Capstone Project

NETFLIX MOVIES AND TV SHOWS CLUSTERING

Individual Project
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Presentation Overview

- Introduction
- Problem statement
- Data Information
- EDA & feature engineering
- Preparing Data for modeling
- Implementing Model
- Model summary
- Conclusion

Introduction

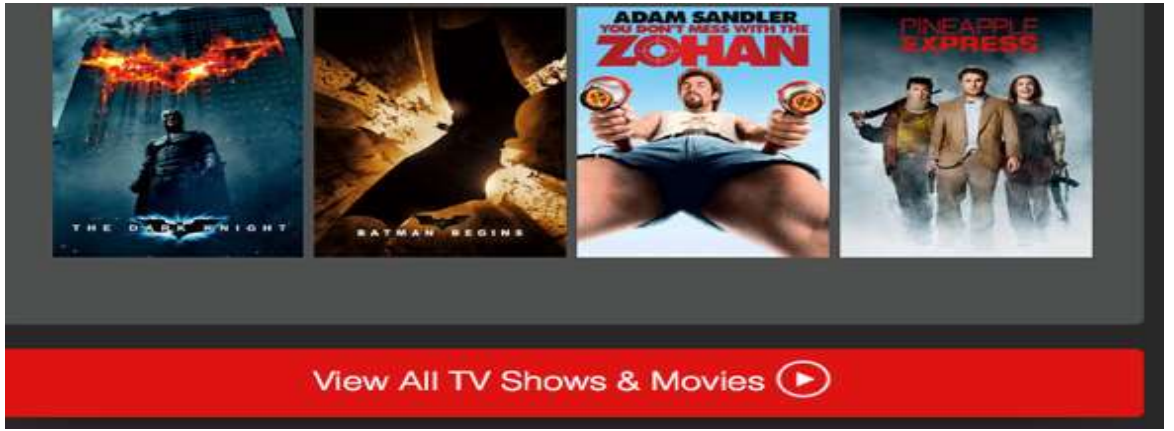
Netflix, Inc. is an American technology and media services provider and production company headquartered in Los Gatos, California. Netflix was founded in 1997 by Reed Hastings and Marc Randolph in Scotts Valley, California. The company's primary business is its subscription-based streaming service, which offers online streaming of a library of films and television series, including those produced in-house.

The dataset consists of details (title,director,cast,duration,rating etc..) of tv shows and movies available on Netflix as of 2019.

Problem statement

Objective: "Which movie will you like" given that you have seen 'The Dark night, Batman Begins, Pineapple express'?

How do we figure this out?



The idea of **Clustering** is to group the items together based on their attributes. The accuracy of predictions about how much someone is going to love a movie based on their movie preferences.

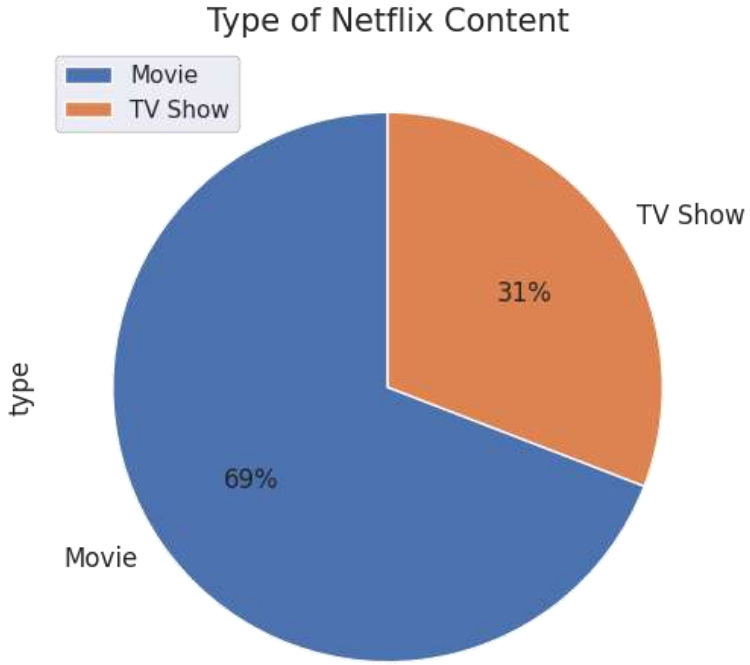
Data Information

- **show_id** : Unique ID for every Movie / Tv Show
- **type** : Identifier - A Movie or TV Show
- **title** : Title of the Movie / Tv Show
- **director** : Director of the Movie
- **cast** : Actors involved in the movie / show
- **country** : Country where the movie / show was produced
- **date_added** : Date it was added on Netflix
- **release_year** : Actual Release year of the movie / show
- **rating** : TV Rating of the movie / show
- **duration** : Total Duration - in minutes or number of seasons
- **listed_in** : Genre
- **Description** : The Summary description

EDA

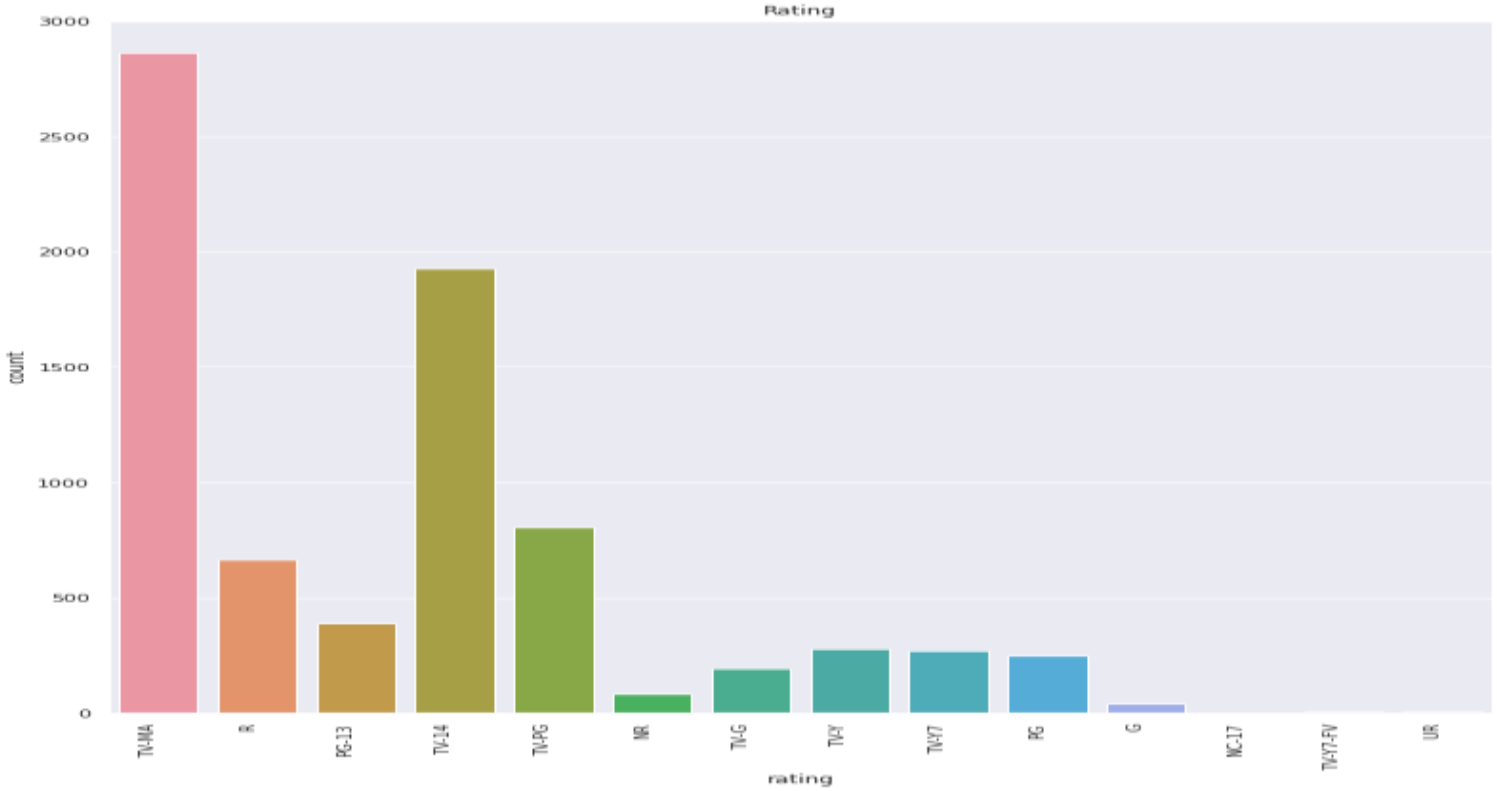
- Distribution of Type

So there are about 4,000+ movies and almost 2,000 TV shows, with movies being the majority. There are far more movie titles (69%) that TV shows titles (31%) in terms of title.



