Netflix Buisness Case

Start of the Business Case

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

Loading the Dataset in CSV format to Pandas Dataframe and basic data analyis.

```
# Importing the data from the csv file.
netflix = pd.read_csv('netflix.csv')
netflix.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...

Next steps: Generate code with netflix View recommended plots

Getting basic information of the dataframe.

```
#Getting basic information about the data
netflix.shape ,
netflix.info() ,
netflix.isna().sum()
```

```
<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
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
```

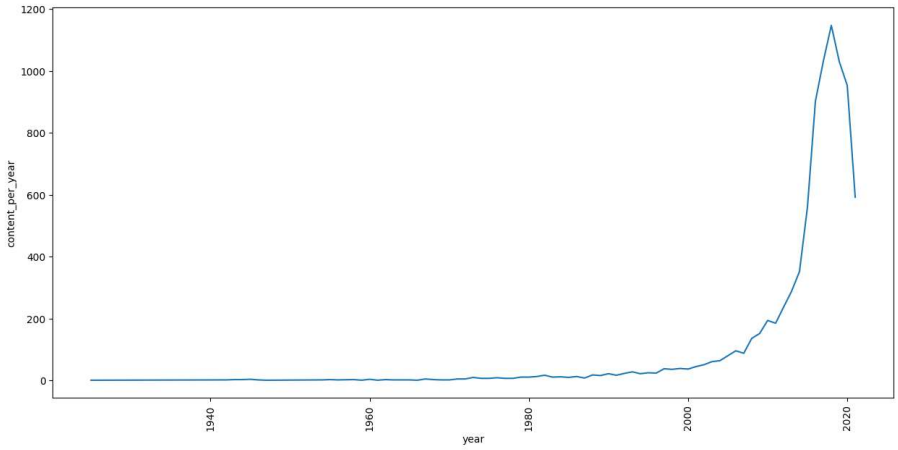
Handling the Null values from the respective columns provided from the dataframe info().

```
#filling the Null/NaN values with Unknown in column director, cast and country and Unavailable in column date_added , rating and duration
netflix['director'].fillna('Unknown_Director', inplace= True)
netflix['cast'].fillna('Unknown_cast', inplace= True)
netflix['country'].fillna('Unknown_Country', inplace = True)
netflix['date_added'].fillna(pd.NaT, inplace= True)
netflix['rating'].fillna('Unavailable', inplace = True)
netflix['duration'].fillna('Unavailable', inplace= True)
# netflix.head()
```

Category wise data Analysis:

Variaion of Content Creation across availabel content on the platform. (Bivariate)

```
#Count of the ahows across the year category
yearwise_data = pd.DataFrame(netflix['release_year'].value_counts().reset_index())
yearwise_data.columns = ['year', 'content_per_year']
plt.figure(figsize=(15,7))
sns.lineplot(data = yearwise_data,x = 'year', y = 'content_per_year')
plt.xticks(rotation = 90)
plt.show()
```




```
yearwise_data , yearwise_data1
```

```
(    year  content_per_year
 0   2018              1147
 1   2017              1032
```

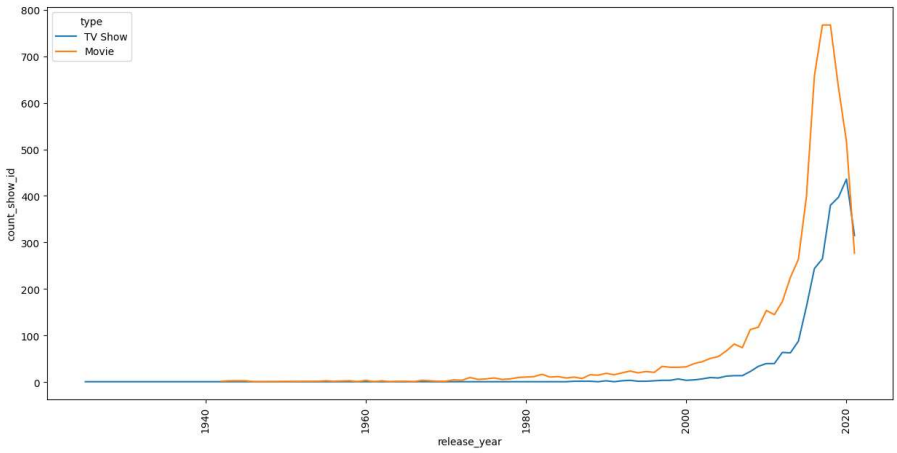
```
2   2019              1030
3   2020               953
4   2016               902
..   ...               ...
69  1959                 1
70  1925                 1
71  1961                 1
72  1947                 1
73  1966                 1

[74 rows x 2 columns],
     release_year     type  count_show_id
0            1925  TV Show              1
1            1942    Movie              2
2            1943    Movie              3
3            1944    Movie              3
4            1945    Movie              3
..            ...      ...            ...
114          2019  TV Show            397
115          2020    Movie            517
116          2020  TV Show            436
117          2021    Movie            277
118          2021  TV Show            315

[119 rows x 3 columns])
```

Variaion of Content Creation along with type of the content across availabel content on the platform. (Bivariate)

