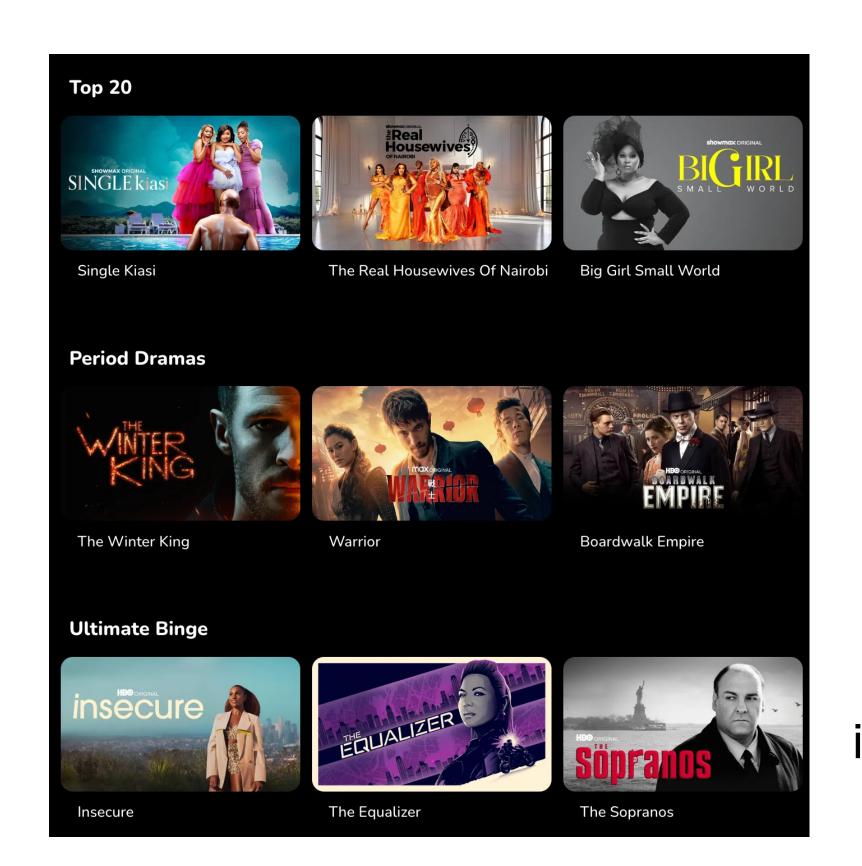# MOVIE RECOMMENDATION SYSTEM

OVERVIEW

RMX consultancy created a user based and item based collaborative filtering methods on movie lens dataset to create a movie recommendation system for Showmax to:

- Accurately recommend top 5 movies
- Provide insights and recommendations to Showmax

BUSINESS UNDERSTANDING

Personalized movie recommendations are important for Showmax to enhance user satisfaction and retention. Netflix sets the industry standard by offering top 10 movies or series in a user's country and personalized recommendations based on viewing history and ratings.

