



Videogame market study

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AAD (Advanced Analytics Department)

Index

1. Introduction
2. Business case
3. Presentation for the CEO
4. Presentation for the data science team
5. Conclusions

1. Introduction

- The launched Xbox One is underperforming.
- One of the key identified points on why it is underperforming compared to the competitors was the lack of console exclusive video games launched.
- We wish to invest 75 million USD to develop a console selling video game in Q4 2016.

2. Business case

- We wish to develop a best seller game for our new XBOX .
- For that we have to understand the following:
 - What genre tends to sell the best?
 - What publishers sell the most?
 - Who are our competitors?
 - What types of games have been best sellers in the past?
 - What is our safest bet in terms of: Genre and Publisher?
- After this, we will assign the data science team to generate a regression model to predict global sales for the selected genre and publisher for next year.

To answer the previous questions we have leveraged the ["Video Game Sales"](#) dataset from user GregorySmith in Kaggle.

The dataset is a ranking of top seller games containing 16k rows with the following information:

- Rank - Ranking of overall sales
- Name - The games name
- Platform - Platform of the games release (i.e. PC,PS4, etc.)
- Year - Year of the game's release
- 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.

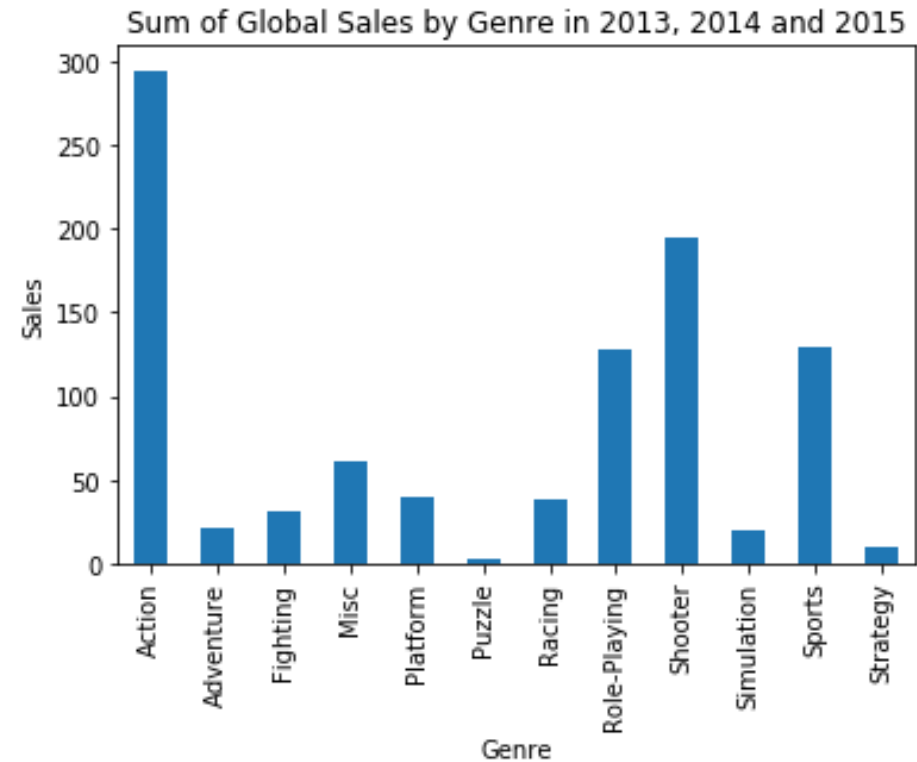
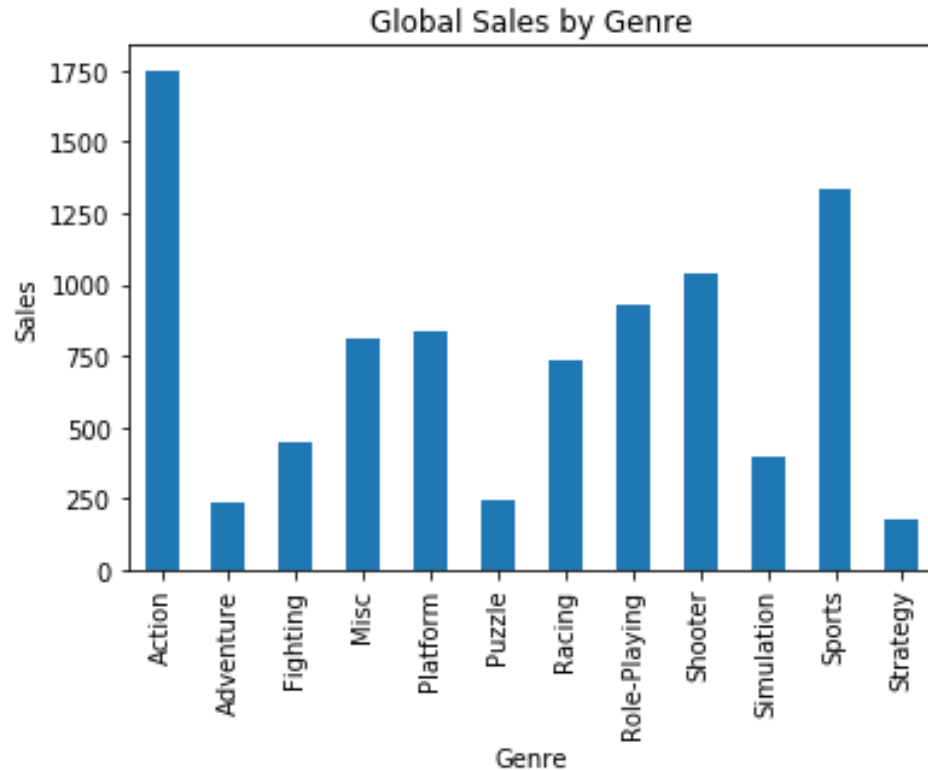
Note: data is incomplete for 2015 and 2016.



