1.1 Introduction

Netflix, Inc. is an American subscription streaming service and production company. It offers a library of films and television series through distribution deals as well as its own productions, known as Netflix Originals. As of March 31, 2023, with an estimated 232.5 million paid memberships in more than 190 countries, it is the most-subscribed video on demand streaming service. Founded by Reed Hastings and Marc Randolph in Scotts Valley, California, Netflix initially operated as a DVD sales and rental business. However, within a year, it shifted its focus exclusively to DVD rentals. In 2007, the company introduced streaming media and video on demand services, marking a significant step in its evolution.

1.1.1 Problem Statement Analyzing the data and generating Insights that would help Netflix in deciding which type of Shows/Movies to produce more and how to grow business in different countries

The Dataset consists of data of range 2008-mid 2021 ,about 8807 tv shows and movies available , along with other details such as – cast, director, type ,ratings, release year ,duration etc. .The data is available in single csv file

Features of Dataset

->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

In [88]:

In [88]:

In [89]:
```
import pandas as pd
import numpy as np
```

```
import matplotlib.pyplot as plt
import seaborn as sns
```

Read File and show

In [90]:
```
df = pd.read_csv('https://d2beiqkhq929f0.cloudfront.net/public_assets/assets/000/000/940/original/netflix.csv')
df.head()
```

Out[90]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descript
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Documentaries	As father n the en his film
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows, TV Dramas, TV Mysteries	A cross paths part Cape To
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	September 24, 2021	2021	TV-MA	1 Season	Crime TV Shows, International TV Shows, TV Act...	To pro his fa fro powe drug l
3	s4	TV Show	Jailbirds New Orleans	NaN	NaN	NaN	September 24, 2021	2021	TV-MA	1 Season	Docuseries, Reality TV	Fe flirtati and to talk d an
4	s5	TV Show	Kota Factory	NaN	Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...	India	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows, Romantic TV Shows, TV ...	In a cit coach cen know trai

Shape of dataframe

In [91]:
```
df.shape
```

Out[91]: (8807, 12)

checking info

In [92]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8807 entries, 0 to 8806
Data columns (total 12 columns):
 #   Column        Non-Null Count  Dtype 
---  ------        --------------  ----- 
 0   show_id       8807 non-null   object
 1   type          8807 non-null   object
 2   title         8807 non-null   object
 3   director      6173 non-null   object
 4   cast          7982 non-null   object
 5   country       7976 non-null   object
 6   date_added    8797 non-null   object
 7   release_year  8807 non-null   int64 
 8   rating        8803 non-null   object
 9   duration      8804 non-null   object
 10  listed_in     8807 non-null   object
 11  description   8807 non-null   object
dtypes: int64(1), object(11)
memory usage: 825.8+ KB
```

Checking datatypes

In [93]:
```
df.dtypes
```

Out[93]:
```
show_id         object
type            object
title           object
director        object
cast            object
country         object
date_added      object
release_year     int64
rating          object
duration        object
listed_in       object
description     object
dtype: object
```

checking NAN values

In [94]:
```
df.isna().sum()
```

Out[94]:
```
show_id            0
type               0
title              0
director        2634
cast             825
country          831
date_added        10
release_year       0
rating             4
duration           3
listed_in          0
description        0
dtype: int64
```

In [95]:
```
df.describe(include = 'object')
```

Out[95]:

	show_id	type	title	director	cast	country	date_added	rating	duration	listed_in	description
count	8807	8807	8807	6173	7982	7976	8797	8803	8804	8807	8807
unique	8807	2	8807	4528	7692	748	1767	17	220	514	8775
top	s1	Movie	Dick Johnson Is Dead	Rajiv Chilaka	David Attenborough	United States	January 1, 2020	TV-MA	1 Season	Dramas, International Movies	Paranormal activity at a lush, abandoned prope...
freq	1	6131	1	19	19	2818	109	3207	1793	362	4

In [95]:

Filling NAN Space

In [96]:
```
df['director'] = df['director'].fillna('NotAvailable')
df['cast'] = df['cast'].fillna('NotAvailable')
df['country'] = df['country'].fillna(df['country'].mode()[0])
df['date_added'] = df['date_added'].fillna(df['date_added'].mode()[0])
df['duration'] = df['duration'].fillna(df['duration'].mode()[0])
```

In [97]:
```
df.isna().sum()
```

Out[97]:
```
show_id         0
type            0
title           0
director        0
cast            0
country         0
date_added      0
release_year    0
rating          4
duration        0
listed_in       0
description     0
dtype: int64
```

In [98]:
```
df.describe()
```

Out[98]:

	release_year
count	8807.000000
mean	2014.180198
std	8.819312
min	1925.000000
25%	2013.000000
50%	2017.000000
75%	2019.000000
max	2021.000000

In [99]:
```
df['rating'].fillna(df['rating'].mode()[0])
```

Out[99]:
```
0       PG-13
1       TV-MA
2       TV-MA
3       TV-MA
4       TV-MA
        ...
8802        R
8803    TV-Y7
8804        R
8805       PG
8806    TV-14
Name: rating, Length: 8807, dtype: object
```

Splitting rows with multiple values

In [100…
```
## Converting the columns to string tyoe before splitting
df['director'] = df['director'].astype(str)
df['cast'] = df['cast'].astype(str)
df['country'] = df['country'].astype(str)
df['listed_in'] = df['listed_in'].astype(str)
```

In [101…
```
df['cast'] = df['cast'].apply(lambda x: x.split(','))
df['director'] = df['director'].apply(lambda x: x.split(','))
df['country'] = df['country'].apply(lambda x: x.split(','))
df['listed_in'] = df['listed_in'].apply(lambda x: x.split(','))
```

In [102…
```
df = df.explode('cast')
df = df.explode('director')
df = df.explode('country')
df = df.explode('listed_in')
df.head()
```

Out[102]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	des
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	September 25, 2021	2020	PG-13	90 min	Documentaries	fath th
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	TV Dramas	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	TV Mysteries	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Khosi Ngema	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows	p Ca

Converting data_added column to datetime

In [103…

```
df['date_added'] = pd.to_datetime(df['date_added'],format = 'mixed')
df['year'] = df['date_added'].dt.year
```

```
df.head()
```

Out[103]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	des
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	fath th
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Khosi Ngema	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca

splitting duration of movies and seasons

In [104…

```
df['duration'] = df['duration'].astype(str)
df['movie_min'] = df[df['type']=='movie']['duration'].apply(lambda x: x.split(' ')[0])
df['seasons_no'] = df[df['type']=='Tv Show']['duration'].apply(lambda x: x.split(' ')[0])
df.head()
```

Out[104]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	des
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	fath th
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Khosi Ngema	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca

In [105…

```
df.isnull().sum()
```

Out[105]:
```
show_id             0
type                0
title               0
director            0
cast                0
country             0
date_added          0
release_year        0
rating             67
duration            0
listed_in           0
description         0
year                0
movie_min      202065
seasons_no     202065
dtype: int64
```

In [106…
```
df['rating'].unique()
```

Out[106]:
```
array(['PG-13', 'TV-MA', 'PG', 'TV-14', 'TV-PG', 'TV-Y', 'TV-Y7', 'R',
       'TV-G', 'G', 'NC-17', '74 min', '84 min', '66 min', 'NR', nan,
       'TV-Y7-FV', 'UR'], dtype=object)
```

replacing rating values

In [107…
```
df['rating'] = df['rating'].replace(['66 min', '74 min', '84 min'],np.nan)
```

In [108…
```
def get_mode(series):
    return series.mode()[0] if not series.mode().empty else np.nan
df['rating'] = df.groupby('type')['rating'].transform(lambda x: x.fillna(get_mode(x)))

df.head()
```

Out[108]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	des
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	fath th
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Khosi Ngema	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca

In [109…

```
df['movie_min'] = df['movie_min'].fillna(0)
df['seasons_no'] = df['seasons_no'].fillna(0)
df.head()
```

Out[109]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	des
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	fath th
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	p Ca
1	s2	TV Show	Blood & Water	NotAvailable	Khosi Ngema	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	p Ca

In [110…

```
df.isnull().sum()
```

Out[110]:
```
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
year            0
movie_min       0
seasons_no      0
dtype: int64
```

In [110…

Preprocessing ends here

Data analysis

Attributes

In [111…
```
for i in df.columns:
  print(i,df[i].nunique())
  print('-'*20)
```

```
show_id 8807
--------------------
type 2
--------------------
title 8807
--------------------
director 5121
--------------------
cast 39297
--------------------
country 197
--------------------
date_added 1714
--------------------
release_year 74
--------------------
rating 14
--------------------
duration 220
--------------------
listed_in 73
--------------------
description 8775
--------------------
year 14
--------------------
movie_min 1
--------------------
seasons_no 1
--------------------
```

Titles

In [112…

```
total_no_titles = df['title'].nunique()
total_no_movies = df[df['type']=='Movie']['title'].nunique()
total_no_tv_shows = df[df['type']=='TV Show']['title'].nunique()
print(f"total no of title is {total_no_titles}")
print(f"Title of movie is {total_no_movies}")
print(f"Title of Tv show is {total_no_tv_shows}")
```

```
total no of title is 8807
Title of movie is 6131
Title of Tv show is 2676
```

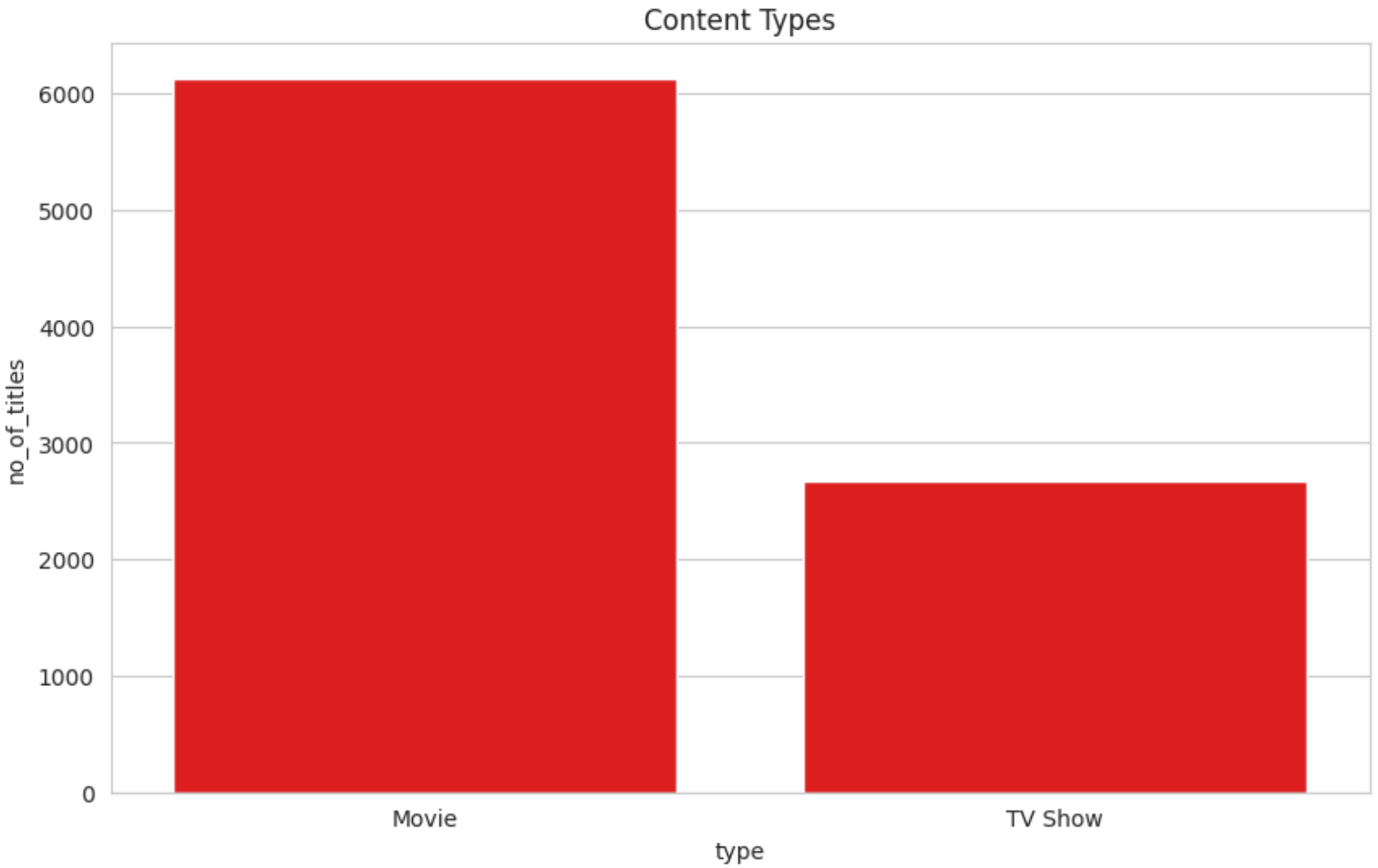
Content Types

In [113…
```
no_of_shows = pd.DataFrame(df.groupby('type')['show_id'].nunique()).reset_index()
no_of_shows.columns = ['type','no_of_titles']
no_of_shows.head()
```

Out[113]:

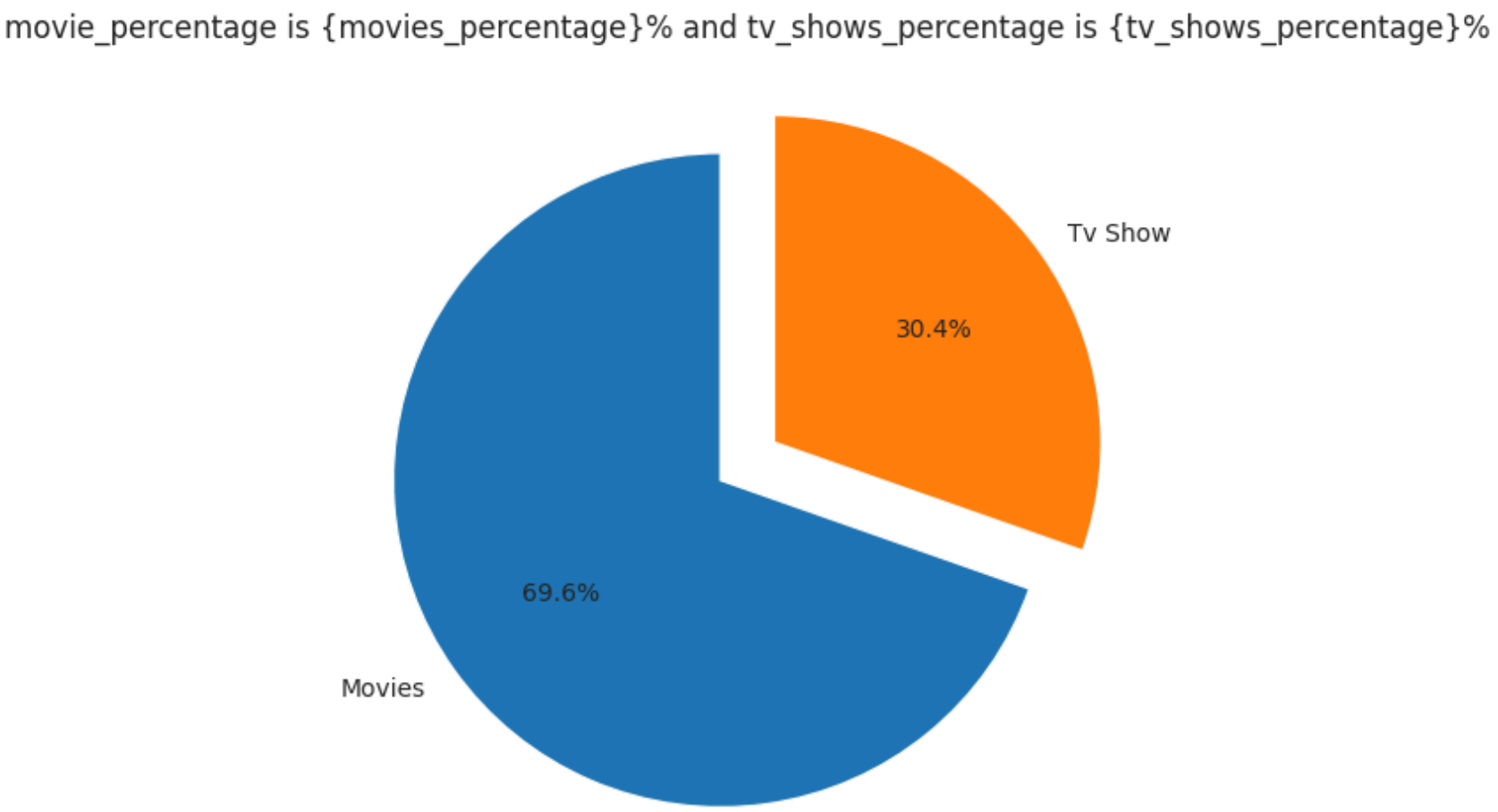
	type	no_of_titles
0	Movie	6131
1	TV Show	2676

In [114…
```
sns.set_style("whitegrid")
plt.figure(figsize = (10,6))
sns.barplot(x = 'type',y = 'no_of_titles',data = no_of_shows,color='r')
plt.title('Content Types')
plt.show()
```



In [115…

