

Representing independent women in movies: a good or bad business?

Author: Nélia Bouzid

Laboratory: Université Paris Sciences & Lettres

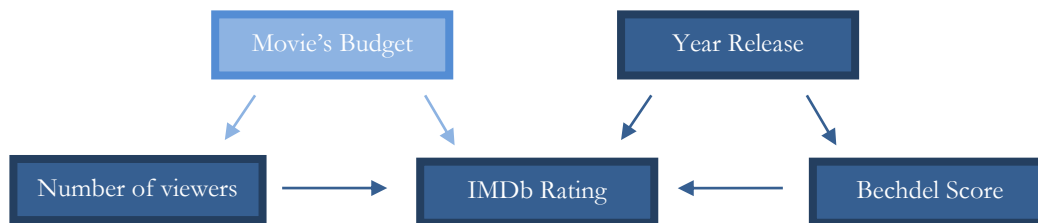
Contact: nelia.bouzid@psl.eu

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1. Introduction

The Bechdel test was invented in 1985 by Alison Bechdel in her comic *Dykes to Watch Out For* and consists in the measure of women's representation in movies. To pass the test, the film must have two women named in it (score 1 to the test, 0 otherwise) who talk to each other (score 2) about anything else than a man (score 3). With the rise of feminism, one could think that viewers prefer movies that pass the Bechdel test.

Is a movie's IMDb rating impacted by its Bechdel score?



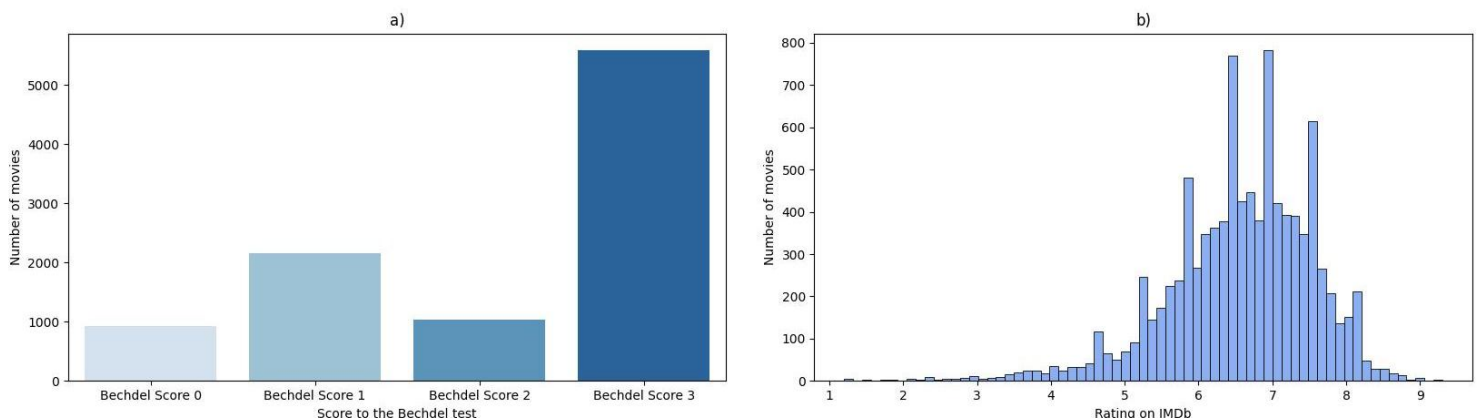
We anticipate that if it's the case, we should observe:

- **Prediction 1:** the higher the Bechdel score, the higher the IMDb rating.
- **Prediction 2:** the more recent the film, the higher its rating.
- **Prediction 3:** the more recent the film, the higher its Bechdel score.

Indeed, our hypothesis is that the rise of feminism has allowed women to be better represented in cinema over time (prediction 3) and set new demands among viewers who tend to be always more feminist (prediction 1). We also predict that directors adapt themselves to their evolving audiences (prediction 2).

2. Data

I used a merge of two datasets about movies: it covers information about 9689 movies (see Figure 1. a), such as their titles, genres, ratings on IMDb and Bechdel score. The two original datasets and their descriptions are available at the following addresses : <https://bechdeltest.com/api/v1/doc> (Bechdel test data) <https://developer.imdb.com/non-commercial-datasets/> (data from IMDb).



