequency = table(data$Year), Percent = prop.table(table(data$Year)) \* 100))

freq\_year <- freq\_year[order(freq\_year$Frequency, decreasing=TRUE), ]

freq\_year

options(repr.plot.width = 14, repr.plot.height = 10)

df <- head(freq\_year, 10)

a <- ggplot(data = df, mapping = aes(x = Frequency, y = row.names(df))) +

geom\_bar(stat = "identity", mapping = aes(fill = row.names(df), color = row.names(df)), alpha = .7, size = 1.1) +

geom\_label(mapping = aes(label=Frequency), fill = "#006400", size = 6, color = "white", fontface = "bold", hjust=.7) +

ggtitle("The 10 most frequent years in the database") +

xlab(" ") +

ylab("") +

theme\_ipsum() +

coord\_flip() +

theme(plot.background = element\_rect(color = "black", size = 1.1),

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

df1 <- tail(freq\_year, 10)

b <- ggplot(data = df1, mapping = aes(x = Frequency, y = row.names(df1))) +

geom\_bar(stat = "identity", mapping = aes(fill = row.names(df1), color = row.names(df1)), alpha = .7, size = 1.1) +

geom\_label(mapping = aes(label=Frequency), fill = "red", size = 6, color = "white", fontface = "bold", hjust=.7) +

ggtitle("The 10 least frequent years in the database") +

xlab(" ") +

ylab("") +

theme\_ipsum() +

coord\_flip() +

theme(plot.background = element\_rect(color = "black", size = 1.1),

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, nrow = 2, ncol = 1)

==================================================================================

##NA\_sales

options(repr.plot.width = 14, repr.plot.height = 10)

df <- head(freq\_year, 10)

a <- ggplot(data = df, mapping = aes(x = Frequency, y = row.names(df))) +

geom\_bar(stat = "identity", mapping = aes(fill = row.names(df), color = row.names(df)), alpha = .7, size = 1.1) +

geom\_label(mapping = aes(label=Frequency), fill = "#006400", size = 6, color = "white", fontface = "bold", hjust=.7) +

ggtitle("The 10 most frequent years in the database") +

xlab(" ") +

ylab("") +

theme\_ipsum() +

coord\_flip() +

theme(plot.background = element\_rect(color = "black", size = 1.1),

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

df1 <- tail(freq\_year, 10)

b <- ggplot(data = df1, mapping = aes(x = Frequency, y = row.names(df1))) +

geom\_bar(stat = "identity", mapping = aes(fill = row.names(df1), color = row.names(df1)), alpha = .7, size = 1.1) +

geom\_label(mapping = aes(label=Frequency), fill = "red", size = 6, color = "white", fontface = "bold", hjust=.7) +

ggtitle("The 10 least frequent years in the database") +

xlab(" ") +

ylab("") +

theme\_ipsum() +

coord\_flip() +

theme(plot.background = element\_rect(color = "black", size = 1.1),

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, nrow = 2, ncol = 1)

==================================================================================##Eu\_Sales

options(repr.plot.width = 14, repr.plot.height = 6)

a <- ggplot(data = data, mapping = aes(x = EU\_Sales)) +

geom\_histogram(bins = 80, fill = "#00CED1", color = "#7FFF00") +

xlab("Sales in Europe (in millions)") +

ylab("Frequency") +

ggtitle("Sales in Europe (in millions) Histogram") +

theme\_minimal() +

theme(plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

df <- data[data$EU\_Sales < 2, ]

b <- ggplot(data = df, mapping = aes(x = EU\_Sales)) +

geom\_histogram(bins = 80, fill = "#00CED1", color = "#7FFF00") +

xlab("Sales in Europe (in millions)") +

ylab("") +

ggtitle("Sales in Europe < 2 millions") +

theme\_minimal() +

theme(

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, nrow = 1, ncol = 2)

==================================================================================

##JP\_Sales

options(repr.plot.width = 14, repr.plot.height = 6)

a <- ggplot(data = data, mapping = aes(x = JP\_Sales)) +

geom\_histogram(bins = 80, fill = "#4B0082", color = "#FF00FF") +

xlab("Sales in Japan (in millions)") +

ylab("Frequency") +

ggtitle("Sales in Japan (in millions) Histogram") +

theme\_minimal() +

theme(plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

df <- data[data$JP\_Sales < 2, ]

b <- ggplot(data = df, mapping = aes(x = JP\_Sales)) +

geom\_histogram(bins = 80, fill = "#4B0082", color = "#FF00FF") +

xlab("Sales in Japan (in millions)") +

ylab("") +

ggtitle("Sales in Japan < 2 millions") +

theme\_minimal() +

theme(

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, nrow = 1, ncol = 2)

==================================================================================

##other\_sales

options(repr.plot.width = 14, repr.plot.height = 6)

a <- ggplot(data = data, mapping = aes(x = Other\_Sales)) +

geom\_histogram(bins = 80, fill = "#800000", color = "black") +

xlab("Sales in the rest of the world (in millions)") +

ylab("Frequency") +

ggtitle("Sales in the rest of the world") +

theme\_minimal() +

theme(plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

df <- data[data$Other\_Sales < 2, ]

b <- ggplot(data = df, mapping = aes(x = Other\_Sales)) +

geom\_histogram(bins = 80, fill = "#800000", color = "black") +

xlab("Sales in the rest of the world (in millions)") +

ylab("") +

ggtitle("Sales in the rest of the world < 2") +

theme\_minimal() +

theme(

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, nrow = 1, ncol = 2)

