Basic Information

Project Title: GameTop

Description: Data visualization project about the sales of video games

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Github Repository: https://github.com/jtchan2/GameTop

Background and Motivation

Video games have become a huge aspect of today's society. Where people say "oh this game is so good" or "you have to try this game" and making it seem every video game is one the best created. The motivation behind this project is to show which games are good or popular at a given year depending on their sales around the world and maybe influence the potential to create more games in categories of lower or highest sales.

Project Objectives

- Overall Objective: display various top selling games/game categories throughout various years.
- Objective 1: What the top 10 games sold globally overall recent years
- Objective 2: display several game sales and show the difference of sales per region
- Objective 3: display the change of specific game publishers or game genre (if publishers do not have enough info) sales from 1996 to 2015

Data

For data collection I will be using a data set from Kaggle by Gregory Smith to be used:

https://www.kaggle.com/gregorut/videogamesales

As well as doing self research of data to find more country wise game sales/ genre game sales and additional game release date data

Data Processing

Data from kaggle is already formatted into a table view. The additional processing will be deleting/removing data that have little or insufficient data or importance to overall data. The aspects of the data which I would use are game name, game genre, NA sales, europe sales, Japan sales, year/date published and global sales

Visualization Design

Included at the end of write up

Must Have Features

- Feature 1: create a bar chart to represent the 10 best with the feature of having over bar shows more information about the game. This Feature meets objective 1
- Feature 2: Implement a world map where Europe, USA and Japan would be gradient filled to display differences in game/genre sales of a specific year. THis feature meets objective 2
  - **Feature rationally decided to change to treemap as data set that is used for project does not have sufficient information to create Country Maps**
  - **Treemap will instead have 3 large categories of NA sales, JP sales and EU sales of each game so viewer can see which country has best game sales**
- Feature 3: Create a line chart where each line represents a game publisher games sales over the years

○ Also having the feature of hovering over the line will give information specific to the game on that date and its details. This feature address objective 3

Optional Features

Optional features that I would like to implement for the line chart, would be to make it so it would highlight one genre of video games and lower accents of other genres. Another optional feature would to make the world map visualization handle multiple games where a legend with clickable games that would change the map to replace current map value/color with another game's value

Related Works

Granic, Isabela, et al. "The Benefits of Playing Video Games." American Psychological Association , Jan. 2014.

Link to source: https://www.apa.org/pubs/journals/releases/amp-a0034857.pdf

Lee, Jin Ha, et al. "Facet Analysis of Video Game Genres." University of Washington, 2014.

link to source:

https://www.ideals.illinois.edu/bitstream/handle/2142/47323/057_ready.pdf?sequence=2&isAllowed=y

Quwaider, Muhannad, et al. "The Impact of Video Games on the Players Behaviors: A Survey." *Procedia Computer Science*, Elsevier, 21 May 2019, https://www.sciencedirect.com/science/article/pii/S1877050919305393.

Toh, Weimin. "The Economics of Decision-Making in Video Games." *Game Studies*, 2022, http://gamestudies.org/2103/articles/toh.

von der Heiden, Juliane M., et al. "The Association between Video Gaming and

Psychological Functioning." *Frontiers*, Frontiers, 1 Jan. 1AD,

https:**//www.frontiersin.org/articles/10.3389/fpsyg.2019.01731/full.**

Wilke, Claus O. *Fundamentals of data visualization: a primer on making informative and

compelling figures*. O'Reilly Media, 2019.

