

ANALYSIS OF HISTORICAL PHYSICAL VIDEO GAME SALES TO HELP UNDERSTAND FUTURE TRENDS

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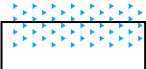
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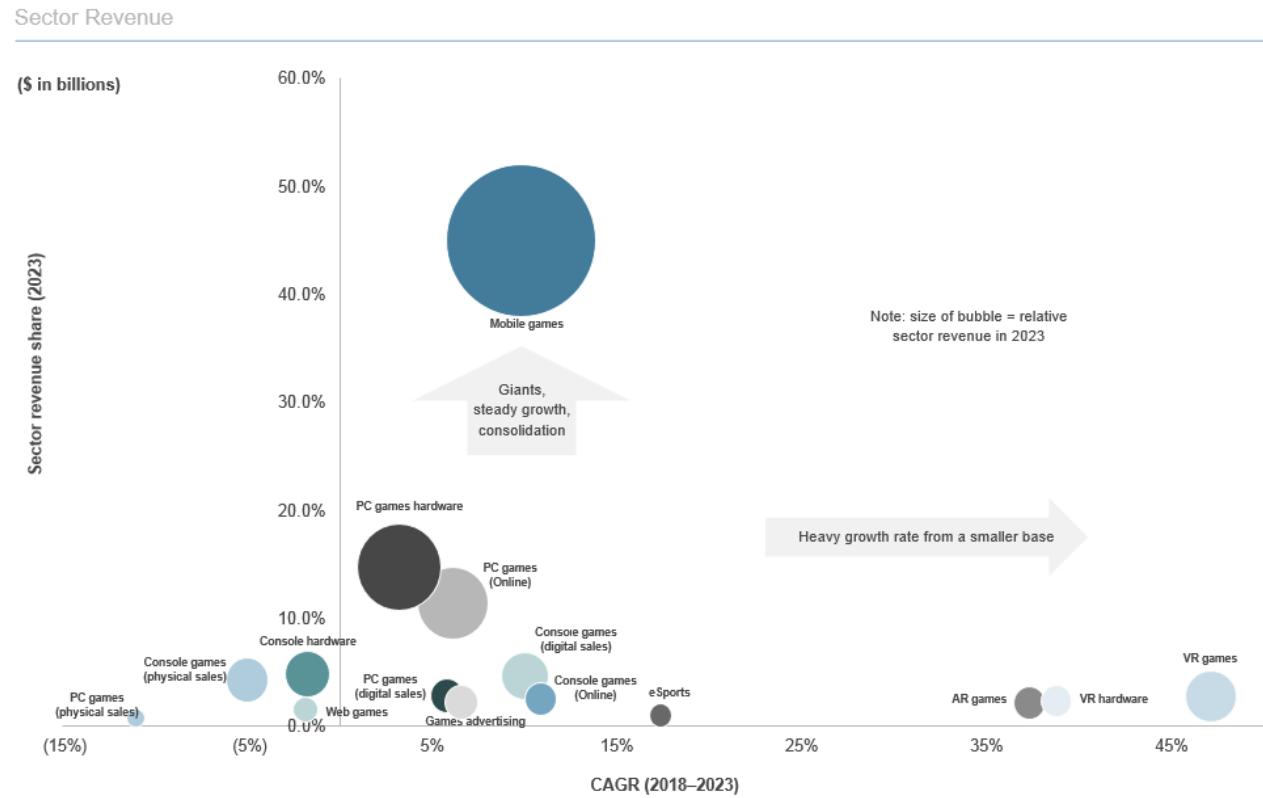


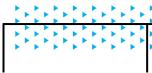
INTRODUCTION



INTRODUCTION

- Massive growth in video game sales since 1980s
- Big industry
- Rapidly evolving
- eSports
- Gambling
- Consolidation

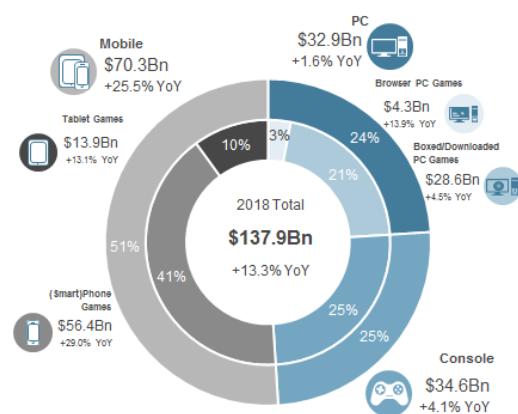




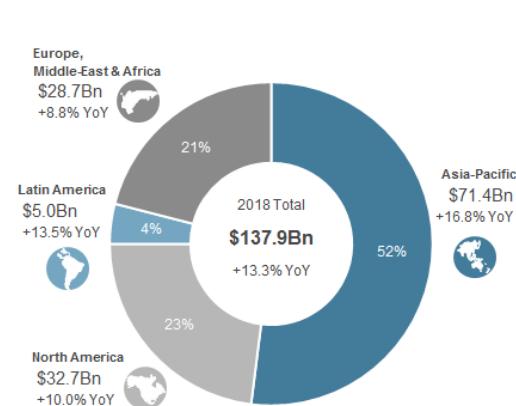
INTRODUCTION (cont.)