By using collaborative filtering, Showmax can develop targeted suggestions to improve user retention, helping them to be more competitive.
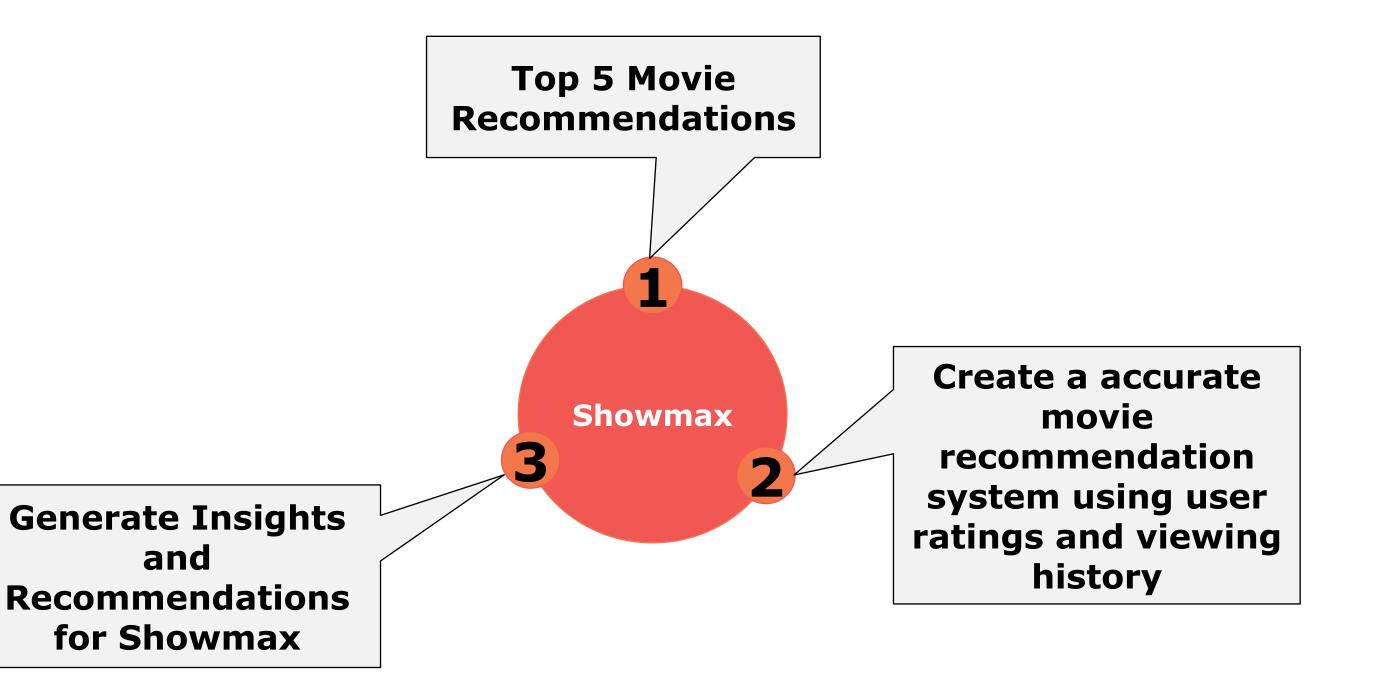
PROBLEM STATEMENT

Showmax has tasked RMX Consultancy to enhance its competitive edge by implementing a personalized movie recommendation system. The goal is to build a model that can recommend the top 5 movies to users based on their ratings and viewing history, leveraging collaborative filtering techniques to deliver a superior viewing experience.

OBJECTIVES

Top 5 Movie Recommendations

1

Showmax

3

2

Create a accurate movie recommendation system using user ratings and viewing history

Generate Insights and Recommendations for Showmax

Data

The dataset describes 5-star rating and free-text tagging activity from MovieLens, a movie recommendation service. It contains the following:
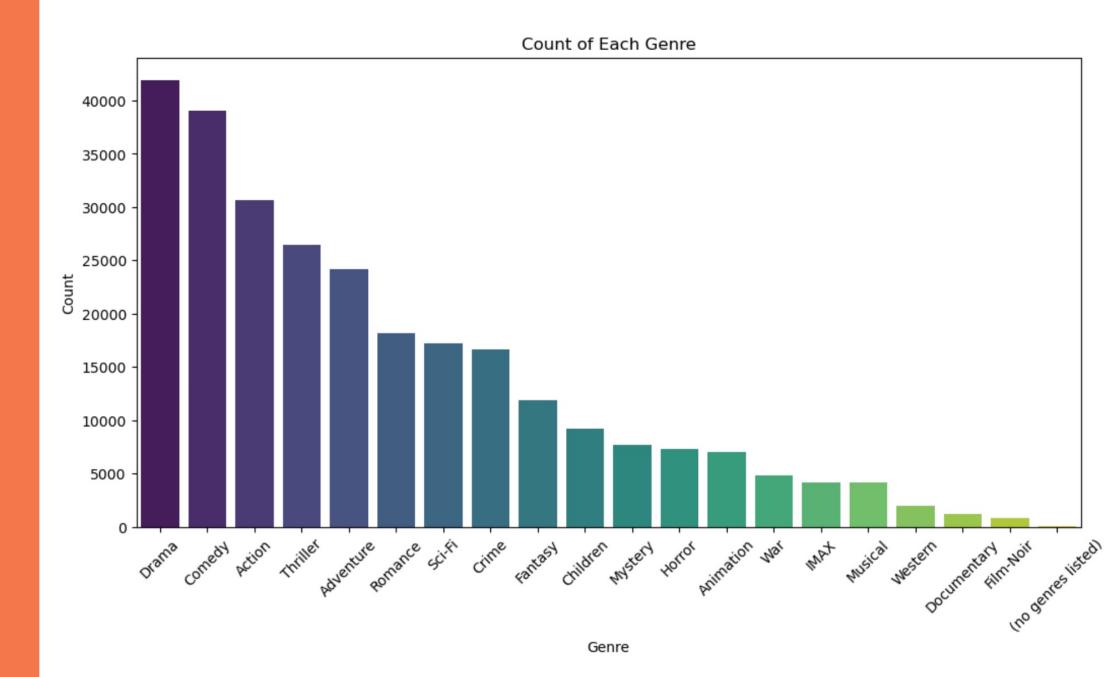
Ratings
100,836

