

# KDot's Netflix Data Analysis Project

## Exploration of Netflix content using Python, Pandas and Matplotlib

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### Project Overview

This project analyzes a Netflix dataset to uncover key insights about content types, genres, country distributions, and release trends. The goal is to demonstrate hands-on data cleaning, exploratory analysis, and visualization skills using Python.

### Tools and Libraries Used

- Python3
- Pandas
- Matplotlib
- Jupyter Notebook
- Git and Github

```
In [1]: import pandas as pd  
df = pd.read_csv('../data/netflix.csv')
```

```
In [2]: #Quick insight into the data loaded  
df.head()  
df.info()  
df.describe()
```

```

<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

```

Out[2]: **release\_year**

<b>count</b>	8807.000000
<b>mean</b>	2014.180198
<b>std</b>	8.819312
<b>min</b>	1925.000000
<b>25%</b>	2013.000000
<b>50%</b>	2017.000000
<b>75%</b>	2019.000000
<b>max</b>	2021.000000

In [3]: *#Seeing what are the messiest columns*  
`df.isnull().sum()`

```

Out[3]: 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 [4]: #Converting the dates to ISO format, disregarding the ones inputted di
df['date_added'] = pd.to_datetime(df['date_added'], errors='coerce')
```

```
In [5]: df['date_added'].head()
```

```
Out[5]: 0    2021-09-25
        1    2021-09-24
        2    2021-09-24
        3    2021-09-24
        4    2021-09-24
        Name: date_added, dtype: datetime64[ns]
```

```
In [6]: #Retrieving the total of blank values
df['date_added'].isna().sum()
```

```
Out[6]: np.int64(98)
```

```
In [7]: #Dropping the rows where date_added is blank
df = df[df['date_added'].notna()]
```

```
In [8]: #Checking row count
print(df.shape)
```

```
(8709, 12)
```

```
In [9]: #Sorting the dataframe by date_added from the newest down
df.sort_values('date_added', ascending=False).head(10)
```

```
Out[9]:
```

	show_id	type	title	director	cast	country	date_added
--	---------	------	-------	----------	------	---------	------------

0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	2021-09-25
---	----	-------	----------------------	-----------------	-----	---------------	------------

6	s7	Movie	My Little Pony: A New Generation	Robert Cullen, José Luis Ucha	Vanessa Hudgens, Kimiko Glenn, James Marsden, ...	NaN	2021-09-24
---	----	-------	----------------------------------	-------------------------------	---	-----	------------

10	s11	TV Show	Vendetta: Truth, Lies and The Mafia	NaN	NaN	NaN	2021-09-24
----	-----	---------	-------------------------------------	-----	-----	-----	------------

9	s10	Movie	The Starling	Theodore Melfi	Melissa McCarthy, Chris O'Dowd,	United States	2021-09-24
---	-----	-------	--------------	----------------	---------------------------------	---------------	------------

					Kevin Kline, T...			
8	s9	TV Show	The Great British Baking Show	Andy Devonshire	Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho...	United Kingdom	2021-09-24	
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba, Oyafunmike Ogunlano, Alexandra D...	United States, Ghana, Burkina Faso, United Kin...	2021-09-24	
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	2021-09-24	
5	s6	TV Show	Midnight Mass	Mike Flanagan	Kate Siegel, Zach Gilford, Hamish Linklater, H...	NaN	2021-09-24	
3	s4	TV Show	Jailbirds New Orleans	NaN	NaN	NaN	2021-09-24	
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	2021-09-24	

```
In [10]: #Filling in missing values in 'cast and 'country' with 'unknown'
df['cast'] = df['cast'].fillna('Unknown')
df['country'] = df['country'].fillna('Unknown')
```

```
In [11]: #Checking if all missing values have been filled in 'cast' and 'country'
df[['cast', 'country']].isna().sum()
```

```
Out[11]: cast      0
country    0
dtype: int64
```

```
In [12]: #Retrieves the top 10 countries with the most Netflix content
df['country'].value_counts().head(10)
```