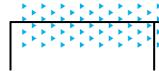
- Growth in mobile is far outpacing console and PC platforms; mobile games spending increased to \$70Bn in 2018 (26% YoY growth)
- Mobile is the largest games platform, currently accounts for 51% of total global gaming spend
- China, Japan and South Korea account for nearly half of all global games revenue in 2018

Global Games Market by Platform



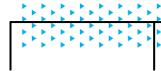
Global Games Market by Region





PROJECT OVERVIEW

- Three major video game publishers in the market during 1980s
 - Atari (USA)
 - Activision (USA)
 - Nintendo (Japan)
- The video game PHYSICAL sales industry's growth started around 1980 until early 2010
- Physical Industry sales started to decline, but eSports / mobile exploding
 - Micro-transactions
 - Multiplayer mode
 - User experience



CHALLENGE

- Run ANOVA analysis to test different game sales in different territories from historical sales to find variations to see if the impacts are different to predict what types of games / genres / regions do well since the industry has become the number one media and entertainment industry in the world

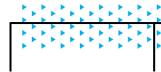
Ninja, a Fortnite Star, Leaps From Twitch to Mixer

Tyler Blevins, 28, the multimillionaire gamer known as Ninja, says he has a deal to stream exclusively at the Microsoft service. He's quitting Twitch, the Amazon service where he has over 14 million followers. Yes, it's a big deal.





PROCESS / BACKGROUND & SUMMARY

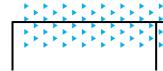


THE PROCESS

- Worked as a team to find interesting data that we were passionate about
- Found large dataset with good data and created hypothesis
- Cleaned data
- Used RStudio
- Produced results
- Divided into sections



DATA & RESULTS

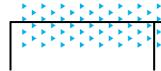


DATA

The data was discovered on [Kaggle database](#). The data was generated by a data scrape of vghcartz.com which is a video game sales tracking website that provides weekly sales figures of console software and hardware by region. The data contains a list of video games with sales greater than 100,000 copies.

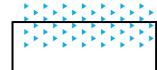
kaggle





Variables

- Rank - Ranking of overall sales
- Platform - Platform of the games release (i.e. PC,PS4, etc.)
- Genre - Genre of the game
- Publisher - Publisher of the game
- 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 (in millions)
- Global_Sales - Total worldwide sales.

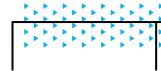


Mean Analysis - Genre

- Mean global sales among different genres was actually very close
- There is not a lot of variation in our data in the genre variable

```
tapply(gamesales$Global_Sales_mn , gamesales$Genre, mean)
```

```
##          Action      Adventure      Fighting        Misc      Platform
##    12.16132    11.08525    12.26776   12.00187    12.54508
##          Puzzle      Racing Role-Playing     Shooter     Simulation
##    11.68019    12.18790    12.17086   12.39884    11.98102
##          Sports     Strategy
##    12.32016    11.53598
```

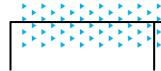


Mean Analysis - Region

- There was not a lot of variation in terms of regions

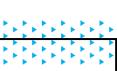
```
tapply(gamesales$Global_Sales_mn , gamesales$Region, mean)
```

```
##      EU_Sales      JP_Sales      NA_Sales Other_Sales
##      12.07855     12.07855     12.07855    12.07855
```



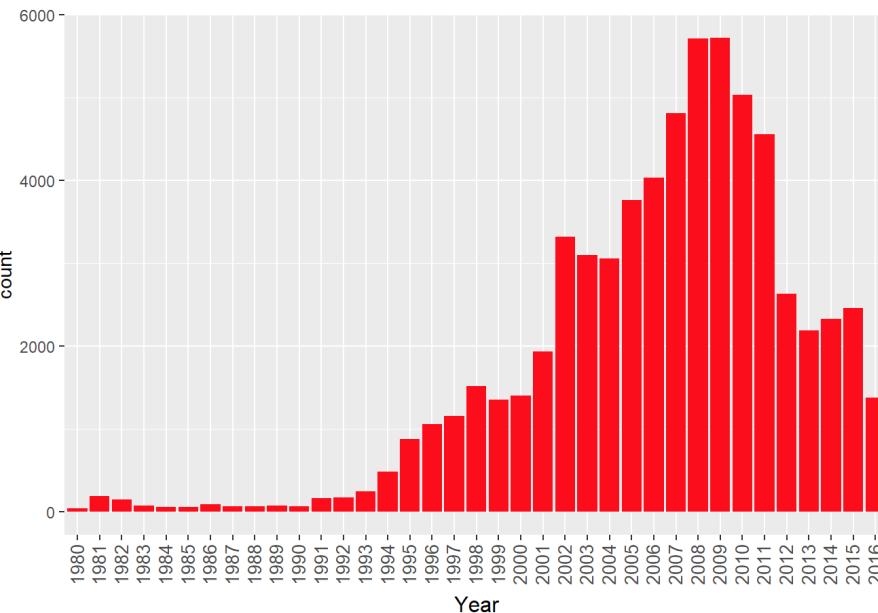
Data Exploratory/Charts

- Data Cleaning
- Eliminate Year 2017, 2020, and NA data
- Reason: data collection till 2016
- Converting the Year of Release, Global Sales, and User Score to numeric values
- Themes and colors are defined for future charts

