putting the FEATURE in FILMS

What drives success at the Box Office?

Linear Regression Final Project
Aathira Chennat

In 2019, the Global Film &
Entertainment Market surpassed

$100 BILLION DOLLARS

42% of this is made at the box office.

From 2017-2019, the average box office earnings for a film was

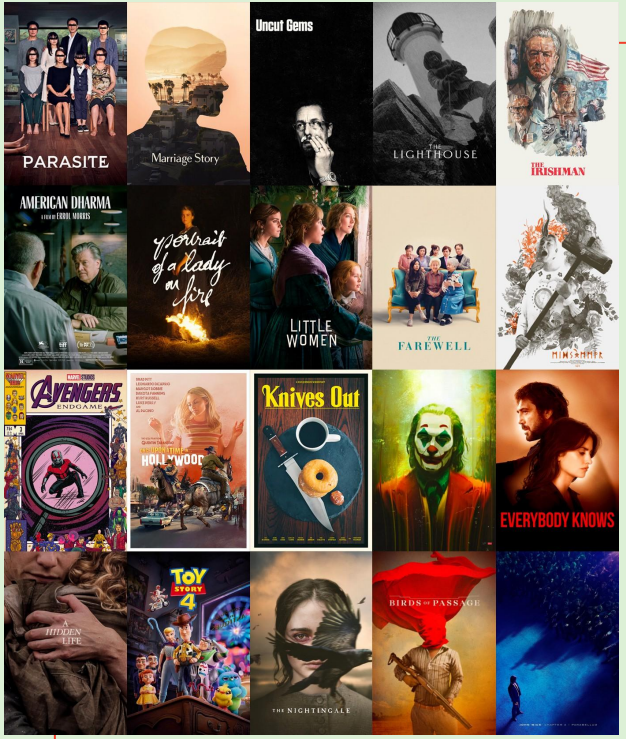
$22 MILLION DOLLARS

After paying fixed costs, investors take 50% of the profits.