```
#Comparative Count of Movies and TV-Series spread across the release_year
yearwise_data1 =pd.DataFrame(netflix.groupby(['release_year', 'type']).agg({'show_id' : 'count'})).reset_index()
yearwise_data1.columns = ['release_year', 'type', 'count_show_id']
plt.figure(figsize=(15,7))
sns.lineplot(data=yearwise_data1,x = 'release_year' , y = 'count_show_id' , hue = 'type')
plt.xticks(rotation = 90)
plt.show()
```

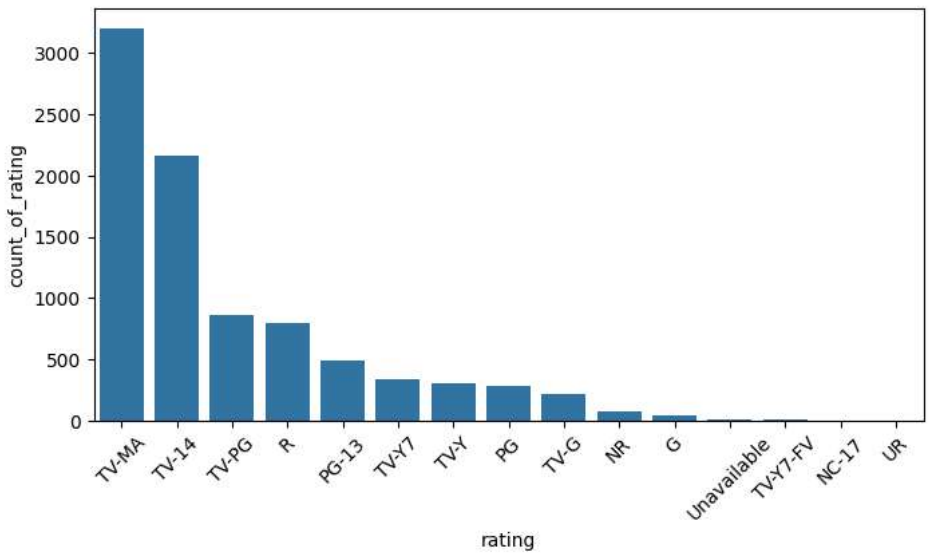


Transferring relevant data from rating attribute to duration attribute.

```
a = netflix[netflix['rating'].str.contains('min')].reset_index()
for i in range(len(a)):
    netflix.loc[a.iloc[i,0],'duration'] = a.loc[i,'rating']
    netflix.loc[a.iloc[i,0],'rating'] = 'Unavailable'
# netflix[netflix['rating'].str.contains('min')]
```

Categorical Analysis according to 'rating' category. (Univariate)

```
# Count of the each show across the ratings category
rating_data = pd.DataFrame(netflix['rating'].value_counts().reset_index())
rating_data.columns = ['rating', 'count_of_rating']
plt.figure(figsize=(8,4))
sns.barplot(data = rating_data, x = 'rating' , y ='count_of_rating')
plt.xticks(rotation = 45)
plt.show()
```




```
rating_data
```

	rating	count_of_rating
0	TV-MA	3207
1	TV-14	2160
2	TV-PG	863
3	R	799
4	PG-13	490
5	TV-Y7	334
6	TV-Y	307
7	PG	287
8	TV-G	220
9	NR	80
10	G	41
11	Unavailable	7
12	TV-Y7-FV	6
13	NC-17	3
14	UR	3

Next steps: Generate code with rating_data View recommended plots

Converting column date_added into the Year, Month , day and Week columns

```
netflix['date_added'] = pd.to_datetime(netflix['date_added'])
netflix['year'] = netflix['date_added'].dt.year
netflix['month'] = netflix['date_added'].dt.month_name()
netflix['day'] = netflix['date_added'].dt.day
netflix['week'] = netflix['date_added'].dt.isocalendar().week
```

Count of the ahows across the addition week of the year category and Comparative Count of Movies and TV-Series spread across addition week and month of year (Bivariate)

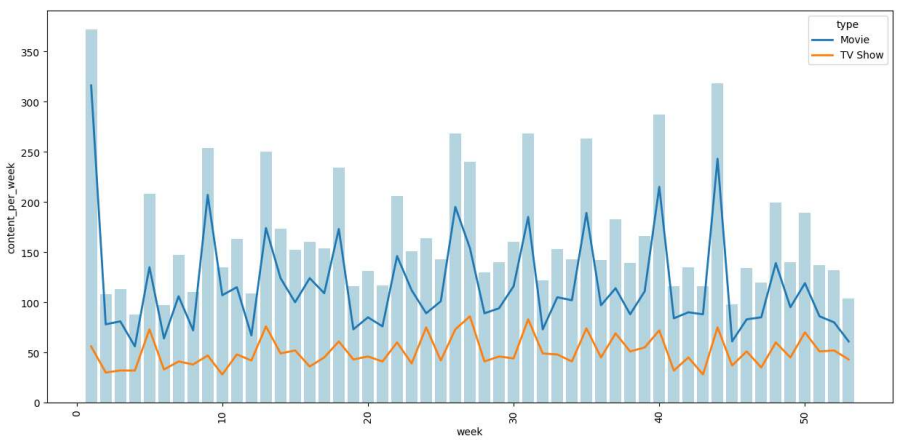
```
weekwise_data = pd.DataFrame(netflix['week'].value_counts().reset_index())
weekwise_data.columns = ['week', 'content_per_week']
weekwise_data1 =pd.DataFrame(netflix.groupby(['week', 'type']).agg({'show_id' : 'count'})).reset_index()
weekwise_data1.columns = ['week', 'type', 'count_show_id']

fig, ax = plt.subplots(figsize=(15, 7))

sns.barplot(data = weekwise_data,x = 'week', y = 'content_per_week', ax =ax , color = 'lightblue', native_scale= 0.5)

sns.lineplot(data=weekwise_data1,x = 'week' , y = 'count_show_id' , hue = 'type',ax = ax, linewidth = 2)