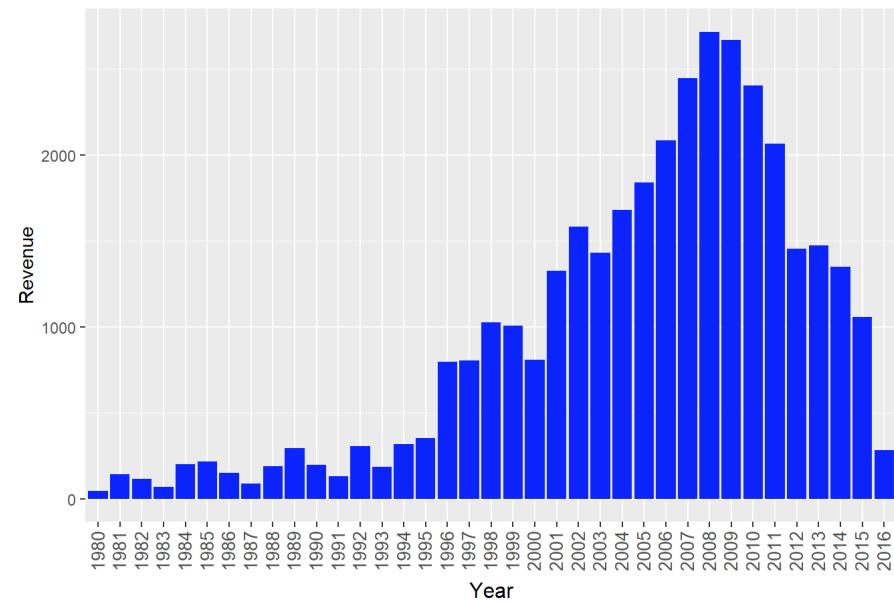


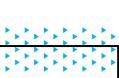
Number of Release by Year / Revenue by Year

