Phase 2 project

Group members

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2.

Business Understanding

- The film industry is a highly competitive and dynamic sector, where the success of a movie depends on various factors, including genre, budget, runtime, and release timing. By analyzing these factors, we can gain insights into what makes a movie successful and use this knowledge to guide our production choices. Understanding the preferences and behaviors of moviegoers, as well as the strategies employed by successful films, will be critical in shaping our studio's content creation strategy.

Data Understanding

rt.movie_info.tsv

- **Source:** The dataset can be found in The Numbers database
- **Format:** The data is stored in a csv (comma separated value) file

tn.movie_budgets.csv

- **Source:** The dataset can be found in Movies DB database
- **Format:** The data is stored in a csv (comma separated value) file

tn.movie_budgets.csv

- **Source:** The dataset can be found in Rotten tomatoes database
- **Format:** The data is stored in a csv (comma separated value) file

im.db

- **Source:** The dataset can be found in IMDB database
- **Format:** The data is stored in a csv (comma separated value) file

Data Understanding

The Specific rows used in the dataset are

budget_release_date - The date the movie was released

title - The title of the Movie

domestic_gross - The money the movie made in the country it was made

worldwide_gross - The money the movie made around the world

Region - the country the movie was made

runtime_minutes - The duration of the movie in minutes

genre - The genre of the movie

Objectives

1. Identify leading movie genres in terms of gross sales to determine which consistently produce high-performing films.
2. Understanding the affect the budget of movies have on the amount the movie grosses.
3. Analyze movie runtime to have a better understanding on the best runtime movies should have to maximize profit .

Most Frequent Genre

Frequency of Each Genre
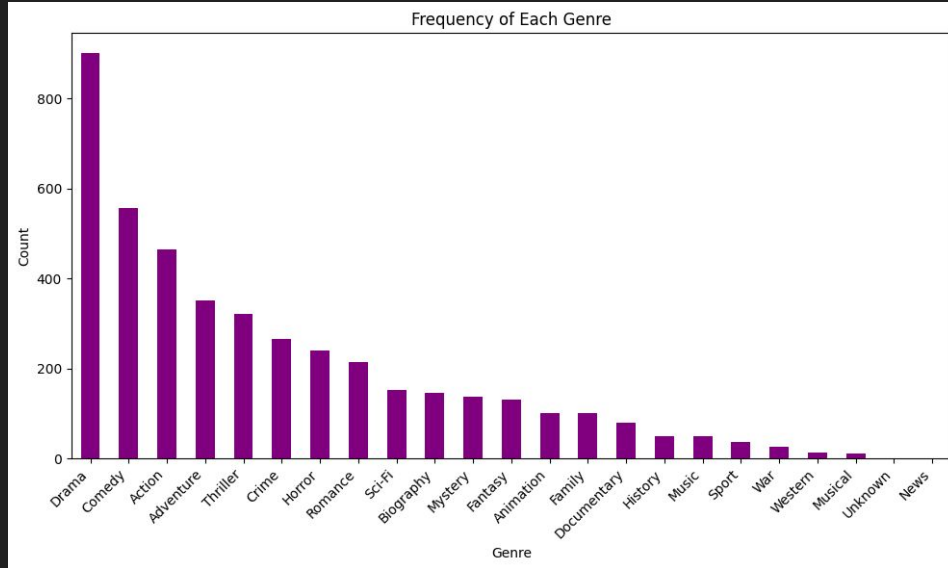
- The most frequent genres, each with over 400 occurrences, are Action, Comedy, and Drama.
- Among these, Comedy is the most frequent with over 800 occurrences.
- The three least frequent genres are News, Musical, and Western, in descending order.
- The high frequency of Action, Comedy, and Drama genres indicates strong market demand and safer investment opportunities, while the low frequency of News, Musical, and Western suggests a need for targeted marketing to attract niche audiences.