x_axis_labels = [tick.get_text() for tick in ax.get_xticklabels()]
ax = plt.gca()
plt.xticks(rotation = 90)
plt.show()
```



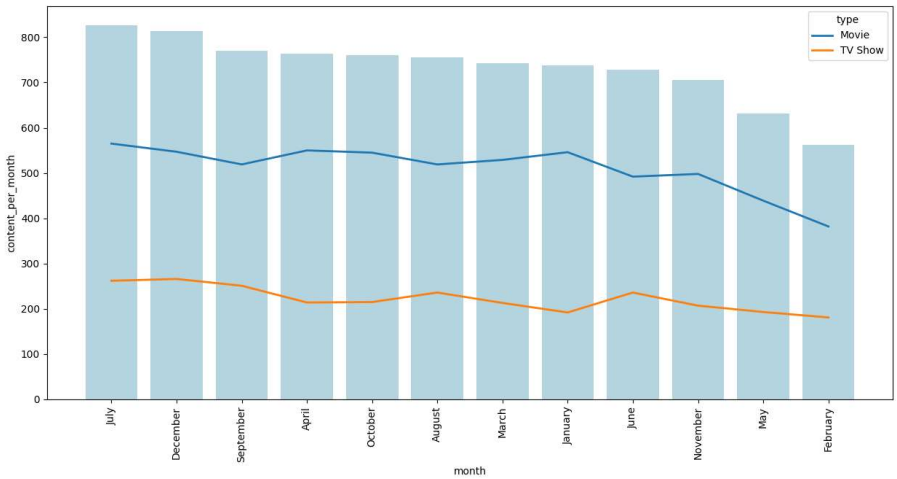
```
monthwise_data = pd.DataFrame(netflix['month'].value_counts().reset_index())
monthwise_data.columns = ['month', 'content_per_month']
monthwise_data1 =pd.DataFrame(netflix.groupby(['month', 'type']).agg({'show_id' : 'count'})).reset_index()
monthwise_data1.columns = ['month', 'type', 'count_show_id']

fig, ax = plt.subplots(figsize=(15, 7))

sns.barplot(data = monthwise_data,x = 'month', y = 'content_per_month', ax =ax , color = 'lightblue', native_scale= 0.5)

sns.lineplot(data=monthwise_data1,x = 'month' , y = 'count_show_id' , hue = 'type',ax = ax, linewidth = 2)

x_axis_labels = [tick.get_text() for tick in ax.get_xticklabels()]
ax = plt.gca()
plt.xticks(rotation = 90)
plt.show()
```




```
weekwise_data , weekwise_data1
```

```
(    week  content_per_week
 0      1               372
 1     44               318
 2     40               287
 3     31               268
 4     26               268
 5     35               263
 6      9               254
 7     13               250
 8     27               240
 9     18               234
 10     5               208
 11    22               206
 12    48               199
 13    50               189
 14    37               183
 15    14               173
 16    39               166
 17    24               164
 18    11               163
 19    16               160
 20    30               160
 21    17               154
 22    33               153
 23    15               152
```

```
24    23              151
25     7              147
26    25              143
27    34              143
28    36              142
29    49              140
30    29              140
31    38              139
32    51              137
33    10              135
34    42              135
35    46              134
36    52              132
37    20              131
38    28              130
39    32              122
40    47              120
41    21              117
42    41              116
43    19              116
44    43              116
45     3              113
46     8              110
47    12              109
48     2              108
49    53              104
50    45               98
51     6               97
52     4               88,
     week     type  count_show_id
0       1    Movie            316
1       1  TV Show             56
2       2    Movie             78
```

```
1 monthwise_data,monthwise_data1
```

```
(        month  content_per_month
 0        July                827
 1    December                813
 2   September                770
 3       April                764
 4     October                760
 5      August                755
 6       March                742
 7     January                738
 8        June                728
 9    November                705
 10        May                632
 11   February                563,
         month     type  count_show_id
 0       April    Movie            550
 1       April  TV Show            214
 2      August    Movie            519
 3      August  TV Show            236
 4    December    Movie            547
 5    December  TV Show            266
 6    February    Movie            382
 7    February  TV Show            181
 8     January    Movie            546
 9     January  TV Show            192
 10       July    Movie            565
 11       July  TV Show            262
 12       June    Movie            492
 13       June  TV Show            236
 14      March    Movie            529
 15      March  TV Show            213
 16        May    Movie            439
 17        May  TV Show            193
 18   November    Movie            498
 19   November  TV Show            207
 20    October    Movie            545
 21    October  TV Show            215
 22  September    Movie            519
 23  September  TV Show            251)
```

Unnesting of the data into the new dataframe

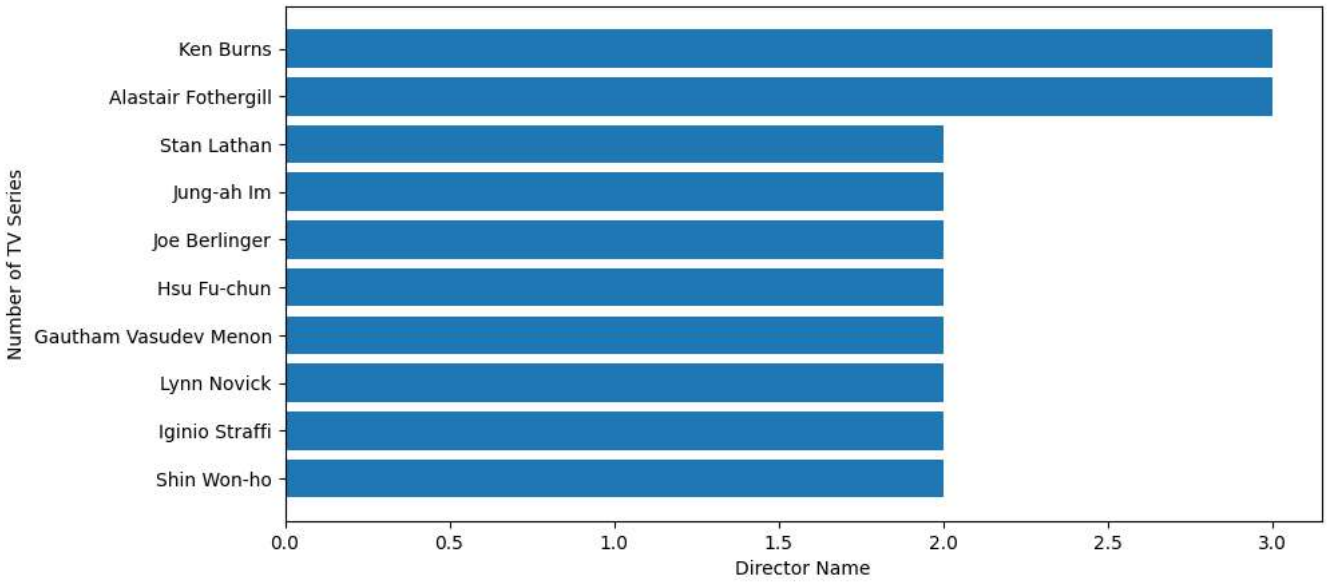
```
netflix_new = netflix
netflix_new['director'] = netflix_new['director'].str.split(', ')
netflix_new = netflix_new.explode('director')
netflix_new['cast'] = netflix_new['cast'].str.split(', ')
netflix_new = netflix_new.explode('cast')
netflix_new['country'] = netflix_new['country'].str.split(', ')
netflix_new = netflix_new.explode('country')
netflix_new['listed_in'] = netflix_new['listed_in'].str.split(', ')
netflix_new = netflix_new.explode('listed_in')
netflix_new.head()
```

	show_id	type	title	director	cast	country	date_added	release_y
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	Unknown_cast	United States	2021-09-25	2
1	s2	TV Show	Blood & Water	Unknown_Director	Ama Qamata	South Africa	2021-09-24	2
1	s2	TV Show	Blood & Water	Unknown_Director	Ama Qamata	South Africa	2021-09-24	2
1	s2	TV Show	Blood & Water	Unknown_Director	Ama Qamata	South Africa	2021-09-24	2
1	s2	TV Show	Blood & Water	Unknown_Director	Khosi Ngema	South Africa	2021-09-24	2

