



University of
South Australia

Data Visualization

PROJECT REPORT

Gaming Industry: Trends & Sales Analysis

Kavan Patel

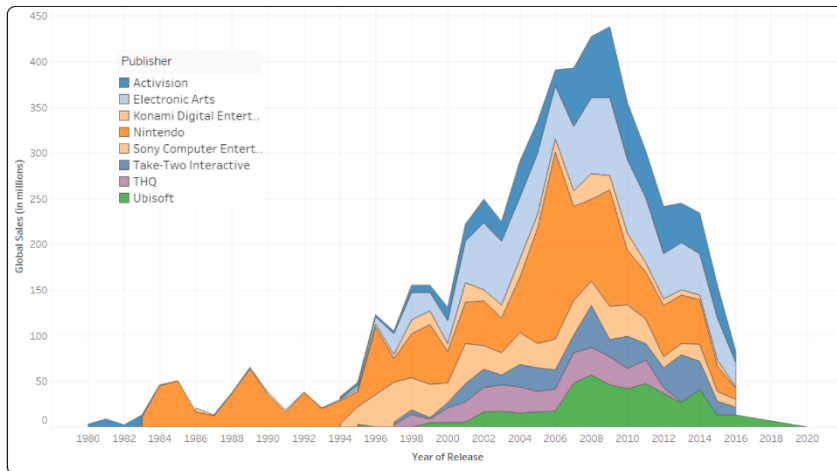
Student Id: 110386407

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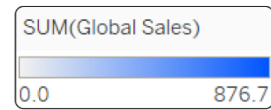
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Video Game Sales Dashboard

Top 8 Publisher sales over the years



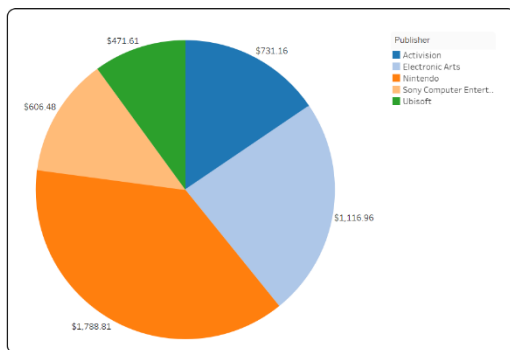
Global sales of all platforms



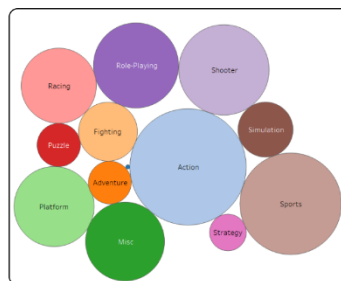
Platf..

PS2	876.7
Wii	718.8
PS3	714.9
X360	602.0
DS	581.2
PS	418.7
GB	243.0
PS4	230.1
GBA	230.0
NES	211.4
PSP	202.6
3DS	198.9
N64	172.8
PC	165.0
GC	156.6
XB	153.5
SNES	112.8
XOne	99.8
WiiU	72.7
PSV	26.9
SAT	21.4
2600	19.8
GEN	19.4
DC	13.3
SCD	1.9
WS	0.7
3DO	0.1
GG	0.0

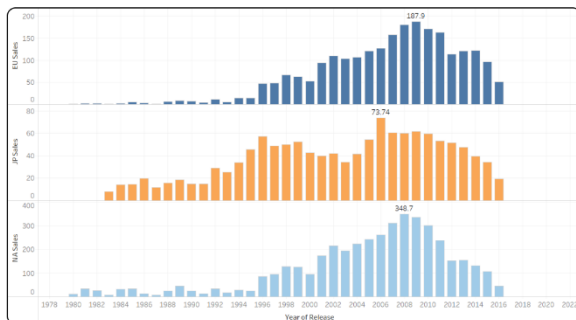
Top 5 Publisher sales (in millions)



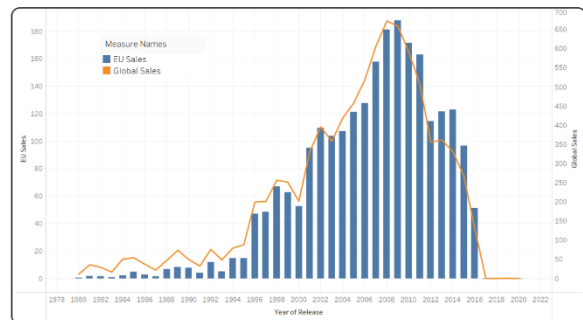
Global sales for different genre



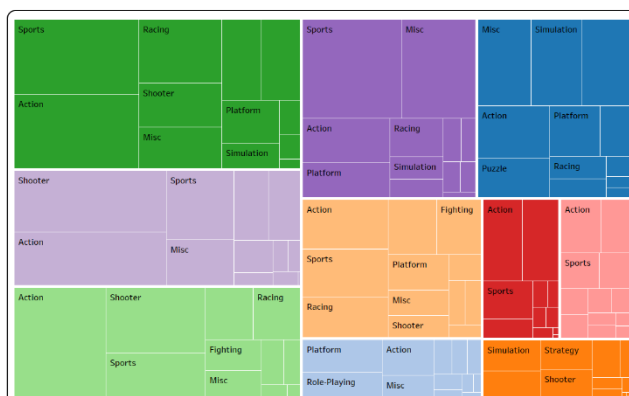
Individual sales of each region over the years



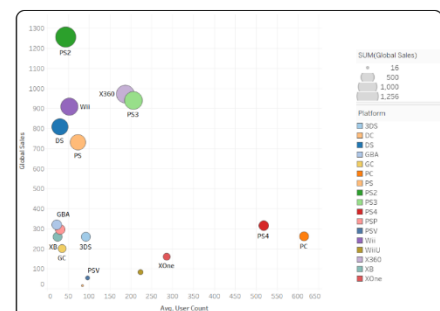
Comparison of Europe's trend with global trend



Best selling genre on platforms



Global sales by user count



Introduction

The gaming industry has witnessed exponential growth, transforming into a global entertainment powerhouse. In 2022 alone, the industry generated a remarkable \$183 billion in revenue, highlighting its significant economic impact. With approximately 2.9 billion gamers worldwide, representing nearly 37% of the global population, gaming has become a widespread and influential phenomenon. As we delve into the dataset, we can explore the sales trends within the industry, gaining insights into the immense market size and consumer demand that underpins the gaming landscape.