Most Frequent Runtime
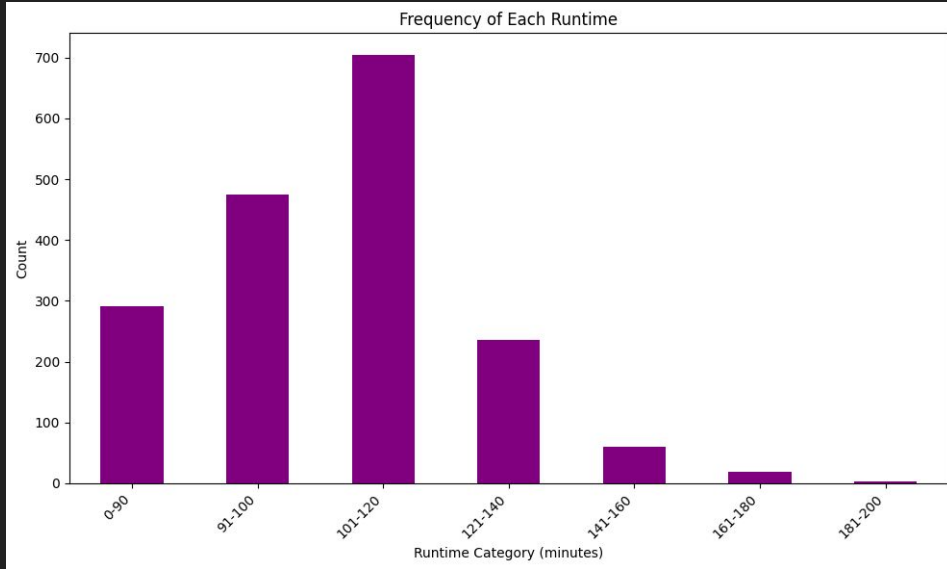
Frequency of Each Runtime

- Popular Runtime: Movies with a runtime of 101-120 minutes have the highest frequency at approximately 700, indicating strong audience preference.
- Longer Movies Less Frequent: Films with runtimes of 141-160, 161-180, and 181-200 minutes each have frequencies below 100.
- Audience Preference: The data suggests audiences generally prefer shorter movies over extended viewing times.

