EDA_On_Netflix_Data

June 19, 2023

1 Problem Statements: EDA on Netflix Data

1.1 Description:

- **Netflix is an American subscription video on-demand over-the-top streaming television service owned and operated by Netflix, Inc., a company based in Los Gatos, California. It offers films and television series from various genres and it is available in multiple languages.**
- **Netflix was founded in 1997 by Reed Hastings and Marc Randolph. The company started as a DVD-by-mail service, but it soon transitioned to streaming video. Netflix is one of the most popular streaming services in the world, with over 222 million subscribers in over 190 countries.**
- **Netflix is a subscription service, which means that users pay a monthly fee to access the content. There are three different subscription plans available: Basic, Standard, and Premium. The Basic plan allows users to watch on one screen at a time, the Standard plan allows users to watch on two screens at a time, and the Premium plan allows users to watch on four screens at a time.**
- **Netflix is available on a variety of devices, including smartphones, tablets, computers, and smart TVs. The service can also be streamed through a variety of streaming devices, such as Roku, Amazon Fire TV, and Apple TV.**
- **Netflix is a popular streaming service with a wide variety of content. The company is constantly adding new content, and it is a great way to watch movies and TV shows. If you are looking for a streaming service, Netflix is a great option.**

2 1.0 Importing Library

[ ]:
```
import pandas as pd
import numpy as np
import matplotlib
import matplotlib.pyplot as plt
import seaborn as sns
```

3 2.0 Load The DataSet

[ ]:
```
netflix_df=pd.read_csv("netflix_titles.csv")
netflix_df.head()
```

[ ]:
```
  show_id     type  title           director  \
0      s1  TV Show     3%                NaN
1      s2    Movie   7:19  Jorge Michel Grau
2      s3    Movie  23:59       Gilbert Chan
3      s4    Movie      9        Shane Acker
4      s5    Movie     21     Robert Luketic

                                                cast        country  \
0  João Miguel, Bianca Comparato, Michel Gomes, R…         Brazil
1  Demián Bichir, Héctor Bonilla, Oscar Serrano, …         Mexico
2  Tedd Chan, Stella Chung, Henley Hii, Lawrence …      Singapore
3  Elijah Wood, John C. Reilly, Jennifer Connelly…  United States
4  Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar…  United States

          date_added  release_year rating   duration  \
0    August 14, 2020          2020  TV-MA  4 Seasons
1  December 23, 2016          2016  TV-MA     93 min
2  December 20, 2018          2011      R     78 min
3  November 16, 2017          2009  PG-13     80 min
4    January 1, 2020          2008  PG-13    123 min

                                           listed_in  \
0  International TV Shows, TV Dramas, TV Sci-Fi &…
1                       Dramas, International Movies
2                Horror Movies, International Movies
3  Action & Adventure, Independent Movies, Sci-Fi…
4                                             Dramas

                                         description
0  In a future where the elite inhabit an island …
1  After a devastating earthquake hits Mexico Cit…
2  When an army recruit is found dead, his fellow…
3  In a postapocalyptic world, rag-doll robots hi…
4  A brilliant group of students become card-coun…
```

3.1 2.1 Datasets Summary:

The dataset was created by scraping the Netflix website. The data is updated regularly.

Here is a brief explanation of the dataset:

- **show_id:** The Netflix ID is a unique identifier for each title on Netflix.
- **title:** The title is the name of the show or movie.

- **type:** The type of title indicates whether the title is a movie, TV show, stand-up special, etc.
- **country:** The country indicates the country in which the title is available.
- **release_date:** The release_date indicates the date the title was released on Netflix.
- **rating:** The rating indicates the Netflix rating for the title.
- **genres:** The genres indicate the genres of the title.
- **description:** The description is a brief description of the title.
- **director:** The director is the director of the title.
- **cast:** The cast is the cast of the title.
- **duration:** The duration indicates the duration of the title in minutes.
- **listed_in:** The listed_in indicates the categories in which the title is listed.
- **language:** The language indicates the language of the title.
- This dataset can be used to explore the content available on Netflix. It can also be used to identify trends in Netflix content.

