



Analysing Factors Influencing Movie Success

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Project Overview



- **Goal:**
Identify the types of films performing best in the box office and understand the factors influencing their success.
- **Analysis:**
Used Python to merge and clean multiple movie datasets, calculate profit and ROI, and run visualizations and statistical tests to uncover what drives box office success.
- **Deliverable:**
Provide insights on the most profitable genres, budgets, and release timings to guide future video content production and help producers make data-driven decisions for maximizing box office returns.



Problem Statement



- Movie production is risky, with no guarantee of profitability. Without data-driven insights, producers and investors face uncertainty when deciding what films to make.
- This project analyses which genres, budgets, and release periods are most linked to strong returns on investment, helping stakeholders make smarter, lower-risk decisions in a competitive industry.

Business Understanding



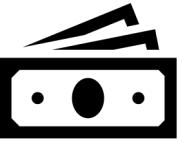
- The demand for original video content is growing rapidly, with major studios competing for audience attention
- Our company plans to launch a new movie studio to enter this market, but success depends on understanding what types of films perform well
- This project analyses historical movie data to uncover key characteristics of successful films and provide **actionable insights** to guide production strategy

Business Understanding

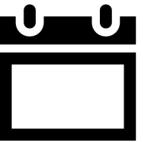


- **Business Goal:** Identify which types of films perform best across key performance metrics — such as ratings, popularity, and return on investment (ROI)
- **Stakeholders:** Studio investors, studio executives, distribution strategists and movie producers
- **Key Questions:**
 - Which movie genres are the most popular among audiences?
 - Which months are the best for releasing movies to maximize performance?
 - What is the ideal budget range for a film to attract popularity or success?
 - Which genres yield the highest return on investment (ROI)?

Objectives



- Identify the most profitable movie genres based on ROI.



- Determine the best release months for high-performing films.

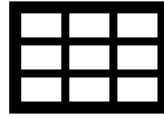


- Analyse the impact of the production budget on movie profitability



- Recommend strategies for maximising ROI in future film productions.

Data Understanding



Datasets Used and Data used:

- IMDb (SQL database): rating, genre and runtime
- Box Office Mojo csv: domestic revenue and foreign revenue
- The numbers csv: production budget
- The Movie Db csv: popularity score, release date

Challenges:

- The budget wasn't available for all films
- No universal movie identification index

