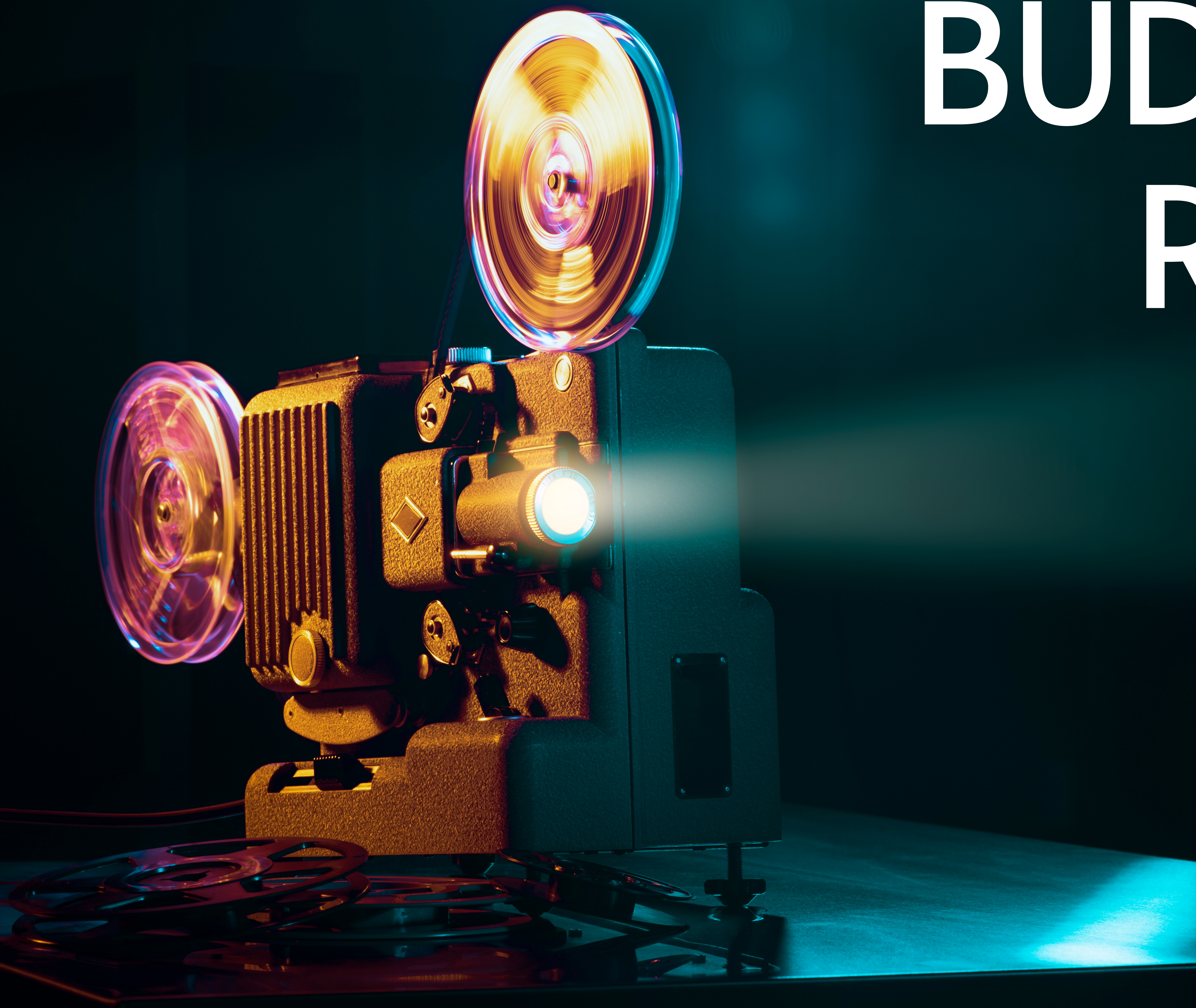
BUDGET VS. REVENUE

IN THE MOVIE INDUSTRY



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PURPOSE STATEMENT

The purpose of this analysis is to identify if factors such as genre, budget, release date, and runtime contribute significantly to a film's final gross revenue.

By undertaking this analysis, we aim to provide the movie industry with data-driven insights that will enable more informed decision-making in the allocation of resources during the movie production process.

THE ANALYSIS PROCESS

We pulled film industry data from Kaggle.com. After downloading the tmdb_5000_movies.CSV file, we were able to clean it up for analysis. Our main focus in cleaning was to consolidate genres and dates.

Our dataset was composed of 4803 American movies ranging from 1916 to 2017 with the combined revenue of $395,097,847,444 billion dollars.

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WHAT THE DATA REVEALED

The data analysis revealed that various factors, including the genre, budget, and runtime, play a significant role in determining a film's ultimate gross revenue. Some findings from our data revealed that: certain genres do bring in more money, there is positive correlation is evident between a movie's budget and its revenue, release months matter, runtime lengths of 1.5-2 hours bring in the most revenue, and that bigger budgets don’t guarantee perfect ratings from critics.

