Budget vs. Box Office: ROI in the Film Industry

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Business Understanding

Background

Company looking to produce movies in order to diversify their revenue streams

Goals

Provide three recommendations on which movie features are the most *cost efficient*

Success Criteria

Define '*cost efficient*' to be measured using return on investment (ROI):

$$ROI = \frac{Net\ profit}{Cost\ of\ investment}$$

Data Understanding

IMDB's film database (8 tables total):

movie_basics:

- **6 features** with **146,144 entries**
- Each entry represents a different movie

persons:

- **5 features** with **606,648 entries**.
- Each entry represents a person who has worked in/on a movie

principals:

- **6 features** and **1,028,186 entries**
- Each entry represents a movie with a corresponding individual who was part of the movie

Data Understanding

The Numbers' *budgets* dataset:

- 6 features and 5,782 entries
- Each entry represents a different movie

Data Preparation

- Cleaned four datasets: *budgets*, *movie_basics*, *persons*, *principals*

- Converted columns to correct data types with help of custom *get_info()* function

- Filtered out outliers and irrelevant columns, and addressed NaN values
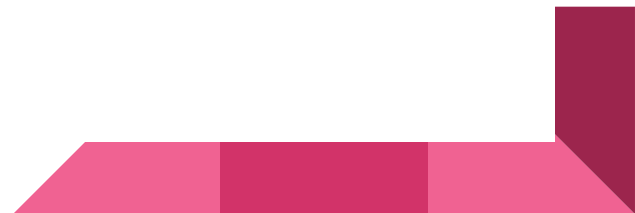
Data Preparation

- Created three new dataframes (*top_people_budgets*, *top_roi_movie_basics*, *budgets_no_outliers*)

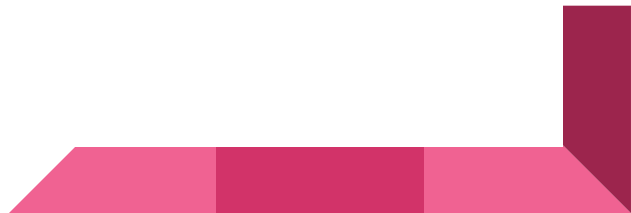- Focused on movies with the top 25% ROIs

Data Analysis

- **37%** of movies did **_NOT_** achieve **positive ROI**

- Typical movie:
  - **$16 million production budget**

  - **$26 million worldwide gross revenue**

  - **66% ROI**

Data Analysis

- **More than 33%** of movies classified as: **Dramas** & **Comedies**

- Middle 50% of movies had **runtimes** ranging **87** to **113 minutes**
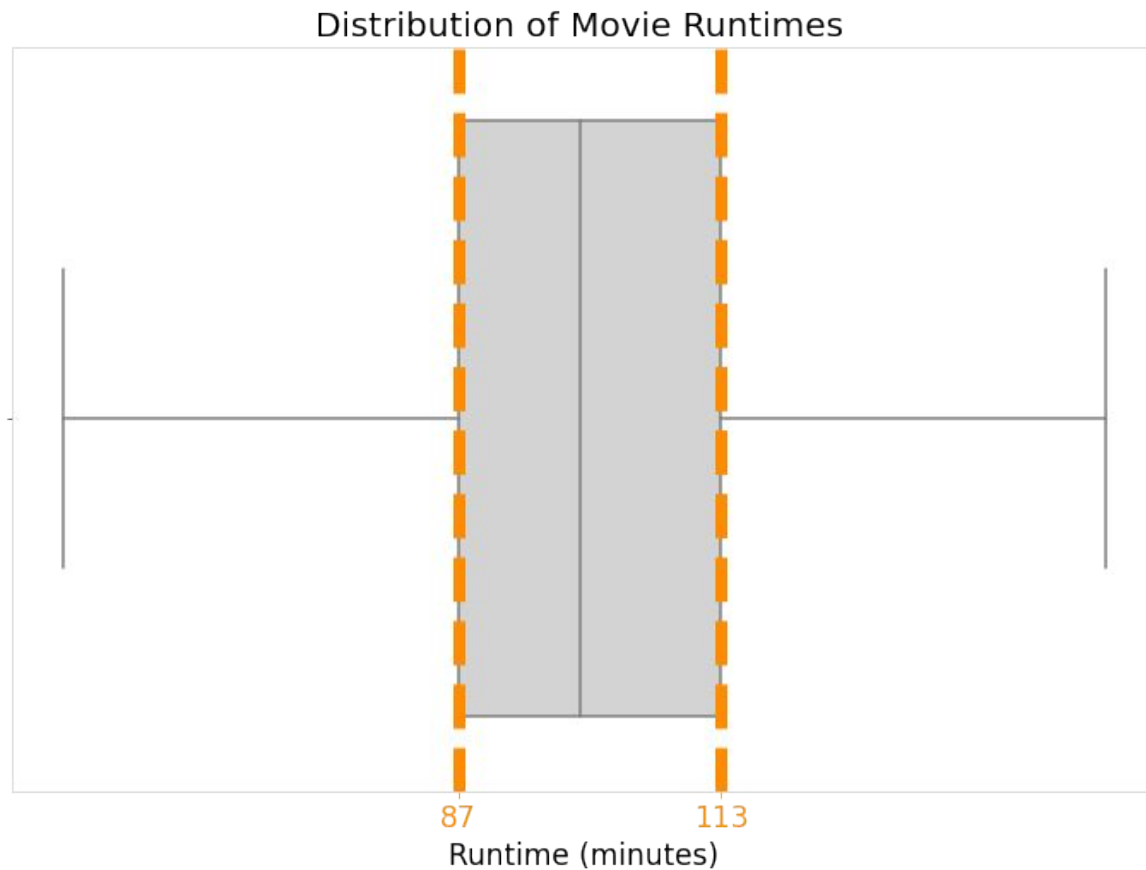
Data Analysis

