**Project 1**

**The Secrets to Video Game Success:**

**Factors that Affect Ratings and Sales**

**Team Members**

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**Objective**

Our project will investigate what factors affect whether a video game is successful or not based on video game ratings and sales.

**Global Sales vs. Critic Ratings**

*Is there a relationship between video game global sales and critic ratings score? Do games that have higher ratings tend to sell better?*

There is a weak positive correlation between global sales and critic ratings (r-squared = 0.323). The model accounts for 32% of variation. This means as critic ratings increase, global sales slightly increase. Due to the weak relationship, we can assume there are likely other variables that affect global sales and critic ratings.

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**Global Sales vs. Critic Ratings for different Genres**

*How do global sales and critic ratings vary across video game genres? Which genres sell the best and which are rated the highest?*

Video games do vary in popularity across genres. The Shooter genre was the most popular with the highest global sales. Action was the second best-selling, followed by Sports & Role-Playing.

We also found that there is a weak correlation between genres and critic ratings. The ratings didn’t really influence the sales of a particular genre. This would be better used to determine the sale of a specific game within that specific genre.

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**Global Sales for different Genres across Years**

*How do global sales for different video game genres vary across the years? Does the popularity of different genres vary over time?*

Global sales for different video game genres did vary across years.

* From our analysis, we saw that Action Adventure games have the highest global sales. However, there’s been a decline in sales over the 5-year period.
* Sports/Simulation, Fighting, and Party/Puzzle games have the most consistent sales globally.
* The biggest thing to note would be MISC games. Starting in 2015, there’s been a gradual increase in sales. This would consist mostly of Mobile and Indie games, and we can project that it will only continue to increase since the general population owns a smartphone, and these devices are only getting better in quality.

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Though we are looking at sales globally, the best thing to do to determine what games sell best would be to narrow it down to the region. Depending on the type of game a developer would make, they would look at which region they would want to focus their sales in.

**Sales per Region for different Genres**

*How do video game sales vary between regions (NA, PAL, JP, Rest of the World) for different genres? Do different genres sell better in certain regions?*

Video game genres do vary in popularity across regions.

* In North America the Shooter genre sees the highest sales, followed by Action, then Role-Playing.
* In the PAL region and the Rest of the World the Shooter genre also sees the highest sales and Action is the second highest selling genre. However, the third genre with the highest sales is Sports.
* In Japan the Role-Playing genre has the highest sales, followed by Action, then Shooter.

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Overall the Shooter genre is the highest selling across 3 of the 4 regions. The only exception is Japan, where Role-Playing games sell the best and Shooter games come in third. Action is the second favorite genre across the board. In North America the third best selling genre is Role-Playing, but in PAL and the rest of the world (excluding Japan) it’s Sports.

These differences could be due to a variety of factors. One such factor could be culture. Fast-paced shooting games tend to be more popular in the west (NA and PAL) while role-playing games that are slower and more story-driven are more popular in the east (JP). Playing video games is a leisure activity for many people. It may be possible that people who live in western regions prefer to release their tension through more aggressive games, while people in the east prefer to slow down and enjoy a slower-paced story to unwind.

**Global Sales vs. Critic Ratings for different Platforms**

*How do global sales and critic ratings vary across video game platforms? Which platforms have games that sell the best and which are rated the highest?*

Global Sales for the various platforms that sold the best were the PlayStation, the Xbox, and Nintendo Wii and DS. A lot of the sales in the dataset were derived from the Sony family (i.e. PS3, PS4, etc.) followed by Microsoft (i.e. Xbox One, Xbox 360, etc.) As can be seen by the two bar charts, at a visual glance, the sales and their respective critic scores provide no significant correlation as all platforms generally have a good critic score rating.

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Points of Interest:

* The top two competitors producing the most sales from 2009 to 2019 is the PlayStation 3 and Xbox 360.
* The Sony PlayStation collectively had more than 600 million in global sales, and the Microsoft Xbox collectively had around 500 million in global sales.
* The sales were notable in the PS3 and the Xbox 360 is because they were the models that were released and popular during the observation period. (2009 – 2019). The PS3 release lifespan was from 2006 – 2017, and the Xbox was from 2005 – 2016.
* The average critic rating is around 7.2; it is generally positive with very little variation between the platforms.