```
movies_percentage = round(df[df['type']=='Movie']['show_id'].nunique()/total_no_titles*100,2)
tv_shows_percentage = round(df[df['type']=='TV Show']['show_id'].nunique()/total_no_titles*100,2)
plt.figure(figsize = (10,6))
types = np.array([movies_percentage,tv_shows_percentage])
label = ['Movies','Tv Show']
plt.pie(types,labels = label,autopct='%1.1f%%',startangle=90,explode=(0.1,0.1))
plt.title('movie_percentage is {movies_percentage}% and tv_shows_percentage is {tv_shows_percentage}%')
plt.show()
```

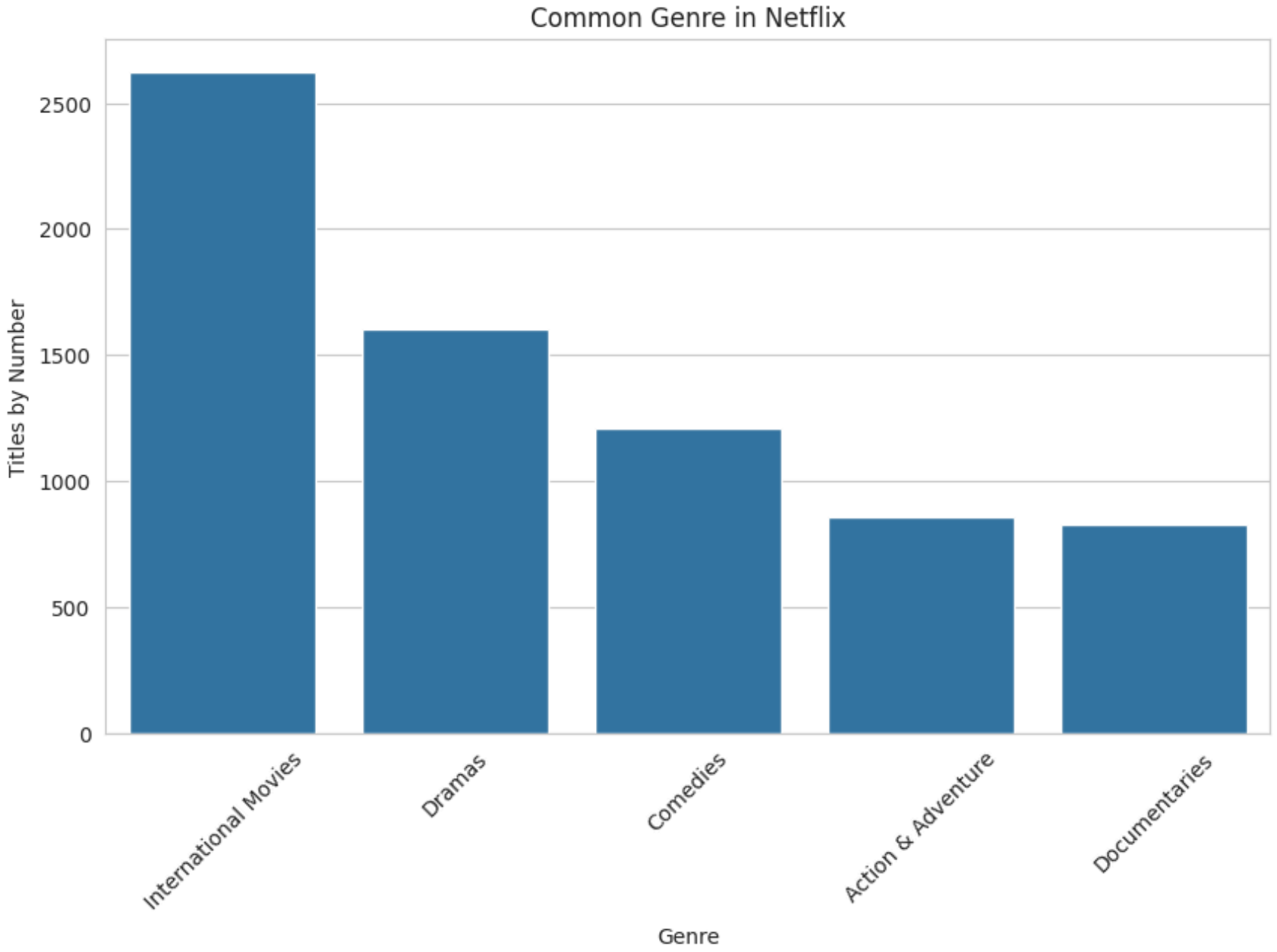


least common genere **bold text**

In [116…
```
df_list_of_genres = pd.DataFrame(df.groupby('listed_in')['show_id'].nunique()).reset_index()
# df_listed_in
df_list_of_genres.columns = ['Genre','titles_number']

df_listed_in = df_list_of_genres.sort_values('titles_number',ascending = False).head(5)
```

In [117…
```
sns.set_style("whitegrid")

plt.figure(figsize=(10, 6))
```

```
sns.barplot(data = df_listed_in, x = 'Genre',y = 'titles_number')
plt.xlabel('Genre')
plt.ylabel('Titles by Number')
plt.xticks(rotation = 45)
plt.title('Common Genre in Netflix')
plt.show()
```



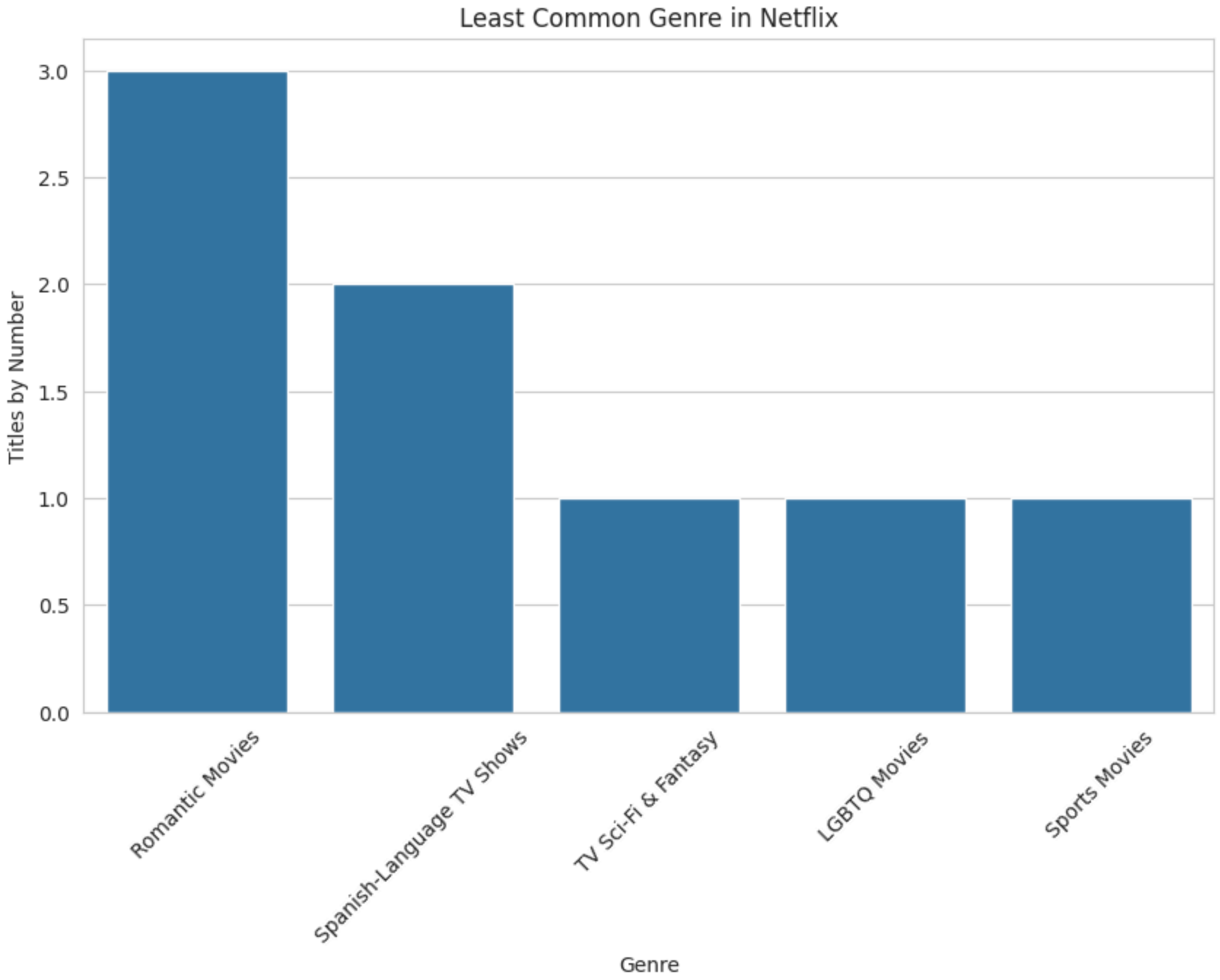
Least common Genre in Netflix

In [118…
```
df_least_genre = pd.DataFrame(df.groupby('listed_in')['show_id'].nunique()).reset_index()
df_least_genre.columns = ['Genre','titles_number']
df_listed_in = df_least_genre.sort_values('titles_number',ascending = False).tail(5)
df_listed_in
```

Out[118]:

	Genre	titles_number
59	Romantic Movies	3
62	Spanish-Language TV Shows	2
70	TV Sci-Fi & Fantasy	1
55	LGBTQ Movies	1
63	Sports Movies	1

In [119…
```
sns.set_style("whitegrid")

plt.figure(figsize=(10, 6))
sns.barplot(data = df_listed_in, x = 'Genre',y = 'titles_number')
plt.xlabel('Genre')
plt.ylabel('Titles by Number')
plt.xticks(rotation = 45)
plt.title('Least Common Genre in Netflix')
plt.show()
```


Least Common Genre in Netflix
Titles by Number
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Romantic Movies
Spanish-Language TV Shows
TV Sci-Fi & Fantasy
LGBTQ Movies
Sports Movies
Genre

No of shows based on type/category and rating

In [120…

```
df_title_rating = pd.DataFrame(df.groupby(['type','rating'])['show_id'].nunique()).reset_index()
df_title_rating.columns = ['type','rating','titles_number']
df_title_rating
```

Out[120]:

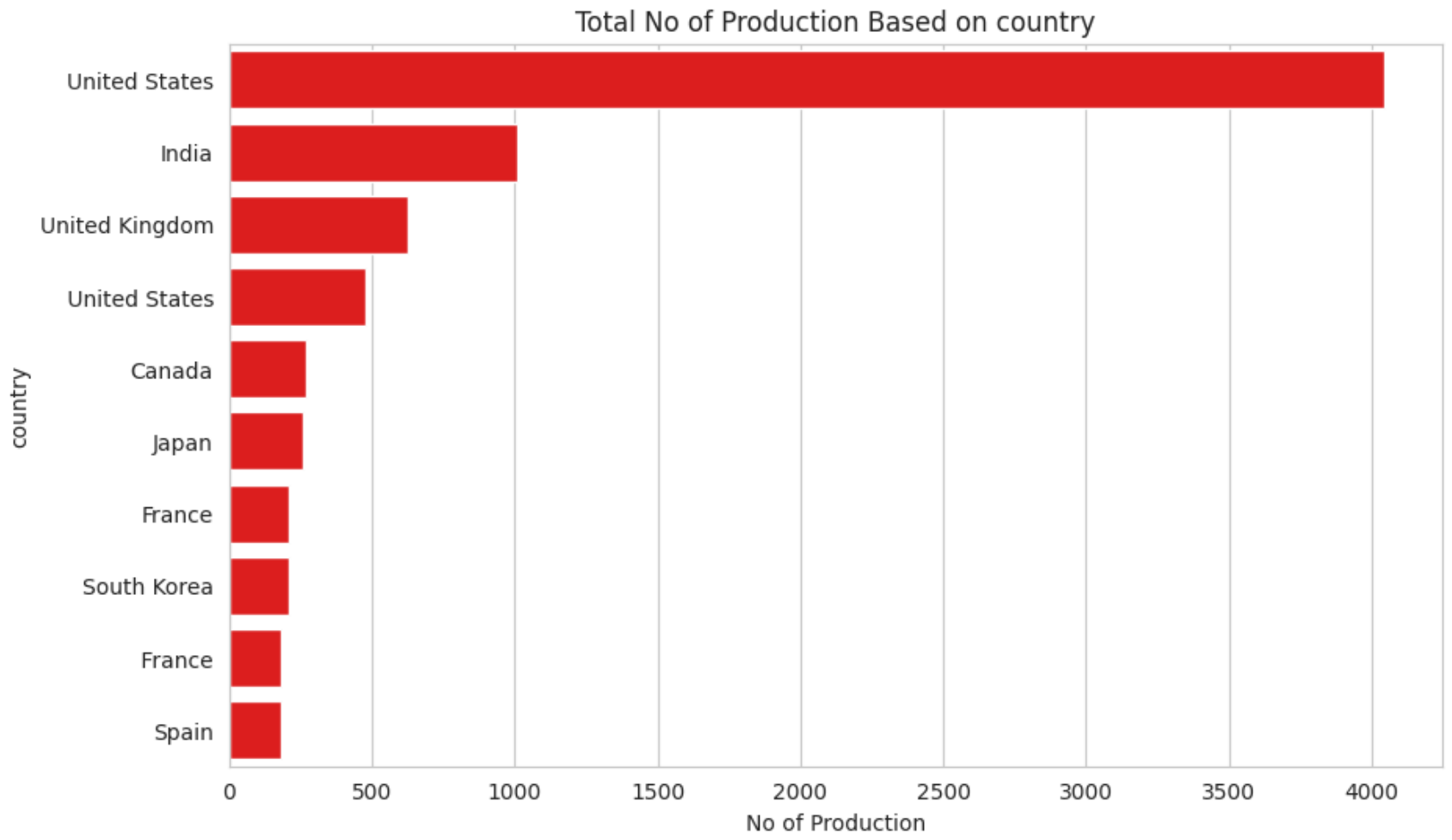
	type	rating	titles_number
0	Movie	G	41
1	Movie	NC-17	3
2	Movie	NR	75
3	Movie	PG	287
4	Movie	PG-13	490
5	Movie	R	797
6	Movie	TV-14	1427
7	Movie	TV-G	126
8	Movie	TV-MA	2067
9	Movie	TV-PG	540
10	Movie	TV-Y	131
11	Movie	TV-Y7	139
12	Movie	TV-Y7-FV	5
13	Movie	UR	3
14	TV Show	NR	5
15	TV Show	R	2
16	TV Show	TV-14	733
17	TV Show	TV-G	94
18	TV Show	TV-MA	1147
19	TV Show	TV-PG	323
20	TV Show	TV-Y	176
21	TV Show	TV-Y7	195

	type	rating	titles_number
22	TV Show	TV-Y7-FV	1

Which country has highest production of Movies and Tv shows

In [121…
```
df_country = pd.DataFrame(df.groupby('country')['show_id'].nunique()).reset_index()
df_country.columns = ['country','No of Production']
df_country = df_country.sort_values('No of Production',ascending = False).head(10)
```

In [122…
```
sns.set_style("whitegrid")

plt.figure(figsize=(10, 6))
sns.barplot(data = df_country, x = 'No of Production', y = 'country',color = 'r')
plt.title('Total No of Production Based on country')
plt.show()
```



In [123…
```
df['country'].isna().sum()
```

Out[123]:
```
0
```

In [124…
```
#df_country = pd.DataFrame(df.groupby(['type','country'])['show_id'].nunique()).reset_index()

#df_grouped = df.groupby(['type', 'country'], as_index=False)['show_id'].sum()
df_country = pd.DataFrame(df.groupby(['type','country'])['show_id'].nunique()).reset_index()
df_country.columns = ['type','country','titles_number']
#df_country.head()
```