Website

- https://jtchan2.github.io/GameTop.github.io/

Project Schedule

Initial project proposal Mar 11, 2022
Revised project proposal Mar 29, 2022
- Research additional information about video release/publish dates **Not finished, more published dates to find than initially thought (initial=10k, actual >100k)**
- Decide to include Specific game sold/ genre sold visualization **Decided on Genre Sales**
Alpha release of Project Apr 6, 2022
- Create base line chart without tools **Implemented line chart**
- Create Base color map of world **Not implemented, decided to change to treemap**
- Create base bar chart without hovering tools **Implemented Bar Chart with hovering title**
Beta Release of Project, Apr 20, 2022
- **Get all 100,000 publish dates of games and change correct dates for line chart**
- **Improve algorithms of both Line and Bar Charts**
- **Add Legends for genre difference in visualizations**
- Implement tooltips for all visualizations
    - **Items such as hovering and filtering tool tips**
- **Have treemap implemented with hovering tooltip**
Final Project Presentation May 9, 2022
- Put visualizations into slides
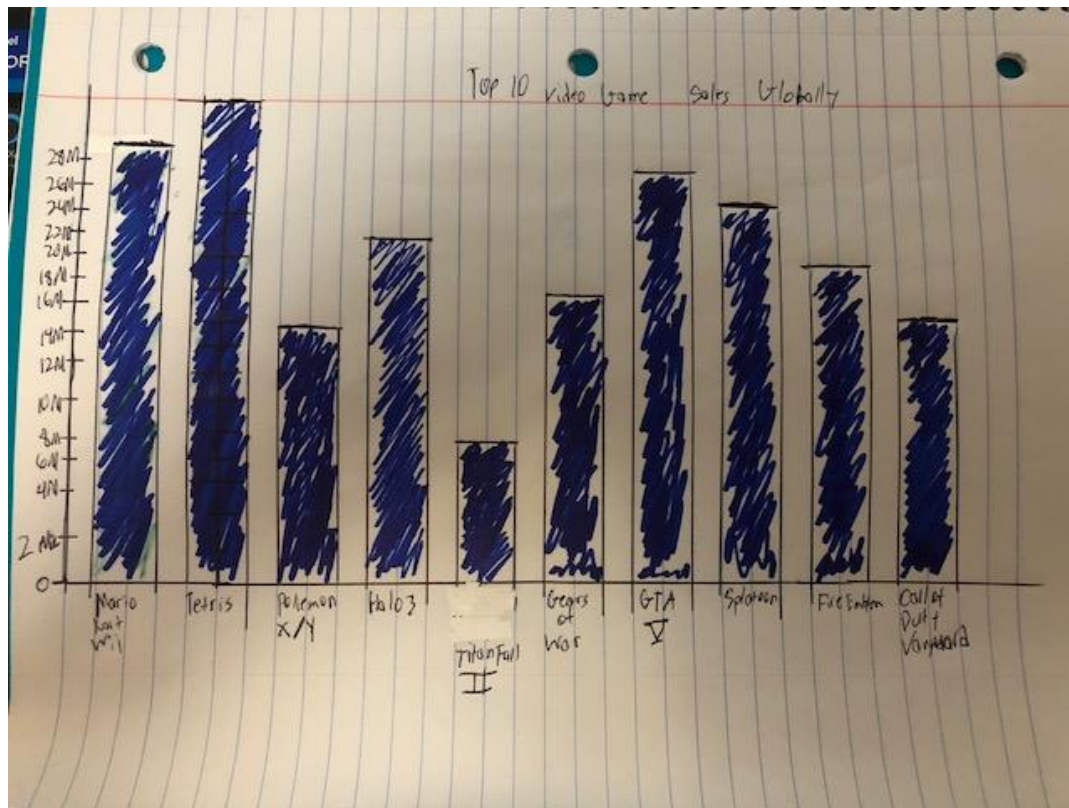- Have website running with template of bulma
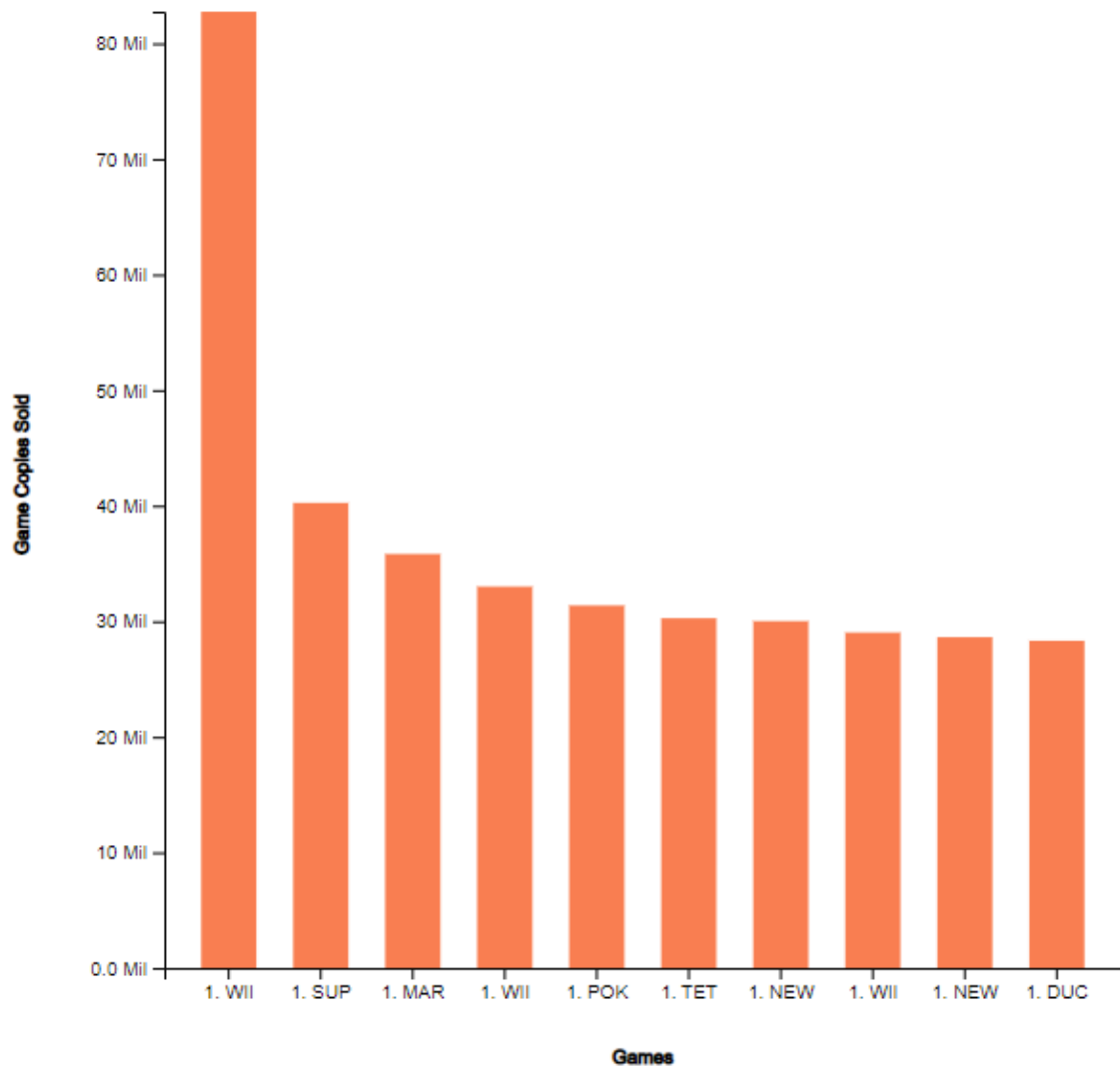Final Project report draft May 16, 2022
Final Project Report, Slides, Demo, Code & Data May 19, 2022

