Computing Vision

Team Name: DJ Dirty Pandas

Mentor: Ayush Giri

Team Members: Alex White, Alex Donahue, Nate Netznik, Thi Van Nguyen, Colton Lineman

Meet Our Team

Alex Donahe
Solution Analyst
Aldonahue@deloitte.com

Nate Netznik
Solution Analyst
nnetznik@deloitte.com

Alex White
Solution Analyst
alexwhite2@deloitte.com

Van Nguyen
Solution Analyst
thivnguyen@deloitte.com

Colton Lineman
Solution Analyst
clineman@deloitte.com

We are a dynamic team of rising analysts from Deloitte's AI Academy, specialized in creating Machine Learning and Artificial Intelligence solutions.

Overview

Business Task:
Develop movie recommendations for the head of Computing Vision's new movie studio.

Approach:
Examine recent movie performance and identify keys to box-office profitability.

Key Metrics:
Budget, Genre, Director, Season

About the Data

The data were collected from a variety of sources (see appendix). Our key **profit** data set came from The Numbers.

Limited analysis to movies released from 2010-present

Gross Profit v. Profit Ratio

GROSS PROFIT:
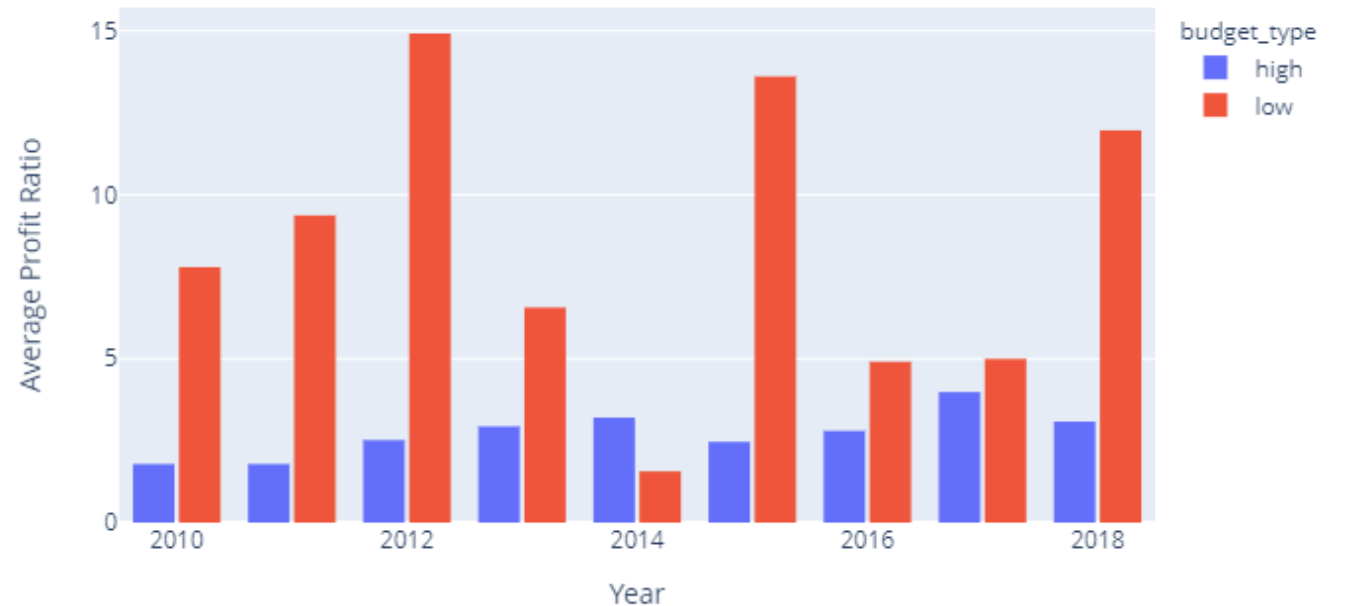TOTAL AMOUNT EARNED BY MOVIE RELEASE,
ADJUSTED FOR INFLATION

PROFIT RATIO:
(GROSS – BUDGET) / BUDGET
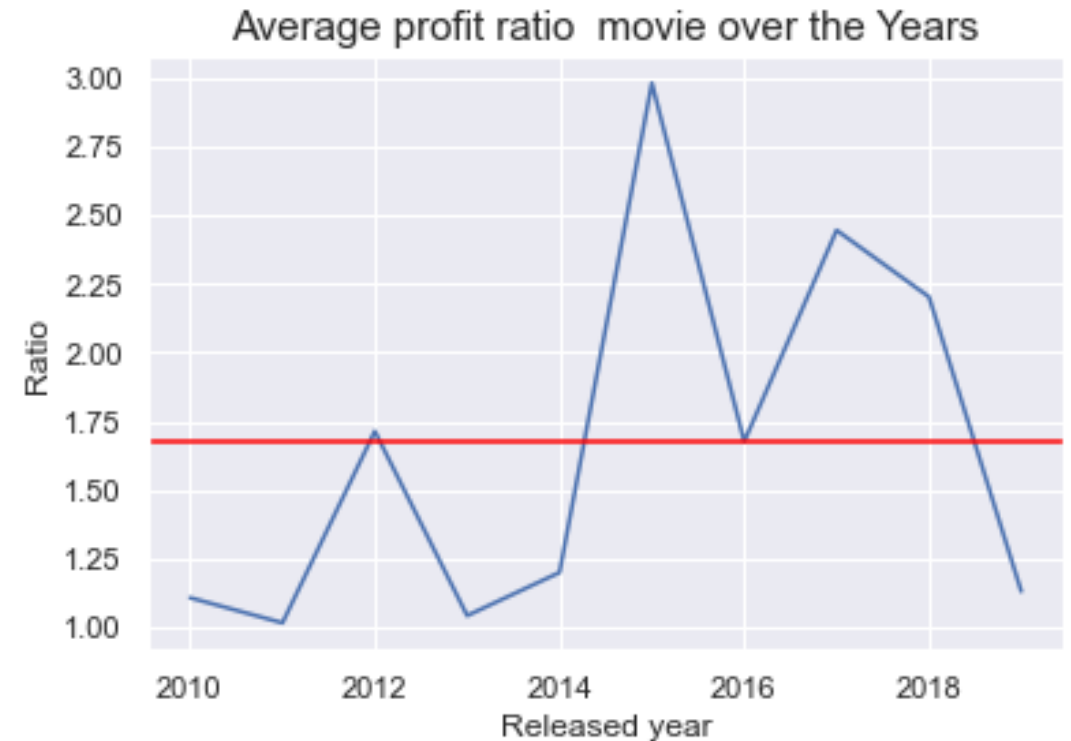
Budget Type vs. Profit Ratio

- Low budget movies tend to have a higher profit ratio compared to higher budget movies

- **Business Recommendation:** We recommend that your company should produce lower budget films to get a higher profit margin
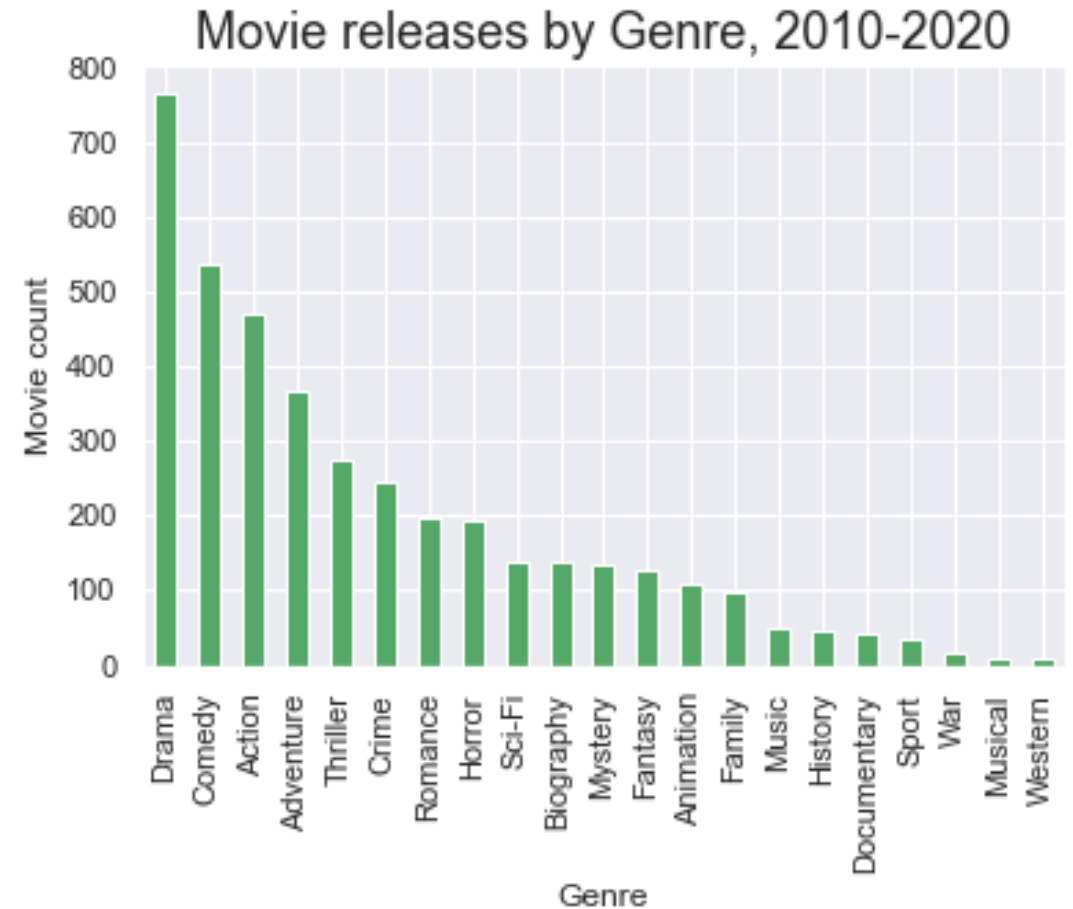

