Netflix Analysis

Importing Necessary Libraries

In [2]:

```
import pandas as pd
import numpy as np
from sklearn.preprocessing import LabelEncoder
import matplotlib.pyplot as plt
import seaborn as sns
```

Read the CSV file as DataFrame

In [3]:

```
df = pd.read_csv(r"C:\Users\Abdo\Desktop\Projects\Netflix_Analysis_Projec

df.head(3)
```

Out[3]:

	show_id	type	title	director	cast	country	date_added	release_y
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2(
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	September 24, 2021	2

Sampling Data from a DataFrame

In [4]:

```
df.sample(10)
```

Out[4]:

	show_id	type	title	director	cast	country	date_added	r
7295	s7296	TV Show	Leyla and Mecnun	Onur Ünlü	Ali Atay, Melis Birkan, Serkan Keskin, Ahmet M...	Turkey	April 15, 2017	
7948	s7949	TV Show	Save Our Shelter	NaN	Rocky Kanaka, Rob North	United States	August 18, 2018	
5481	s5482	Movie	Chamatkar	Rajiv Mehra	Shah Rukh Khan, Naseeruddin Shah, Urmila Maton...	India	May 15, 2017	
2728	s2729	Movie	Humpty Sharma Ki Dulhania	Shashank Khaitan	Varun Dhawan, Alia Bhatt, Ashutosh Rana, Sidha...	India	April 1, 2020	
8183	s8184	Movie	The Adventures of Sharkboy and Lavagirl	Robert Rodriguez	Taylor Lautner, Taylor Dooley, Cayden Boyd, Ge...	United States	December 2, 2020	
7880	s7881	Movie	Rocky II	Sylvester Stallone	Sylvester Stallone, Talia Shire, Burt Young, C...	United States	August 1, 2019	
7507	s7508	Movie	Moonlight	Barry Jenkins	Trevante Rhodes, André Holland, Janelle Monáe,...	United States	May 21, 2019	
7089	s7090	Movie	Inuyasha the Movie - La spada del dominatore d...	Toshiya Shinohara	Kappei Yamaguchi, Satsuki Yukino, Koji Tsujita...	Japan	September 1, 2017	
7989	s7990	Movie	Sexo, Pudor y Lagrimas	Antonio Serrano	Demián Bichir, Susana Zabaleta, Jorge Salinas,...	Mexico	December 15, 2017	
6809	s6810	Movie	Froning: The Fittest Man in History	Heber Cannon	Rich Froning	United States	July 15, 2018	

	show_id	type	title	director	cast	country	date_added	r

1- Data Cleaning and Processing

- Dealing with the missing data

In [5]:

```
# Replacments

# Replace blank countries with the mode (most common) country
df['country'] = df['country'].fillna(df['country'].mode()[0])


df['cast'].replace(np.nan, 'No Data',inplace  = True)
df['director'].replace(np.nan, 'No Data',inplace  = True)

# Drops

df.dropna(inplace=True)

# Drop Duplicates

df.drop_duplicates(inplace= True)
```

In [6]:

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

Out[6]:

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

In [7]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 8790 entries, 0 to 8806
Data columns (total 12 columns):
 #   Column        Non-Null Count  Dtype 
---  ------        --------------  ----- 
 0   show_id       8790 non-null   object
 1   type          8790 non-null   object
 2   title         8790 non-null   object
 3   director      8790 non-null   object
 4   cast          8790 non-null   object
 5   country       8790 non-null   object
 6   date_added    8790 non-null   object
 7   release_year  8790 non-null   int64 
 8   rating        8790 non-null   object
 9   duration      8790 non-null   object
 10  listed_in     8790 non-null   object
 11  description   8790 non-null   object
dtypes: int64(1), object(11)
memory usage: 892.7+ KB
```

- Date Conversion and Feature Extraction

In [8]:

```
# Remove leading/trailing spaces
df['date_added'] = df['date_added'].str.strip()

# Convert to datetime, handling errors by coercing invalid formats to NaT
df['date_added'] = pd.to_datetime(df['date_added'], errors='coerce')