Data Cleaning

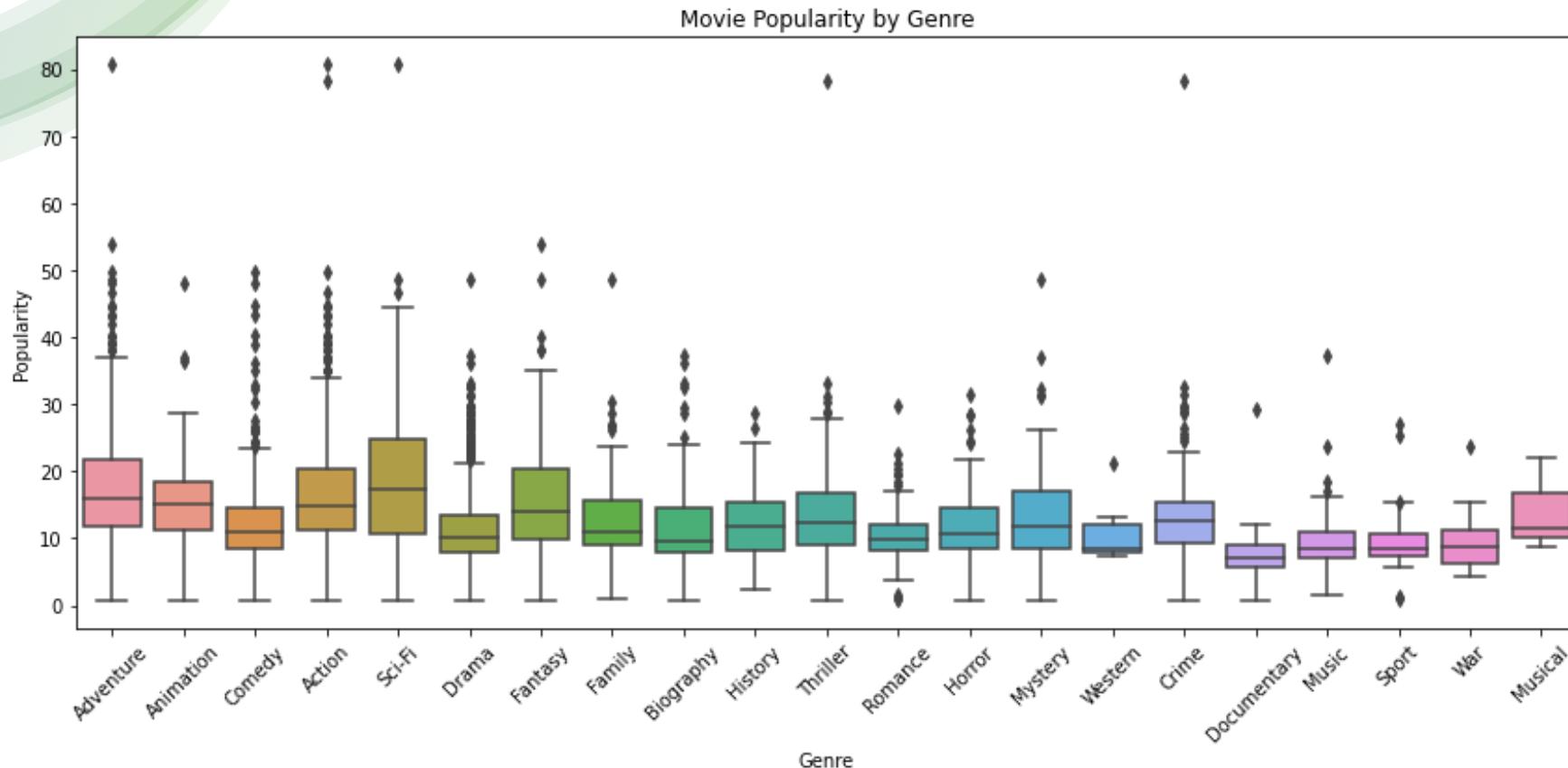


- Used Box Office Mojo CSV as the base dataset
- Dropped rows with missing values, except:
 - *Domestic and Foreign Revenue*: nulls assumed to mean zero and replaced accordingly
- Standardised movie titles for consistency across datasets
- Merged datasets using cleaned titles
- Removed duplicate entries
- Engineered new features to support analysis:
 - *Total Gross, ROI, Profit, Release Month*