```
#df_country
df_country = df_country.sort_values('titles_number',ascending = False).head(10)
df_country
```

Out[124]:

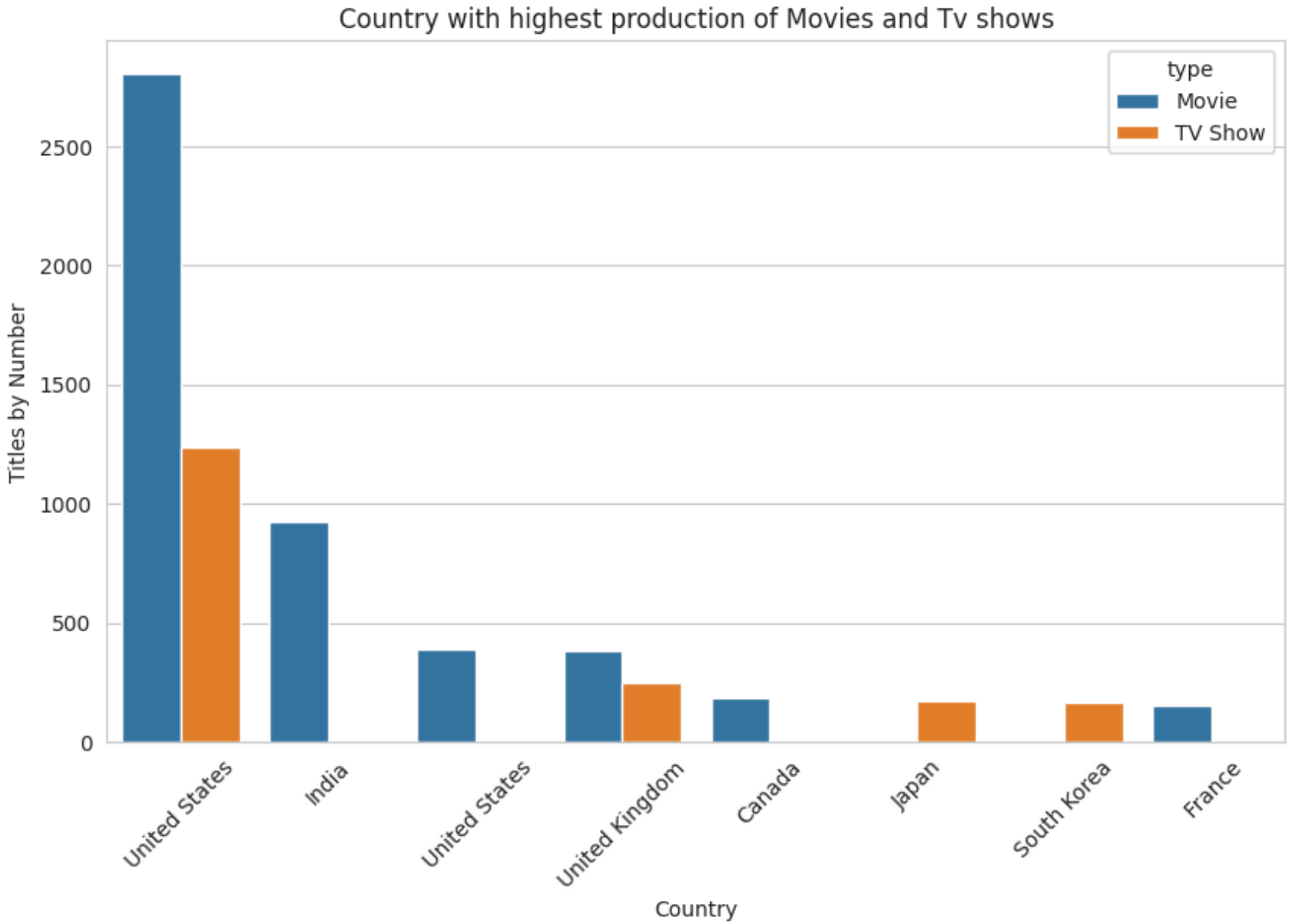
	type	country	titles_number
181	Movie	United States	2804
287	TV Show	United States	1238
136	Movie	India	927
103	Movie	United States	388
180	Movie	United Kingdom	382
286	TV Show	United Kingdom	246
118	Movie	Canada	187
256	TV Show	Japan	174
277	TV Show	South Korea	164
32	Movie	France	155

In [125…

```
#df_country.drop_duplicates(df.groupby['type','country'])
#df_country.head()
```

In [126…

```
sns.set_style("whitegrid")

plt.figure(figsize=(10, 6))
sns.barplot(data = df_country, x = 'country',y = 'titles_number',hue = 'type')
plt.xlabel('Country')
plt.ylabel('Titles by Number')
plt.xticks(rotation = 45)
plt.title('Country with highest production of Movies and Tv shows')
plt.show()
```



Duration of content based on **Type**

In [127…
```
df_by_duration = pd.DataFrame(df.groupby(['type','duration'])['show_id'].nunique()).reset_index()
df_by_duration.columns = ['type','duration','number of titles']
df_by_duration
```

Out[127]:

	type	duration	number of titles
0	Movie	1 Season	3
1	Movie	10 min	1
2	Movie	100 min	108
3	Movie	101 min	116
4	Movie	102 min	122
...	...	...	...
216	TV Show	5 Seasons	65
217	TV Show	6 Seasons	33
218	TV Show	7 Seasons	23
219	TV Show	8 Seasons	17
220	TV Show	9 Seasons	9

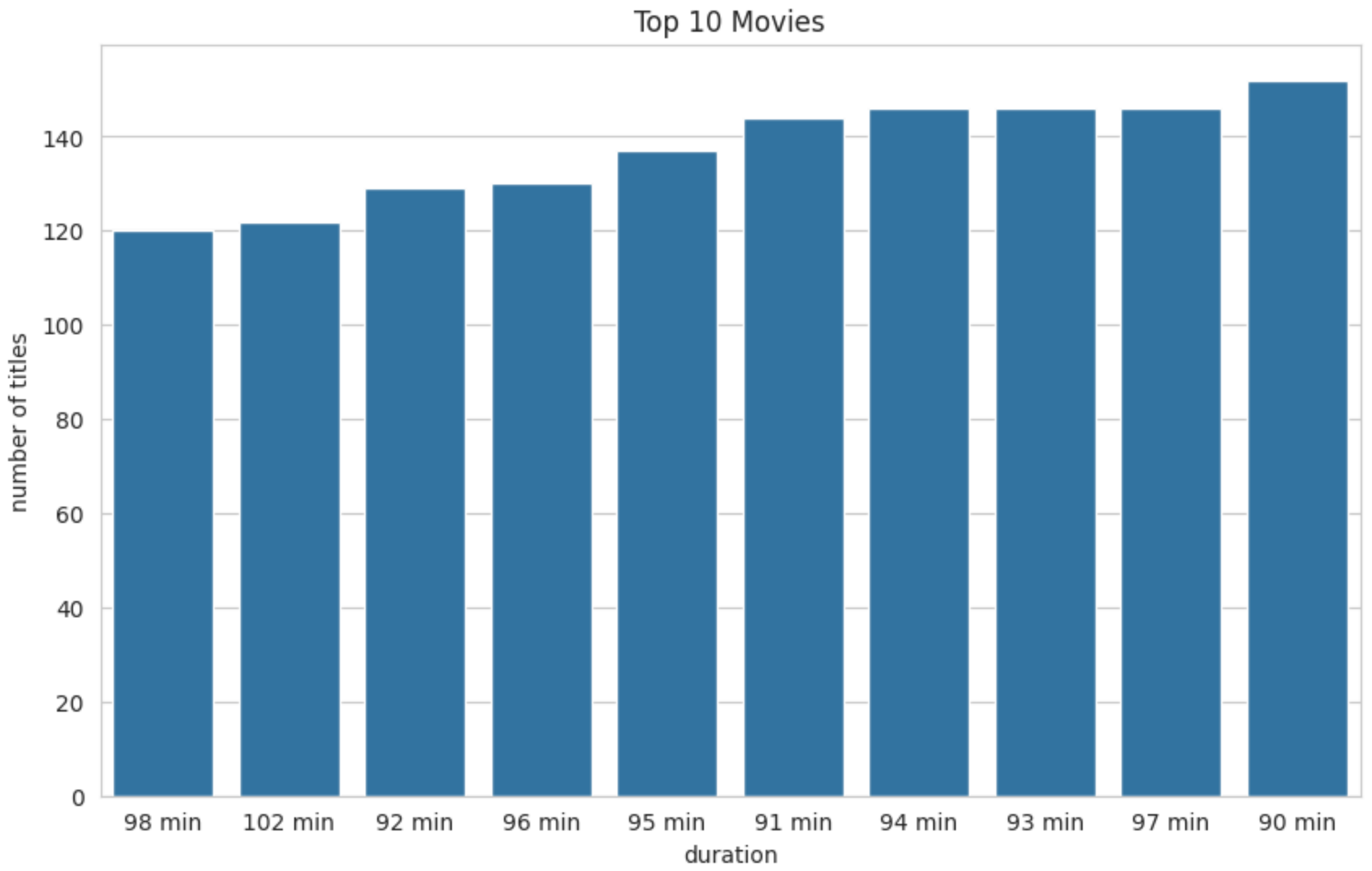
221 rows × 3 columns

Duration of top 10 Movies

In [128…
```
movies_data = df_by_duration[df_by_duration['type'] == 'Movie']
movies_data_sorted = movies_data.sort_values(by='number of titles', ascending= False).head(10)
top_10_movies_desc = movies_data_sorted.sort_values(by='number of titles', ascending=True)
```

In [129…
```
plt.figure(figsize = (10,6))
sns.barplot(x = 'duration',y = 'number of titles',data = top_10_movies_desc)
```

```
plt.title('Top 10 Movies')
plt.show()
```



Duration of Top 10 Tv Shows

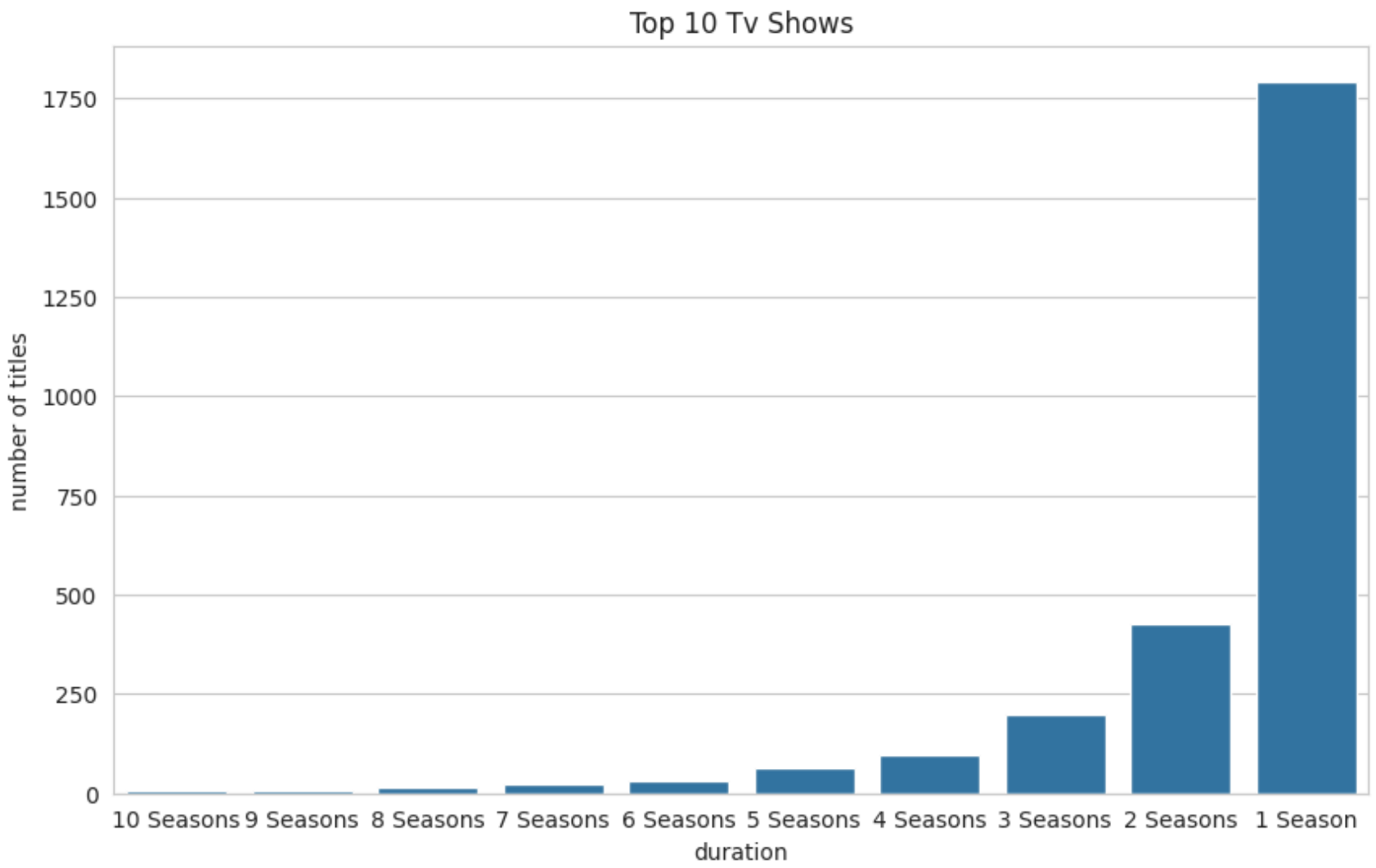
In [130…

```
tv_Show_data = df_by_duration[df_by_duration['type'] == 'TV Show']
tv_Show_data_sorted = tv_Show_data.sort_values(by='number of titles', ascending= False).head(10)
```

```
top_10_tv_show_desc = tv_Show_data_sorted.sort_values(by='number of titles', ascending=True)
```

In [131…

```
plt.figure(figsize=(10, 6))
sns.barplot(x='duration', y='number of titles', data=top_10_tv_show_desc)
plt.title('Top 10 Tv Shows')
plt.show()
```



In [132…

```
df_directors = pd.DataFrame(df.groupby('director')['title'].nunique()).reset_index()
df_directors = df_directors.sort_values('title',ascending = False).iloc[1:]
```

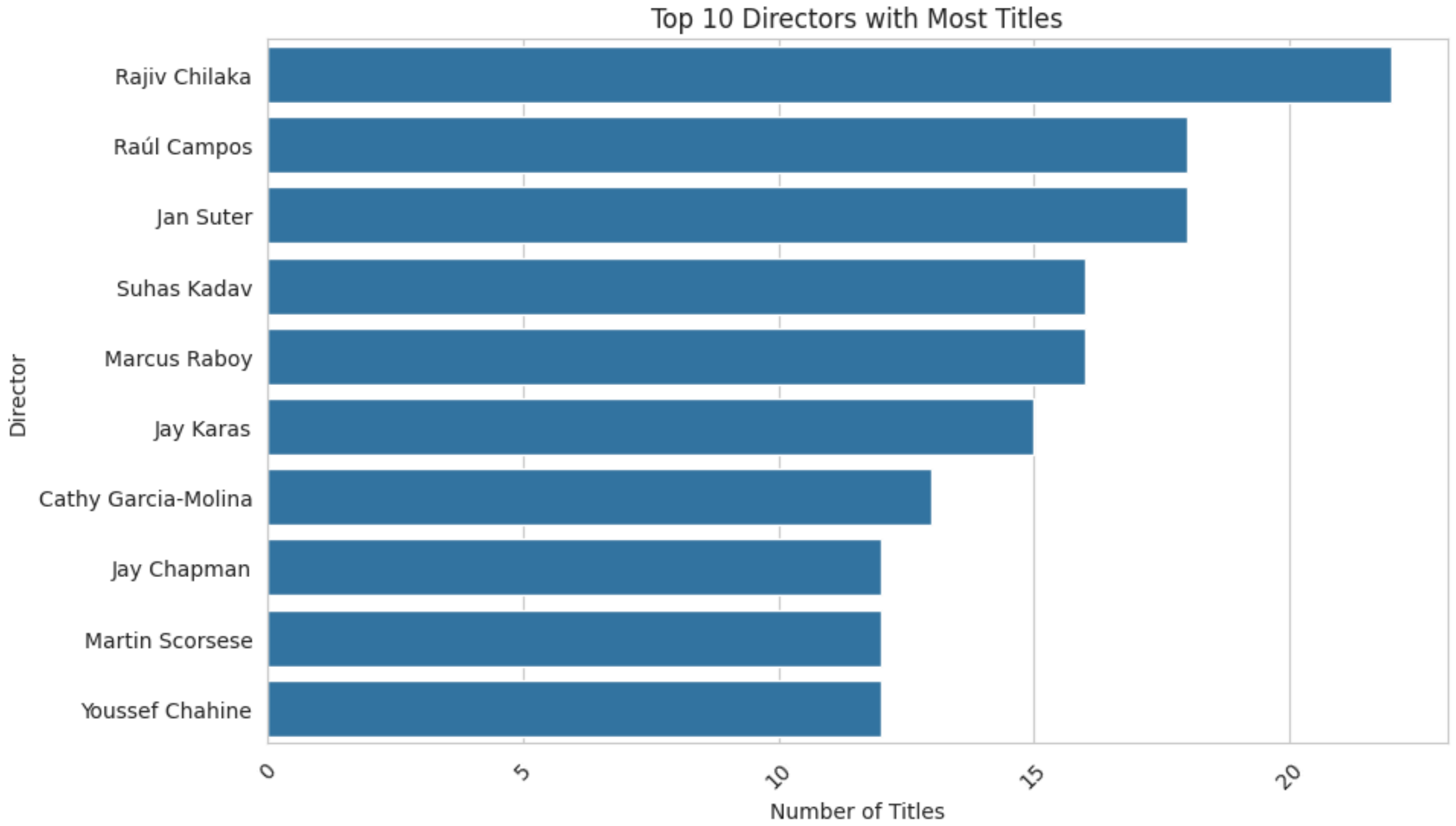
```
df_directors.head()
```

Out[132]:

	director	title
4021	Rajiv Chilaka	22
4068	Raúl Campos	18
261	Jan Suter	18
4652	Suhas Kadav	16
3235	Marcus Raboy	16

In [133…