==================================================================================

##Global\_sales

options(repr.plot.width = 14, repr.plot.height = 6)

a <- ggplot(data = data, mapping = aes(x = Global\_Sales)) +

geom\_histogram(bins = 80, fill = "orange", color = "#FF0000") +

xlab("Total worldwide sales (in millions)") +

ylab("Frequency") +

ggtitle("Total worldwide sales (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

df <- data[data$Global\_Sales < 2, ]

b <- ggplot(data = df, mapping = aes(x = Global\_Sales)) +

geom\_histogram(bins = 80, fill = "orange", color = "#FF0000") +

xlab("Total worldwide sales (in millions)") +

ylab("") +

ggtitle("Total worldwide sales < 2") +

theme\_minimal() +

theme(

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, nrow = 1, ncol = 2)

==================================================================================#Distribution of qualitative variable

#Name

#5most frequent game in database

freq\_name <- data.frame(cbind(Frequency = table(data$Name), Percent = prop.table(table(data$Name)) \* 100))

freq\_name <- head(freq\_name[order(freq\_name$Frequency, decreasing = T), ], 5)

freq\_name

a <- ggplot(data = freq\_name, mapping = aes(x = row.names(freq\_name), y = Frequency)) +

geom\_segment(aes(xend=row.names(freq\_name), yend=0, color = row.names(freq\_name)), size = 2.5, alpha = .5) +

geom\_point(mapping = aes(fill = row.names(freq\_name)), size = 5, shape = 21) +

coord\_flip() +

theme\_economist() +

xlab("") +

ylab("") +

theme(plot.background = element\_rect(fill = "#F8F8FF", color = "purple"),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 14, face = "bold"),

axis.text.y = element\_text(size = 16, face = "bold"),

legend.position = "none")

b <- ggplot(data = freq\_name, mapping = aes(x = row.names(freq\_name), y = Frequency)) +

geom\_segment(aes(xend=row.names(freq\_name), yend=0, color = row.names(freq\_name)), size = 2.5, alpha = .5) +

geom\_point(mapping = aes(fill = row.names(freq\_name)), size = 5, shape = 21) +

theme\_economist() +

xlab("") +

ylab("") +

theme(plot.background = element\_rect(fill = "#F8F8FF", color = "purple"),

axis.title.x = element\_text(size = 16, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 16, face = "bold"),

axis.text.y = element\_text(size = 16, face = "bold"),

legend.position = "none")

plot\_grid(a, b + coord\_polar(), ncol = 2, nrow = 1)

==================================================================================##plateform

unique(data$Platform)

freq\_platform <- data.frame(cbind(Frequency = table(data$Platform), Percent = prop.table(table(data$Platform)) \* 100))

freq\_platform <- head(freq\_platform[order(freq\_platform$Frequency, decreasing = T), ], 5)

freq\_platform

a <- ggplot(data = freq\_platform, mapping = aes(x = row.names(freq\_platform), y = Frequency)) +

geom\_bar(stat = "identity", aes(fill = row.names(freq\_platform)), size = 1, alpha = .5, color = "black") +

geom\_label(mapping = aes(label = Frequency), fill = "purple", color = "white", size = 6, fontface = "bold") +

coord\_flip() +

theme\_economist() +

ylab("Frequency") +

xlab("") +

theme(plot.background = element\_rect(fill = "#F0E68C", color = "orange", size = 1),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.x = element\_text(size = 20, hjust = .5, vjust = -2, face = "italic"),

axis.text.x = element\_text(size = 14, face = "bold"),

axis.text.y = element\_text(size = 16, face = "bold"),

legend.position = "none")

b <- ggplot(data = freq\_name, mapping = aes(x = row.names(freq\_platform), y = Frequency)) +

geom\_bar(stat = "identity", aes(fill = row.names(freq\_platform)), color = "black", size = 1, alpha = .5) +

theme\_economist() +

xlab("") +

ylab("") +

theme(plot.background = element\_rect(fill = "#F0E68C", color = "orange", size = 1),

axis.title.y = element\_text(size = 16, face = "italic"),

axis.title.x = element\_text(size = 20, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 16, face = "bold"),

axis.text.y = element\_text(size = 16, face = "bold"),

legend.position = "none")

plot\_grid(a, b + coord\_polar(), ncol = 2, nrow = 1)

==================================================================================

#gener

freq\_genre <- data.frame(cbind(Frequency = table(data$Genre), Percent = prop.table(table(data$Genre)) \* 100))

freq\_genre <- freq\_genre[order(freq\_genre$Frequency, decreasing = T), ]

freq\_genre

options(repr.plot.width = 14, repr.plot.height = 6)

ggplot(data = freq\_genre, mapping = aes(x = Frequency, y = row.names(freq\_genre))) +

geom\_bar(stat = "identity", mapping = aes(fill = row.names(freq\_genre), color = row.names(freq\_genre)), alpha = .7, size = 1.1) +

geom\_label(mapping = aes(label=Frequency), fill = "#B22222", size = 6, color = "white", fontface = "bold", hjust=.7) +

ggtitle("Genre Frequency Distribution") +

xlab(" ") +

ylab("") +

theme\_ipsum() +

coord\_flip() +

theme(

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold", angle = 20),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

=================================================================================