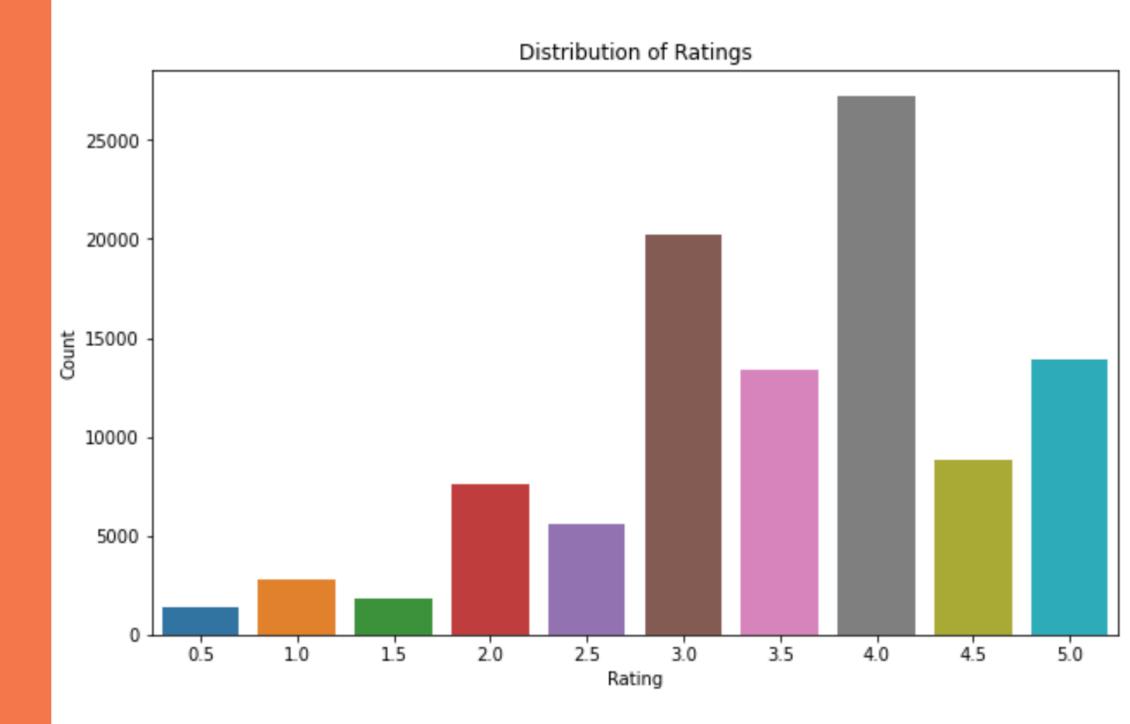**Tags**
3,683

Movies
9,742

Users
610

Movie Genres Count

Drama was the most common genre with a count of 40,000+ while Film noir being the least common with a count of less than 1,000