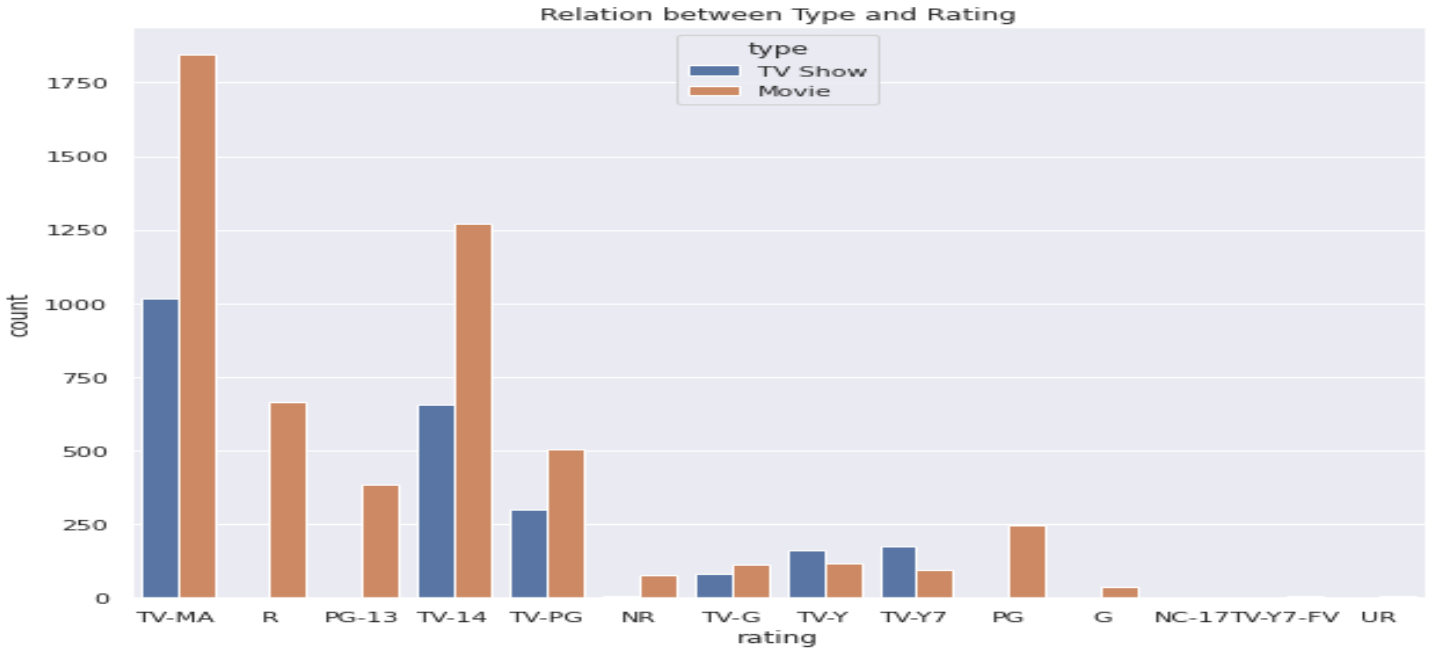
EDA

- **Rating of shows and movies**



EDA

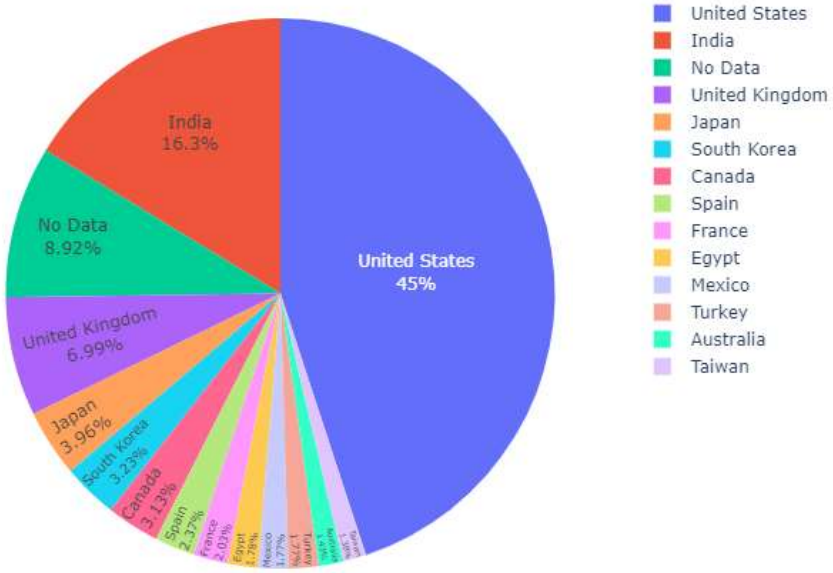
- **Relation between Type and Rating**



EDA

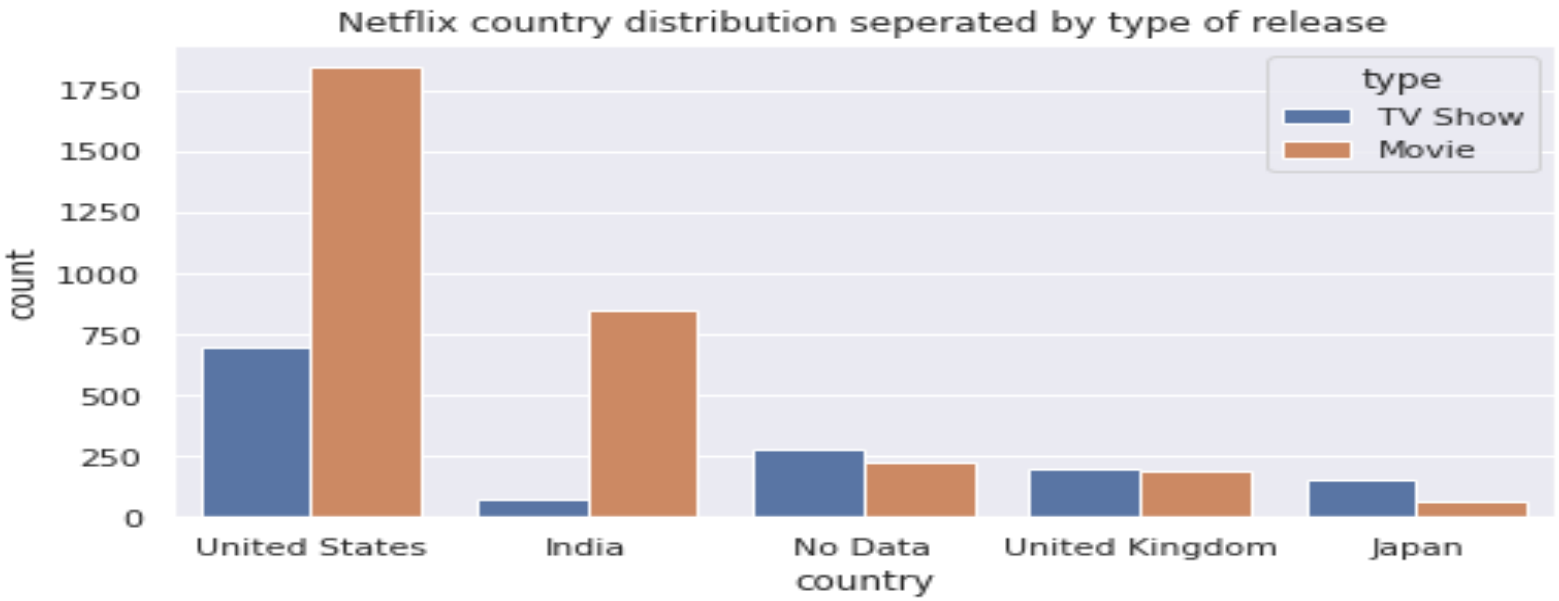
- **Country-wise Content Production**

The majority of the content providers are in the above top-ten countries. Among which USA, India, and UK create more than half of the tv shows and movies on the platform.



