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

Double-click (or enter) to edit

Start coding or generate with AI.

Start coding or generate with AI.

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

Double-click (or enter) to edit

Read File and show

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

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...
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	After crossing paths at a party, a Cape Town t...
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 protect his family from a powerful drug lor...
3	s4	TV Show	Jailbirds New Orleans	NaN	NaN	NaN	September 24, 2021	2021	TV-MA	1 Season	Docuseries, Reality TV	Feuds, flirtations and toilet talk go down amo...
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 city of coaching centers known to train I...

Next steps: Generate code with df View recommended plots

Shape of dataframe

```
df.shape
```

```
(8807, 12)
```

checking info

```
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

```
df.dtypes
```

```
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

```
df.isna().sum()
```

```
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
```

```
df.describe(include = 'object')
```

	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

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Filling NAN Space

```
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])
```

```
df.isna().sum()
```

```
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
```

```
df.describe()
```

	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

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

```
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

```
## 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)
```

```
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(','))
```

```
df = df.explode('cast')
df = df.explode('director')
df = df.explode('country')
df = df.explode('listed_in')
df.head()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	September 25, 2021	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows	After crossing paths at a party, a Cape Town t...
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	TV Dramas	After crossing paths at a party, a Cape Town t...
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	TV Mysteries	After crossing paths at a party, a Cape Town t...
1	s2	TV Show	Blood & Water	NotAvailable	Khosi Ngema	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows	After crossing paths at a party, a Cape Town t...

Converting data_added column to datetime

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

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description	year
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...	2021
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	After crossing paths at a party, a Cape Town t...	2021
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	After crossing paths at a party, a Cape Town t...	2021
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	After crossing paths at a party, a Cape Town t...	2021
1	s2	TV Show	Blood & Water	NotAvailable	Khosi Ngema	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	After crossing paths at a party, a Cape Town t...	2021

splitting duration of movies and seasons

```
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()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description	year	movie_min	seasons_no
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...	2021	NaN	NaN
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	After crossing paths at a party, a Cape Town t...	2021	NaN	NaN
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	After crossing paths at a party, a Cape Town t...	2021	NaN	NaN
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	After crossing paths at a party, a Cape Town t...	2021	NaN	NaN

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

```
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
```

```
df['rating'].unique()
```

```
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

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

```
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()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description	year	movie_min	seasons_no
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...	2021	NaN	NaN
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	After crossing paths at a party, a Cape Town t...	2021	NaN	NaN
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	After crossing paths at a party, a Cape Town t...	2021	NaN	NaN
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	After crossing paths at a party, a Cape Town t...	2021	NaN	NaN

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

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description	year	movie_min	seasons_no
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NotAvailable	United States	2021-09-25	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...	2021	0	0
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows	After crossing paths at a party, a Cape Town t...	2021	0	0
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Dramas	After crossing paths at a party, a Cape Town t...	2021	0	0
1	s2	TV Show	Blood & Water	NotAvailable	Ama Qamata	South Africa	2021-09-24	2021	TV-MA	2 Seasons	TV Mysteries	After crossing paths at a party, a Cape Town t...	2021	0	0

```
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
year            0
movie_min       0
seasons_no      0
dtype: int64
```

Start coding or generate with AI.

Preprocessing ends here

Data analysis

Attributes

```
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
--------------------
month_added 12
--------------------
launch_time 1
--------------------
week_added 53
--------------------
```

Titles

```
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
```

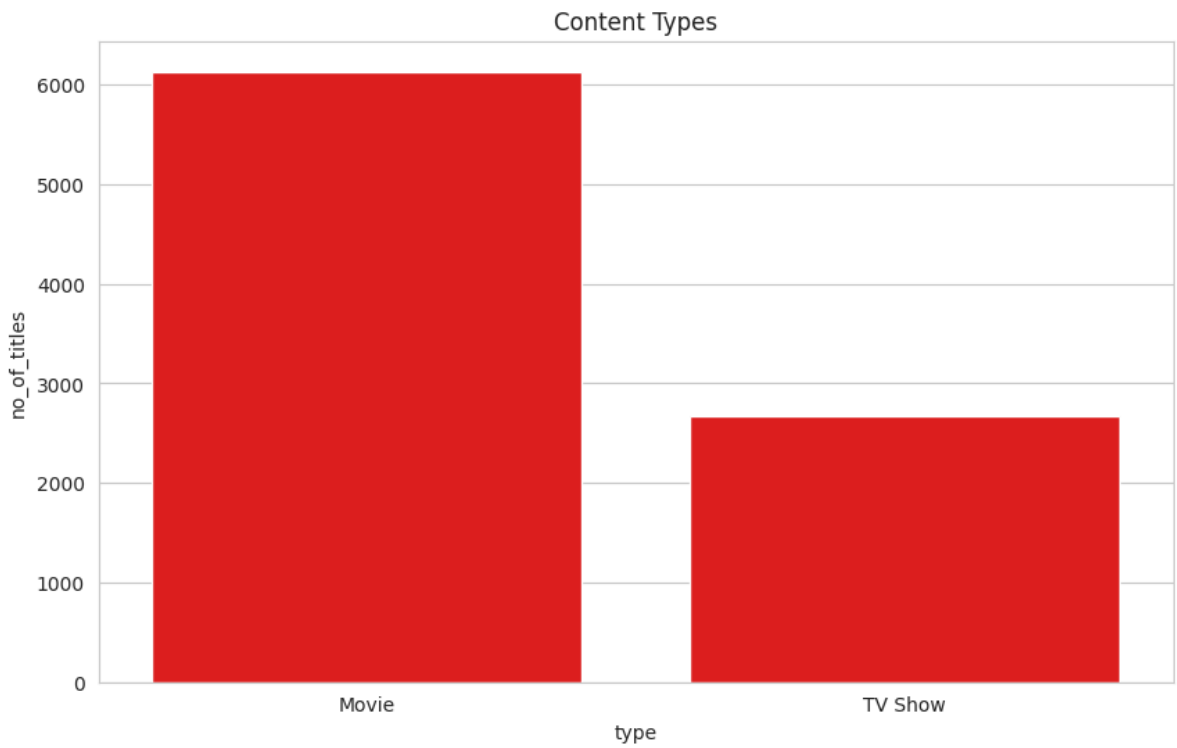
Content Types

```
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()
```

	type	no_of_titles
0	Movie	6131
1	TV Show	2676

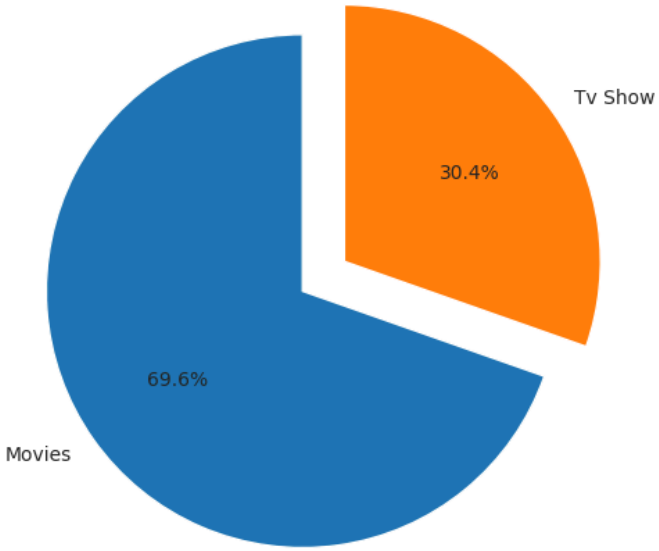
Next steps: Generate code with no_of_shows View recommended plots