Investing in a movie involves a critical financial aspect, wherein the amount allocated significantly influences expectations of a commensurate return on investment. However, as we have just observed, an unequivocal relationship between substantial budgets and favorable reception is not always evident. In this presentation, we will delve into the reception and financial performance of movies to gain a deeper understanding of their relationships.

It is imperative to note that correlation does not establish causation. Our analysis solely seeks to measure the interplay between these variables, without implying a causal connection. It is essential to acknowledge the presence of other variables, often referred to as third-factor or confounding variables, which could potentially underlie the observed correlations.

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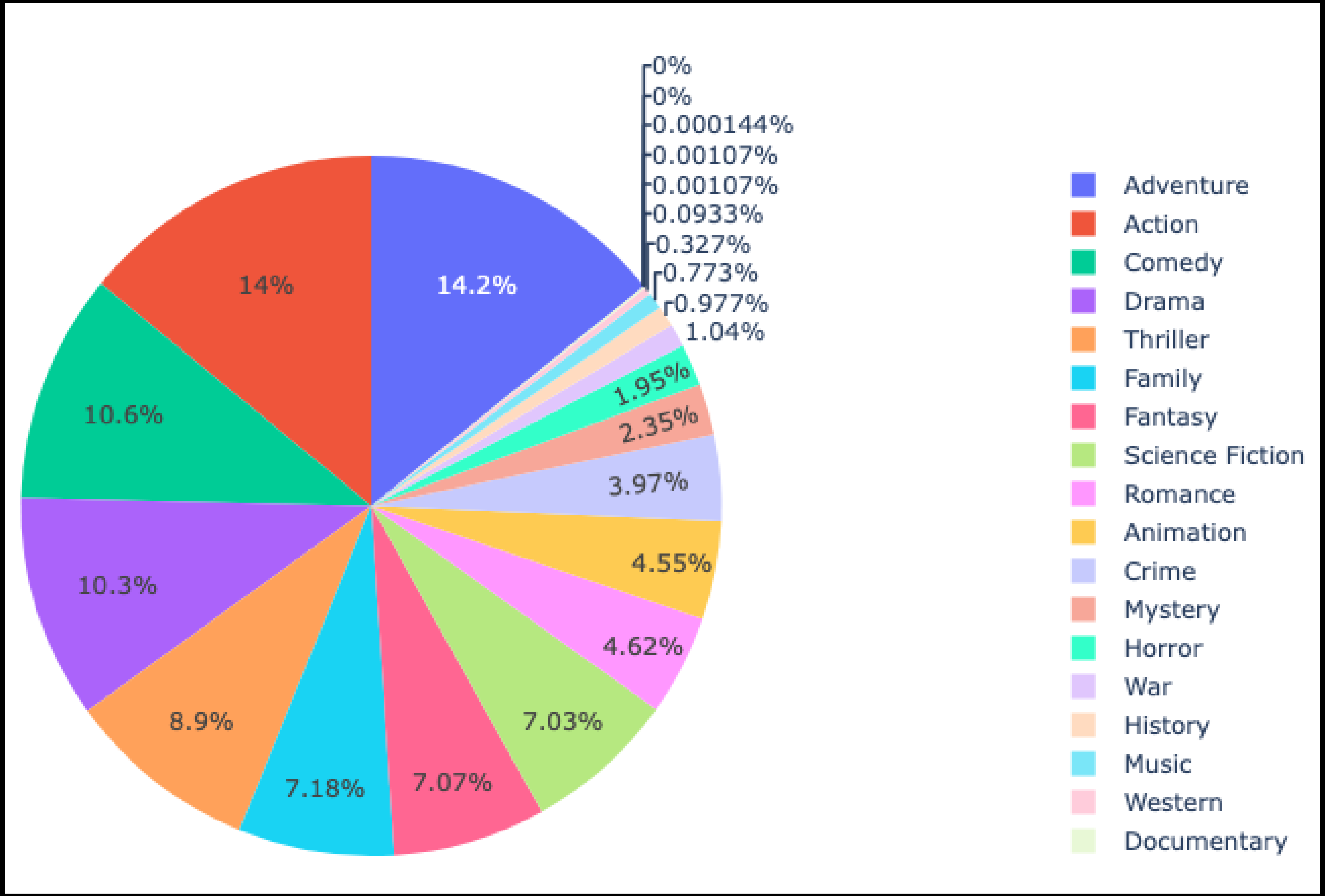
GENRE REVENUE DISTRIBUTION

Adventure films emerged as the highest revenue-generating genre, contributing 14.2% to the overall revenue, closely trailed by Action movies at 14%. Comedy and Drama genres followed with 10.6% and 10.3% of the total revenue, respectively. The remaining genre categories fell within the range of 8.9% to 9.3% of the total revenue. Notably, Documentaries represented the smallest share, contributing a mere 0.093% of the total revenue.



