Video Game Sales Exploratory Data Analysis
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Introduction

Data visualization:

- The most effective way to transform raw data into a clear and compelling narrative
- Simplifies the understanding of large datasets and reveals complex patterns
- Enhances data accessibility, enabling users to quickly identify trends, insights, and support informed business decisions

Datasets:

- **Video Games Sales (VGS)**
  - https://www.kaggle.com/datasets/gregorut/videogamesales/data
  - 11 fields and 16598 records
  - The sales volumes of video games in the global market from 1980 to 2020
- Entertainment Software Rating Board (ESRB)
  - 34 fields and 1895 records
- Economic Data on Gross Domestic Product (GDP)
  - 16 fields and 267 records

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Primary Objective:

To illustrate the global trends in video games and their sales volume by region of the world from 1980 to 2020

Feature Name	Description	Data Type
Rank	Ranking of overall sales	Ordinal
Name	The games name	Categorical
Platform	Platform of the games release	Categorical
Year	Year of the game's release	Interval
Genre	Genre of the game	Categorical
Publisher	Publisher of the game	Categorical
NA_Sales	Sales in North America (in millions)	Ratio
EU_Sales	Sales in Europe (in millions)	Ratio
JP_Sales	Sales in Japan (in millions)	Ratio
Other_Sales	Sales in the rest of the world (in millions)	Ratio
Global_Sales	Total worldwide sales	Ratio

Table 1. Video Games Sales Dataset

Methodology

Text cleaning

- Copyright
- Editions
- Scrape Errors ("The Chronicles...)

['Strategy', 'Tower Defense']",8
8470,"The Chronicles of Narnia:
['Memory Card', 'DualShock']",20

Editions

591,Ratchet & Clank Future: Tools of Destruction,PS
592,NBA Live 2005,PS2,2004,Sports,Electronic Arts,2
593,LittleBigPlanet,PSP,2009,Platform,Sony Computer
594,Killzone: Shadow Fall,PS4,2013,Shooter,Sony Com
595,Ghostbusters: The Video Game (DS Version),X360,
596,Monster Hunter Freedom 2,PSP,2007,Role-Playing,
597,WWE SmackDown vs. RAW 2007,PS2,2006,Fighting,TH

Copyright

The Elder Scrolls III: Morrowind®
Super Hexagon,17283,97%,2012-11-27
LEGO® Star Wars™ - The Complete Sa

Peak Sales

- Peak Sales: Global video game sales peaked around 2008, reaching a high of 678.9 million units.
- Declining Trend: Sales have been steadily declining since 2010, likely due to factors like market saturation and shifting consumer preferences.
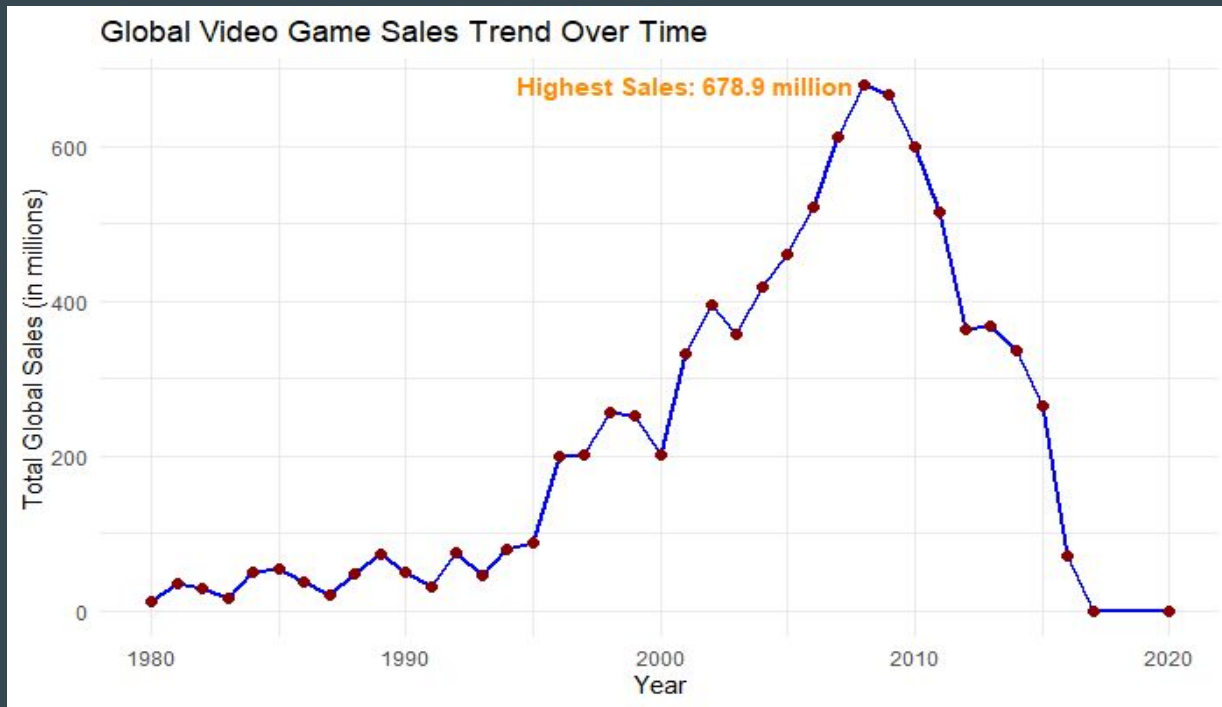