```
# graph of top directors grouped with title

import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

df_directors = pd.DataFrame(df.groupby('director')['title'].nunique()).reset_index()
df_directors = df_directors.sort_values('title',ascending = False).iloc[1:]

top_10_directors = df_directors.head(10)

plt.figure(figsize=(10, 6))
sns.barplot(x='title', y='director', data=top_10_directors)

# Add title and labels
plt.title('Top 10 Directors with Most Titles')
plt.xlabel('Number of Titles')
plt.ylabel('Director')

# Rotate x-axis labels for readability
plt.xticks(rotation=45)

# Show the plot
plt.show()
```



Top Directors by number of movies and tvshows produced

In [134…

```
df_director = pd.DataFrame(df.groupby('director')['show_id'].nunique()).reset_index()
df_director = df_director.sort_values('show_id',ascending = False).iloc[1:]
df_director.head()
```

Out[134]:

	director	show_id
4021	Rajiv Chilaka	22
4068	Raúl Campos	18
261	Jan Suter	18
4652	Suhas Kadav	16
3235	Marcus Raboy	16

In [135…

```
df_director = pd.DataFrame(df.groupby(['director','listed_in'])['show_id'].nunique()).reset_index()
df_director.columns = ['director','type','titles_number']
df_director = df_director.sort_values('titles_number',ascending = False).iloc[1:]
df_director.head()
```

Out[135]:

	director	type	titles_number
8824	NotAvailable	TV Dramas	637
8809	NotAvailable	International TV Shows	511
8823	NotAvailable	TV Comedies	422
8845	NotAvailable	Kids' TV	373
8838	NotAvailable	Crime TV Shows	340

In [136…

```
df_director = pd.DataFrame(df.groupby(['director','listed_in'])['show_id'].nunique()).reset_index()
df_director.columns = ['Director','listed_in','No_of_titles']

directors_sort = df_director.sort_values(['No_of_titles','Director'], ascending = False).groupby('Director').head(10)
directors_sort = directors_sort.sort_values('No_of_titles', ascending = False).iloc[5:20]
directors_sort
```

Out[136]:

	Director	listed_in	No_of_titles
8838	NotAvailable	Crime TV Shows	340
8816	NotAvailable	Romantic TV Shows	310
8834	NotAvailable	British TV Shows	228
8840	NotAvailable	Docuseries	194
8833	NotAvailable	Anime Series	165
9714	Rajiv Chilaka	Children & Family Movies	22
545	Jan Suter	Stand-Up Comedy	18
9841	Raúl Campos	Stand-Up Comedy	18
11365	Suhas Kadav	Children & Family Movies	16
7677	Marcus Raboy	Stand-Up Comedy	15
5760	Jay Karas	Stand-Up Comedy	14
5751	Jay Chapman	Stand-Up Comedy	11
3167	Cathy Garcia-Molina	International Movies	11
12444	Youssef Chahine	International Movies	10
4139	Don Michael Paul	Action & Adventure	9

Addition of content over years

In [137…

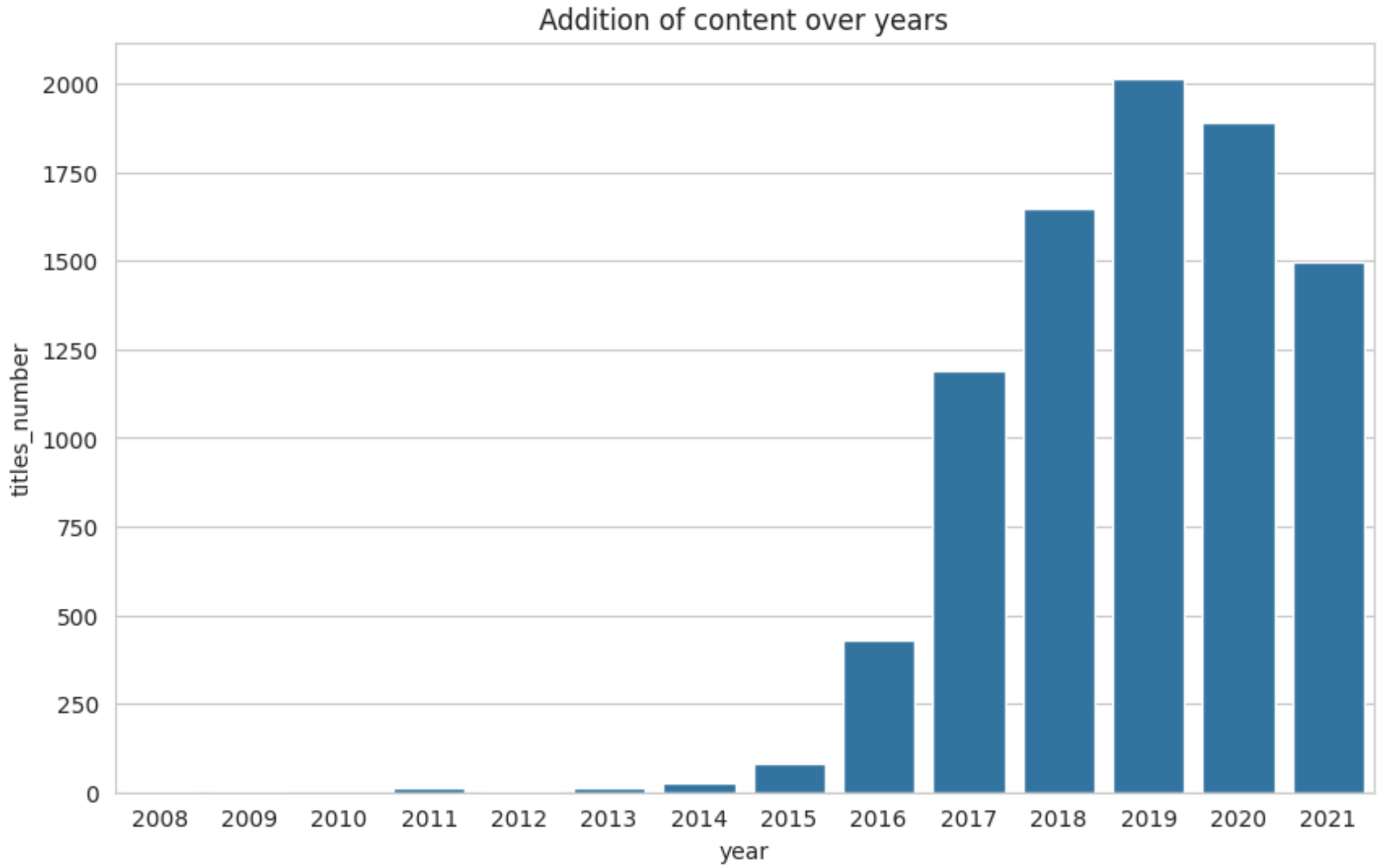
```
df_title_over_years = pd.DataFrame(df.groupby('year')['show_id'].nunique()).reset_index()
df_title_over_years.columns = ['year','titles_number']
df_title_over_time=df_title_over_years.sort_values('year',ascending = False)
df_title_over_time
```

Out[137]:

	year	titles_number
13	2021	1498
12	2020	1889
11	2019	2016
10	2018	1649
9	2017	1188
8	2016	429
7	2015	82
6	2014	24
5	2013	11
4	2012	3
3	2011	13
2	2010	1
1	2009	2
0	2008	2

In [138…

```
plt.figure(figsize=(10, 6))
sns.barplot(x='year', y='titles_number', data=df_title_over_time)
plt.title('Addition of content over years')
plt.show()
```



Movies release over span of years on netflix

In [139…

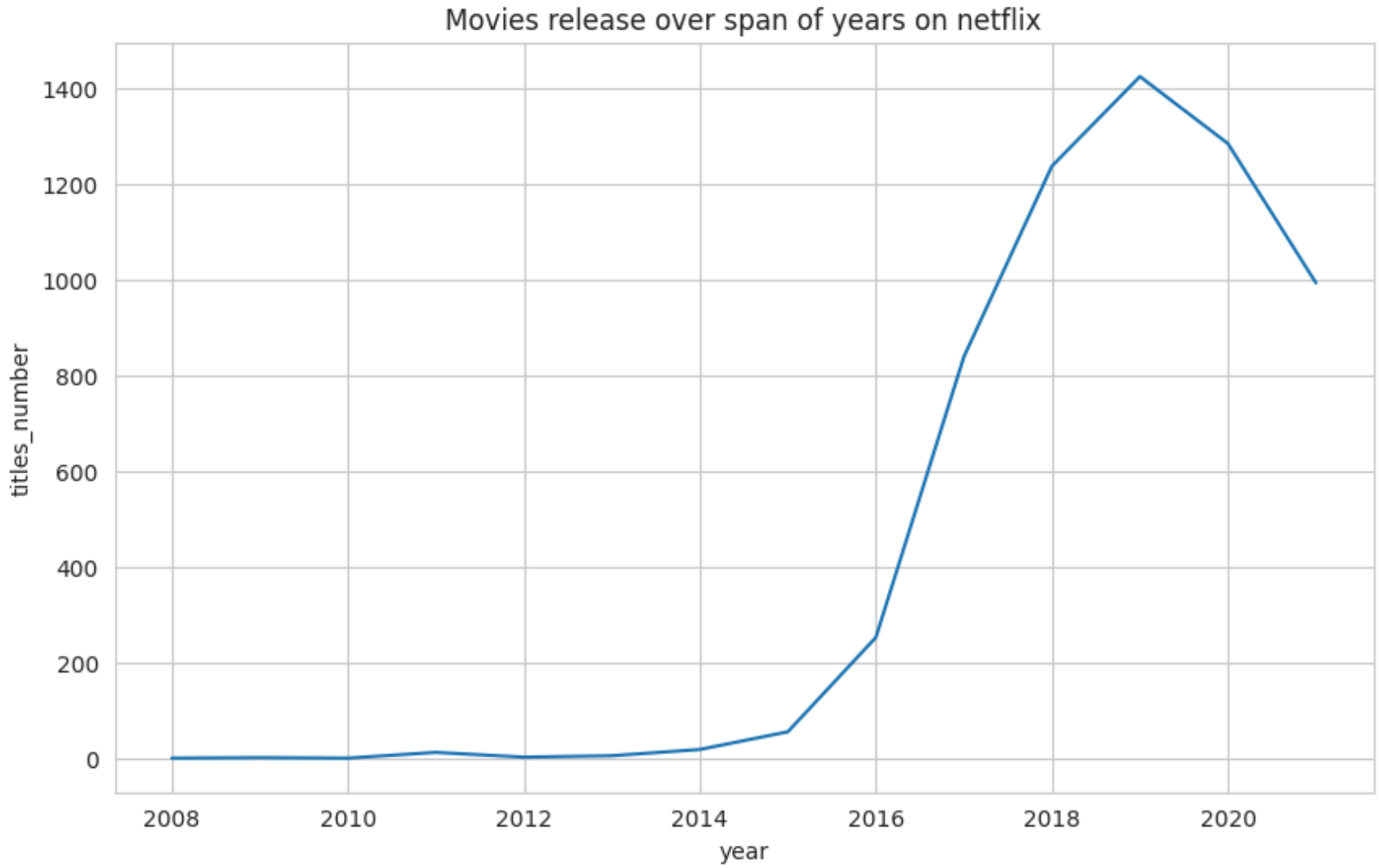
```
df_movies_release_overyears = pd.DataFrame(df[df['type']=='Movie'].groupby('year')['show_id'].nunique()).reset_index(
df_movies_release_overyears.columns = ['year','titles_number']
df_movies_release_overyears
```

Out[139]:

	year	titles_number
0	2008	1
1	2009	2
2	2010	1
3	2011	13
4	2012	3
5	2013	6
6	2014	19
7	2015	56
8	2016	253
9	2017	839
10	2018	1237
11	2019	1424
12	2020	1284
13	2021	993

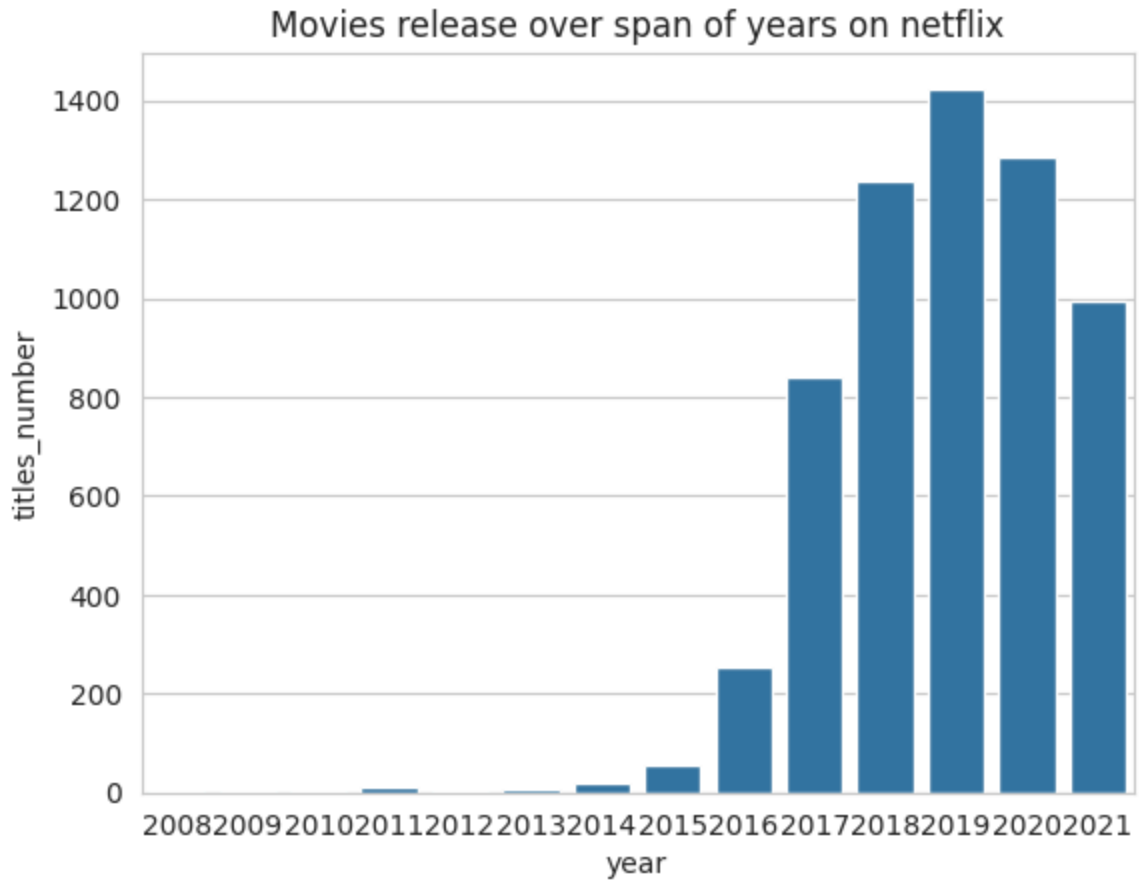
In [140…

```
plt.figure(figsize=(10, 6))
sns.lineplot(x='year', y='titles_number', data=df_movies_release_overyears)
plt.title('Movies release over span of years on netflix')
plt.show()
```



In [141…