3. Presentation for the CEO

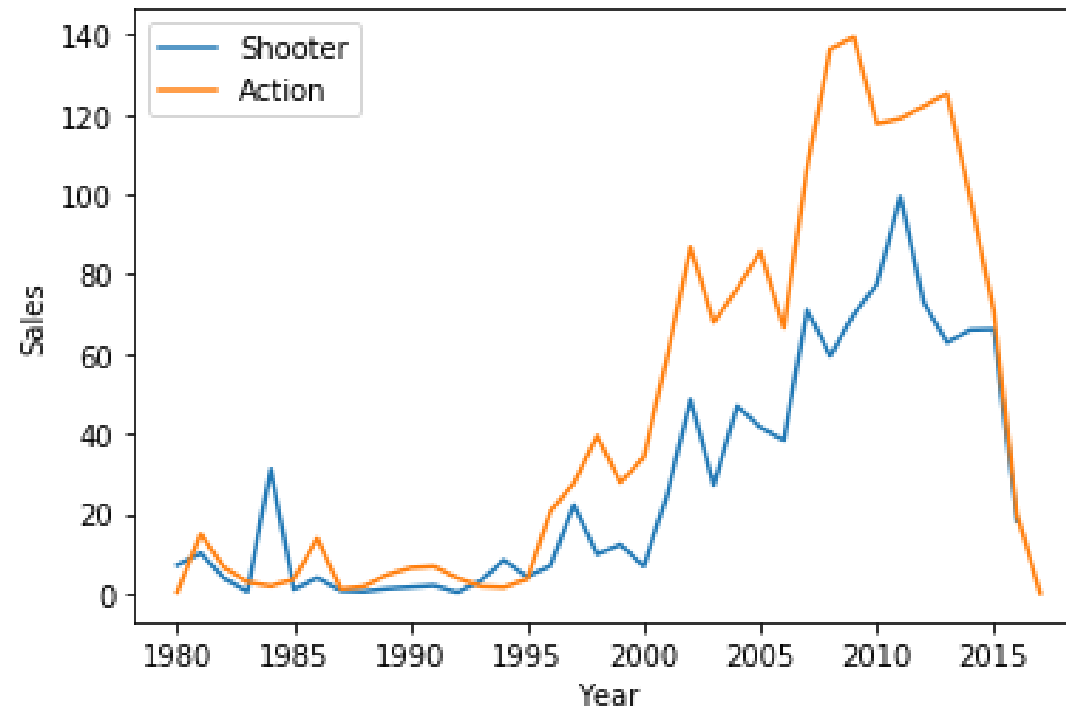
Genre analysis

Looking into the sales at a global level, we clearly see that Action type games are the best selling genre by a margin. This is still the case when exploring the sales in the recent years. By looking into 2013, 2014 and 2015 we also see that the Shooter genre is on the rise.

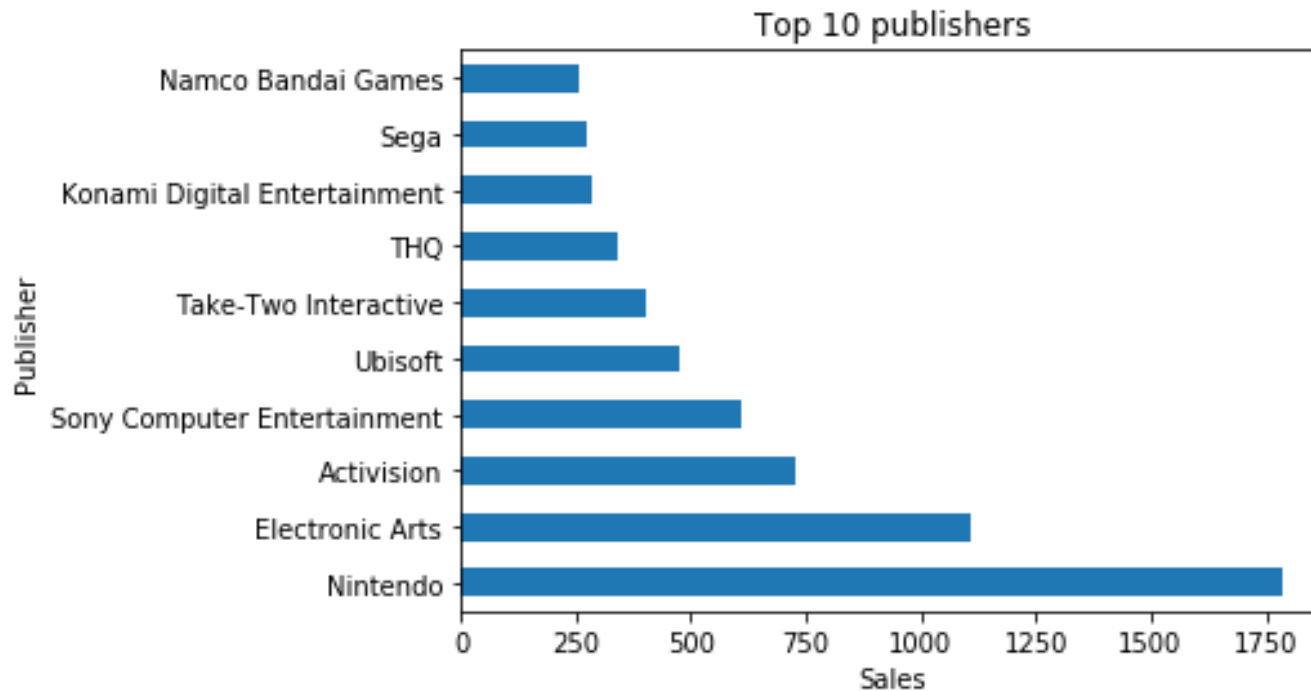


Genre analysis

- Comparing the two most performance genres, we can see action type games still outperform shooter games and we expect this to continue to be the case based on the sales of the recent years.