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GENRE COUNTS

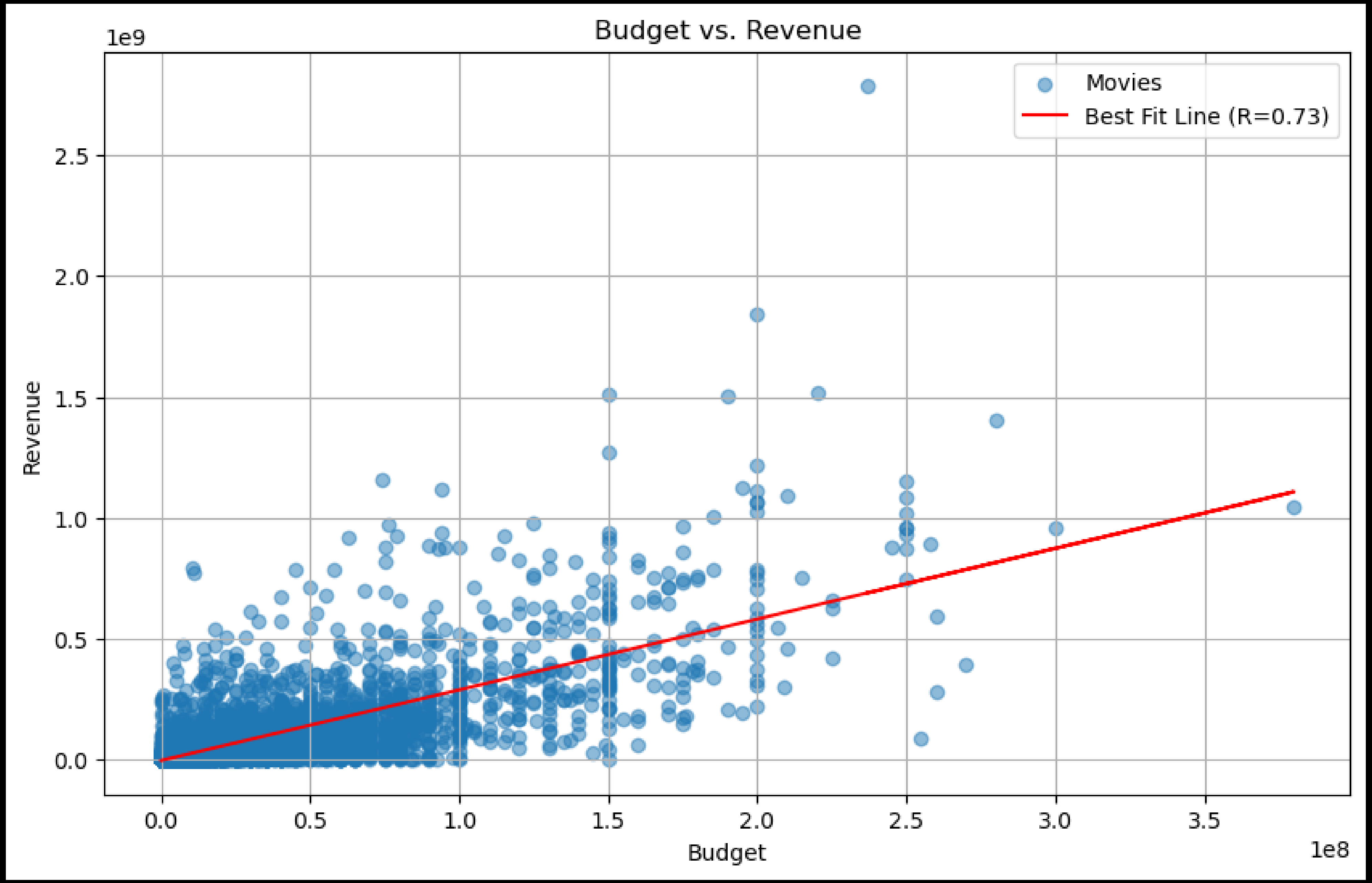
While genres such as adventure, action, comedy, and drama collectively contribute to approximately half of the total revenue in the movie industry, it's intriguing to note that the most frequently produced genre is "drama," with a substantial count of 2297 films. "Comedy" follows closely behind with 1722 films, and "thrillers" rank third with 1274 productions.

In contrast, "westerns" represent the genre with the least film production, comprising a mere 82 counts. This data highlights a fascinating disparity between the most frequently created films and those that are the most financially lucrative. Notably, while "action" and "adventure" genres are responsible for generating the highest revenue, they are not the most commonly made films. This contrast underscores the dynamic nature of the film industry, where a balance between audience preference, creativity, and economic success plays a crucial role in shaping the cinematic landscape.

Genre	Count
Drama	2297
Comedy	1722
Thriller	1274
Action	1154
Romance	894
Adventure	790
Crime	696
Science Fiction	535
Horror	519
Family	513

Genre	Count
Fantasy	424
Mystery	348
Animation	234
History	197
Music	185
War	144
Documentary	110
Western	82

HOW DOES BUDGET IMPACT REVENUE?



A positive correlation is evident between a movie's budget and its revenue, as demonstrated by the regression line and a notably high correlation coefficient (r value) of 0.73. As the budget allocated to a movie increases, there is a corresponding tendency for the revenue it generates to rise as well.