EDA

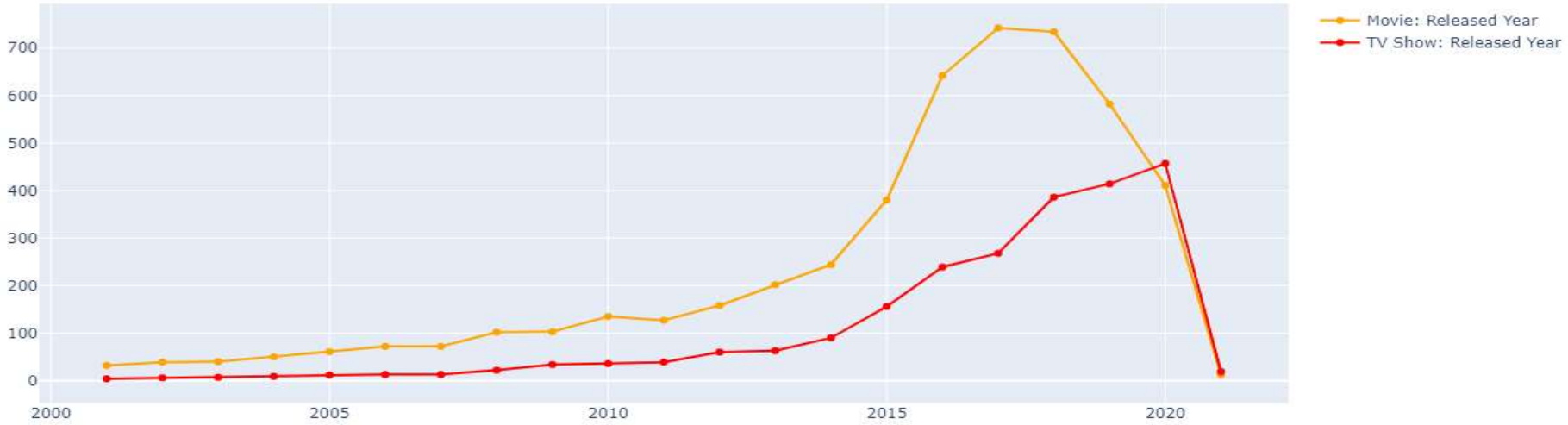
- Top 5 countries separated by type of release



EDA

- **Content released over the years**

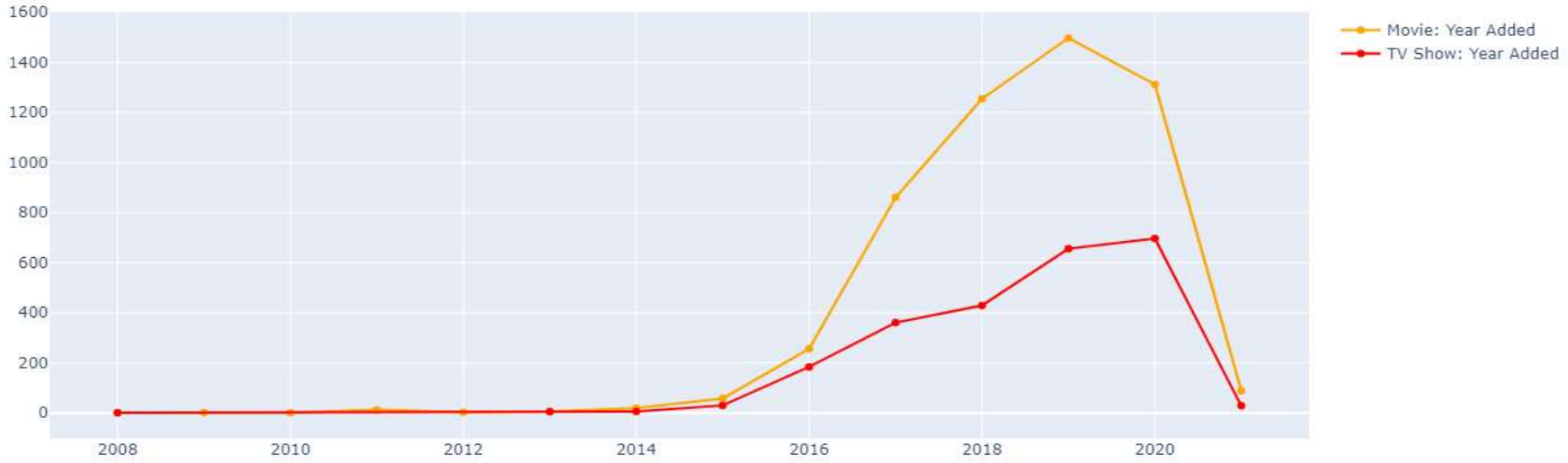
Maximum movies are released in 2017.



EDA

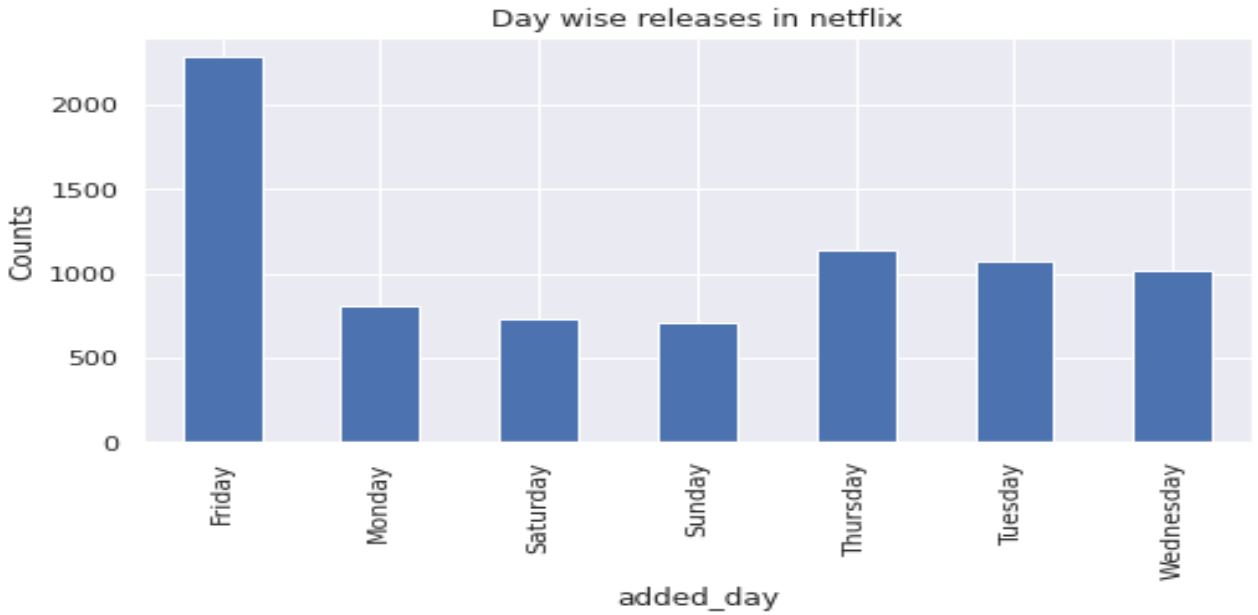
- **Content added over the years**

From 2016 we can see a noticeable addition in the number of movies and tv shows uploaded by Netflix on its platform.