Figure 1. The Line Chart of Global Video Game Sales Trend Over Time

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Genre Trends

- Action Game Dominance: Action games have consistently been the most released genre since the late 1990s.
- Diverse Genre Landscape: The gaming industry offers a diverse range of genres, with varying levels of popularity over time.

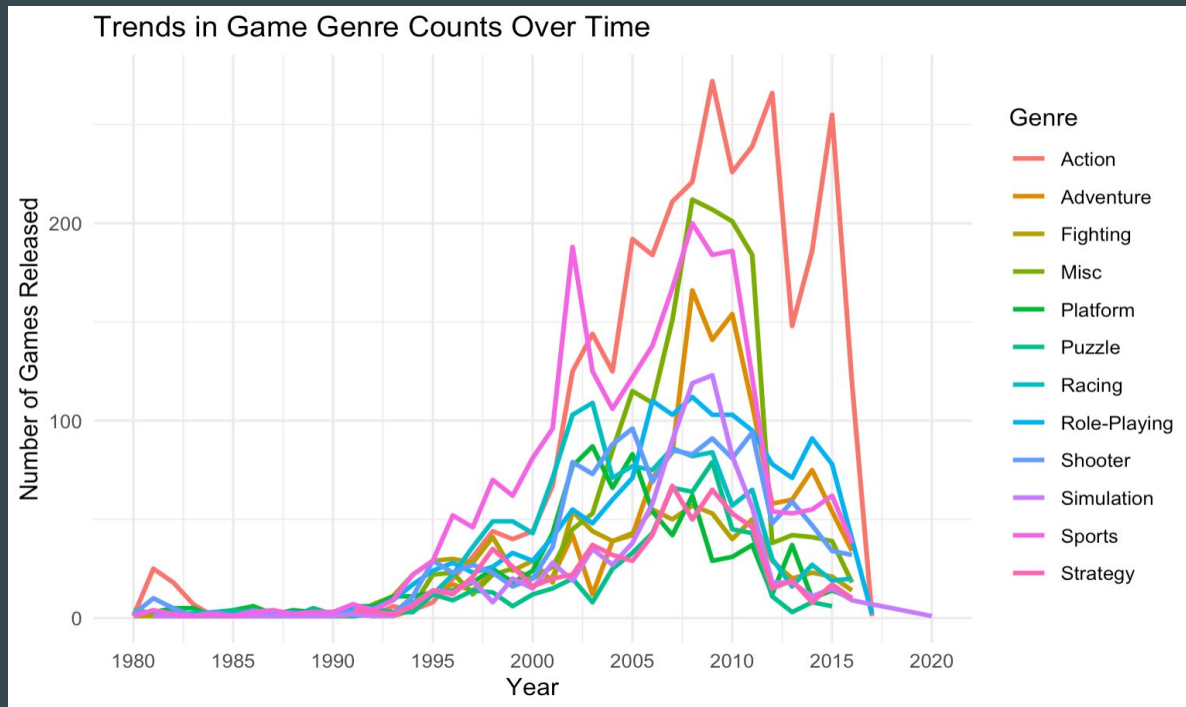**Figure 2. The Line Graphic of Game Genre Trends Over Time**