**Global Sales for Video Game Genres for different Platforms**

*How do video games sales vary between genres for each platform? Does the most popular genre for each platform vary?*

As can be expected, certain genres are linked with respective platforms. This could have various explanations as to why certain genres are more popular on certain platforms. It could be speculated that certain platforms have deals for publishing companies that release certain genres, hence driving up certain genres. Certain platforms may be suitable for criteria that are required for certain genres (e.g. high performing graphic cards utilized by shooter genres)

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Points of Interest:

* In the Genre of Sports, the platform with the most sales was the PS3.
* In the Genre of Shooter, the platform with the most sales was the Xbox 360.
* In the Genre of Action, the platform with the most sales was the PS3.
* In the Genre of Misc, the platform with the most sales was the Wii.
* The Nintendo DS had its highest sales in the following Genres, Action, Adventure, RPGs, Puzzles, Simulations, and Misc.

**Sales per Region for different Platforms**

*How do video game sales vary between regions (NA, PAL, JP, Rest of the world) for different platforms? Do different platforms sell better in certain regions?*

Video game platforms do vary in popularity across regions.

* In North America the Xbox360 was the platform with the highest game sales, followed by PlayStation 3 and then the PlayStation 4.
* In the PAL Region and the Rest of the World the PlayStation 4 had the highest game sales, followed by PlayStation 3, and finally Xbox360.
* In Japan the PlayStation 3 has the highest game sales, followed by the PlayStation 4, and finally the 3DS

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Overall the Sony platforms (PlayStation 3 & 4) had the highest game sales across 3 of the 4 regions. The only exception is North America, where the Xbox360 has the highest game sales and the PlayStation 3 comes in second. Surprisingly, the 3DS is quite popular in Japan, coming in third.

The differences in platform sales across regions could be due to several factors, but one possible cause could be where the different platform developers originated. The Xbox360 was developed by Microsoft, an American company, and it is the most popular console in North America. In contrast, Sony (PlayStation) and Nintendo (3DS) were both started in Japan and are more popular outside of North America.

**Global Sales vs. Critic Ratings for different Publishers**

*How do global sales and critic ratings vary for different publishers? Which publishers have games that sell the best and which are rated the highest?*

There is no relationship between global sales and critic ratings for different game publishers. If a publisher has higher global sales of their games, it does not mean they will also have high critic ratings.

Out of the top 5 publishers with the highest global sales, the only one that also had high critic ratings was Rockstar Games, which came in fifth for global sales. The rest had average critic rating scores.

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Overall the critic ratings did not appear to vary much between publishers, so there does not appear to be any relationship between global sales and critic ratings. However, this makes sense given the overall weak relationship between global sales and critic ratings (as shown by our linear regression). Critic ratings are not a good predictor of global sales and vice versa.

**Number of Games Sold by different Publishers**

*Which publishers released the most games? Did publishers that released the most games also have the highest global sales?*

There is no relationship between the number of games sold and the global sales of games for different publishers. If a publisher releases more games, it does not necessarily mean they will make more sales.

Nintendo published the highest number of games, but it came in eighth in global sales. Conversely, Activision had the highest global sales of games, but it came in sixth in the number of games published. This seems to suggest that game quality is more important than game quantity. Making less games that are (presumably) higher quality will result in higher sales.

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**General Conclusions**

Based on our findings we can conclude that a video game is more likely to be successful if:

* It is in the Shooter or Action genre
* It is released on PlayStation and/or Xbox consoles
* It is released by Activision, EA, or Ubisoft

**Limitations of the Data**

We used a single dataset for this project. While it had a considerable amount of data, there were some limitations that we noted.

* Many of the cells in some columns were empty and resulting in a large quantity of data loss. This could mean we have an incomplete picture of the game industry. We may have missed certain genres or platforms because they were missing certain data.
* There is no indication what the source for the critic scores are and how many critics contributed to the score.
* The dataset classified Mobile games as Miscellaneous and did not have much data on them. Mobile games are a rapidly growing sector of the gaming industry and it would have been very interesting to see how they faired against more traditional console and PC games.