```
sns.barplot(x='year', y='titles_number', data=df_movies_release_overyears)
plt.title('Movies release over span of years on netflix')
plt.show()
```



In [142…

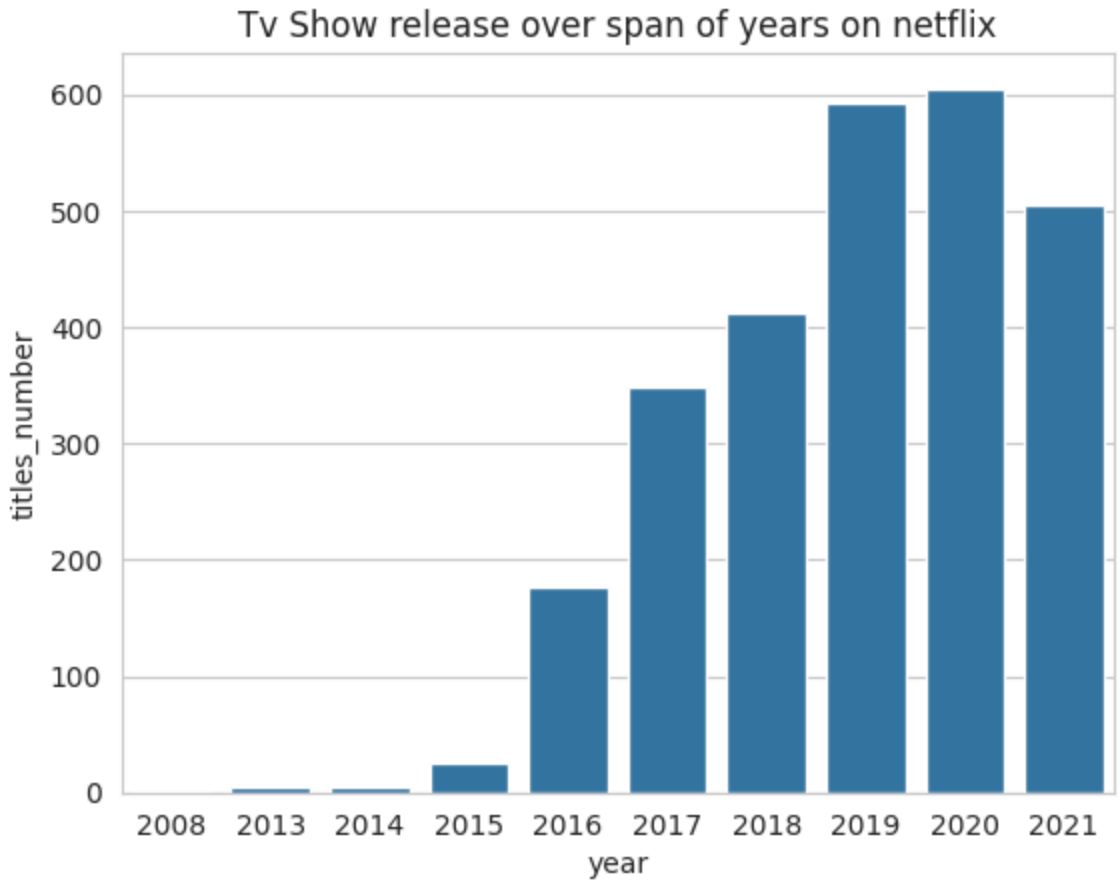
```
df_tvshow_release_overyears = pd.DataFrame(df[df['type']=='TV Show'].groupby('year')['show_id'].nunique()).reset_inde
df_tvshow_release_overyears.columns = ['year','titles_number']
df_tvshow_release_overyears
```

Out[142]:

	year	titles_number
0	2008	1
1	2013	5
2	2014	5
3	2015	26
4	2016	176
5	2017	349
6	2018	412
7	2019	592
8	2020	605
9	2021	505

In [143…

```
sns.barplot(data =df_tvshow_release_overyears,x="year",y="titles_number")
plt.title('Tv Show release over span of years on netflix')
plt.show()
```



In [144…

```
content_by_country = df.groupby(['country', 'type']).size().reset_index(name='count')
#print(content_by_country)
df_unique = df.drop_duplicates()

# Group by 'country' and 'type' and count the number of titles
content_by_country = df_unique.groupby(['country', 'type']).size().reset_index(name='count')
full_content = content_by_country.sort_values('count', ascending=False)
full_content.head()
```

Out[144]:

	country	type	count
281	United States	Movie	44514
200	India	Movie	20761
282	United States	TV Show	17250
145	United States	Movie	7501
279	United Kingdom	Movie	5655

month added and launch time

In [145…

```
df['date_added'] = pd.to_datetime(df['date_added'])
df['month_added'] = df['date_added'].dt.month
df['launch_time'] = df['date_added'].dt.time
monthly_launch_counts = df['month_added'].value_counts().sort_index()
monthly_launch_counts
```

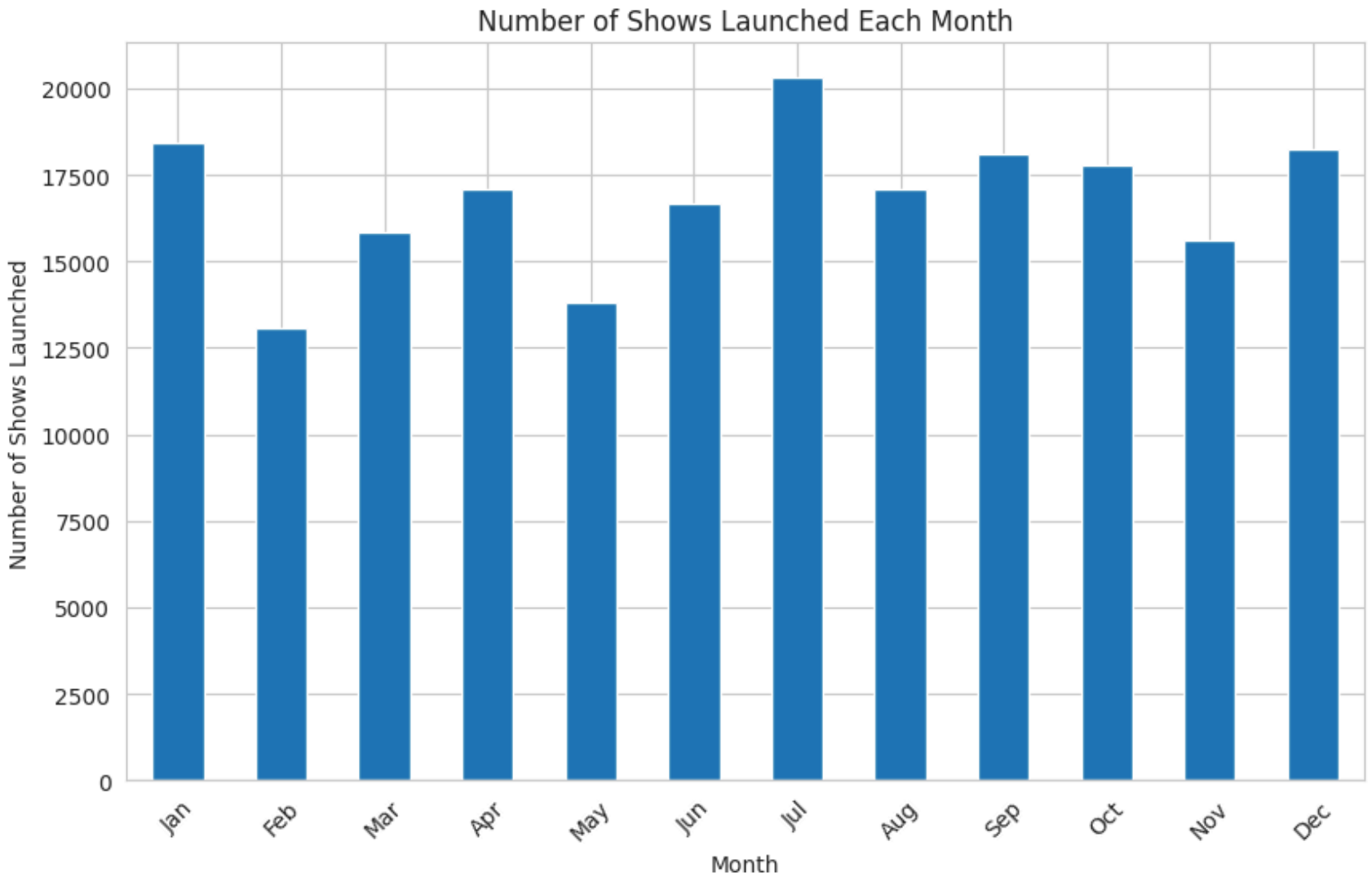
Out[145]:

```
month_added
1     18412
2     13060
3     15859
4     17081
5     13827
6     16659
7     20302
8     17086
9     18120
10    17796
11    15597
12    18266
Name: count, dtype: int64
```

In [146…

```
plt.figure(figsize=(10, 6))
monthly_launch_counts.plot(kind='bar')
plt.title('Number of Shows Launched Each Month')
plt.xlabel('Month')
plt.ylabel('Number of Shows Launched')
```

```
plt.xticks(range(12), ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec'], rotation=
plt.show()
```



In [147…

```
launch_counts = pd.DataFrame(df.groupby(['year','month_added'])['show_id'].nunique().sort_index()).reset_index()
launch_counts.columns = ['year','month_added','launch_show']
launch_month_count = launch_counts.sort_values('launch_show', ascending=False)
launch_month_count.head(18)
```

Out[147]:

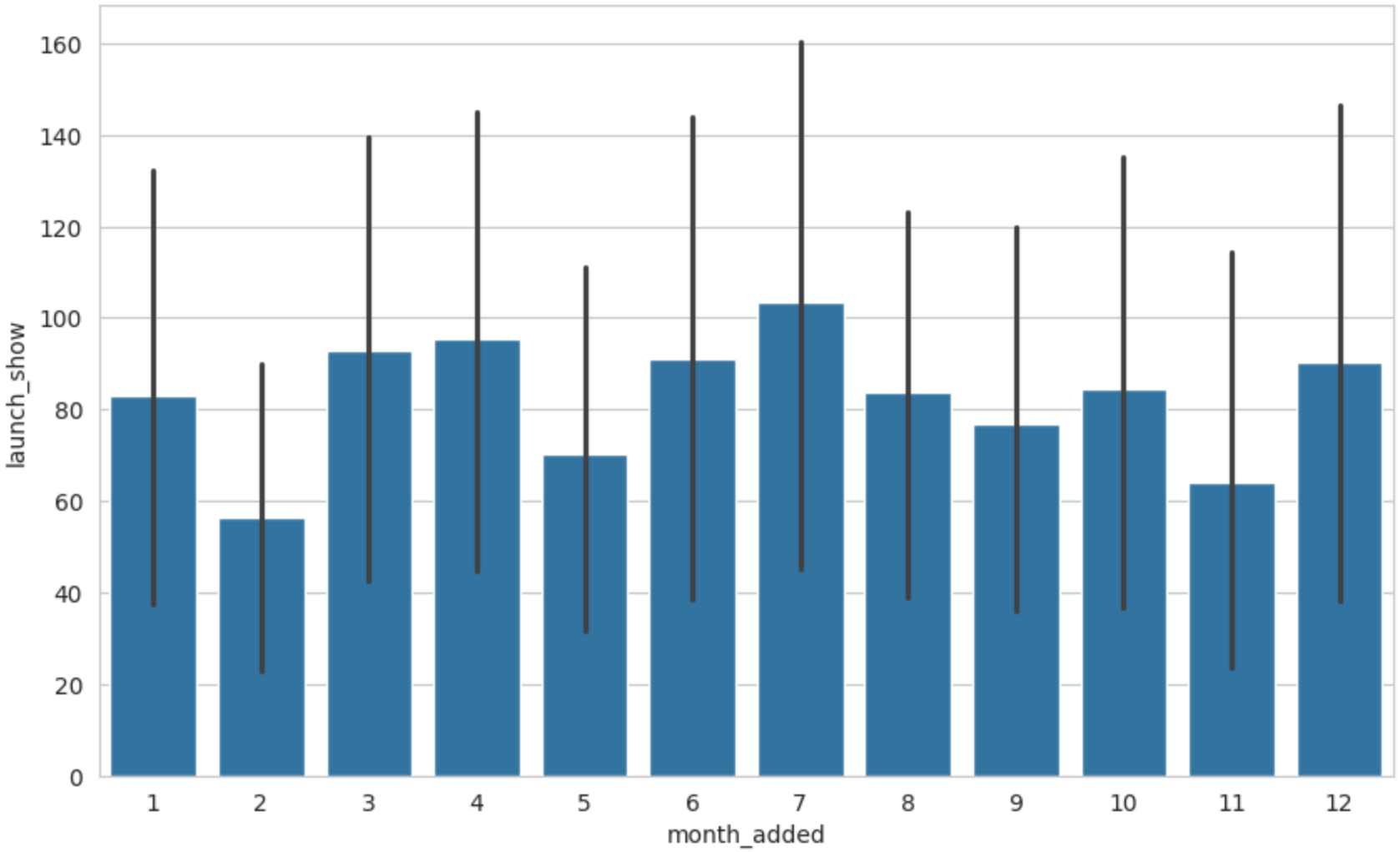
	year	month_added	launch_show
105	2021	7	257
85	2019	11	255
87	2020	1	215
86	2019	12	215
104	2021	6	207
84	2019	10	193
72	2018	10	191
102	2021	4	188
74	2018	12	185
107	2021	9	183
106	2021	8	178
90	2020	4	177
65	2018	3	173
77	2019	3	172
98	2020	12	169
80	2019	6	168
95	2020	9	168
96	2020	10	167

In [148…

```
sns.set_style("whitegrid")

plt.figure(figsize=(10, 6))
sns.barplot(x='month_added', y='launch_show', data=launch_month_count)
```

Out[148]:

```
<Axes: xlabel='month_added', ylabel='launch_show'>
```



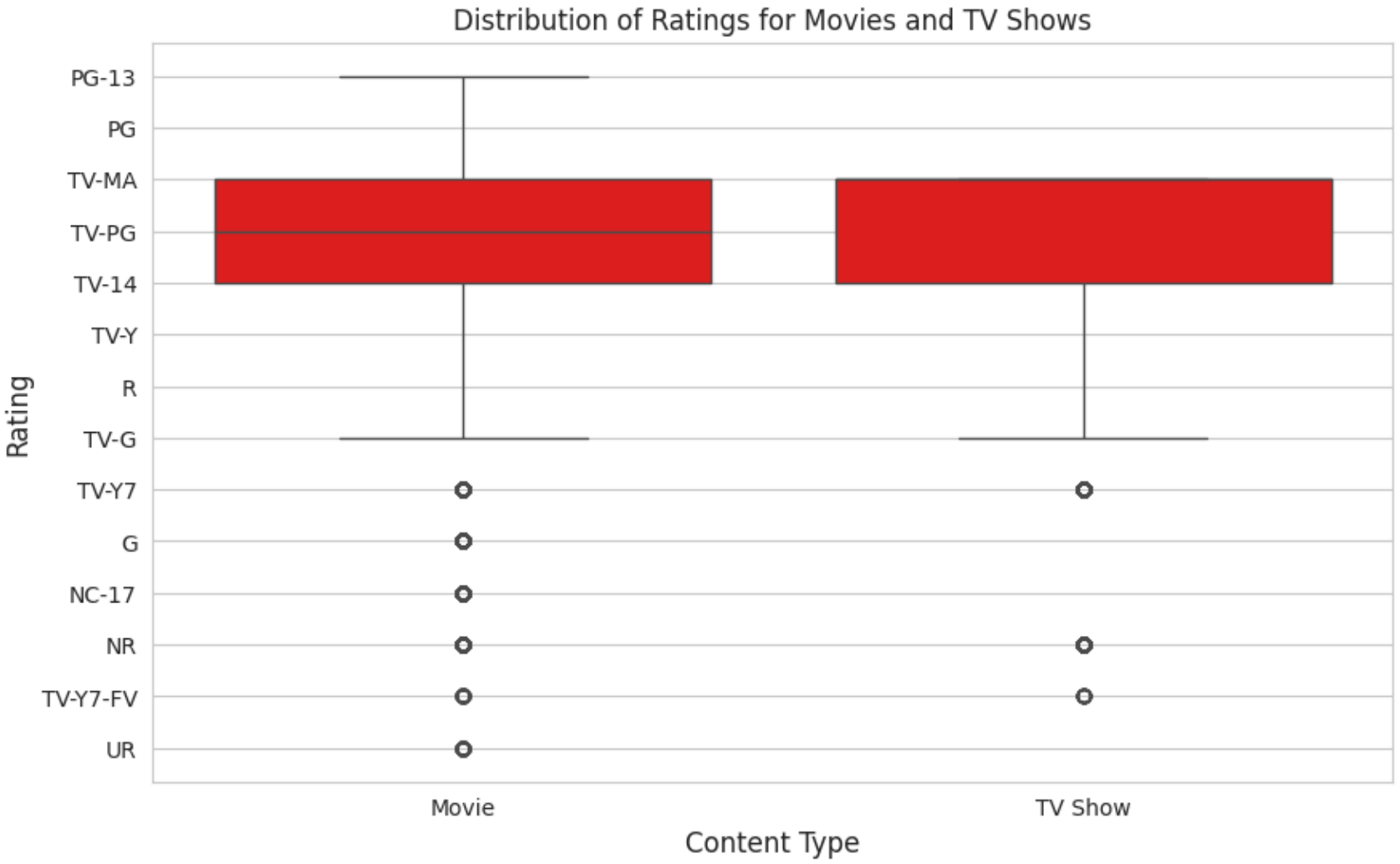
In [148…

Distribution of Ratings For Movies and TV Shows

In [149…