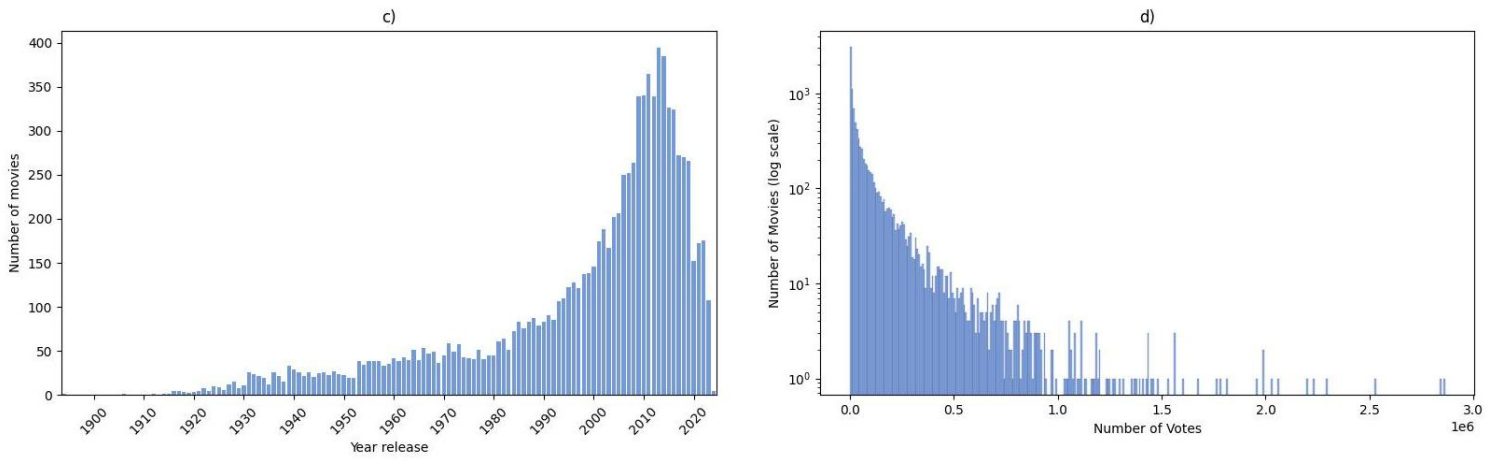


Figure 1. Number of movies per score to the Bechdel test (a), rating on IMDb (b), year release (c) and number of votes (d).

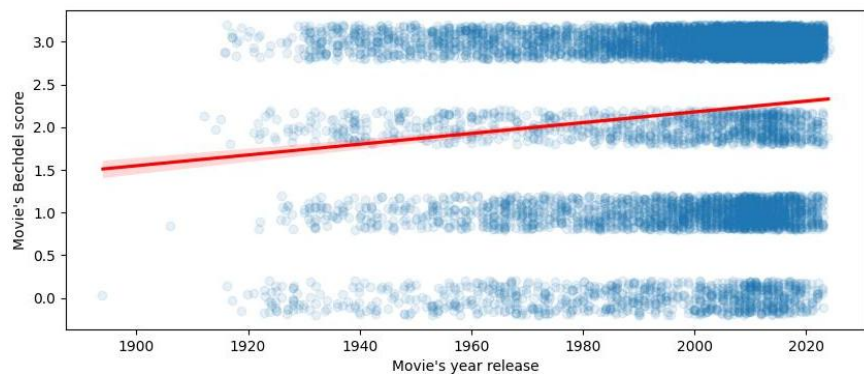
3. Methods

To test predictions 1 and 2, I performed a multivariate linear regression to see if a movie's Bechdel score and year release influence its IMDb rating. As for prediction 3, I performed a simple linear regression to see whether a movie's year release has an impact on its score to the Bechdel test or not.

4. Results

The Bechdel score is significantly improved with the year increase ($\beta = 0.0063$, $p_1 < 0.001$, $R^2 = 0.018$, see Figure 2). The difference in the IMDb average rating can be explained by the number of votes, the Bechdel rating and the year release ($R^2 = 0.174$). Moreover, all predictors significantly impact the IMDb rating ($p_2 < 0.001$, $p_3 < 0.001$, $p_4 < 0.001$). When there is a constant number of votes and Bechdel score, the movie's rating decreases with the increase in year release ($\beta_1 = -0.0109$). Finally, the movie's rating is negatively impacted by the increase in the Bechdel score, for a constant number of votes per movie and year release ($\beta_2 = -0.0421$).

Figure 2. Scatterplot showing the Bechdel test's score distribution per year.



5. Conclusion

Our results indicate that the IMDb average rating decreases both when the Bechdel score gets higher and when the movie's year release increases. Our first two predictions are therefore refuted. However, the more recent the movie's release year, the higher its Bechdel score: our third prediction is therefore validated.

Our study also allows us to think about the way women are represented in movies that pass the Bechdel test. In further studies, it would be interesting to see whether movies that pass the Bechdel test include important female characters or not.