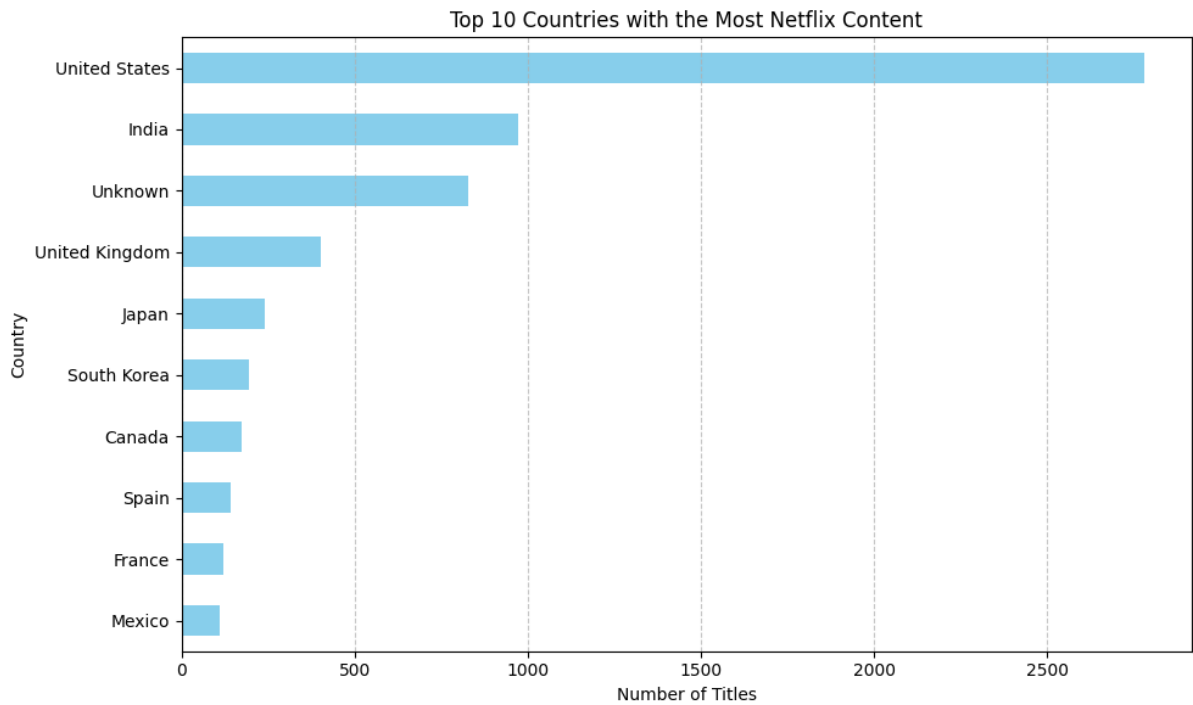
```
Out[12]: country
United States    2778
India            971
Unknown          827
United Kingdom   403
Japan            241
South Korea      195
Canada           173
Spain            141
France           122
Mexico           110
Name: count, dtype: int64
```

```
In [13]: #A visual for the prior mentioned output using Matplotlib

import matplotlib.pyplot as plt

top_countries = df['country'].value_counts().head(10)
```

```
In [14]: plt.figure(figsize=(10,6))
top_countries.plot(kind='barh', color = 'skyblue')
plt.xlabel('Number of Titles')
plt.ylabel('Country')
plt.title('Top 10 Countries with the Most Netflix Content')
plt.gca().invert_yaxis() #This allows the US to be on the top
plt.grid(axis='x', linestyle='--', alpha=0.7)
plt.tight_layout()
plt.savefig('../images/top_countries_bar_chart.png', bbox_inches='tight')
plt.show()
```