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Platform

- Platform Dominance: The PS2, Xbox 360, and PS3 were the top-selling platforms, particularly for Action, Sports, and Shooter genres..
- Genre Performance: Action games were the top-performing genre across platforms, while Puzzle, Simulation, and Strategy genres had lower sales.
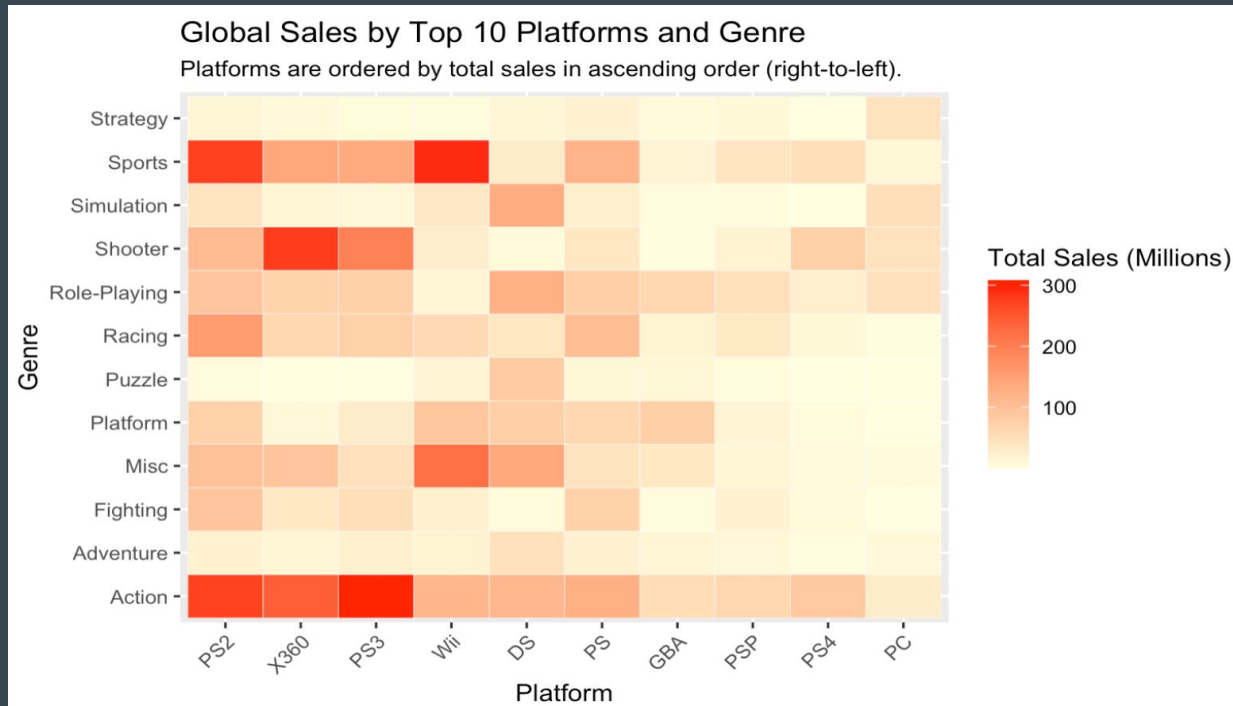