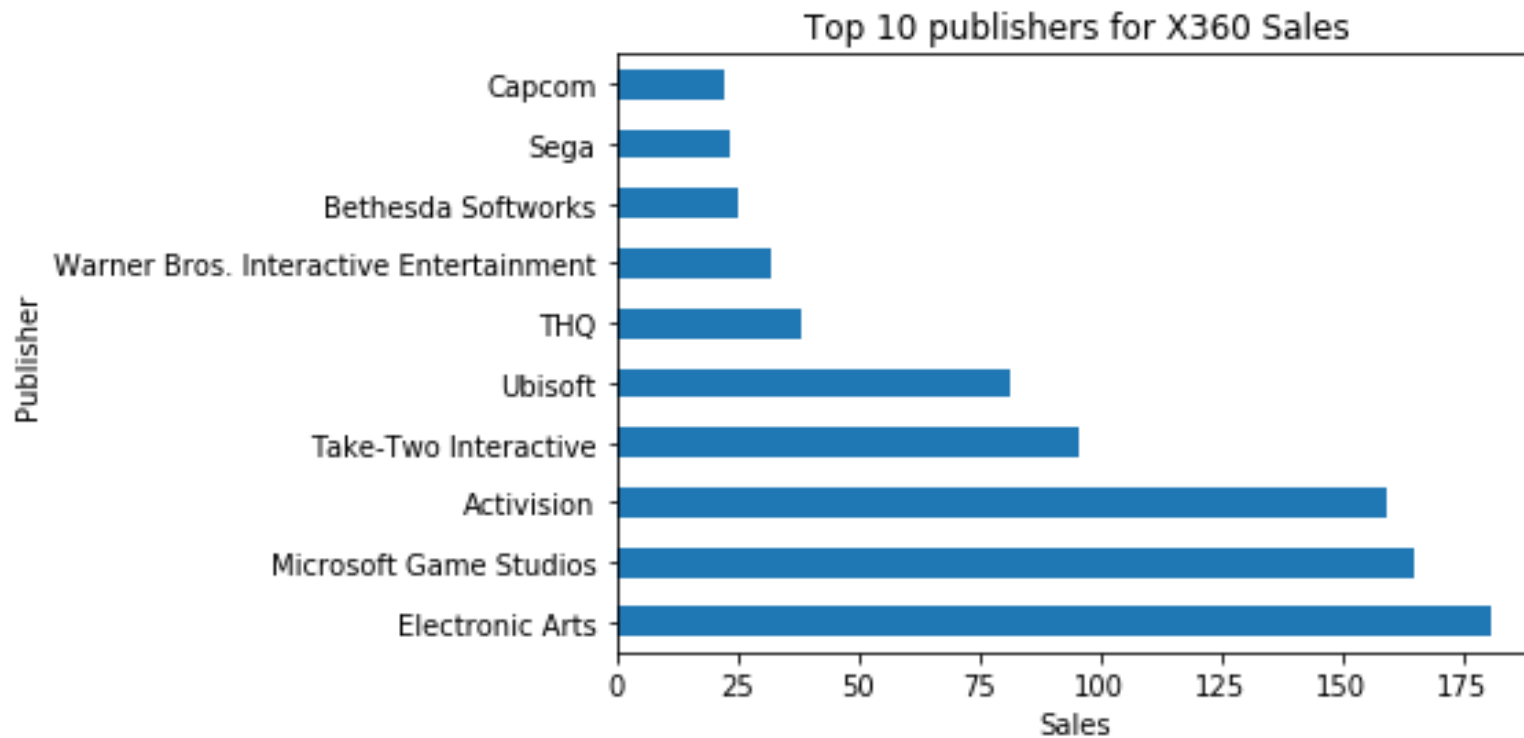
Publisher analysis



The graph gives a clear perspective on which are the most performant publishers and whom we should partner with.

Excluding Nintendo, who is our competitor, we can consider Electronic Arts and Activision as our main potential partners.

Publisher analysis



We can see that analyzing the sales of X360 games Electronic Arts and in-house developed games are both performant.

If we want to cater to the greater audience we propose to partner with **Electronic Arts** or **Activision**.

Games analysis

Rank		Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales
0	1	Wii Sports	Wii	2006.0	Sports	Nintendo	41.49	29.02	3.77	8.46	82.74
1	2	Super Mario Bros.	NES	1985.0	Platform	Nintendo	29.08	3.58	6.81	0.77	40.24
2	3	Mario Kart Wii	Wii	2008.0	Racing	Nintendo	15.85	12.88	3.79	3.31	35.82
3	4	Wii Sports Resort	Wii	2009.0	Sports	Nintendo	15.75	11.01	3.28	2.96	33.00
4	5	Pokemon Red/Pokemon Blue	GB	1996.0	Role-Playing	Nintendo	11.27	8.89	10.22	1.00	31.37

As seen in the publisher analysis, Nintendo is a very performant game publisher, but they develop for the younger audience, which differs from out teen to adult based audience and thus don't think taking into account their games provides much value.