Therefore, the purpose of visualizing this data is to answer the following questions.

- What is the distribution of global sales across different genres in the gaming industry? And which genre generates the highest revenue?
- Which platform has the highest sales in a particular genre?
- Are platforms with higher user counts generating the highest revenue?
- What is the sales distribution among the top 5 publishers in the gaming industry?
- What are the critic scores for different game genres? and Which genres generally receive the highest and lowest critic scores?
- How have the sales figures of video games evolved over the years in North America, Europe, and Japan?

Data Sources & Description

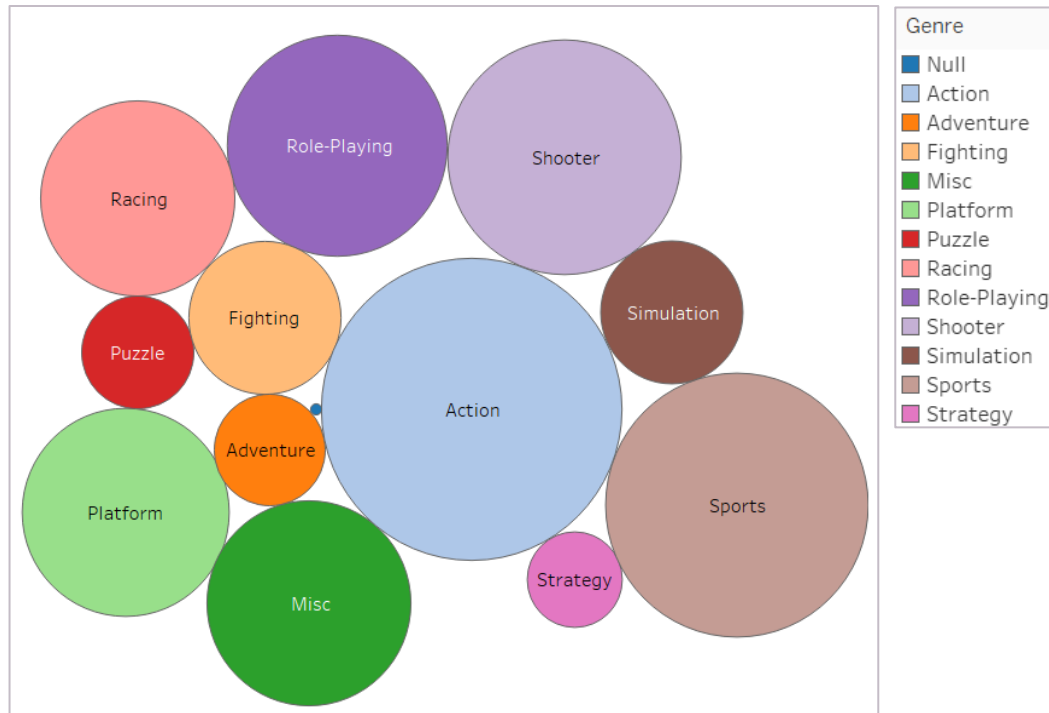
The dataset used for this visualization report is taken from [kaggle.com](https://www.kaggle.com) and contains a list of video games with sales greater than 100,000 copies. It was generated by a scrape of vgchartz.com. This dataset provides information on video games, including their rank, name, platform, year of release, genre, publisher, and sales figures in North America, Europe, Japan, and other regions. The dataset allows for the analysis of sales trends across different regions, exploring the popularity of genres, and assessing publisher performance. The data presents an opportunity to generate insightful visualizations and gain a deeper understanding of the gaming industry. This data set has 11 columns and 16598 observations in an Excel file. Variable names and their description are given in the table below.

Variable name	Description
Rank	Ranking of overall sales
Name	Name of the games
Platform	The platform where the game was released
Year	Year of the game's release
Genre	A genre of the game
Publisher	Publisher of the game
Critic_Score	Critic score given by the users out of 100
NA_Sales	Sales in North America (in millions)
EU_Sales	Sales in Europe (in millions)
JP_Sales	Sales in Japan (in millions)
Other_Sales	Sales in the rest of the world
Global_Sales	Total world-wide sales

In terms of software, I utilized Tableau for visualization and R, along with popular libraries such as ggplot2 and plotly. Tableau provides an intuitive interface for creating dynamic visualizations and dashboards. R, a statistical programming language, offers powerful libraries like ggplot2 for static visualizations and plotly for interactive plots. Additionally, for dashboard design, I utilized Figma, which can easily create interactive and visually appealing dashboards by leveraging its extensive library of design components and features.