```
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()
```



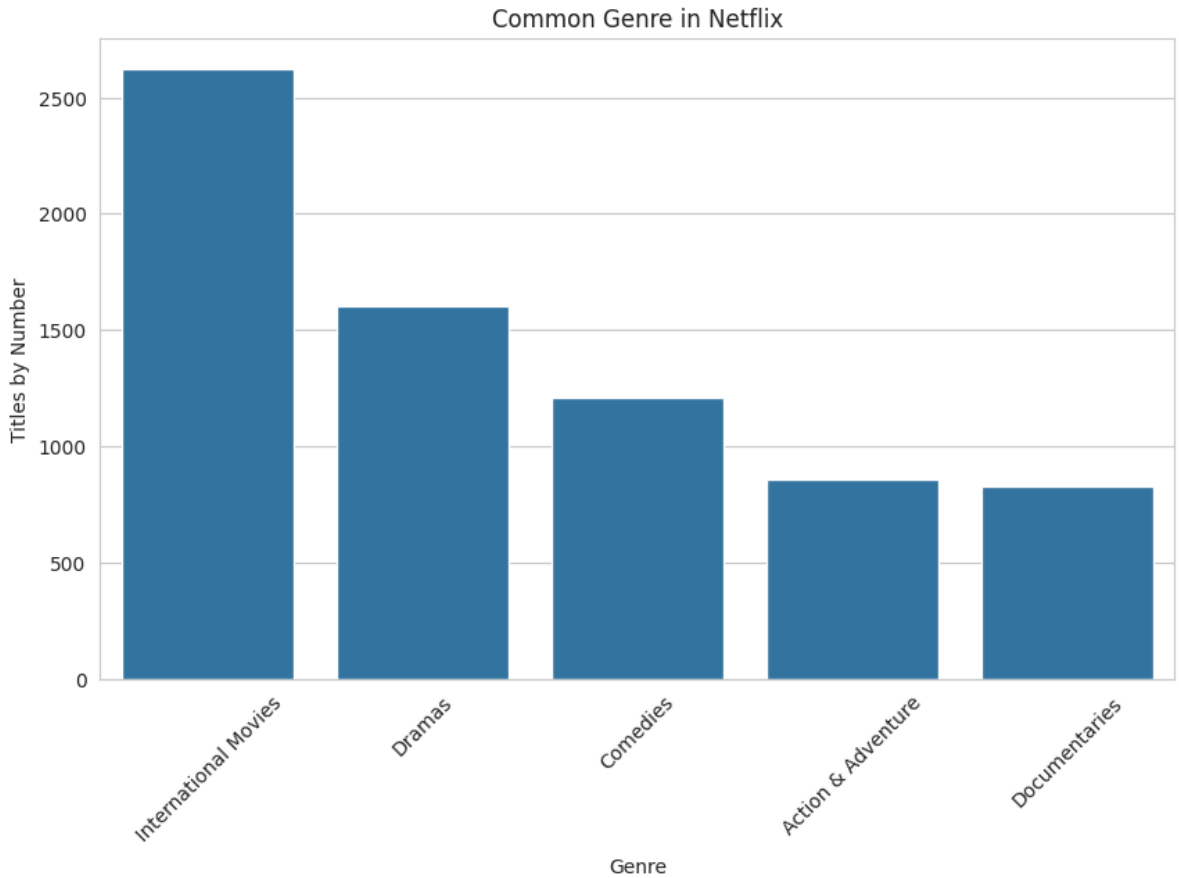

```
movies_percentage = round(df[df['type']=='Movie']['show_id'].nunique()/total_no_titles*100,2)
tv_shows_percentage = round(df[df['type']=='TV Show']['show_id'].nunique()/total_no_titles*100,2)
plt.figure(figsize = (10,6))
types = np.array([movies_percentage,tv_shows_percentage])
label = ['Movies','Tv 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()
```

movie_percentage is {movies_percentage}% and tv_shows_percentage is {tv_shows_percentage}%



least common genere **bold text**

```
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)


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()
```



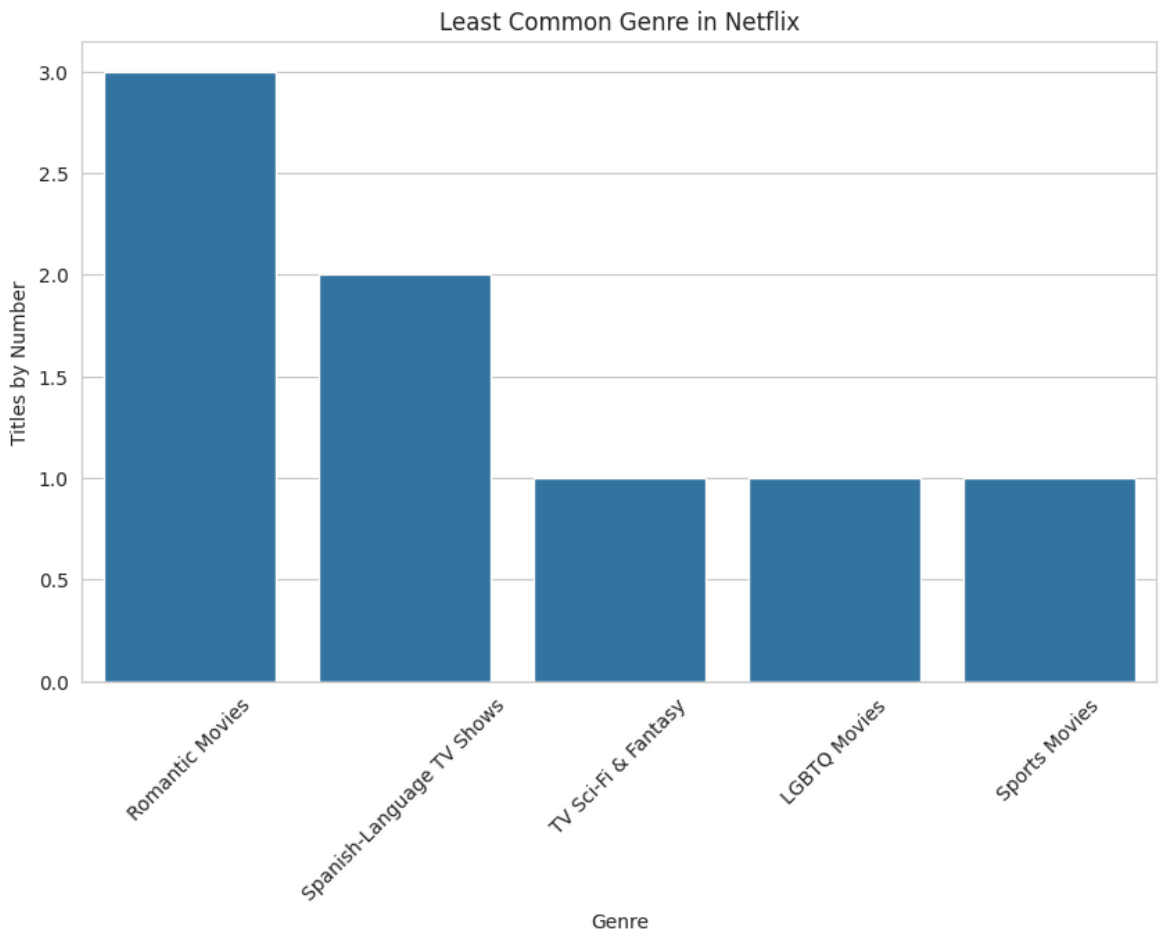
Least common Genre in Netflix

```
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
```

	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

Next steps: Generate code with df_listed_in View recommended plots

```
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()
```



No of shows based on type/category and rating

```
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
```

	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
22	TV Show	TV-Y7-FV	1

Next steps: Generate code with df_title_rating View recommended plots

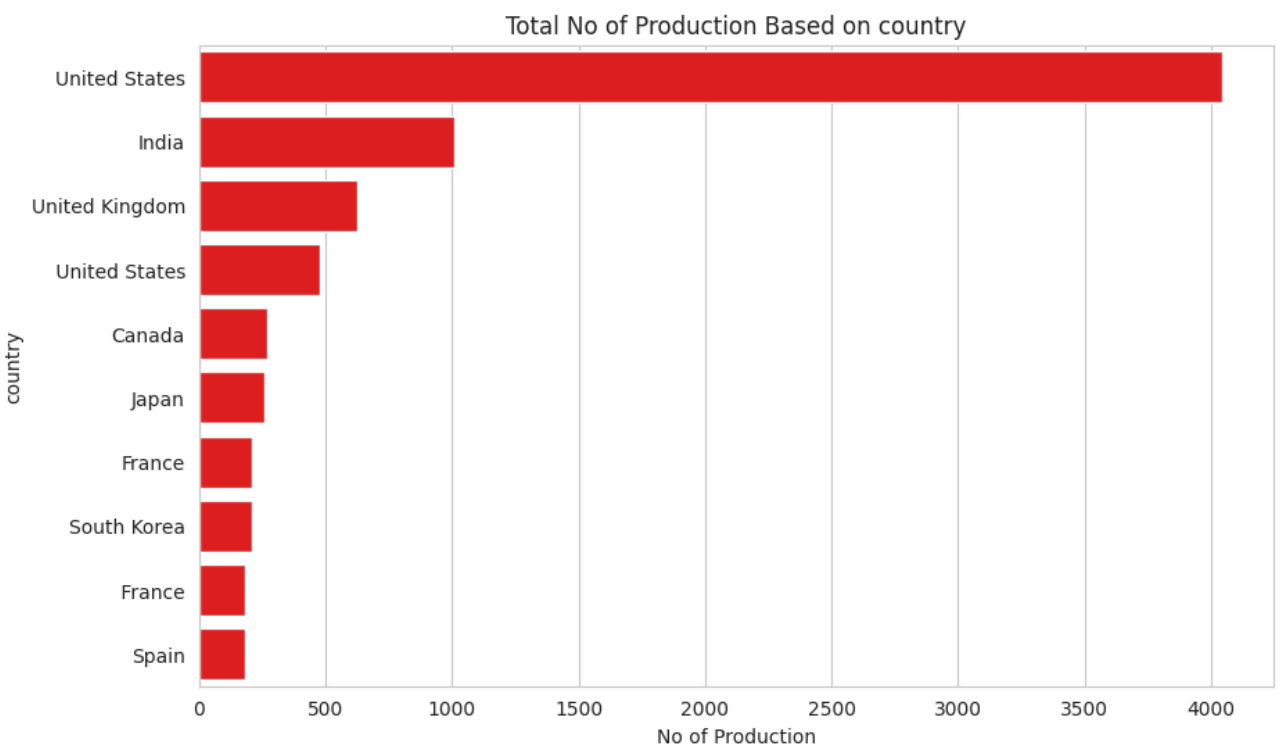
Which country has highest production of Movies and Tv shows