4 3.0 Data Exploration

[ ]:

```
netflix_df.shape
```

[ ]:

```
(7787, 12)
```

- In this DataSet 7787 observation and 12 Features

[ ]:

```
netflix_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7787 entries, 0 to 7786
Data columns (total 12 columns):
 #   Column        Non-Null Count  Dtype 
---  ------        --------------  ----- 
 0   show_id       7787 non-null   object
 1   type          7787 non-null   object
 2   title         7787 non-null   object
 3   director      5398 non-null   object
 4   cast          7069 non-null   object
 5   country       7280 non-null   object
 6   date_added    7777 non-null   object
 7   release_year  7787 non-null   int64 
 8   rating        7780 non-null   object
 9   duration      7787 non-null   object
 10  listed_in     7787 non-null   object
 11  description   7787 non-null   object
```

```
dtypes: int64(1), object(11)
memory usage: 730.2+ KB
```

```
[ ]: netflix_df.columns
```

```
[ ]: Index(['show_id', 'type', 'title', 'director', 'cast', 'country', 'date_added',
            'release_year', 'rating', 'duration', 'listed_in', 'description'],
           dtype='object')
```

5 4.0 Data Cleaning

- Checking null value and handling

```
[ ]: netflix_df.isnull().sum()
```

```
[ ]: show_id            0
     type               0
     title              0
     director        2389
     cast             718
     country          507
     date_added        10
     release_year       0
     rating             7
     duration           0
     listed_in          0
     description        0
     dtype: int64
```

```
[ ]: netflix_df.director.fillna("No Director ",inplace=True)
     netflix_df.cast.fillna("No Cast",inplace=True)
     netflix_df.country.fillna("Country Unavailable",inplace=True)
```

```
[ ]: netflix_df.isnull().sum()
```

```
[ ]: show_id          0
     type             0
     title            0
     director         0
     cast             0
     country          0
     date_added      10
     release_year     0
     rating           7
     duration         0
     listed_in        0
     description      0
     dtype: int64
```

- date_added have 10 na so remove it

```
[ ]: netflix_df.dropna(subset=['date_added','rating'],inplace=True)
```

```
[ ]: netflix_df.isnull().sum()
```

```
[ ]: show_id         0
     type            0
     title           0
     director        0
     cast            0
     country         0
     date_added      0
     release_year    0
     rating          0
     duration        0
     listed_in       0
     description     0
     dtype: int64
```

- **Convert Date Time format**

```
[ ]: netflix_df["date_added"] = pd.to_datetime(netflix_df['date_added'])
     netflix_df['day_added'] = netflix_df['date_added'].dt.day
     netflix_df['year_added'] = netflix_df['date_added'].dt.year
     netflix_df['month_added']=netflix_df['date_added'].dt.month
     netflix_df['year_added'].astype(int);
     netflix_df['day_added'].astype(int);
```

```
[ ]: netflix_df.head()
```

```
[ ]:   show_id     type  title           director  \
     0      s1  TV Show     3%        No Director
     1      s2    Movie   7:19  Jorge Michel Grau
     2      s3    Movie  23:59       Gilbert Chan
     3      s4    Movie      9        Shane Acker
     4      s5    Movie     21     Robert Luketic

                                                     cast        country  \
     0  João Miguel, Bianca Comparato, Michel Gomes, R…         Brazil
     1  Demián Bichir, Héctor Bonilla, Oscar Serrano, …         Mexico
     2  Tedd Chan, Stella Chung, Henley Hii, Lawrence …      Singapore
     3  Elijah Wood, John C. Reilly, Jennifer Connelly…  United States
     4  Jim Sturgess, Kevin Spacey, Kate Bosworth, Aar…  United States

       date_added  release_year rating   duration  \
     0 2020-08-14          2020  TV-MA  4 Seasons
     1 2016-12-23          2016  TV-MA     93 min
```