# Extract month and month name
df['month_added'] = df['date_added'].dt.month
df['month_name_added'] = df['date_added'].dt.month_name()
df['year_added'] = df['date_added'].dt.year

df.head(3)
```

Out[8]:

	show_id	type	title	director	cast	country	date_added	release_y
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	No Data	United States	2021-09-25	2(
1	s2	TV Show	Blood & Water	No Data	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	2021-09-24	2
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	United States	2021-09-24	2

- Feature Engineering and Data Cleaning: Extracting Key Attributes and Normalizing Data

In [9]:

```
# Quick feature engineering

# Helper column for various plots
df['count'] = 1

# Many productions have several countries listed - this will skew our res

# Lets retrieve just the first country
df['first_country'] = df['country'].apply(lambda x: x.split(",")[0])
df['first_country'].head()

# Rating ages from this notebook: https://www.kaggle.com/andreshg/eda-beg

ratings_ages = {
    'TV-PG': 'Older Kids',
    'TV-MA': 'Adults',
    'TV-Y7-FV': 'Older Kids',
    'TV-Y7': 'Older Kids',
    'TV-14': 'Teens',
    'R': 'Adults',
    'TV-Y': 'Kids',
    'NR': 'Adults',
    'PG-13': 'Teens',
    'TV-G': 'Kids',
    'PG': 'Older Kids',
    'G': 'Kids',
    'UR': 'Adults',
    'NC-17': 'Adults'
}
```

```
df['target_ages'] = df['rating'].replace(ratings_ages)
df['target_ages'].unique()

# Genre

df['genre'] = df['listed_in'].apply(lambda x :  x.replace(' ,',',').repla

# Reducing name length

df['first_country'].replace('United States', 'USA', inplace=True)
df['first_country'].replace('United Kingdom', 'UK',inplace=True)
df['first_country'].replace('South Korea', 'S. Korea',inplace=True)
```

In [10]:

```
df.head()
```

Out[10]:

	show_id	type	title	director	cast	country	date_added	release_y
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	No Data	United States	2021-09-25	20
1	s2	TV Show	Blood & Water	No Data	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	2021-09-24	2
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	United States	2021-09-24	2
3	s4	TV Show	Jailbirds New Orleans	No Data	No Data	United States	2021-09-24	2
4	s5	TV Show	Kota Factory	No Data	Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...	India	2021-09-24	2

- Save the Cleaned DataFrame As CSV File

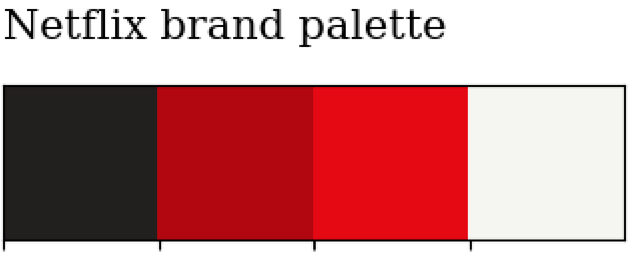
In [11]:

```
df.to_csv(r"C:\Users\Abdo\Desktop\Cleaned_Netflix.csv", index=False)
```

2- Data Visualization

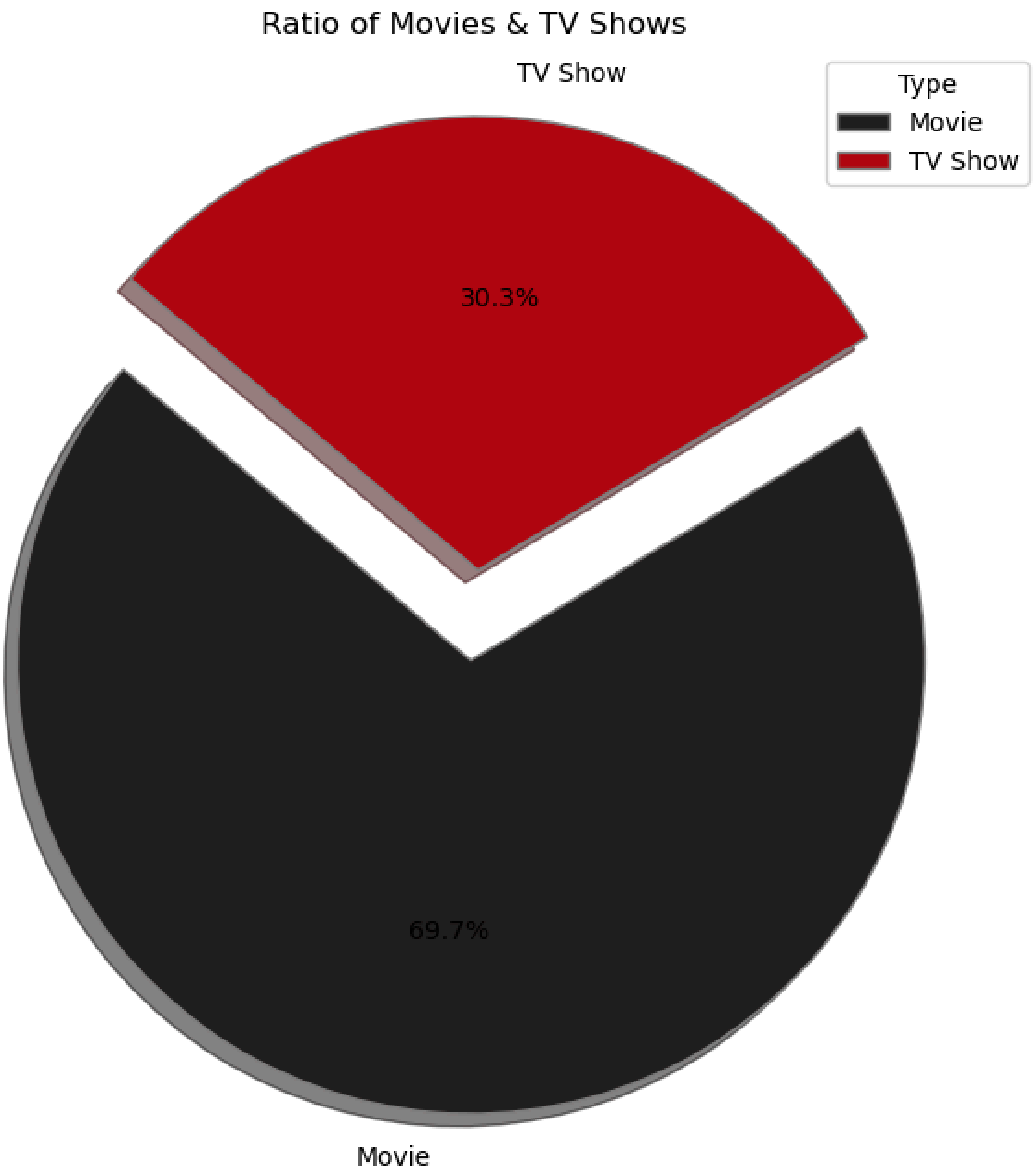
I'll use the Netflix brand colours

In [12]:
```
# Palette
sns.palplot(['#221f1f', '#b20710', '#e50914','#f5f5f1'])
# Defining Netflix colors
netflix_colors = ['#221f1f', '#b20710', '#e50914', '#f5f5f1']