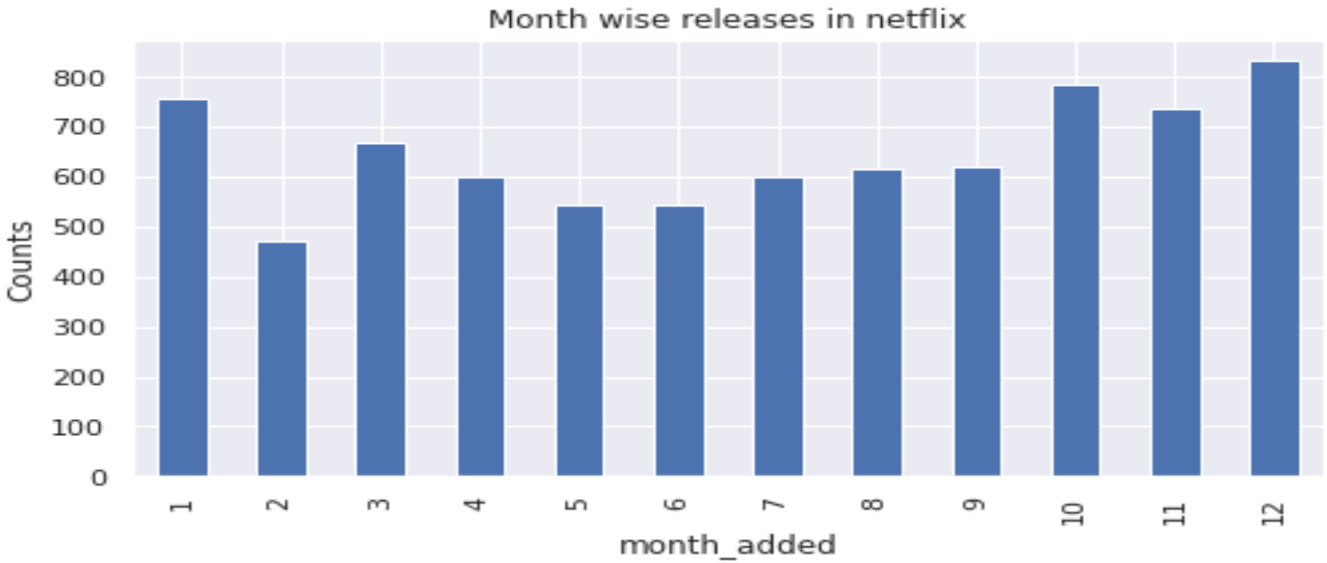
EDA

- **Day wise addition of movies and shows to the platform**



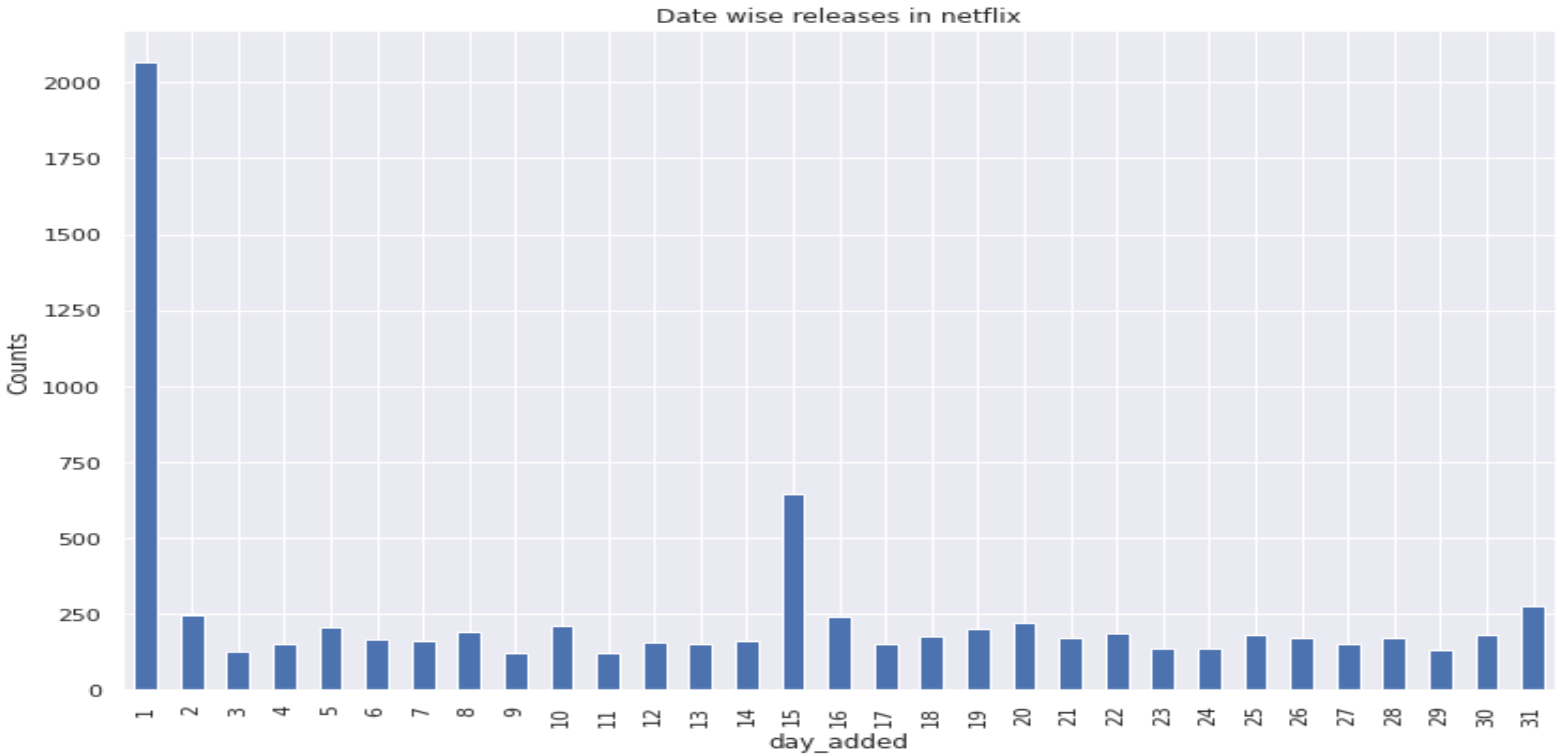
EDA

- **Month wise addition of movies and shows to the platform**