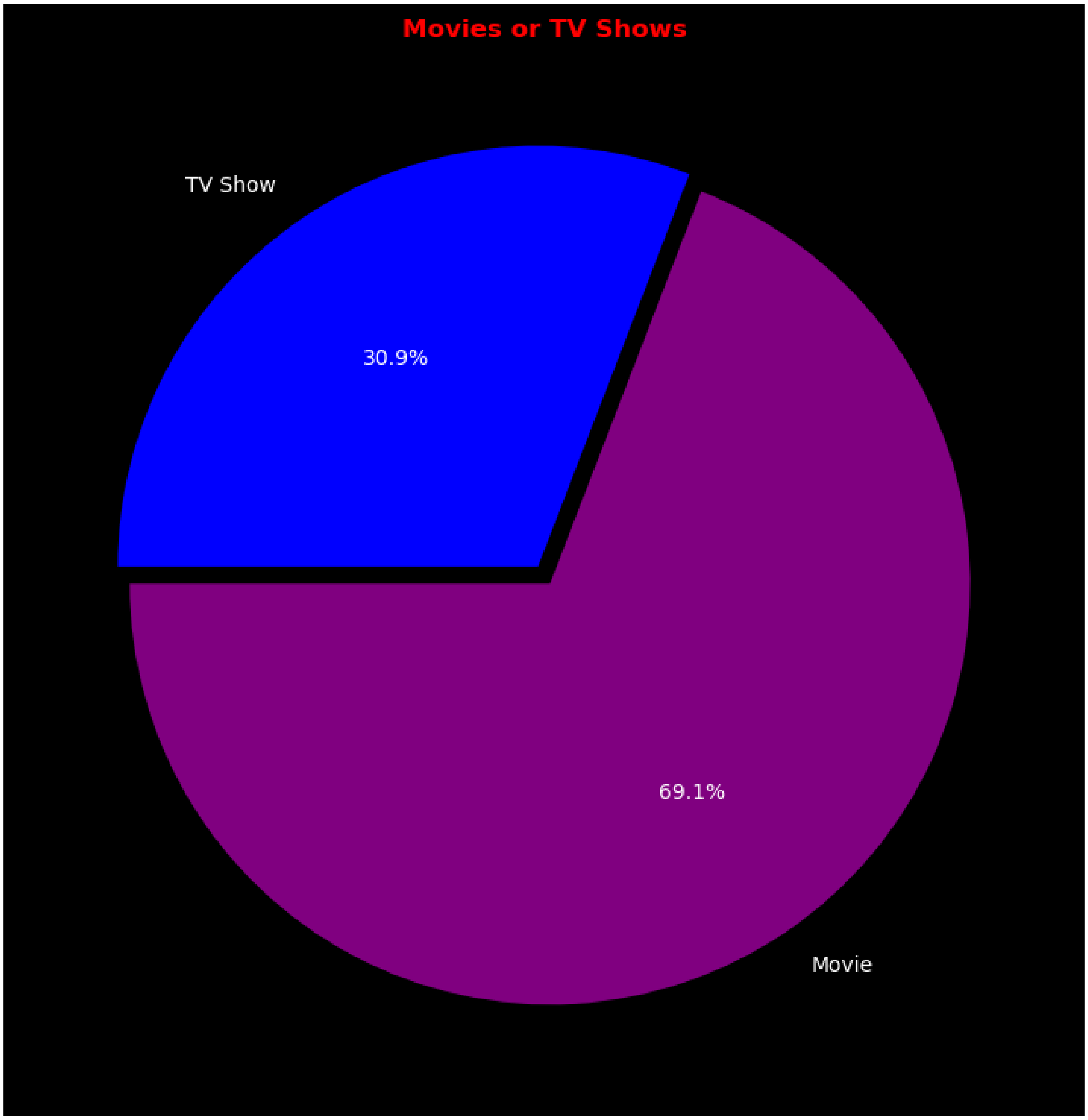
```
2 2018-12-20          2011      R     78 min
3 2017-11-16          2009  PG-13     80 min
4 2020-01-01          2008  PG-13    123 min

                                                  listed_in  \
0  International TV Shows, TV Dramas, TV Sci-Fi &…
1                            Dramas, International Movies
2                     Horror Movies, International Movies
3  Action & Adventure, Independent Movies, Sci-Fi…
4                                                   Dramas

                                                description  day_added  year_added  \
0  In a future where the elite inhabit an island …         14        2020
1  After a devastating earthquake hits Mexico Cit…         23        2016
2  When an army recruit is found dead, his fellow…         20        2018
3  In a postapocalyptic world, rag-doll robots hi…         16        2017
4  A brilliant group of students become card-coun…          1        2020

   month_added
0            8
1           12
2           12
3           11
4            1
```