plt.title("Netflix brand palette ",loc='left',fontfamily='serif',fontsize
plt.show()
```



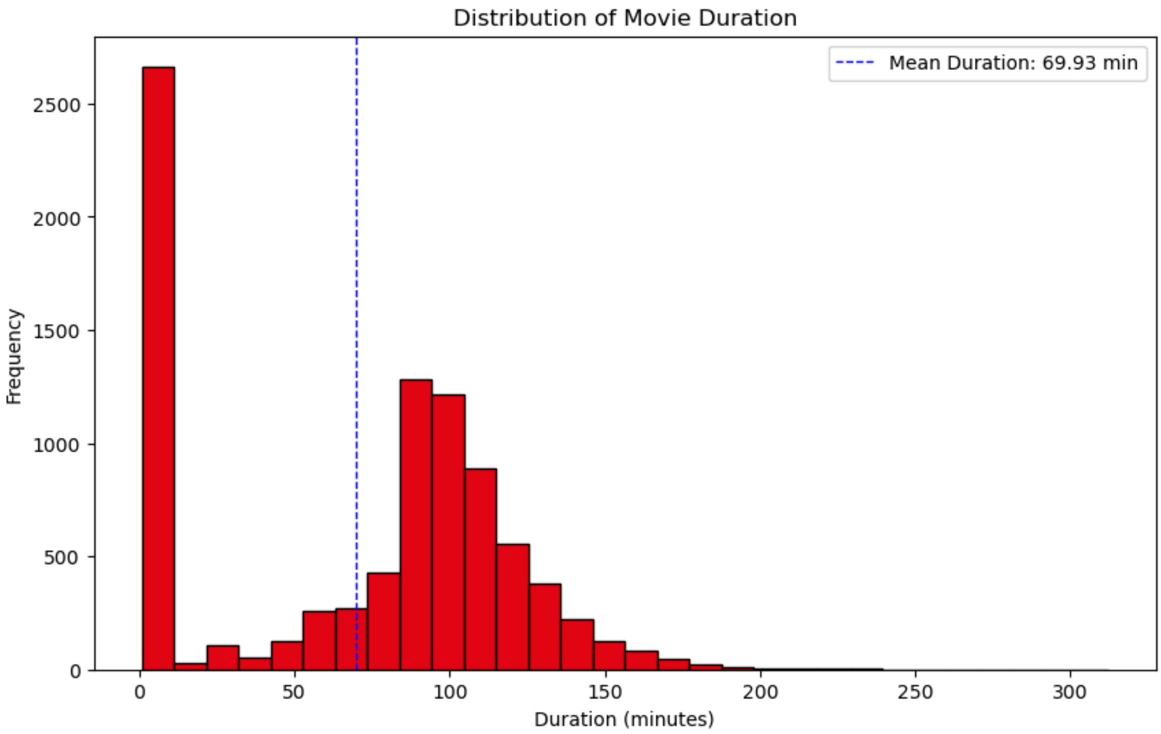
- `Pie Chart` : Displays the Ratio of Movies & TV Shows

In [13]:
```
x = df.groupby(['type'])['type'].count()
y = len(df)
r = ((x / y) * 100).round(2)