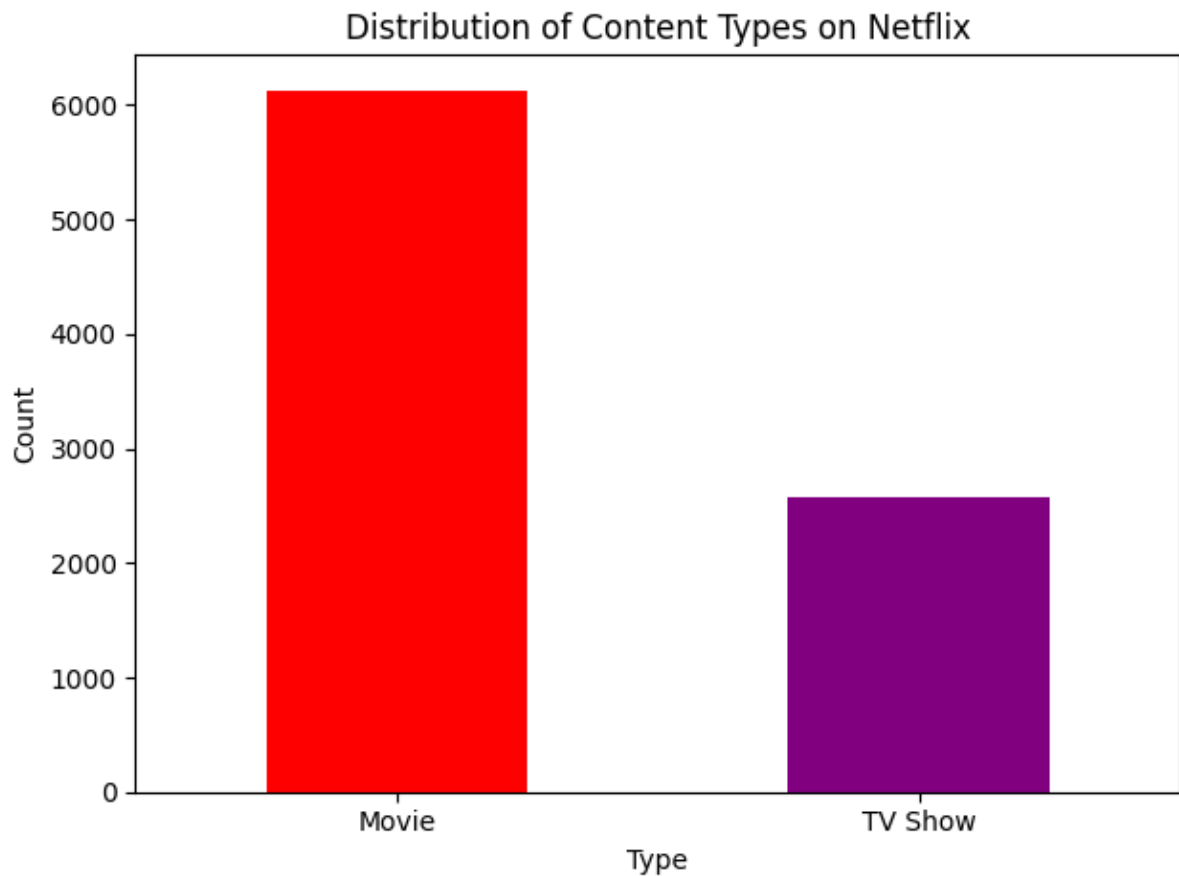


```
In [15]: #Counting the different content types
df['type'].value_counts()
```

```
Out[15]: type
Movie      6131
TV Show    2578
Name: count, dtype: int64
```

```
In [16]: #Bar chart displaying content count
df['type'].value_counts().plot(kind='bar', color=['red', 'purple'])

plt.title('Distribution of Content Types on Netflix')
plt.xlabel('Type')
plt.ylabel('Count')
plt.xticks(rotation=0)
plt.tight_layout()
plt.show()
```



```
In [17]: #Splitting the genre values
all_genres = df['listed_in'].dropna().str.split(', ')

#Flattening the list
flat_genres = [genre for sublist in all_genres for genre in sublist]

print(flat_genres[:10])
```