6 5.0 Exploratory Analysis and Visualization

- **Type: Movie and TV Shows**

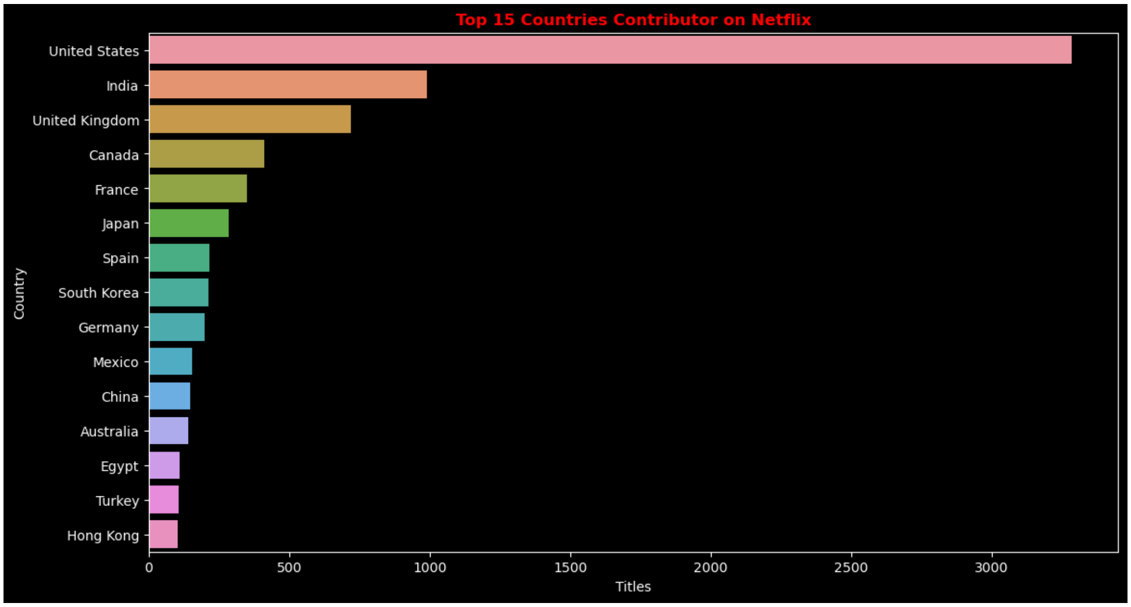
[ ]:

```
plt.style.use("dark_background")
plt.figure(figsize=(16,9))
plt.title("Movies or TV Shows",weight='bold',color='red')
p=plt.pie(netflix_df.type.value_counts(),explode=(0.025,0.
 ↪025),labels=netflix_df.type.value_counts().
 ↪index,colors=['purple','blue'],autopct='%1.1f%%',startangle=180)
plt.show()
```