Visualization Results

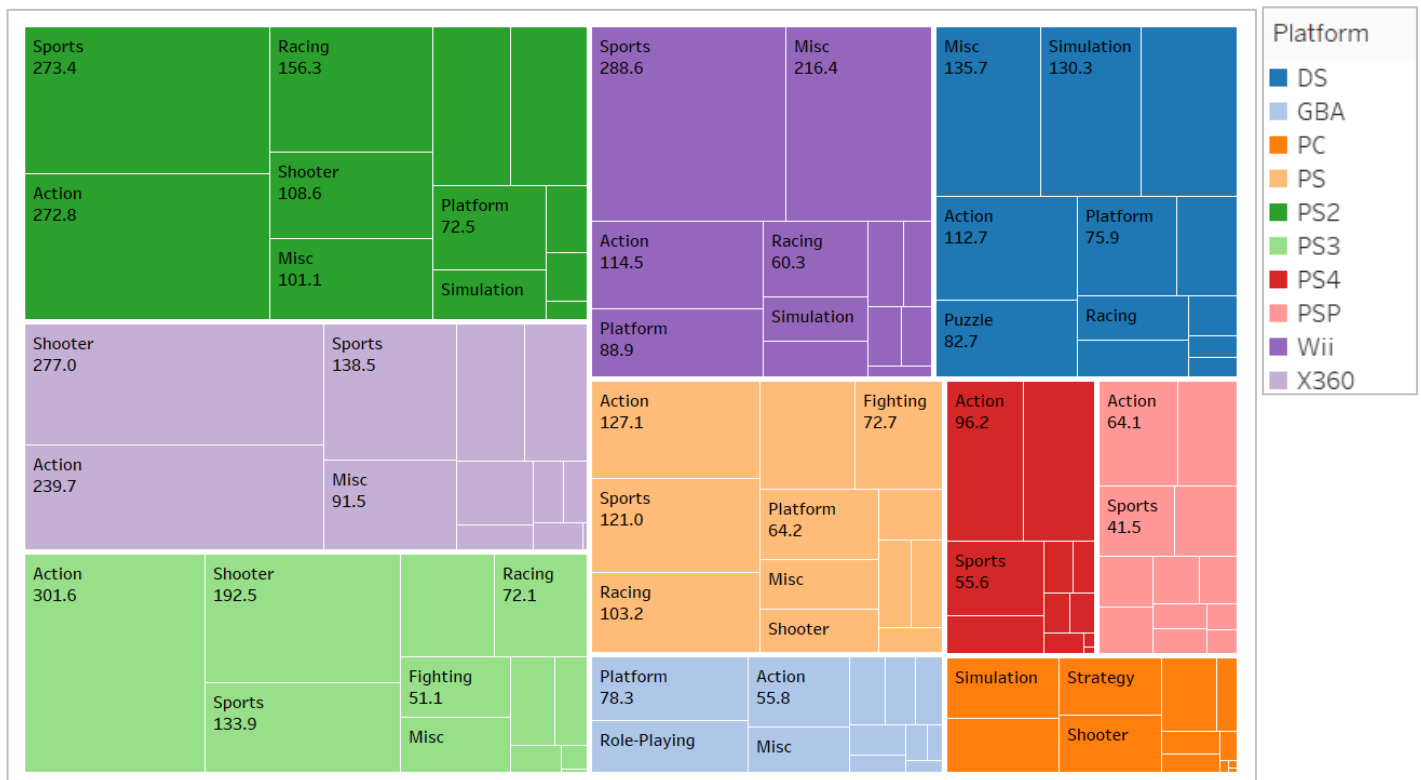
Global Sales of Gaming Genres



(Figure 1: Bubble chart of global sales for different genre)

A bubble chart in Figure 1 was utilized to showcase the global sales of different genres in the gaming industry. In this visualization, each genre is represented as a bubble, with the size of each bubble corresponding to the global sales. Additionally, distinct colours are assigned to each genre to aid differentiation. The bubble chart allows for the analysis of sales distribution across genres and enables the identification of genres with the highest global sales. Larger bubbles indicate genres with higher sales, while smaller bubbles represent genres with comparatively lower sales. This means the Action category is generating the highest revenue among all of them.

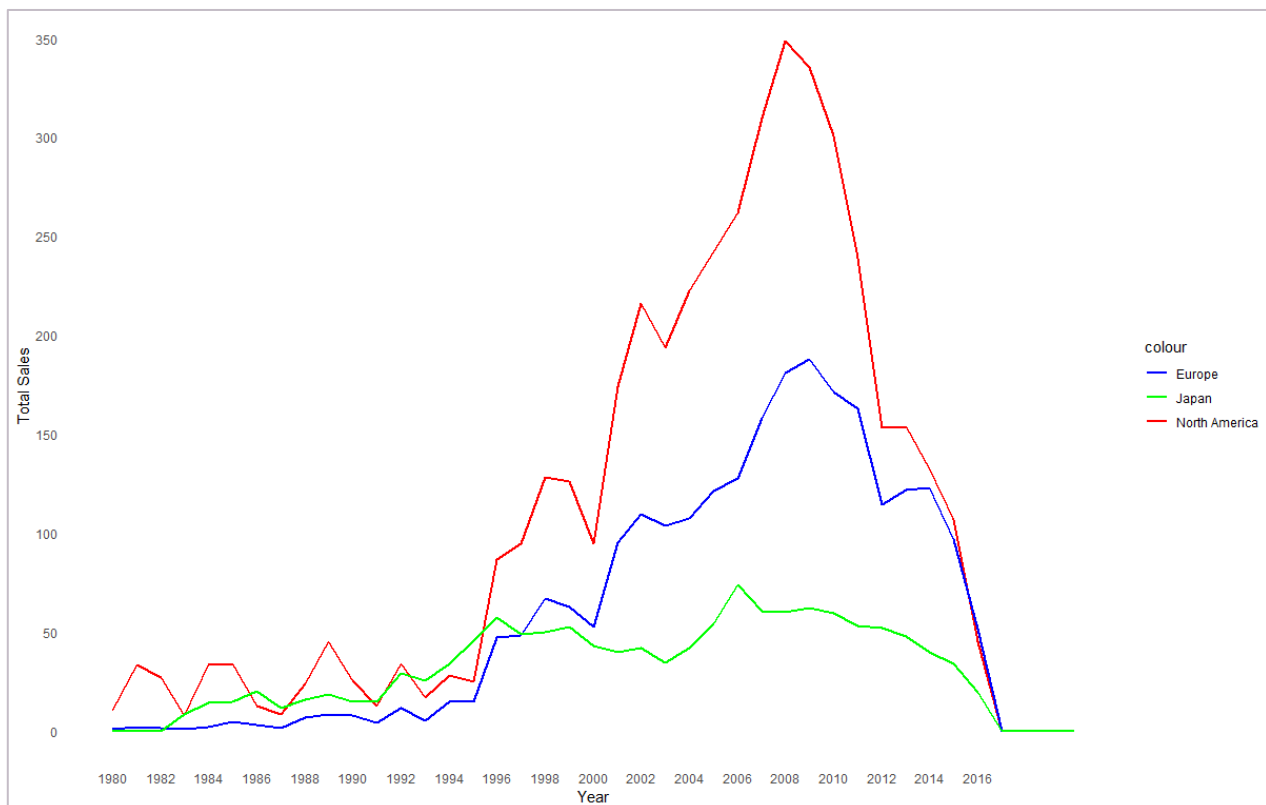
Best Selling Genres on Different Platforms



(Figure 2: Tree map of best-selling genres on platforms)

- Figure 2 represents the tree map visualization to explore the best-selling genres on different platforms, showcasing the sales distribution. The tree map utilizes colours to represent the platforms, and the size of each rectangle corresponds to the global sales (in millions). It is very clear that PS2 is the most popular platform among all other platforms and Sports is the dominating platform with \$273.4 million in sales. Action and Sports are well-liked genres on many platforms.
- PS2 is the most popular platform but in terms of the highest sales in a particular genre, PS3 takes charge with sales of \$301.6 million in the Action genre.