explode = (0.1, 0.1)  # Adjust as needed

# Creating a pie chart
plt.figure(figsize=(10, 8))
plt.pie(
    r,
    labels=r.index,
    autopct='%1.1f%%',
    startangle=140,
    colors=netflix_colors[:len(r)],
    explode=explode[:len(r)],  # Explode effect for the slices
    shadow=True,               # Adding shadow for a 3D effect
    wedgeprops=dict(edgecolor='grey')  # Adding an edge color to the wedg
)
plt.title('Ratio of Movies & TV Shows')
plt.legend(title='Type', loc='best')  # Adding a legend
plt.show()
```



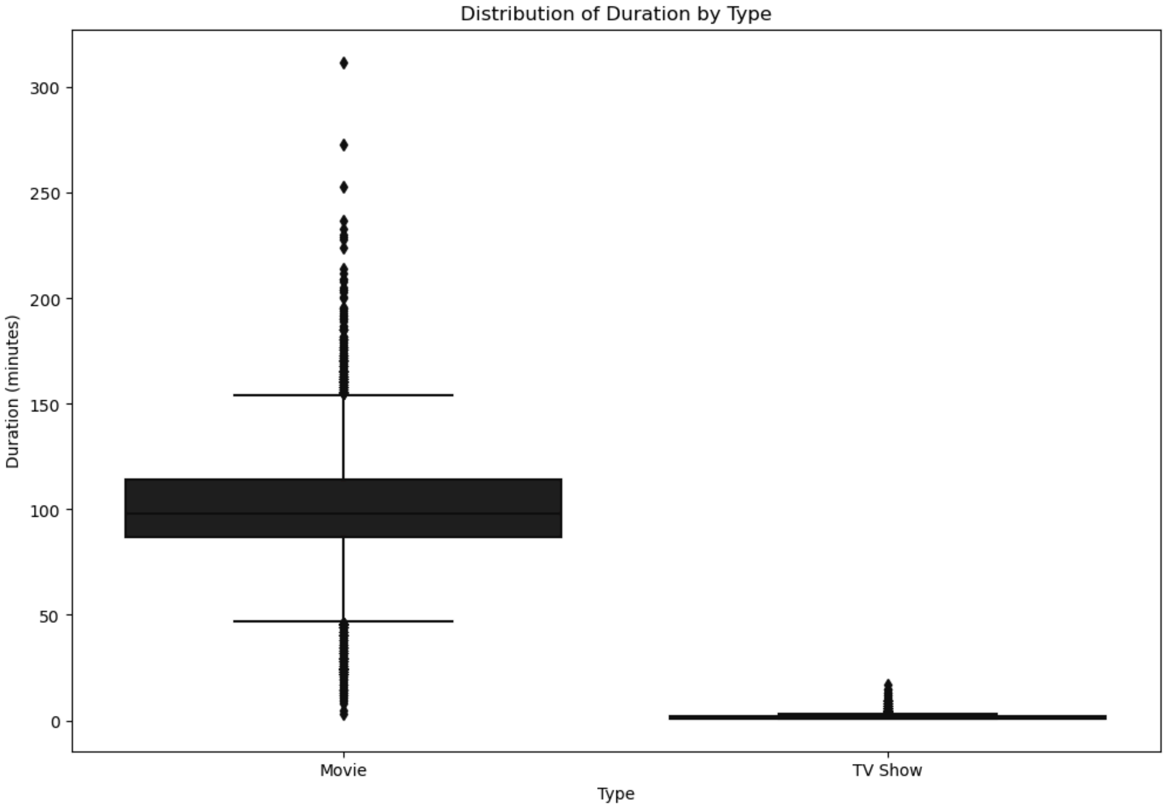
- `Histogram` : Distribution of Duration - Displays the distribution of movie durations

In [14]:
```
# Converting 'duration' to numeric values (in minutes)
df['duration_numeric'] = df['duration'].str.extract('(\d+)').astype(float

# Calculate the mean duration
mean_duration = df['duration_numeric'].mean()

# Creating a histogram of durations
plt.figure(figsize=(10, 6))
plt.hist(df['duration_numeric'].dropna(), bins=30, color='#e50914', edgec