#Publisher

unique(data$Publisher)

# 10 most Frequent publisher in database

freq\_published <- data.frame(cbind(Frequency = table(data$Publishe), Percent = prop.table(table(data$Publishe)) \* 100))

freq\_published <- head(freq\_published[order(freq\_published$Frequency, decreasing = T), ], 10)

freq\_published

options(repr.plot.width = 14, repr.plot.height = 10)

ggplot(data = freq\_published, mapping = aes(x = Frequency, y = row.names(freq\_published))) +

geom\_line(group = 1, size = 1, color = "blue", linetype = "dashed") +

geom\_label(mapping = aes(label=Frequency, fill = row.names(freq\_published)), size = 7, color = "white", fontface = "bold", hjust=.7) +

ggtitle("Publisher distribution") +

xlab("Frequency") +

ylab("") +

theme\_economist() +

theme(plot.background = element\_rect(fill = "#98FB98", color = "blue"),

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 18, face = "bold"),

axis.text.y = element\_text(size = 18, face = "bold"),

legend.position = "none")

#B.central trend Measures

options(repr.plot.width = 14, repr.plot.height = 6)

a <- ggplot(data = df\_means, mapping = aes(x = Mean, y = row.names(df\_means))) +

geom\_line(group = 1, size = 1.2, linetype = "dashed", color = "blue") +

geom\_point(size = 5, shape = 21, stroke = 1.5, mapping = aes(fill = row.names(df\_means))) +

theme\_minimal() +

ylab("") +

theme(plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 18, face = "bold"),

axis.text.y = element\_text(size = 18, face = "bold"),

legend.position = "none")

b <- ggplot(data = df\_means, mapping = aes(x = Mean, y = row.names(df\_means))) +

geom\_line(group = 1, size = 1.2, linetype = "dashed", color = "blue") +

geom\_point(size = 5, stroke = 1.5, shape = 21, mapping = aes(fill = row.names(df\_means))) +

theme\_minimal() +

ylab("") +

xlab("") +

theme(plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 18, face = "bold"),

axis.text.y = element\_text(size = 18, face = "bold"),

legend.position = "bottom",

legend.title = element\_text(color = "white"),

legend.text = element\_text(size = 12, face = "bold"))

plot\_grid(a, b + coord\_polar(), nrow = 1, ncol = 2)

## Median

df\_median <- data.frame(Median = c(median(data$NA\_Sales), median(data$EU\_Sales), median(data$JP\_Sales), median(data$Other\_Sales), median(data$Global\_Sales)))

row.names(df\_median) <- c("NA\_Sales", "EU\_Sales", "JP\_Sales", "Other\_Sales", "Global\_Sales")

df\_median

##Mode

Mode <- function(x){

freq <- table(x)

return(names(freq)[freq == max(freq)])

}

df\_mode <- data.frame(Mode = c(Mode(data$NA\_Sales), Mode(data$EU\_Sales), Mode(data$JP\_Sales), Mode(data$Other\_Sales), Mode(data$Global\_Sales)))

row.names(df\_mode) <- c("NA\_Sales", "EU\_Sales", "JP\_Sales", "Other\_Sales", "Global\_Sales")

df\_mode

df\_meds <- data.frame(Mean = df\_means$Mean, Median = df\_median, Mode = df\_mode)

df\_meds

##c.Seprating Measures

#percentile

percentile <- c()

for(i in 1:99){

percentile <- c(percentile, i / 100)

}

df\_percentiles <- data.frame(NA\_Sales = quantile(data$NA\_Sales, percentile), EU\_Sales = quantile(data$EU\_Sales, percentile), JP\_Sales = quantile(data$JP\_Sales, percentile),

Other\_Sales = quantile(data$Other\_Sales, percentile), Global\_Sales = quantile(data$Global\_Sales, percentile))

df\_percentiles

##d.Dispersion Measure

df\_dm <- data.frame(DM = c(MeanAD(data$NA\_Sales), MeanAD(data$EU\_Sales), MeanAD(data$JP\_Sales), MeanAD(data$Other\_Sales), MeanAD(data$Global\_Sales)))

row.names(df\_dm) <- c("NA\_Sales", "EU\_Sales", "JP\_Sales", "Other\_Sales", "Global\_Sales")

df\_dm

df\_var <- data.frame(Variance = c(var(data$NA\_Sales), var(data$EU\_Sales), var(data$JP\_Sales), var(data$Other\_Sales), var(data$Global\_Sales)))

row.names(df\_var) <- c("NA\_Sales", "EU\_Sales", "JP\_Sales", "Other\_Sales", "Global\_Sales")

df\_var

df\_std <- data.frame(std = c(sqrt(var(data$NA\_Sales)), sqrt(var(data$EU\_Sales)), sqrt(var(data$JP\_Sales)), sqrt(var(data$Other\_Sales)), sqrt(var(data$Global\_Sales))))

row.names(df\_std) <- c("NA\_Sales", "EU\_Sales", "JP\_Sales", "Other\_Sales", "Global\_Sales")

df\_std

df\_dispersion <- data.frame(DM = df\_dm$DM, Variance = df\_var$Variance, std = df\_std$std)

row.names(df\_dispersion) <- c("NA\_Sales", "EU\_Sales", "JP\_Sales", "Other\_Sales", "Global\_Sales")

df\_dispersion

ggplot(data = df\_dispersion) +

geom\_bar(stat = "identity", mapping = aes(x = row.names(df\_dispersion), y = Variance, fill = "Variance"), alpha = .9, size = 1, color = "blue") +

geom\_bar(stat = "identity", mapping = aes(x = row.names(df\_dispersion), y = std, fill = "std"), alpha = .4, size = 1, color = "green") +

geom\_bar(stat = "identity", mapping = aes(x = row.names(df\_dispersion), y = DM, fill = "DM"), alpha = .9, size = 1, color = "red") +

xlab("") +

ylab("") +

theme\_minimal() +

theme(plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 18, face = "bold"),

axis.text.y = element\_text(size = 18, face = "bold"),

legend.position = "bottom",

legend.title = element\_text(color = "white"),

==================================================================================