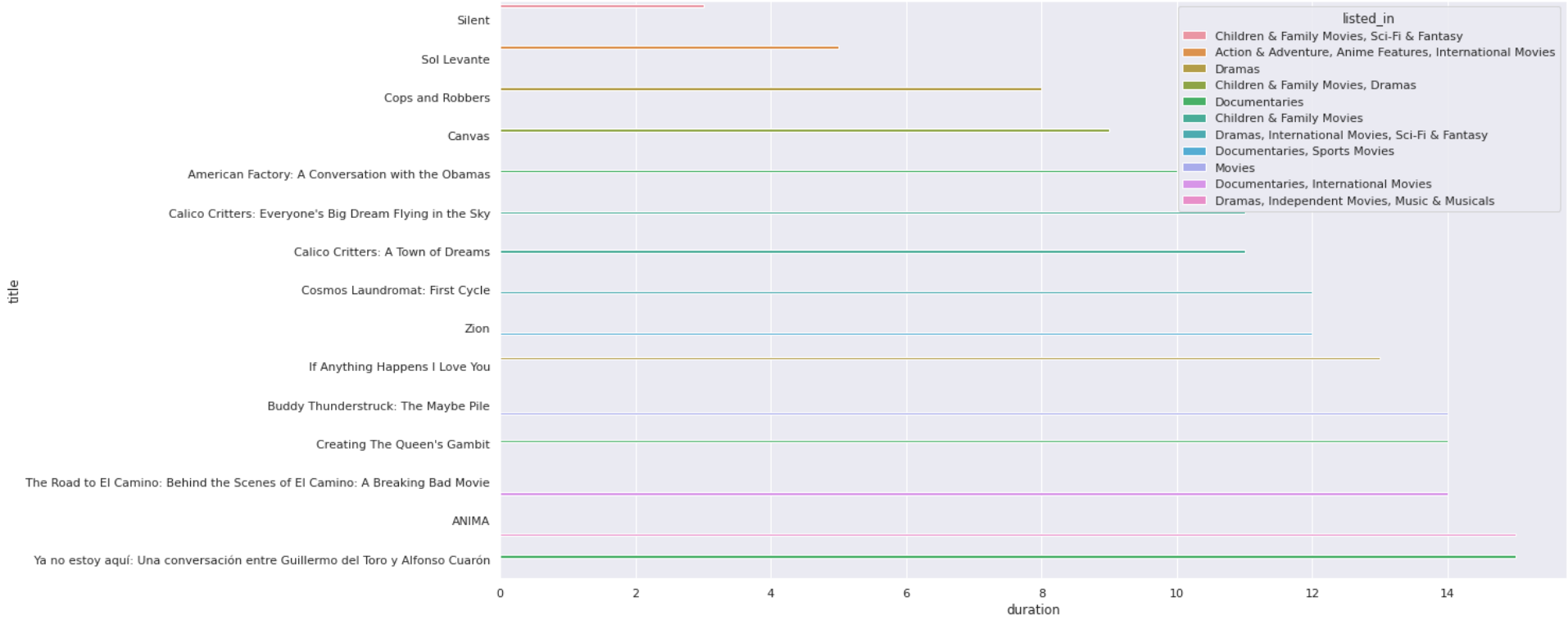
EDA

- **Date wise addition of movies and shows to the platform**



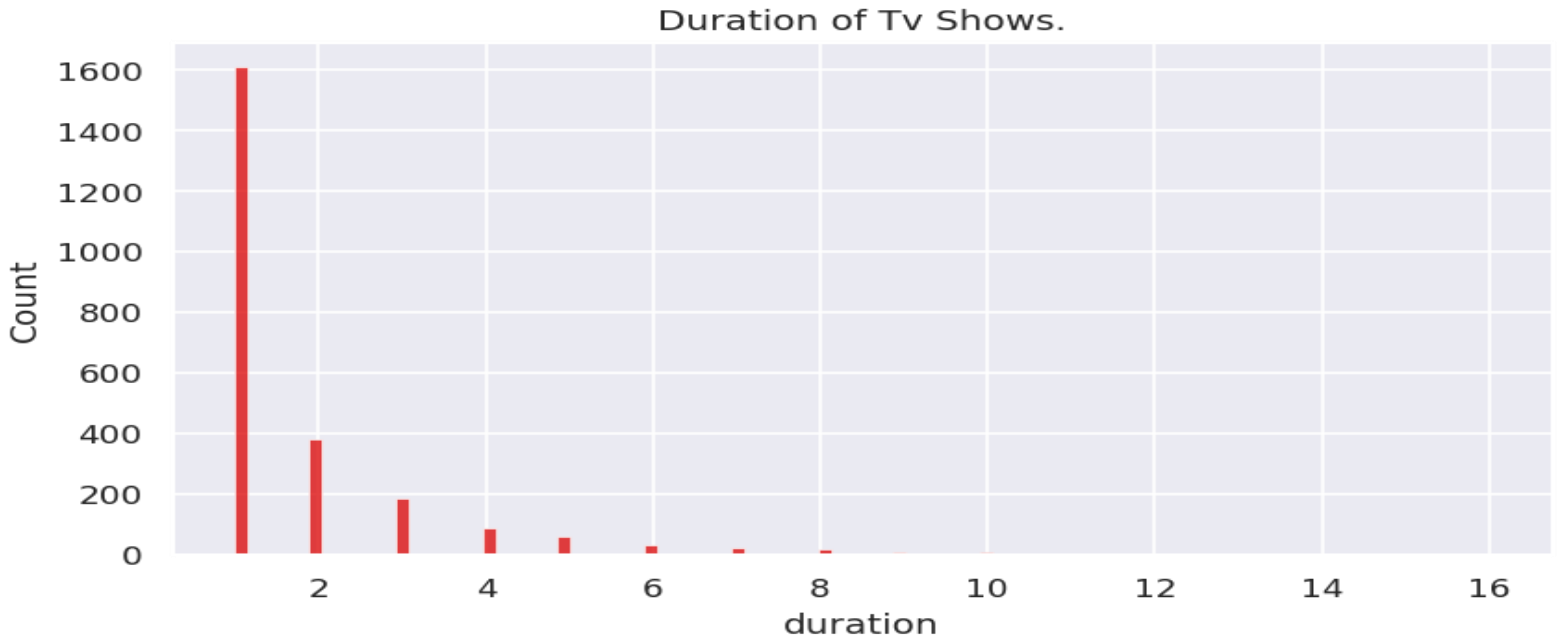
EDA

- **Movies that take less amount of time**



EDA

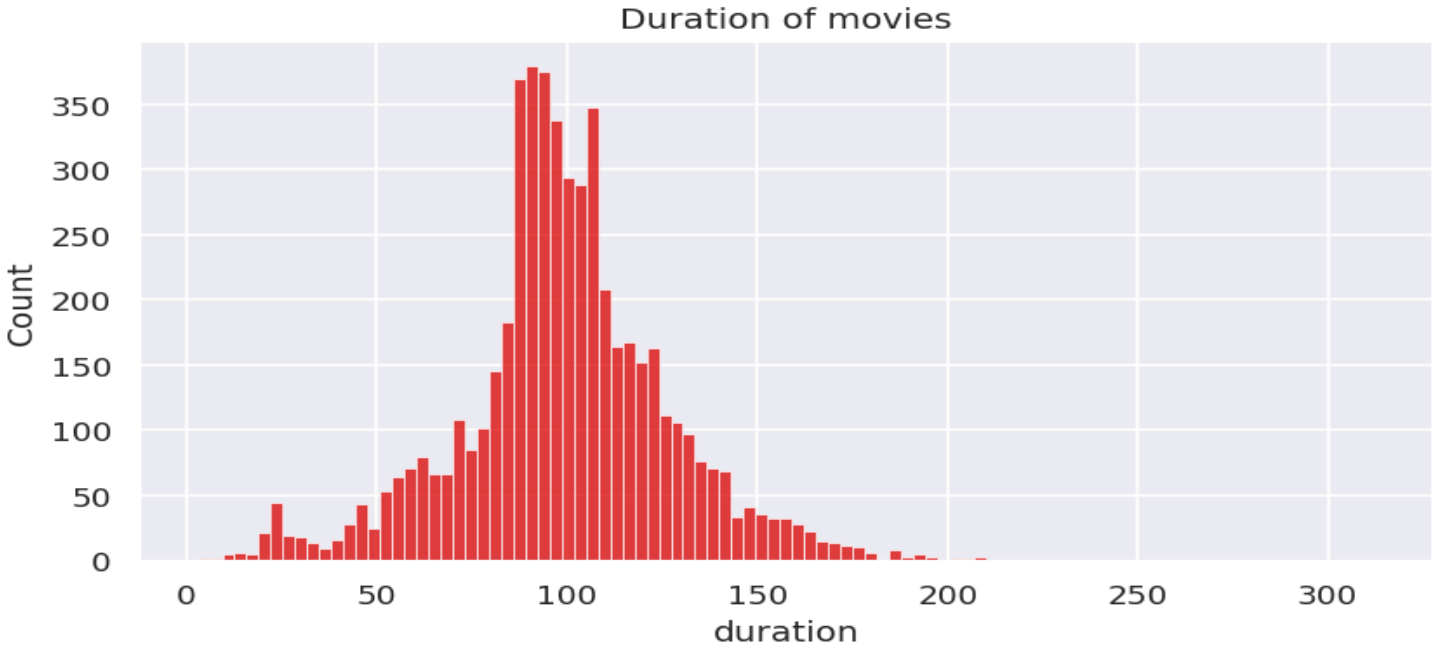