01

The Client

Financiers looking to get into the movie business



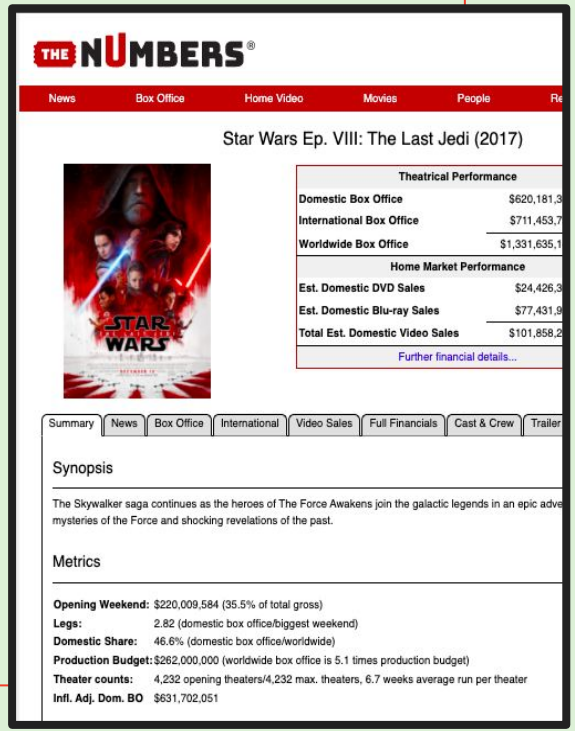
02
The Data

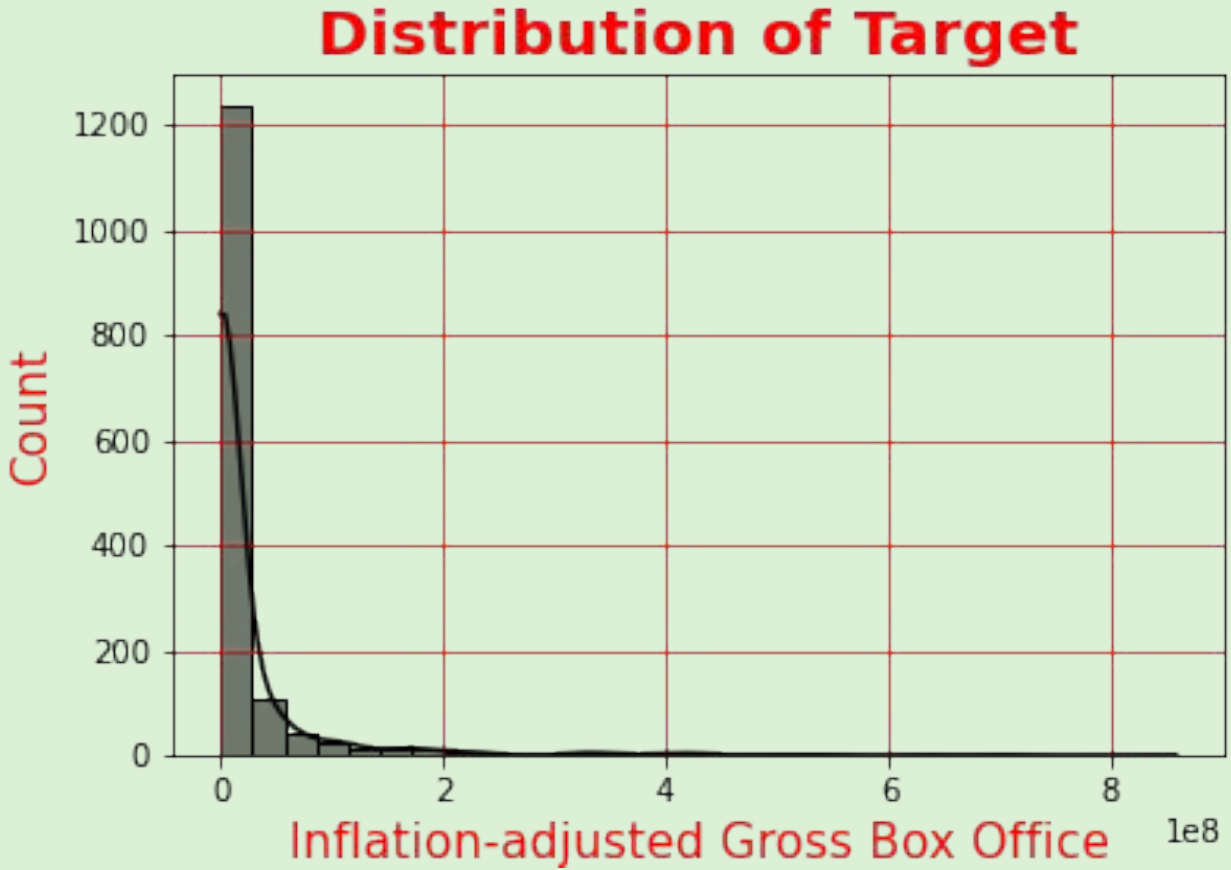
Films Screened
Domestically 2017-2019

- Black Panther
- Frozen II
- Star Wars VIII
- Wonder Woman

THE NUMBERS

- 1,481 Observations
- 22 Features
  - 10 Numeric
  - 12 Categorical
- Scraped via Beautiful Soup