Count of Each Genre

Ratings Distribution

Majority of the movies had a rating of between 3.5 and 4.0

Distribution of Ratings

Tags Frequency

For tags used, Netflix, queue, funny, quirky, atmospheric, surreal and superhero are the most common tags used by the users
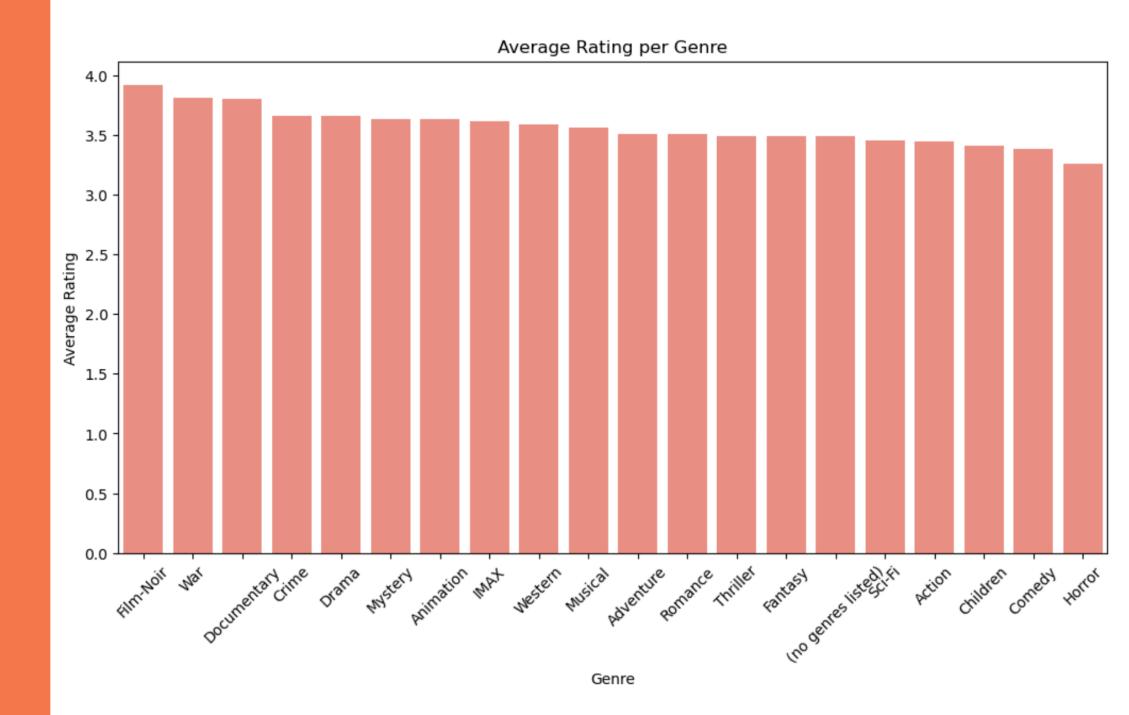

Word Cloud of Tags (Excluding "NoTag" Tag)

Average Rating per Genre

All the genres had an average rating of more than 3.0. Only Horror had an average rating of less than 3.5

Rating Distribution per Genre
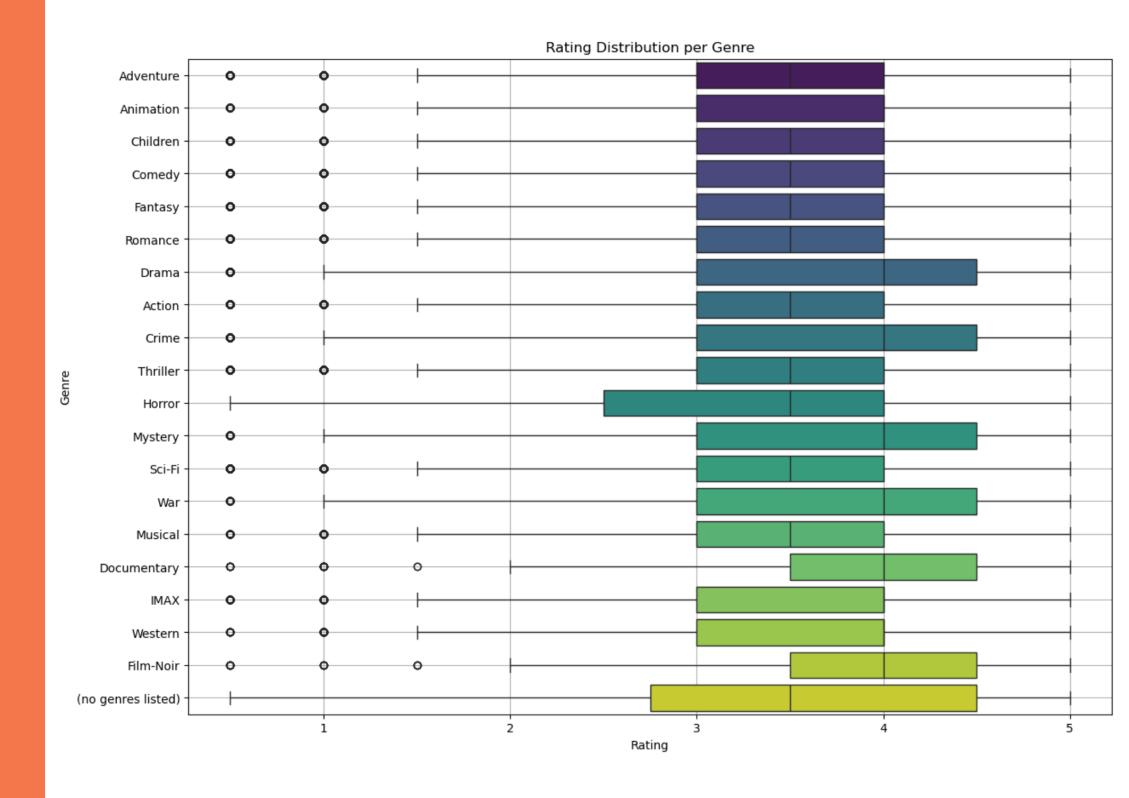
Most of the genres have a rating of between 3.0 and 4.0