- **Duration of Tv Shows**



Most of the Tv Shows last for 1 or 2 seasons

EDA

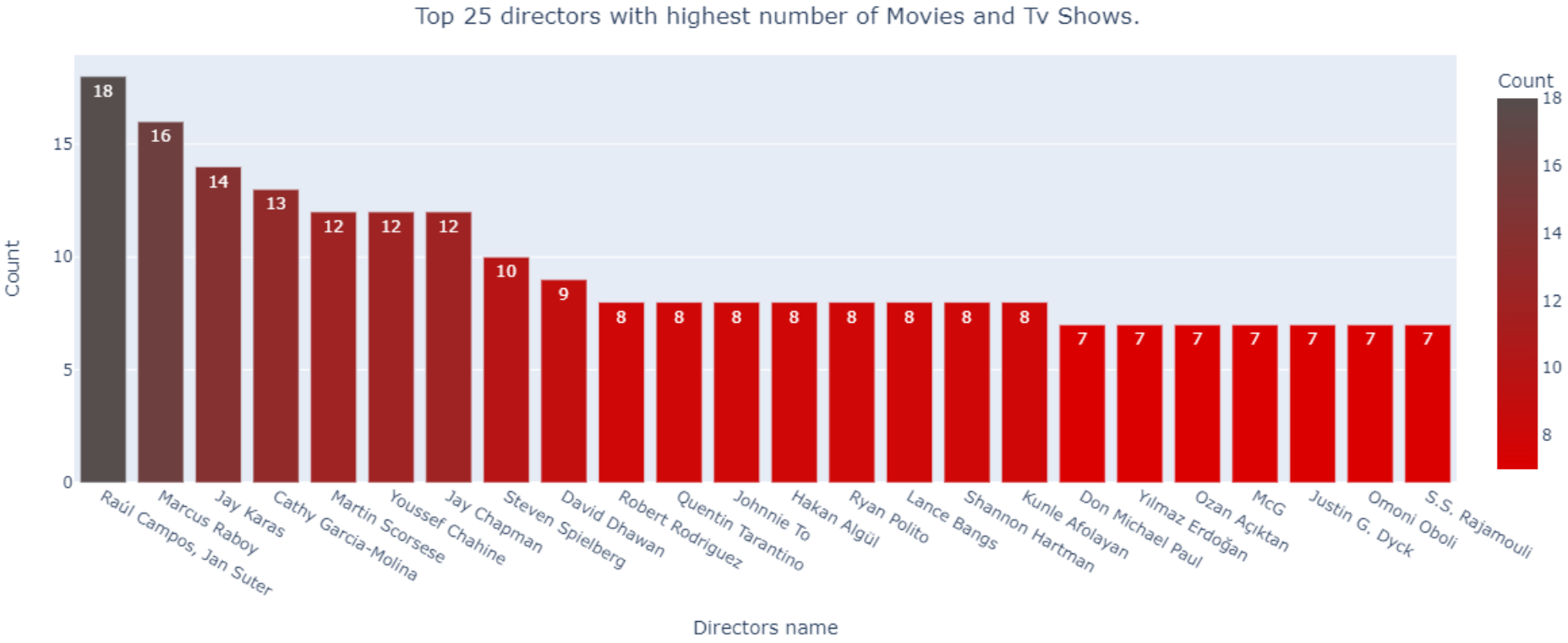
- **Duration of movies**



Most of the movies last for **90** to **120** minutes.