Games analysis

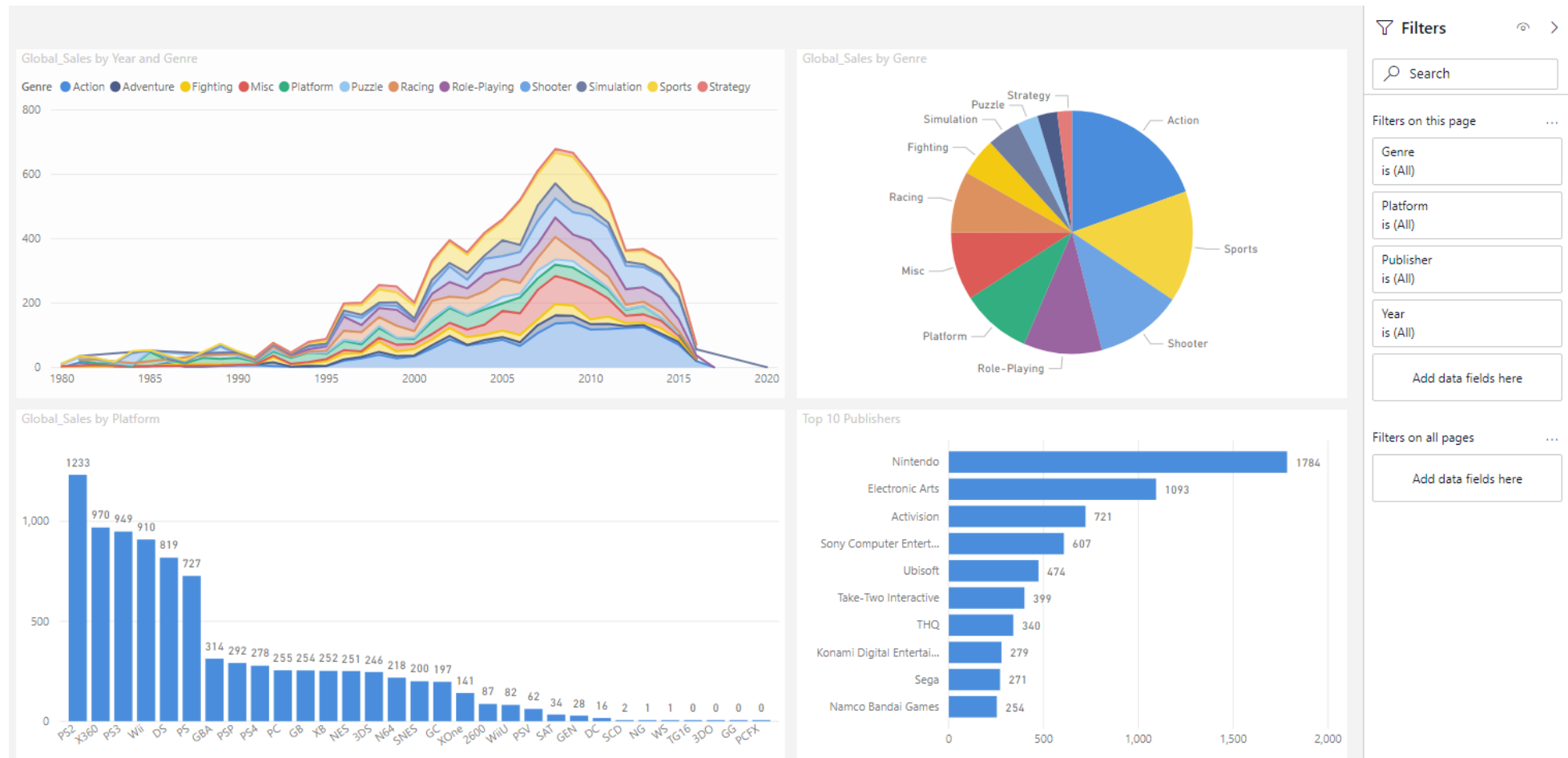
Rank		Name	Platform	Year	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales
15	16	Kinect Adventures!	X360	2010.0	Misc	Microsoft Game Studios	14.97	4.94	0.24	1.67	21.82
16	17	Grand Theft Auto V	PS3	2013.0	Action	Take-Two Interactive	7.01	9.27	0.97	4.14	21.40
17	18	Grand Theft Auto: San Andreas	PS2	2004.0	Action	Take-Two Interactive	9.43	0.40	0.41	10.57	20.81
23	24	Grand Theft Auto V	X360	2013.0	Action	Take-Two Interactive	9.63	5.31	0.06	1.38	16.38
24	25	Grand Theft Auto: Vice City	PS2	2002.0	Action	Take-Two Interactive	8.41	5.49	0.47	1.78	16.15
28	29	Gran Turismo 3: A-Spec	PS2	2001.0	Racing	Sony Computer Entertainment	6.85	5.09	1.87	1.16	14.98
29	30	Call of Duty: Modern Warfare 3	X360	2011.0	Shooter	Activision	9.03	4.28	0.13	1.32	14.76
31	32	Call of Duty: Black Ops	X360	2010.0	Shooter	Activision	9.67	3.73	0.11	1.13	14.64
33	34	Call of Duty: Black Ops 3	PS4	2015.0	Shooter	Activision	5.77	5.81	0.35	2.31	14.24
34	35	Call of Duty: Black Ops II	PS3	2012.0	Shooter	Activision	4.99	5.88	0.65	2.52	14.03

Looking into the best selling games, excluding Nintendo we can see that the same games sell for both **Microsoft** and our main competitor **Sony**. This is to be expected as we share core audience.

Activision provides top selling games for both consoles, and as we have seen previously it is one of the best selling publishers.

Further exploration

- To perform some data analysis, please feel free to use the provided interactive dashboard built in Power BI.





4. Presentation for the data science team

Note: it is assumed that the data science teams also attended the presentation for the CEO.

Objective

- To estimate the earnings for next year and support our decision to invest in Activision we want to Predict the estimated earnings of a new exclusive Call of Duty Game for the XBOX One.
- For that we will build a regression model that estimates Global Sales based on the features of our dataset.

Data info

Our dataset contains 11 columns, 4 of which are categorical and the rest numerical. To gain some understanding on the distribution of our dataset, we will look into the counts of our main categorical columns: genre, publisher and year.

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```

```
RangeIndex: 16598 entries, 0 to 16597
```

```
Data columns (total 11 columns):
```

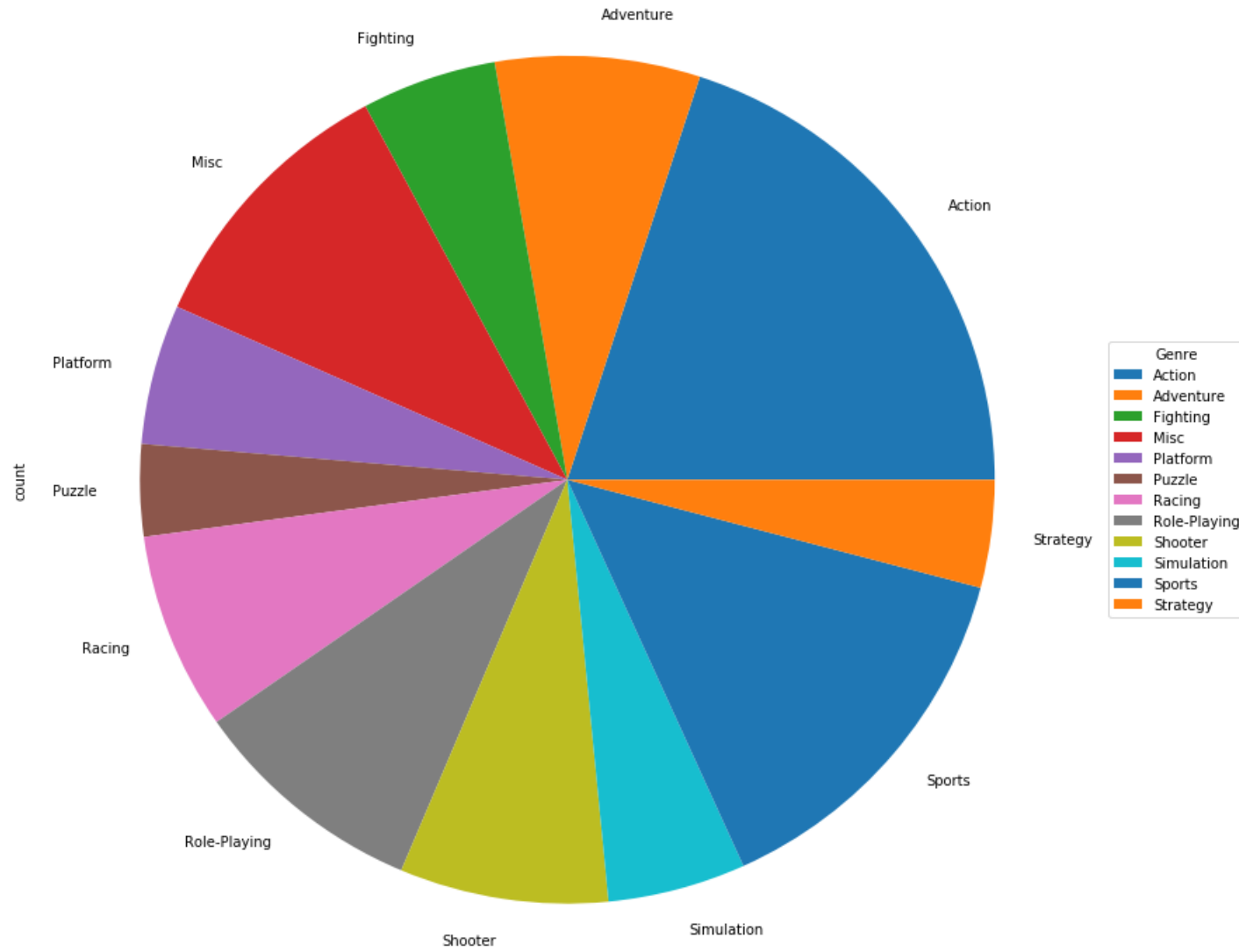
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0	Rank	16598 non-null	int64
1	Name	16598 non-null	object
2	Platform	16598 non-null	object
3	Year	16327 non-null	float64
4	Genre	16598 non-null	object
5	Publisher	16540 non-null	object
6	NA_Sales	16598 non-null	float64
7	EU_Sales	16598 non-null	float64
8	JP_Sales	16598 non-null	float64
9	Other_Sales	16598 non-null	float64
10	Global_Sales	16598 non-null	float64

```
dtypes: float64(6), int64(1), object(4)
```