Immediate Milestones: Add tooltips to line chart and Bar chart, Implement treemap
Roadblocks: Date published of game as more that 100k entries in data set so slowed development

Feature #1

Top 10 Video Game Sales Globally

Mario Kart Wii | Tetris | Pokemon X/Y | Halo 3 | TitanFall II | Gears of War | GTA V | Splatoon | Fire Emblem | Call of Duty Vanguard

Y-axis: Game Copies Sold

Y-axis values: 80 Mil, 70 Mil, 60 Mil, 50 Mil, 40 Mil, 30 Mil, 20 Mil, 10 Mil, 0.0 Mil

X-axis categories: 1. WII, 1. SUP, 1. MAR, 1. WII, 1. POK, 1. TET, 1. NEW, 1. WII, 1. NEW, 1. DUC

X-axis: Games

1. Game: Wii Sports
2. Game: Super Mario Bros.
3. Game: Mario Kart Wii
4. Game: Wii Sports Resort
5. Game: Pokemon Red/Pokemon Blue
6. Game: Tetris
7. Game: New Super Mario Bros.
8. Game: Wii Play
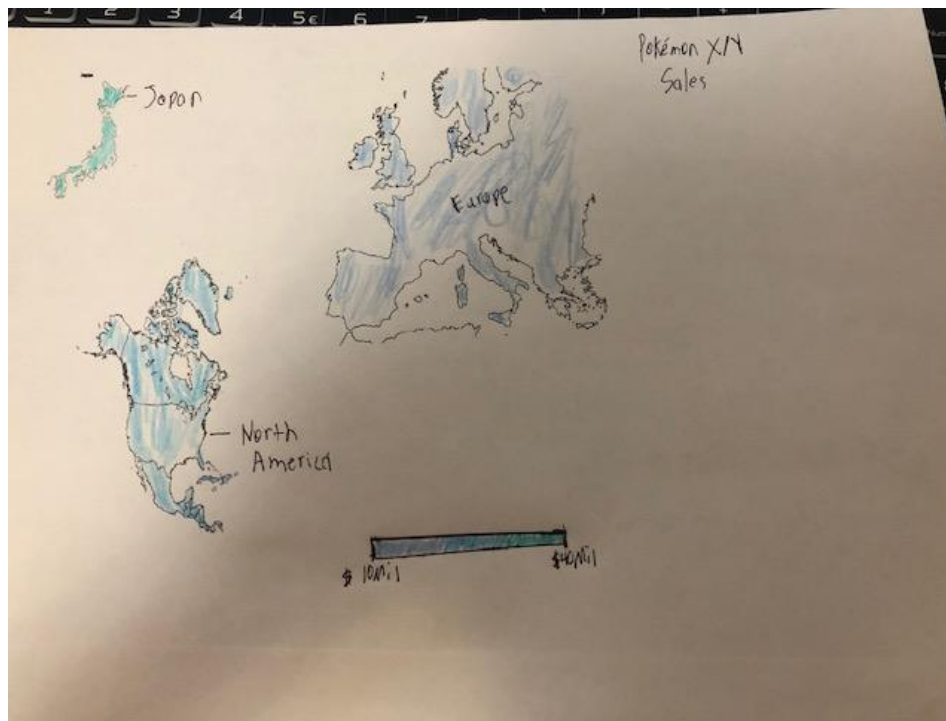9. Game: New Super Mario Bros. Wii
10. Game: Duck Hunt