```
netflix_new.drop('description', axis = 1,inplace = True)
```

finding most common director in TV show and in movies separately (Top 10 in both category) (Univariate)

```
dir_TV_top = pd.DataFrame(netflix_new.loc[(netflix_new['type'] == 'TV Show') & (netflix_new['director'] != 'Unknown_Director')].groupby('
dir_TV_top = dir_TV_top.reset_index().sort_values('title',ascending = False).iloc[:10,:].iloc[::-1,:]
plt.figure(figsize=(10,5))
plt.barh(dir_TV_top['director'], dir_TV_top['title'])
plt.xlabel('Director Name')
plt.ylabel('Number of TV Series')
plt.show()
```



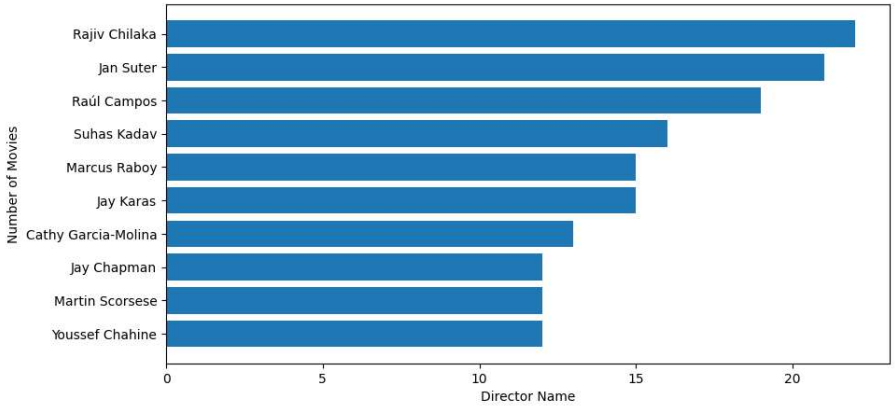

```
dir_TV_top
```

	director	title
251	Shin Won-ho	2
103	Iginio Straffi	2
168	Lynn Novick	2
84	Gautham Vasudev Menon	2
100	Hsu Fu-chun	2
128	Joe Berlinger	2
140	Jung-ah Im	2
259	Stan Lathan	2
8	Alastair Fothergill	3
146	Ken Burns	3

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

finding most common director in TV show and in movies separately (Top 10 in both category) (Univariate)

```
dir_movie_top = pd.DataFrame(netflix_new.loc[(netflix_new['type'] == 'Movie') & (netflix_new['director'] != 'Unknown_Director')].groupby(
dir_movie_top = dir_movie_top.reset_index().sort_values('title',ascending = False).iloc[:10,:].iloc[::-1,:]
plt.figure(figsize=(10,5))
plt.barh(dir_movie_top['director'], dir_movie_top['title'])
plt.xlabel('Director Name')
plt.ylabel('Number of Movies')
plt.show()
```




```
dir_movie_top
```

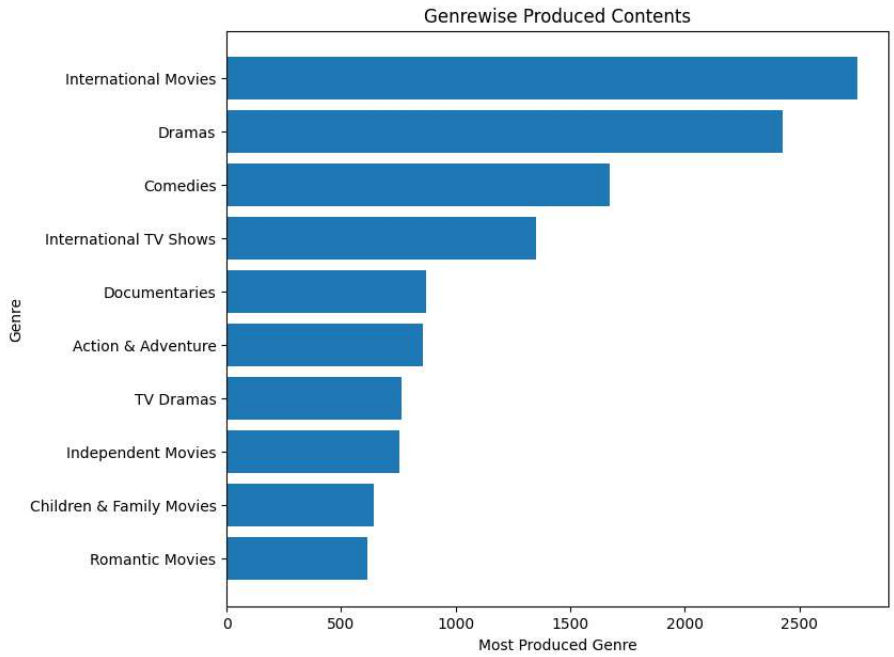
	director	title
4725	Youssef Chahine	12
2815	Martin Scorsese	12
1859	Jay Chapman	12
727	Cathy Garcia-Molina	13
1862	Jay Karas	15
2739	Marcus Raboy	15
4261	Suhas Kadav	16
3633	Raúl Campos	19
1817	Jan Suter	21
3582	Rajiv Chilaka	22

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

Genrewise Produced Contents (Univariate)