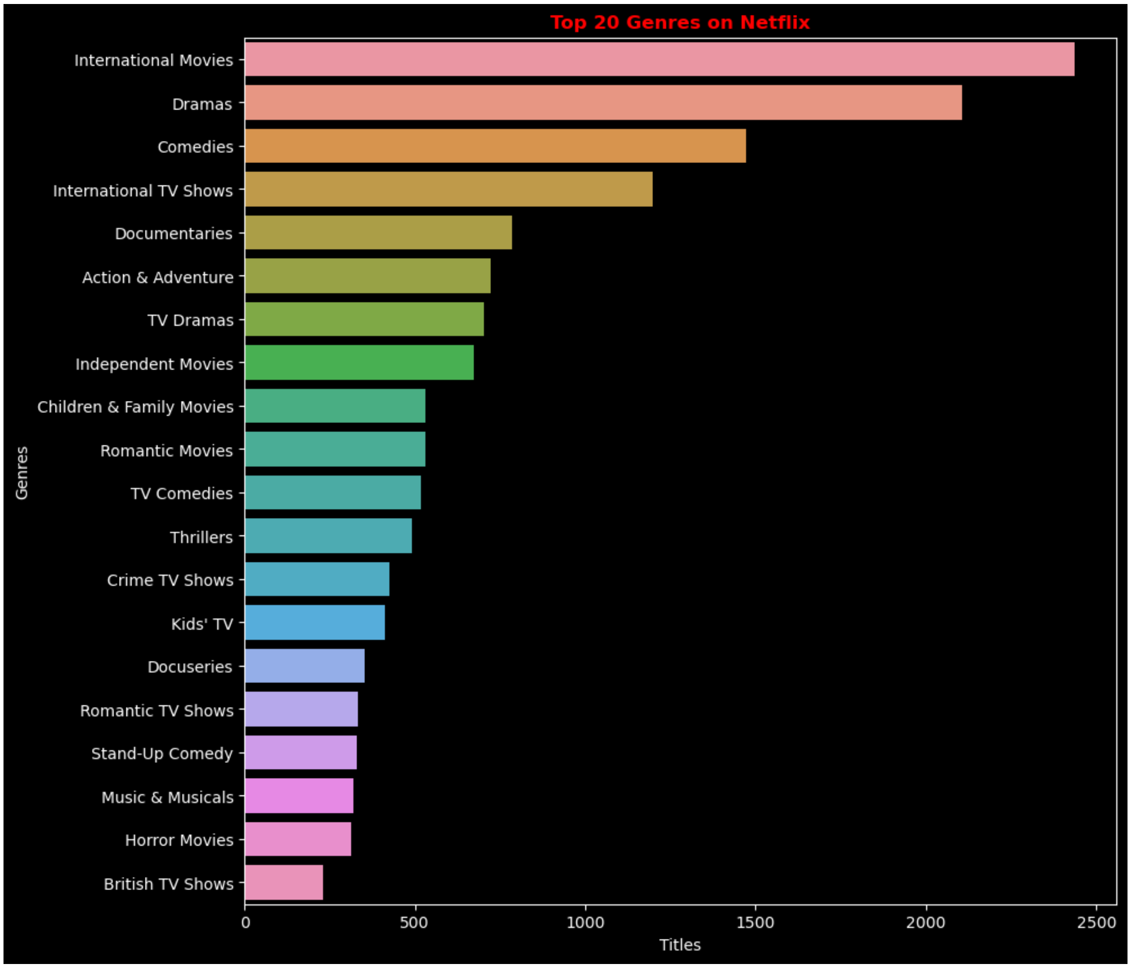


[ ]:

```python
# Countries by the Amount of the Produces Content

filtered_countries = netflix_df.set_index('title').country.str.split(', ', expand=True).stack().reset_index(level=1, drop=True)
filtered_countries = filtered_countries[filtered_countries != 'Country Unavailable']
plt.figure(figsize=(13, 7))
g = sns.countplot(y=filtered_countries,
                  order=filtered_countries.value_counts().index[:15])
plt.title('Top 15 Countries Contributor on Netflix',color='red',weight='bold')
plt.xlabel('Titles')
plt.ylabel('Country')
plt.show()
```

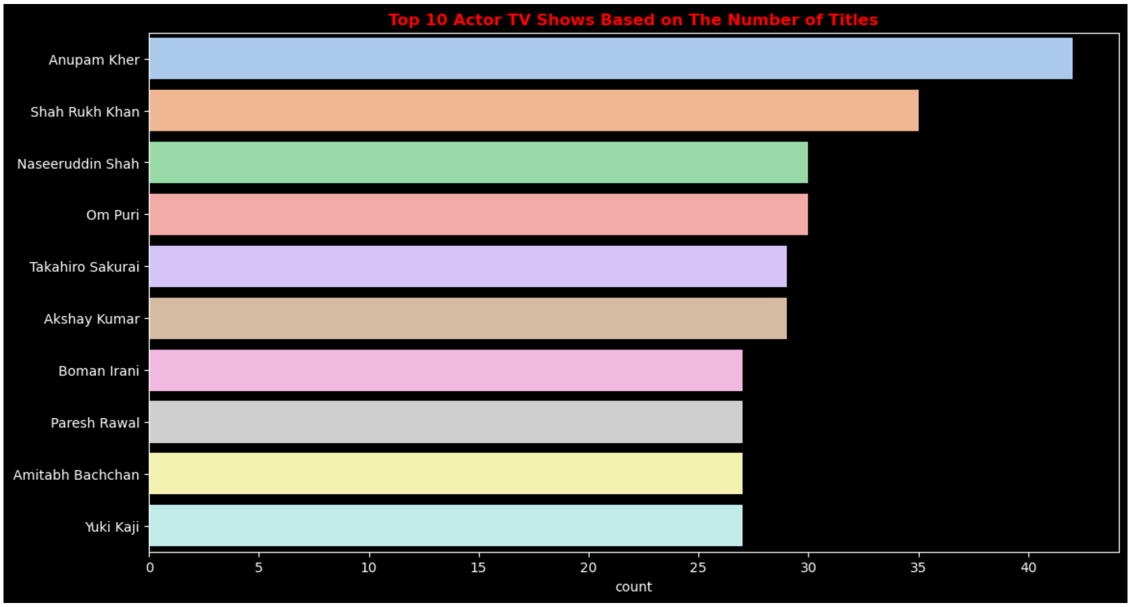


```
[ ]: # Top Genres on Netflix

filtered_genres = netflix_df.set_index('title').listed_in.str.split(', ',␣
 ↪expand=True).stack().reset_index(level=1, drop=True);
plt.figure(figsize=(10,10))
g = sns.countplot(y = filtered_genres, order=filtered_genres.value_counts().
 ↪index[:20])
plt.title('Top 20 Genres on Netflix',color='red',weight='bold')
plt.xlabel('Titles')
plt.ylabel('Genres')
plt.show()
```