Implemented Feature Link:
https://jtchan2.github.io/GameTop.github.io/vgBar.html
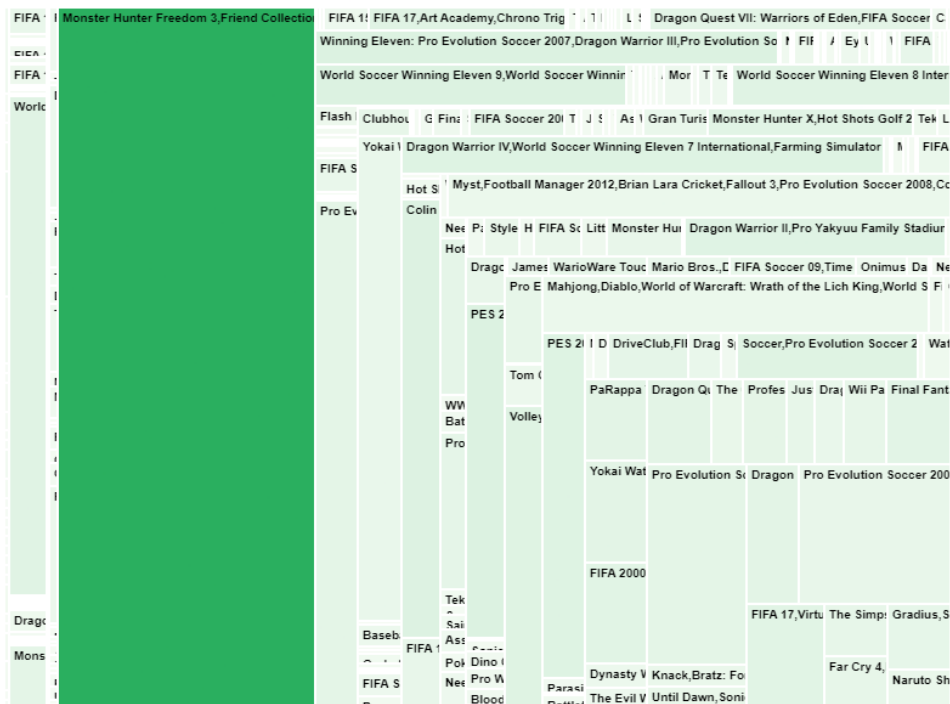**Link to code: https://github.com/jtchan2/GameTop.github.io/blob/main/vgBar.html**
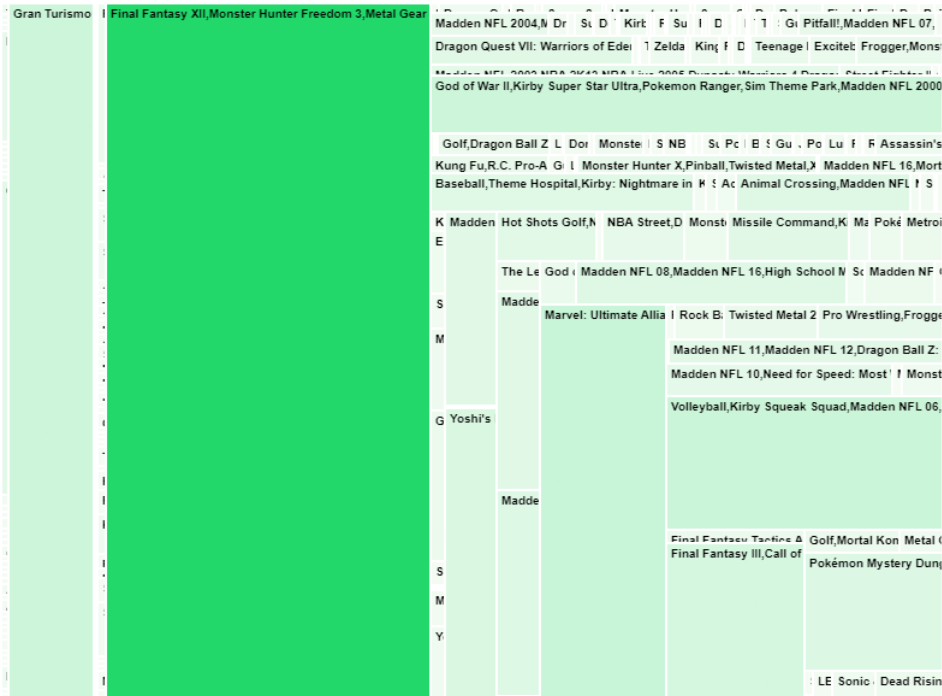
Feature #2

Rationale for Change: Data set does not have values for longitude and latitude to implement a map of data
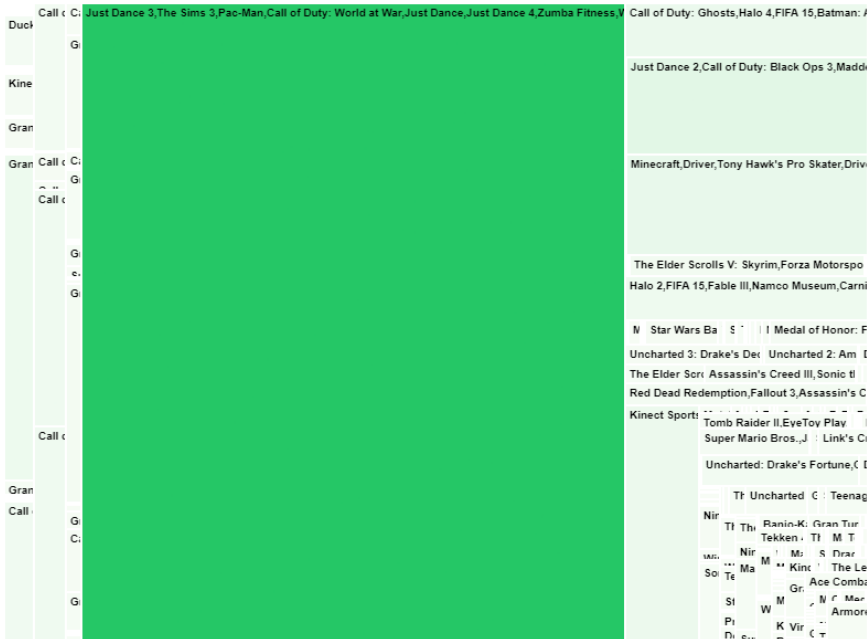**Considered Change: Create treemap representation of data set**
Potential Visualization outlook:

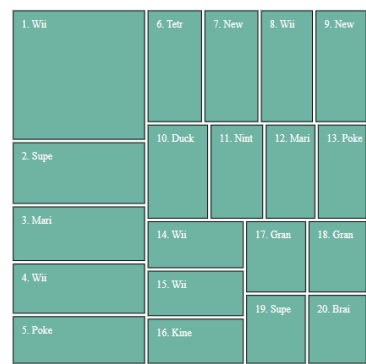**Treemap above is of NA sales, color is by global sales**