Video Game Releases by Year



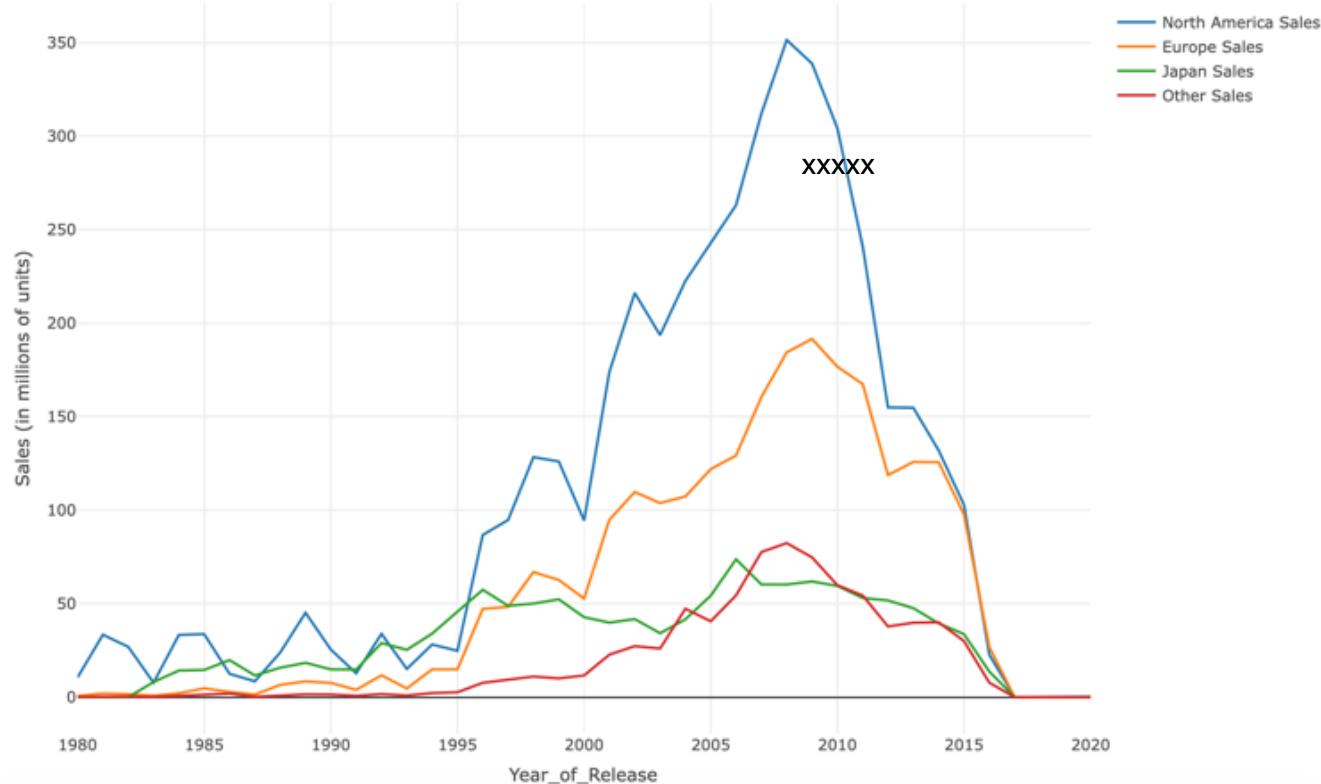
Video Game Revenue by Year

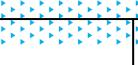




Sales by Year in each Region

Fig.3 Total Sales (in mn) by Year of Release

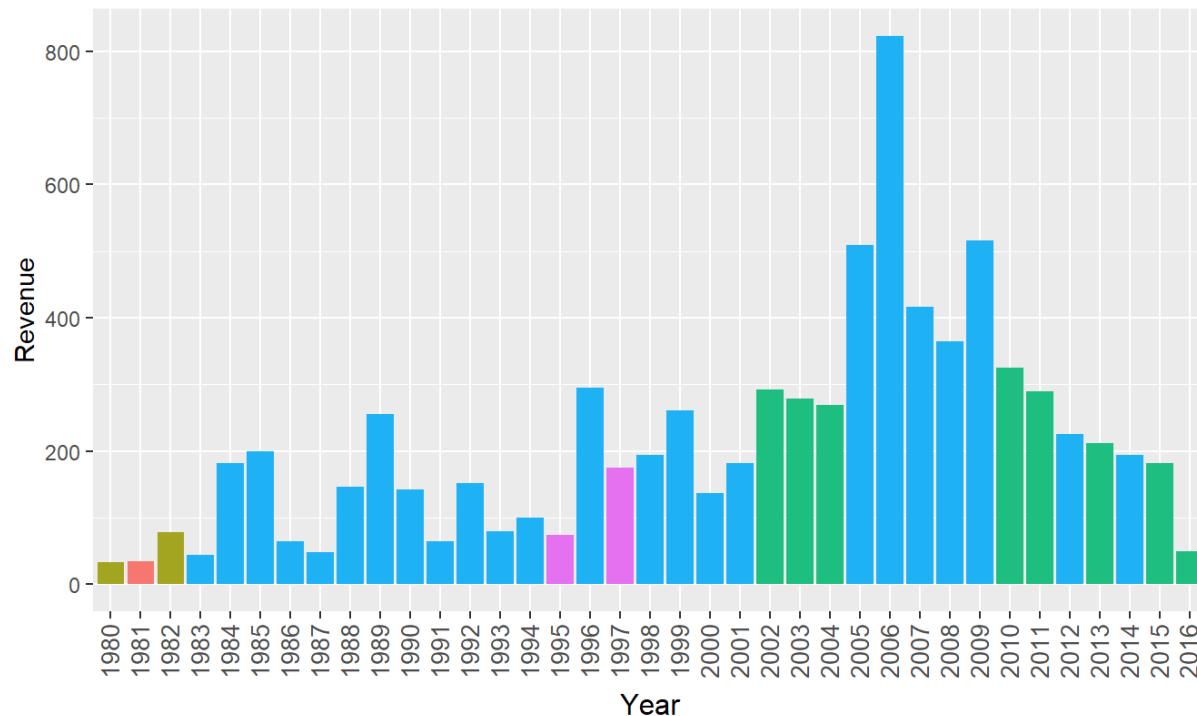


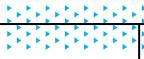


Top Publisher by Revenue per Year

Top Publisher by Revenue each Year

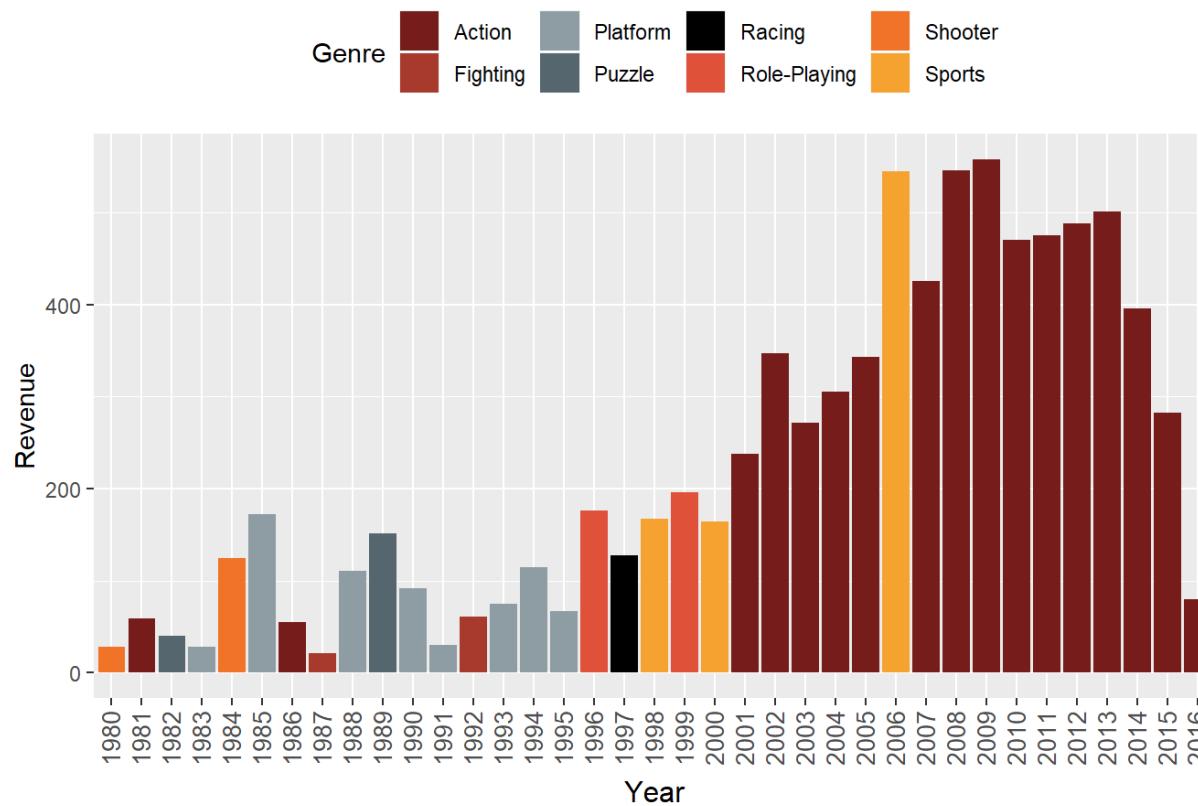
Publisher Activision Atari Electronic Arts Nintendo Sony Computer Entertainment