```
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)
```

```
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()
```




```
df['country'].isna().sum()
```

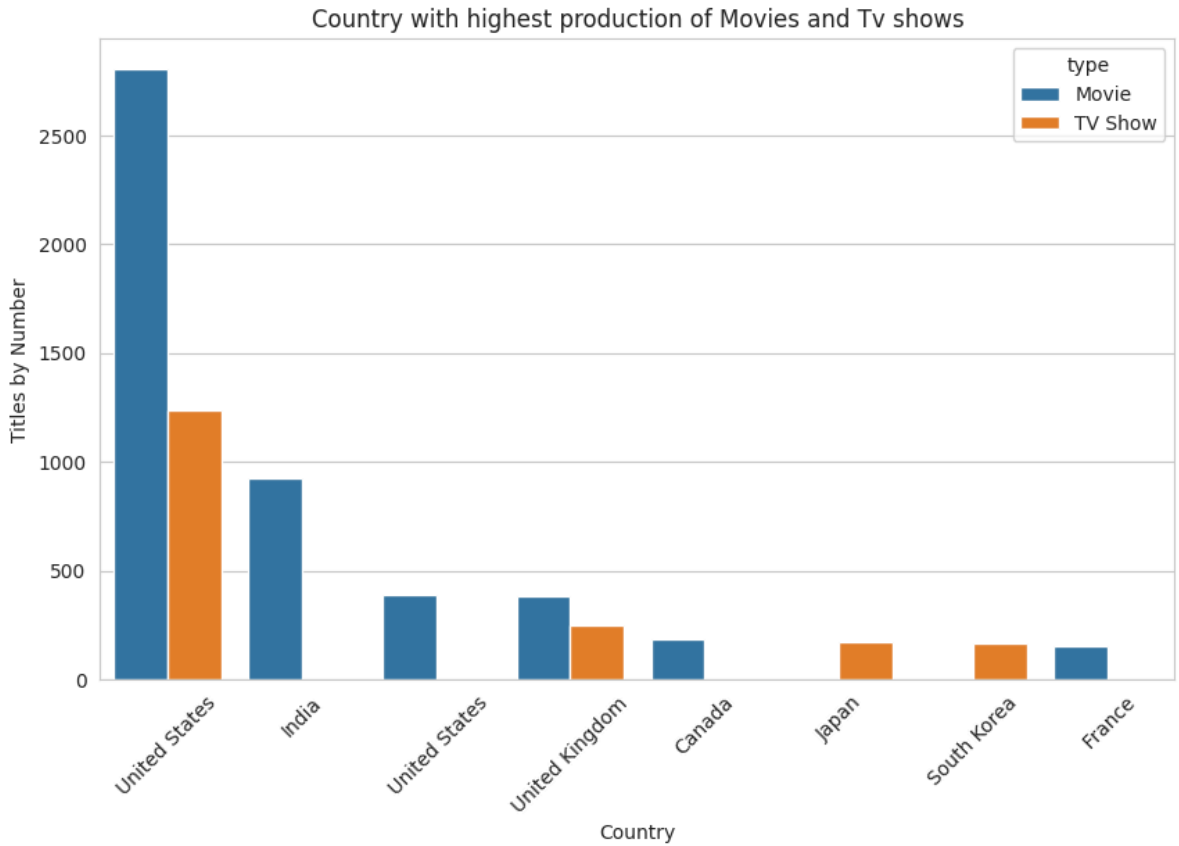
```
0
```

```
#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
```

	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

Next steps: Generate code with df_country View recommended plots

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


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()
```



Double-click (or enter) to edit

Duration of content based on **Type**

```
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
```

	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

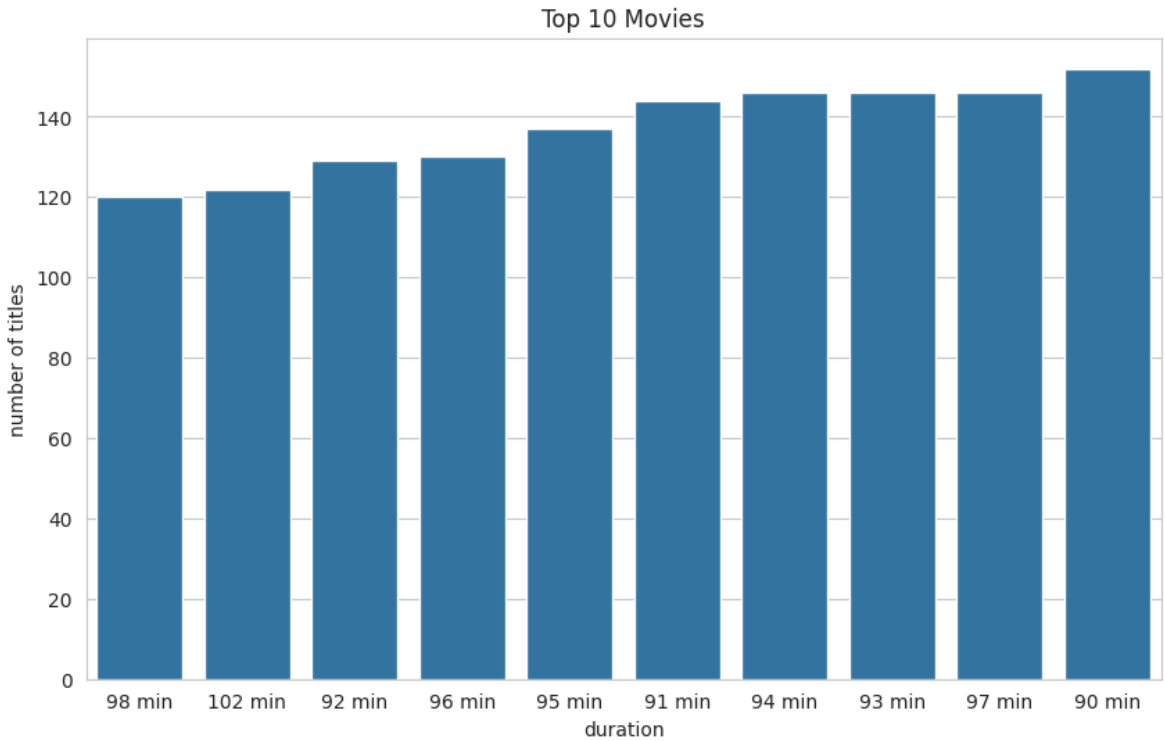
221 rows × 3 columns

Next steps: Generate code with df_by_duration View recommended plots

Duration of top 10 Movies

```
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)
```

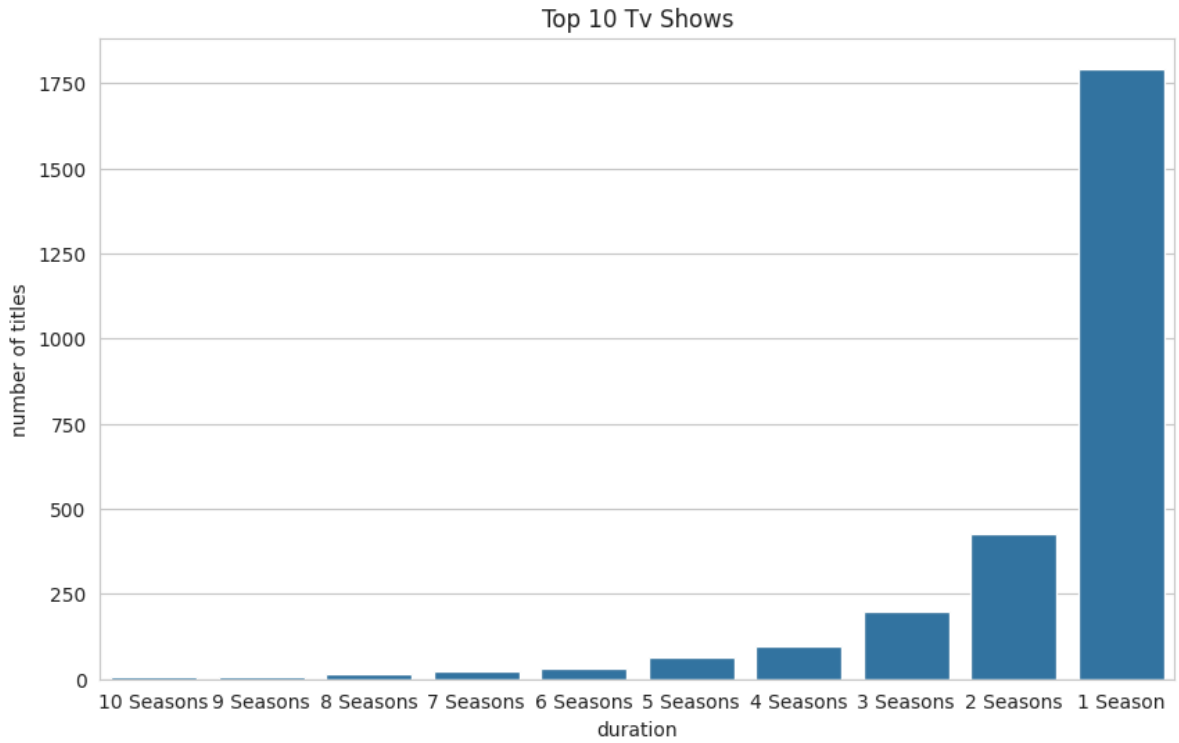
```
plt.figure(figsize = (10,6))
sns.barplot(x = 'duration',y = 'number of titles',data = top_10_movies_desc)
plt.title('Top 10 Movies')
plt.show()
```