Nonetheless, it is imperative to emphasize that correlation does not imply causation. Our analysis solely examines the interplay between these two variables without establishing a causal relationship. It is essential to acknowledge the potential influence of other variables which may underlie this observed correlation.

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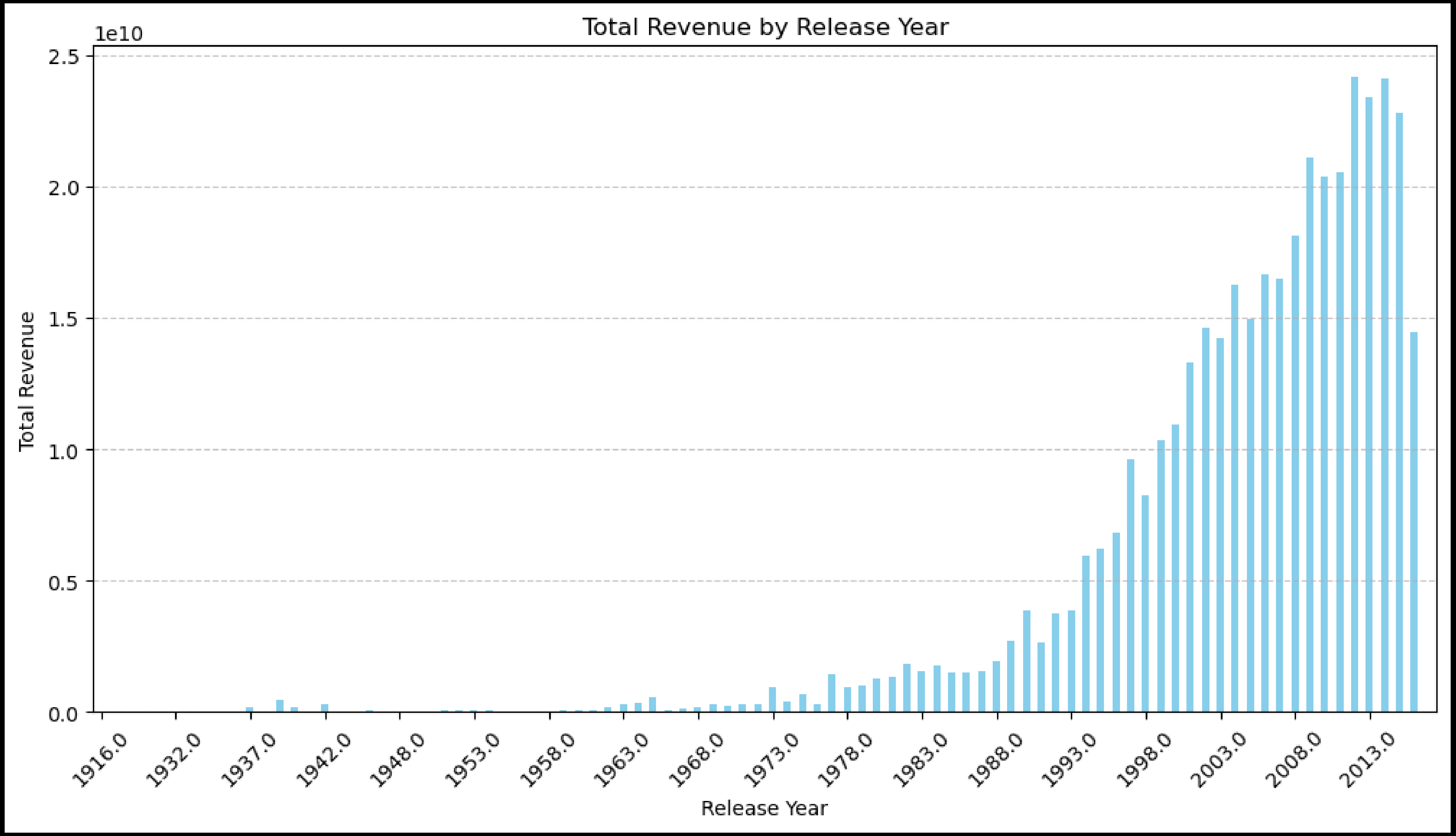
YEARLY RELEASE VS. REVENUE



Over the span from the 1990s to 2013, there was a steady upward trajectory in movie revenue, indicating a consistent and promising growth pattern. However, the abrupt drop in revenue from 2015 to 2016 presents an intriguing turning point. Notably, the peak years for movie revenue fell between 2008 and 2013, showcasing a consistent range of $2-2.5 billion in total revenue during these years.

This data suggests revenue patterns are influenced by various external factors such as economic conditions, competition, and evolving audience preferences. In light of these trajectories, one could cautiously anticipate that the future of the film industry will continue to be shaped by an ever-changing set of dynamics, making adaptability and strategic planning essential for sustained success.