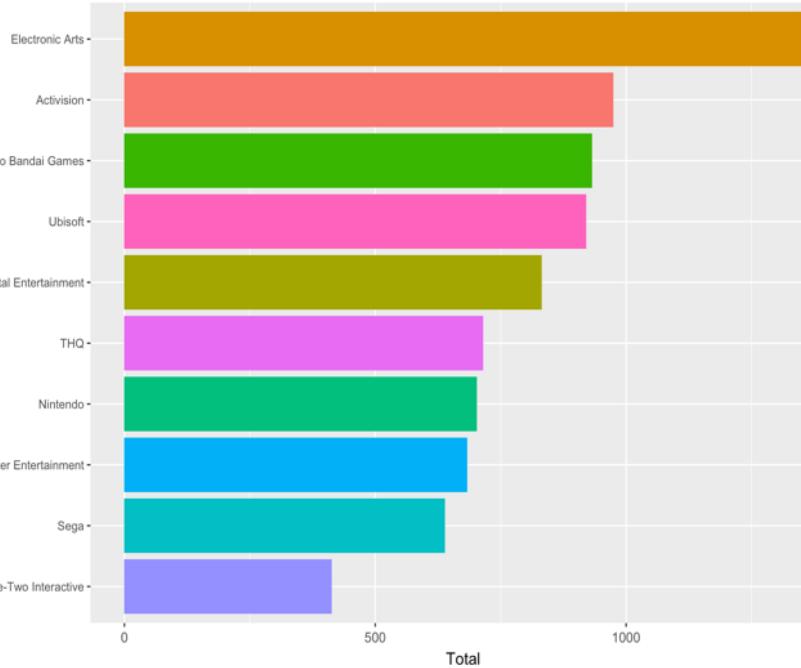
Top Genre by Revenue per Year

Top Genre by Revenue each Year

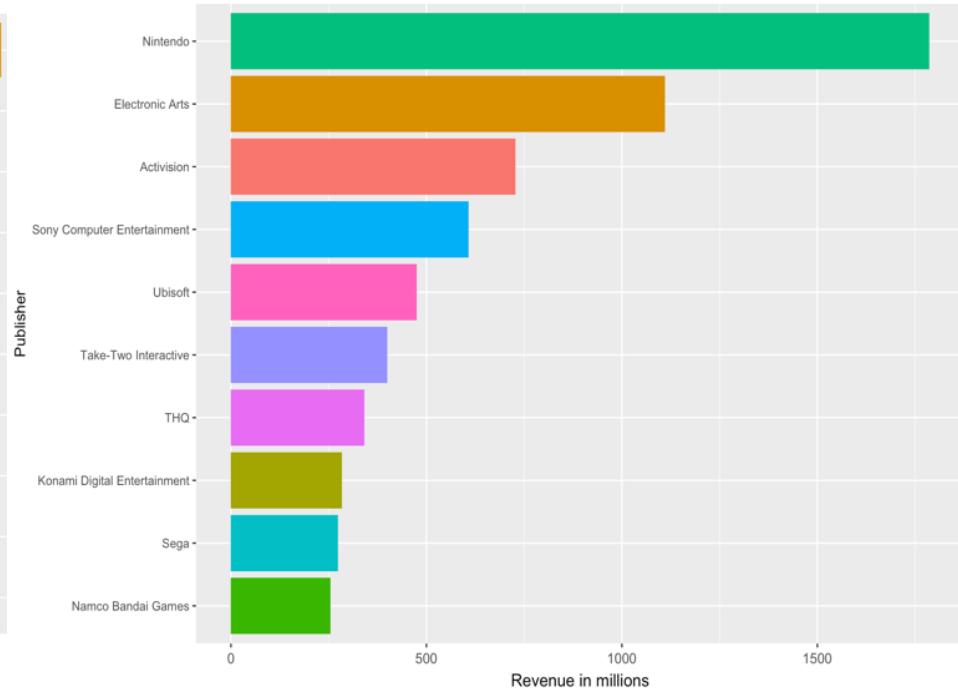


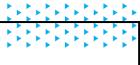
Top 10 Publishers by Number of Releases / by Revenue

