2.1.1 # Global Trend Visualization

Chart, line chart

AI-generated content may be incorrect.

2.1.2 # Composition of Global Sales Over Time

Chart

AI-generated content may be incorrect.

2.1.3 # Regional Breakdown

Chart, bar chart

AI-generated content may be incorrect.

2.1.4 # Regional Comparison by Console Type

Chart

AI-generated content may be incorrect.

**R Code:**

library(readxl)

vgsales\_final <- read\_excel("Desktop/CSUF/spring 25/isds 577/group project/vgsales\_final.xlsx")

# Classify platforms (Switch is considered Handheld)

vgsales\_final$Console\_Type <- ifelse(

vgsales\_final$Platform %in% c("3DS", "DS", "GBA", "GB", "PSP", "PSV", "Switch"),

"Handheld",

"Stationary"

)

# Focus on last decade of sales

vgsales\_decade <- subset(vgsales\_final, Year >= 2010 & Year <= 2019)

library(dplyr)

# Summarize sales by year and console type

sales\_by\_type <- vgsales\_decade %>%

group\_by(Year, Console\_Type) %>%

summarise(

Global\_Sales = sum(Global\_Sales, na.rm = TRUE),

NA\_Sales = sum(NA\_Sales, na.rm = TRUE),

EU\_Sales = sum(EU\_Sales, na.rm = TRUE),

JP\_Sales = sum(JP\_Sales, na.rm = TRUE),

Other\_Sales = sum(Other\_Sales, na.rm = TRUE),

.groups = 'drop'

)

# Global Trend Visualization (2.1.1)

library(ggplot2)

ggplot(sales\_by\_type, aes(x = Year, y = Global\_Sales, color = Console\_Type)) +

geom\_line(size = 1.2) +

geom\_point(size = 2) +

labs(

title = "Global Video Game Sales by Console Type (2010–2019)",

x = "Year",

y = "Global Sales (in millions)",

color = "Console Type"

) +

theme\_minimal()

# Composition of Global Sales Over Time (2.1.2)

ggplot(sales\_by\_type, aes(x = Year, y = Global\_Sales, fill = Console\_Type)) +

geom\_area(alpha = 0.8, position = "stack") +

labs(

title = "Composition of Global Sales by Console Type (2010–2019)",

x = "Year",

y = "Global Sales (in millions)",

fill = "Console Type"

) +

theme\_minimal()

# Regional Breakdown (2.1.3)

ggplot(sales\_by\_type, aes(x = Year, y = JP\_Sales, fill = Console\_Type)) +

geom\_bar(stat = "identity", position = "dodge") +

labs(

title = "Japanese Market: Handheld vs Stationary Console Sales (2010–2019)",

x = "Year",

y = "JP Sales (in millions)",

fill = "Console Type"

) +

theme\_minimal()

# Regional Comparison by Console Type (2.1.4)

# Reshape for faceting

library(tidyr)

sales\_long <- sales\_by\_type %>%

pivot\_longer(cols = c(NA\_Sales, EU\_Sales, JP\_Sales, Other\_Sales),

names\_to = "Region", values\_to = "Sales")

# Faceted bar plot

ggplot(sales\_long, aes(x = Year, y = Sales, fill = Console\_Type)) +

geom\_bar(stat = "identity", position = "dodge") +

facet\_wrap(~ Region) +

labs(

title = "Regional Console Sales by Type (2010–2019)",

x = "Year",

y = "Sales (in millions)",

fill = "Console Type"

) +

theme\_minimal()

# Hypothesis Testing

# Prepare the data

library(dplyr)

sales\_test\_data <- vgsales\_final %>%

filter(Year >= 2010 & Year <= 2019) %>%

filter(Console\_Type %in% c("Handheld", "Stationary")) %>%

select(Console\_Type, Global\_Sales)

# Run Welch's two-sample t-test (does not assume equal variance)

t.test(Global\_Sales ~ Console\_Type, data = sales\_test\_data)

**Test Output:**  
Welch Two Sample t-test  
  
data: Global\_Sales by Console\_Type  
t = -11.605, df = 5137.6, p-value < 2.2e-16  
  
Alternative hypothesis: true difference in means between group Handheld and group Stationary is not equal to 0  
  
95 percent confidence interval:  
 -0.4289668 to -0.3049859  
  
Sample estimates:  
 Mean (Handheld): 0.260 million units  
 Mean (Stationary): 0.627 million units