Most Frequent Region


Frequency of Each region
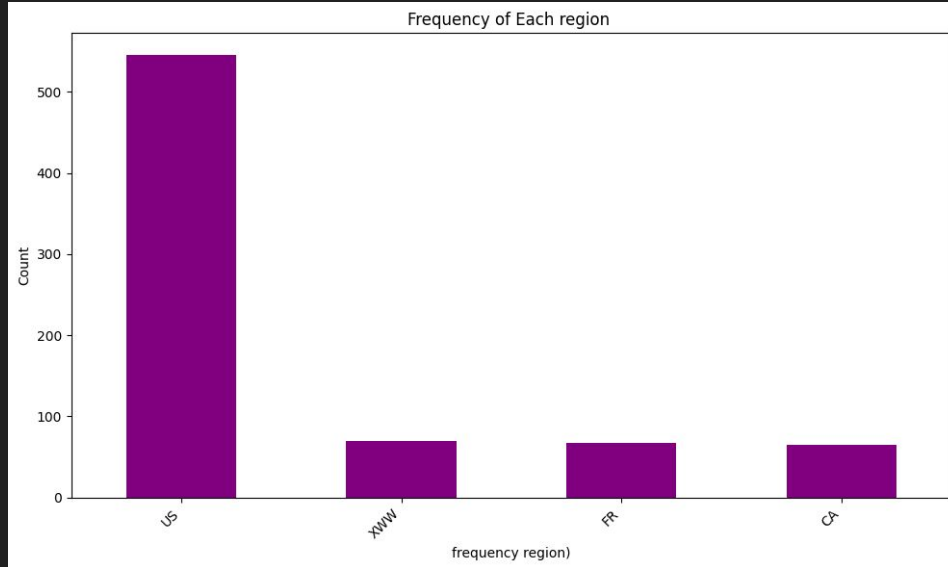
- High Frequency Region: The USA has the highest frequency with over 500 occurrences, indicating it is the most prominent region for movies.
- Low Frequency Regions: France and Canada have the lowest frequencies, each with below 100 occurrences.
- Viewer Preference: The data suggests that most viewers favor movies from the USA over those from France and Canada.
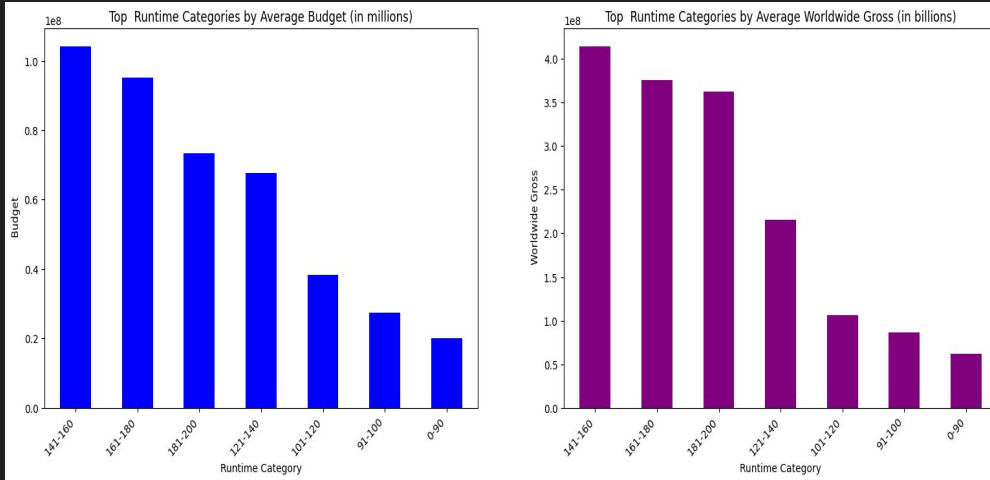
Top 10 gernes vs Budget/worldwide gross
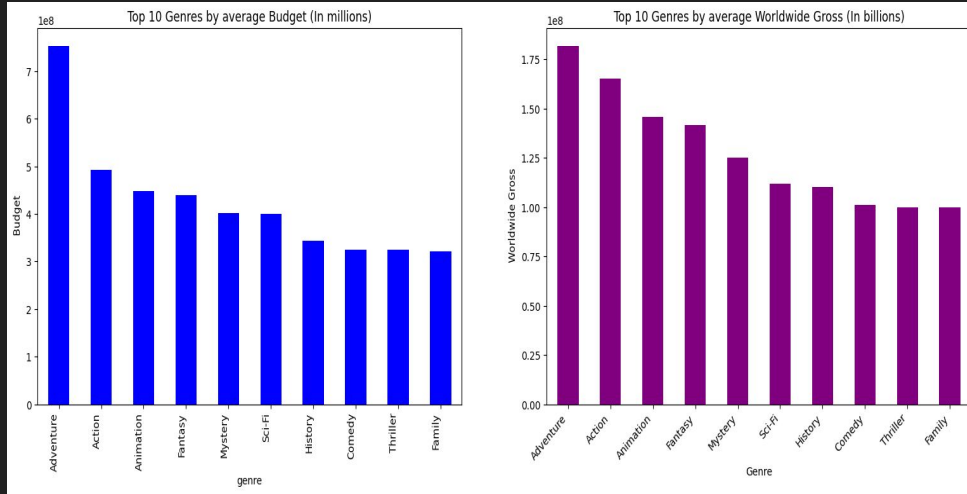
- Adventure, Action and Animation: Leads in both worldwide gross and budget, indicating it generates the highest revenue and requires significant investment among the top 10 genres.
- Comedy, Thriller, and Family: Rank lowest in worldwide gross and budget, suggesting these genres may face challenges in achieving high revenue and require fewer resources for production.
    ○