Top 10 Publishers by Number of Releases



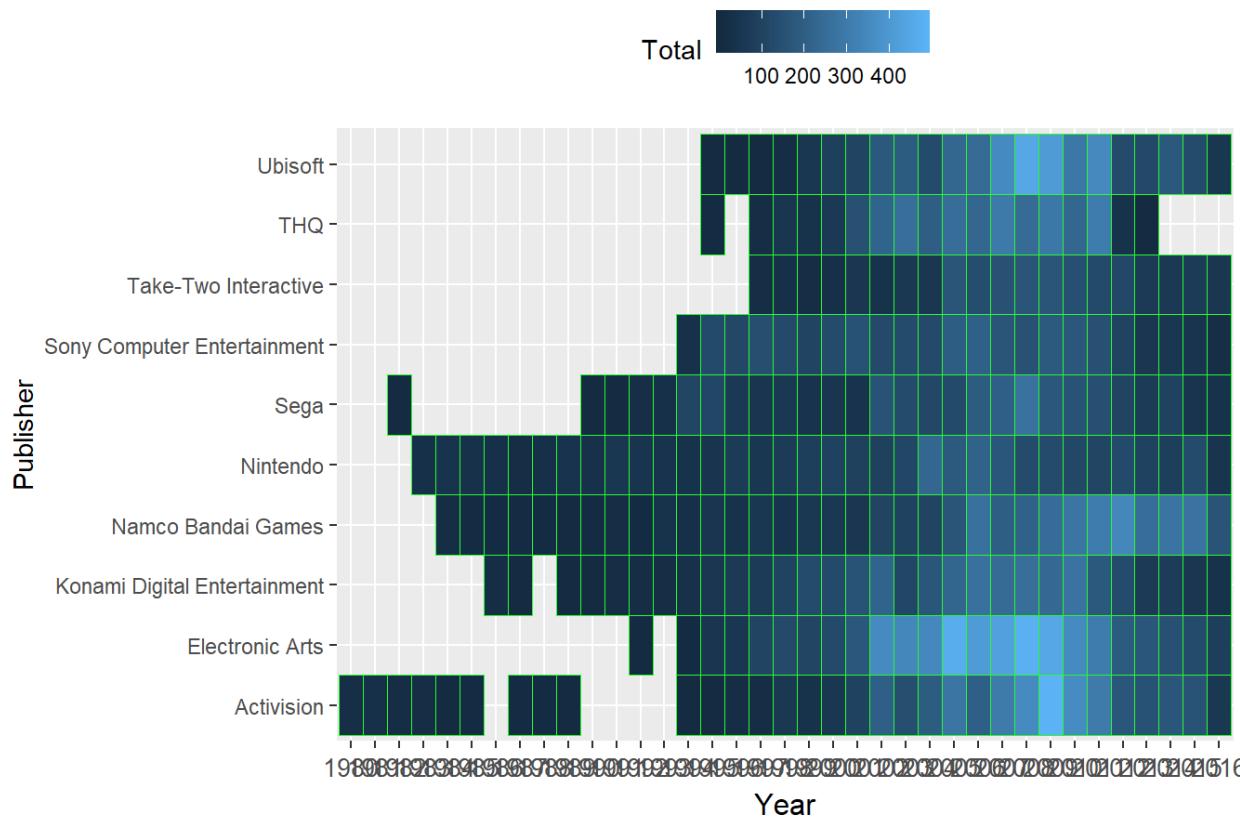
Top 10 Publishers by Revenue

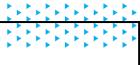




Top 10 Publishers' Number of Releases by Year

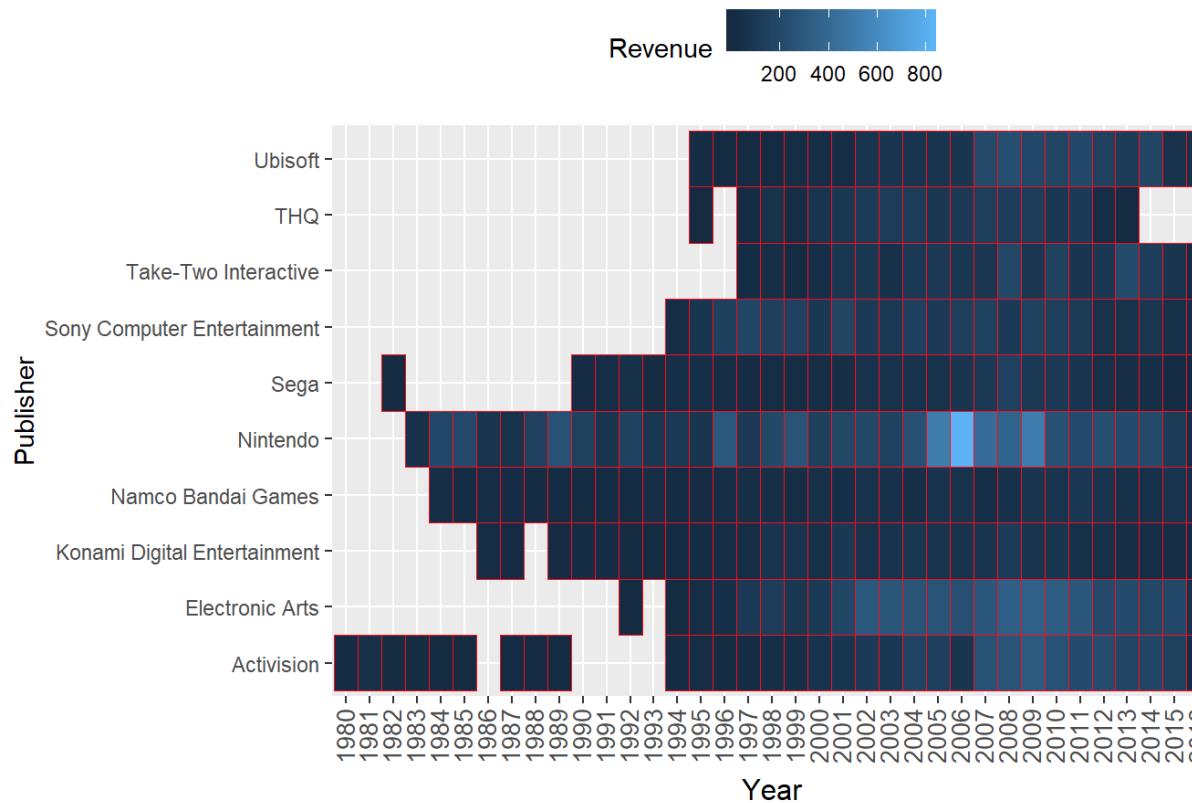
Top 10 Publishers Releases by Year

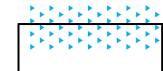