```
netflix_new.rename(columns={'listed_in' : 'Genre'},inplace= True)
```

```
b = pd.DataFrame(netflix_new.groupby('Genre').agg({'title' : 'nunique'})).sort_values(by = 'title',ascending=False).reset_index()
b = b.iloc[9::-1,:]
plt.figure(figsize=(8,7))
plt.barh(width= b['title'], y = b['Genre'])
plt.ylabel('Genre')
plt.xlabel('Most Produced Genre')
plt.title('Genrewise Produced Contents')
plt.show()
```



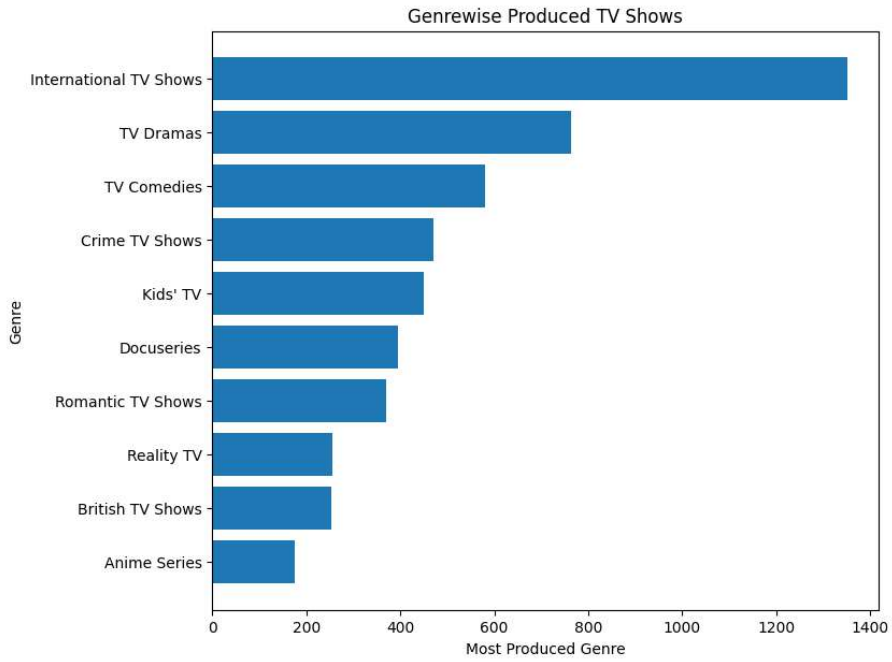

```
b
```

	Genre	title
9	Romantic Movies	616
8	Children & Family Movies	641
7	Independent Movies	756
6	TV Dramas	763
5	Action & Adventure	859
4	Documentaries	869
3	International TV Shows	1351
2	Comedies	1674
1	Dramas	2427
0	International Movies	2752

Next steps: Generate code with b View recommended plots

Genrewise Produced TV Shows (Univariate)

```
c = pd.DataFrame(netflix_new[netflix_new['type'] == 'TV Show'].groupby('Genre').agg({'title' : 'nunique'})).sort_values(by = 'title',asce
c = c.iloc[9::-1,:]
plt.figure(figsize=(8,7))
plt.barh(width= c['title'], y = c['Genre'])
plt.ylabel('Genre')
plt.xlabel('Most Produced Genre')
plt.title('Genrewise Produced TV Shows')
plt.show()
```



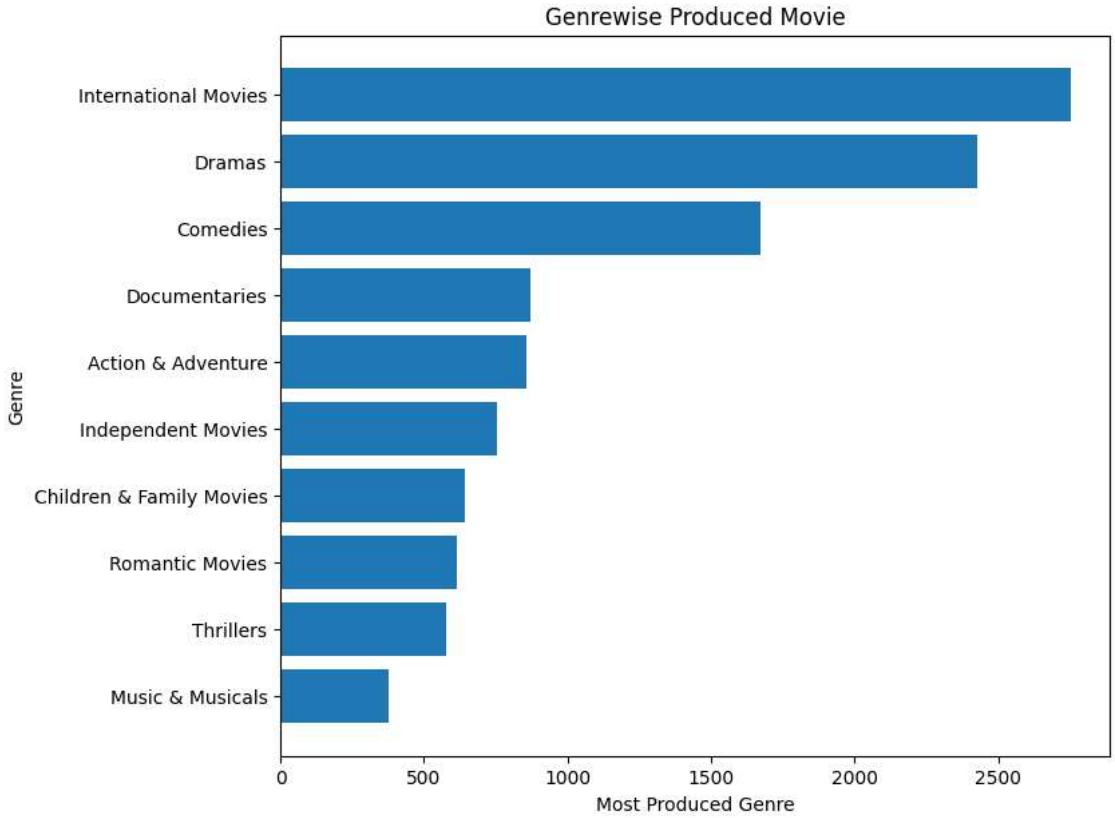

