

# Predicting the long tail:

## Identifying which movies have legs

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# How do movie theaters pay for movies?

01

A theater wants to show a movie.

- Theaters employ 'buyers' to negotiate with studios

02

The box office is split between the producers and the theater

- The longer a movie is shown, the better the deal becomes for the theater
- Movie theaters often take a loss on every ticket sold in the first weeks, because they make it back through concessions.

03

The movie theater decides whether they want to keep showing the movie

- These deals usually last for blocks of four weeks.



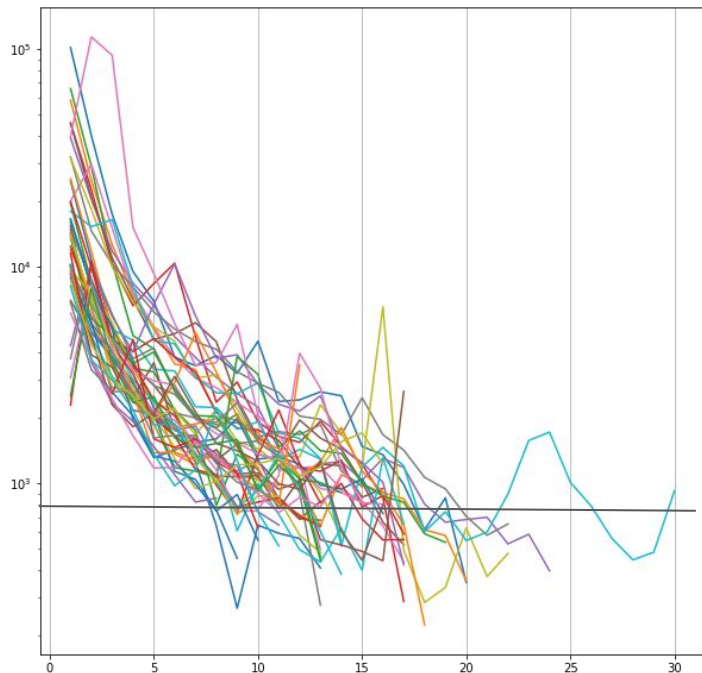
## Data Sources

- Box Office Mojo
- IMDB

## Data Analysis

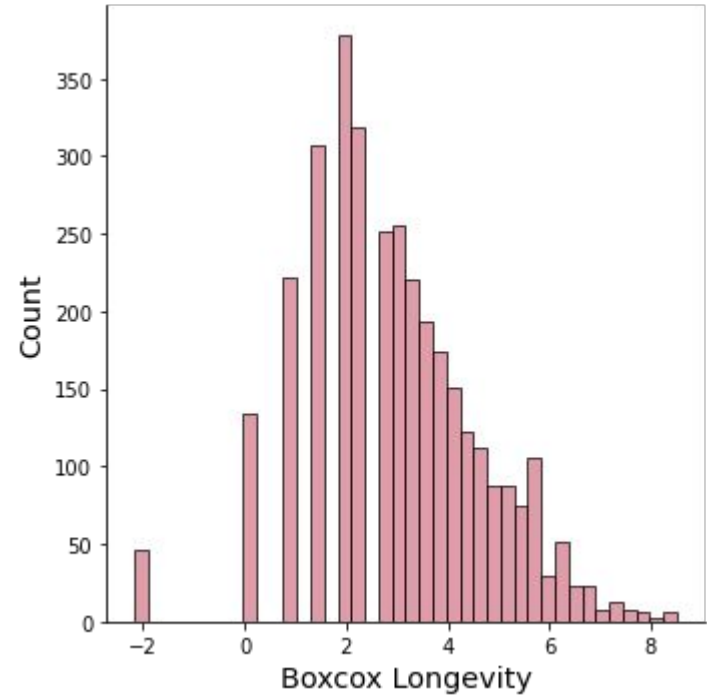
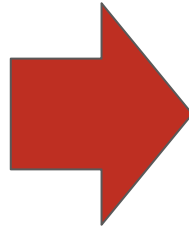
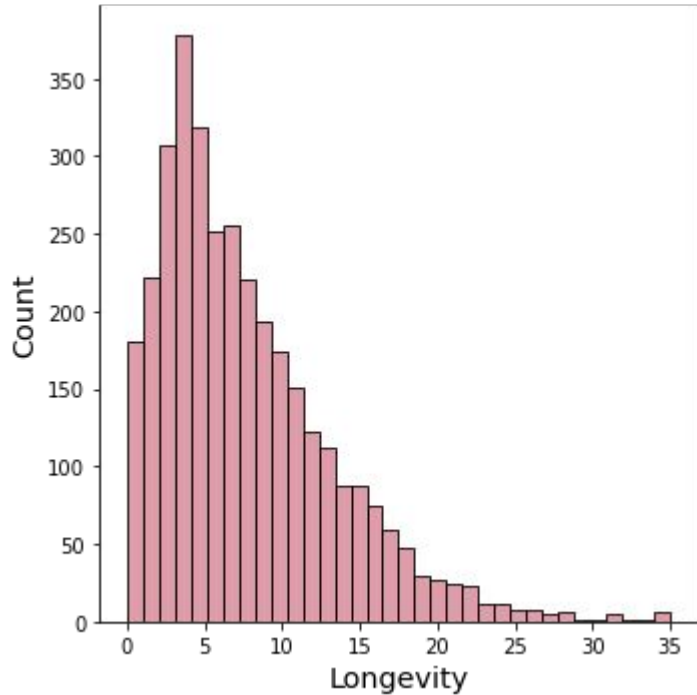
- LassoCV
- Feature Extraction
- RidgeCV

# Measuring longevity of a movie using a threshold



- Movie sales are noisy, but show a clear overall trend when plotted against time
- To reduce the influence of noise, I measured the number of weeks where a movie was above a threshold.