Budget Type vs. Profit Ratio

Profit Ratio over the year

- Average profit ratio tends to increase, but the trend decrease significantly after 2018 because of the economy went down during Covid-19

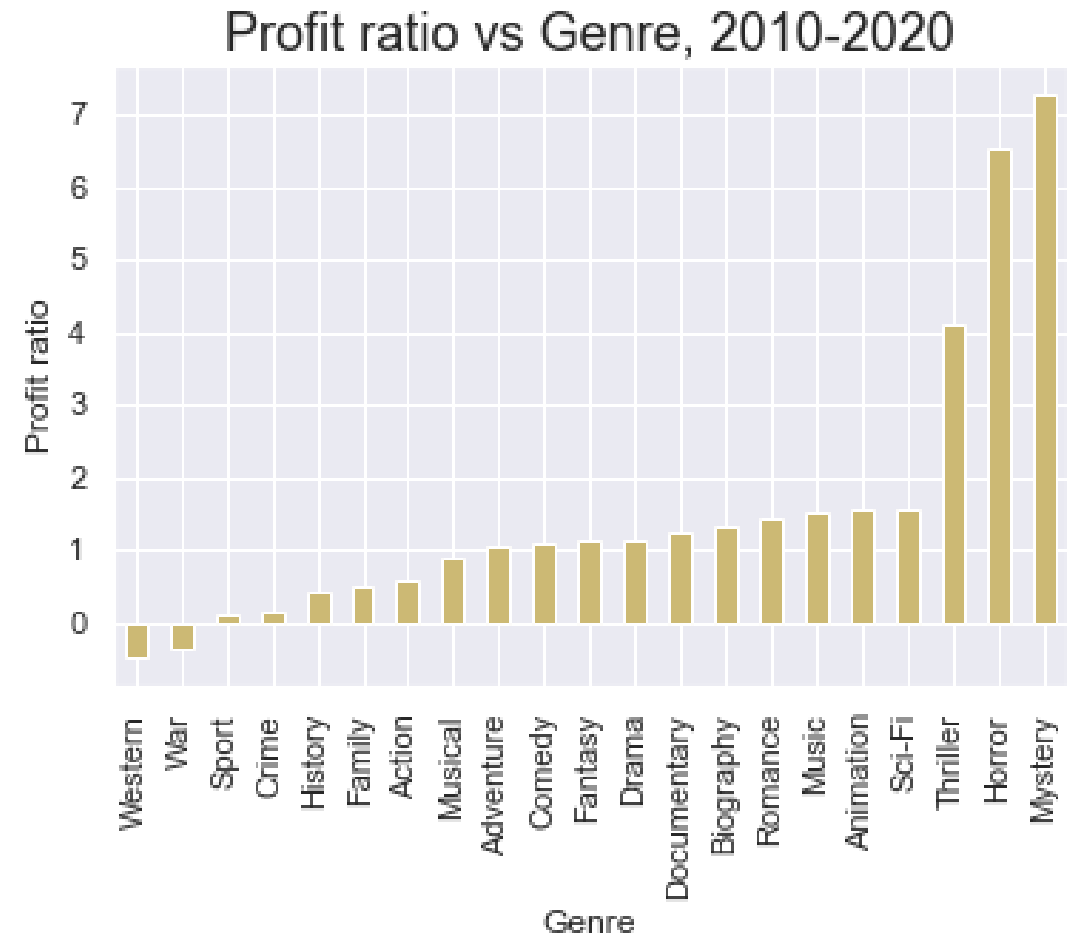- The average profit ratio over the years (red line) is 1.7