Treemap above is of EU sales where color also is by global sales

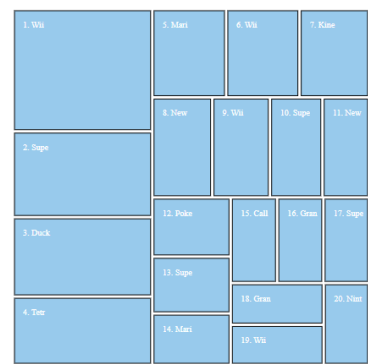**Treemap above is of JP sales where color as ones before based off global sales**

New Treemaps:

Global Sales Tree Map

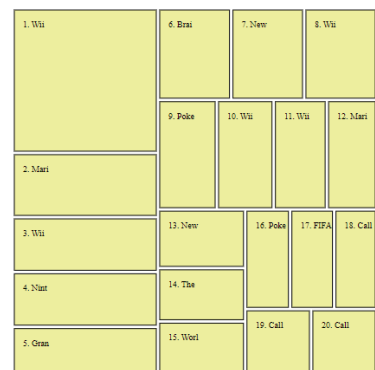|				
1. Wii	6. Tetr	7. New	8. Wii	9. New
2. Supe	10. Duck	11. Nint	12. Mari	13. Poke
3. Mari	14. Wii	17. Gran	18. Gran	
4. Wii	15. Wii	19. Supe	20. Brai	
5. Poke	16. Kine			

1. Game:Wii Sports
2. Game:Super Mario Bros.
3. Game:Mario Kart Wii
4. Game:Wii Sports Resort
5. Game:Pokemon Red/Pokemon Blue
6. Game:Tetris
7. Game:New Super Mario Bros.
8. Game:Wii Play
9. Game:New Super Mario Bros. Wii
10. Game:Duck Hunt
11. Game:Nintendogs
12. Game:Mario Kart DS
13. Game:Pokemon Gold/Pokemon Silver
14. Game:Wii Fit
15. Game:Wii Fit Plus
16. Game:Kinect Adventures!
17. Game:Grand Theft Auto V
18. Game:Grand Theft Auto: San Andreas
19. Game:Super Mario World
20. Game:Brain Age: Train Your Brain in Minutes a Day

North America Game Sales Tree Map

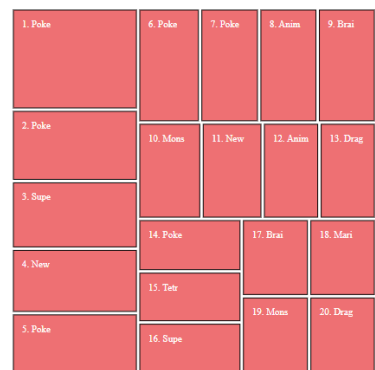|			
1. Wii	5. Mari	6. Wii	7. Kine
	8. New	9. Wii	10. Supe	11. New
2. Supe			
3. Duck	12. Poke	15. Call	16. Gran	17. Supe
	13. Supe	18. Gran		20. Nint
4. Tetr	14. Mari	19. Wii		

1. Game:Wii Sports
2. Game:Super Mario Bros.
3. Game:Duck Hunt
4. Game:Tetris
5. Game:Mario Kart Wii
6. Game:Wii Sports Resort
7. Game:Kinect Adventures!
8. Game:New Super Mario Bros. Wii
9. Game:Wii Play
10. Game:Super Mario World
11. Game:New Super Mario Bros.
12. Game:Pokemon Red/Pokemon Blue
13. Game:Super Mario Land
14. Game:Mario Kart DS
15. Game:Call of Duty: Black Ops
16. Game:Grand Theft Auto V
17. Game:Super Mario Bros. 3
18. Game:Grand Theft Auto: San Andreas
19. Game:Wii Fit Plus
20. Game:Nintendogs
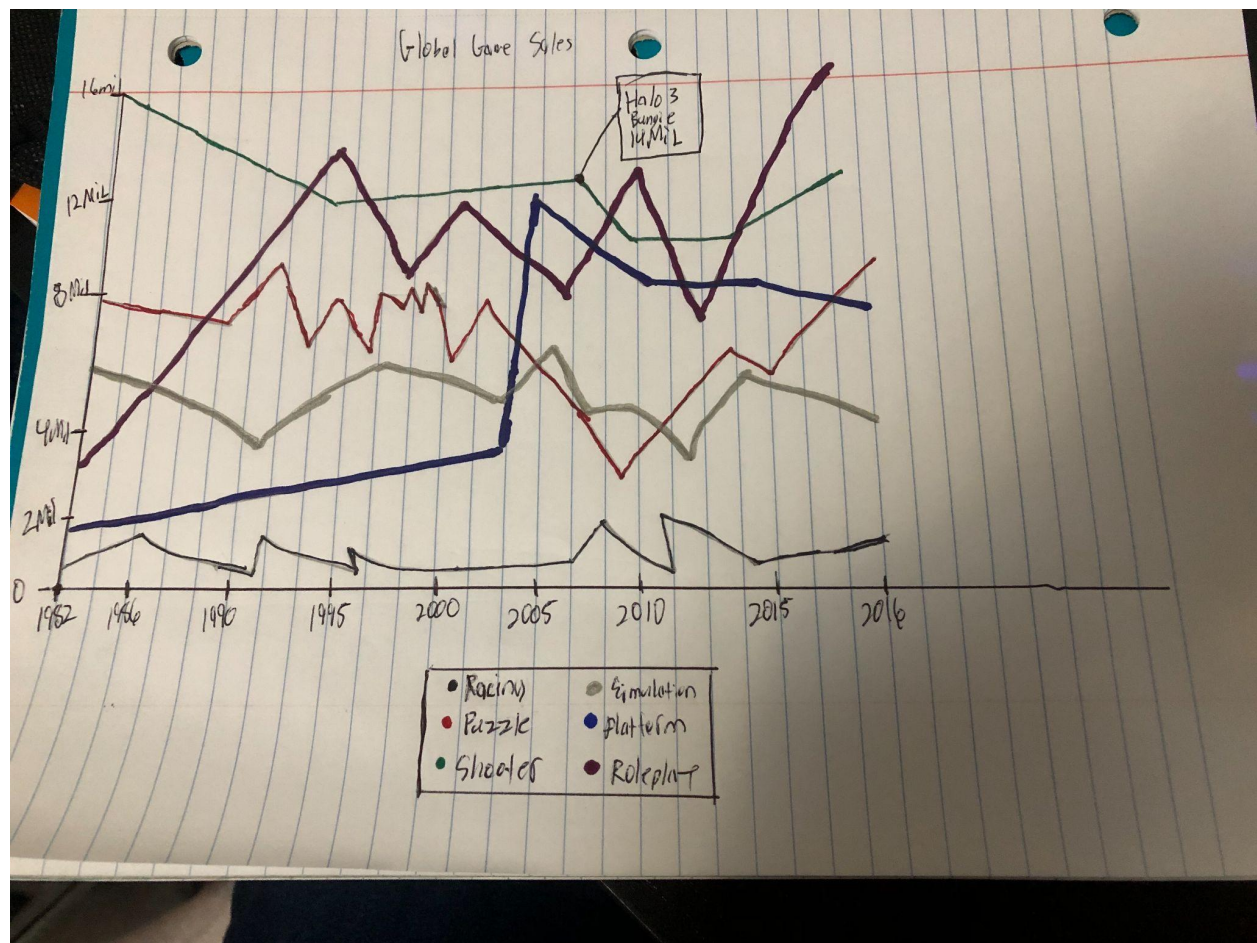
Europe Game Sales Tree Map