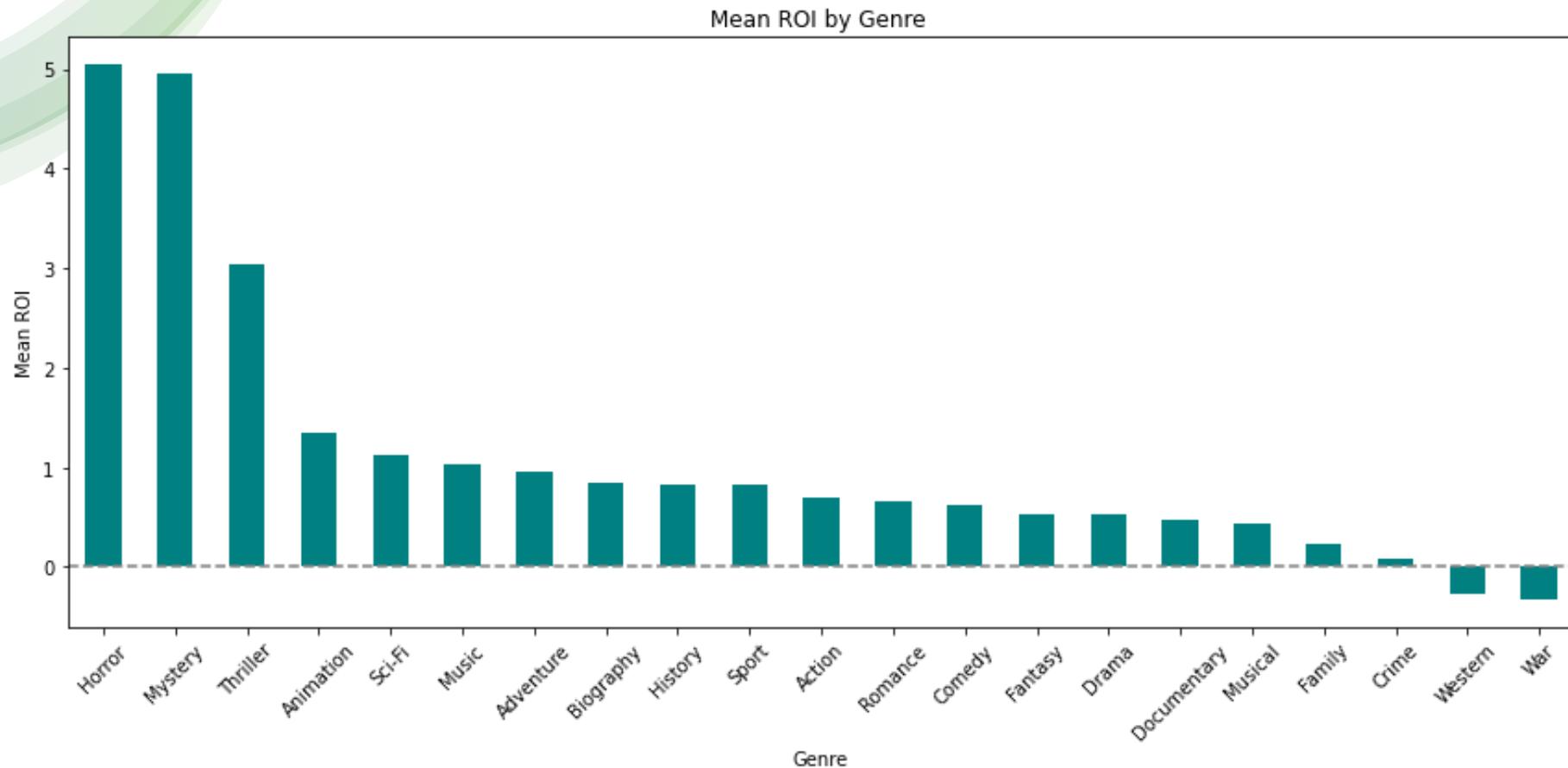
FINDINGS

Popularity by Genre