# Transforming Skewed Discrete Data

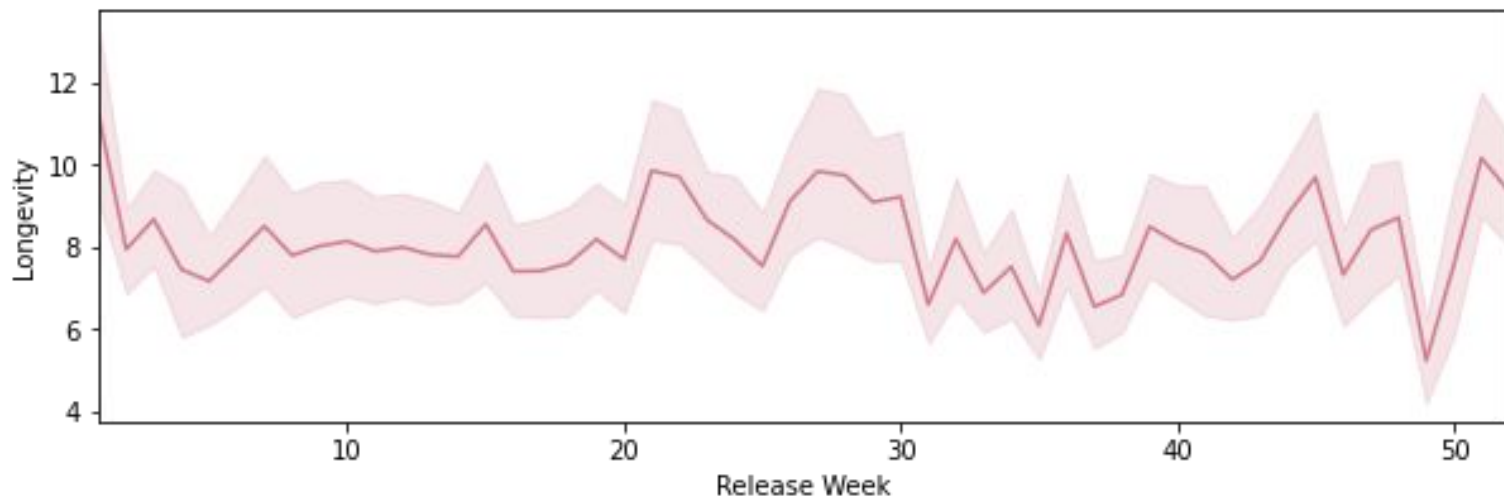


# Simple Features:

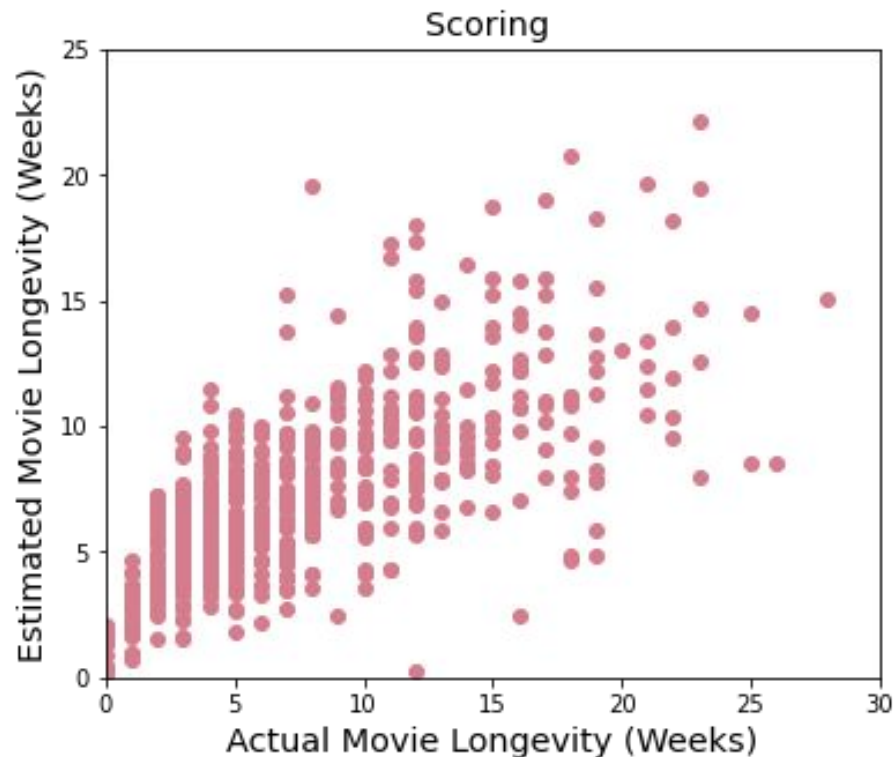
- Genre
- MPAA Rating
- Average per-theater box-office from the first two weeks
- Number of theaters where the movie was shown during the first two weeks.

# Nonlinear Features

- Movies released just before December tended to be displaced by later movies
- Movies released in December and early January were longer lived.



# Strength of Fit



Trained  $R^2$ : 0.48

Test  $R^2$ : 0.55

Mean Absolute Error: 2.8



# Key Observations from Regression Coefficients

Movie longevity was correlated very strongly with the logarithm of its initial box office return.

Movies in many theaters had greater longevity than those in few theaters, independently of their box office at each theater.

Animated movies, PG, and TV-PG movies were longer lasting than other movies.

# Bibliography

- Tyson, Jeff. “How Movie Distribution Works.” HowStuffWorks, HowStuffWorks, 18 Sept. 2000, [entertainment.howstuffworks.com/movie-distribution.htm](http://entertainment.howstuffworks.com/movie-distribution.htm).