1. Wii	6. Brai	7. New	8. Wii
2. Mari	9. Poke	10. Wii	11. Wii	12. Mari
3. Wii	13. New	16. Poke	17. FIFA	18. Call
4. Nint	14. The		
5. Gran	15. Worl	19. Call	20. Call

1. Game:Wii Sports
2. Game:Mario Kart Wii
3. Game:Wii Sports Resort
4. Game:Nintendogs
5. Game:Grand Theft Auto V
6. Game:Brain Age: Train Your Brain in Minutes a Day
7. Game:New Super Mario Bros.
8. Game:Wii Play
9. Game:Pokemon Red/Pokemon Blue
10. Game:Wii Fit Plus
11. Game:Wii Fit
12. Game:Mario Kart DS
13. Game:New Super Mario Bros. Wii
14. Game:The Sims 3
15. Game:World of Warcraft
16. Game:Pokemon Gold/Pokemon Silver
17. Game:FIFA 16
18. Game:Call of Duty: Black Ops II
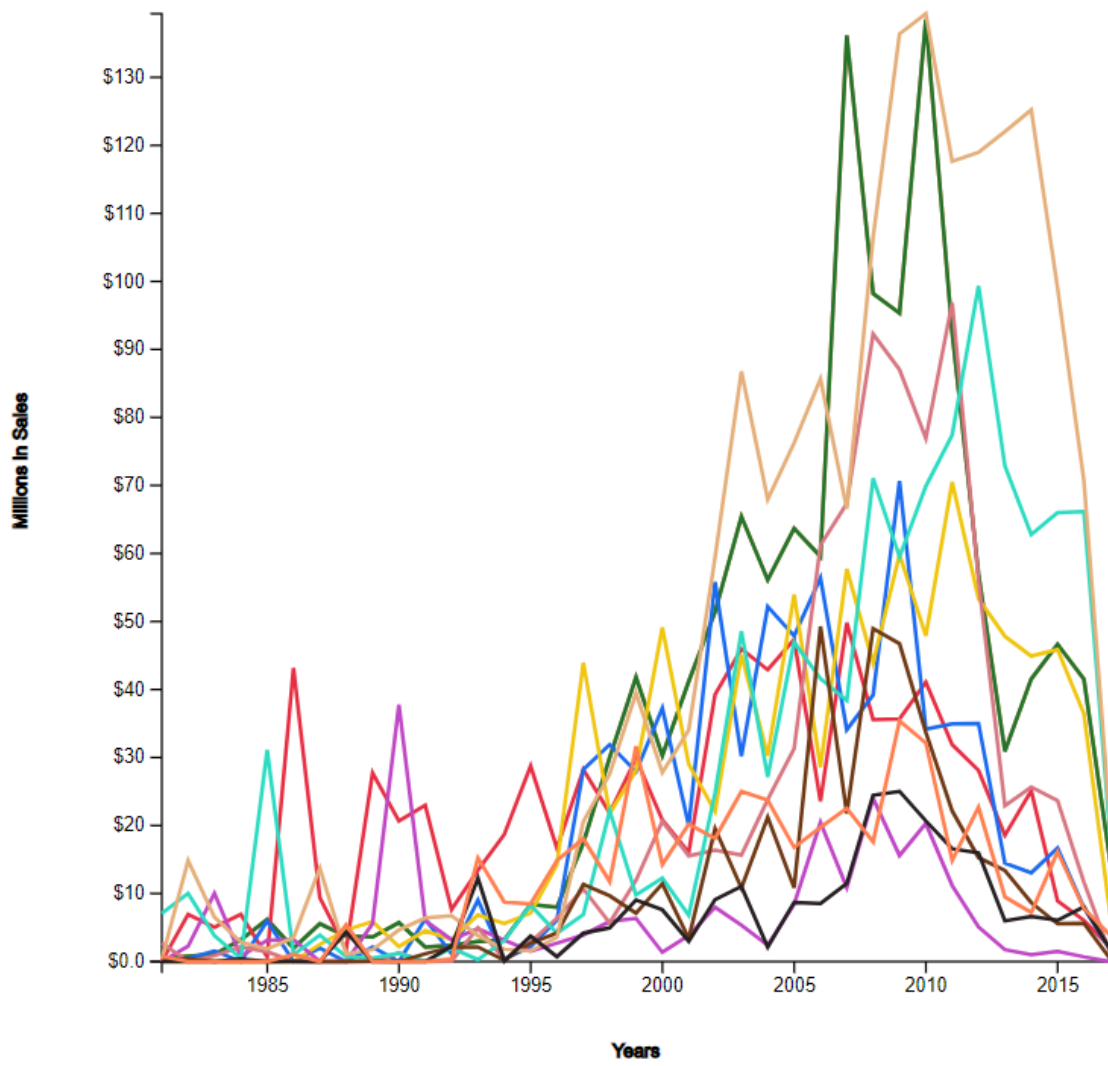19. Game:Call of Duty: Modern Warfare 3
20. Game:Call of Duty: Black Ops 3