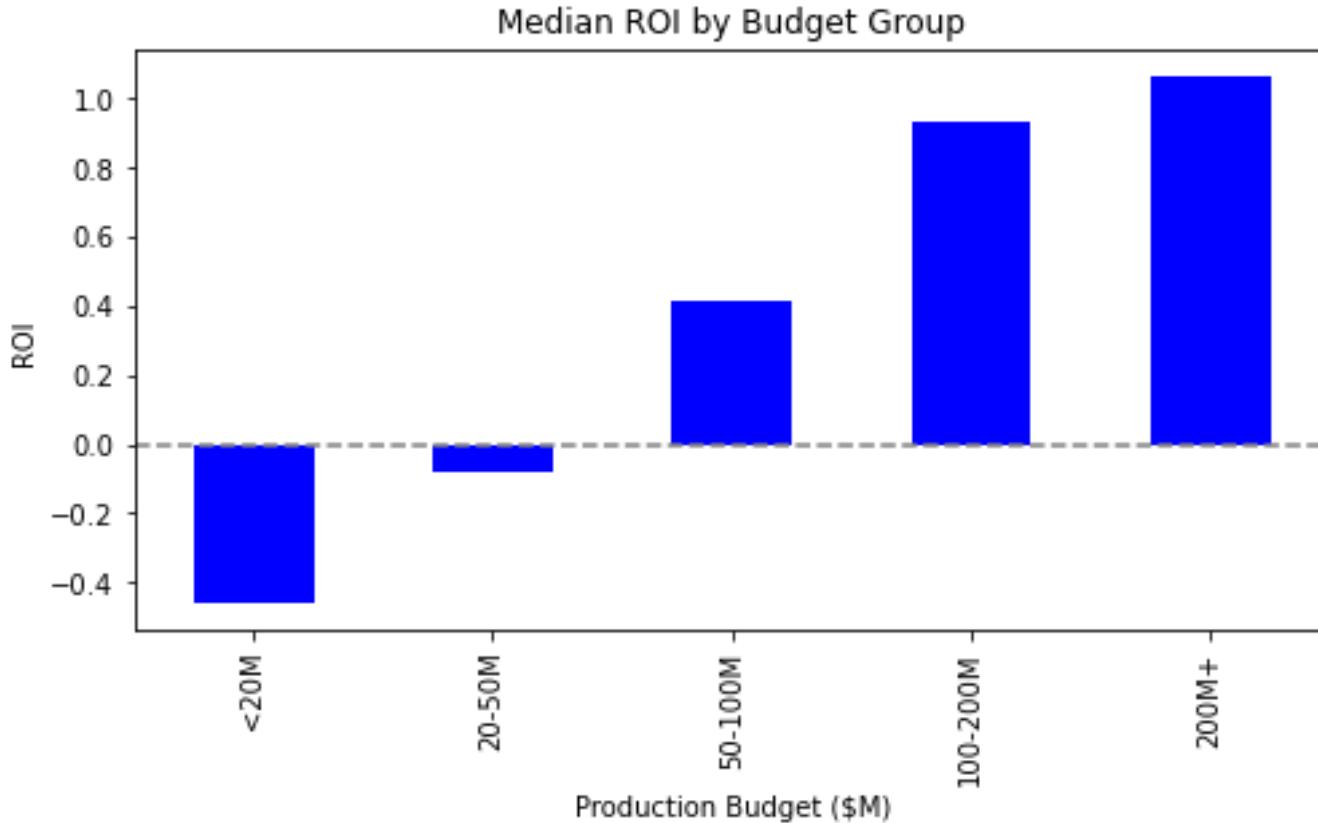
Adventure, action and sci-fi films emerged as the most popular genres