Rating Distribution per Genre

Average Rating per User
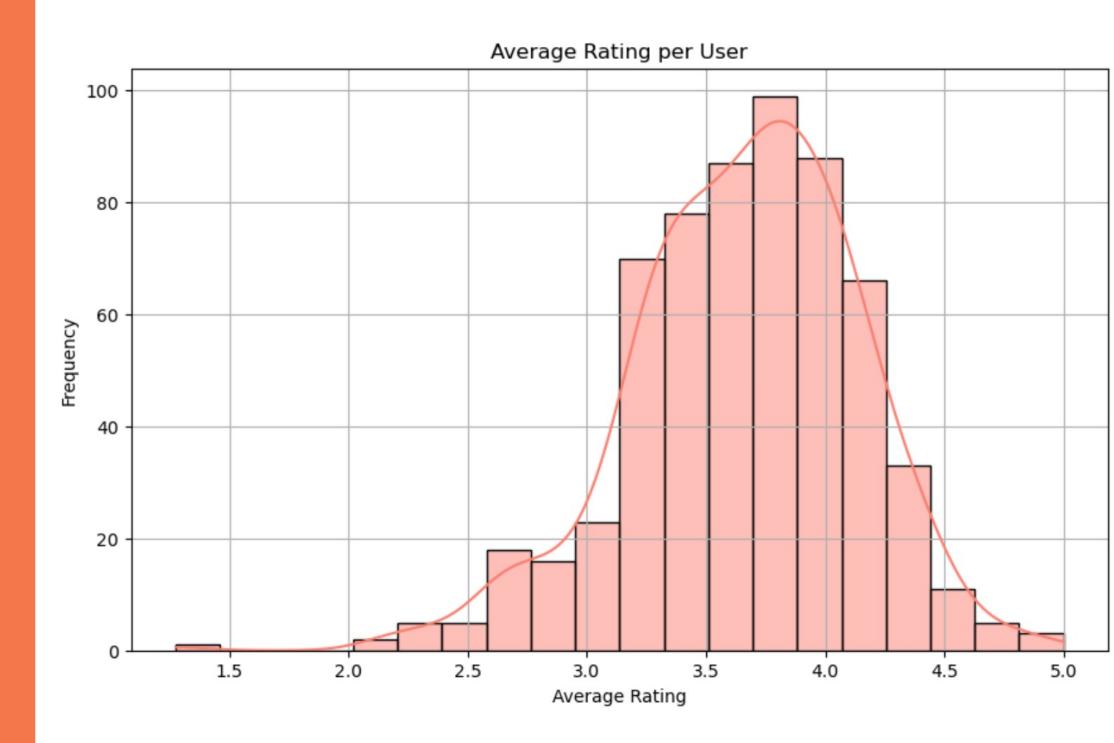
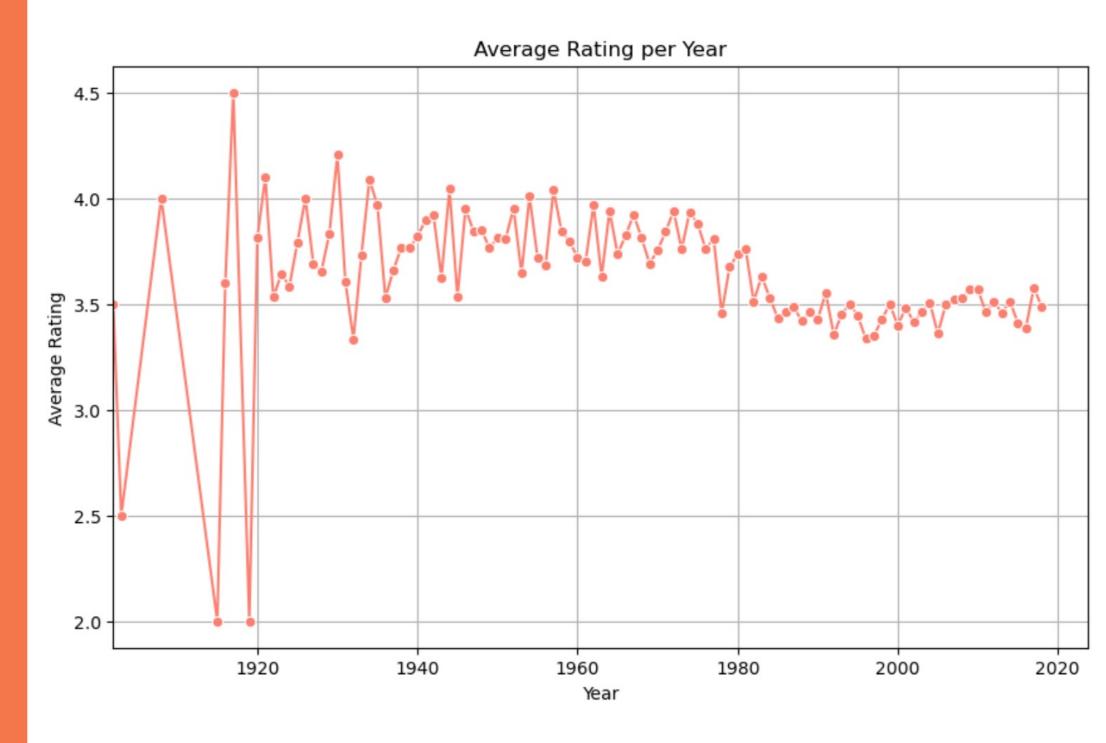Most users gave the movies ratings of between 3.5 and 4.0

