

Movies worldwide box-office gross

Can we predict it



Roberto Linares

The problem:

How to choose what
movies rights to
acquire?

Solution:

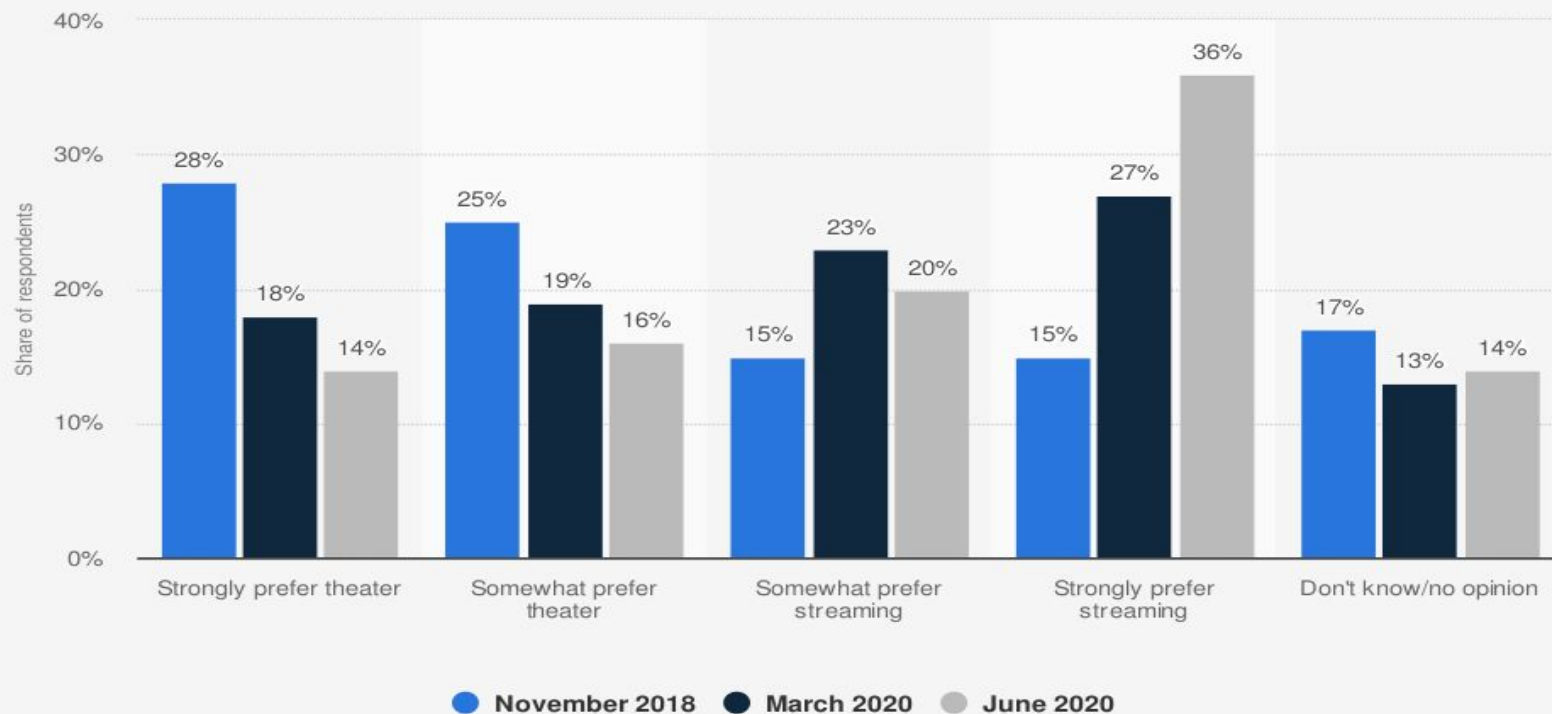
Let's unleash the
power of data to help
us find out.

NETFLIX

VS



Preference for watching a movie for the first time at a theater instead of via a streaming service in the United States from November 2018 to June 2020



The data



Box Office Mojo
by IMDbPro

Search for Titles

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International


Worldwide

Calendar

All Time

Showdowns

Indices



Star Wars: Episode VII - The Force Awakens (2015)

As a new threat to the galaxy rises, Rey, a desert scavenger, and Finn, an ex-stormtrooper, must join Han Solo and Chewbacca to search for the one hope of restoring peace.