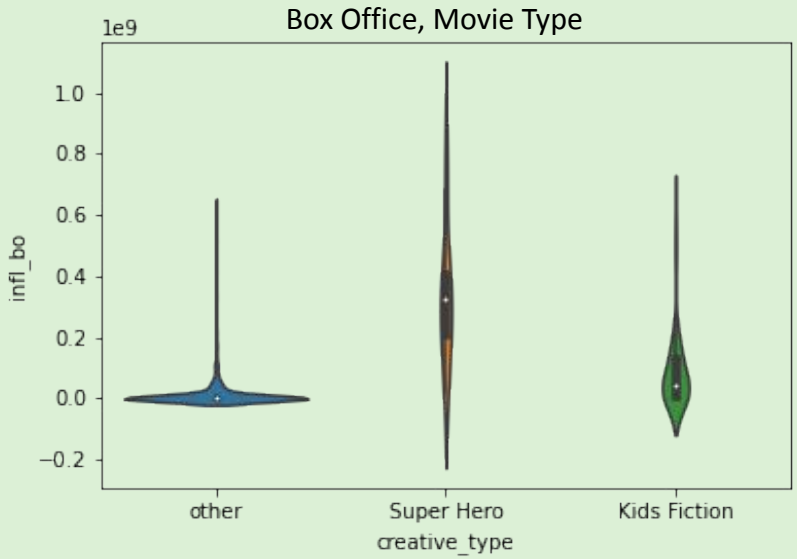


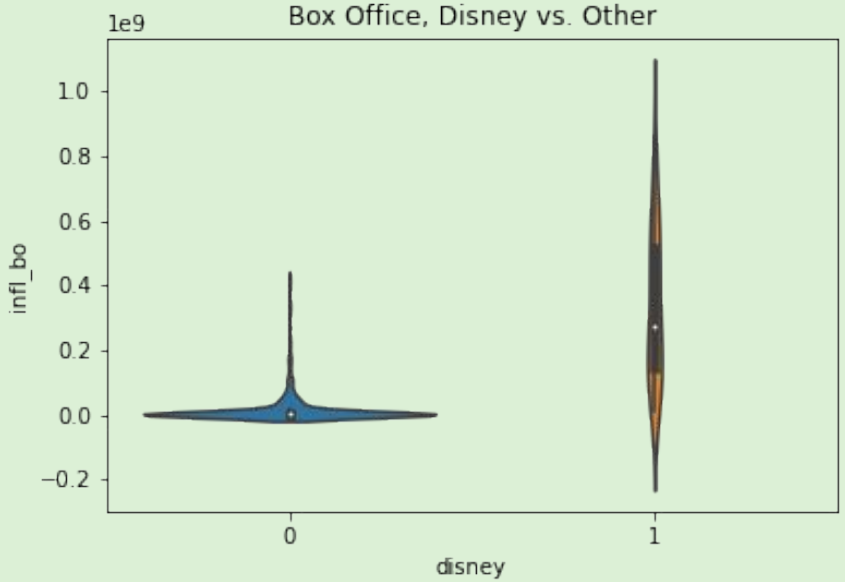
Inflation-Adjusted Domestic Box Office

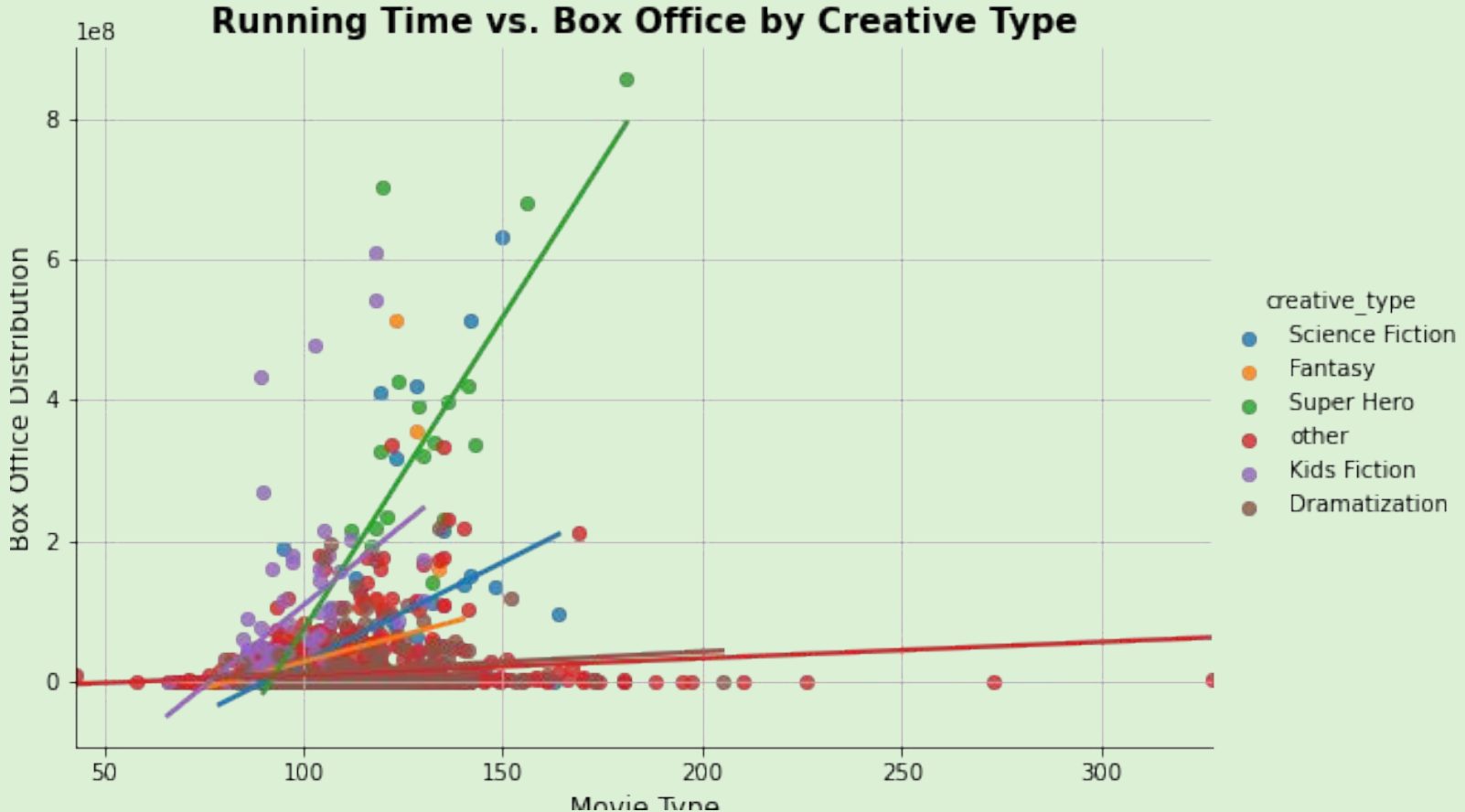
- **Genre**