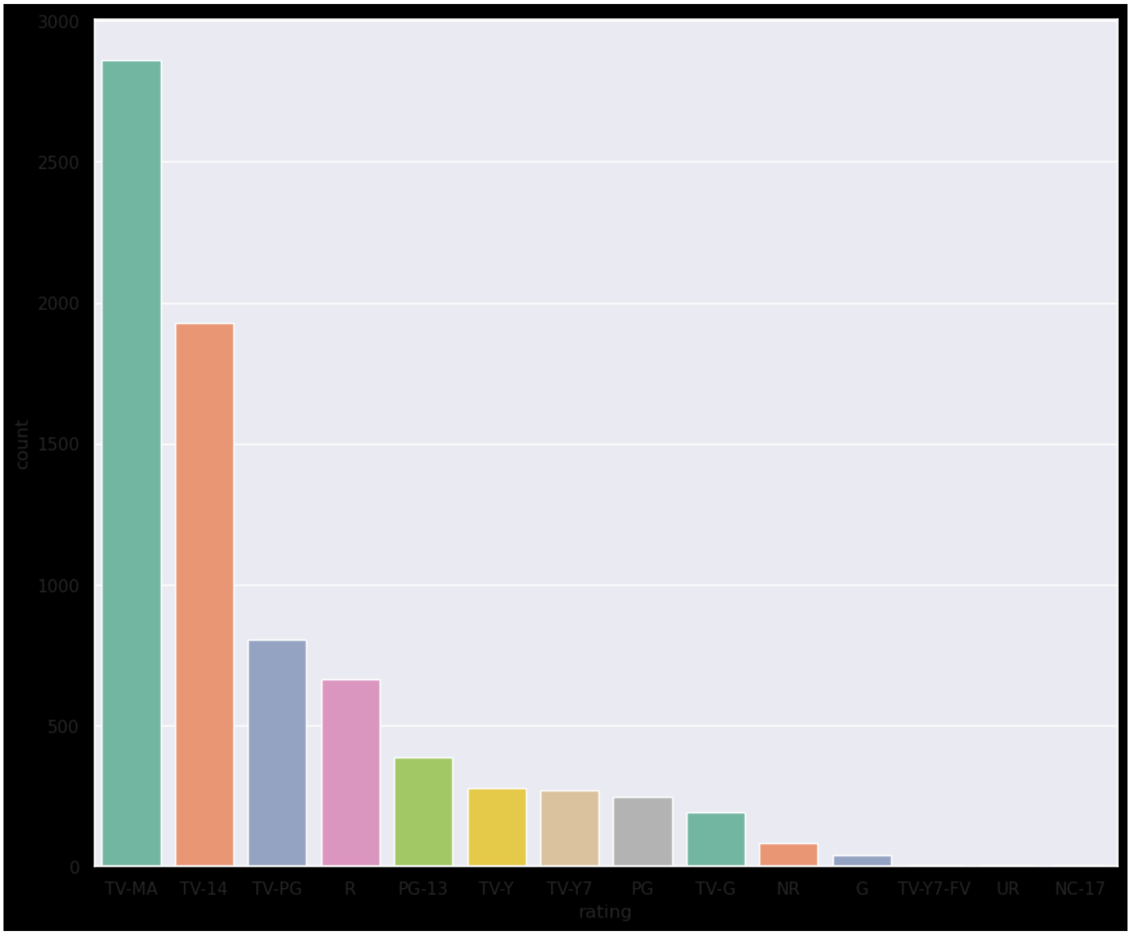
[ ]:

```
#  Top Actor on Netflix based on the number of titles

filtered_cast_shows = netflix_df[netflix_df.cast != 'No Cast'].
 ↪set_index('title').cast.str.split(', ', expand=True).stack().
 ↪reset_index(level=1, drop=True)
plt.figure(figsize=(13,7))
plt.title('Top 10 Actor TV Shows Based on The Number of␣
 ↪Titles',color='red',weight='bold')
sns.countplot(y = filtered_cast_shows, order=filtered_cast_shows.value_counts().
 ↪index[:10], palette='pastel')
plt.show()
```



[ ]:

```
plt.figure(figsize=(12,10))
sns.set(style="darkgrid")
ax = sns.countplot(x="rating", data=netflix_df, palette="Set2",
                   order=netflix_df['rating'].value_counts().index[0:15])
```