- Drama & comedy **professions** generating **highest ROI:**

  - **Composers**
    - Danny Elfman, Alexandre Desplat, Marco Beltrami, Thomas Newman, Theodore Shapiro

  - **Directors**
    - David O. Russell, Steven Spielberg, Damien Chazelle

  - **Producers**
    - Simon Kinberg, Michael De Luca, Dana Brunetti
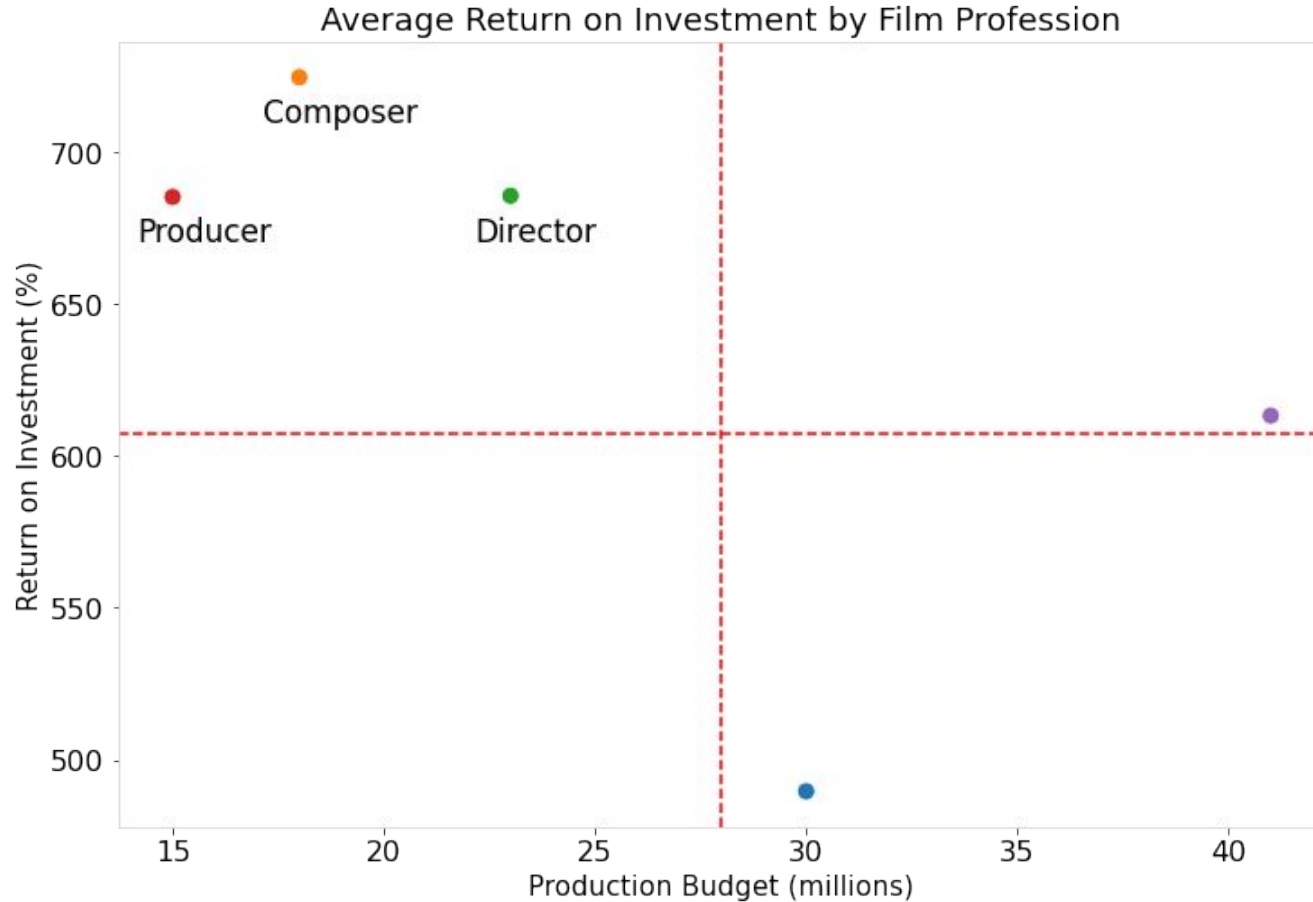
# More than 33% of movies classified as Dramas & comedies