Japan Game Sales Tree Map

1. Poke	6. Poke	7. Poke	8. Anim	9. Brai
2. Poke	10. Mons	11. New	12. Anim	13. Drag
3. Supe	14. Poke	17. Brai	18. Mari
4. New	15. Tetr		
5. Poke	16. Supe	19. Mons	20. Drag

1. Game:Pokemon Red/Pokemon Blue
2. Game:Pokemon Gold/Pokemon Silver
3. Game:Super Mario Bros.
4. Game:New Super Mario Bros.
5. Game:Pokemon Diamond/Pokemon Pearl
6. Game:Pokemon Black/Pokemon White
7. Game:Pokemon Ruby/Pokemon Sapphire
8. Game:Animal Crossing: Wild World
9. Game:Brain Age 2: More Training in Minutes a Day
10. Game:Monster Hunter Freedom 3
11. Game:New Super Mario Bros. Wii
12. Game:Animal Crossing: New Leaf
13. Game:Dragon Quest IX: Sentinels of the Starry Skies
14. Game:Pokemon X/Pokemon Y
15. Game:Tetris
16. Game:Super Mario Land
17. Game:Brain Age: Train Your Brain in Minutes a Day
18. Game:Mario Kart DS
19. Game:Monster Hunter Freedom Unite
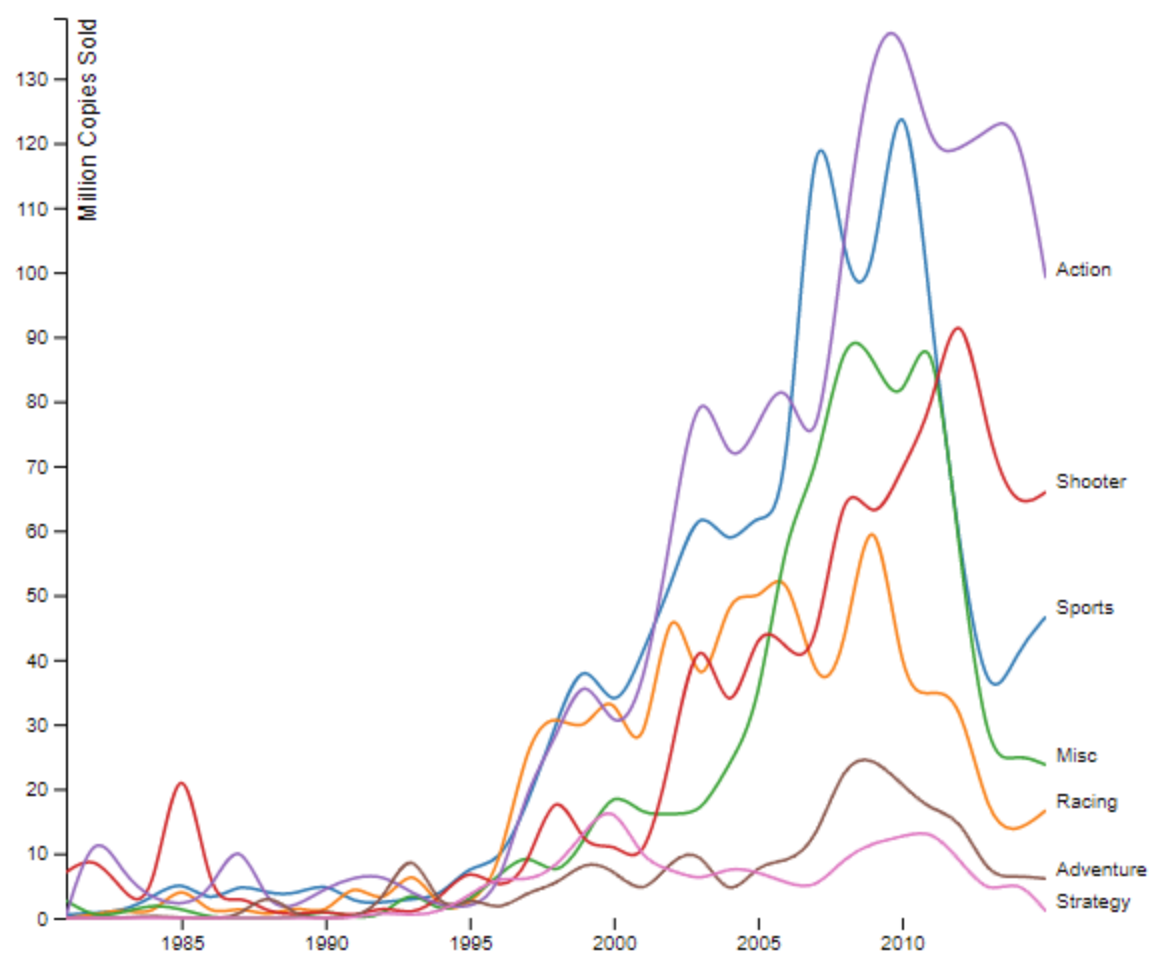20. Game:Dragon Quest VII: Warriors of Eden