Average Rating per Movie Year of release

Movies produced after 1980 seems to have generally lower ratings compared to movies produced before 1980
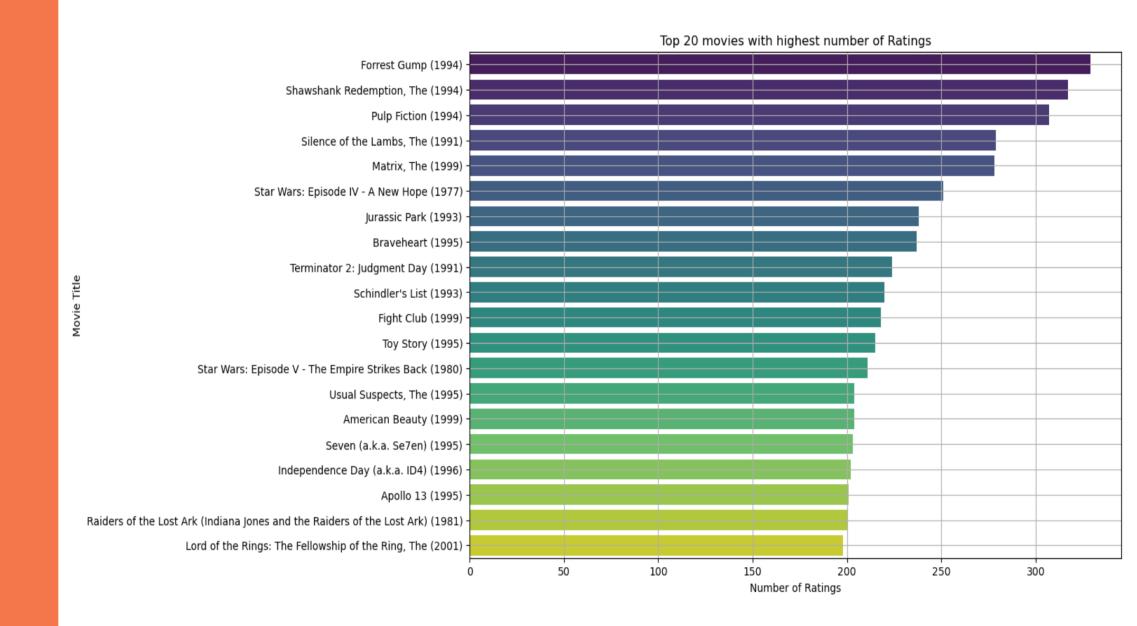