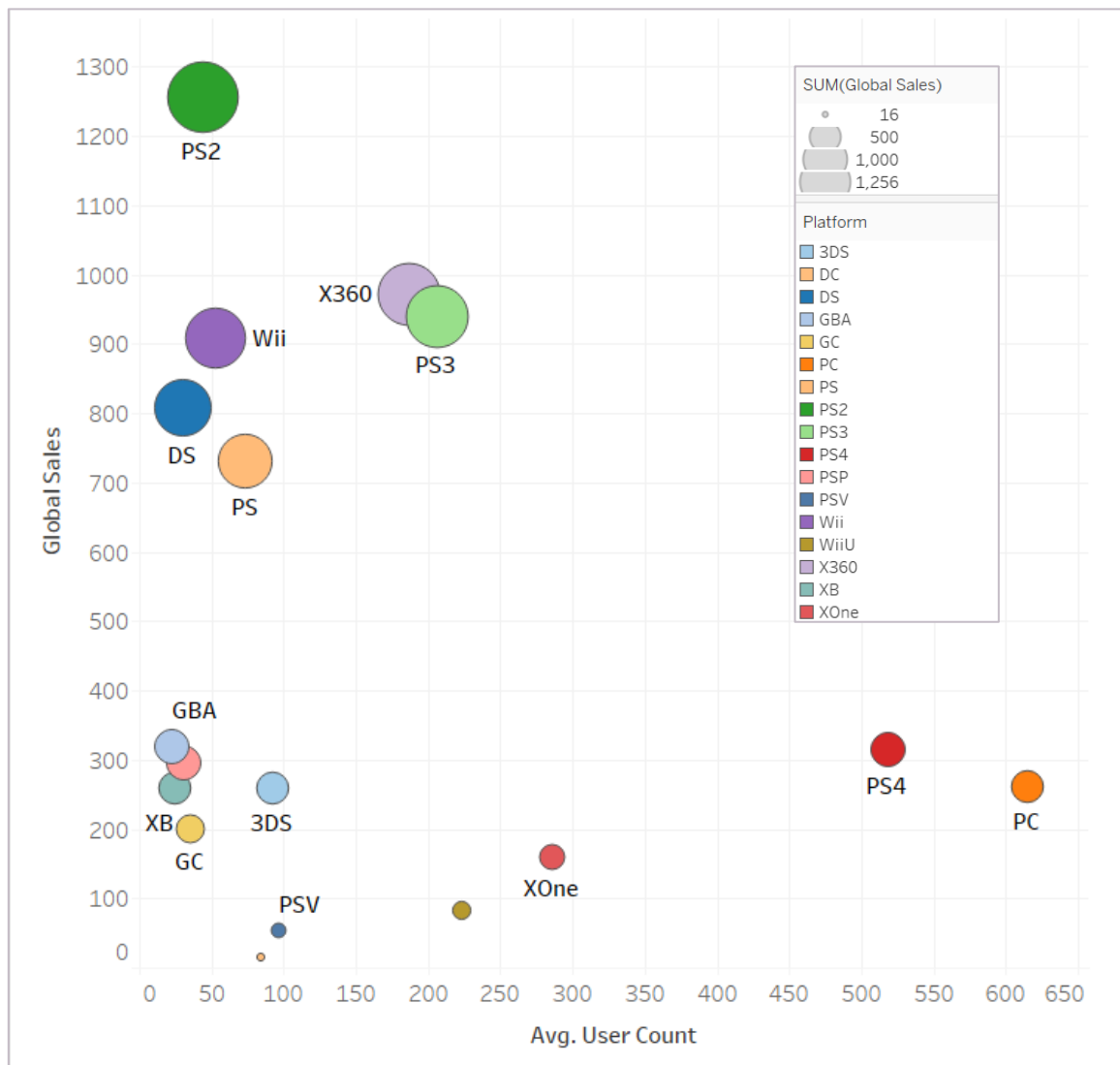
Sales Trends in the Gaming Industry by Region



(Figure 3: Combined line chart generated in R for sales trend)

- The combined line graph provided in Figure 3 represents the sales figures of video games in North America (NA), Europe (EU), and Japan (JP) from 1980 to 2016, measured in million USD. In the early 1980s, the sales figures were relatively modest, with North America leading the market. However, by the mid-1990s, the industry experienced a significant growth spurt, marked by a surge in sales across all regions. For example, in 1996, sales in North America peaked at 86.76 million USD, while Europe and Japan recorded sales of \$47.26 million and \$57.44 million, respectively.
- The following years saw continued growth in the industry, with the highest combined sales occurring in 2008. During this period, North America reported sales of \$348.69 million, Europe had \$181.14 million, and Japan reported \$60.25 million in sales.
- In more recent years, the industry has faced some challenges, with sales declining in 2016. North America recorded sales of \$44.93 million, Europe had \$51.22 million, and Japan reported \$19.31 million in sales. These values reflect the dynamic nature of the video game market and highlight the importance of understanding regional variations and market trends when analysing sales data.