Average profit ratio movie over the Years

Movie Releases Vary by Genre

- In terms of the number of releases worldwide **dramas, comedies, and actions** top the list between 2010 and 2020

Movie releases by Genre, 2010-2020
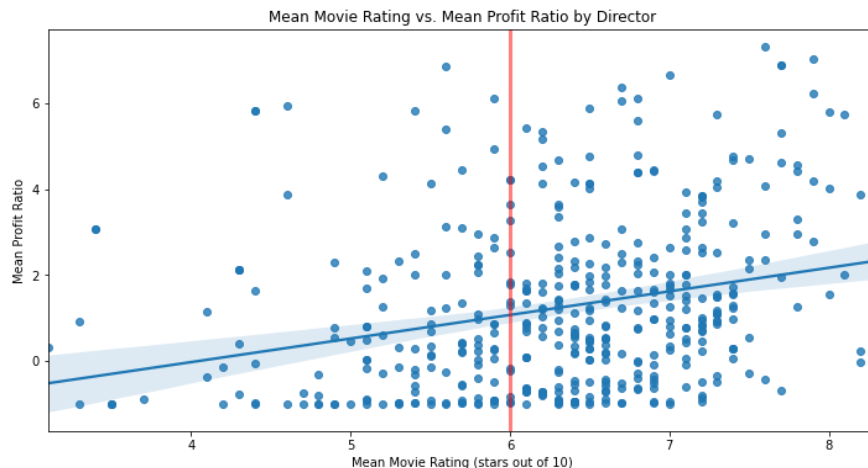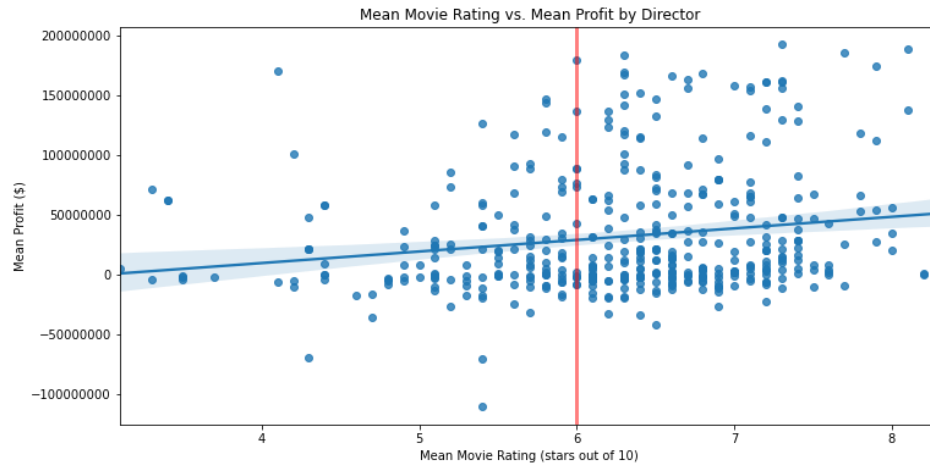
Profit Ratio vs. Genre