Average profit margin for each genre
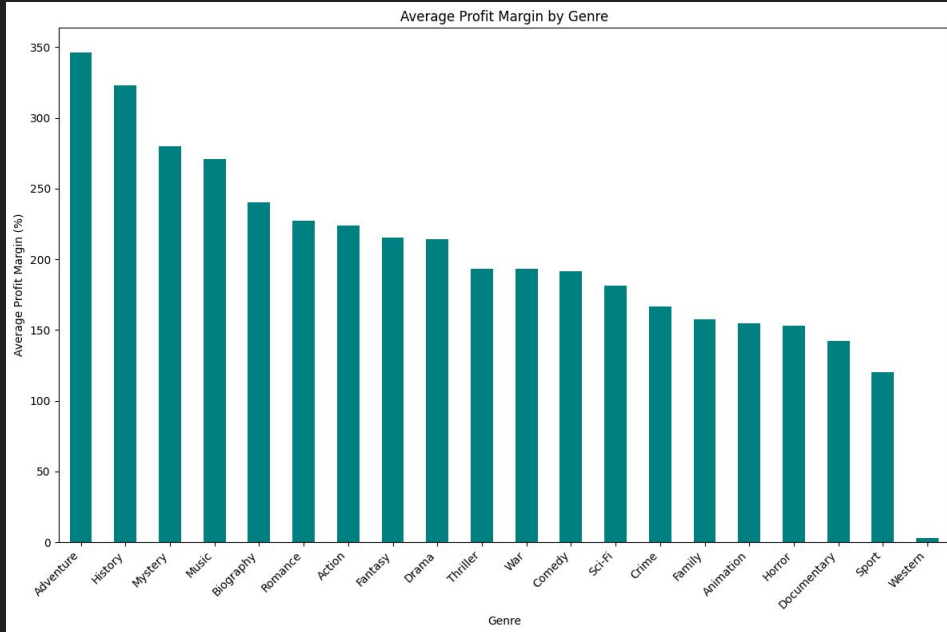
Average Profit Margin by Genre

- High-Profit Genres: Investing in Adventure, History, Mystery, and Music genres is likely to yield higher returns, with Adventure being the most profitable.
- Low-Profit Genre: Westerns tend to have lower profitability, indicating a potential riskier investment.
- Strategic Focus: To maximize profit margins, the production strategy should prioritize high-margin genres while carefully evaluating the potential and marketing strategies for Westerns.
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Top Runtime Vs Budget /worldwide gross

Top Runtime Categories by Average Budget (in millions)

Top Runtime Categories by Average Worldwide Gross (in billions)

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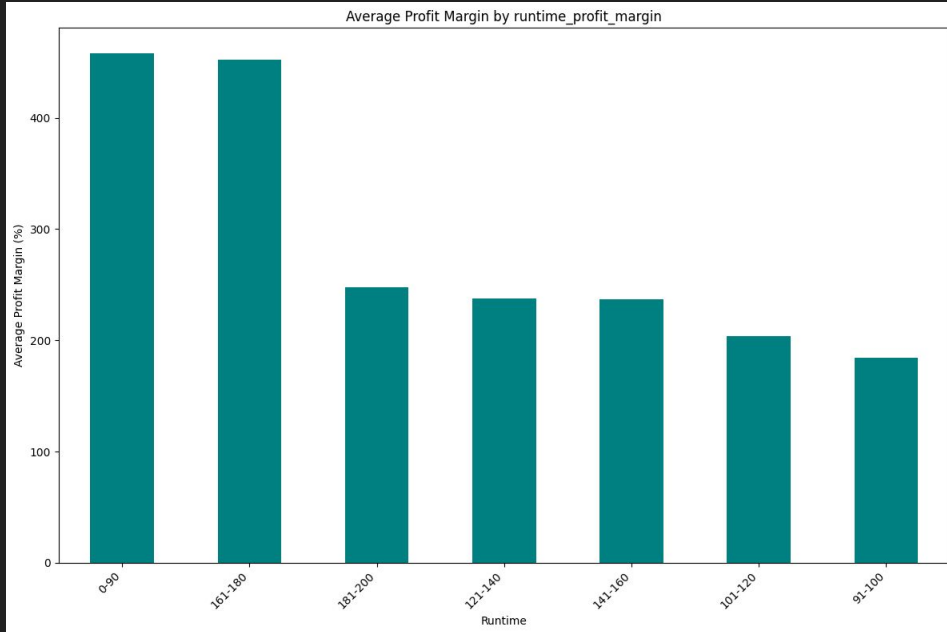-