Duration of Top 10 Tv Shows

```
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)
```

```
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()
```



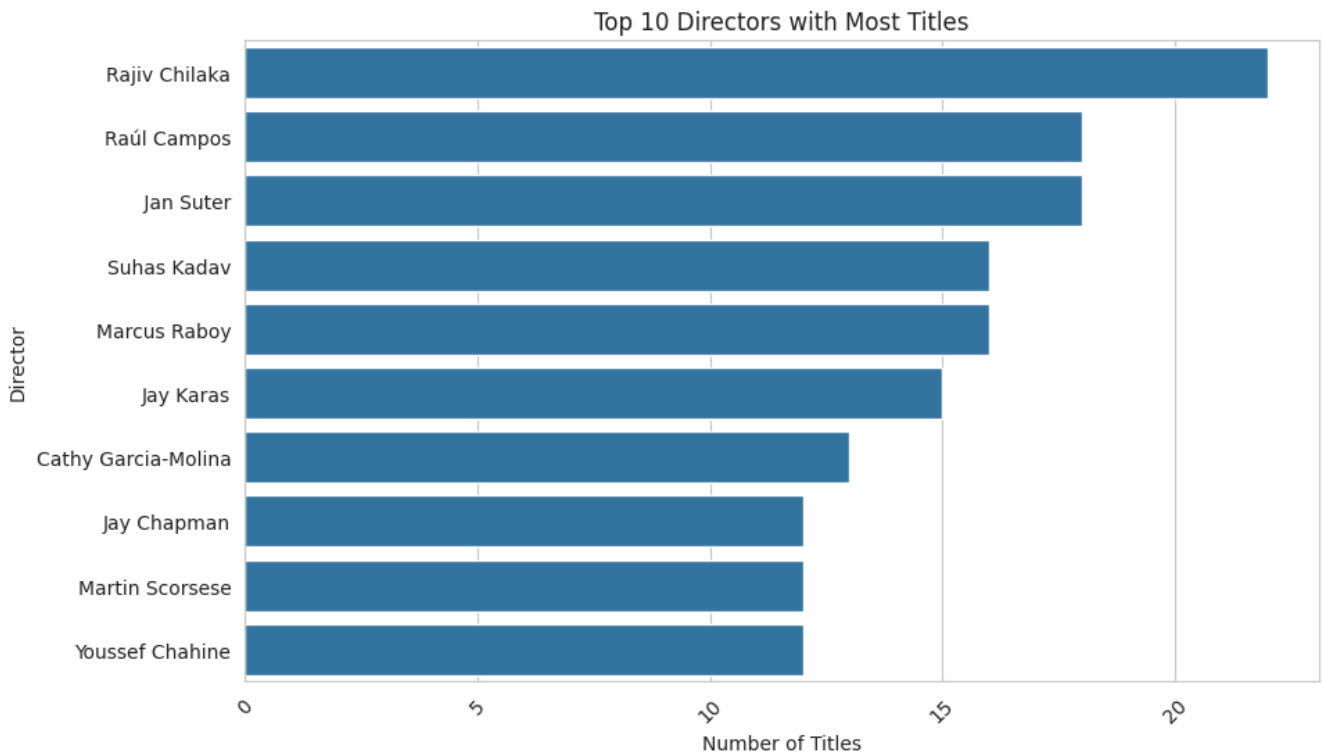

```
df_directors = pd.DataFrame(df.groupby('director')['title'].nunique()).reset_index()
df_directors = df_directors.sort_values('title',ascending = False).iloc[1:]
df_directors.head()
```

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

Next steps: Generate code with df_directors View recommended plots

```
# 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

```
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()
```

```
df_director.head()
```

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

Next steps: Generate code with df_director View recommended plots

```
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()
```

	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

Next steps: Generate code with df_director View recommended plots

```
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
```

	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

Next steps: Generate code with `directors_sort` View recommended plots

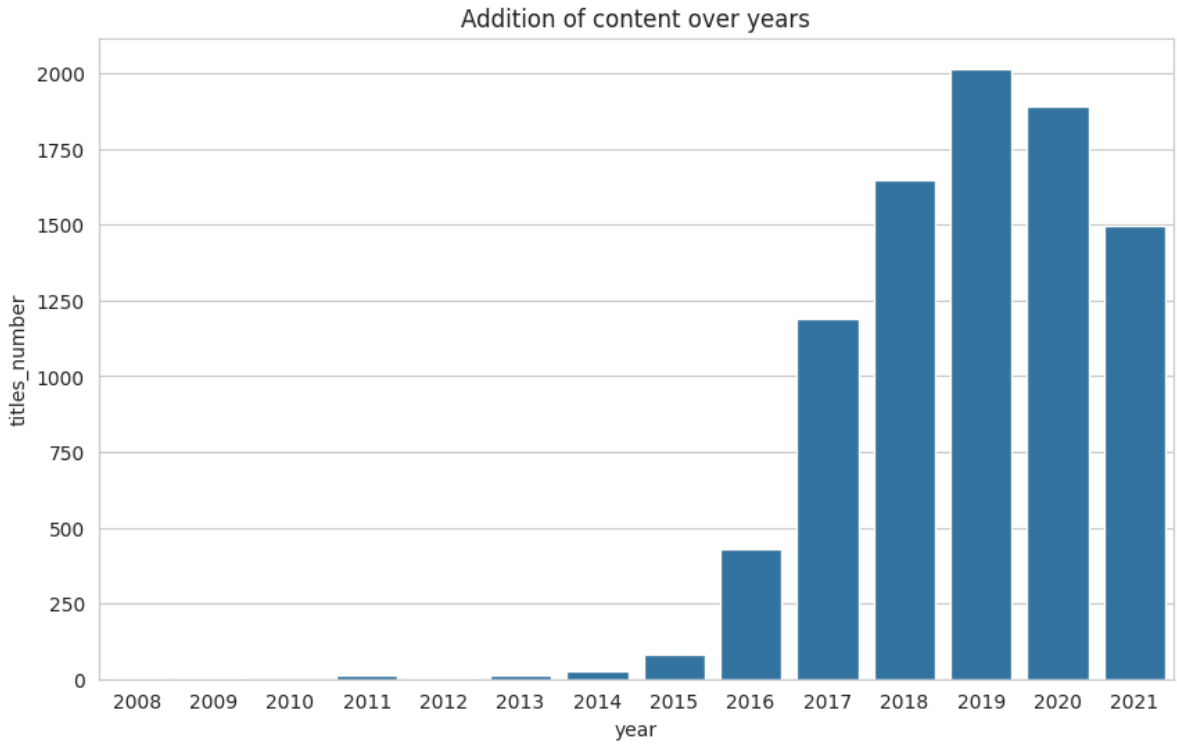
Addition of content over years

```
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
```

	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

Next steps: Generate code with `df_title_over_time` View recommended plots