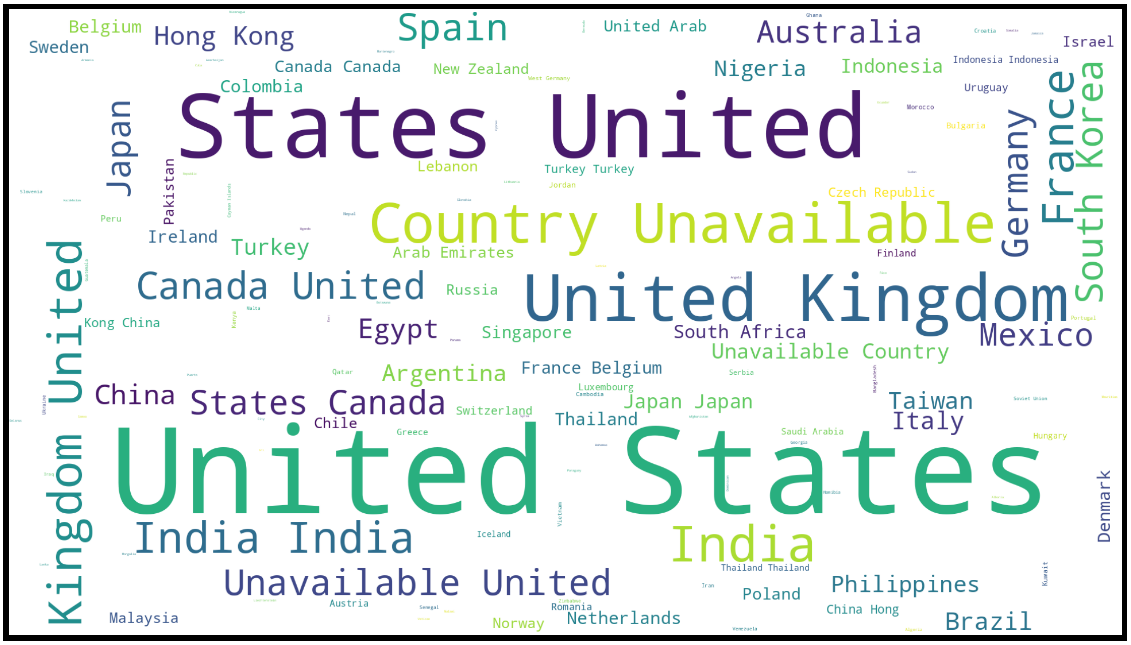


```
[ ]: df = netflix_df.copy()
     df=df.dropna()
     df.shape
```

```
[ ]: (7770, 15)
```

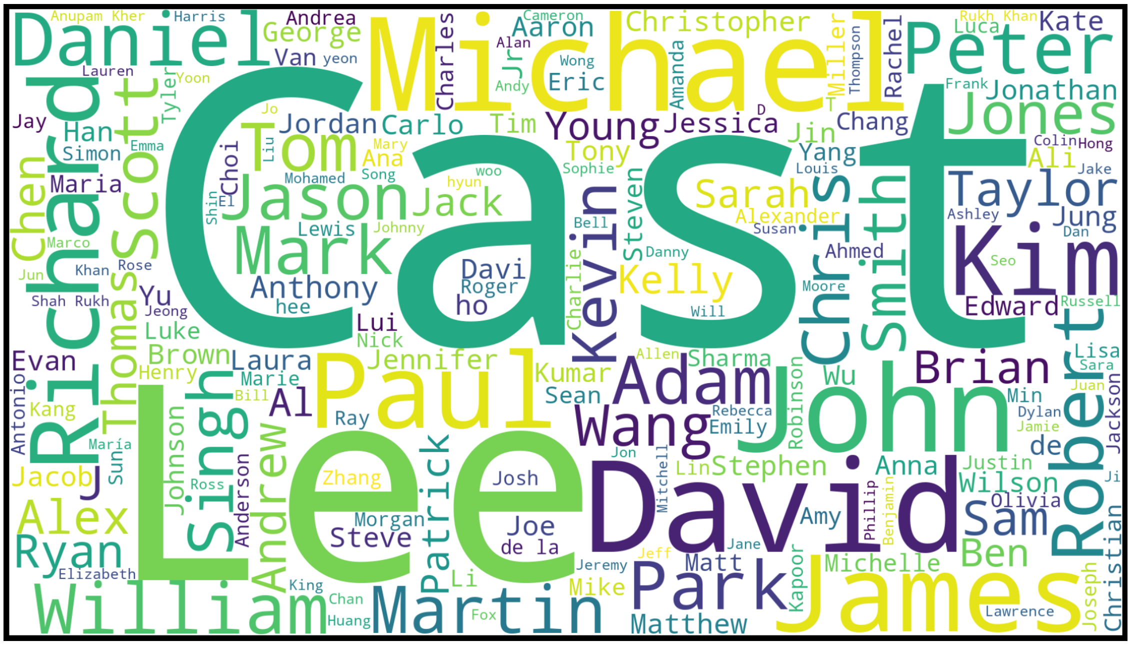
- Country

```
[ ]: from wordcloud import WordCloud
     plt.style.use('dark_background')
     plt.subplots(figsize=(25,15))
     wordcloud = WordCloud(
                               background_color='white',
                               width=1920,
                               height=1080
                              ).generate(" ".join(df.country))
     plt.imshow(wordcloud)
     plt.axis('off')
     plt.savefig('country.png')
plt.show()
```