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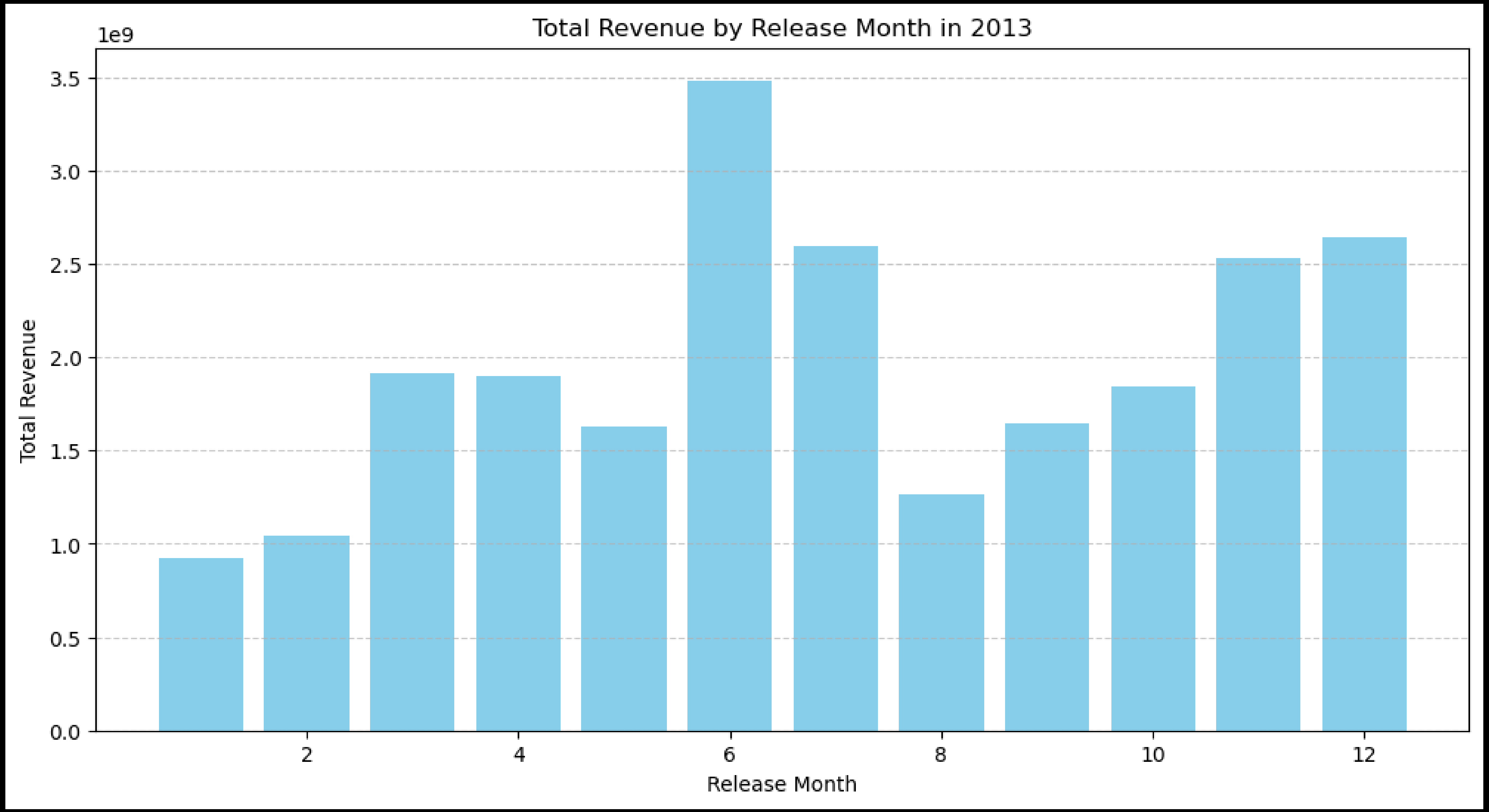
MONTHLY RELEASE VS. REVENUE

The analysis of monthly revenue trends in 2013 reveals intriguing patterns in the movie industry. January and February emerged as the months with the lowest revenue earnings, with January barely crossing the $1 billion mark. In stark contrast, June, July, November, and December showed the highest revenue earnings, with June alone exceeding $3.5 billion.

While this data pertains to a single year, it provides valuable insights into consumer spending habits. It is reasonable to infer that Americans tend to allocate more funds for movies during significant holiday breaks, particularly around Thanksgiving and Christmas, as well as during the summer months.