```
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()
```



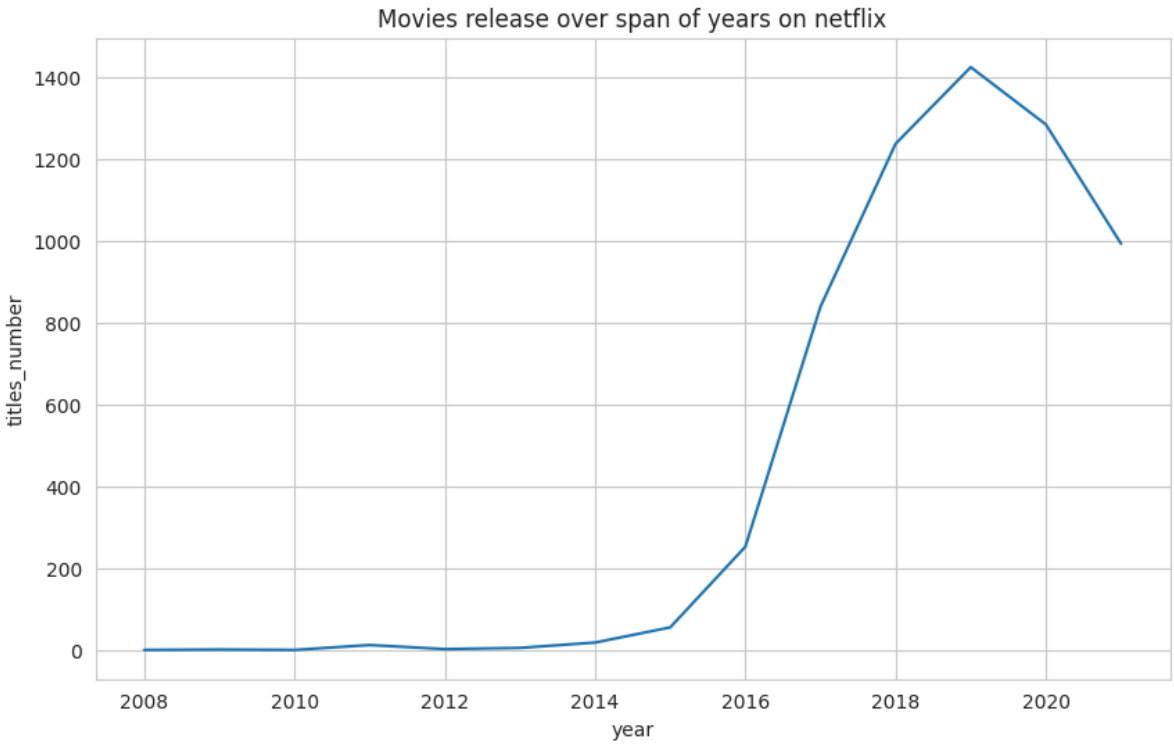
Movies release over span of years on netflix

```
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
```

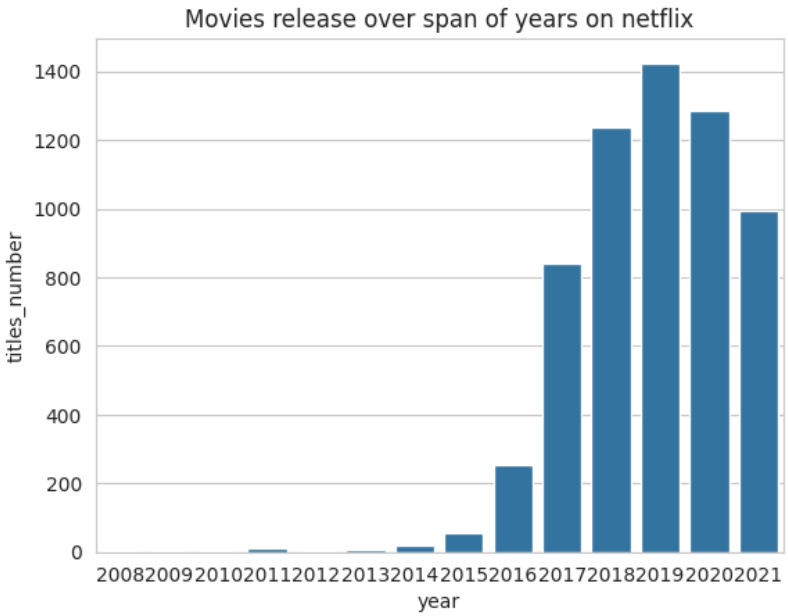
	year	titles_number
0	2008	1
1	2009	2
2	2010	1
3	2011	13
4	2012	3
5	2013	6
6	2014	19
7	2015	56
8	2016	253
9	2017	839
10	2018	1237
11	2019	1424
12	2020	1284
13	2021	993

Next steps: Generate code with df_movies_release_overyears View recommended plots

```
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()
```




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

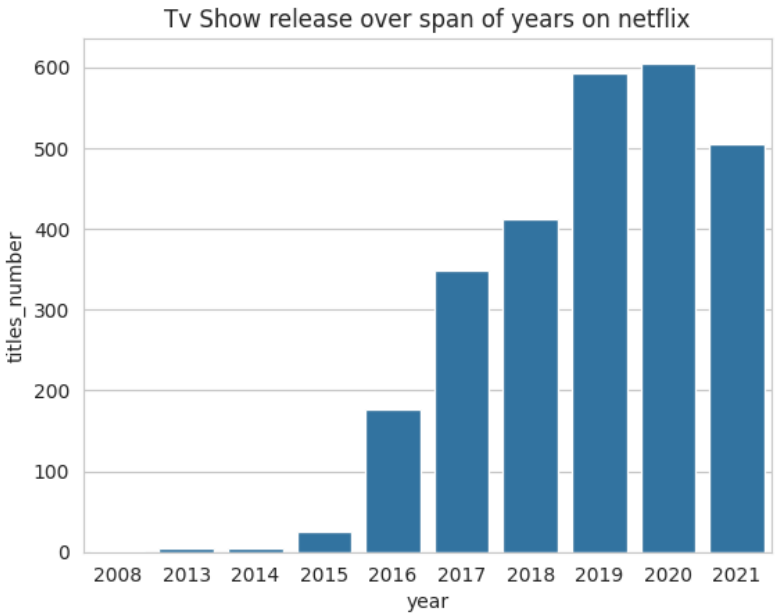



```
df_tvshow_release_overyears = pd.DataFrame(df[df['type']=='TV Show'].groupby('year')['show_id'].nunique()).reset_index()
df_tvshow_release_overyears.columns = ['year','titles_number']
df_tvshow_release_overyears
```

	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

Next steps: Generate code with df_tvshow_release_overyears View recommended plots

```
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()
```



Double-click (or enter) to edit

```
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()
```

	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

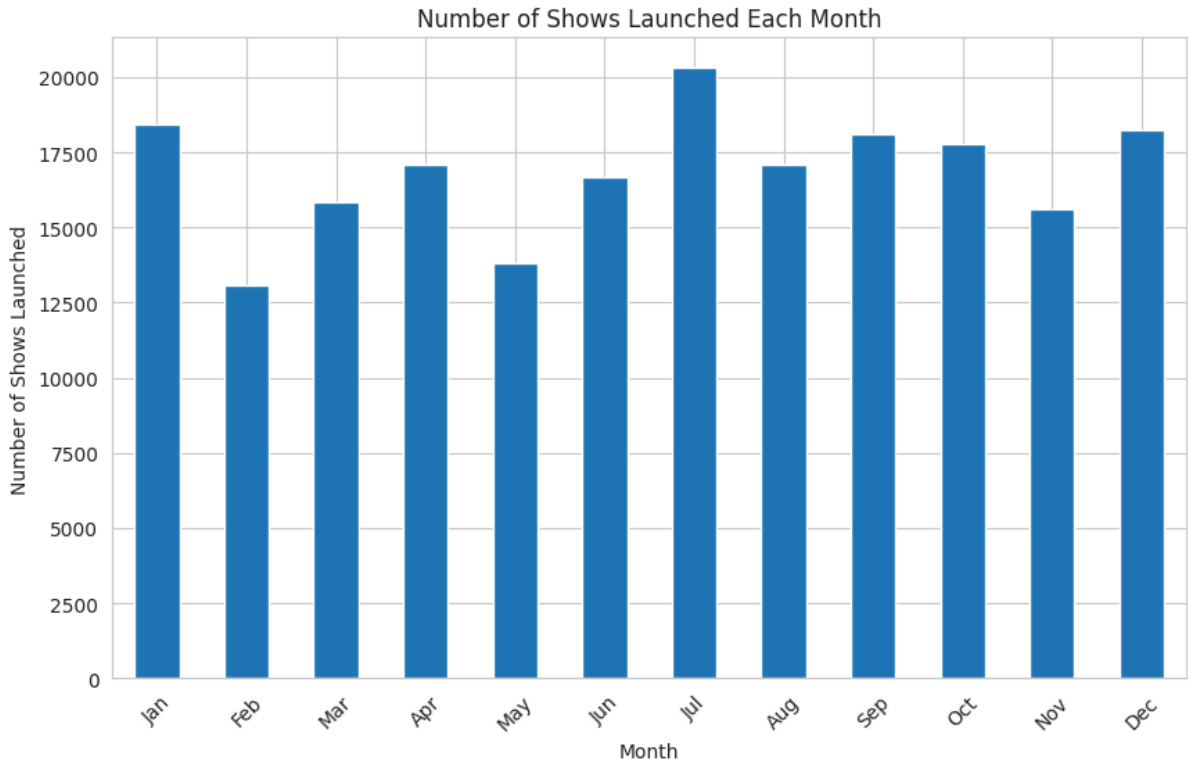
Next steps: Generate code with `full_content` View recommended plots

month added and launch time