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Movie Genres in the Top Quartile of ROI
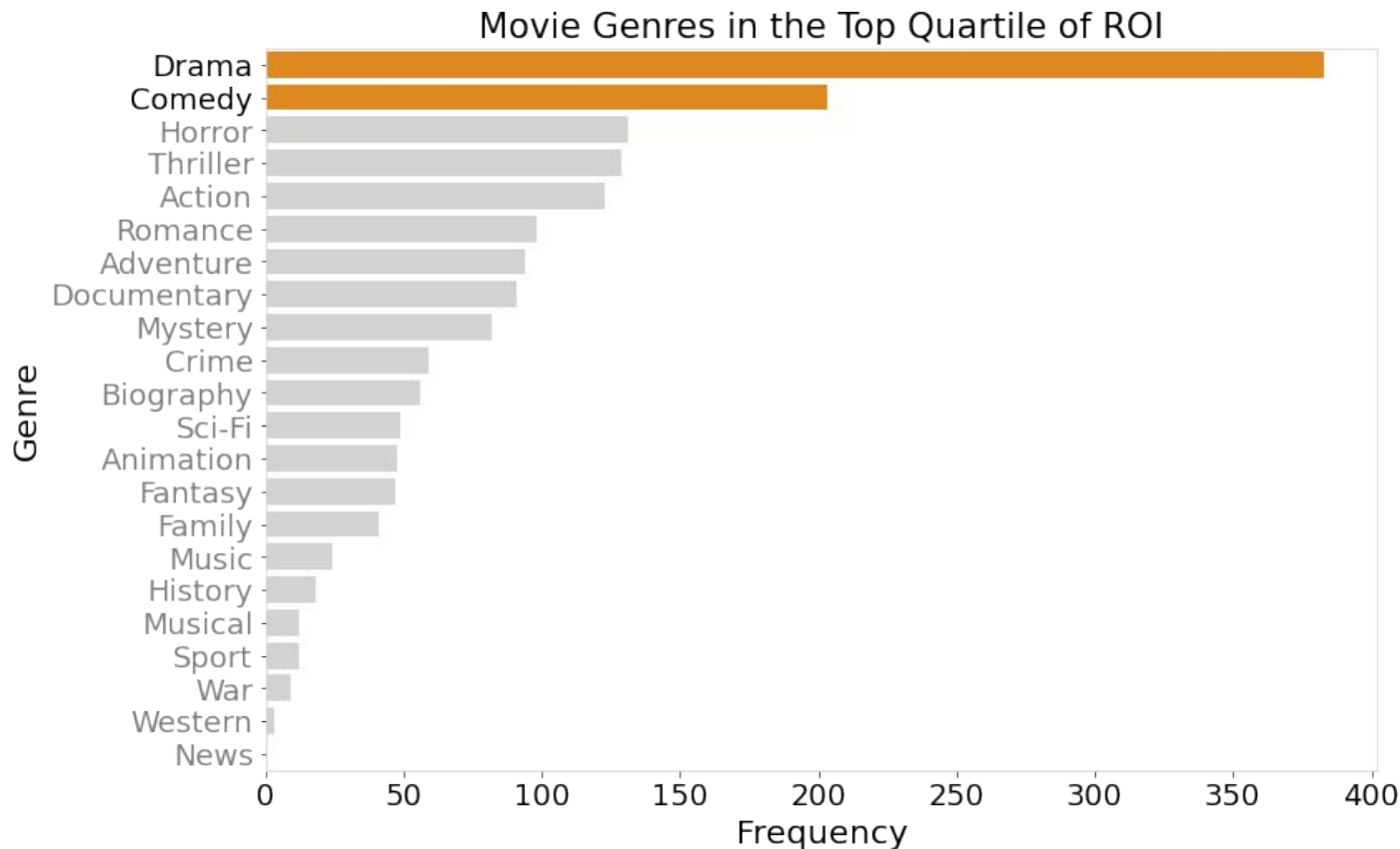
Runtimes between **87-113 minutes** for the middle 50% of movies