Figure 3. The Heatmap of Global Video Game Sales Across Platforms and Genres

Regional Sales

- North America leads in total video game sales across all regions.
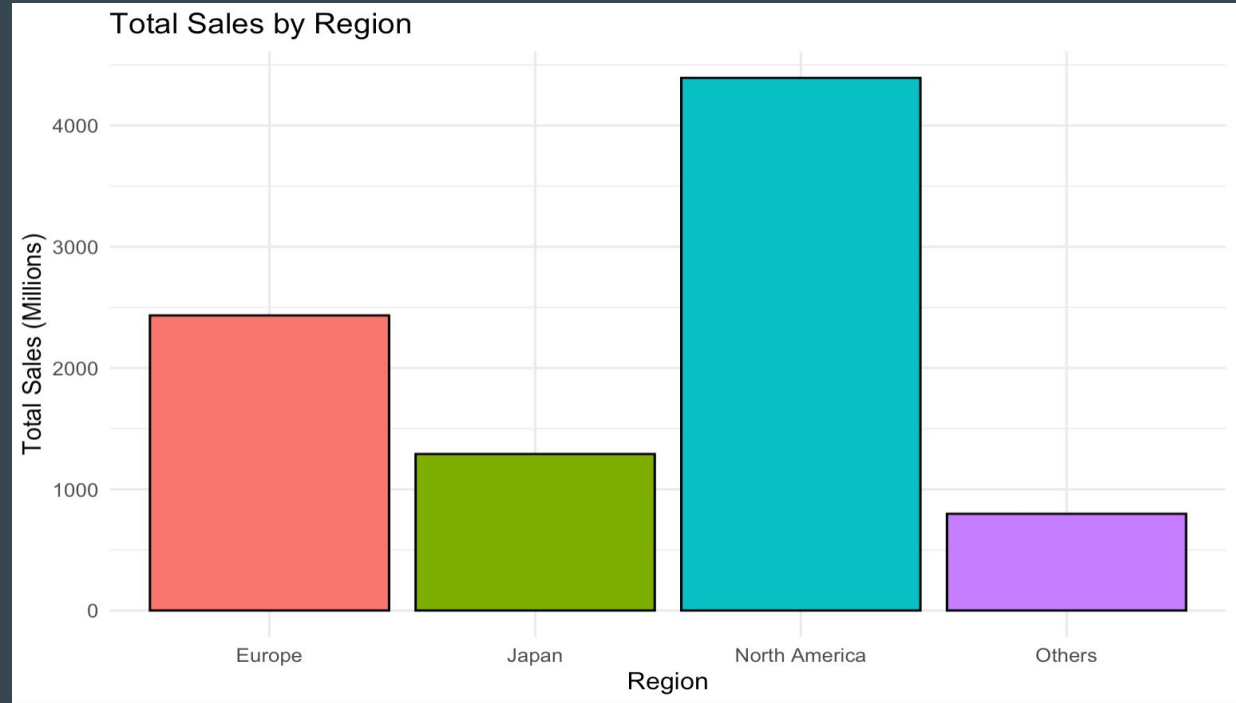- Japan presents a significant role in the gaming industry as a single nation.