```
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
```

```
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
```

```
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=45)
plt.show()
```



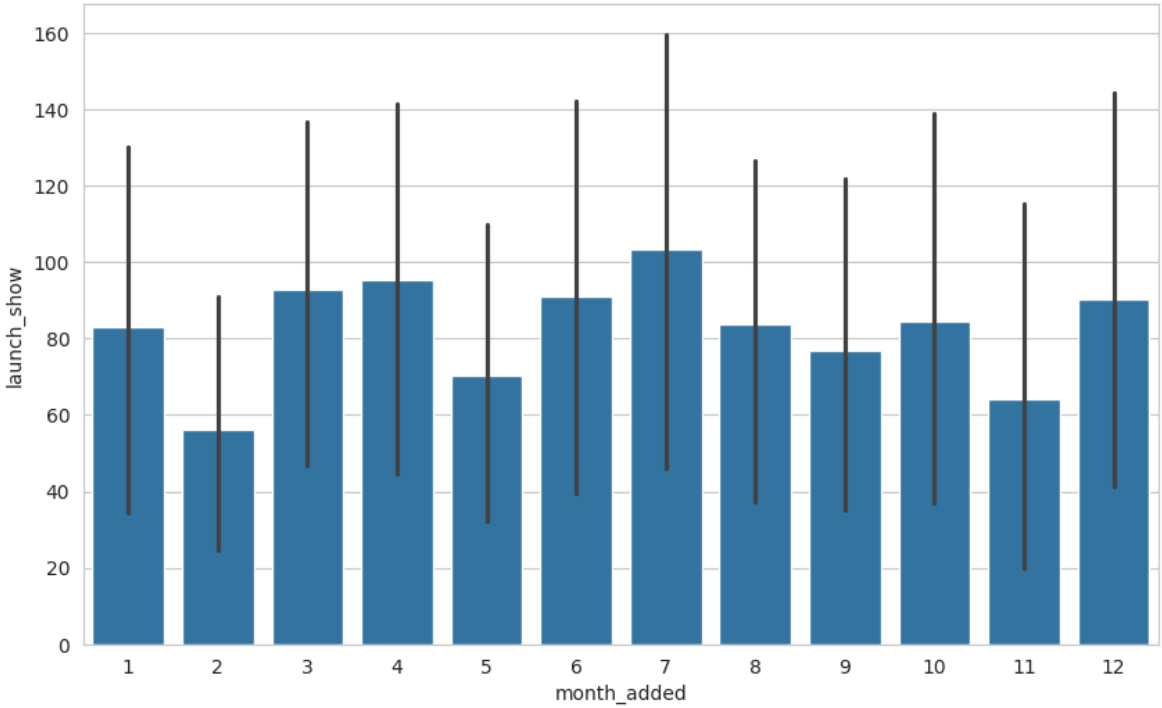

```
launch_counts = pd.DataFrame(df.groupby(['year','month_added'])['show_id'].nunique().sort_index()).reset_index()
launch_counts.columns = ['year','month_added','launch_show']
launch_month_count = launch_counts.sort_values('launch_show', ascending=False)
launch_month_count.head(18)
```

	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

Next steps: Generate code with `launch_month_count` View recommended plots

```
sns.set_style("whitegrid")

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

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



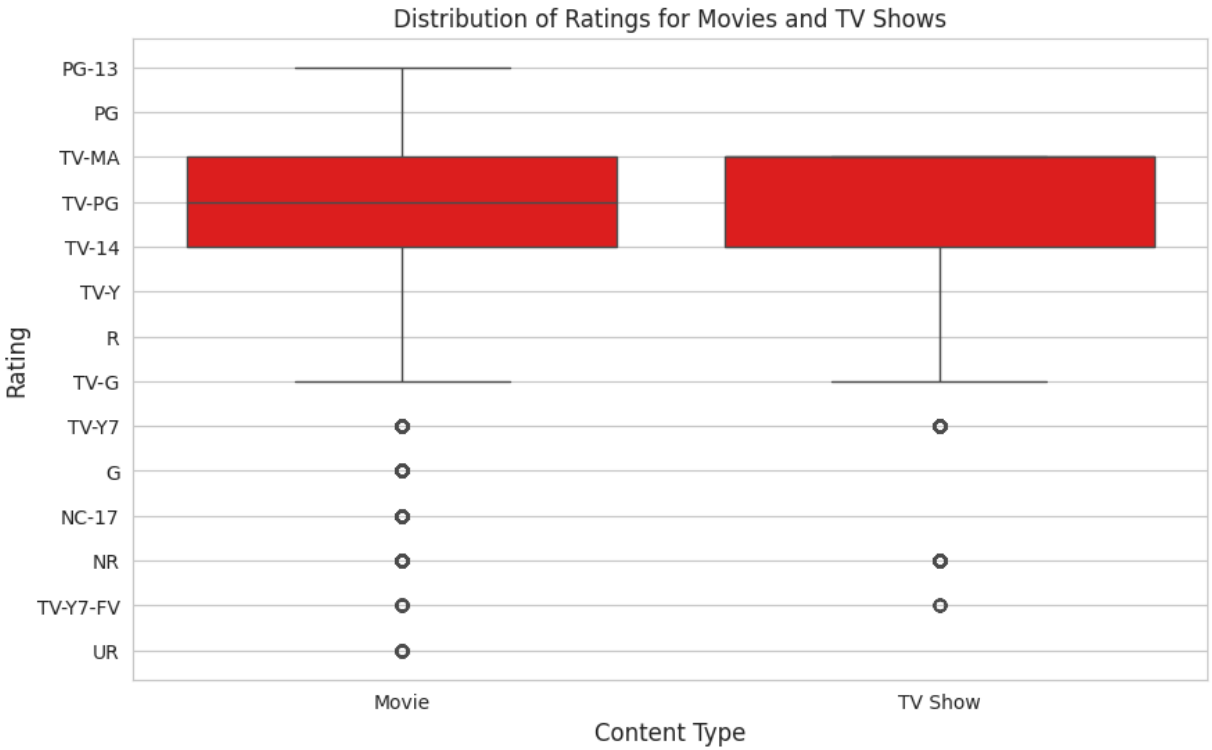
Start coding or generate with AI.

Distribution of Ratings For Movies and TV Shows

Double-click (or enter) to edit

Double-click (or enter) to edit

```
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()
```



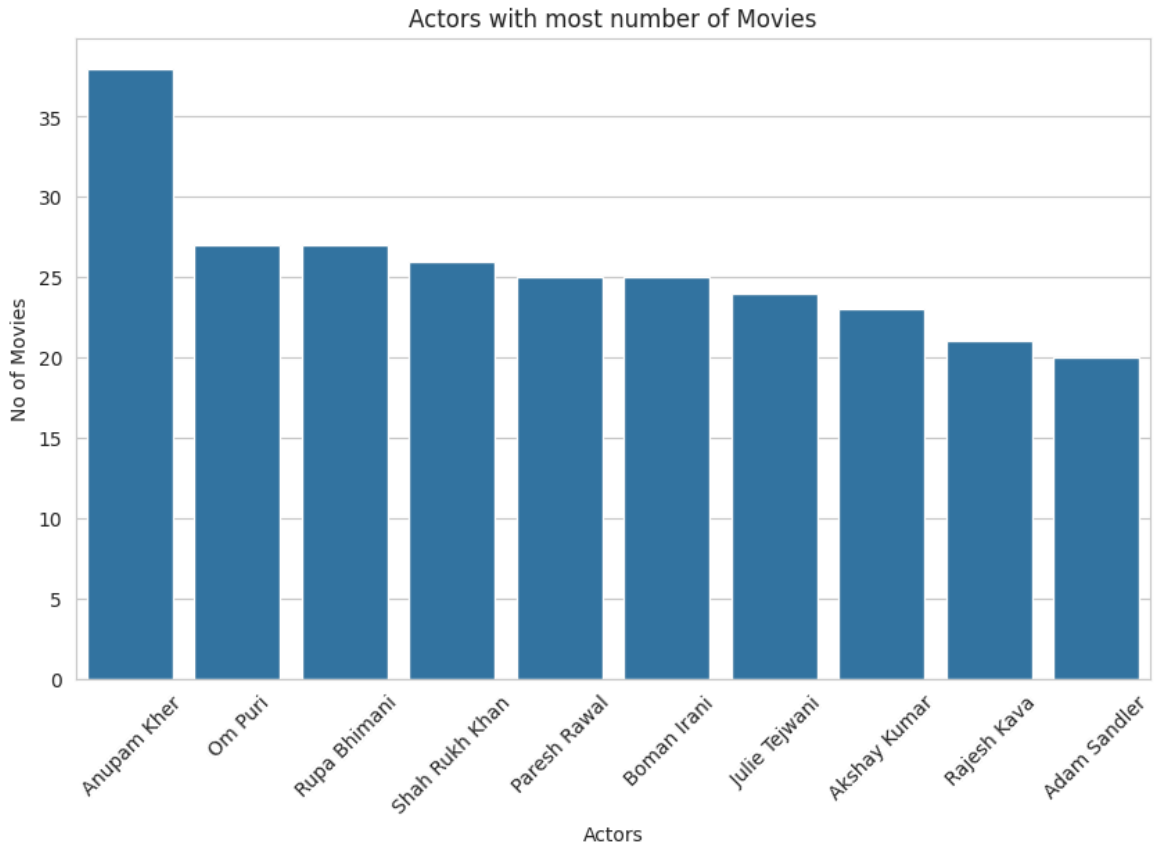
Actors with most number of Movies

```
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
```

	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

Next steps: Generate code with df_actor_movie_sort View recommended plots

```
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()
```