['Documentaries', 'International TV Shows', 'TV Dramas', 'TV Mysterys', 'Crime TV Shows', 'International TV Shows', 'TV Action & Adventure', 'Docuseries', 'Reality TV', 'International TV Shows']

```
In [18]: #Counting the genre frequency
genre_counts = pd.Series(flat_genres).value_counts()

print(genre_counts.head(10))
```

```

International Movies      2752
Dramas                   2427
Comedies                  1674
International TV Shows    1328
Documentaries             869
Action & Adventure        859
Independent Movies        756
TV Dramas                 739
Children & Family Movies  641
Romantic Movies           616
Name: count, dtype: int64

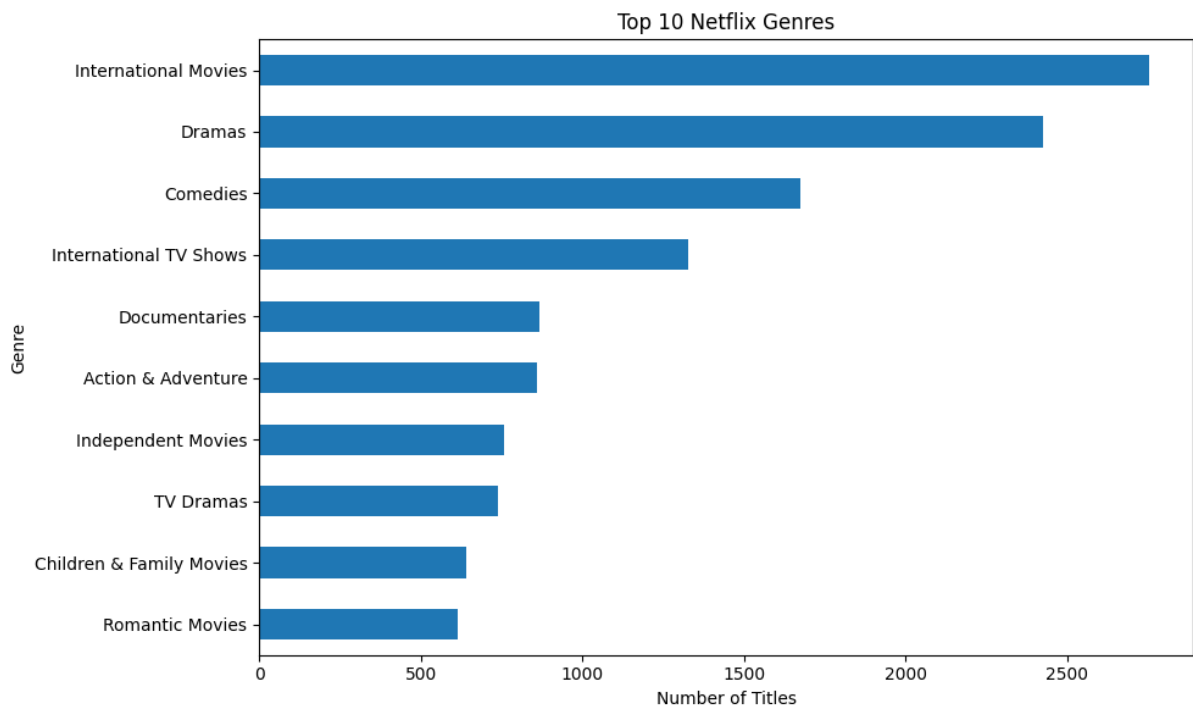
```

```

In [19]: #Placing top 10 genres in a bar chart
top_10_genres = genre_counts.head(10)

plt.figure(figsize=(10,6))
top_10_genres.plot(kind='barh')
plt.xlabel('Number of Titles')
plt.ylabel('Genre')
plt.title('Top 10 Netflix Genres')
plt.gca().invert_yaxis()
plt.tight_layout()
plt.savefig('../images/top_genres_bar_chart.png', bbox_inches='tight',
plt.show()

```



```

In [20]: #Extracting year
df['year_added'] = df['date_added'].dt.year

#Groups titles added each year
titles_by_year = df['year_added'].value_counts().sort_index()

print(titles_by_year)