Correlation between Global Sales and User Count

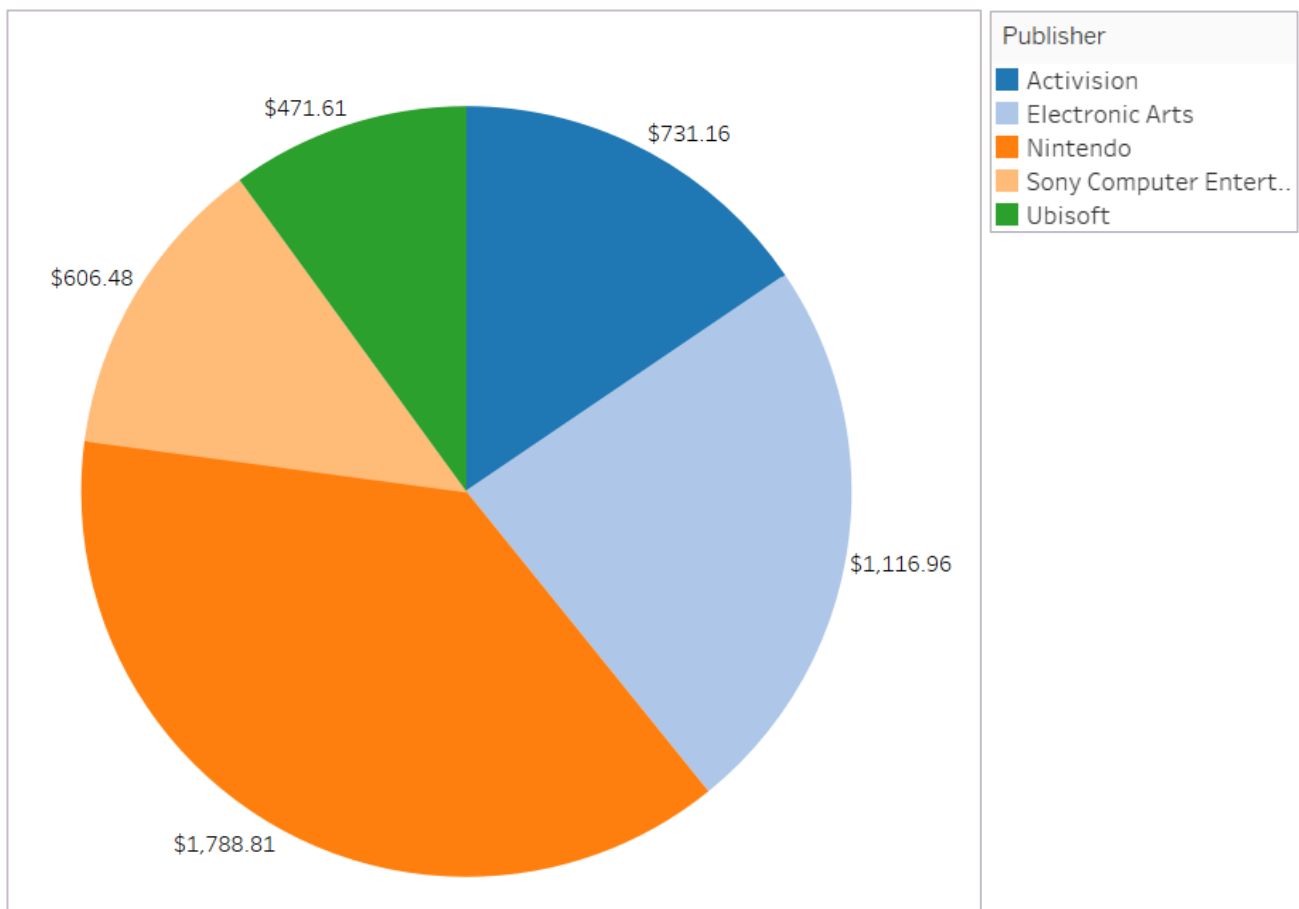


(Figure 4: Scatter plot of Avg. User count by Global Sale)

- Scatter plot in Figure 4 compares the global sales and average user count for each game in the dataset. The scatter plot utilizes colours to represent different platforms, while the size of each bubble corresponds to the global sales. This data-driven visualization allows for a comprehensive analysis of the relationship between user engagement, represented by the average user count, and sales performance across platforms. By examining the scatter plot, we can identify any correlations, patterns, or outliers between global sales and user count, and uncover valuable insights into the factors influencing game sales.

- In the scatterplot, the biggest green point again proves that PS2 is the most dominating platform in terms of global sales but, the orange point is representing the platform PC which has the highest number of users, so it doesn't mean the platform that has the highest number of users are generating the highest revenue.