Distribution of Movie Runtimes

Producers, writers, & directors generate the **highest ROI**

Drama & comedy **composers:** Danny Elfman, Alexandre Desplat, Marco Beltrami, Thomas Newman, Theodore Shapiro

Total Gross Revenue Across Dramas & Comedies
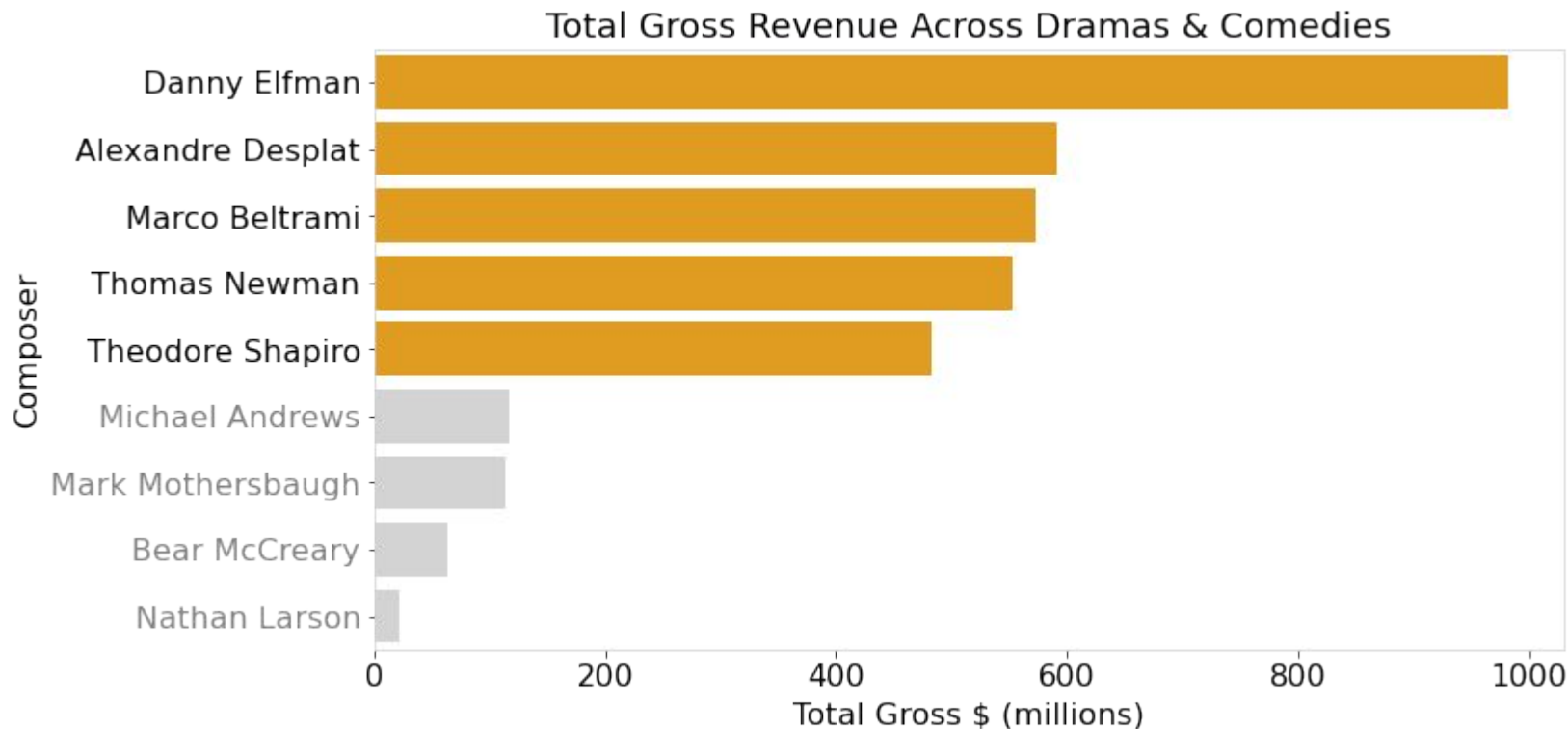
Drama & comedy **directors:** David O. Russell, Steven Spielberg, Damien Chazelle