```
c
```

	Genre	title
9	Anime Series	176
8	British TV Shows	253
7	Reality TV	255
6	Romantic TV Shows	370
5	Docuseries	395
4	Kids' TV	451
3	Crime TV Shows	470
2	TV Comedies	581
1	TV Dramas	763
0	International TV Shows	1351

Next steps: Generate code with c View recommended plots

Genrewise Produced Movie (Univariate)

```
d = pd.DataFrame(netflix_new[netflix_new['type'] == 'Movie'].groupby('Genre').agg({'title' : 'nunique'})).sort_values(by = 'title',ascend
d = d.iloc[9::-1,:]
plt.figure(figsize=(8,7))
plt.barh(width= d['title'], y = d['Genre'])
plt.ylabel('Genre')
plt.xlabel('Most Produced Genre')
plt.title('Genrewise Produced Movie')
plt.show()
```



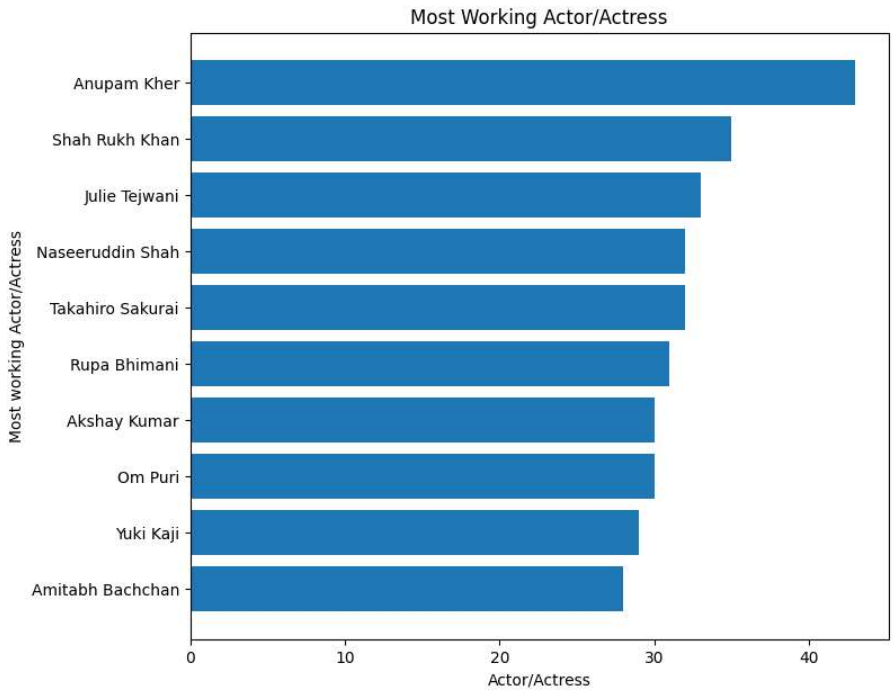

```
d
```

	Genre	title
9	Music & Musicals	375
8	Thrillers	577
7	Romantic Movies	616
6	Children & Family Movies	641
5	Independent Movies	756
4	Action & Adventure	859
3	Documentaries	869
2	Comedies	1674
1	Dramas	2427
0	International Movies	2752

Next steps: Generate code with d View recommended plots

Most Common Actor/Actress across all content types (Univariate)