Average Rating per Year

Top 20 movies with the highest number of ratings

Movies with the highest number of ratings, were released in the 90s apart from Lord of the Rings: The Fellowship of the Ring (2001)
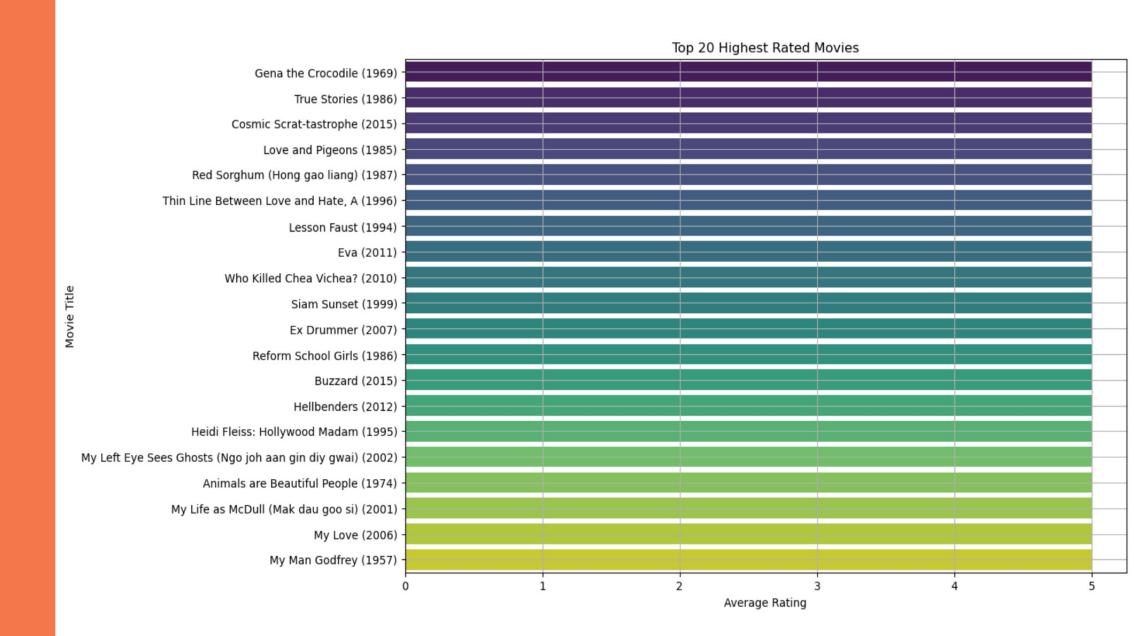