Average ROI by Genre



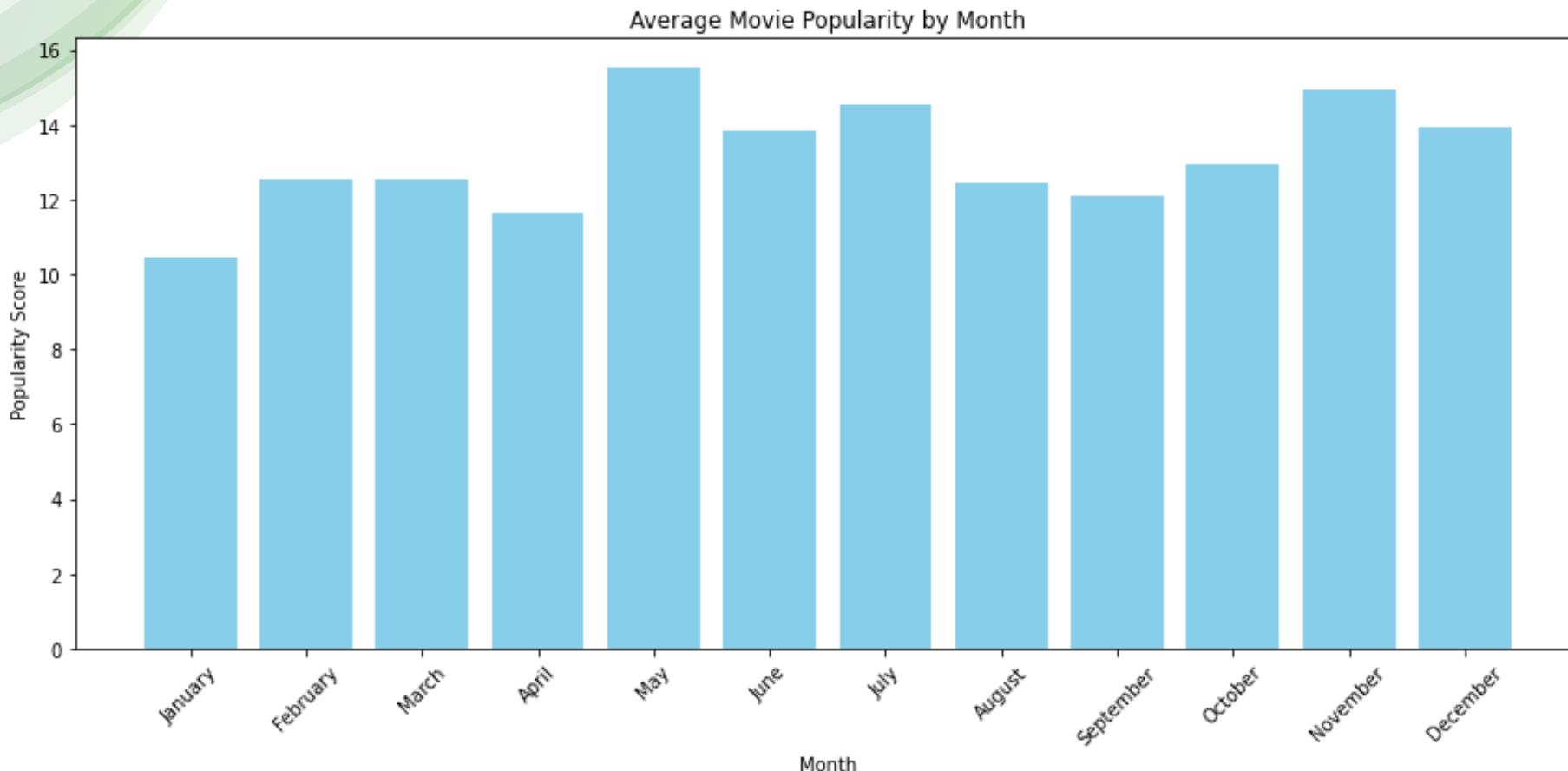
Horror, mystery and thriller films had the highest return on investment rate