```
b_actor = pd.DataFrame(netflix_new.loc[(netflix_new['cast'] != 'Unknown_cast')].groupby('cast').agg({'title' : 'nunique'})).sort_values(b
b_actor = b_actor.iloc[9::-1,:]
plt.figure(figsize=(8,7))
plt.barh(width= b_actor['title'], y = b_actor['cast'])
plt.xlabel('Actor/Actress')
plt.ylabel('Most working Actor/Actress')
plt.title('Most Working Actor/Actress')
plt.show()
```



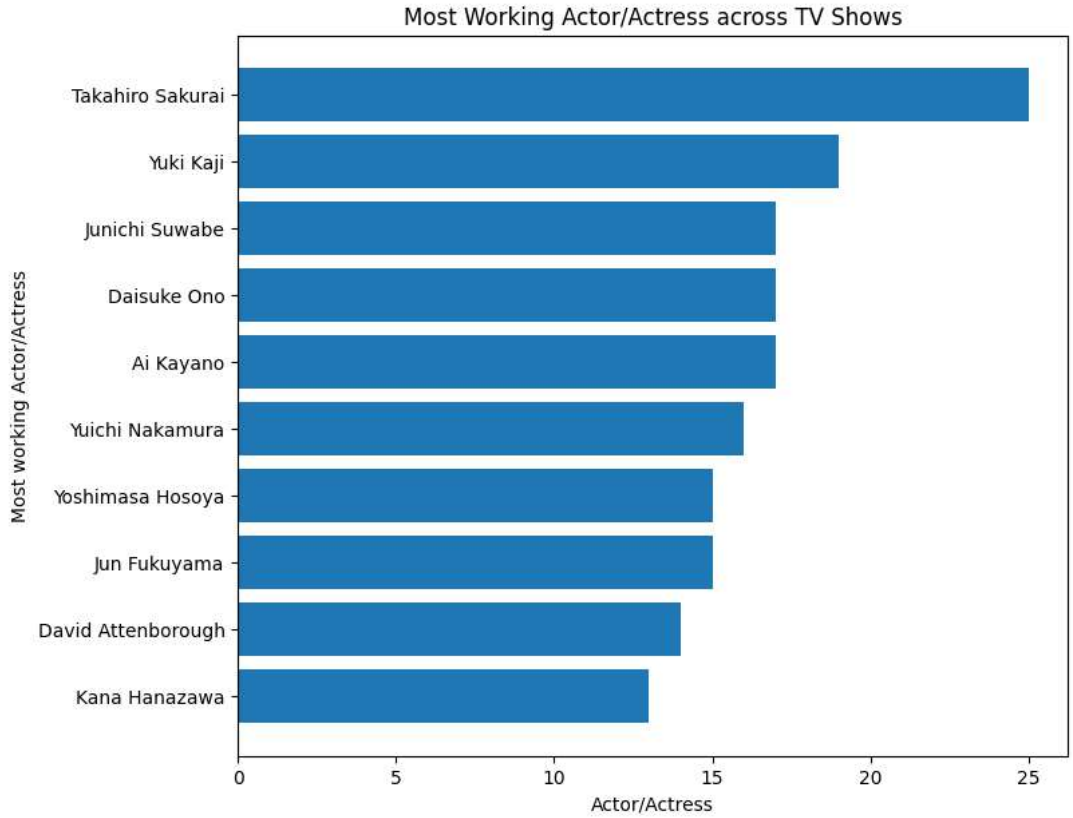

```
b_actor
```

	cast	title
9	Amitabh Bachchan	28
8	Yuki Kaji	29
7	Om Puri	30
6	Akshay Kumar	30
5	Rupa Bhimani	31
4	Takahiro Sakurai	32
3	Naseeruddin Shah	32
2	Julie Tejwani	33
1	Shah Rukh Khan	35
0	Anupam Kher	43

Next steps: Generate code with b_actor View recommended plots

Most Common Actor/Actress across TV Shows (Univariate)

```
c_actor = pd.DataFrame(netflix_new.loc[(netflix_new['cast'] != 'Unknown_cast') & (netflix_new['type'] == 'TV Show')].groupby('cast').agg(
c_actor = c_actor.iloc[9::-1,:]
plt.figure(figsize=(8,7))
plt.barh(width= c_actor['title'], y = c_actor['cast'])
plt.xlabel('Actor/Actress')
plt.ylabel('Most working Actor/Actress')
plt.title('Most Working Actor/Actress across TV Shows')
plt.show()
```



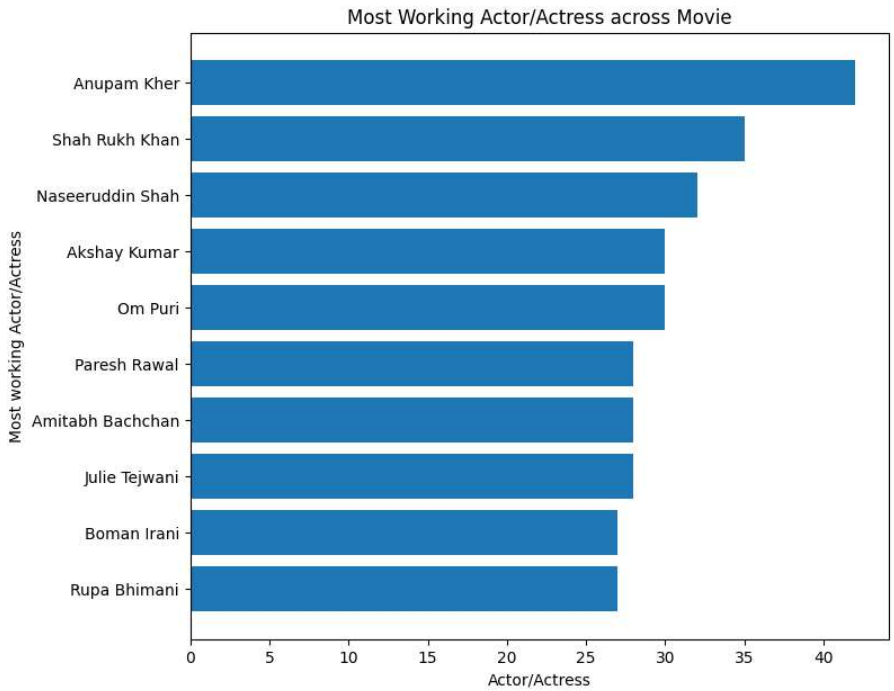