Top 20 movies with highest number of Ratings

Top 20 highest rated movies

All top 20 highest rated movies
had a rating of 5.0
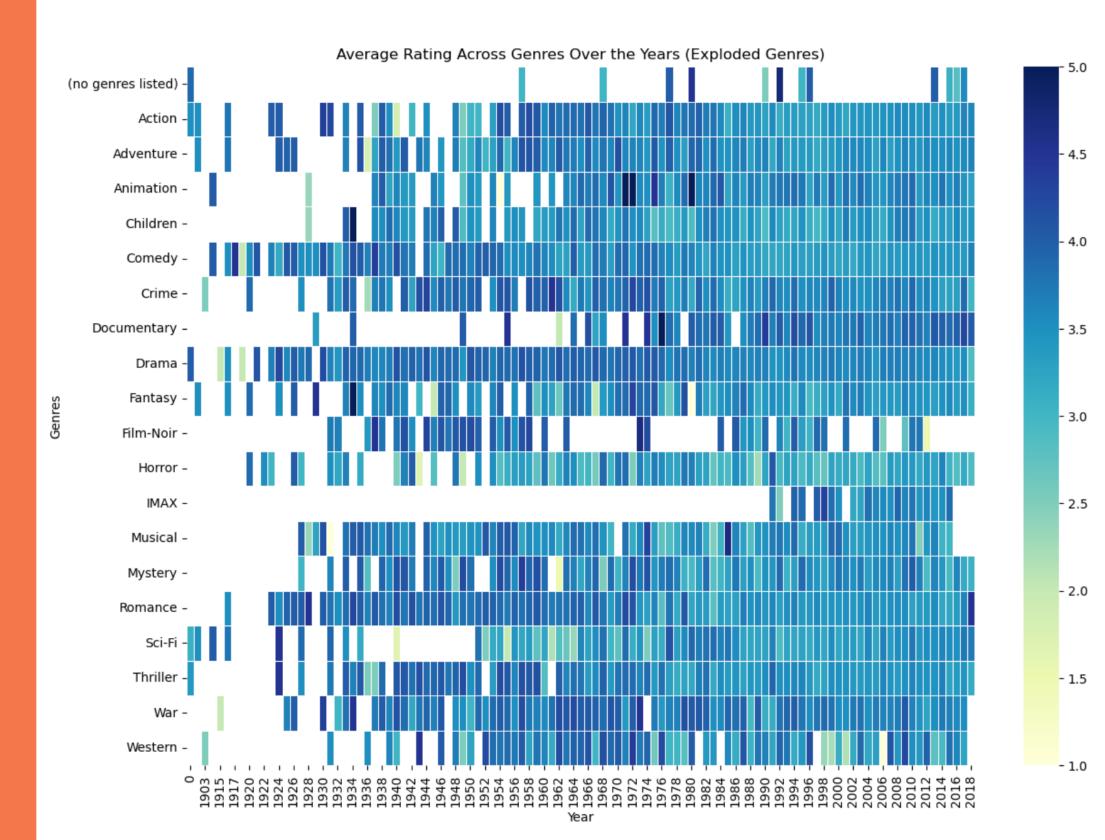

Top 20 Highest Rated Movies

Average Rating Across Genres Over the Years

Drama, comedy and musical received higher average ratings in early to mid-20th century. Animation and Fantasy have become popular in recent years. Genres like Documentary, Film-Noir have maintained consistently high ratings over time.

Average Rating Across Genres Over the Years (Exploded Genres)

MODEL

Baseline Model: KNN Basic
RMSE: `0.85`

- On average, the model's predictions for user ratings are approximately 0.8 point off (on a scale of 0.5-5.0)

Other Models: KNN with Means and SVD

- **SVD RMSE**: 0.85
- **Tuned SVD RSME**: 0.85
- **KNNWithMeans**: 0.67

Best Model: KNNBaseline

- Before Tuning: RMSE = `0.65`

- Tuned: RMSE RMSE: `0.60`

The KNNBaseline model successfully recommended top 5 movies for users.

The model has high accuracy of 85%, suggesting a best performing model.

Recommendations

- **Focus on showing common genres** such as Drama, comedy and Action and add less Documentary or Film-Noir movies

- **Collect More Data** on why the user rated the movie high or low. This will help to enhance user experience

- **Diversify the recommendation**: Provide a mix of popular and less well-known movies to keep users engaged.

- **Improve Customer Experience**: Showmax app improvement for better user experience

Personalized Marketing Campaigns: evelop personalized marketing campaigns based on the model insights to increase engagement and reduce churn rates.

Curated Content Lists: Create curated content lists based. For example, "Top Movies for Action Lovers"

Partnerships and Collaborations: Collaborate with content creators and influencers to promote exclusive content

Content Accessibility and Localization: Enhance content accessibility by providing subtitles, dubbing options for a broader audience.

Next Steps

Thank you

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