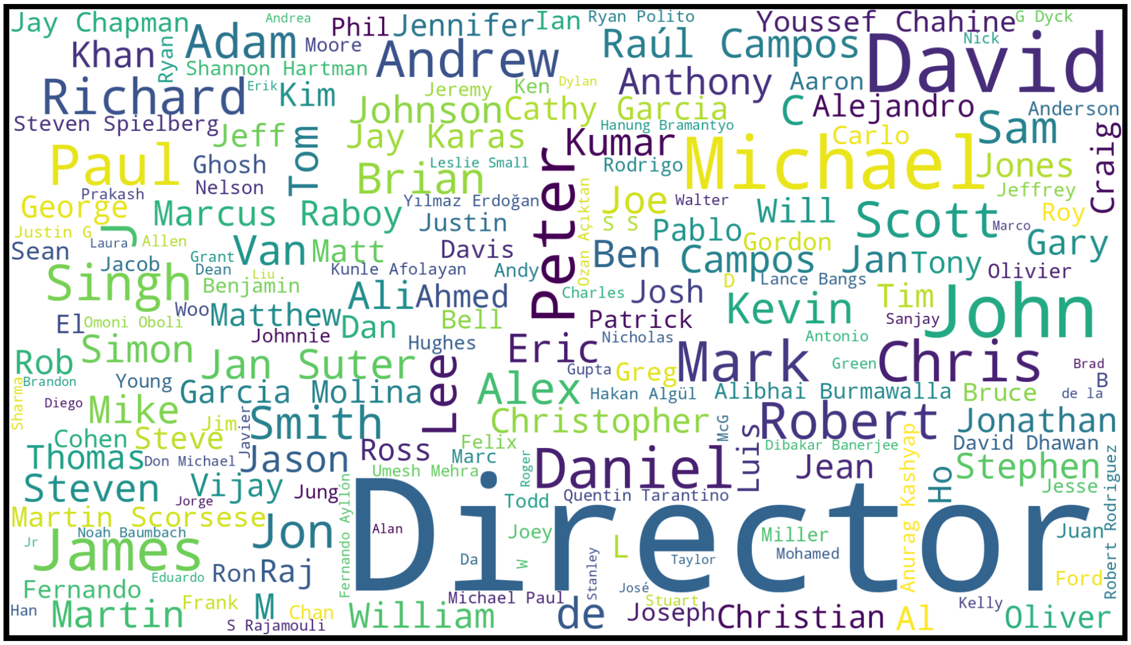
- **Cast in the Shows**

```
[ ]: plt.subplots(figsize=(25,15))
     wordcloud = WordCloud(
                               background_color='white',
                               width=1920,
                               height=1080
                              ).generate(" ".join(df.cast))
     plt.imshow(wordcloud)
     plt.axis('off')
     plt.savefig('cast.png')
     plt.show()
```



- **Directors**

```
[ ]: plt.subplots(figsize=(25,15))
     wordcloud = WordCloud(
                               background_color='white',
                               width=1920,
                               height=1080
                              ).generate(" ".join(df.director))
     plt.imshow(wordcloud)
     plt.axis('off')
     plt.savefig('director.png')
     plt.show()
```



- **Categories**

```
[ ]: plt.subplots(figsize=(25,15))
     wordcloud = WordCloud(
                               background_color='white',
                               width=1920,
                               height=1080
                              ).generate(" ".join(df.listed_in))
     plt.imshow(wordcloud)
     plt.axis('off')
     plt.savefig('category.png')
     plt.show()
```

International Movies
Movies Comedies
Children Family
Movies International
Dramas Independent
TV Dramas
TV Comedies
Comedies International
Movies Thrillers
Shows TV
Kids' TV
Movies Dramas
Dramas International
Music Musicals
International TV
Romantic TV
Shows Romantic
Independent Movies
Comedies Dramas
Romantic Movies
Action Adventure
Movies Romantic
TV Shows
Family Movies
Movies Action
Documentaries International
Sports Movies
Crime TV
Movies Documentaries
Sci Fi
Fi Fantasy
Horror Movies
Adventure Dramas
Language TV Shows Docuseries
Korean TV
LGBTQ Movies
Comedy Stand
Classic Movies
Shows Spanish
Thrillers Dramas
British TV
Reality TV
Spanish Language
Anime Series
Dramas Dramas
Shows Korean
Movies Children
Movies Crime
Movies Music
Docuseries International
Adventure Comedies

7 Thank You !