```



```

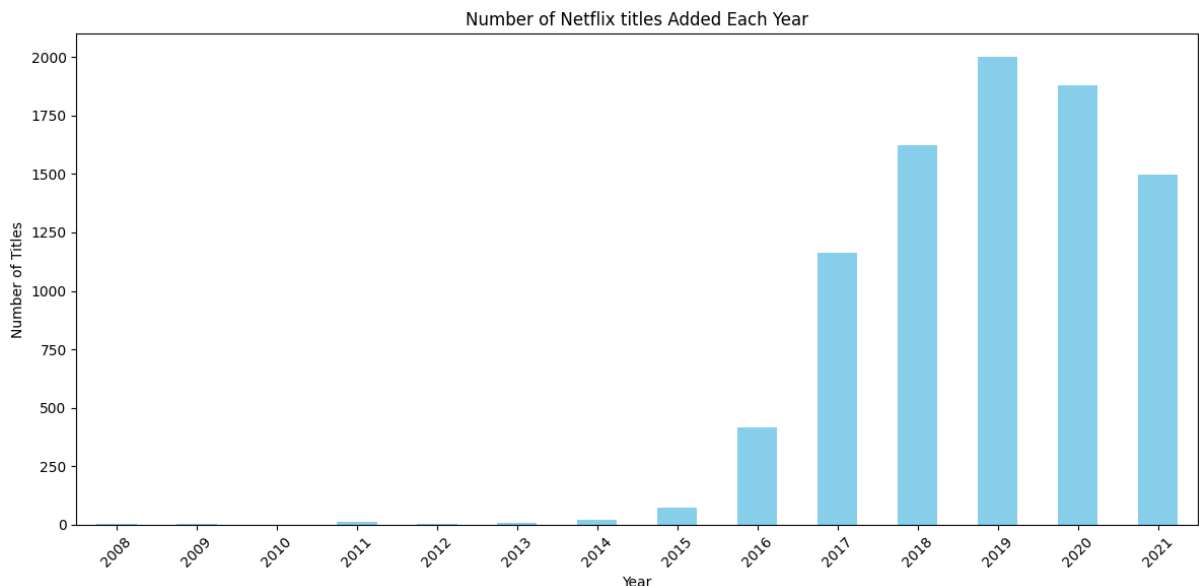
year_added
2008      2
2009      2
2010      1
2011     13
2012      3
2013     10
2014     23
2015     73
2016    418
2017   1164
2018   1625
2019   1999
2020   1878
2021   1498
Name: count, dtype: int64

```

```

In [21]: #Visualizing the titles added each year
plt.figure(figsize=(12,6))
titles_by_year.plot(kind='bar', color='skyblue')
plt.title('Number of Netflix titles Added Each Year')
plt.xlabel('Year')
plt.ylabel('Number of Titles')
plt.xticks(rotation=45)
plt.tight_layout()
plt.savefig('../images/titles_by_year_bar.png', bbox_inches='tight', d
plt.show()

```

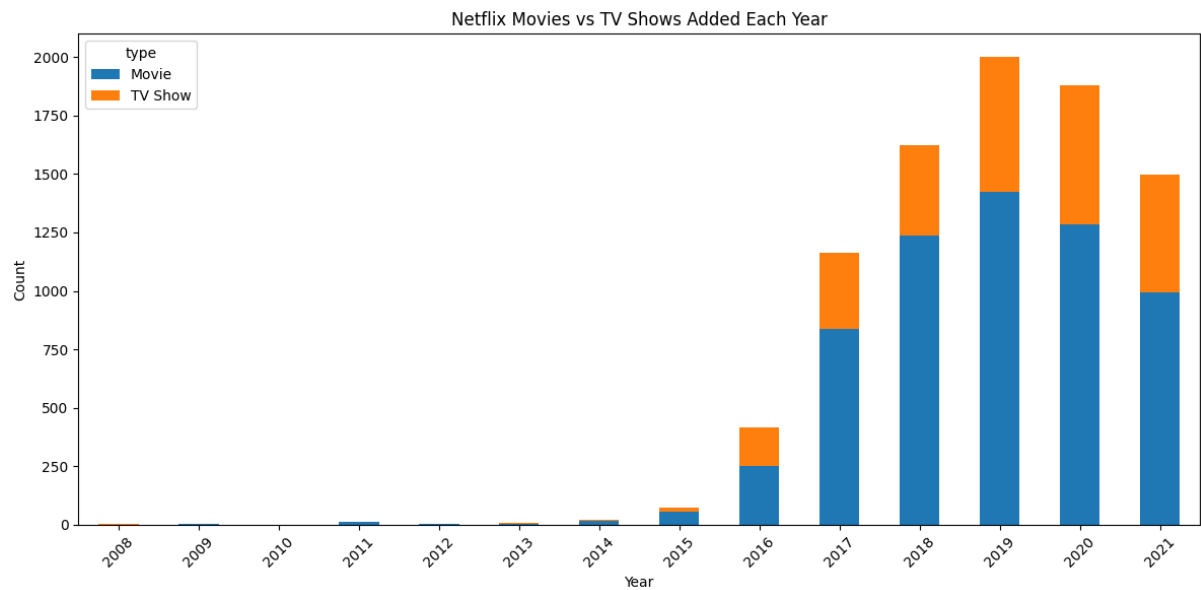


```

In [22]: #Comparison between movies and tv shows
titles_by_type_year = df.groupby(['year_added', 'type']).size().unstack
titles_by_type_year.plot(kind='bar', stacked=True, figsize=(12,6))
plt.title('Netflix Movies vs TV Shows Added Each Year')
plt.xlabel('Year')
plt.ylabel('Count')
plt.xticks(rotation=45)