## 3.exploratory analysis

##A.analysis of the world best-selling game

# NA\_Sales

t\_v\_name\_NA <- aggregate(list(NA\_Sales = data$NA\_Sales), list(Name = data$Name), sum)

t\_v\_name\_NA <- t\_v\_name\_NA[order(t\_v\_name\_NA$NA\_Sales, decreasing = T), ]

# EU\_Sales

t\_v\_name\_EU <- aggregate(list(EU\_Sales = data$EU\_Sales), list(Name = data$Name), sum)

t\_v\_name\_EU <- t\_v\_name\_EU[order(t\_v\_name\_EU$EU\_Sales, decreasing = T), ]

# JP\_Sales

t\_v\_name\_JP <- aggregate(list(JP\_Sales = data$JP\_Sales), list(Name = data$Name), sum)

t\_v\_name\_JP <- t\_v\_name\_JP[order(t\_v\_name\_JP$JP\_Sales, decreasing = T), ]

# Other\_Sales

t\_v\_name\_Other <- aggregate(list(Other\_Sales = data$Other\_Sales), list(Name = data$Name), sum)

t\_v\_name\_Other <- t\_v\_name\_Other[order(t\_v\_name\_Other$Other\_Sales, decreasing = T), ]

# Global\_Sales

t\_v\_name\_Global <- aggregate(list(Global\_Sales = data$Global\_Sales), list(Name = data$Name), sum)

t\_v\_name\_Global <- t\_v\_name\_Global[order(t\_v\_name\_Global$Global\_Sales, decreasing = T), ]

options(repr.plot.width = 14, repr.plot.height = 25)

a <- ggplot(data = head(t\_v\_name\_NA, 10), mapping = aes(x = Name, y = NA\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Name, color = Name), size = 1.1, alpha = .7) +

geom\_label(mapping = aes(label = NA\_Sales), size = 6, fontface = "bold") +

xlab("") +

ylab("Sales in North America (in millions)") +

ggtitle("The 10 best selling games in North America") +

theme\_ipsum() +

theme(legend.position = "none",

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold", angle = 20),

axis.text.y = element\_text(size = 18, face = "bold"),

axis.title.y = element\_text(size = 20))

b <- ggplot(data = head(t\_v\_name\_EU, 10), mapping = aes(x = Name, y = EU\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Name, color = Name), size = 1.1, alpha = .7) +

geom\_label(mapping = aes(label = EU\_Sales), size = 6, fontface = "bold") +

xlab("") +

ylab("Sales in Europe (in millions)") +

ggtitle("The 10 best selling games in Europe") +

theme\_ipsum() +

theme(legend.position = "none",

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold", angle = 20),

axis.text.y = element\_text(size = 18, face = "bold"),

axis.title.y = element\_text(size = 20))

c <- ggplot(data = head(t\_v\_name\_JP, 10), mapping = aes(x = Name, y = JP\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Name, color = Name), size = 1.1, alpha = .7) +

geom\_label(mapping = aes(label = JP\_Sales), size = 6, fontface = "bold") +

xlab("") +

ylab("Sales in Japan (in millions)") +

ggtitle("The 10 best selling games in Japan") +

theme\_ipsum() +

theme(legend.position = "none",

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold", angle = 20),

axis.text.y = element\_text(size = 18, face = "bold"),

axis.title.y = element\_text(size = 20))

d <- ggplot(data = head(t\_v\_name\_Other, 10), mapping = aes(x = Name, y = Other\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Name, color = Name), size = 1.1, alpha = .7) +

geom\_label(mapping = aes(label = Other\_Sales), size = 6, fontface = "bold") +

xlab("") +

ylab("Sales in the rest of the world (in millions)") +

ggtitle("The 10 best selling games in rest of the world") +

theme\_ipsum() +

theme(legend.position = "none",

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold", angle = 20),

axis.text.y = element\_text(size = 18, face = "bold"),

axis.title.y = element\_text(size = 20))

plot\_grid(a, b, c, d, nrow = 4, ncol = 1)

## best selling game in world from 1980 to 2016

a <- c()

for(i in 1:nrow(t\_v\_name\_Global)){

a <- c(a, i)