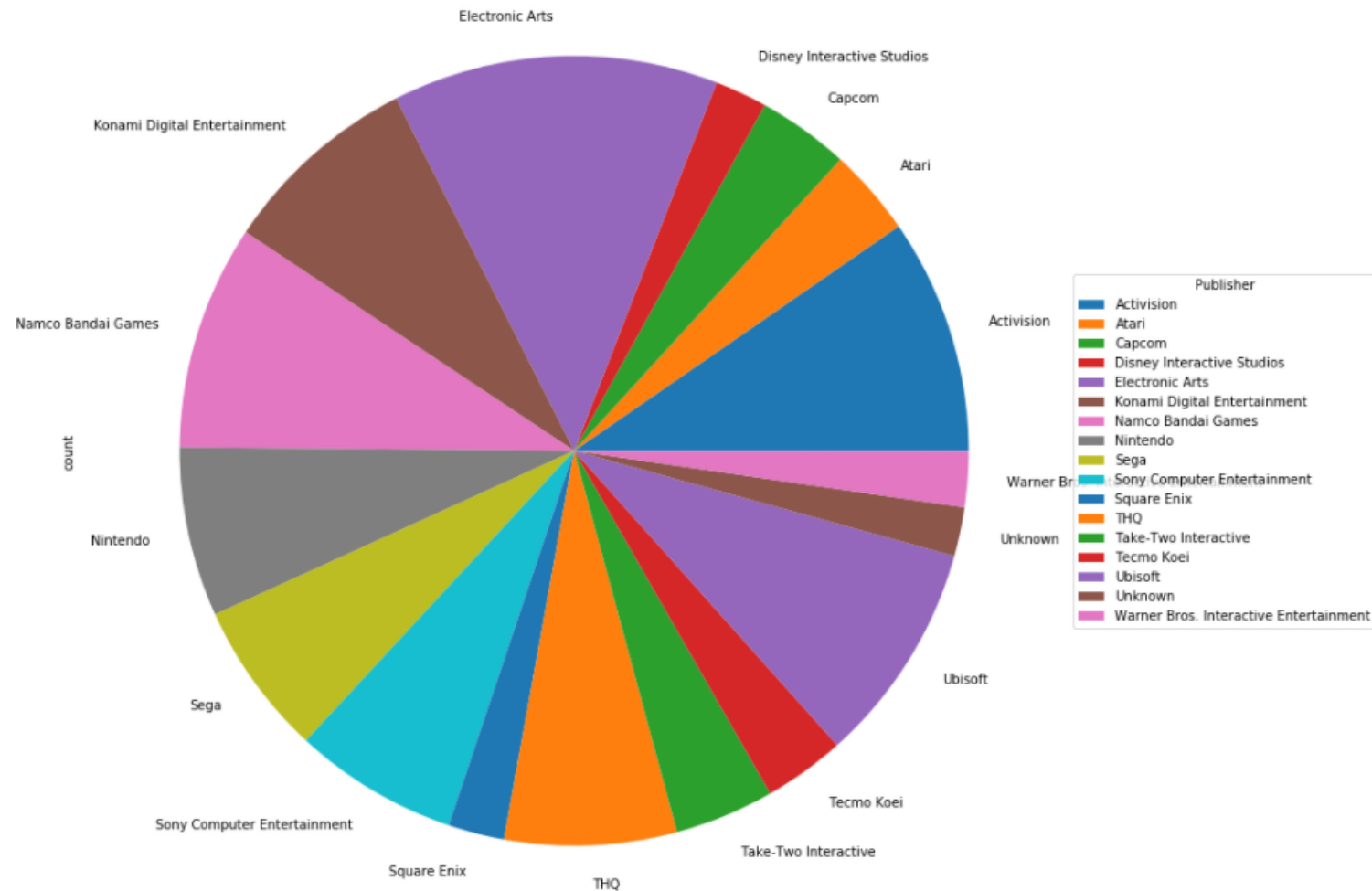
```
memory usage: 1.4+ MB
```

	Rank	Year	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales
count	16598.000000	16327.000000	16598.000000	16598.000000	16598.000000	16598.000000	16598.000000
mean	8300.605254	2006.406443	0.264667	0.146652	0.077782	0.048063	0.537441
std	4791.853933	5.828981	0.816683	0.505351	0.309291	0.188588	1.555028
min	1.000000	1980.000000	0.000000	0.000000	0.000000	0.000000	0.010000
25%	4151.250000	2003.000000	0.000000	0.000000	0.000000	0.000000	0.060000
50%	8300.500000	2007.000000	0.080000	0.020000	0.000000	0.010000	0.170000
75%	12449.750000	2010.000000	0.240000	0.110000	0.040000	0.040000	0.470000
max	16600.000000	2020.000000	41.490000	29.020000	10.220000	10.570000	82.740000