- **Distribution Company**

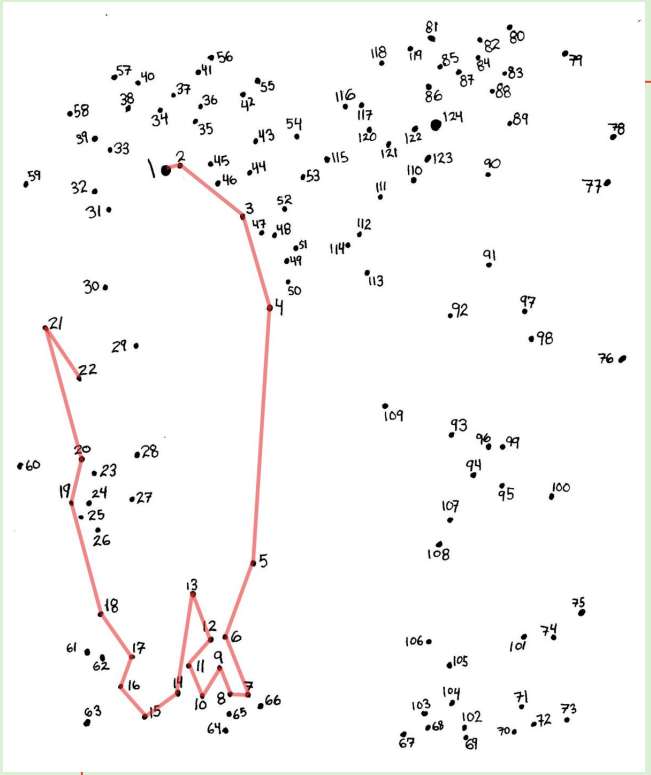
CONTINUOUS FEATURES

- ~~Opening weekend box office~~
- ~~Max Theater Count~~
- ~~Domestic Box Office Share~~
- Running Time