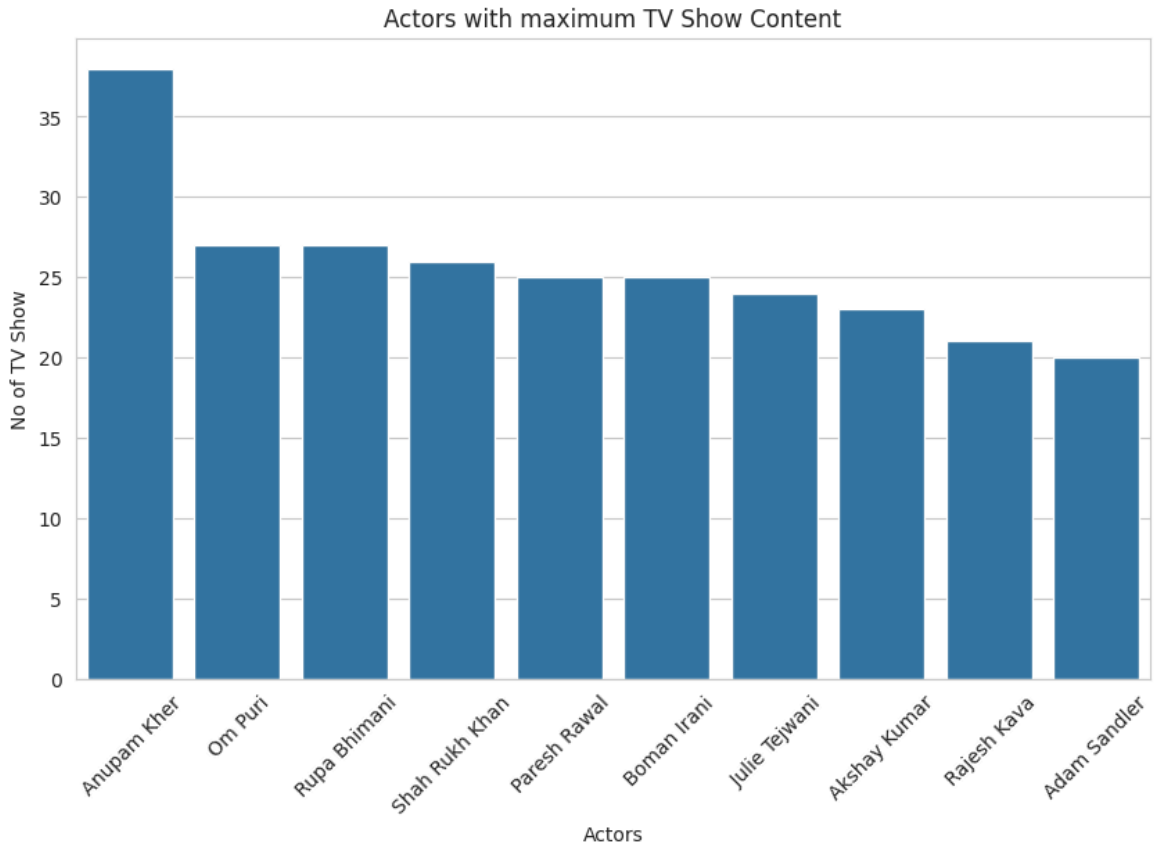
Actors with maximum TV Show Content

```
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
```

	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

Next steps: Generate code with df_actor_tv_show View recommended plots

```
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()
```




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

```
type
Movie      145917
TV Show     56148
Name: count, dtype: int64
```

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

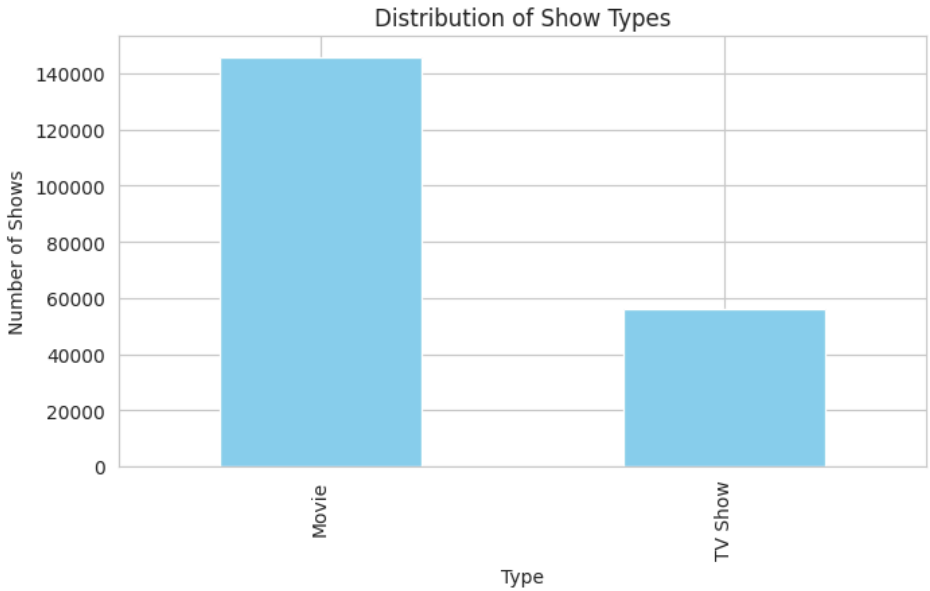
```
listed_in
 International Movies    27141
Dramas                   19657
Comedies                 13894
Action & Adventure       12216
 Dramas                  10149
                         ...
 Stand-Up Comedy            24
Romantic Movies             20
TV Sci-Fi & Fantasy          7
LGBTQ Movies                 5
```

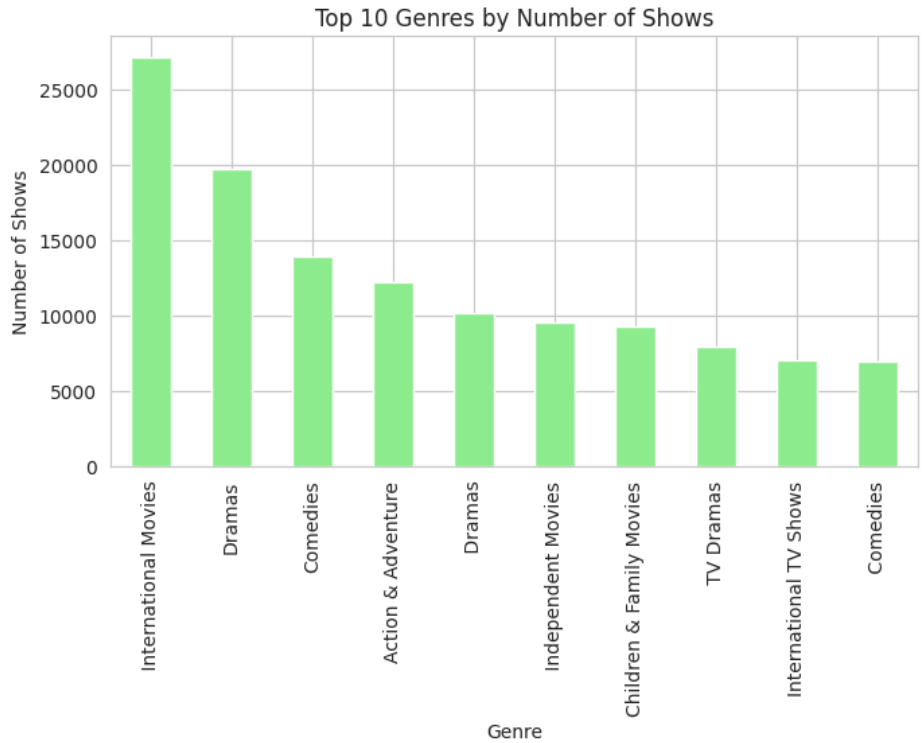
```
Sports Movies                3
Name: count, Length: 73, dtype: int64
```

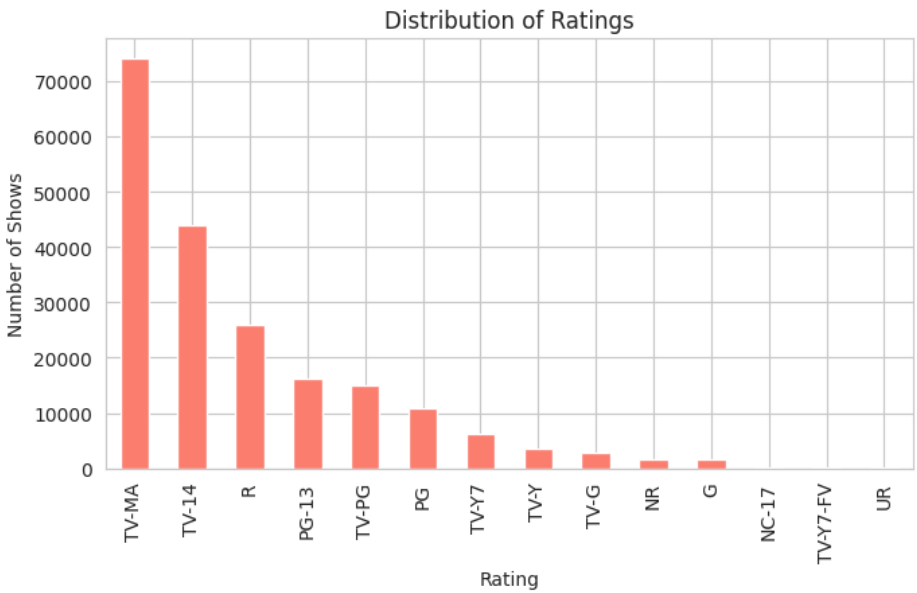
```
rating_counts = df['rating'].value_counts()
rating_counts
```

```
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
```

```
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()
```