Feature#3

Global Game Sales

Halo 3
Bungie
14 Mil

16mil
12Mil
8 Mil
4Mil
2 Mil
0

1982 1986 1990 1995 2000 2005 2010 2015 2016

Legend:
- Racing
- Puzzle
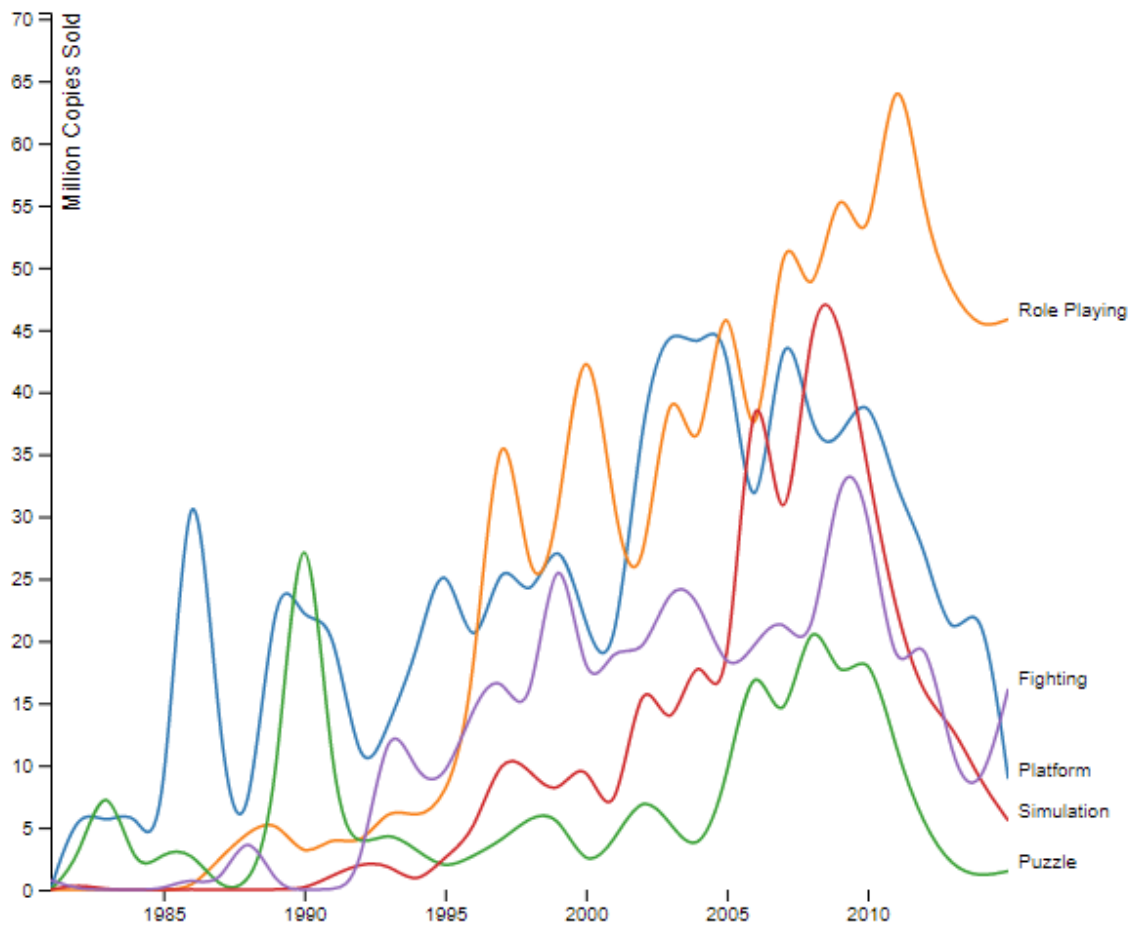- Shooter
- Simulation
- Platform
- Roleplay

Revised Line charts:

Action, Shooter, Sports, Misc, Racing, Adventure, Strategy

Role-Playing, Fighting, Platform, Simulation, Puzzle

Implemented feature website Link:
https://jtchan2.github.io/GameTop.github.io/vgLine.html
Link to
Code:https://github.com/jtchan2/GameTop.github.io/blob/main/vgLine.html