Figure 4. The Bar Plot of Total Video Game Sales by Region

Favorite Genre

- Action Genre Dominance: Action games lead in sales, particularly in North America, showcasing their popularity in this market.
- Strong Genres Globally: Sports and Shooter genres perform well across all regions, indicating broad global appeal.
- Regional Insights: North America drives the highest sales across most genres, highlighting its importance for game developers targeting regional strategies.
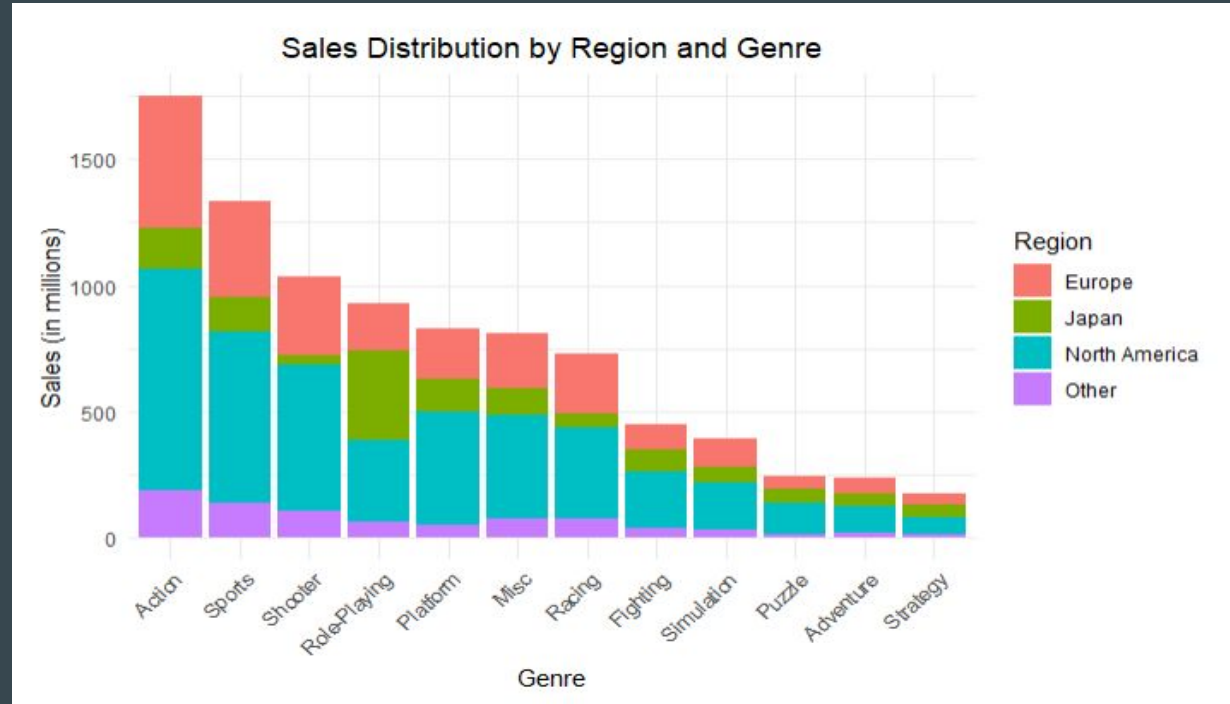

Figure 5. Sales Distribution by Region and Genre

Favorite Games

- Highlight Top Game: "Wii Sports" dominates with 82.74 million global sales
- Other Leading Games: "Super Mario Bros" and "Mario Kart Wii"
- Industry Insight: Blockbuster games play a pivotal role in shaping the video game industry's landscape.
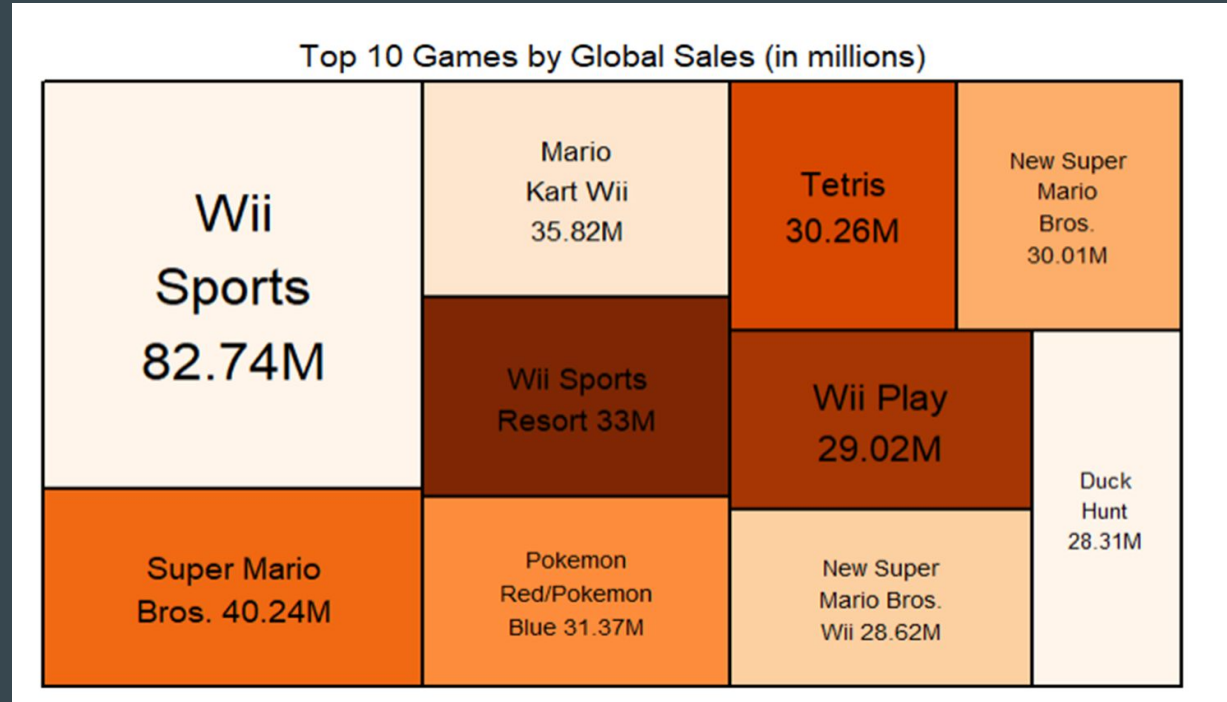