Average Profit Margin By Runtime

Average Profit Margin by runtime_profit_margin

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Budget vs WorldWide Gross
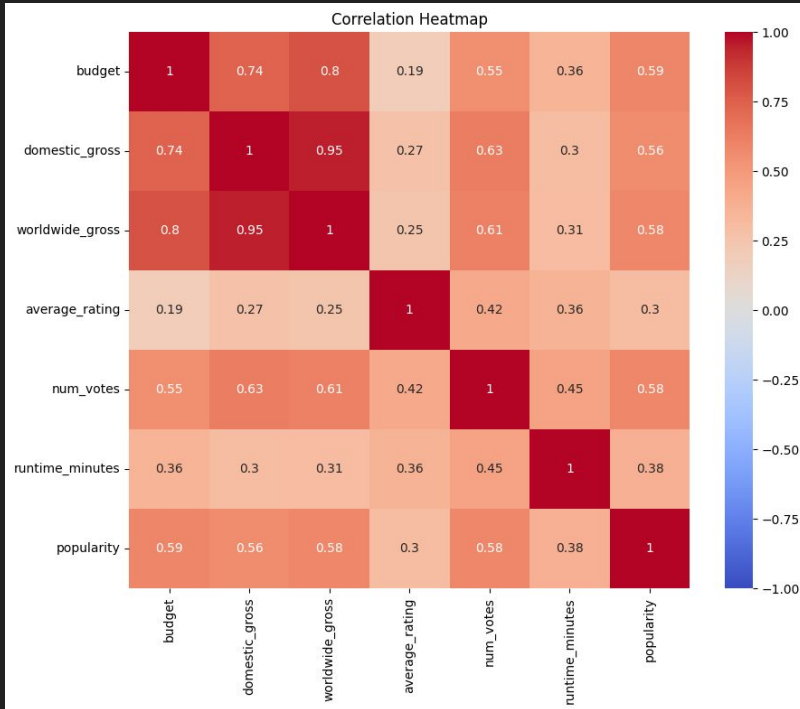

Budget vs Worldwide Gross
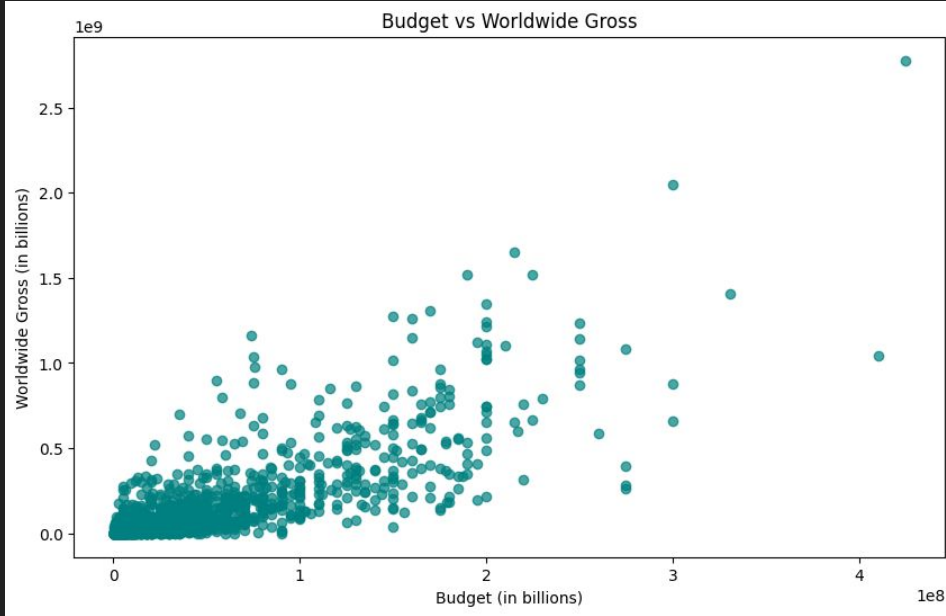
- General Trend: There is a positive correlation between budget and worldwide gross. This suggests that movies with higher budgets tend to earn more revenue.