Cumulative Gross Revenue Across Dramas & Comedies
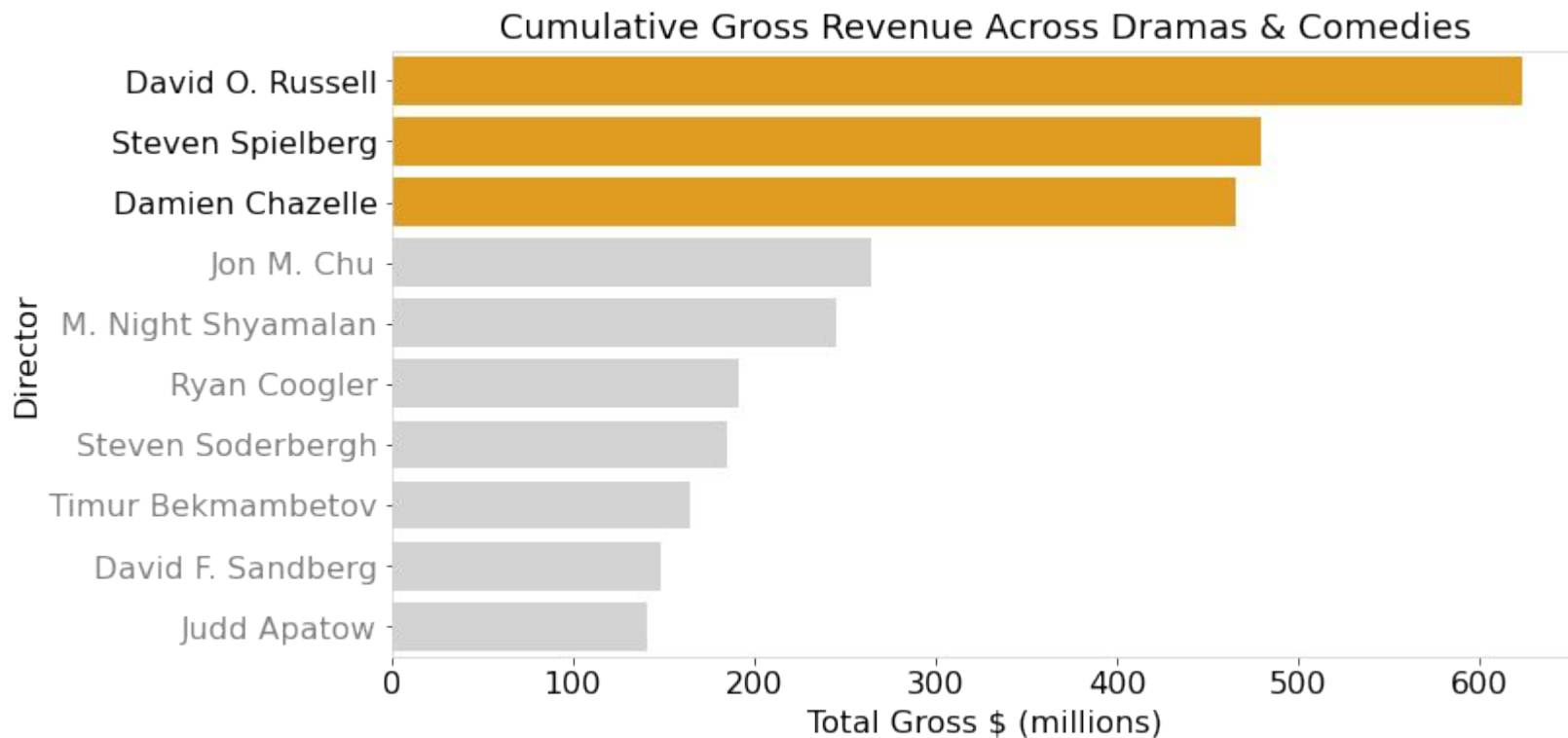
Drama & comedy **producers:** Simon Kinberg, Michael De Luca, Dana Brunetti