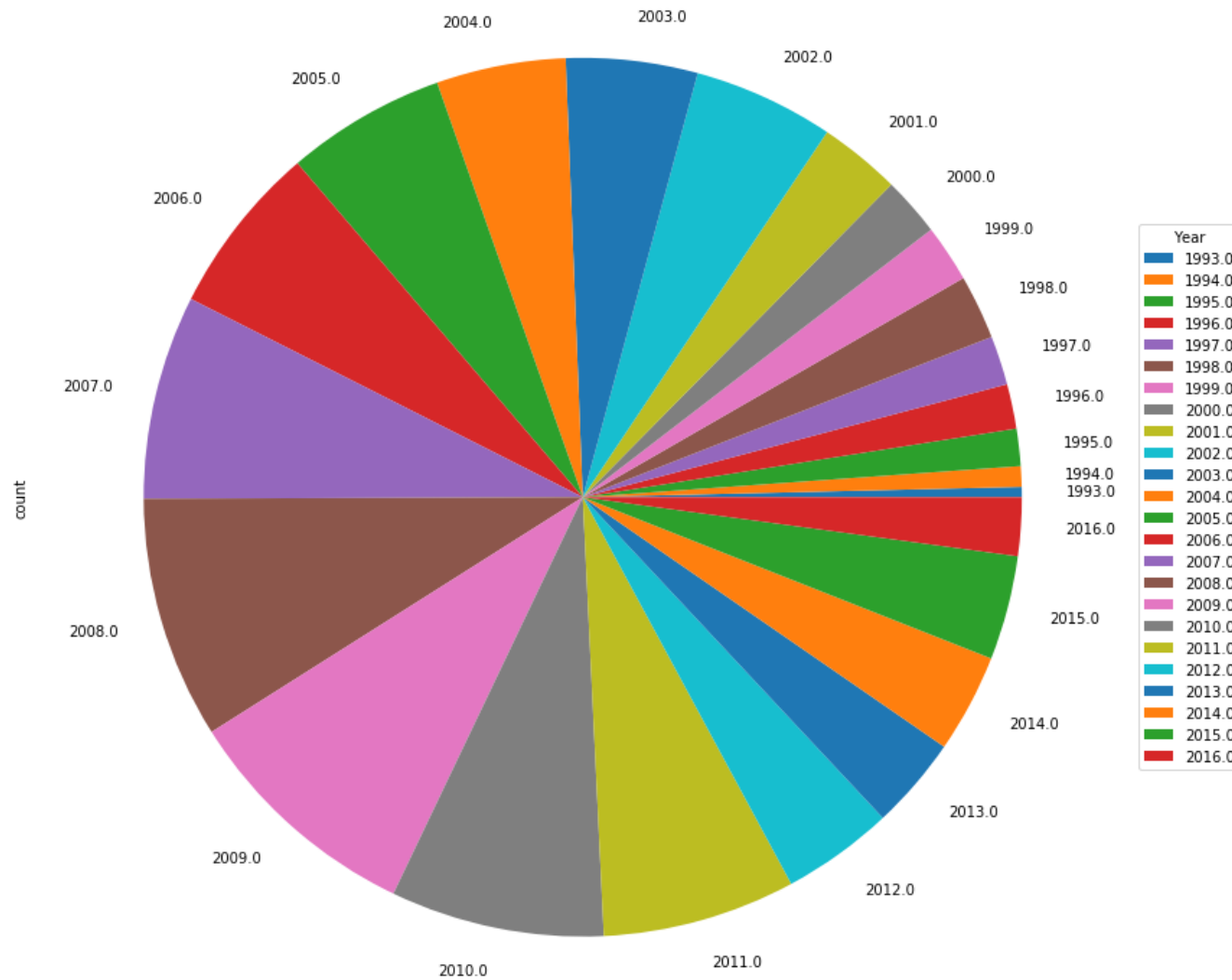
Counts: by genre



Counts: by top publishers (more than 200 top ranking games accross all platforms)