Box Office, Movie Type
1e9
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
infl_bo
other
Super Hero
Kids Fiction
creative_type


Box Office, Disney vs. Other
1e9
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
infl_bo
0
1
disney


Running Time vs. Box Office by Creative Type
1e8
8
6
4
2
0
Box Office Distribution
50
100
150
200
250
300
Movie Type
creative_type
Science Fiction
Fantasy
Super Hero
other
Kids Fiction
Dramatization



03

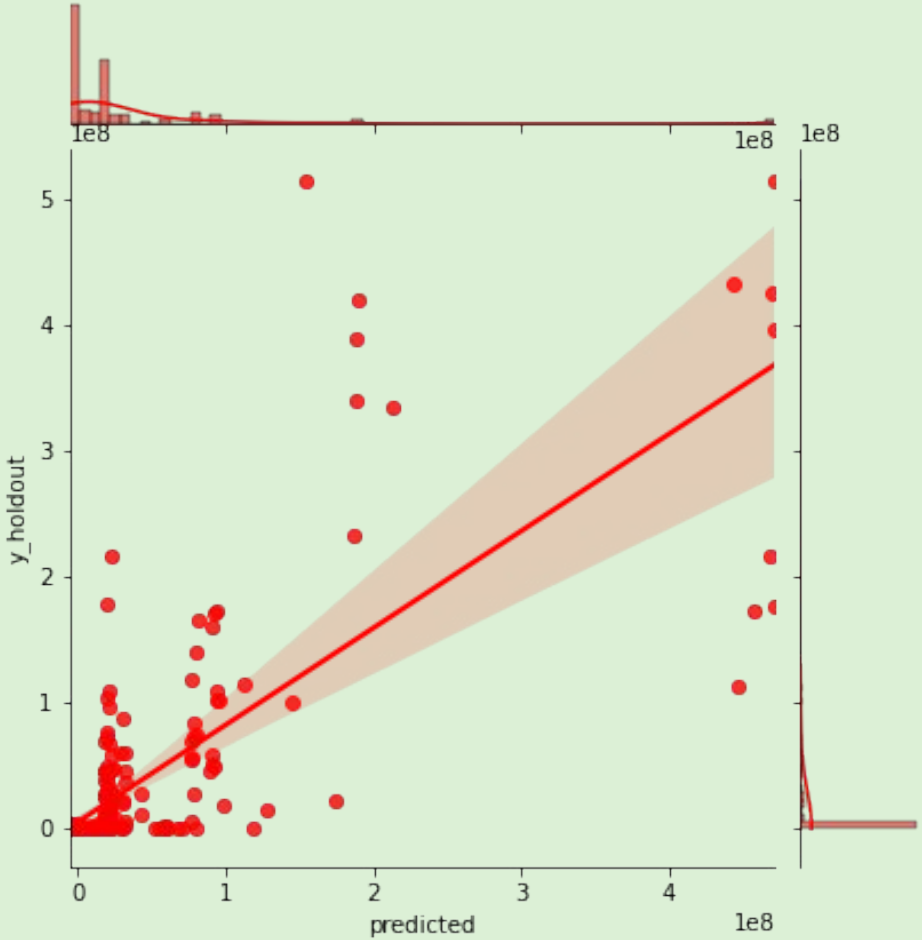
The Model

RESULTS

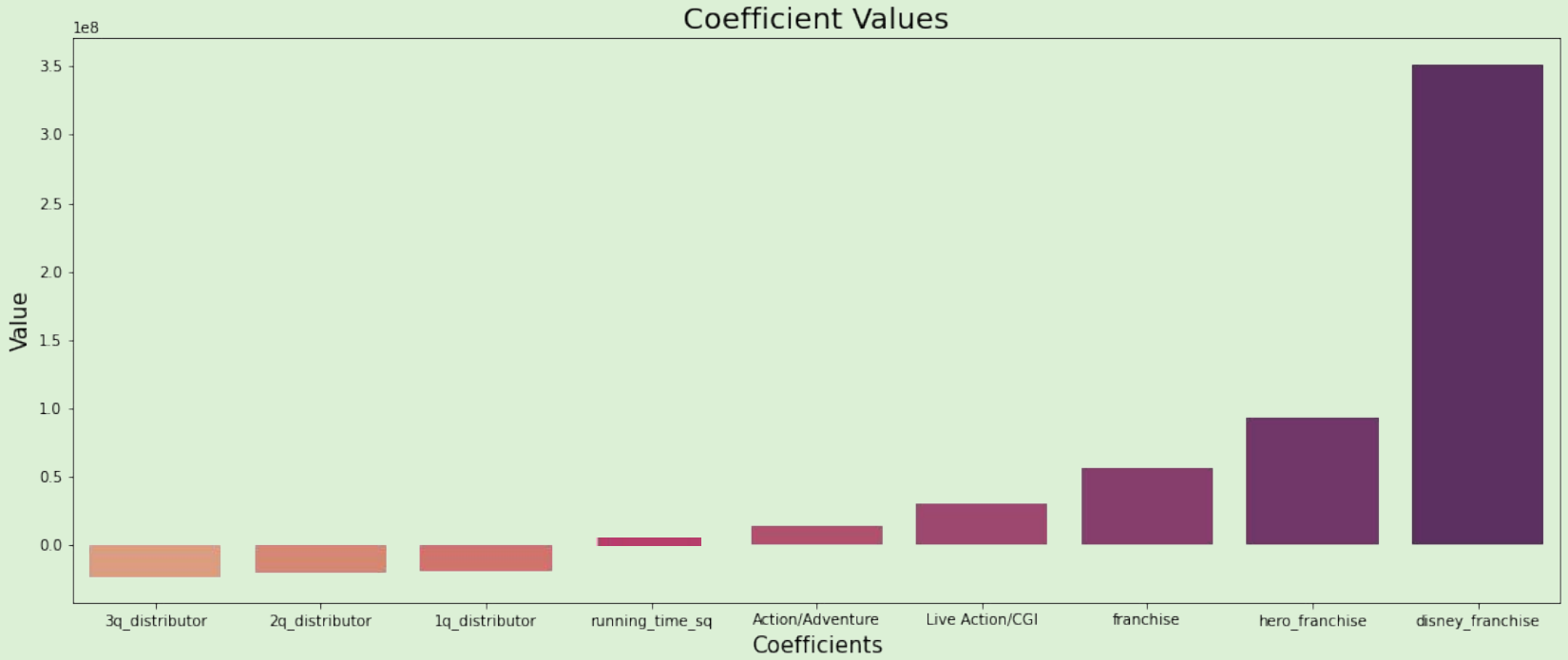
$16.9M
Mean Adjusted Error

50%
R-Squared

10
Features



FEATURES


Coefficient Values
1e8
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Value
3q_distributor
2q_distributor
1q_distributor
running_time_sq
Action/Adventure
Live Action/CGI
franchise
hero_franchise
disney_franchise
Coefficients

DISCUSSION

Where do we go from here?

NEXT STEPS

MANAGE OUTLIERS

Limit dataset to 1-3rd quartile distribution companies.

CLEAN FEATURES

Running time is noisy, and likely introducing multicollinearity. Incorporate Production budget.

EXTEND TIMEFRAME

Gather more observations, starting with 2014 or 2015.

appendix

1. Follows, Stephen. *Do Hollywood Movies Make a Profit? 07/25/*2016. Steven Follows: Film Data and Education. Retrieved 02/19/2022: https://stephenfollows.com/hollywood-movies-make-a-profit/

2. Escandon, Rosa. *The Film Industry Made a Record-Breaking $100 Billion Last Year. 03/12/2020. Forbes. Retrieved 02/19/2022: https://www.forbes.com/sites/rosaescandon/2020/03/12/the-film-industry-made-a-record-breaking-100-billion-last-year/?sh=64bc1c7e34cd*

3. Mean gross box office earnings calculated using data from The Numbers. https://the-numbers.com/