Cumulative Gross Revenue Across Dramas & Comedies
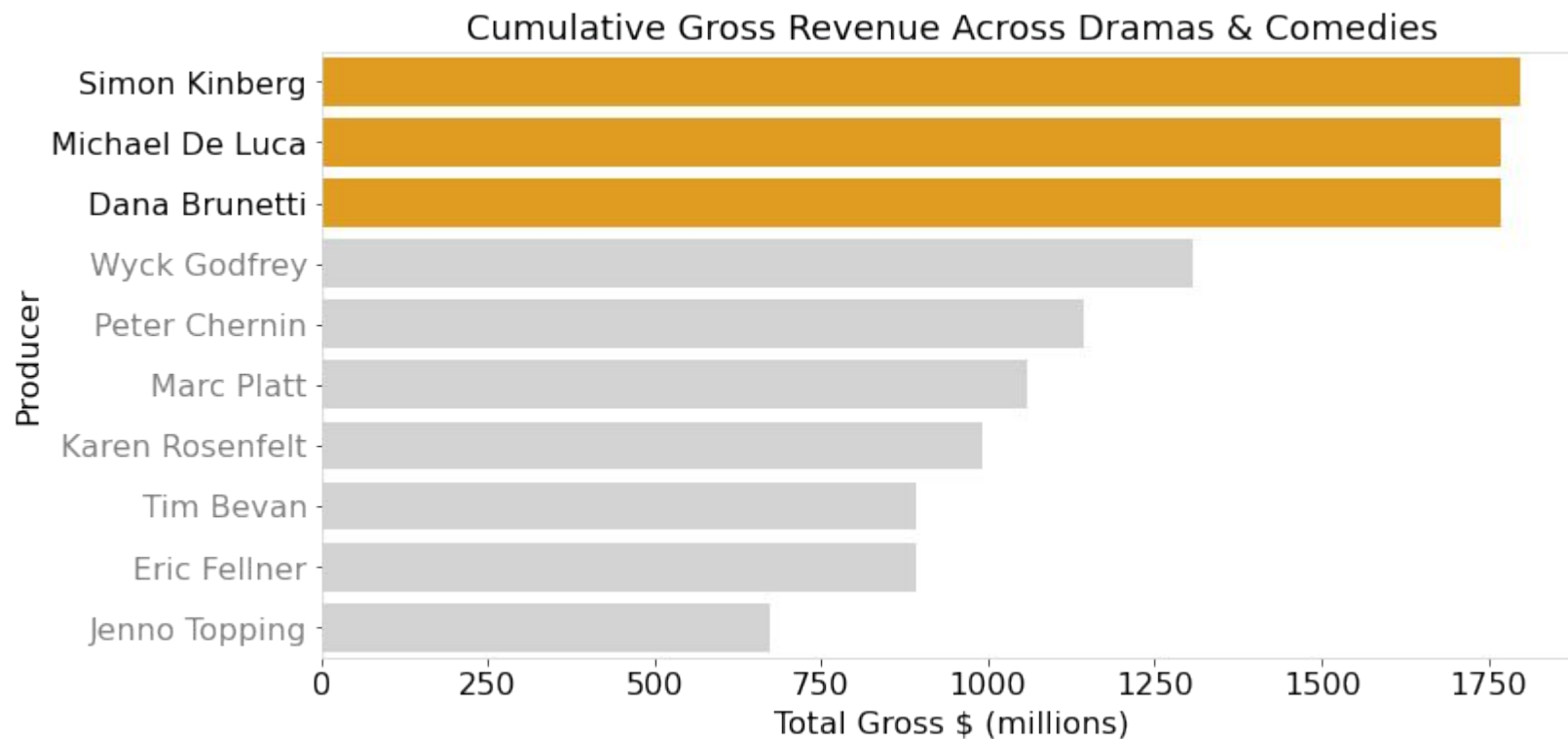
Limitations

- Limited amount of budget data = Less data for ROI analysis

Recommendations

Recommendation 1: Genre

Focus on creating:
- **Dramas**
- **Comedies**

Recommendation 2: Runtime

Ensure movies are between **87** and **113** minutes long

Recommendation 3: Hiring

Hire high-quality **composers, directors**, & **producers** specializing in **drama** & **comedy**

Next Steps

1. Moving forward I am interested in:

   a. Gathering budget data on a wider number of movies

   b. Performing regression analysis:
      i. Which factors most strongly correlate with movie ROI?

Thank you!

Github Repository:
https://github.com/ckucewicz/movie_analysis_project

Contact Chris Kucewicz at
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