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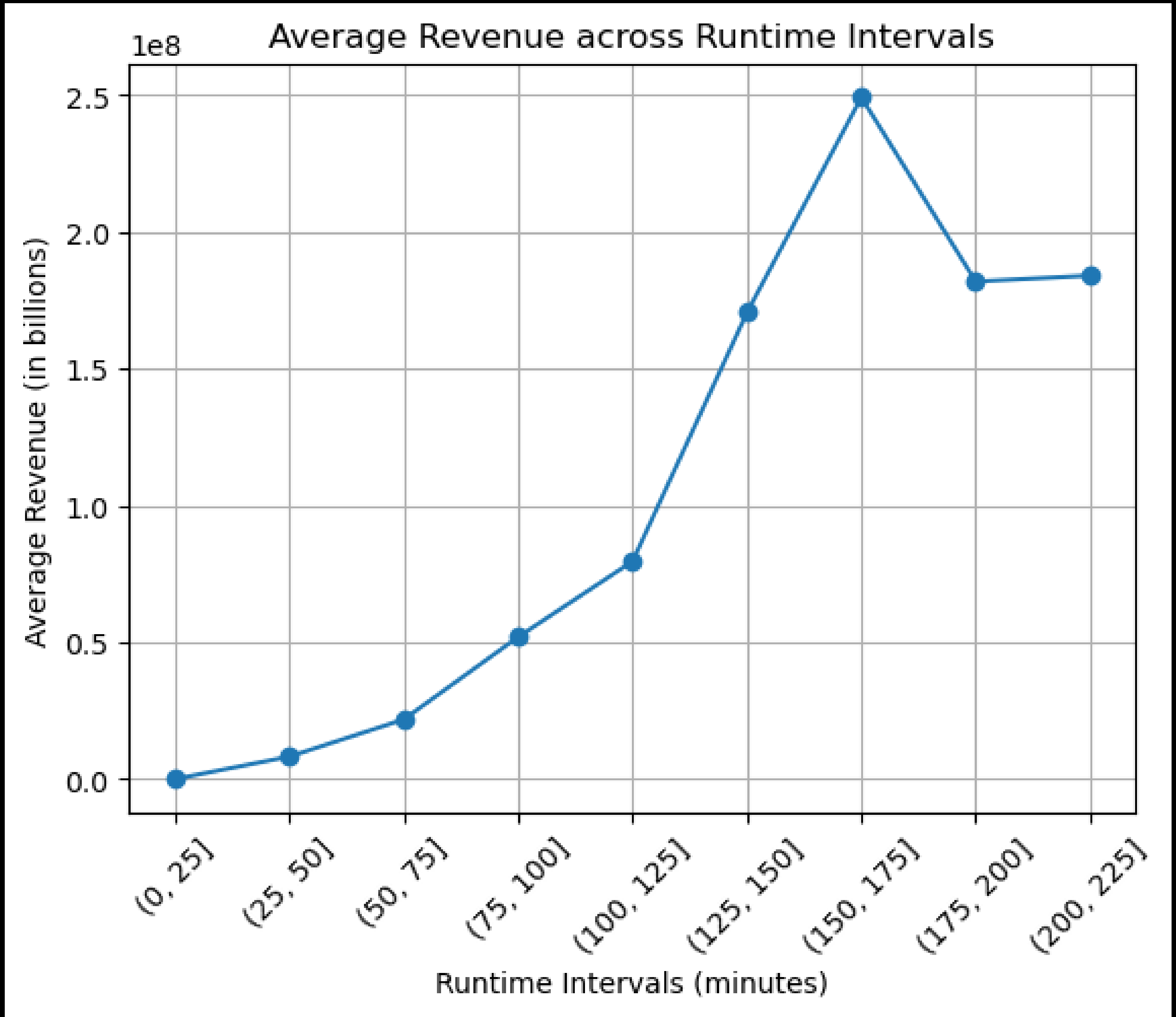
RUNTIME VS. REVENUE

As illustrated in this chart, we observe a nearly exponential increase in revenue as the duration of a movie extends up to the two-and-a-half-hour mark. Beyond this point, however, revenue experiences a sharp decline, eventually stabilizing. This pattern signifies that movie consumers exhibit a pronounced preference for films falling within the runtime range of one and a half to two and a half hours. Beyond this timeframe, a substantial portion of consumers appear to lose interest in the movie-watching market.

Much like budget considerations, the duration of a movie plays a pivotal role in the investment decision-making process. Families tend to favor shorter runtimes, while adult audiences may be more inclined to engage with longer, three-hour epic films. These runtime preferences significantly influence a movie's revenue potential.