}

row.names(t\_v\_name\_Global) <- a

head(t\_v\_name\_Global, 10)

options(repr.plot.width = 20, repr.plot.height = 8)

a <- ggplot(data = head(t\_v\_name\_Global, 5), mapping = aes(x = Name, y = Global\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Name, color = Name), size = 1, alpha = .7) +

geom\_label(mapping = aes(label = Global\_Sales), color = "white", fill = "blue", size = 6, fontface = "bold") +

xlab("") +

ylab("") +

ggtitle("The best selling games in the world from 1980 to 2016") +

theme\_ipsum() +

coord\_flip() +

theme(legend.position = "none",

plot.title = element\_text(size = 25, face = "bold", hjust = -2, vjust = 4),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 18, face = "bold"),

axis.title.y = element\_text(size = 20))

b <- ggplot(data = head(t\_v\_name\_Global, 5), mapping = aes(x = Name, y = Global\_Sales)) +

geom\_line(size = 2, alpha = .7, group = 1) +

geom\_point(mapping = aes(fill = Name), shape = 21, size = 5) +

theme\_ipsum() +

xlab("") +

ylab("") +

theme(legend.position = "none",

axis.text.x = element\_text(size = 15, face = "bold"),

axis.text.y = element\_text(size = 18, face = "bold"),

axis.title.y = element\_text(size = 20))

plot\_grid(a, b + coord\_polar(), nrow = 1, ncol = 2)

df\_top\_5 <- data[data$Name == "Wii Sports" | data$Name == "Grand Theft Auto V" | data$Name == "Super Mario Bros." | data$Name == "Tetris" | data$Name == "Mario Kart Wii", ]

options(repr.plot.width = 14, repr.plot.height = 7)

ggplot(data = df\_top\_5, mapping = aes(x = Year, y = Global\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Name, color = Name), size = 1, alpha = .8) +

facet\_wrap(~Name) +

theme\_bw() +

xlab("") +

ylab("Sales in the world (in millions)") +

theme(

legend.position = "none",

strip.text.x = element\_text(margin = margin(7, 7, 7, 7), size = 20, face = "bold", color = "white"),

strip.background = element\_rect(fill = "#BC8F8F", color = "black"),

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 11, face = "bold"),

axis.text.y = element\_text(size = 15, face = "bold"),

axis.title.y = element\_text(size = 20))

## B.Number of sales per plateform

# NA\_Sales

p\_name\_NA <- aggregate(list(NA\_Sales = data$NA\_Sales), list(Platform = data$Platform), sum)

p\_name\_NA <- p\_name\_NA[order(p\_name\_NA$NA\_Sales, decreasing = T), ]

# EU\_Sales

p\_name\_EU <- aggregate(list(EU\_Sales = data$EU\_Sales), list(Platform = data$Platform), sum)

p\_name\_EU <- p\_name\_EU[order(p\_name\_EU$EU\_Sales, decreasing = T), ]

# JP\_Sales

p\_name\_JP <- aggregate(list(JP\_Sales = data$JP\_Sales), list(Platform = data$Platform), sum)

p\_name\_JP <- p\_name\_JP[order(p\_name\_JP$JP\_Sales, decreasing = T), ]

# Other\_Sales

p\_name\_Other <- aggregate(list(Other\_Sales = data$Other\_Sales), list(Platform = data$Platform), sum)

p\_name\_Other <- p\_name\_Other[order(p\_name\_Other$Other\_Sales, decreasing = T), ]

# Global\_Sales

p\_name\_Global <- aggregate(list(Global\_Sales = data$Global\_Sales), list(Platform = data$Platform), sum)

p\_name\_Global <- p\_name\_Global[order(p\_name\_Global$Global\_Sales, decreasing = T), ]

options(repr.plot.width = 20, repr.plot.height = 23)

a <- ggplot(data = p\_name\_NA, 10, mapping = aes(x = Platform, y = NA\_Sales)) +

geom\_line(size = 1.1, alpha = .7, group = 1, linetype = 2, color = "purple") +

geom\_label(mapping = aes(label = NA\_Sales, fill = Platform), color = "black", size = 6, fontface = "bold", alpha = .8) +

xlab("") +

ylab("Sales in North America") +

ggtitle("Number of sales per platform in North America") +

theme\_minimal() +

theme(

legend.position = "none",

plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold", hjust = .5),

axis.title.y = element\_text(size = 23, hjust = .5))

b <- ggplot(data = p\_name\_EU, 10, mapping = aes(x = Platform, y = EU\_Sales)) +

geom\_line(size = 1.1, alpha = .7, group = 1, linetype = 2, color = "purple") +

geom\_label(mapping = aes(label = EU\_Sales, fill = Platform), color = "black", size = 6, fontface = "bold", alpha = .8) +

xlab("") +

ylab("Sales in Europe") +

ggtitle("Number of sales per platform in Europe") +

theme\_minimal() +

theme(

legend.position = "none",

plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold", hjust = .5),

axis.title.y = element\_text(size = 23, hjust = .5))

c <- ggplot(data = p\_name\_JP, 10, mapping = aes(x = Platform, y = JP\_Sales)) +

geom\_line(size = 1.1, alpha = .7, group = 1, linetype = 2, color = "purple") +

geom\_label(mapping = aes(label = JP\_Sales, fill = Platform), color = "black", size = 6, fontface = "bold", alpha = .8) +

xlab("") +

ylab("Sales in Japan") +

ggtitle("Number of sales per platform in Japan") +

theme\_minimal() +

theme(

legend.position = "none",

plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold", hjust = .5),

axis.title.y = element\_text(size = 23, hjust = .5))

d <- ggplot(data = p\_name\_Other, 10, mapping = aes(x = Platform, y = Other\_Sales)) +

geom\_line(size = 1.1, alpha = .7, group = 1, linetype = 2, color = "purple") +

geom\_label(mapping = aes(label = Other\_Sales, fill = Platform), color = "black", size = 6, fontface = "bold", alpha = .8) +

xlab("") +

ylab("Sales in the rest of the world") +

ggtitle("Number of sales per platform in rest of the world") +

theme\_minimal() +

theme(

legend.position = "none",

plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold", hjust = .5),

axis.title.y = element\_text(size = 23, hjust = .5))

plot\_grid(a, b, c, d, nrow = 4, ncol = 1)