Sales Distribution of Top 5 Publishers

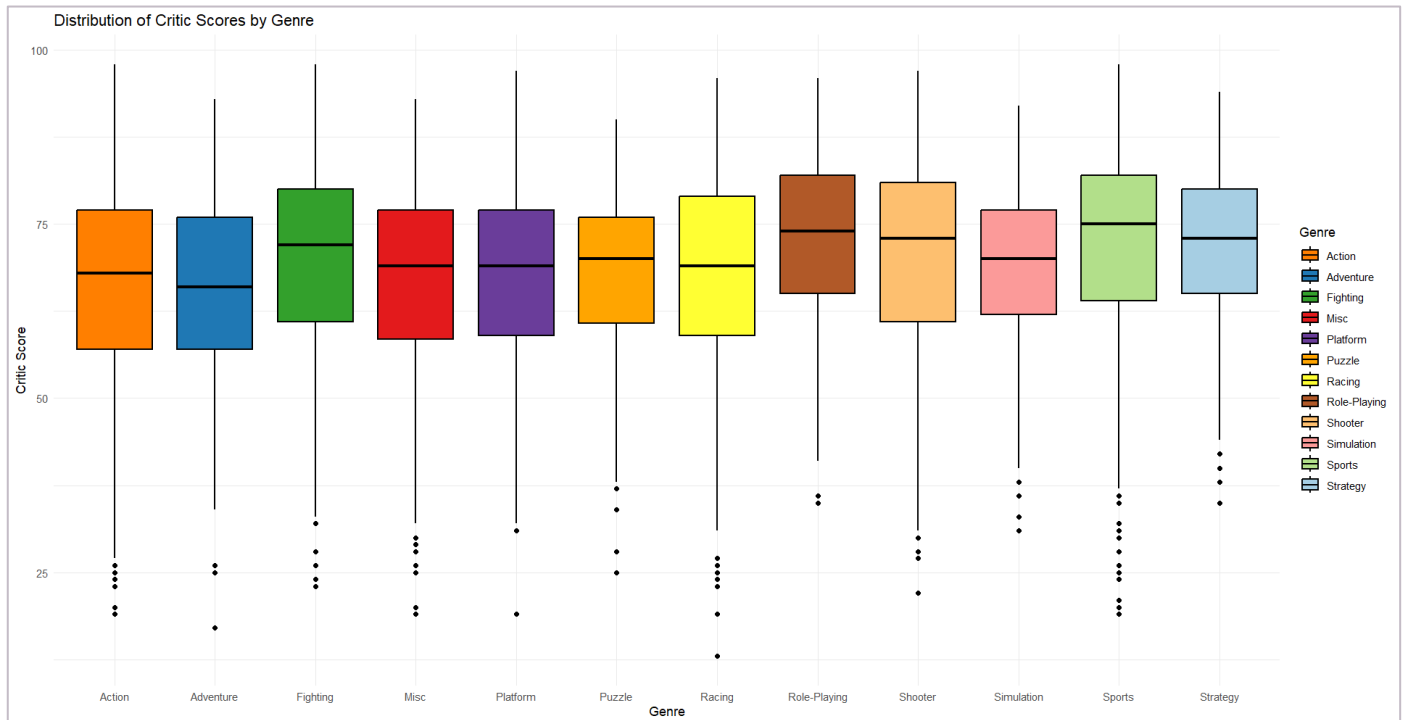


(Figure 5: Pie chart of top 5 publisher sale)

- A pie chart in Figure 5, showcased the sales distribution of the top 5 publishers in the gaming industry. The pie chart represents the sales figures (in millions) for each publisher, highlighting their respective contributions to the overall sales. Each publisher is assigned a distinct colour to aid visual differentiation. The size of each slice corresponds to the proportion of sales attributed to that publisher, allowing for a quick understanding of their individual impact. By analysing the pie chart, it is easy to identify the market share and relative importance of each publisher in terms of global sales.

- According to the pie chart, Nintendo is the most dominant publisher with the highest sales of \$1788.81 million while Ubisoft just contributed \$471.61 million in the global sales.

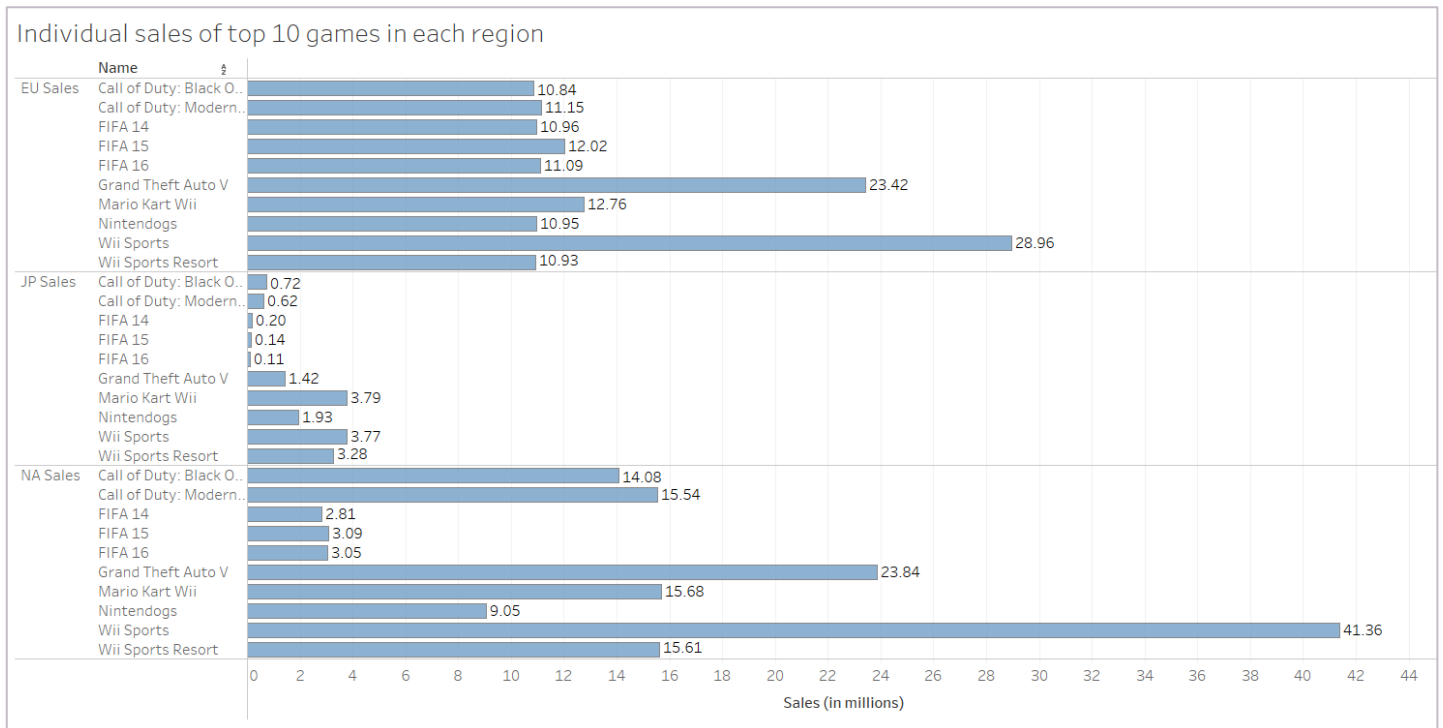
Critic Scores by Game Genre



(Figure 6: Box plot generated in R of critic score)

- The box plot in Figure 6 provides a visual representation of the lowest, highest, and mean critic scores for different game genres. It shows that RPGs and sports games stand out with the highest mean critic scores with 82 and 75 respectively, indicating that these genres are generally well-received by critics. Shooter games, strategy games, and fighting games also receive positive reviews, as their mean scores are above average.
- The average mean critic score of all game genres is 70. Adventure, puzzle, and platform games fall within the moderate range, with their mean scores slightly lower. Meanwhile, action, misc, racing, and simulation games receive average reviews, as their mean scores are closer to the middle range. It is worth noting that the range of scores varies within each genre, highlighting the diversity of opinions and evaluations.
- Overall, the graph highlights the variations in critic scores across different game genres, providing insights into the overall reception and critical acclaim of each genre.