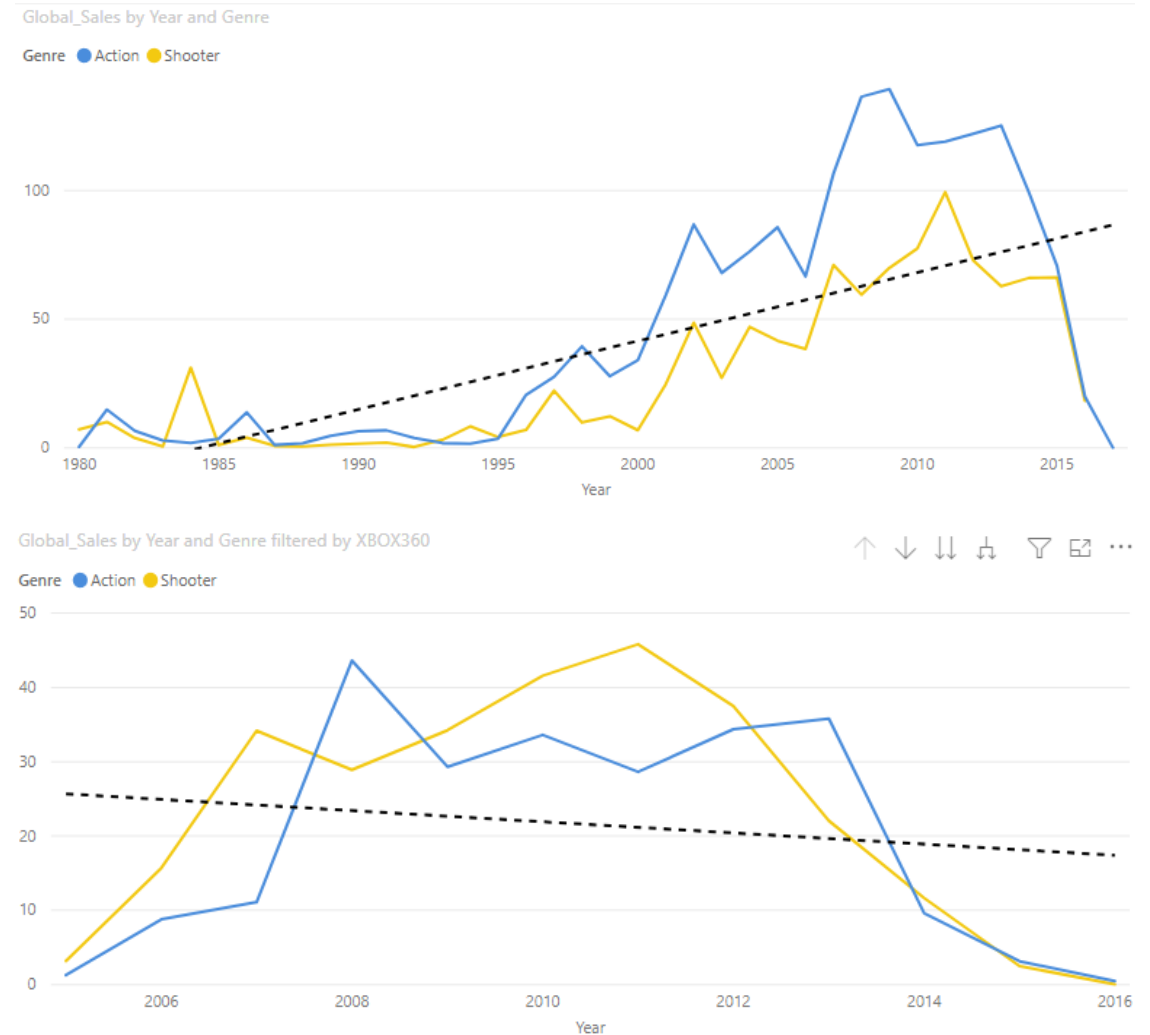
Counts: by years



Genre analysis

As explored in the CEO presentation, Action and Shooter genres outperform the rest. This is even more true in the recent years, and as we can see from the trend line in the graph to in the top right, the sales are increasing for these two genres.

The graph below that shows that Shooter sales for the XBOX360 outperformed Action type games for years 2010, 2011 and 2012, showing that these games are especially popular amongst the XBOX clients.

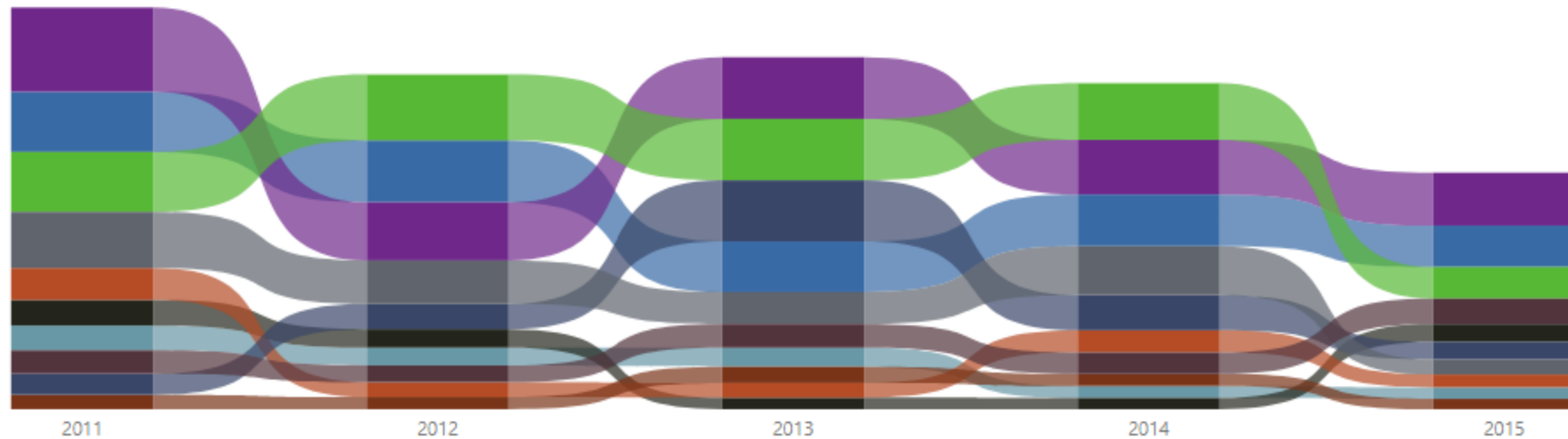


Publisher analysis

As seen from the ribbon chart below, both Activision and Electronic Arts have performed consistently and well in the past few years. Making them both very valuable choices.

Global_Sales by Year and Publisher

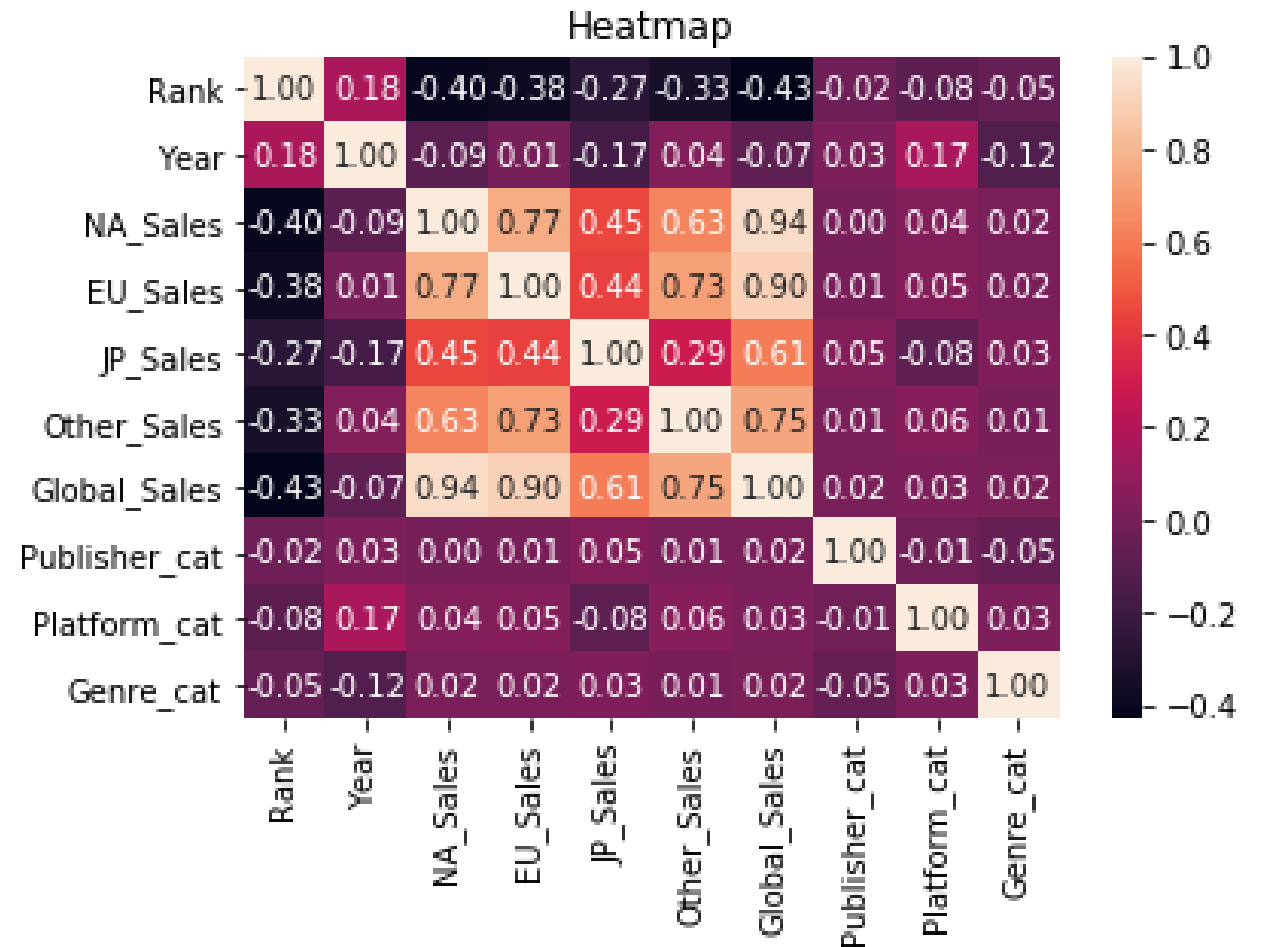
Publisher ● Activision ● Electronic Arts ● Microsoft Game Studios ● Namco Bandai Ga... ● Nintendo ● Sony Computer Ent... ● Square Enix ● Take-Two Interacti... ● Ubisoft ● Warner Bros. Int...