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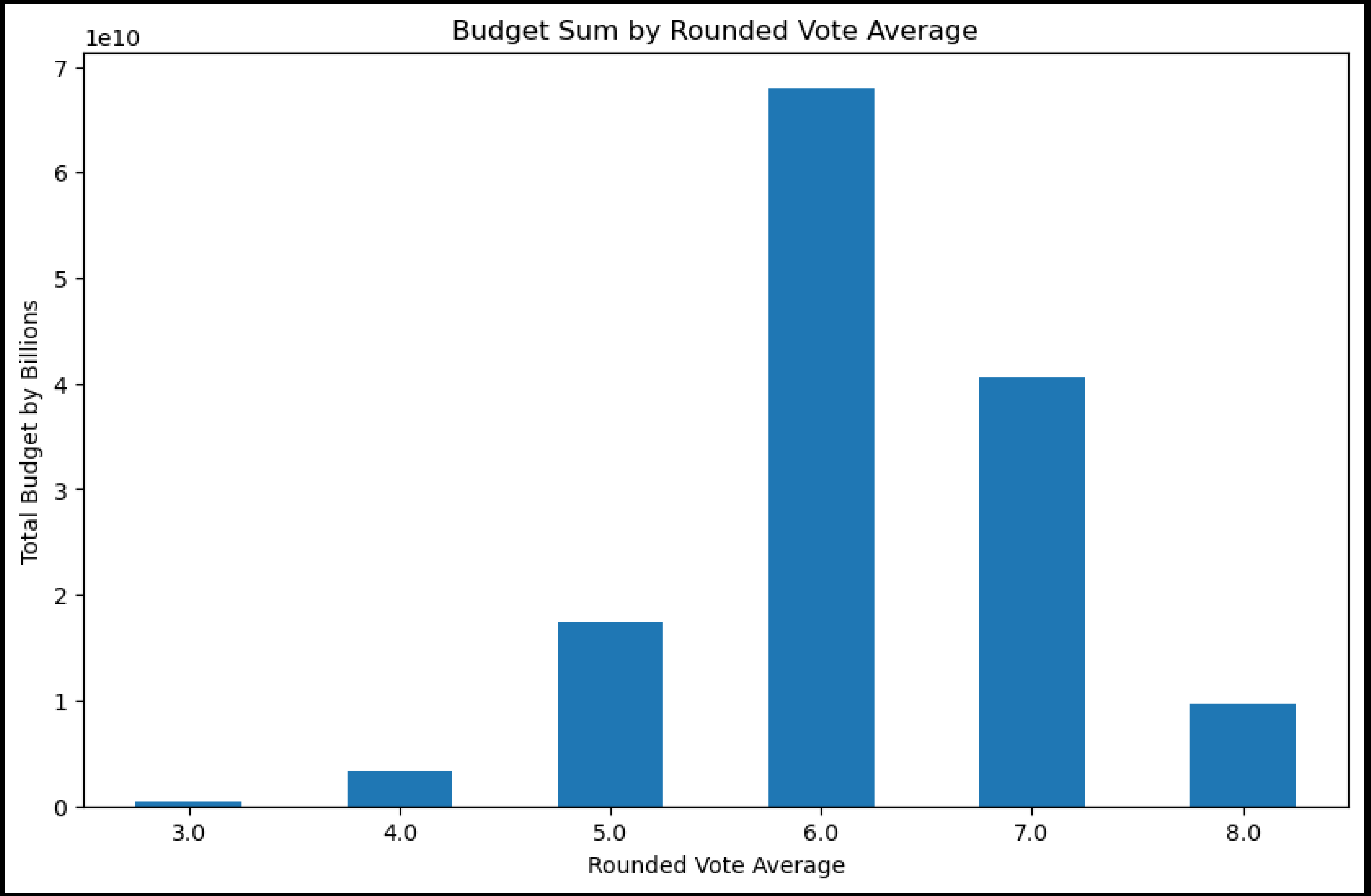
BUDGET VS. VOTE AVERAGE

Consumers often base their decisions on whether to invest their time and money in a movie on its reception by others. In the graph presented here, we can observe that both the budgets allocated to movies and their reception tend to rise in tandem until they reach a 6 out of 10 rating threshold.

However, it becomes apparent that larger budgeted movies experience diminishing returns concerning their reception beyond this point.



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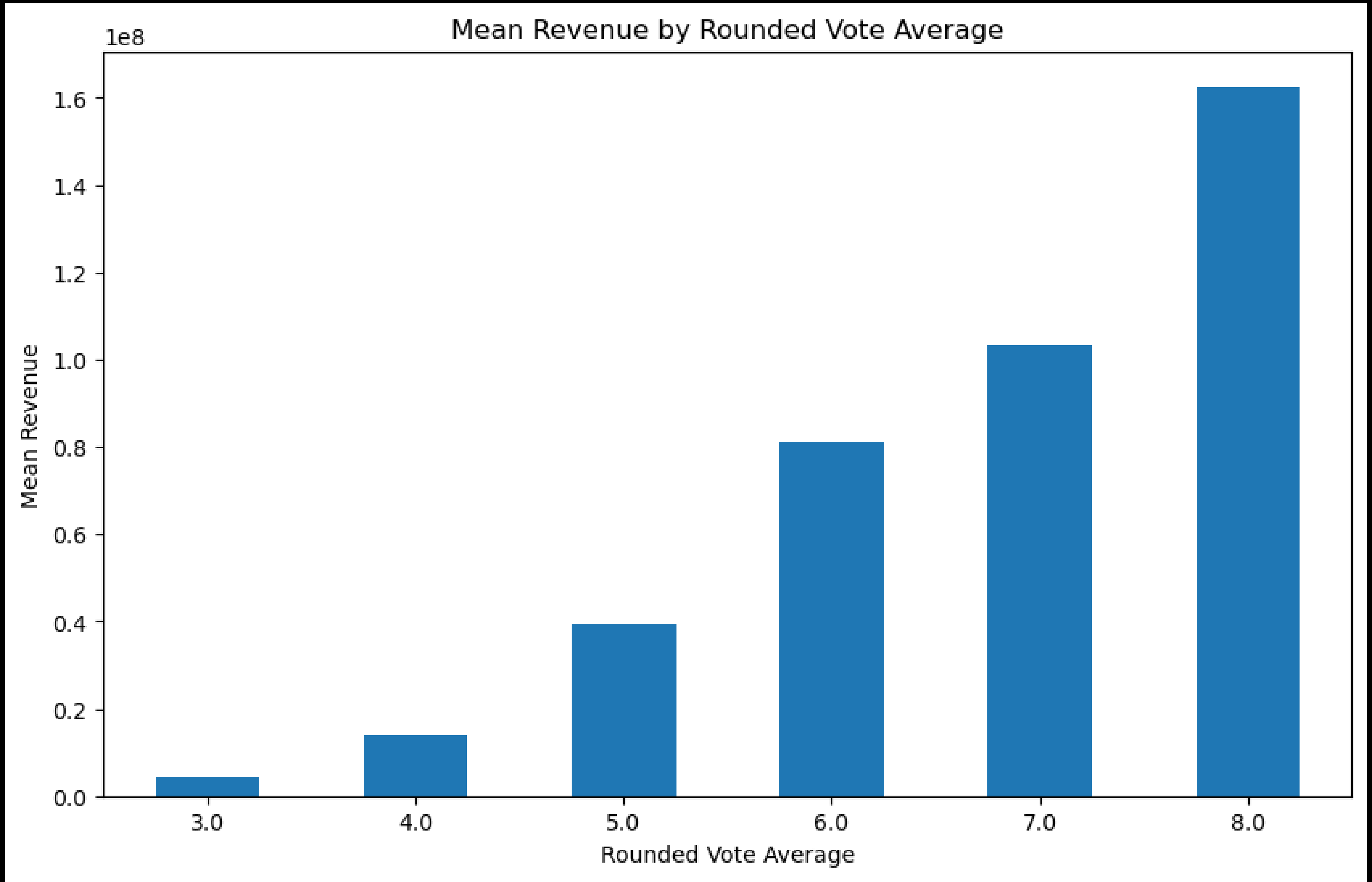
REVENUE VS. VOTE AVERAGE