```
df_movies = df[df['type'] == 'Movie']
df_tv_shows = df[df['type'] == 'TV Show']
```

```
sns.set_style("whitegrid")

plt.figure(figsize=(10, 6))
sns.boxplot(x='type', y='rating', data=pd.concat([df_movies, df_tv_shows]), color = 'r')
plt.title('Distribution of Ratings for Movies and TV Shows')
plt.xlabel('Content Type',fontsize = 12)
plt.ylabel('Rating',fontsize = 12)
plt.show()
```



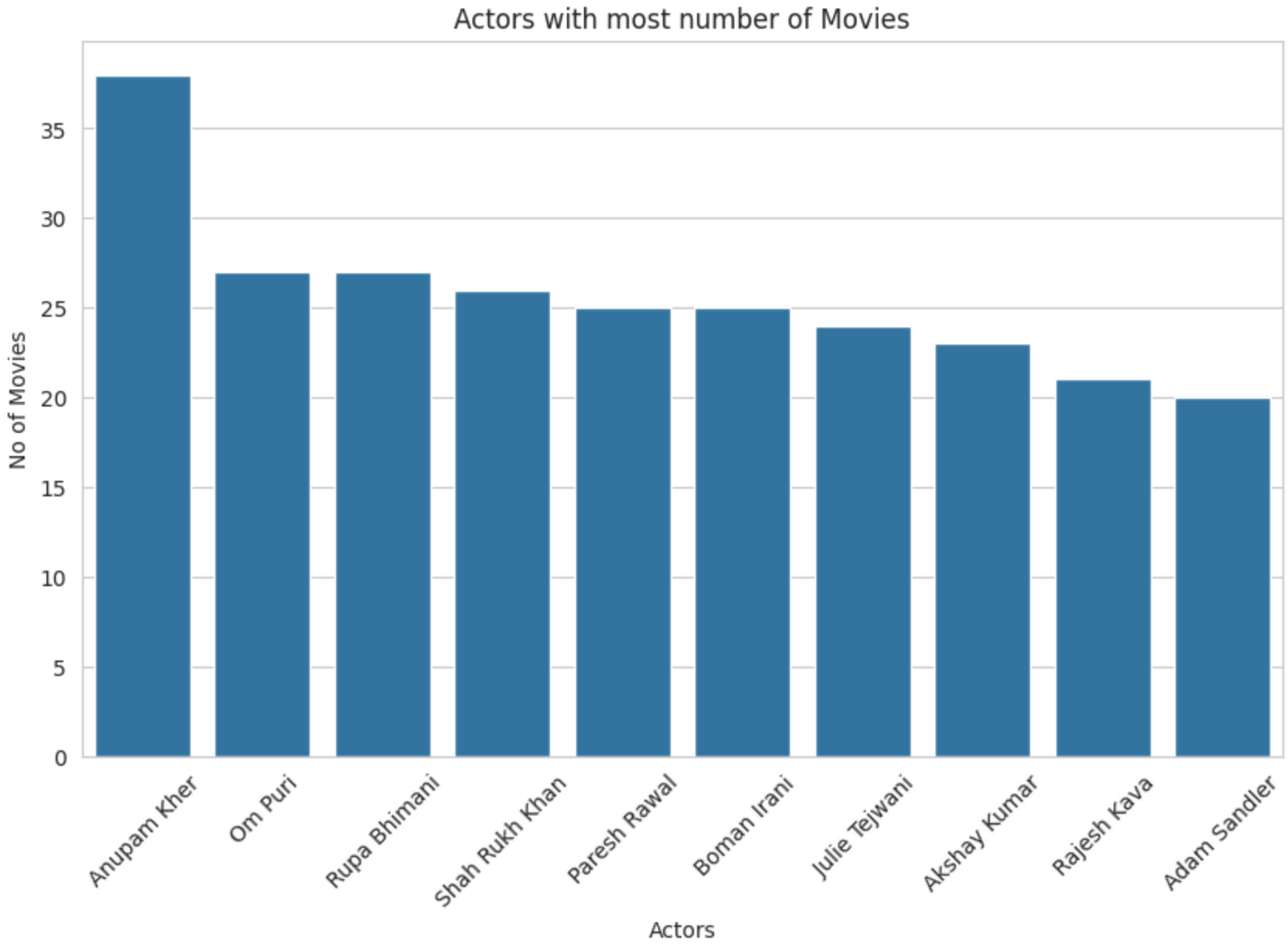
Actors with most number of Movies

In [150…
```
df_actor = pd.DataFrame(df.groupby(['type', 'cast'])['show_id'].nunique()).reset_index()
df_actor.columns = ['type','cast','No_of_shows']

df_actor_movie = df_actor[df_actor['type']=='Movie']
df_actor_movie_sort = df_actor_movie.sort_values('No_of_shows', ascending = False).iloc[1:11]
df_actor_movie_sort
```

Out[150]:

	type	cast	No_of_shows
1946	Movie	Anupam Kher	38
16781	Movie	Om Puri	27
19235	Movie	Rupa Bhimani	27
27292	Movie	Shah Rukh Khan	26
17025	Movie	Paresh Rawal	25
3109	Movie	Boman Irani	25
11219	Movie	Julie Tejwani	24
24247	Movie	Akshay Kumar	23
18089	Movie	Rajesh Kava	21
24181	Movie	Adam Sandler	20

In [151…
```
plt.figure(figsize=(10, 6))
sns.barplot(x='cast', y='No_of_shows', data=df_actor_movie_sort)
plt.xlabel('Actors')
plt.ylabel('No of Movies')
plt.title('Actors with most number of Movies')
plt.xticks(rotation=45)
plt.show()
```



Actors with maximum TV Show Content

In [152…

```
df_actor = pd.DataFrame(df.groupby(['type', 'cast'])['show_id'].nunique()).reset_index()
df_actor.columns = ['type','cast','No_of_shows']
```

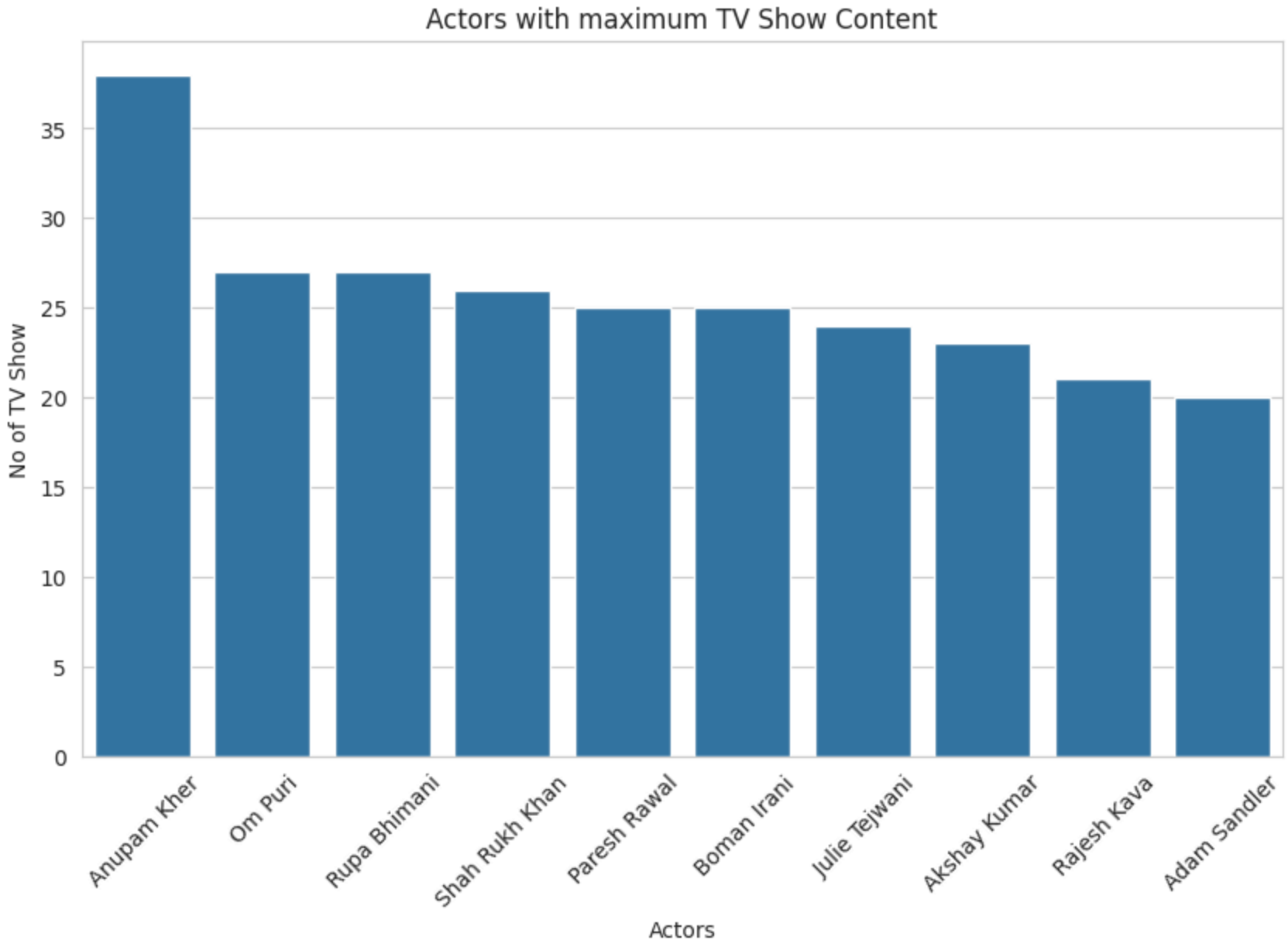
```
df_actor_tv = df_actor[df_actor['type']=='TV Show']
df_actor_tv_show = df_actor_movie.sort_values('No_of_shows', ascending = False).iloc[1:11]
df_actor_tv_show
```

Out[152]:

	type	cast	No_of_shows
1946	Movie	Anupam Kher	38
16781	Movie	Om Puri	27
19235	Movie	Rupa Bhimani	27
27292	Movie	Shah Rukh Khan	26
17025	Movie	Paresh Rawal	25
3109	Movie	Boman Irani	25
11219	Movie	Julie Tejwani	24
24247	Movie	Akshay Kumar	23
18089	Movie	Rajesh Kava	21
24181	Movie	Adam Sandler	20

In [153…

```
plt.figure(figsize=(10, 6))
sns.barplot(x='cast', y='No_of_shows', data=df_actor_tv_show)
plt.xlabel('Actors')
plt.ylabel('No of TV Show')
plt.title('Actors with maximum TV Show Content')
plt.xticks(rotation=45)
plt.show()
```



In [154…

```
type_counts = df['type'].value_counts()
type_counts
```

Out[154]:
```
type
Movie      145917
TV Show     56148
Name: count, dtype: int64
```

In [155…
```
genre_counts = df['listed_in'].value_counts()
genre_counts
```

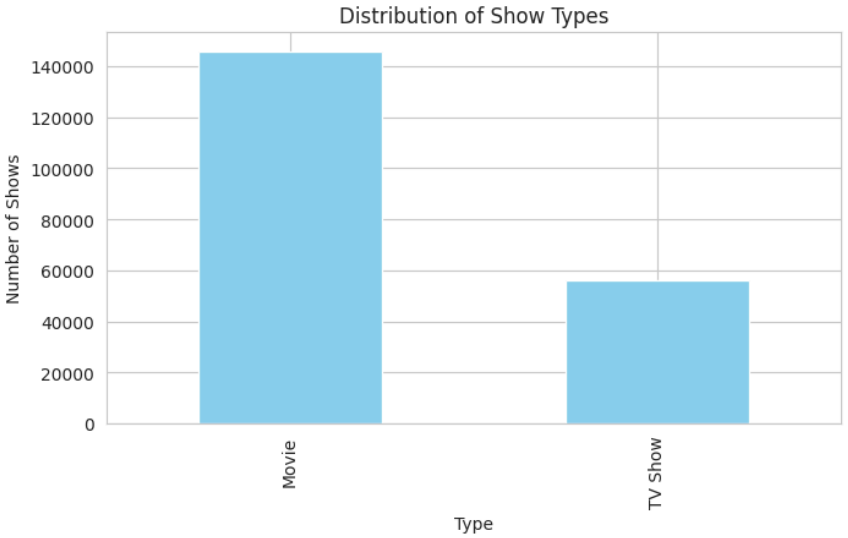
Out[155]:
```
listed_in
 International Movies    27141
Dramas                   19657
Comedies                 13894
Action & Adventure       12216
 Dramas                  10149
                         ...
 Stand-Up Comedy            24
Romantic Movies             20
TV Sci-Fi & Fantasy          7
LGBTQ Movies                 5
Sports Movies                3
Name: count, Length: 73, dtype: int64
```

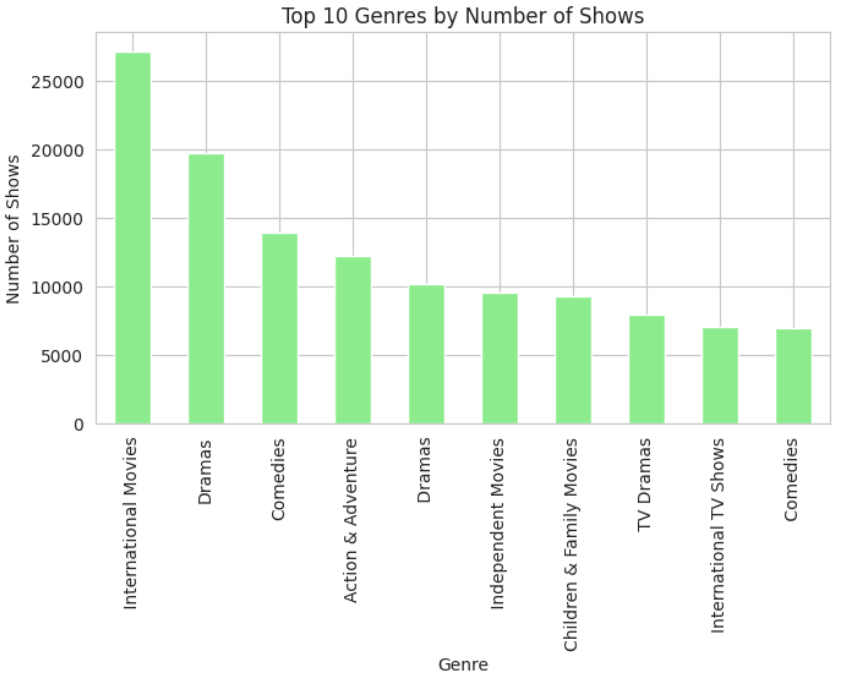
In [156…
```
rating_counts = df['rating'].value_counts()
rating_counts
```

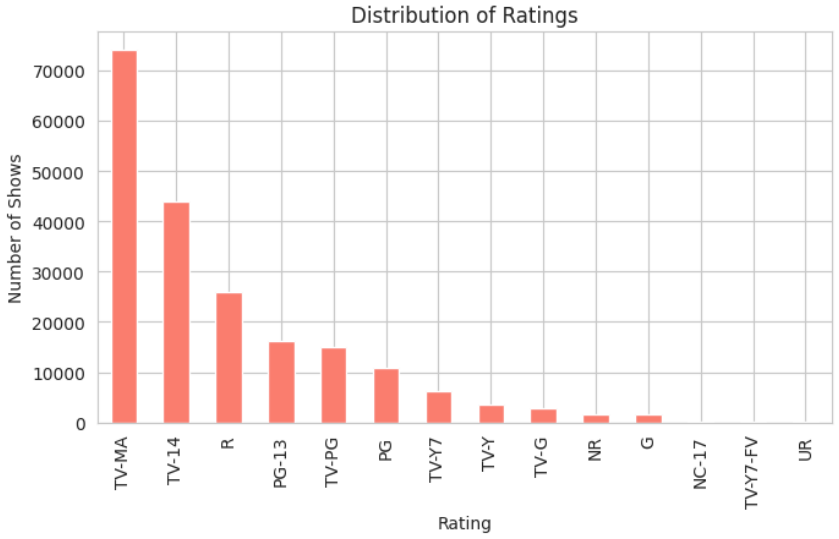
Out[156]:
```
rating
TV-MA       73985
TV-14       43957
R           25860
PG-13       16246
TV-PG       14926
PG          10919
TV-Y7        6304
TV-Y         3665
TV-G         2779
NR           1573
G            1530
NC-17         149
TV-Y7-FV       86
UR             86
Name: count, dtype: int64
```

In [157…