- There are differences between the means of profit ratio by genre
  - **Mystery, Horror, and Thriller** are the top 3 genres in terms of profit ratio
  - Horror and Mystery have similar profit ratios.
  - There is a significant difference between Horror and Action in terms of profit ratio
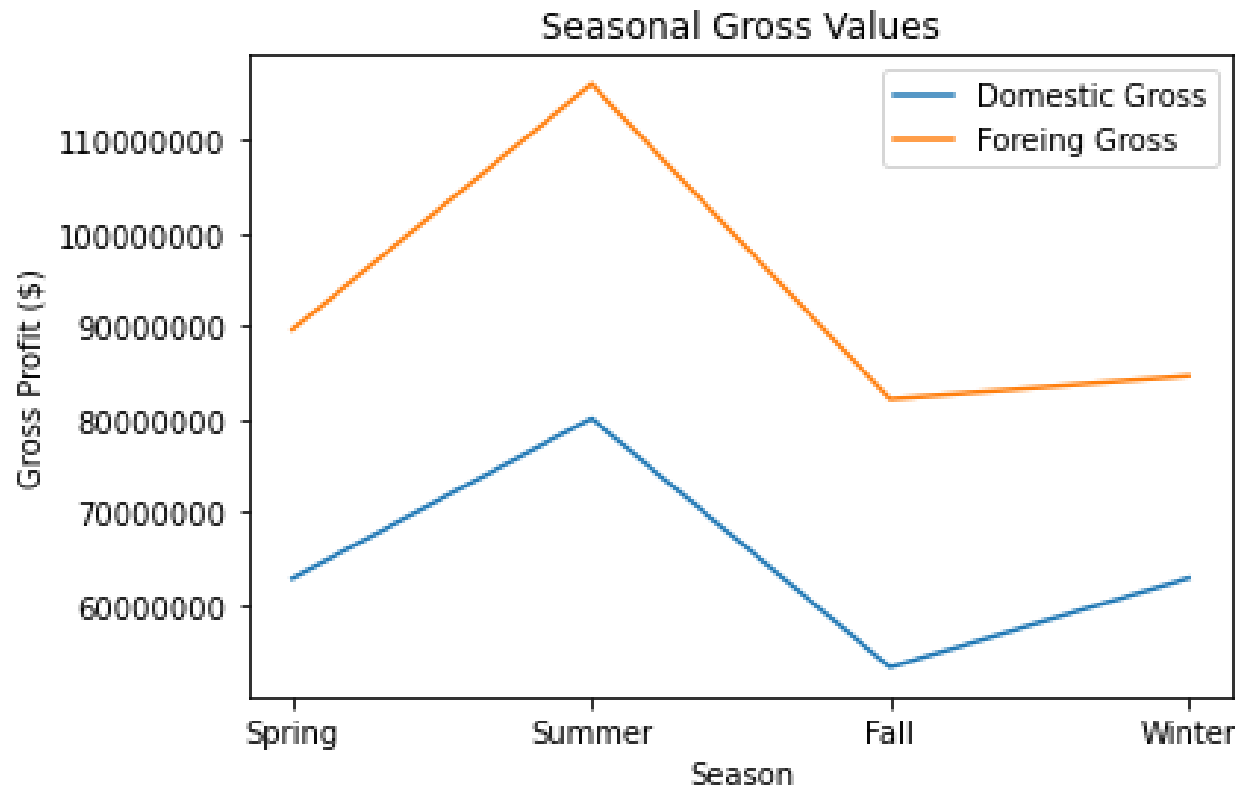- **Business Recommendation**: Target mystery, horror, and thriller genres

Profit ratio vs Genre, 2010-2020

Top 3 Movies with the Highest Profit Ratio

Title	Year	Budget	Worldwide gross	Profit	Profit ratio	Genre
The Gallows	2015	100,000 $	41,656,474 $	41,556,474 $	414.56	Horror, Mystery, Thriller
The Devil Inside	2012	1,000,000 $	101,759,490 $	100,759,490 $	99.75	Horror
Paranormal Activity 2	2010	300,000 $	177,512,032 $	174,512,032 $	51.17	Horror

Movie Ratings By Director vs. Profit

Mean Movie Rating vs. Mean Profit by Director

Mean Movie Rating vs. Mean Profit Ratio by Director

- Do a director's past movie ratings predict the director's profitability?

- Directors with at least average ratings yield **higher profits and profit ratios** than those with lower than average ratings

- Recruit directors with **higher than average** historical movie ratings

Seasonal Release Effects Gross Profits

Seasonal Gross Values

- Our team recommends that the optimal time to release a movie is during the summer

- Summer release dates lead to greater gross profits over all seasons in the domestic market

- Summer releases lead to greater gross profits over winter and fall in the foreign market

- We were unable to conclude with the same level of confidence that summer outperforms spring in the foreign market. However, we would still recommend a summer release date

Summary and Recommendations

Produce low budget films to maximize value.

Target mystery, horror, and thriller genres.

Recruit directors with above average historical movie ratings.

Plan to release during the summer.

Limitations and Future Research

Data reduction from using The Numbers dataset

Cross-genre effects on profit

Seasonal aggregation on profits / recommendations

Review Natural Language Processing potential

Q&A

Thank you for your time.

Appendix

- [GitHub Repository](#)
- Data sources
  - [Box Office Mojo](#)
  - [IMDB](#)
  - [Rotten Tomatoes](#)
  - [TheMovieDB](#)
  - [The Numbers](#)