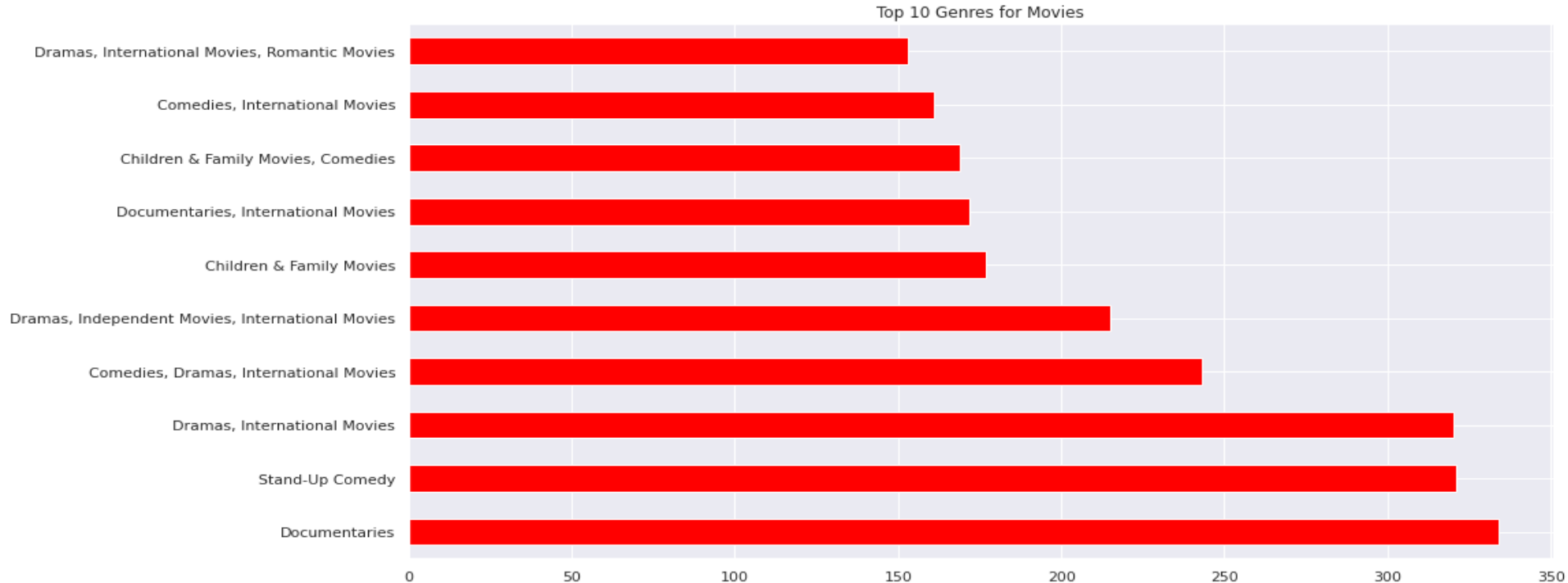
EDA

- **Top 25 directors**



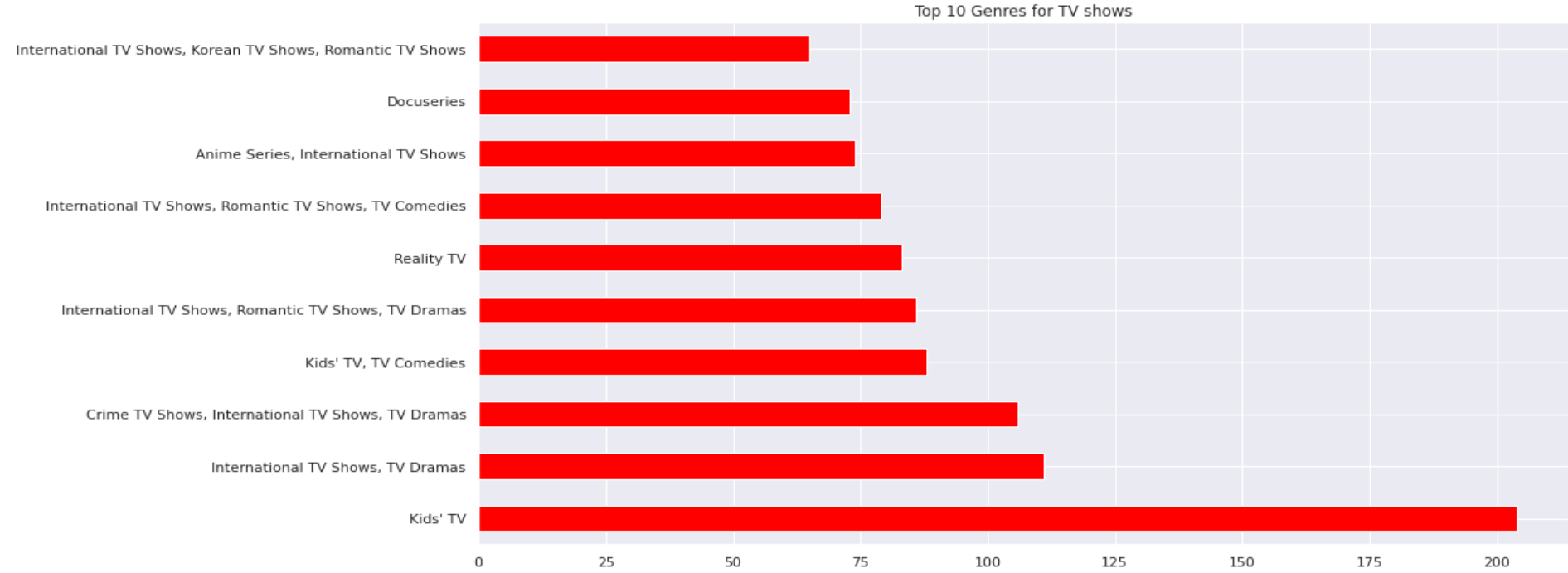
EDA

- **Genres for Movies**



EDA

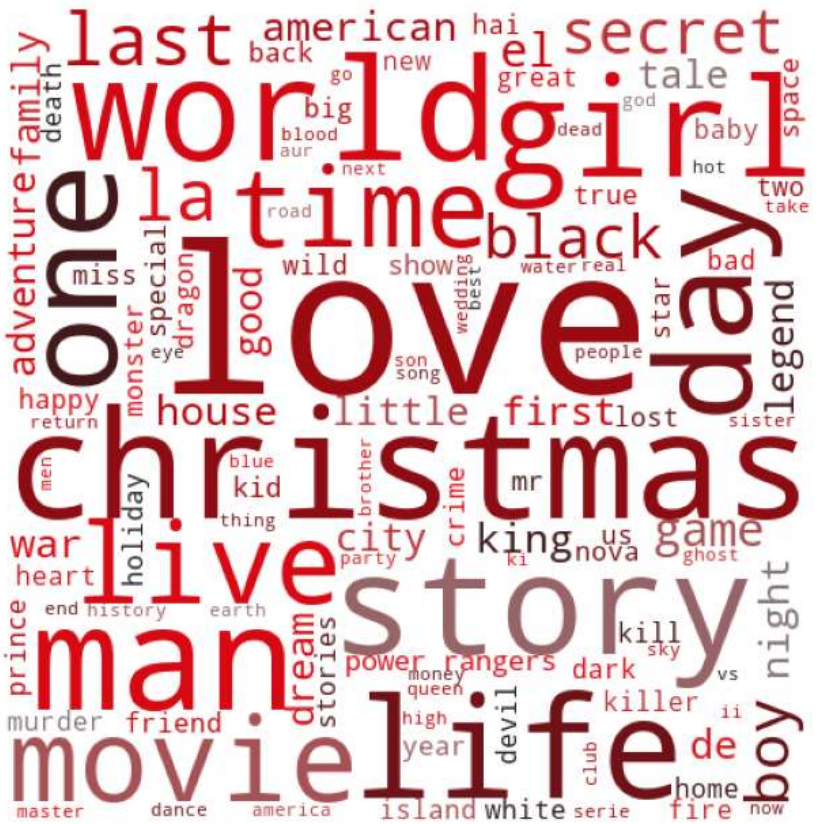
- **Genres for TV shows**



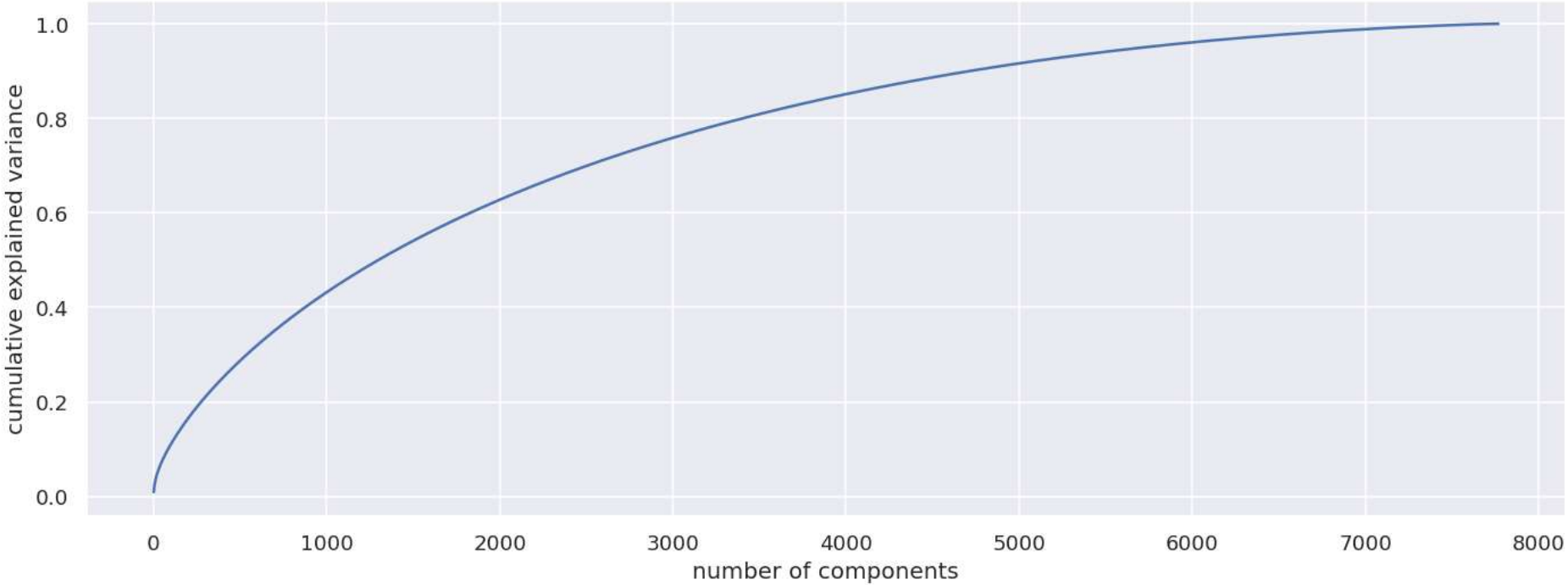
EDA

- Most used words in title

Most repeated words in title include Christmas, Love, World, Man, and Story.
We saw that most of the movies and tv shows got added during the winters, which tells why Christmas appeared many times in the titles.