```
plt.figure(figsize=(14, 10))

# Plot 1: Type of shows
plt.subplot(2, 2, 1)
type_counts.plot(kind='bar', color='skyblue')
plt.title('Distribution of Show Types')
plt.xlabel('Type')
plt.ylabel('Number of Shows')

# Plot 2: Genres
plt.subplot(2, 2, 2)
genre_counts.head(10).plot(kind='bar', color='lightgreen')
plt.title('Top 10 Genres by Number of Shows')
plt.xlabel('Genre')
plt.ylabel('Number of Shows')

# Plot 3: Ratings
plt.subplot(2, 2, 3)
rating_counts.plot(kind='bar', color='salmon')
plt.title('Distribution of Ratings')
plt.xlabel('Rating')
plt.ylabel('Number of Shows')

plt.tight_layout()
plt.show()
```







Genres popular accross different countries

In [158…
```
country_genre_counts = df.groupby(['country', 'listed_in']).size().reset_index(name='count')
#country_genre_counts = country_genre_counts.pivot(index='country', columns='listed_in', values='count')
country_genre_counts = country_genre_counts.sort_values('count', ascending=False)
country_genre_counts.head(10)
```

Out[158]:

	country	listed_in	count
1547	India	International Movies	6619
2386	United States	Comedies	5261
2383	United States	Children & Family Movies	4779
2391	United States	Dramas	4707
2379	United States	Action & Adventure	4067
1575	India	Dramas	3365
2354	United States	Independent Movies	3316
2346	United States	Comedies	3096
2351	United States	Dramas	2902
2372	United States	TV Dramas	2443

In [159…
```
country_genre_counts = df.groupby(['country', 'listed_in']).size().reset_index(name='count')
count = country_genre_counts.groupby(['listed_in','country']).max().sort_values('count', ascending=False)
count
```

Out[159]:

		count
listed_in	country	
International Movies	India	6619
Comedies	United States	5261
Children & Family Movies	United States	4779
Dramas	United States	4707
Action & Adventure	United States	4067
...	...	...
Docuseries	Denmark	1
Documentaries	Panama	1
Stand-Up Comedy & Talk Shows	Brazil	1
Sports Movies	Uruguay	1
Docuseries	Argentina	1

2441 rows × 1 columns

In [159…

In [160…

```
df['month_added'] = df['date_added'].dt.month
#df['season_added'] = (df['month_added']%12 + 3)//3

# Group by 'season_added' and 'listed_in' and count the number of shows in each genre for each season
seasonal_genre_counts = df.groupby(['month_added', 'listed_in']).nunique()['show_id']
seasonal_genre = seasonal_genre_counts.sort_values(ascending=False).reset_index()
seasonal_genre.head(15)
```

Out[160]:

	month_added	listed_in	show_id
0	4	International Movies	254
1	10	International Movies	250
2	3	International Movies	242
3	12	International Movies	240
4	7	International Movies	235
5	6	International Movies	230
6	9	International Movies	227
7	8	International Movies	224
8	5	International Movies	197
9	11	International Movies	181
10	1	International Movies	178
11	2	International Movies	166
12	7	Dramas	158
13	3	Dramas	156
14	10	Dramas	154

Number of Tv Shows and Movies added each month

In [161…

```
df_rate = df.groupby(["month_added","type"]).agg({'type':'count'})
month = df_rate.rename(columns = {"type":"count"})
month.reset_index(inplace = True)
month.sort_values('count',ascending=False).head(20)
```

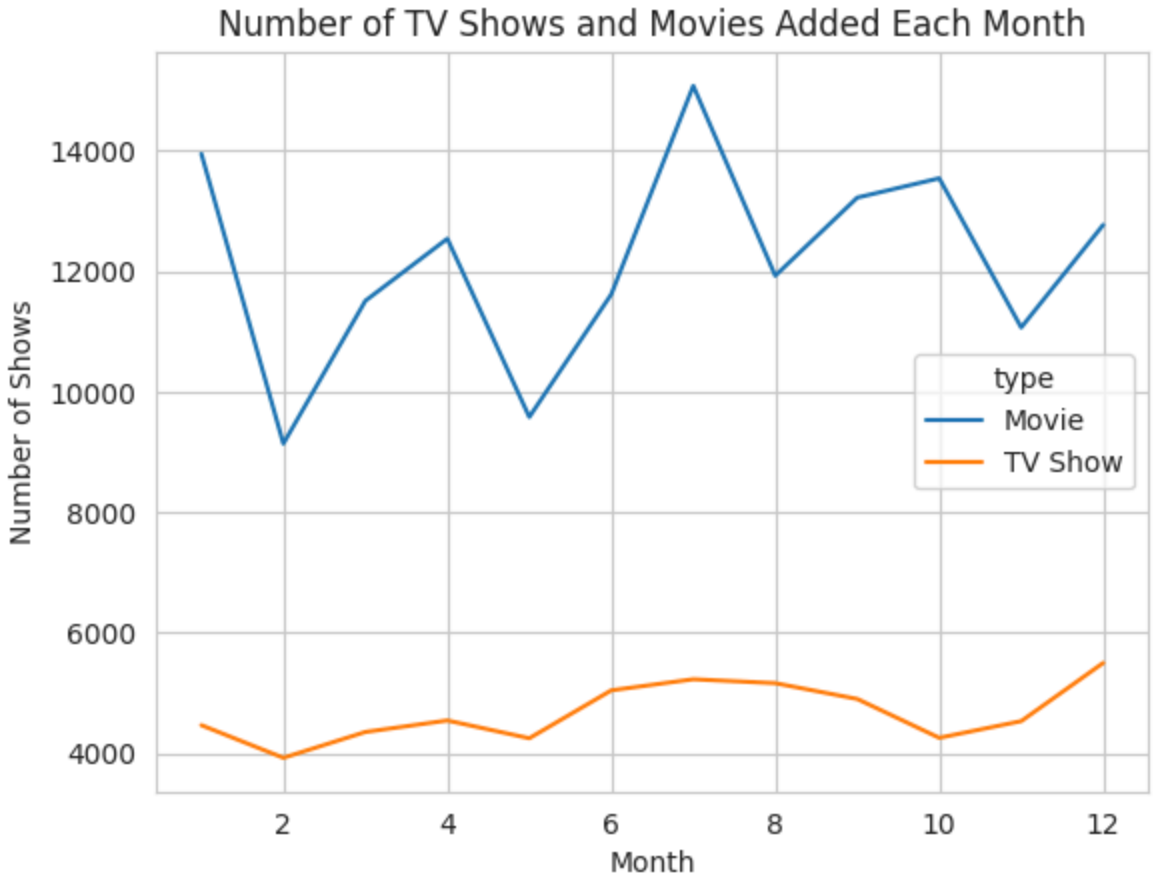
Out[161]:

	month_added	type	count
12	7	Movie	15075
0	1	Movie	13947
18	10	Movie	13541
16	9	Movie	13220
22	12	Movie	12768
6	4	Movie	12538
14	8	Movie	11924
10	6	Movie	11616
4	3	Movie	11507
20	11	Movie	11065
8	5	Movie	9579
2	2	Movie	9137
23	12	TV Show	5498
13	7	TV Show	5227
15	8	TV Show	5162
11	6	TV Show	5043
17	9	TV Show	4900
7	4	TV Show	4543
21	11	TV Show	4532
1	1	TV Show	4465

In [162…

```
#  graph for above code lineplot showing number of tv shows and movies added each month

import seaborn as sns
```

```
import matplotlib.pyplot as plt

# Create a lineplot of the number of TV shows and movies added each month
sns.lineplot(data=month, x="month_added", y="count", hue="type")

# Set the title and axis labels
plt.title("Number of TV Shows and Movies Added Each Month")
plt.xlabel("Month")
plt.ylabel("Number of Shows")

# Show the plot
plt.show()
```



TV shows and Movies added each week

In [163…

```
df['week_added'] = df['date_added'].dt.isocalendar().week
df_rate = df.groupby(["week_added","type"]).agg({'type':'count'})
week = df_rate.rename(columns = {"type":"count"})
week.reset_index(inplace = True)
week.sort_values('count',ascending=False).head(20)
```

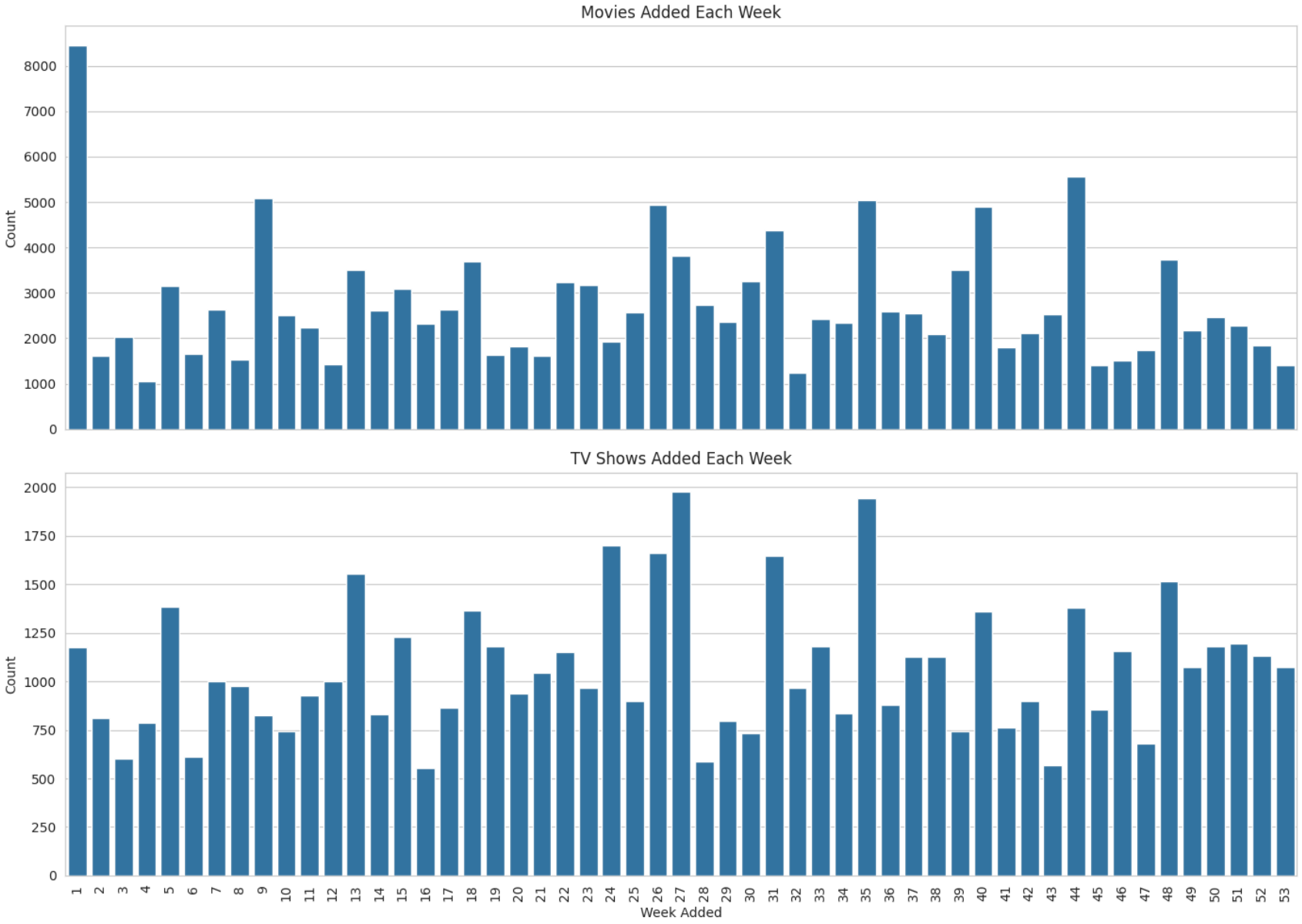
Out[163]:

	week_added	type	count
0	1	Movie	8456
86	44	Movie	5563
16	9	Movie	5094
68	35	Movie	5048
50	26	Movie	4931
78	40	Movie	4905
60	31	Movie	4388
52	27	Movie	3808
94	48	Movie	3737
34	18	Movie	3686
24	13	Movie	3503
76	39	Movie	3502
58	30	Movie	3262
42	22	Movie	3237
44	23	Movie	3164
8	5	Movie	3148
28	15	Movie	3083
54	28	Movie	2744
12	7	Movie	2636
32	17	Movie	2627

In [164…

```
movies = week[week['type'] == 'Movie']
tv_shows = week[week['type'] == 'TV Show']
```

```
# Create subplots
fig, axes = plt.subplots(2, 1, figsize=(14, 10), sharex=True)

# Plot Movies
sns.barplot(data=movies.sort_values('week_added'), x='week_added', y='count', ax=axes[0])
axes[0].set_title('Movies Added Each Week')
axes[0].set_xlabel('')
axes[0].set_ylabel('Count')
axes[0].tick_params(axis='x', rotation=90)

# Plot TV Shows
sns.barplot(data=tv_shows.sort_values('week_added'), x='week_added', y='count', ax=axes[1])
axes[1].set_title('TV Shows Added Each Week')
axes[1].set_xlabel('Week Added')
axes[1].set_ylabel('Count')
axes[1].tick_params(axis='x', rotation=90)

# Adjust layout
plt.tight_layout()
plt.show()
```



Rating and countries

In [165…

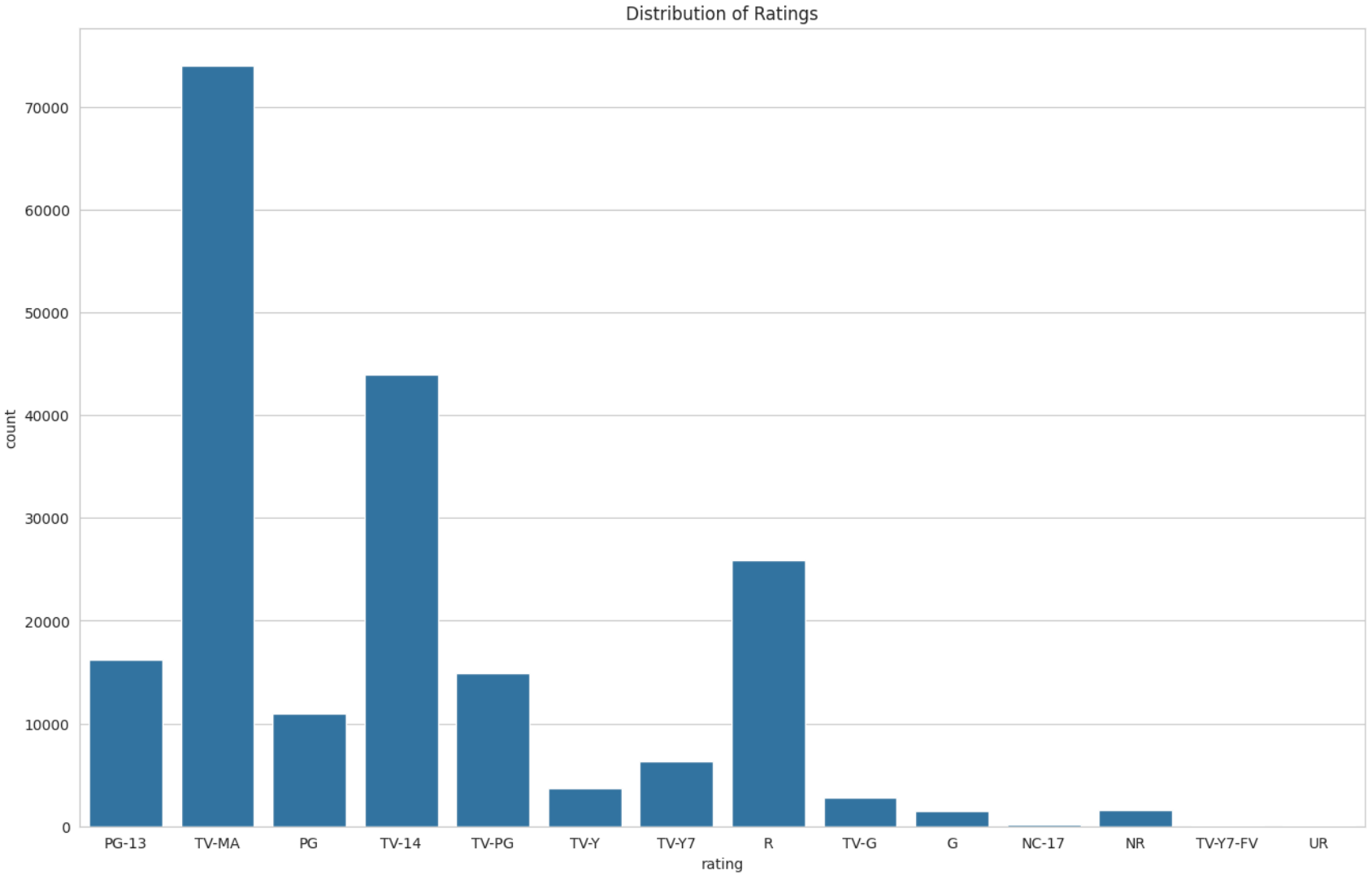
```
# Group by 'country' and 'rating' and count the number of shows in each combination
rating_counts = df.groupby(['country', 'rating']).size().reset_index(name='count')
```