##The 10 plateformwith the highest number of game sales in the WorldPhones

a <- c()

for(i in 1:nrow(p\_name\_Global)){

a <- c(a, i)

}

row.names(p\_name\_Global) <- a

head(p\_name\_Global, 10)

options(repr.plot.width = 14, repr.plot.height = 6)

ggplot(data = head(p\_name\_Global, 10), mapping = aes(x = Platform, y = Global\_Sales)) +

geom\_segment(aes(xend=Platform, yend=0, color = Platform), size = 2.3, alpha = .8) +

geom\_point(mapping = aes(fill = Platform), size = 7, shape = 21) +

geom\_line(group = 1, size = 1.1, linetype = 10, color = "red") +

xlab("") +

ylab("") +

ggtitle("The 10 platforms with the highest number of game sales in the world") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

d\_top\_10 <- data[data$Platform == "PS2" | data$Platform == "X360" | data$Platform == "PS3" | data$Platform == "Wii" | data$Platform == "DS" | data$Platform == "PS" | data$Platform == "GBA"

| data$Platform == "PSP" | data$Platform == "PS4" | data$Platform == "PC", ]

d\_top\_10$Year <- as.numeric(levels(d\_top\_10$Year))[d\_top\_10$Year]

options(repr.plot.width = 14, repr.plot.height = 10)

ggplot(data = d\_top\_10, mapping = aes(x = Year, y = Global\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Platform, color = Platform), size = .1, alpha = .8) +

facet\_wrap(~Platform) +

theme\_bw() +

xlab("") +

ylab("Sales in the world (in millions)") +

theme(

legend.position = "none",

strip.text.x = element\_text(margin = margin(7, 7, 7, 7), size = 20, face = "bold", color = "white"),

strip.background = element\_rect(fill = "#F4A460", color = "black"),

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

axis.title.y = element\_text(size = 20))

## c.game sales by genre

# NA\_Sales

g\_name\_NA <- aggregate(list(NA\_Sales = data$NA\_Sales), list(Genre = data$Genre), sum)

g\_name\_NA <- g\_name\_NA[order(g\_name\_NA$NA\_Sales, decreasing = T), ]

# EU\_Sales

g\_name\_EU <- aggregate(list(EU\_Sales = data$EU\_Sales), list(Genre = data$Genre), sum)

g\_name\_EU <- g\_name\_EU[order(g\_name\_EU$EU\_Sales, decreasing = T), ]

# JP\_Sales

g\_name\_JP <- aggregate(list(JP\_Sales = data$JP\_Sales), list(Genre = data$Genre), sum)

g\_name\_JP <- g\_name\_JP[order(g\_name\_JP$JP\_Sales, decreasing = T), ]

# Other\_Sales

g\_name\_Other <- aggregate(list(Other\_Sales = data$Other\_Sales), list(Genre = data$Genre), sum)

g\_name\_Other <- g\_name\_Other[order(g\_name\_Other$Other\_Sales, decreasing = T), ]

# Global\_Sales

g\_name\_Global <- aggregate(list(Global\_Sales = data$Global\_Sales), list(Genre = data$Genre), sum)

g\_name\_Global <- g\_name\_Global[order(g\_name\_Global$Global\_Sales, decreasing = T), ]

options(repr.plot.width = 20, repr.plot.height = 20)

a <- ggplot(data = g\_name\_NA, mapping = aes(x = Genre, y = NA\_Sales)) +

geom\_segment(aes(xend=Genre, yend=0, color = Genre), size = 2.3, alpha = .8) +

geom\_point(mapping = aes(fill = Genre), size = 7, shape = 21) +

geom\_line(group = 1, size = 1.1, linetype = 10, color = "red") +

xlab("") +

ylab("") +

ggtitle("Number of sales by gender in North America (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

b <- ggplot(data = g\_name\_EU, mapping = aes(x = Genre, y = EU\_Sales)) +

geom\_segment(aes(xend=Genre, yend=0, color = Genre), size = 2.3, alpha = .8) +

geom\_point(mapping = aes(fill = Genre), size = 7, shape = 21) +

geom\_line(group = 1, size = 1.1, linetype = 10, color = "red") +

xlab("") +

ylab("") +

ggtitle("Number of sales by gender in Europe (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

c <- ggplot(data = g\_name\_JP, mapping = aes(x = Genre, y = JP\_Sales)) +

geom\_segment(aes(xend=Genre, yend=0, color = Genre), size = 2.3, alpha = .8) +

geom\_point(mapping = aes(fill = Genre), size = 7, shape = 21) +

geom\_line(group = 1, size = 1.1, linetype = 10, color = "red") +

xlab("") +

ylab("") +

ggtitle("Number of sales by gender in Japan (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

d <- ggplot(data = g\_name\_Other, mapping = aes(x = Genre, y = Other\_Sales)) +

geom\_segment(aes(xend=Genre, yend=0, color = Genre), size = 2.3, alpha = .8) +

geom\_point(mapping = aes(fill = Genre), size = 7, shape = 21) +

geom\_line(group = 1, size = 1.1, linetype = 10, color = "red") +

xlab("") +

ylab("") +

ggtitle("Number of sales by gender in rest of the world (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, c, d, nrow = 4, ncol = 1)