It would be reasonable to anticipate that movies with higher ratings would generate more revenue, as audiences generally prefer quality content and are willing to invest more in it.

However, upon observing that higher budgets don't necessarily translate to higher ratings, it leads us to hypothesize that higher budgets may not always result in increased revenue.

In the previous Budget vs. Vote bar graph, we note that larger budgets do not directly correlate with improved movie ratings. The graph reveals diminishing returns, particularly as ratings surpass an average of 7, where the budgets allocated to such movies significantly decrease. This observation contrasts with our subsequent graph, which demonstrates that higher-rated movies tend to yield higher revenue.

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CONCLUSION

In conclusion, the insights gleaned from this data analysis shed light on the multifaceted nature of the movie industry. There is an intricate relationship between budgeting and revenue, and how they intersect and influence each other, underscores the pivotal role these factors play in determining a film's success.

The data revealed that certain genres do bring in more money. These findings urge movie studios to pay heed to the evolving preferences of American audiences when selecting the genres for future productions. Moreover, they emphasize the value of leveraging data-driven insights and future projections to inform decisions about the types of movies to produce, aligning with the ever-changing landscape of cinematic tastes and consumer demands.

There is positive correlation is evident between a movie's budget and its revenue. The data demonstrates that as the financial investment in the film increases, there is a proportional increase in the amount of revenue generated. One way movie studios could use this information is to strategically invest more or less money in specific genres, since they have the ability to generally estimate the return in their investment.

Filmmakers can draw meaningful conclusions from the release month vs revenue findings, which suggests that strategically timing movie releases to coincide with these high-earning months could potentially lead to significantly higher revenue, capitalizing on consumer preferences and seasonal spending trends.

It is evident that movies with runtime lengths falling within the 1.5 to 2-hour range yield the highest revenue. Filmmakers stand to gain significant advantages by adhering to these optimal time boundaries in their creative endeavors. It's essential to recognize that factors like the intended target audience may influence the ideal runtime, necessitating tailored choices. Our data highlights a substantial difference, revealing that a 150-minute movie generates over twice the revenue compared to a 100-minute one, underscoring the economic value of careful runtime selection in the filmmaking process.

Movie studios keen on enhancing their gross revenue stand to benefit from a nuanced approach to budget allocation, as revealed by the findings of this study. Contrary to conventional wisdom, the data underscores that studios need not overspend to secure favorable votes from critics. Conversely, an extravagant budget does not guarantee an above-average reception, emphasizing the importance of strategic investment.

In this ever-evolving industry, a judicious balance between budgeting and audience appeal emerges as a key strategy for achieving success and maximizing profitability. The data analysis underscores that a well-informed investment approach can pave the way for both critical acclaim and financial success in the dynamic world of filmmaking.

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APPENDIX

For this analysis we utilized insights from: Google, Stack Overflow, ChatGPT, course TA's, and educational resources provided by UT's Data Analytics Bootcamp.

License data for this analysis came from "The Movie Database (TMDB)" via Kaggle.com.

GitHub Repo for this Project:
https://github.com/KacySamples/Project_1.0.git

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