```
# Find the most common rating for each country
most_common_ratings = rating_counts.loc[rating_counts.groupby('country')['count'].idxmax()]

# Display the most common ratings per country
print(most_common_ratings)
```

```
         country rating  count
1                  TV-MA     56
2      Afghanistan  TV-MA      2
3          Albania  TV-MA      8
5          Algeria  TV-MA     53
6           Angola  TV-MA     32
..             ...    ...    ...
759       Uruguay  TV-MA    113
761     Venezuela     NR      2
763       Vietnam  TV-14     66
766  West Germany  TV-MA      4
767      Zimbabwe   TV-G     36

[197 rows x 3 columns]
```

In [166…

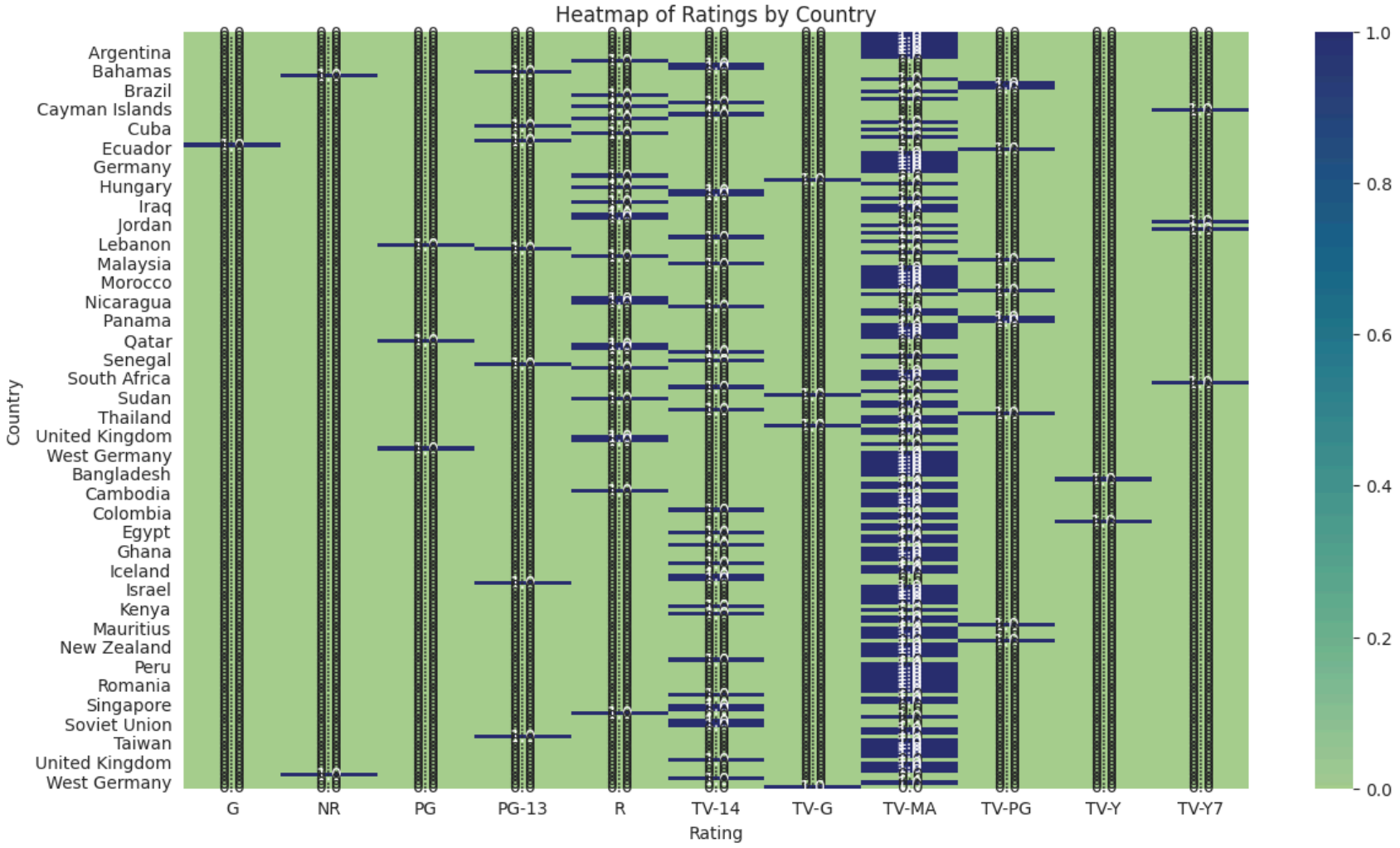
```
plt.figure(figsize=(16, 10))
sns.countplot(x='rating', data=df)
plt.title('Distribution of Ratings')
plt.show()
```



In [167…

```
#Group by 'country' and 'rating' and count the number of shows in each combination
rating_counts = df.groupby(['country', 'rating']).size().reset_index(name='count')

# Find the most common rating for each country
most_common_ratings = rating_counts.loc[rating_counts.groupby('country')['count'].idxmax()]

pivot_table = most_common_ratings.pivot_table(index='country', columns='rating', aggfunc='size', fill_value=0)

# Plotting the heatmap
```

```
plt.figure(figsize=(14, 8))
sns.heatmap(pivot_table, annot=True,fmt='.1f',cmap="crest")
plt.title('Heatmap of Ratings by Country')
plt.xlabel('Rating')
plt.ylabel('Country')
plt.show()
```



In [168…

```
df_country_rating = pd.DataFrame(df.groupby(['rating','country'])['show_id'].nunique()).reset_index()
df_country_rating.sort_values('show_id',ascending = False).head(10)
```

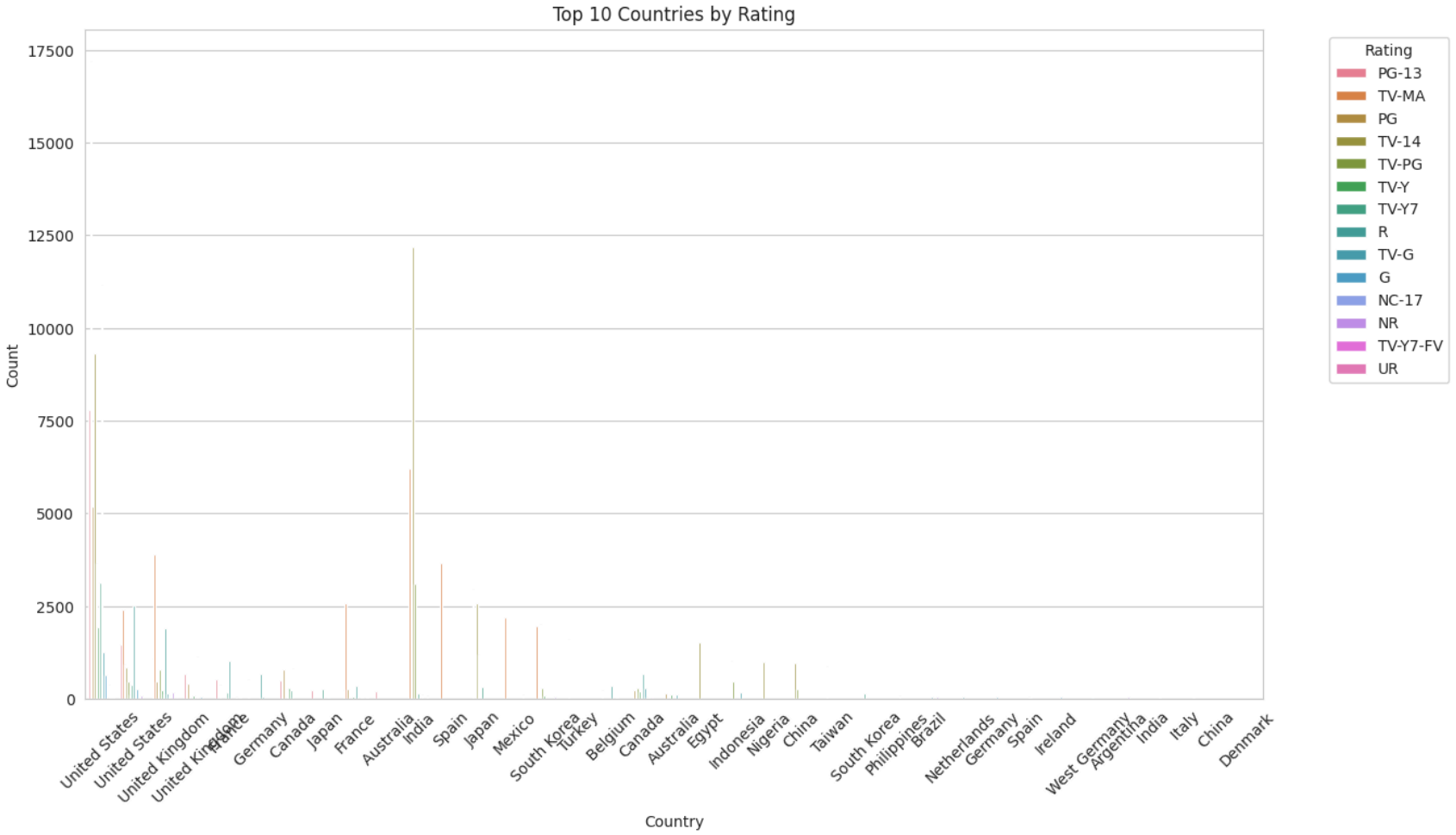
Out[168]:

	rating	country	show_id
585	TV-MA	United States	1266
387	TV-14	United States	669
351	TV-14	India	563
269	R	United States	547
183	PG-13	United States	370
674	TV-PG	United States	364
540	TV-MA	India	260
757	TV-Y7	United States	227
584	TV-MA	United Kingdom	225
108	PG	United States	217

In [169…

```
rating_counts = df.groupby(['country', 'rating']).size().reset_index(name='count')

# Function to get top 10 countries for each rating
def get_top_countries_by_rating(df, rating):
    df_rating = df[df['rating'] == rating]
    df_rating_sorted = df_rating.sort_values(by='count', ascending=False).head(10)
    return df_rating_sorted

# Get unique ratings
unique_ratings = df['rating'].unique()

# Get top 10 countries for each rating
top_countries_by_rating = pd.concat([get_top_countries_by_rating(rating_counts, rating) for rating in unique_ratings]

# Plotting
plt.figure(figsize=(14, 8))
sns.barplot(data=top_countries_by_rating, x='country', y='count', hue='rating')
plt.title('Top 10 Countries by Rating')
plt.xlabel('Country')
plt.ylabel('Count')
```

```
plt.xticks(rotation=45)
plt.legend(title='Rating', bbox_to_anchor=(1.05, 1), loc='upper left')
plt.show()
```



In [170…

```
df['year'].sort_values()
```

Out[170]:
```
5957    2008
5957    2008
6611    2008
5957    2008
5957    2008
        ...
920     2021
920     2021
920     2021
920     2021
0       2021
Name: year, Length: 202065, dtype: int32
```

Insights

From analysis it can be seen in total Netflix has 8807 total shows inkling Movies and Tv Shows both and out of which there are 6131-Movies and 676 Tv Shows. Which shows the 70% percentage of movies and 30% of Tv shows

It is also noted that most common Genre is [International Movies , Dramas , Comedies ,Action,Documentaries]. Out of which International Movies hold the top position

It is also noted that Least common opted Genre is LGBTQ movies and sports movies

There are maximum movies with highest ratings of TV-MA

Maximum number of Movies and Tv Shows production has been noted in United States and India . United States holds the top position in to it

It is Seen Rajiv Chilaka holds the top position as Director and most for family and children entertainment

It is also observed addition of content has been increasing with years and maximum peak time was years 18,19,20,21 And 2020 has observed maximum number of production .The Same scenario has been seen for tv and movies both . We have also observed we can see notable number of growth in Tv shows after 2018.

It is also observed that best time to launch movie is mostly month like July, Where as For Tv Shows December has been more preferred month.

Insights : It can be seen maximum number of International Movies are seen in India and least number of crime shows in Austria

Insights: Here we can see number of Movies added is more in 7th month and least in Feb Similarly for Tv Shows also we can notice that it has fluctuating addition pattern and more addition is seen in December month and least in Feb .

Insights : The plotting shows the count of movies and TV shows added each week throughout the years Identifying peaks in specific weeks helps understand seasonal trends For Example high count of movies added in 27th week may be summer release strategy Here by comparing two plots we can see that movies has almost similar release patterns where as TV Tv Shows spike in particular weeks ,which might indicate preference for worthy release in this period.

Insights on ratings :- Netflix uses various ratings to categories the nature of content and shows based on it

1. PG-13: Parents Strongly Cautioned. Some material may be inappropriate for children under 13.
2. TV-MA: Mature Audience Only. Specifically designed to be viewed by adults and may be unsuitable for children under 17.
3. PG: Parental Guidance Suggested. Some material may not be suitable for children.
4. TV-14: Parents Strongly Cautioned. Contains some material that many parents would find unsuitable for children under 14 years of age.
5. TV-PG: Parental Guidance Suggested. Contains material that parents may find unsuitable for younger children.
6. TV-Y: All Children. Suitable for all children.
7. TV-Y7: Directed to Older Children. Suitable for children age 7 and above.
8. R: Restricted. Contains some adult material. Parents are urged to learn more about the film before taking their children to see it.
9. TV-G: General Audience. Suitable for all ages.
10. G: General Audiences. All ages admitted.
11. NC-17: Adults Only. Clearly adult. Children are not admitted.
12. TV-Y7-FV: Directed to Older Children - Fantasy Violence. Suitable for children age 7 and older, with fantasy violence.
13. UR: Unrated. The content has not been rated by a recognized rating system. By identifying common rating in particular region we can understand regional content preferences .For example ,Here we can see TV-MA is most common rating in United states which is mature content . As here it is seen TV-MA,TV-14 ,TV-PG and R is mostly preferred ratings

Bussiness Insights

Netflix has majority of content released after 2018 .It is seen content for earlier years is less and hence could not engage senior citizens.IT can try and engage senior citizen by targeting senior citizen audience .

As we saw earlier, Maximum content is of TV-MA , TV-14 or PG and R . Which means 80% of content is either for adult or for children with parental control options.It could target on TV-G and for younger childrens who could be engaged in future .

Most of the Genre in Netflix is international movies and shows .We can increase audience engagement by more and more preferred genre in particular country .

Only top 10 countries contribute to the 70 % of Netflix content and rest comes for remaining countries hence Netflix could engage more and more countries to increase business and relatable audience

Even We could consider the duration of shows and Movies and work in accordance with it for upcoming shows and seasons .As we saw maximum viewers like watching movies having one seasons or with minimum number of time frame .

Consider what competitors are producing and identify gaps or opportunities where Netflix can differentiate itself from .

Netflix Should Focus more on producing movies along with Tv Shows according to the what we have seen from the given data

Recommendations

Very limited Genre has been Focused in other countries except United States .Hence every country area should try and add their cultural instinct to it and engage more audience through it .Determine the regional preferences for particular genre and type of content and particular target audience .

Collaborate with local content creator, Producers and distributors to strengthen the market

Try and release more and more original and something new story targeting on different audience groups and keep the waiting period short as now people keep searching new contents more and more.

Netflix Should Focus more on producing movies considering all kinds of ratings and delivering high quality content to audience.`

In [171…

```
#done
```