## Examples of games by genre

a <- c()

for(i in 1:nrow(g\_name\_Global)){

a <- c(a, i)

}

row.names(g\_name\_Global) <- a

g\_name\_Global

options(repr.plot.width = 14, repr.plot.height = 6)

ggplot(data = g\_name\_Global, mapping = aes(x = Genre, y = Global\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Genre), alpha = .7, size = 1, color = "black") +

geom\_label(mapping = aes(label=Global\_Sales), fill = "purple", size = 6, color = "white", fontface = "bold", hjust=.7) +

ggtitle("Best selling genres in the world") +

xlab(" ") +

ylab("") +

theme\_ipsum() +

theme(

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold", angle = 20),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

g\_top\_10 <- data[data$Genre == "Action" | data$Genre == "Sports" | data$Genre == "Shooter" | data$Genre == "Role-Playing" | data$Genre == "Racing", ]

g\_top\_10$Year <- as.numeric(levels(g\_top\_10$Year))[g\_top\_10$Year]

options(repr.plot.width = 14, repr.plot.height = 10)

ggplot(data = g\_top\_10, mapping = aes(x = Year, y = Global\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Genre, color = Genre), size = .1, alpha = .8) +

facet\_wrap(~Genre) +

theme\_bw() +

xlab("") +

ylab("Sales in the world (in millions)") +

theme(

legend.position = "none",

strip.text.x = element\_text(margin = margin(7, 7, 7, 7), size = 20, face = "bold", color = "white"),

strip.background = element\_rect(fill = "black", color = "red"),

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

axis.title.y = element\_text(size = 20))

ggplot(data = g\_top\_10, aes(x=Year, y=Global\_Sales, group=Genre, color=Genre)) +

geom\_line() +

geom\_point() +

ggtitle("Sale of games by genre from 1980 to 2016 (in millions)") +

theme\_ipsum() +

ylab("Sale of games") +

xlab("") +

transition\_reveal(Year)

##d.Number of sales per publisher

options(repr.plot.width = 18, repr.plot.height = 20)

a <- ggplot(data = head(pu\_name\_NA, 10), mapping = aes(x = Publisher, y = NA\_Sales)) +

geom\_bar(stat = "identity", aes(fill = Publisher, color = Publisher), size = 1.2, alpha = .8) +

geom\_label(mapping = aes(label=NA\_Sales), fill = "#FF8C00", size = 6, color = "white", fontface = "bold", hjust=.7) +

xlab("") +

ylab("") +

ggtitle("Number of sales by Publisher in North America (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold", angle = 10),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

b <- ggplot(data = head(pu\_name\_EU, 10), mapping = aes(x = Publisher, y = EU\_Sales)) +

geom\_bar(stat = "identity", aes(fill = Publisher, color = Publisher), size = 1.2, alpha = .8) +

geom\_label(mapping = aes(label=EU\_Sales), fill = "#FF8C00", size = 6, color = "white", fontface = "bold", hjust=.7) +

xlab("") +

ylab("") +

ggtitle("Number of sales by Publisher in Europe (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold", angle = 10),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

c <- ggplot(data = head(pu\_name\_JP, 10), mapping = aes(x = Publisher, y = JP\_Sales)) +

geom\_bar(stat = "identity", aes(fill = Publisher, color = Publisher), size = 1.2, alpha = .8) +

geom\_label(mapping = aes(label=JP\_Sales), fill = "#FF8C00", size = 6, color = "white", fontface = "bold", hjust=.7) +

xlab("") +

ylab("") +

ggtitle("Number of sales by Publisher in Japan (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold", angle = 10),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

d <- ggplot(data = head(pu\_name\_Other, 10), mapping = aes(x = Publisher, y = Other\_Sales)) +

geom\_bar(stat = "identity", aes(fill = Publisher, color = Publisher), size = 1.2, alpha = .8) +

geom\_label(mapping = aes(label=Other\_Sales), fill = "#FF8C00", size = 6, color = "white", fontface = "bold", hjust=.7) +

xlab("") +

ylab("") +

ggtitle("Number of sales by Publisher in rest of the world (in millions)") +

theme\_minimal() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold", angle = 10),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

plot\_grid(a, b, c, d, nrow = 4, ncol = 1)

#10.publishers with the most sales

a <- c()

for(i in 1:nrow(pu\_name\_Global)){

a <- c(a, i)