```

```
plt.tight_layout()
plt.savefig('../images/titles_by_type_year_bar.png', bbox_inches='tight')
plt.show()
```



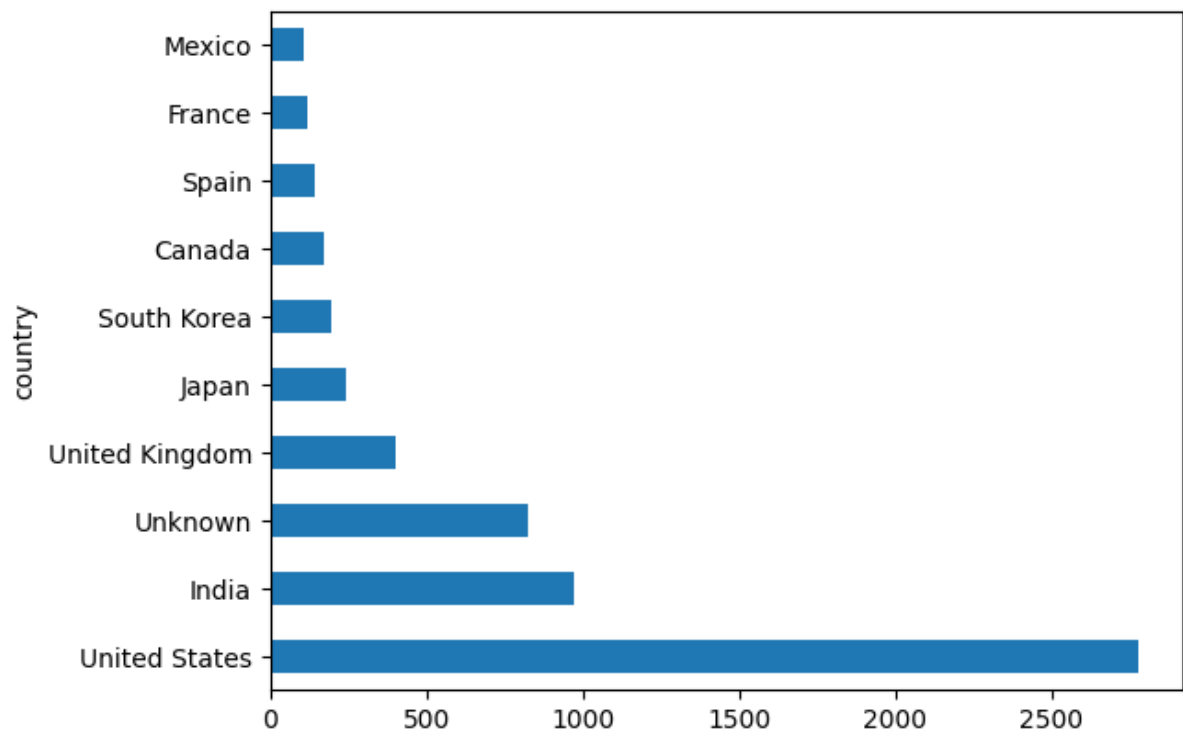
```
In [23]: #To maintain a cleaner visual and more relevant insights, data before
df_filtered = df[df['year_added'] >= 2013]
```

## Key Insight: Netflix Growth Spike Post-2015

From 2016 onward, Netflix began rapidly scaling up its content library, likely driven by increased competition and global market expansion. The peak in 2019 may be influenced by the company's push into original content prior to the pandemic.

```
In [24]: #Top producing countries
df['country'].value_counts().head(10).plot(kind='barh')
```

```
Out[24]: <Axes: ylabel='country'>
```



```
In [26]: #Duration for movies
df[df['type'] == 'Movie']['duration'].value_counts().head(10).plot(kind='bar')
```

```
Out[26]: <Axes: ylabel='duration'>
```