Figure 6. Top 10 Video Games by Global Sales (in millions)

Financial Crisis

- GDP and video game sales grew until the 2008 financial crisis.
- GDP recovered after 2008, not true for sales
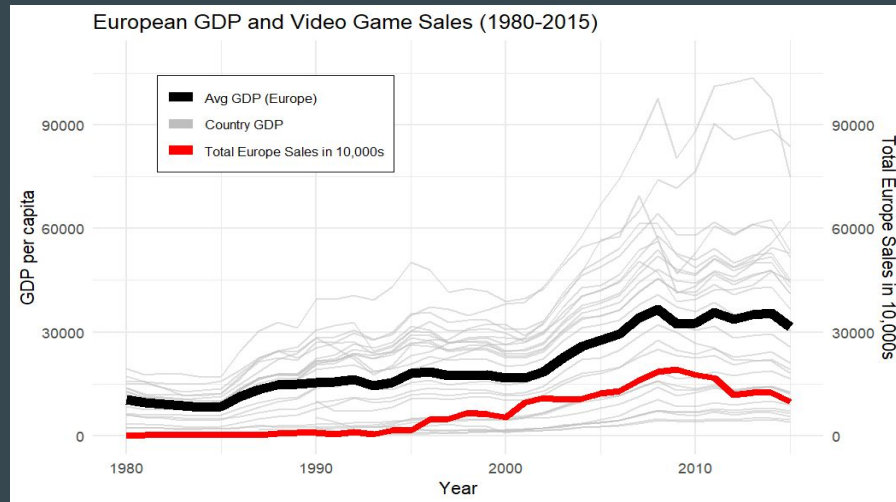 - Businesses exercising caution

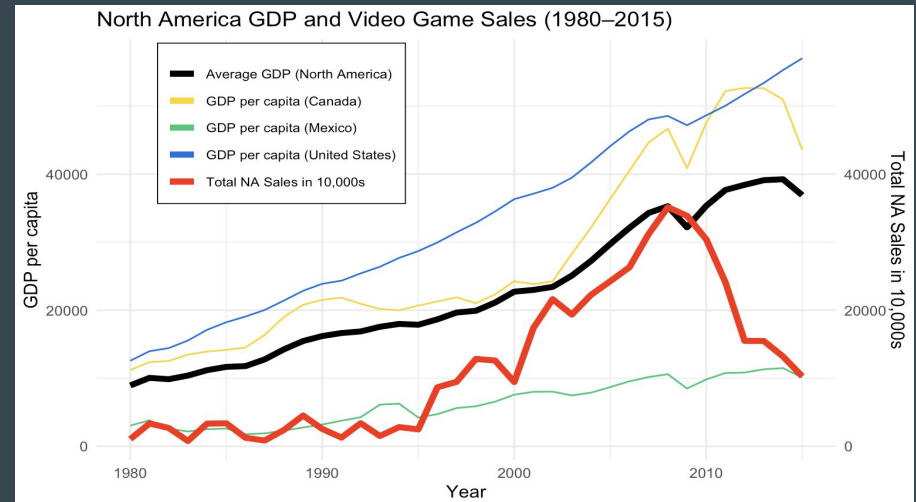**Figure 7. The Line Chart of European GDP and Video Game Sales**