}

row.names(pu\_name\_Global) <- a

head(pu\_name\_Global, 10)

options(repr.plot.width = 14, repr.plot.height = 7)

ggplot(data = head(pu\_name\_Global, 10), mapping = aes(x = Publisher, y = Global\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Publisher), alpha = .7, size = 1, color = "black") +

geom\_label(mapping = aes(label=Global\_Sales), fill = "purple", size = 6, color = "white", fontface = "bold", hjust=.7) +

ggtitle("The 10 publishers with the most sales (in millions)") +

xlab(" ") +

ylab("") +

theme\_ipsum() +

theme(

plot.title = element\_text(size = 24, hjust = .5, face = "bold"),

axis.title.x = element\_text(size = 24, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 24, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 20, face = "bold", angle = 15),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

pu\_top\_10 <- data[data$Publisher == "Nintendo" | data$Publisher == "Electronic Arts" | data$Publisher == "Activision" | data$Publisher == "Sony Computer Entertainment" | data$Publisher == "Ubisoft" | data$Publisher == "Take-Two Interactive" |

data$Publisher == "THQ" | data$Publisher == "Konami Digital Entertainment" | data$Publisher == "Sega" | data$Publisher == "Namco Bandai Games", ]

pu\_top\_10$Year <- as.numeric(levels(pu\_top\_10$Year))[pu\_top\_10$Year]

options(repr.plot.width = 17, repr.plot.height = 10)

ggplot(data = pu\_top\_10, mapping = aes(x = Year, y = Global\_Sales)) +

geom\_bar(stat = "identity", mapping = aes(fill = Publisher, color = Publisher), size = .1, alpha = .8) +

facet\_wrap(~Publisher) +

theme\_bw() +

xlab("") +

ylab("Sales in the world (in millions)") +

theme(

legend.position = "none",

strip.text.x = element\_text(margin = margin(7, 7, 7, 7), size = 20, face = "bold", color = "#4B0082"),

strip.background = element\_rect(fill = "#FFB6C1", color = "green"),

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 20, face = "bold"),

axis.text.y = element\_text(size = 20, face = "bold"),

axis.title.y = element\_text(size = 20))

ggplot(pu\_top\_10, aes(Year, Global\_Sales, colour = Publisher)) +

geom\_point(alpha = 0.7, show.legend = FALSE) +

scale\_size(range = c(2, 12)) +

scale\_x\_log10() +

facet\_wrap(~Publisher) +

# Here comes the gganimate specific bits

labs(title = 'Year: {frame\_time}', x = 'Year', y = 'Sales in the world') +

transition\_time(Year) +

ease\_aes('linear')

npu\_top\_10 <- data[data$Publisher == "Nintendo" | data$Publisher == "Electronic Arts" | data$Publisher == "Activision" | data$Publisher == "Ubisoft", ]

npu\_top\_10$Year <- as.numeric(levels(npu\_top\_10$Year))[npu\_top\_10$Year]

ggplot(data = npu\_top\_10, aes(x=Year, y=Global\_Sales, group=Publisher, color=Publisher)) +

geom\_line() +

geom\_point() +

ggtitle("Sale of games by Publisher from 1980 to 2016 (in millions)") +

theme\_ipsum() +

ylab("Sale of games") +

xlab("") +

transition\_reveal(Year)

## E.global sales Number per year

df\_global <- aggregate(list(Global\_Sales = data$Global\_Sales), list(Year = data$Year), sum)

df\_global <- df\_global[order(df\_global$Global\_Sales), ]

a <- c()

for(i in 1:nrow(df\_global)){

a <- c(a, i)

}

row.names(df\_global) <- a

df\_global

options(repr.plot.width = 20, repr.plot.height = 11)

a <- ggplot(data = df\_global, mapping = aes(x = Year, y = Global\_Sales)) +

geom\_line(size = 1, linetype = 10, color = "blue", group = 1) +

geom\_point(size = 6, shape = 21, mapping = aes(fill = Year)) +

xlab("") +

ylab("Global Sales") +

ggtitle("Number of sales by Year in world (in millions)") +

theme\_classic() +

theme(legend.position = "none",

strip.text.x = element\_text(margin = margin(7, 7, 7, 7), size = 20, face = "bold", color = "#4B0082"),

strip.background = element\_rect(fill = "#FFB6C1", color = "green"),

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15),

axis.text.y = element\_text(size = 20, face = "bold"),

axis.title.y = element\_text(size = 23))

b <- ggplot(data = df\_global, mapping = aes(x = Year, y = Global\_Sales)) +

geom\_segment(aes(xend=Year, yend=0, color = Year), size = 2.3, alpha = .8) +

geom\_point(mapping = aes(fill = Year), size = 5, shape = 21) +

geom\_line(group = 1, size = 1.1, linetype = 10, color = "red") +

xlab("") +

ylab("Global Sales") +

theme\_classic() +

theme(plot.title = element\_text(size = 25, face = "bold", hjust = .5),

axis.title.x = element\_text(size = 16, hjust = .5, face = "italic"),

axis.title.y = element\_text(size = 16, hjust = .5, face = "italic"),

axis.text.x = element\_text(size = 15),

axis.text.y = element\_text(size = 20, face = "bold"),

legend.position = "none")

c <- ggplot(data = df\_global, mapping = aes(x = Year, y = Global\_Sales)) +

geom\_line(size = 1, linetype = 10, color = "blue", group = 1) +

geom\_label(mapping = aes(label=Global\_Sales), fill = "blue", size = 6, color = "white", fontface = "bold", alpha = .5) +

xlab("") +

ylab("Global Sales") +

theme\_classic() +

theme(legend.position = "none",

strip.text.x = element\_text(margin = margin(7, 7, 7, 7), size = 20, face = "bold", color = "#4B0082"),

strip.background = element\_rect(fill = "#FFB6C1", color = "green"),

plot.title = element\_text(size = 22, face = "bold", hjust = .5),

axis.text.x = element\_text(size = 15),

axis.text.y = element\_text(size = 20, face = "bold"),

axis.title.y = element\_text(size = 23))

plot\_grid(a, b, c, ncol = 1, nrow = 3)