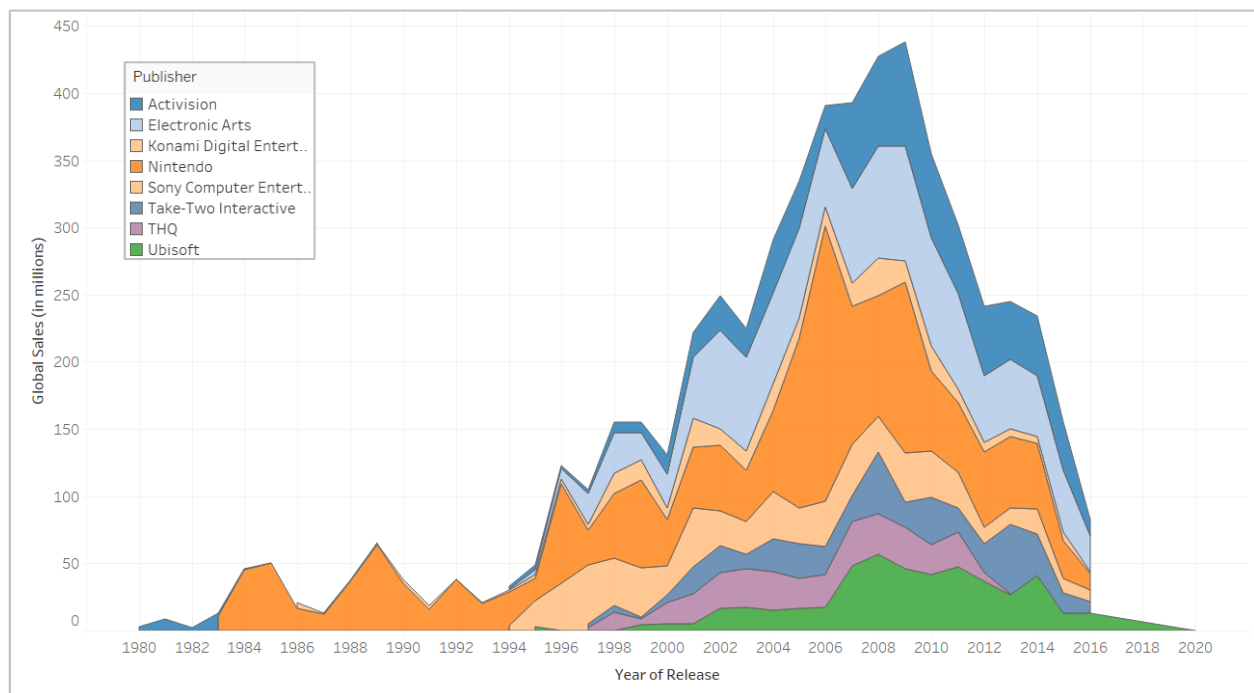
Individual Sales of Top 10 Games in 3 Regions



(Figure 7: Combined bar chart of top 10 games in regions)

- Figure 7 shows the individual sales figures of the top 10 games in different regions, including North America (NA), Europe (EU), and Japan (JP), were showcased using a data-oriented combined bar chart. In this visualization, each game is represented by a separate bar, with the height of each bar corresponding to the sales value.
- It can be clearly seen that Wii Sports is the most popular game in the EU and NA with sales of \$28.96 million and \$41.36 million respectively. In Japan, the most liked game is Mario Kart Wii with individual sales of \$3.79 million but it cannot be ignored that Wii Sports has \$3.77 million individual sales which is not far from Mario Kart Wii which means it can be concluded that Wii Sports is the most bought game in all three regions.

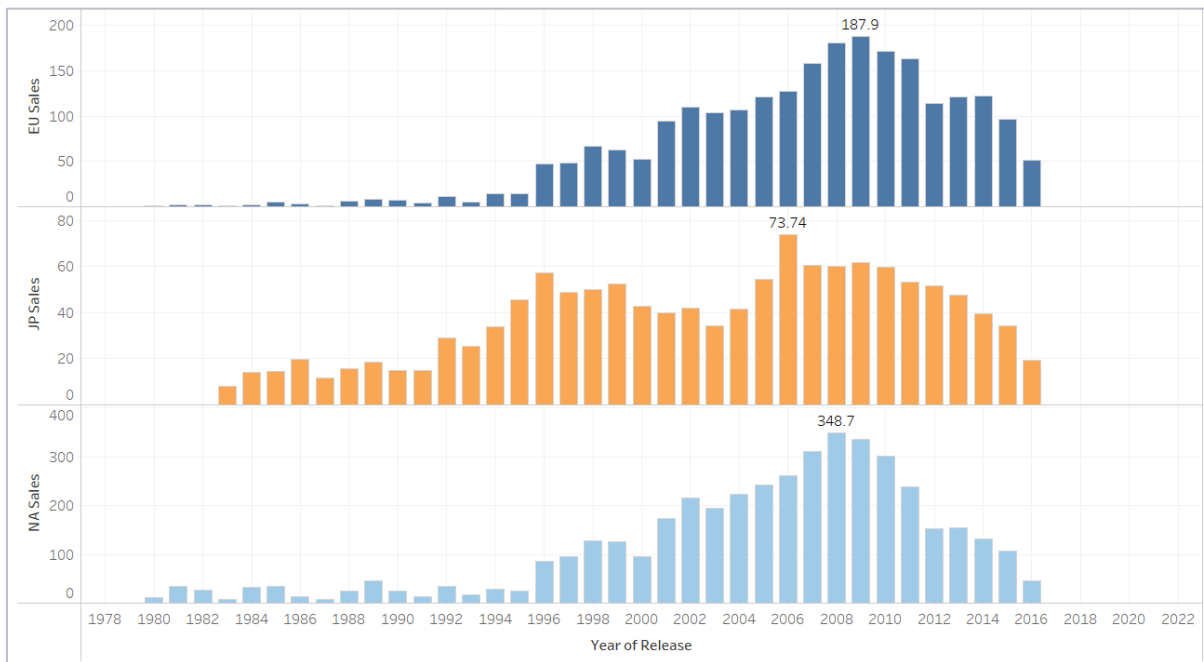
Sales Trend of Top 8 Publishers Over the Years



(Figure 8: Area chart of top 8 publishers over the years)

- Area chart in Figure 8 presents the sales trend of the top 8 publishers over the years in the gaming industry. The area chart showcases the cumulative sales figures (in millions) for each publisher from a period of 1980 to 2016 with the x-axis representing the years of release and the y-axis representing the global sales. Each publisher is assigned a distinct colour, which allows for easy differentiation of their sales trends. By analysing the area chart, we can observe the growth or decline in sales for each publisher over the years and identify any notable patterns or trends. The overlapping areas of the publishers' sales curves provide a visual representation of the overall market dynamics and the competition among the top publishers.
- From this area chart, it could be analysed that from 1980 to the early 90s Nintendo was the leading platform but after that, other platforms came to the competition in fact Activision took the lead in terms of sales till the end of the period. The highest-selling year for Activision was 2009 with around \$430 million in sales.

