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Video Game Sales Research Project

Using a dataset containing a list of video games with sales greater than 100,000 copies, I was able to analyze sales data from more than 16,500 games.

Shown below is the histogram of the top 50 video games, ranked by global sales:

Using this histogram, we can tell that with the category with the two largest groupings of global sales was 11-14 and 14-17. This means that if you were to pick a random video game from the top 50 global sales, the probability of that video game’s global sales being between 11-14 and 14-17 is 54%.

The proportions of video game genres from the 16598 different video games goes as follows:

|  |  |
| --- | --- |
| Action | 0.200 |
| Adventure | 0.077 |
| Fighting | 0.051 |
| Misc | 0.105 |
| Platform | 0.053 |
| Puzzle | 0.035 |
| Racing | 0.075 |
| Role-Playing | 0.090 |
| Shooter | 0.079 |
| Simulation | 0.052 |
| Sports | 0.141 |
| Strategy | 0.041 |

If a single video game was chosen from this data set, the probability that the video game was either an action game or a sports game is 34.1%. That means that 34.1% of all video games that have global sales greater than 100,000 are either action games or sports games.

Shooter games owns the largest share of the top 100 video games sales with 21.21%. If video games were randomly selected from the top 100 video game sales, using the Geometric Distribution formula , the probability that at least 10 video games need to be selected to encounter the first shooter video game is 11.7%. The top 100 grossing video games are diverse and are not dominated by just one genre.

Of the top 100 video games sales, the North American sales are typically 50% of the global sales. The probability that, when randomly choosing three video games out of top 100 video games, that the North American sales will account for over 50% of the global sales is 12.5%. That means that video games are not just massively popular in the North American region. They are popular worldwide.

Of the top 25 video game sales, 20 video games were created by Nintendo, 4 games were created by Take-Two Interactive, and 1 game were created by Microsoft Game Studios. If four video games were randomly chosen from the top 25 video games sales, the probability that one game from each company was chosen is about 6.96%. We can prove the probability using combinations. The total number of ways to choose 4 video games out of 25 is equaling 12650. Using combinations, we end up with the equation or 6.96%. Nintendo dominates the top 25 chart over other prestigious video game companies to the point that it is very unlikely that you could pick four random games from the top 25 of video games sales that represented all three companies.

To truly demonstrate how dominant Nintendo is when it comes to video games sales, out of the top 100 video games, 52% of the video games are created by Nintendo. If we were to randomly select 20 video games, the probability that at least 10 of them were created by Nintendo is 65.68%, calculated using the Binomial Distribution formula .

If a consumer were to buy four random video games from the top 20 video games sales,

Of the top 100 video game sales, 40.61% of the games were during the 2000s. If you were to choose two video games randomly, the probability distribution for Y = number of 2000s games would be:

|  |  |  |  |
| --- | --- | --- | --- |
| p(y) | 0 | 1 | 2 |
| y | 0.3529 | 0.4832 | 0.164 |

This was calculated using the Binomial Distribution formula . The mean would be 0.8122 and the variance would be 0.4857. That means that we were to repeatably take two video games from the top 100 video game sales, we would average about 0.8122 video games from the 2000s. The 2000s produced a ton of video games with high video game sales.

The percentage of Gameboy video games in the 16,500 video games of at least 100,000 copies was one of lowest at 0.59%. This is the equivalent of only 98 Gameboy video games selling at least 100,000 copies. This means that if you were to select 100 video games randomly from this list of video game sales, the probability of at least one Gameboy video game is 44.6% chance. Calculated using Poisson Distribution formula , this probability may seem high but, with a sample size of 100 video games, the probability that you will not see at least one Gameboy video game being over 50% shows that the Gameboy did not have high selling video games.

Of the top 1000 video game sales, the PlayStation 2 platform has the largest share of video game sales with 16.4%. Even with the largest share, the probability of randomly choosing a PlayStation 2 video game from the top 1000 video game sales on the third try is 11.46%. Calculated using Geometric Distribution formula , it is not likely that you choose a PlayStation 2 video game out of the top 100, showing how diverse the top 100 video game platforms are.

However, the same cannot be said of the top 10 video game sales. Of top 10 video game sales, 5 are video games for the Wii console. If 5 video games of the top 10 video game sales were to be randomly selected, the probability that all five of the video games were not Wii games is 3.97%. Calculated using Hypergeometric Probability Distribution formula , it is not likely that you will be able to avoid a Wii game in the top 10 video game sales.While the top 1000 may be diverse, the top 10 video game sales are dominated by the Wii platform.

The top 100 video game sales has a mean of 14.61 million sales and a standard deviation of 9.93. Using the Tchebysheff’s theorem , we can calculate that 30.56% of the video games sales are between 2.61 million sales and 26.61 million sales. This percentage demonstrates how varied the sales numbers are that about 70% of the top 100 sales are either under 2.61 million sales or above 26.61 million sales.

Using all of our calculated data, we can learn more about our video games sales data set. Of the top 100 video game sales, the majority of the sales are in between 11-14 and 14-17 million seen in our first histogram. . The data from the Tcehbysheff’s theorem demonstrates that the 70% of the top 100 video games sales are above 26.61 million sales. Video games in the top 100 are popular worldwide, not primarily dominated by North American sales. The video game genres in the top 100 vary greatly as well with not just one genre dominating all of the others. However, Nintendo typically produces majority of the top 100 video games. Most of the video games in the top 100 were created during the 2000s decade. This is when video games exploded in popularity. While the platforms of top grossing video games varied, the Gameboy was definitely one of the most unpopular platforms. The Wii is one of the most grossing video games platforms in the top 10.