Distribution of Show Types
Number of Shows
0
20000
40000
60000
80000
100000
120000
140000
Movie
TV Show
Type


Top 10 Genres by Number of Shows
Number of Shows
0
5000
10000
15000
20000
25000
International Movies
Dramas
Comedies
Action & Adventure
Dramas
Independent Movies
Children & Family Movies
TV Dramas
International TV Shows
Comedies
Genre


Distribution of Ratings
Number of Shows
0
10000
20000
30000
40000
50000
60000
70000
TV-MA
TV-14
R
PG-13
TV-PG
PG
TV-Y7
TV-Y
TV-G
NR
G
NC-17
TV-Y7-FV
UR
Rating

Genres popular accross different countries

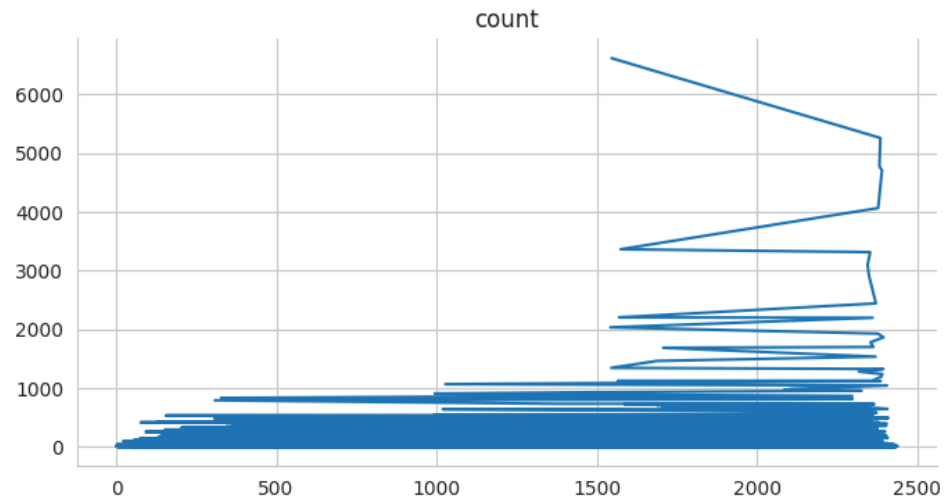
```
country_genre_counts = df.groupby(['country', 'listed_in']).size().reset_index(name='count')
#country_genre_counts = country_genre_counts.pivot(index='country', columns='listed_in', values='count')
country_genre_counts = country_genre_counts.sort_values('count', ascending=False)
country_genre_counts.head(10)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

	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

Next steps: Generate code with `country_genre_counts` View recommended plots

count

```
# @title count

from matplotlib import pyplot as plt
country_genre_counts['count'].plot(kind='line', figsize=(8, 4), title='count')
plt.gca().spines[['top', 'right']].set_visible(False)
```




```
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
```

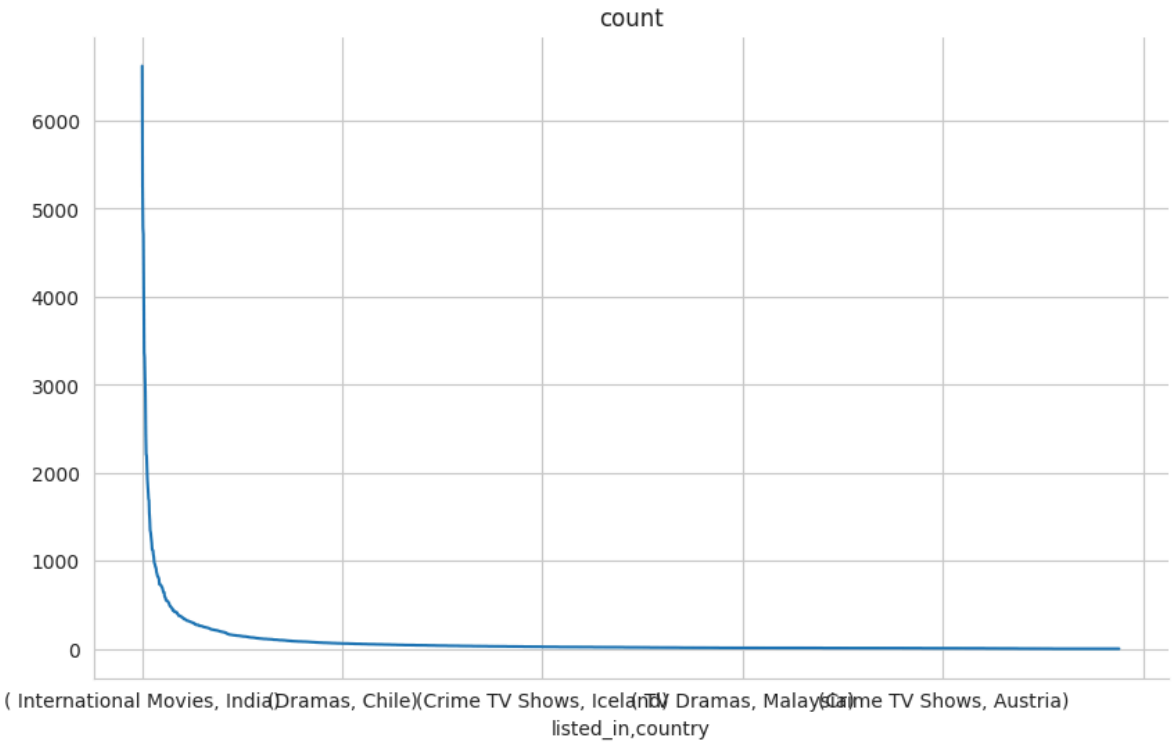
listed_in	country	count
International Movies	India	6619
Comedies	United States	5261
Children & Family Movies	United States	4779
Dramas	United States	4707
Action & Adventure	United States	4067
...	...	...
Docuseries	Denmark	1
Documentaries	Panama	1
Stand-Up Comedy & Talk Shows	Brazil	1
Sports Movies	Uruguay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

2441 rows × 1 columns

Next steps: Generate code with count View recommended plots

count

```
# @title count

from matplotlib import pyplot as plt
count['count'].plot(kind='line', figsize=(10, 6), title='count')
plt.gca().spines[['top', 'right']].set_visible(False)
```



Start coding or generate with AI.

```
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)
```

	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

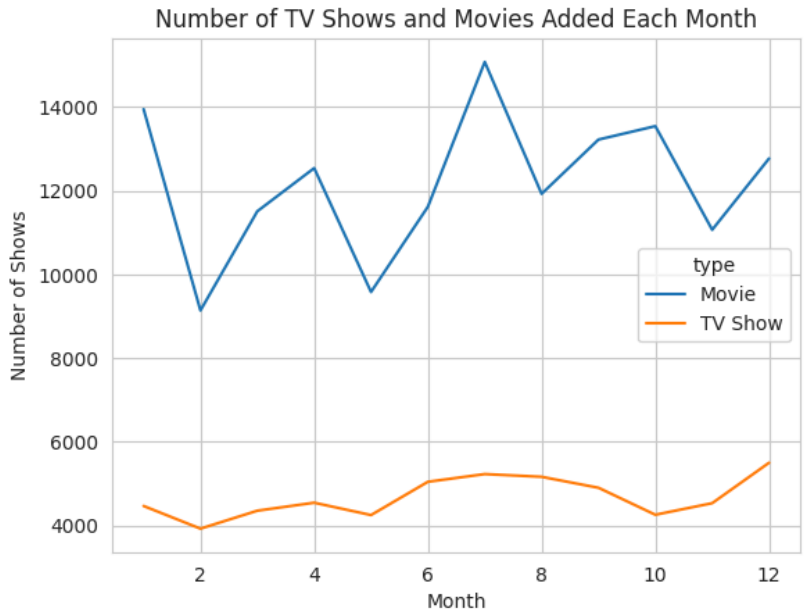
Next steps: Generate code with seasonal_genre View recommended plots

Number of Tv Shows and Movies added each month

```
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)
```

	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

```
#  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

```
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)
```

	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

```
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()
```

Movies Added Each Week

Rating and countries

```
# 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)

# Plotting
plt.figure(figsize=(14, 8))
sns.barplot(data=most_common_ratings, x='country', y='count', hue='rating')
plt.title('Most Common Ratings by Country')
plt.xlabel('Country')
plt.ylabel('Count')
plt.legend(title='Rating')
plt.xticks(rotation=45)
plt.show()
```

```
           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
```