Correlation matrix

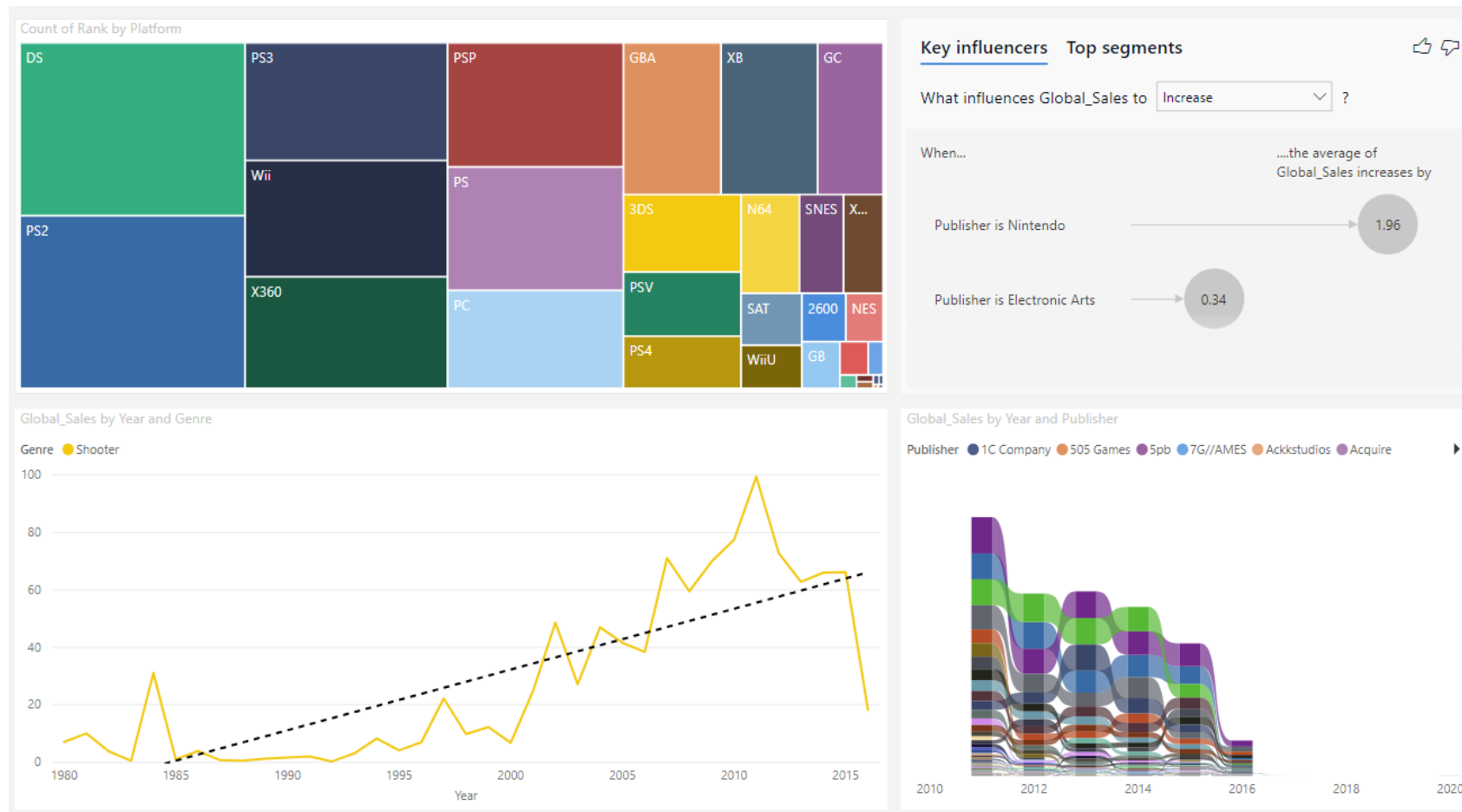
The following is the correlation matrix after label encoding the categorical columns.

We can see correlations are low, but we suspect that after applying some transformations these can grow.



Further exploration

- To perform some data analysis, please feel free to use the provided interactive dashboard built in Power BI.



Conclusions

- Based on the analysis by: Genre, Publisher and Game. We believe our safest bet is to sign an exclusivity contract for a new **shooter** type game with **Activision**.
- The shooter type game sells very well and caters to our core audience, more importantly, it is also very popular amongst our competitor's platform and thus will attract public from them.