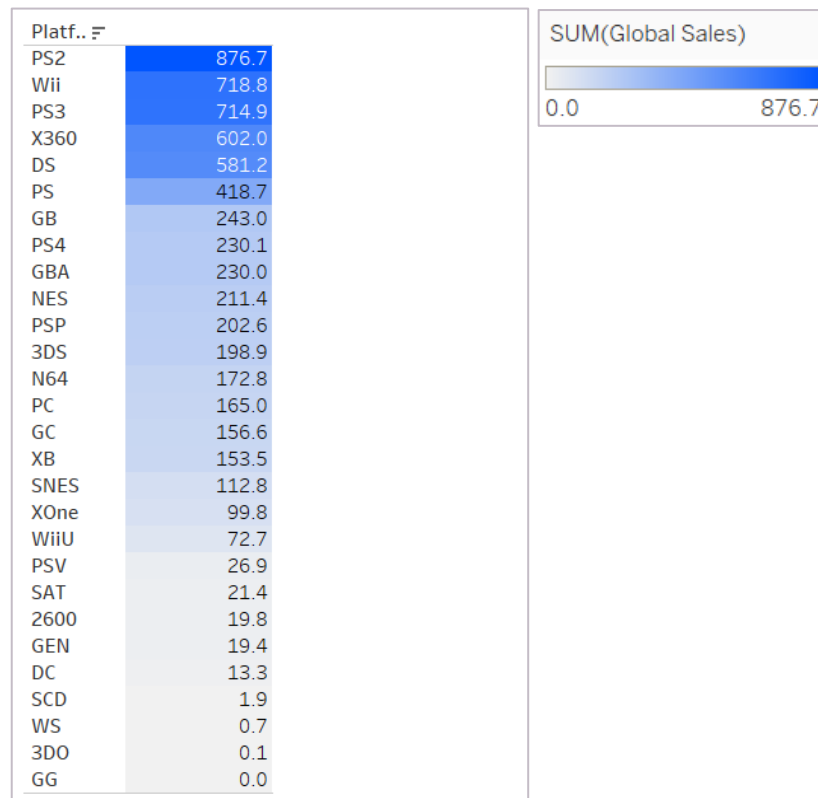
Regional Sales by Year of Release



(Figure 9: Combined bar chart of regional sales)

- Figure 9 shows the regional sales figures by year of release in the gaming industry through a series of combined bar charts. The charts showcase the sales performance of games in three key regions: North America (NA), Europe (EU), and Japan (JP). Each bar chart represents a specific year of release, with the x-axis denoting the years and the y-axis representing the sales figures. The bars are colour-coded to indicate the respective regions, allowing for easy visual comparison.
- A closer examination of the chart reveals that NA consistently outperformed the EU and JP in terms of sales, suggesting a higher acceptance and popularity of gaming, with the year 2008 marking the peak sales of \$348.7 million in NA.
- Among the analysed regions, JP exhibited low but the most consistent and stable sales performance, maintaining a steady growth trajectory throughout the years compared to the other two regions.

Sales Performance of Platforms in Different Regions



(Figure 10: Highlight table of global sales for all the platforms)

- Highlight table in Figure 10 showcase the key information about different platforms and their corresponding sales in various regions. The table provides a concise and organized summary of the sales data, allowing viewers to quickly compare and analyse the performance of each platform in different regions. Using colour coding within the table, we can visually identify high-performing platforms, with vibrant colours representing platforms with exceptional sales figures or market dominance within specific regions.
- By analysing the global sales ranking within the highlight table, we observe that PS2 emerges as the top performer, achieving \$876.7 million in worldwide sales, followed closely by Wii with \$718.8 million.

Conclusion

The analysis of various visualizations provides valuable insights into the gaming industry, its trends, and key factors driving sales and popularity. The global sales of gaming genres, depicted in the bubble chart, reveal that the Action genre generates the highest revenue. The tree map visualization highlights the best-selling genres on different platforms, with Sports and Action genres dominating across multiple platforms, particularly on the PS2 and PS3.

Examining sales trends across regions, it is evident that the gaming industry experienced significant growth from the mid-1990s to 2008, with North America leading in sales, followed by Europe and Japan. However, recent years have witnessed a decline in sales, emphasizing the dynamic nature of the market and the importance of understanding regional variations.

The scatter plot comparing global sales and user count indicates that platforms with the highest number of users, such as PC, do not necessarily generate the highest revenue. This suggests that factors beyond user count, such as engagement and monetization strategies, influence game sales.

Analysing the sales distribution of top publishers, Nintendo emerges as the most dominant publisher in terms of global sales, followed by Ubisoft. Critic scores by game genre reveal that RPGs and sports games tend to receive the highest acclaim, while adventure, puzzle, and platform games fall within the moderate range.

The individual sales of top games across regions demonstrate the popularity of titles like Wii Sports and Mario Kart Wii in different markets. Furthermore, the sales trend of top publishers over the years highlights the shifting landscape of market dominance, with Activision taking the lead in recent years.

Overall, the visualizations and interpretations collectively depict a dynamic gaming industry, with variations in genre popularity, regional sales, platform performance, and critical reception. Understanding these trends and factors is crucial for industry stakeholders to make informed decisions and capitalize on emerging opportunities in this ever-evolving landscape.

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