Figure 8. The Line Chart of North America GDP and Video Game Sales

Financial Crises

- Weak correlation indicates a consistent game industry
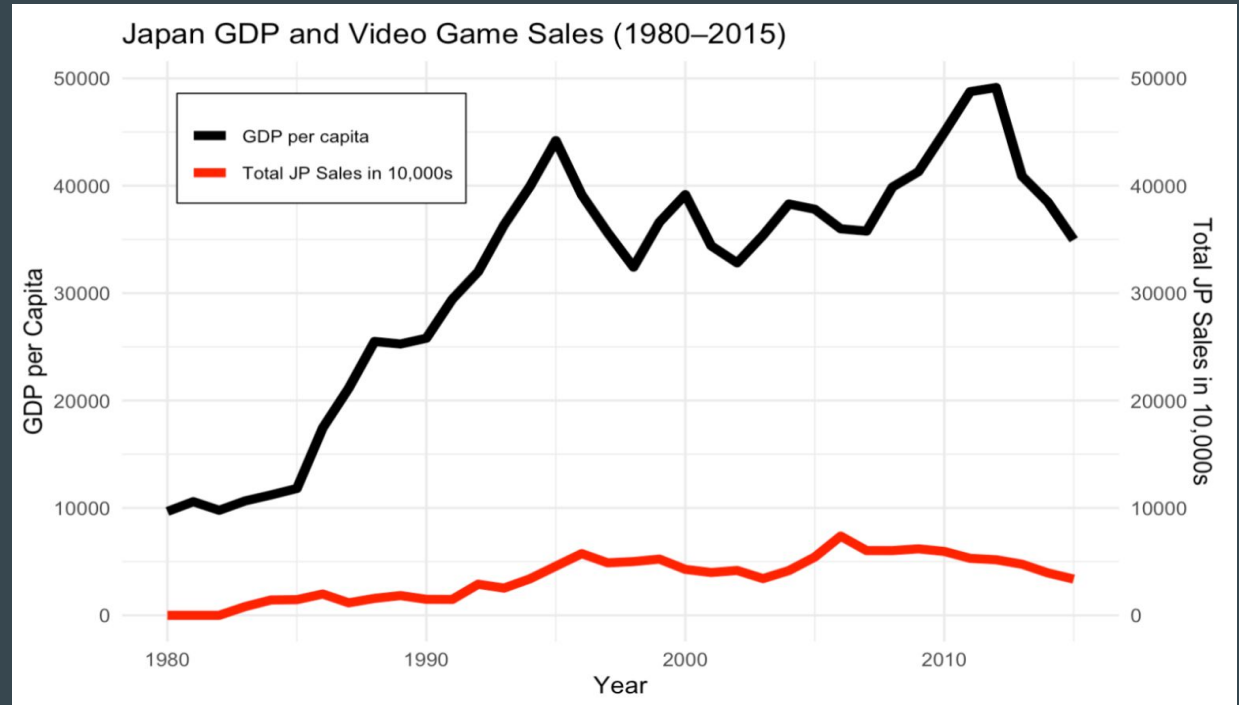- Change in Japan not as noticeable due to "lost decade"

Figure 9. The Line Chart of Japan's GDP and Video Game Sales

Discussion

Key Findings

- Market success depends on regional preferences, economic conditions, and emerging trends.
- Stable markets like Japan show consistent growth potential.

Challenges and Limitations

- **Data Bias:** Assumes most sales occur in the release year, overlooking long-tail effects and updates.
- **Narrow Dataset:** Focuses on traditional games.

Improvement

- **Time-Series Analysis:** Track sales trends over years.
- **Expanded Scope:** Include mobile gaming and streaming platforms data for broader insights.

Thank You for Your Attention & Any Questions?