Gender Distribution in Movie Roles

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Background

How has the gender distribution in movie roles changed over the past 50 years? Is there any relationship between the gender distribution of a movie and how successful a movie is? To answer these questions I gathered data on the top 50 grossing movies in every year from 1969-2018 from IMDB along with cast information for each movie.

Data

IMDB provides a wide range of information on movies including genre, ratings, and cast lists.

Cast information was used to calculate two measures of gender distribution:

1. **G-SCORE:** The percentage of credited roles played by a man, weighted by how highly-billed that role was
2. Percentage of uncredited roles played by a man, unweighted.

Title	Year	% Cr Male	G Score
The Breakfast Club	1985	61.54	74.73
The Blind Side	2009	65.08	53.52
300	2006	65.06	79.03
Mad Max: Fury Road	2015	72.41	60.26

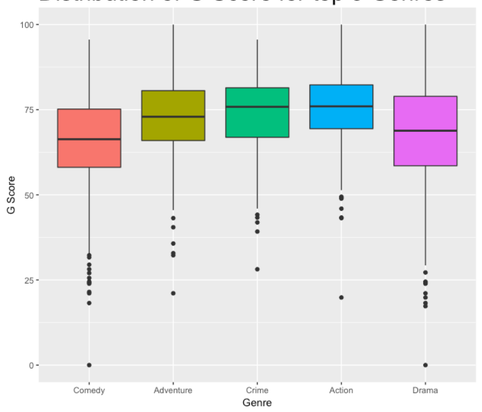
Results

Genre and G-Score

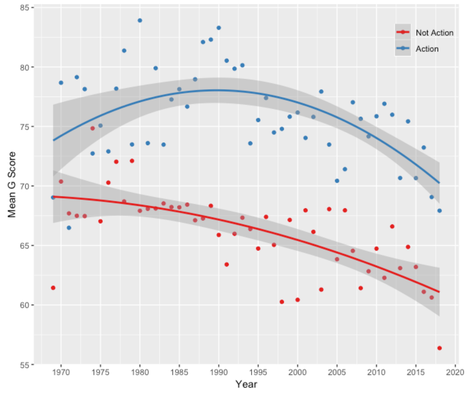
Genre to genre differences are the largest differences in gender distribution by a large margin.

Some genres shows a clear interaction with time. In particular, the **Action** genre is rapidly becoming more gender balanced.

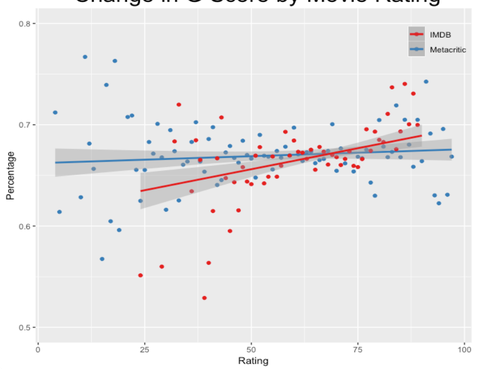
Distribution of G Score for top 5 Genres



Mean G Score over Time



Change in G Score by Movie Rating



Ratings and G-Score

IMDB ratings seem to trend higher for movies with **less female roles by percentage**.

This trend does not hold for **Metacritic ratings.**

LASSO Model

Models were built for the following response variables using *Multivariate LASSO Regression,* similar response variables were paired.

Response	R^2 %	Notable Predictors
G Score	33.32%	Year, Action, Sport, Director Gender
% Uncredited Male	09.23%	Year, War, Romance, Director Gender
Votes	62.69%	G Score, Fantasy, Comedy, MPAA Rating
Gross	12.16%	G Score, Horror, Fantasy, Adventure
IMDB Score	21.42%	G Score, Comedy, Horror, Biography
Metacritic Score	14.56%	Animation, Drama, Horror, Director Gender

(Note: Director Gender was coded with Female as the baseline)

To highlight some key findings, **Credited roles** (**G Score**) were much more explainable than **uncredited** roles, though **year was a large factor in both**. **Popularity on IMDB** was surprisingly explainable while **gross** was not easily explained. For the measures of quality (IMDB and Metacritic Scores), **IMDB** was more explainable and, more importantly, was significantly associated with G Score, **Metacritic scores** were less explainable and did not show the same significant association.

Acknowledgments

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