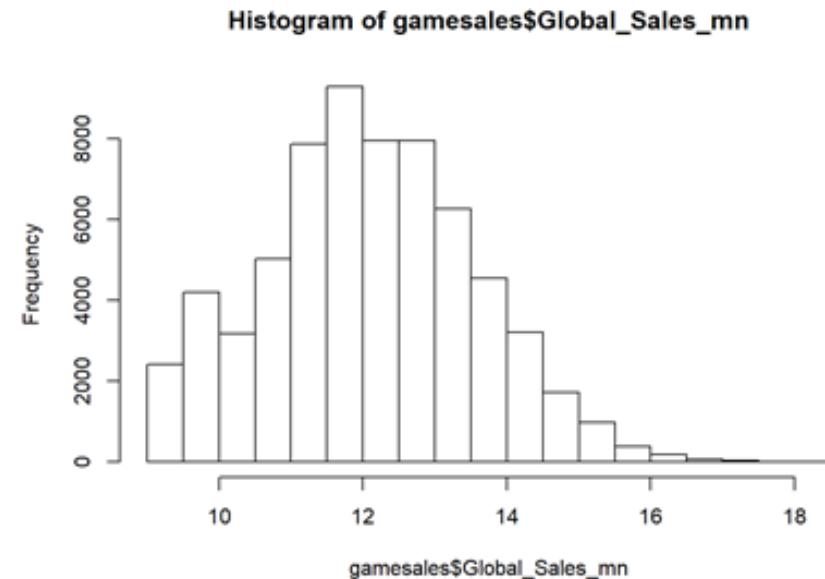
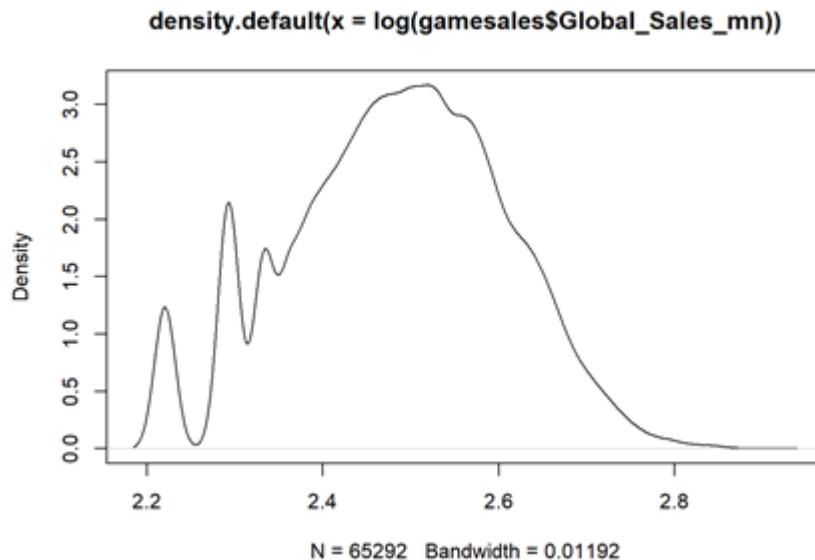
Top 10 Publishers' Revenue by Year

Top 10 Publishers by Revenue

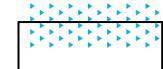




Normal Distribution of Global Sales



- Mean global sales of video game : \$12.08 million
- Minimum global sales : \$9.21 million
- Maximum global sales : \$ 18.23 million.