Median ROI By Budget Group



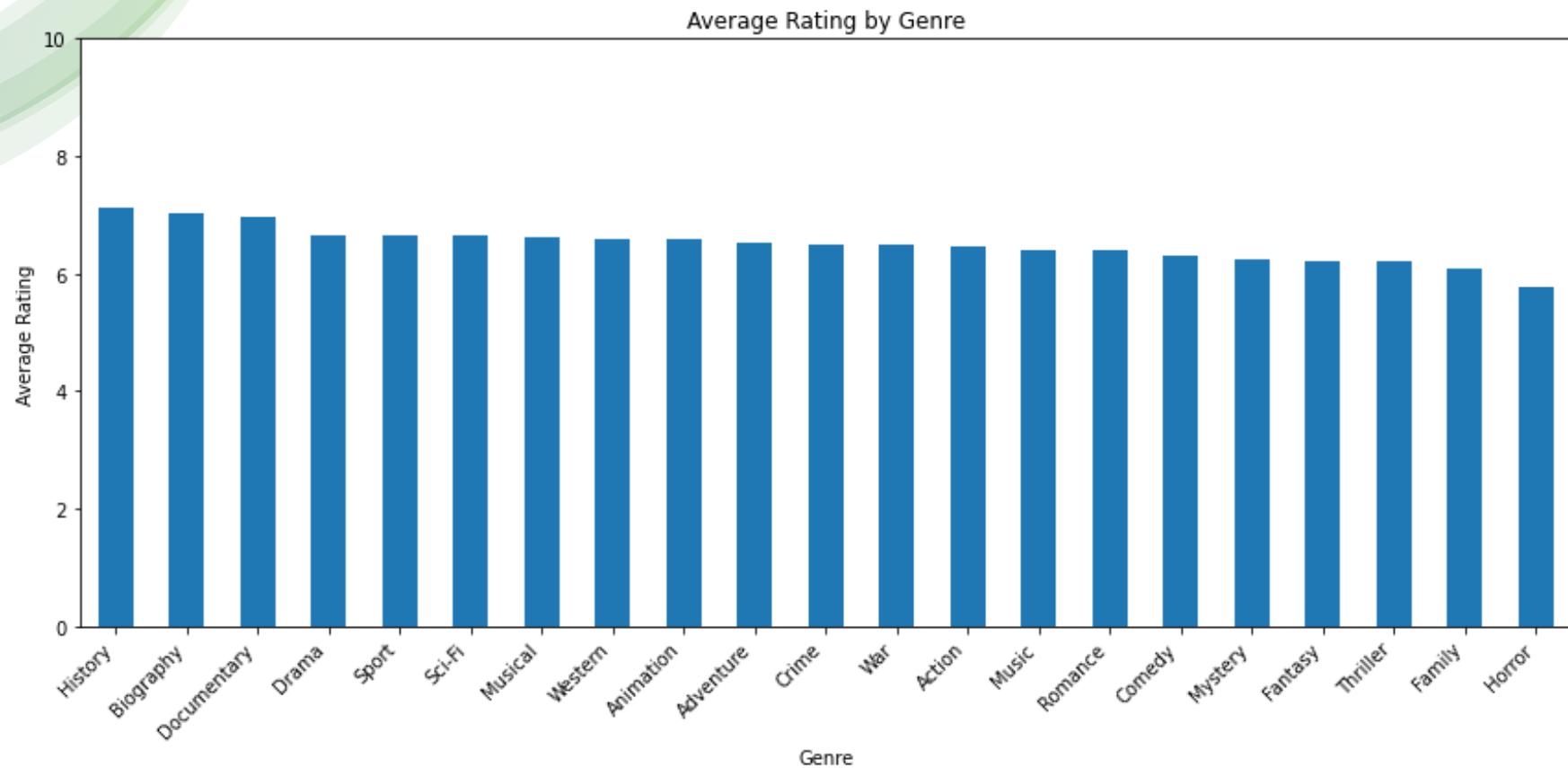
Return on investment increased as budget increased