IMDbPro
[Cast information](#)
[Crew information](#)
[Company information](#)
[News](#)
[Box office](#)
[Brand rankings](#)
[Franchise rankings](#)
[Genre keyword rankings](#)


Title Summary

All Releases

All Releases
DOMESTIC (45.3%)
\$936,662,225
INTERNATIONAL (54.7%)
\$1,132,859,475
WORLDWIDE
\$2,069,521,700

| | |
|-----------------------|---|
| Domestic Distributor | Walt Disney Studios Motion Pictures See full company information |
| Domestic Opening | \$247,966,675 |
| Budget | \$245,000,000 |
| Earliest Release Date | December 16, 2015 (EMEA, APAC) |
| MPAA | PG-13 |
| Running Time | 2 hr 18 min |
| Genres | Action Adventure Sci-Fi |
| IMDbPro | See more details at IMDbPro |

Star Wars: The Force Awakens



Theatrical release poster

Directed by J. J. Abrams

Written by Lawrence Kasdan
J. J. Abrams
Michael Arndt

Cruella
EMMA STONE



Theatrical release poster

Directed by Craig Gillespie

Screenplay by Dana Fox
Tony McNamara

How it looks like

| Title | Domestic opening | Domestic total gross | Worldwide Gross | Budget | Runtime | Rating | Release date | Distributor | Genre |
|-------------------|------------------|----------------------|-----------------|---------------|---------|--------|-------------------|-------------------------------------|-----------------------------|
| Avatar | 77025481 | 760507625 | 2847246203.00 | 2370000000.00 | 162.00 | PG-13 | December 16, 2009 | Twentieth Century Fox | Action Adventure Fantasy... |
| Avengers: Endgame | 357115007 | 858373000 | 2797501328.00 | 3560000000.00 | 181.00 | PG-13 | April 24, 2019 | Walt Disney Studios Motion Pictures | Action Adventure Drama ... |

Models

- Linear Regression
- Ridge

Metrics

R^2

Comparison

MAE

For results

LASSO



Results

$$R^2 = 0.44$$

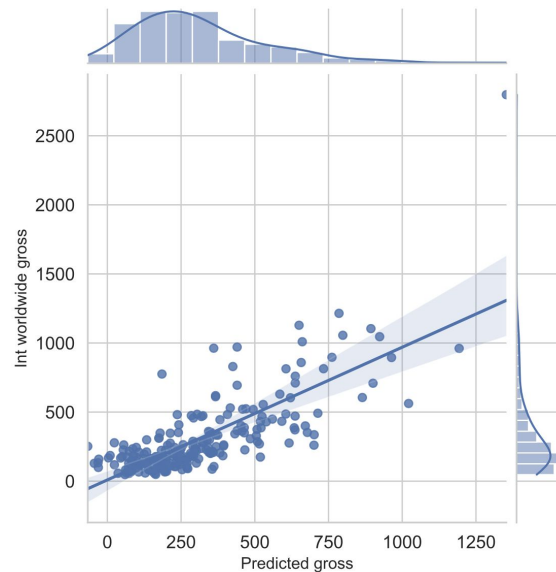
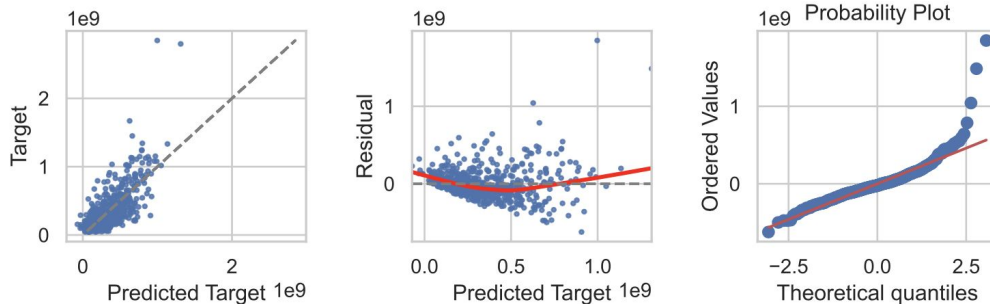
MAE = \$156 million

Lasso

$$R^2 = 0.54$$

MAE = \$130 million

LinearRegression approach



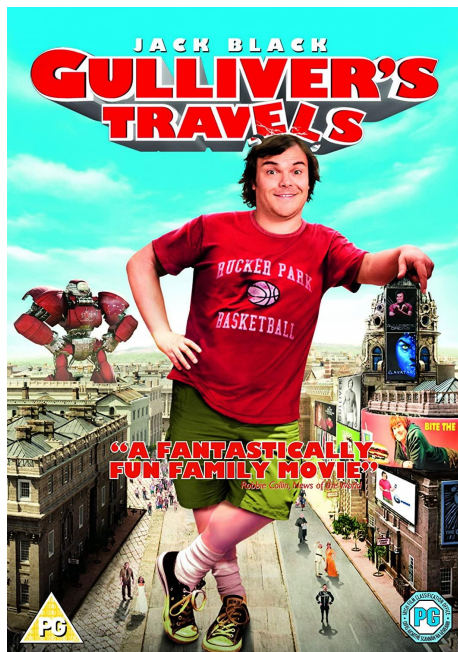
Model predictions



Pred = \$762 million

Real = \$896 million

Diff = \$134 million



Pred = \$318 million

Real = \$237 million

Diff = \$81 million

Key takeaways

- Budget is the feature most related with the predicted goal.
- PG-13 rated films will outperform the rest.
- Most profitable genres are:
 - Animation, adventure, family, music/musical and last but not least, horror 🧛.

Future Work

- Increase the amount of data and features (consider director and lead cast).
- Include the factor of the seasonality of movies.
- Consider the trend of streaming/theaters releases.