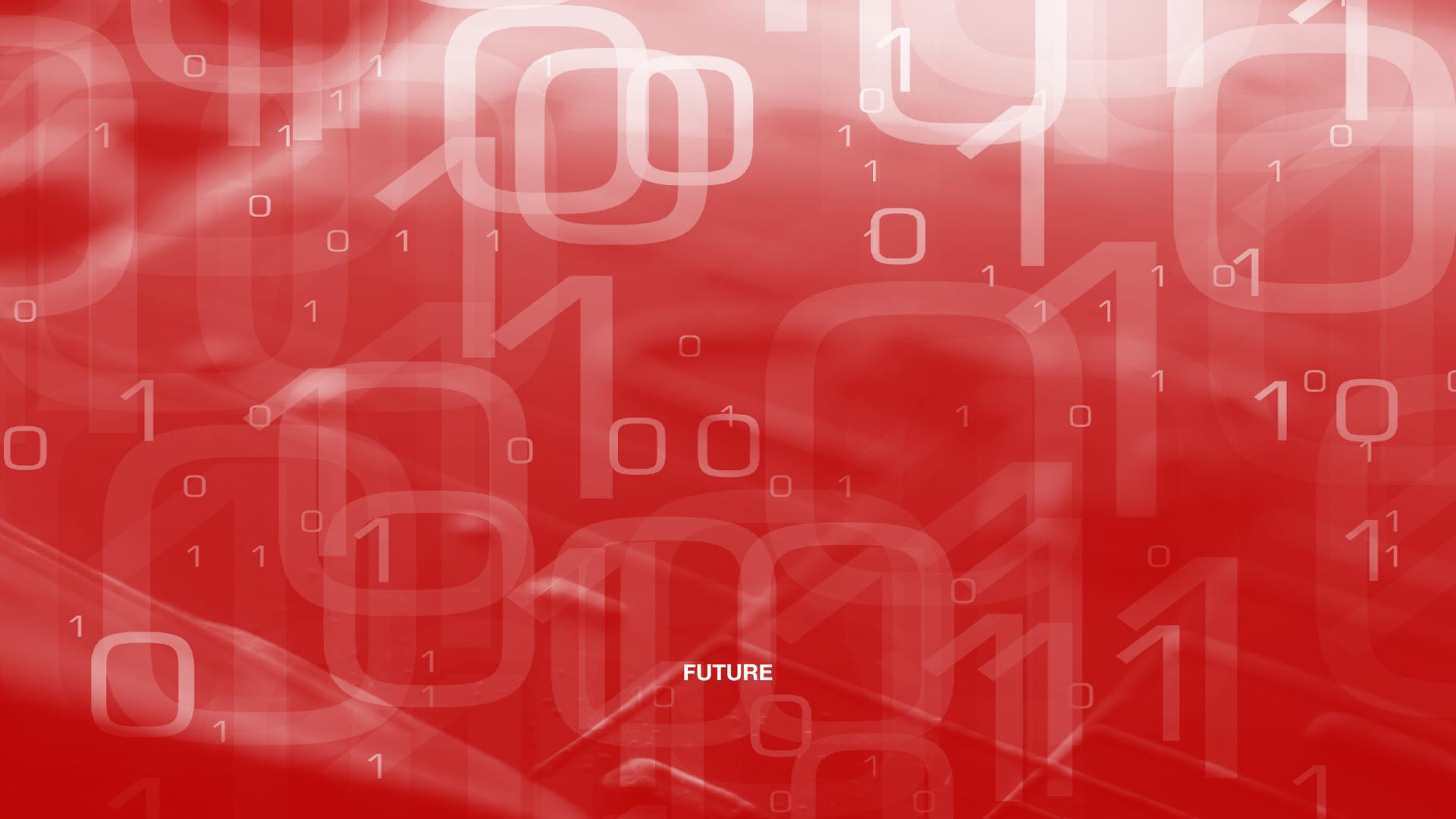


ANOVA Model

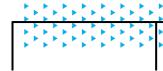
- Dependent variable: Global sales of video game
- Independent variables : Video game platform, Genre, Publisher, Region, and Ranking

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
gamesales\$Platform	30	16491	550	8395.1	<2e-16	***
gamesales\$Genre	11	5184	471	7197.1	<2e-16	***
gamesales\$Publisher	576	34463	60	913.7	<2e-16	***
gamesales\$Region	3	0	0	0.0	1	
gamesales\$Rank	1	79279	79279	1210747.6	<2e-16	***
Residuals	64670	4235	0			

Signif. codes:	0	'****'	0.001	'***'	0.01	'*' 0.05 '.' 0.1 ' ' 1

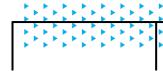


FUTURE



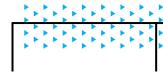
FUTURE EFFORTS

- Find data on electronic downloads / mobile and compare and contrast
- Break down games between casual, midcore, hardcore
- Analyse microtransactions
- Explore if eSports is correlated with video game sales



LESSONS LEARNED

- Nintendo was the leading company in video game market, which can be used as a benchmark
- Action was the top genre video game that generated most revenue out of other genre
- North America had highest video game sales volume



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3. 8 Reasons The Video Game Industry Is Going To Crash Again. (n.d.). Retrieved from <https://www.fraghero.com/8-reasons-the-video-game-industry-is-going-to-crash-again/>

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