Top 10 Genres by Total Budget Domestic Gross and Worldwide Gross
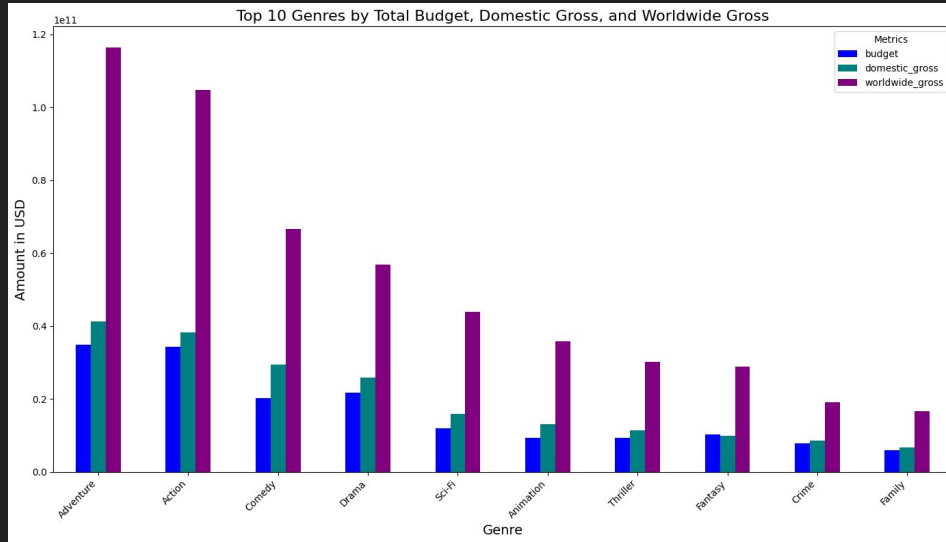
- Highest: Adventure ranks highest in domestic gross, worldwide gross, and budget, followed by Action in second place.
- Lowest: Family ranks lowest among the top 10 genres in these metrics.
- Implication: Prioritize investment in Adventure and Action genres for better financial returns, while exploring ways to enhance the performance of Family films.

Correlation Heat Map

- Budget and worldwide_gross has correlation of 0.802889 This indicates a strong positive correlation, meaning higher budgets tend to be associated with higher worldwide gross.
- Domestic_gross and worldwide_gross also has strong correlation of 0.947102 which shows very high correlation suggests that movies that perform well domestically also perform well worldwide.
- num_votes and popularity also has moderate correlation of 0.584154 indicating a strong positive correlation, suggesting that movies with more votes tend to be more popular.
- Budget and domestic_gross has a high correlation of 0.739963
- Finally budget and popularity has moderate correlation of 0.591660 showcasing a higher-budget movies tend to be more popular.
- On the other side average_rating has lower correlations with most other variables, indicating that the average rating is less influenced by budget, gross, etc.

Conclusions

1. increase in budget leads to an increase in worldwide gross
2. Movies with a runtime between 141 to 180 have the highest budget and the highest worldwide gross
3. Adventure movies have the highest budget, highest gross and the highest profit margin folowed by Action movies
4. Most of the highest grossing movies are made in the USA
5. Movies with a low runtime have the highest gross margin due to the fact they are cheap to produce

Recommendations

High-Budget Adventure and Action Movies:

- Adventure movies, followed by Action movies, have demonstrated the highest budgets, gross earnings, and profit margins. Investing in high-budget productions within these genres can capitalize on their established financial success and popularity.
- Example: Consider creating large-scale adventure films similar to franchises like "Indiana Jones" or "Jurassic Park," and action films akin to "The Avengers" or "Mission Impossible."

Mid to High Budget Movies with a Runtime of 141 to 180 Minutes:

- Movies within the 141 to 180-minute runtime bracket show the highest budgets and worldwide gross. These films often offer expansive storytelling that can attract larger audiences and generate significant revenue.
- Example: Epic narratives like "The Lord of the Rings" series or "Avatar," which have longer runtimes and significant box office success.

Low-Budget, Short Runtime Films:

- Films with shorter runtimes have shown the highest gross margins due to lower production costs. These movies can yield high profitability by minimizing expenses while still appealing to specific audience segments.
- Example: Focus on genres such as comedies, horror, or independent dramas that typically have shorter runtimes but can attract dedicated audiences. Films like "Paranormal Activity" or "Get Out" demonstrate how low-budget films can achieve high profitability.