Average Movie Popularity by Month



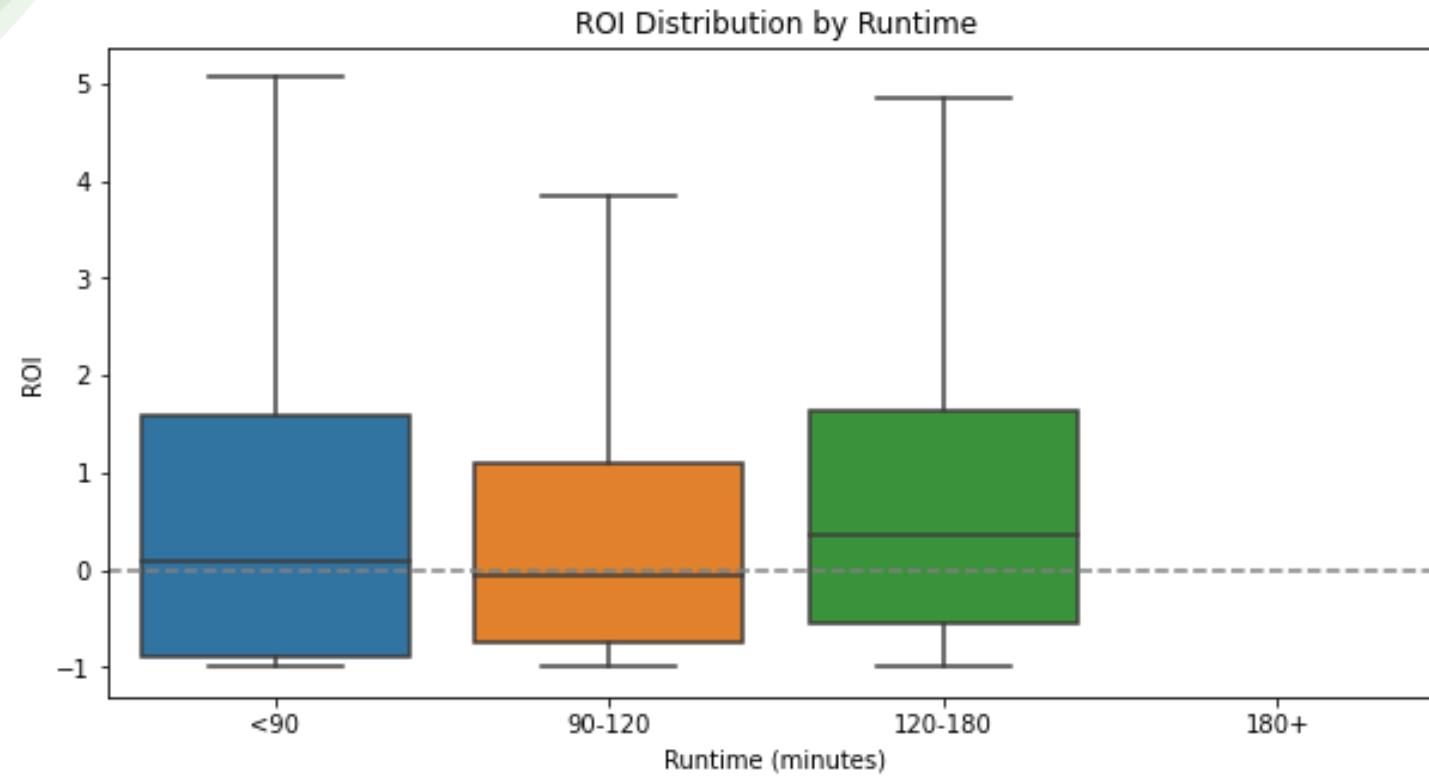
The months of May, November and July had the highest average viewership of movies

Average Rating by Genre



History, biography and documentary films had the highest average rating

ROI Distribution by Runtime



Films with a run time of 120-180 had the highest median ROI

Hypothesis Testing

- R does not differ significantly across genres
- Null Hypothesis : Genre has no effect on the ROI of a movie
- Alternate Hypothesis: Genre has a significant effect on ROI of a movie
- P-value: 0.0000

There is strong evidence that genre has a significant effect on a movie's return on investment (ROI)

Conclusion

- Horror, mystery and thriller movies had the highest ROI, showing these types of films had the most (relative) commercial success
- Adventure, action, and sci-fi were the most popular genres, but not the most profitable
- Movies released in May, November and July performed the best in terms of viewership
- Higher budget films tended to yield higher ROI, **but** a high budget didn't always guarantee high returns

Recommendations

- Time of release:
May, November and July
 - Budget
The more you're willing to invest, the more you can hope to earn in ROI. But this is to be taken with careful consideration
 - Genres
Prioritise short-term commercial success:
Horror, thriller, mystery
- Attract viewership to platform for the long-term:
Adventure, action and sci-fi



NEXT STEPS

- Analyse regional trends to guide location-based marketing.
- Build a simple model to predict ROI based on budget, genre, and release date.
- Investigate marketing spend data if available, to link promotion and success.

Thank You

Questions?