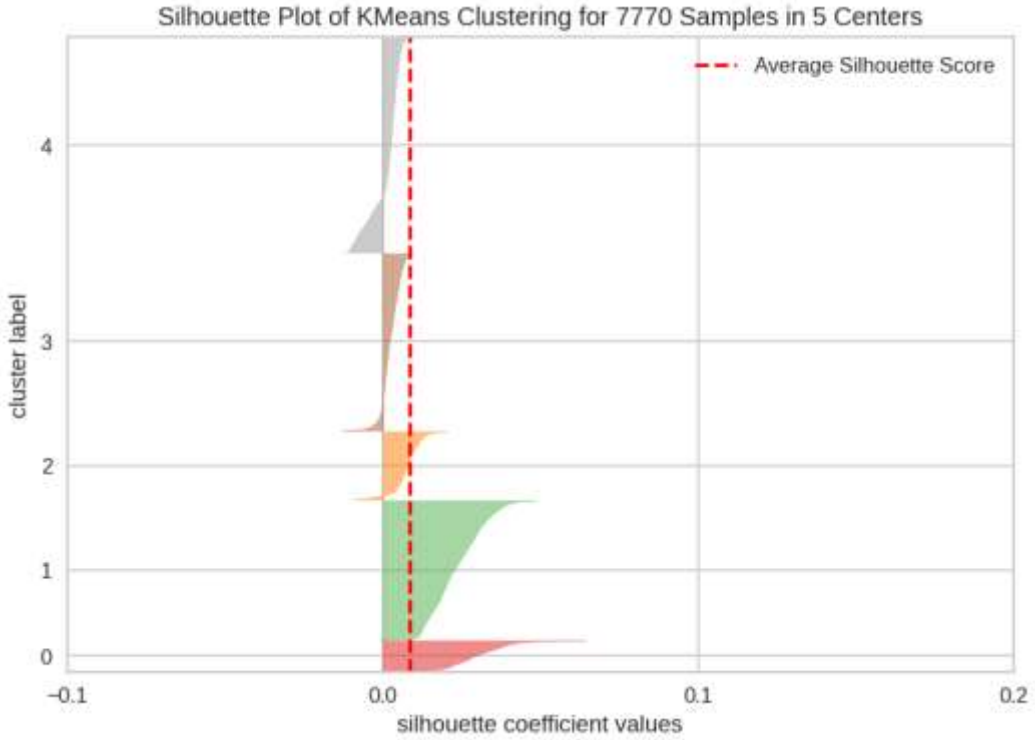
Dimensionality Reduction



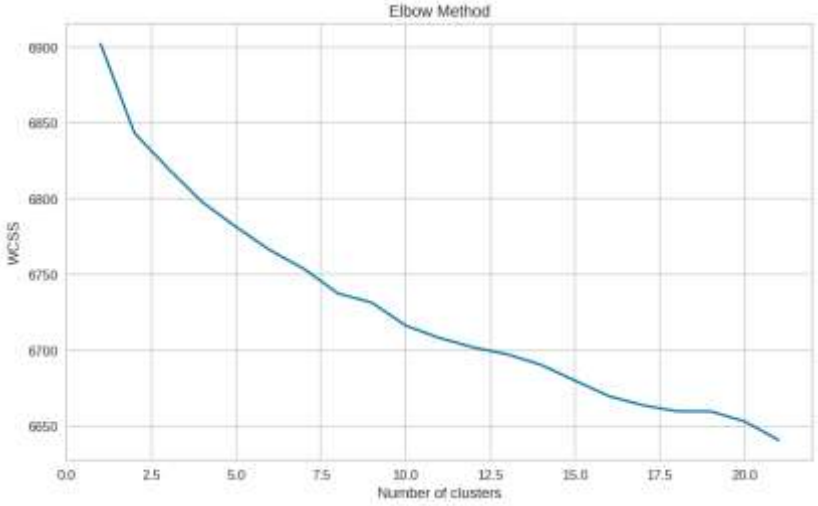
- We can see from the above plot almost 90% of the variance can be explained by 5000 components. Since choosing 5000 could be tricky we will set the value to be 90% in sklearn.

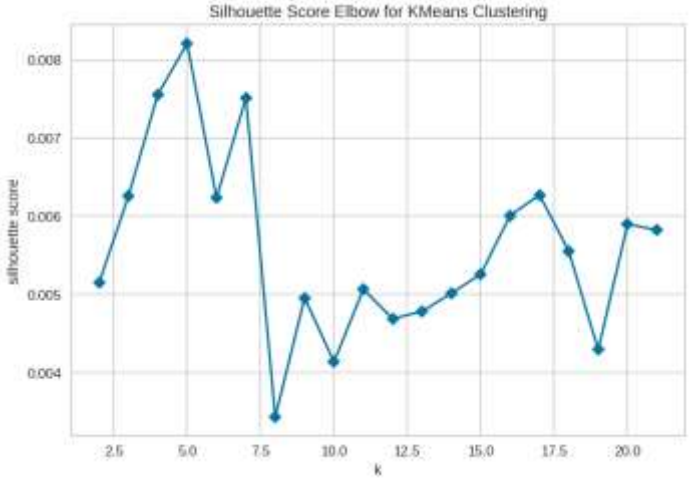
K-Means Clustering with Silhouette

- For n_clusters = 5, silhouette score is 0.008454005808543896



K-Means Clustering with Elbow method



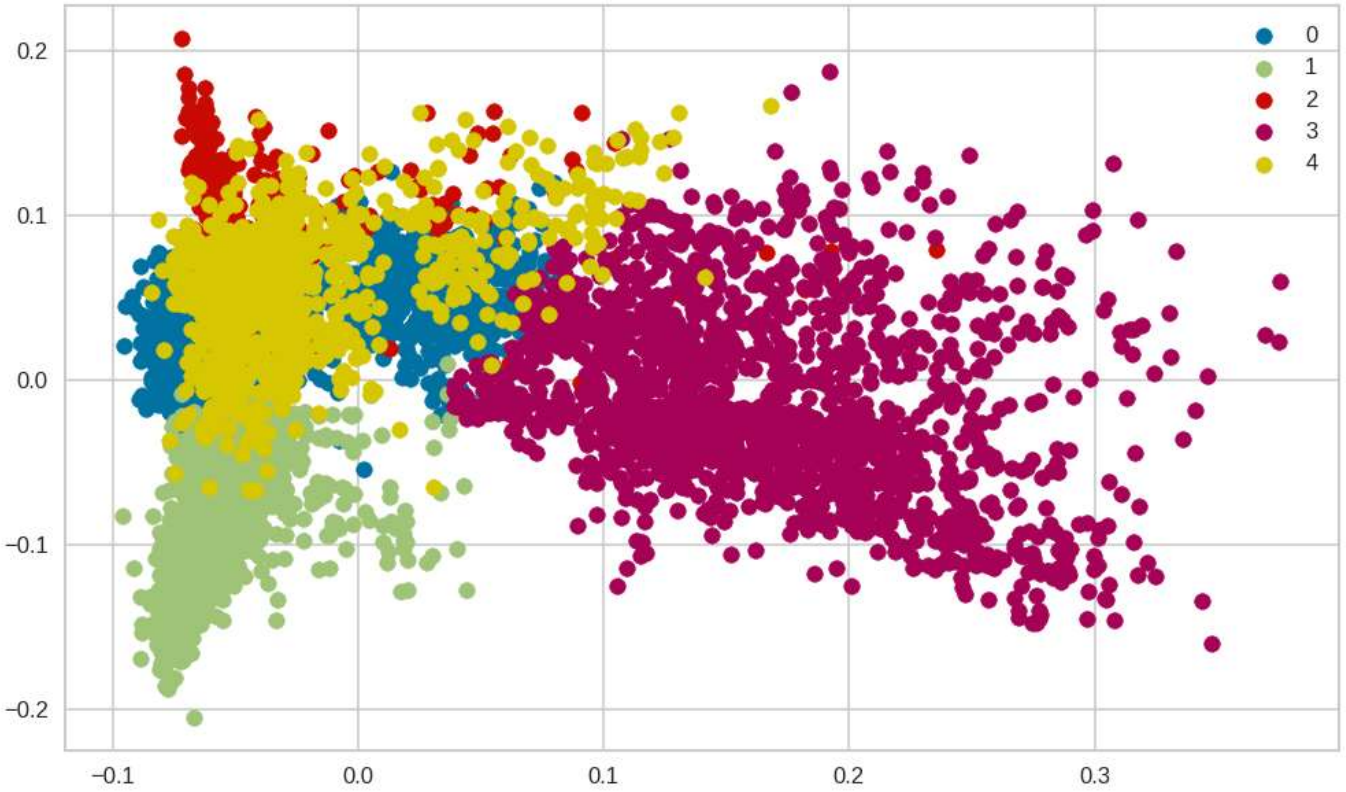


Hyper parameter

{ n_clusters=[2,22], init='k-means++',
max_iter=300, n_init=10
random_state=0}

Clustering

Hyper parameter
{n_clusters=5, init= 'k-means++', random_state=0}



Conclusion

- Nearly 70 percent are movies and 30 percent are TV Shows
- After 2016 Movies and Tv Shows added maximum
- There are two different type of time durations for Movies it's in minutes and for TV Shows it's in season
- Maximum movies are in the range of 90 to 120 minutes
- Most of the **children**, **sci-fi** & **Fantasy** movies and **documentaries** take less amount of time
- K-Means Clustering with Silhouette gives the highest score of 82% for number of clusters 5

THANK YOU