```
c_actor
```

	cast	title
9	Rupa Bhimani	27
8	Boman Irani	27
7	Julie Tejwani	28
6	Amitabh Bachchan	28
5	Paresh Rawal	28
4	Om Puri	30
3	Akshay Kumar	30
2	Naseeruddin Shah	32
1	Shah Rukh Khan	35
0	Anupam Kher	42

Next steps: Generate code with c_actor View recommended plots

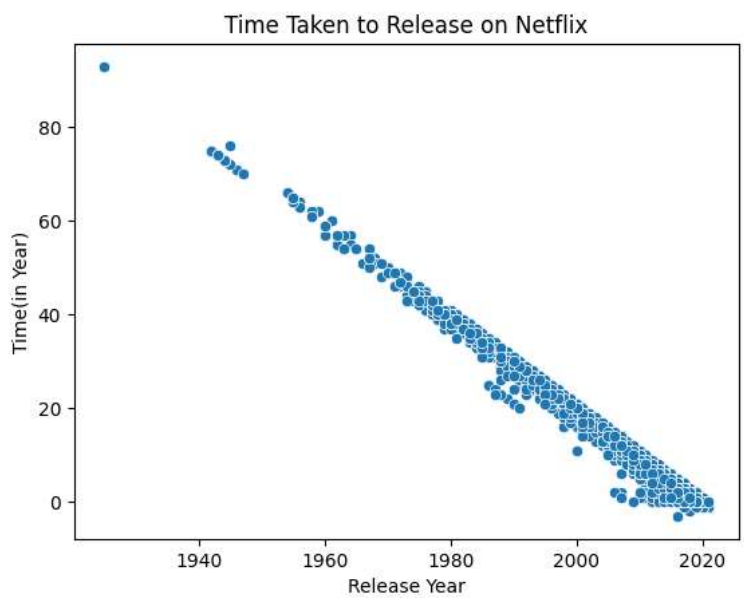
Most Common Actor/Actress across Movie (Univariate)

```
c_actor = pd.DataFrame(netflix_new.loc[(netflix_new['cast'] != 'Unknown_cast') & (netflix_new['type'] == 'Movie')].groupby('cast').agg({'
c_actor = c_actor.iloc[9::-1,:]
plt.figure(figsize=(8,7))
plt.barh(width= c_actor['title'], y = c_actor['cast'])
plt.xlabel('Actor/Actress')
plt.ylabel('Most working Actor/Actress')
plt.title('Most Working Actor/Actress across Movie')
plt.show()
```



Release Time vs Platform release time Analysis (Bivariate)

```
netflix['time_diff'] = (netflix['year']-netflix['release_year'])
sns.scatterplot(data = netflix, x = 'release_year', y = 'time_diff')
plt.xlabel('Release Year')
plt.ylabel('Time(in Year)')
plt.title('Time Taken to Release on Netflix')
plt.show()
```




```
netflix['time_diff']
```

```
0        1.0
1        0.0
2        0.0
```

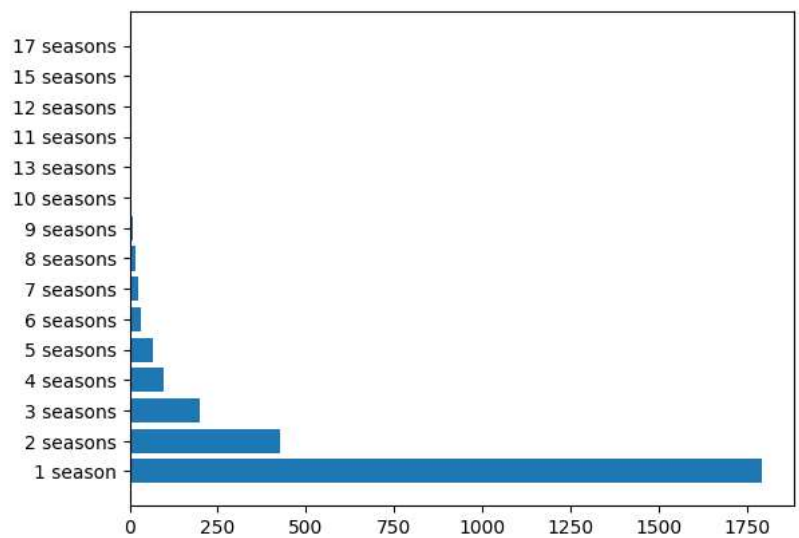
```
3        0.0
4        0.0
        ...
8802    12.0
8803     1.0
8804    10.0
8805    14.0
8806     4.0
Name: time_diff, Length: 8807, dtype: float64
```

```
netflix_new['duration'] = netflix_new['duration'].str.lower()
```

```
tv_duration = pd.DataFrame(netflix_new[netflix['type'] == 'TV Show'].groupby('duration').agg({'title':'nunique'})).sort_values('title',as
tv_duration.rename(columns= {'title' : 'duration_count'},inplace= True)
print(tv_duration)
```

```
         duration  duration_count
0     1 season            1793
1    2 seasons             425
2    3 seasons             199
3    4 seasons              95
4    5 seasons              65
5    6 seasons              33
6    7 seasons              23
7    8 seasons              17
8    9 seasons               9
9   10 seasons               7
10  13 seasons               3
11  11 seasons               2
12  12 seasons               2
13  15 seasons               2
14  17 seasons               1
<ipython-input-102-7c430145e7b2>:1: UserWarning: Boolean Series key will be reindexed to match DataFrame index.
  tv_duration = pd.DataFrame(netflix_new[netflix['type'] == 'TV Show'].groupby('duration').agg({'title':'nunique'})).sort_values('title'
```

```
plt.barh(width = tv_duration['duration_count'], y =tv_duration['duration'])
plt.show()
```




```
mv_duration = pd.DataFrame(netflix_new[netflix['type'] == 'Movie'].groupby('duration').agg({'title':'nunique'})).sort_values('title',asce
mv_duration.rename(columns= {'title' : 'duration_count'},inplace= True)
mv_duration['duration'] = mv_duration['duration'].astype(str).str.replace(r'\s*mins?$', '', regex=True)
mv_duration['duration'] = mv_duration['duration'].astype(int)
bins = [0,20,40,60,90,120,150,330]
labels = ['0-20','21-40','41-60','61-90','91-120','121-150','150-max']
mv_duration['time_category'] = pd.cut(mv_duration['duration'],bins = bins, labels = labels)
mv_duration.drop('duration',axis = 1,inplace = True)
mv_duration = pd.DataFrame(mv_duration.groupby('time_category').agg({'duration_count' : 'sum'})).sort_values('duration_count').reset_inde
print(mv_duration)
```

```
time_category  duration_count
```