# Adding a vertical line for the mean duration
plt.axvline(mean_duration, color='blue', linestyle='dashed', linewidth=1,

plt.title('Distribution of Movie Duration')
plt.xlabel('Duration (minutes)')
plt.ylabel('Frequency')
plt.legend()  # Show the legend with the mean duration label
plt.show()
```



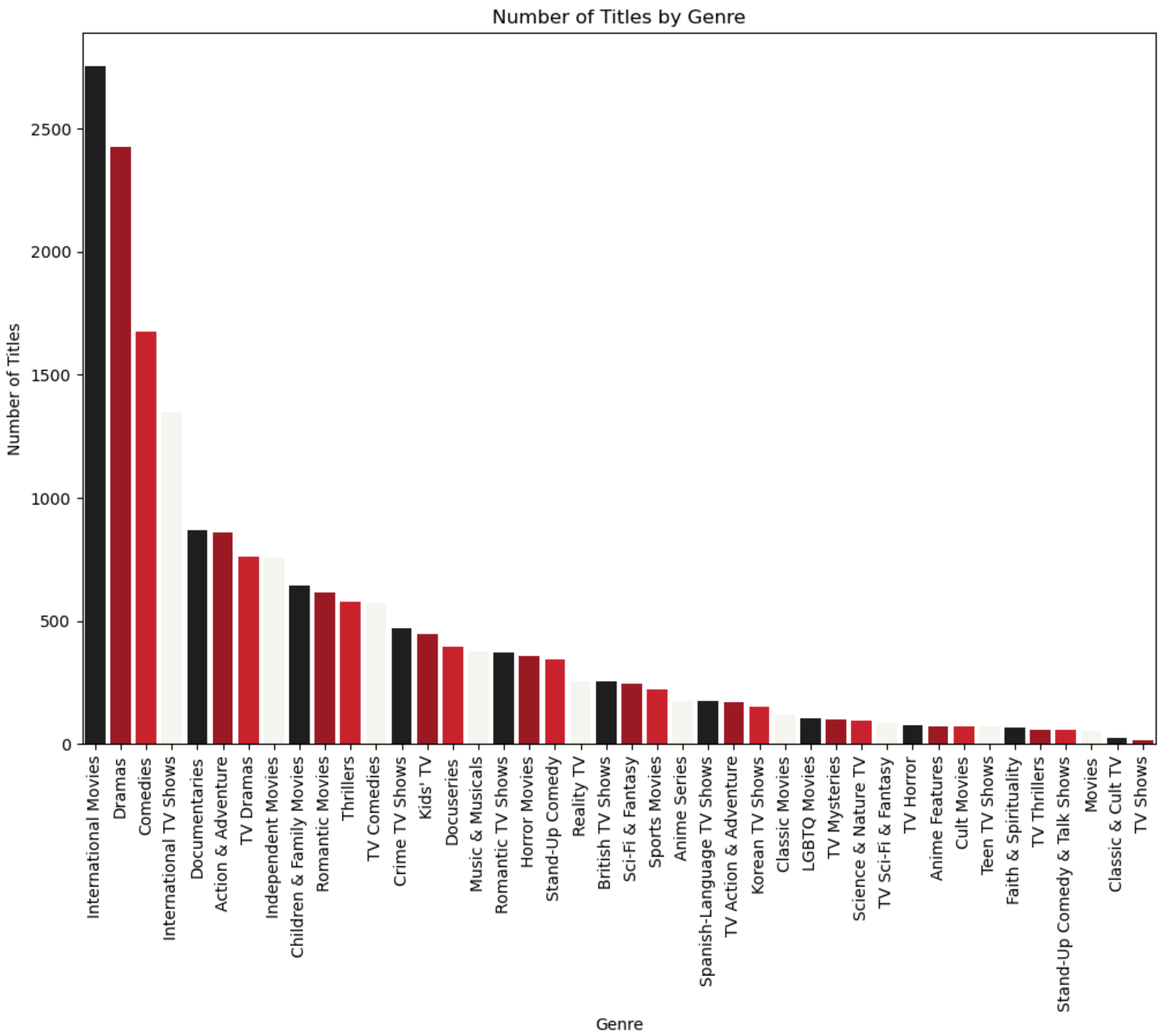
- `Box Plot` : Duration by Type - Visualizes the spread of durations for Movies and TV Shows.

In [15]:
```
# Creating a box plot of duration by type
plt.figure(figsize=(12, 8))
sns.boxplot(x='type', y='duration_numeric', data=df, palette=netflix_colo
plt.title('Distribution of Duration by Type')
plt.xlabel('Type')
plt.ylabel('Duration (minutes)')
plt.show()
```



- `Count Plot` : Titles by Genre - Illustrates the number of titles for each genre.

In [16]:
```
# Exploding the genres into separate rows
genres = df['listed_in'].str.get_dummies(sep=', ')

# Summing up the number of titles per genre
genre_counts = genres.sum().sort_values(ascending=False)

# Creating a count plot for genres
plt.figure(figsize=(12, 8))
sns.barplot(x=genre_counts.index, y=genre_counts.values, palette=netflix_
plt.xticks(rotation=90)
plt.title('Number of Titles by Genre')
plt.xlabel('Genre')
plt.ylabel('Number of Titles')
plt.show()
```



Conclusion

This analysis of the Netflix dataset provided insights into various aspects of the content available on the platform:

- **Ratio of Movies to TV Shows**: Visualized using a pie chart to show the proportion of movies versus TV shows.
- **Distribution of Movie Duration**: A histogram depicted the range of movie lengths, with a vertical line indicating the mean duration.
- **Additional Insights**:
  - Comparison of movie and TV show durations using a box plot.
  - Number of titles by genre.

These visualizations reveal key trends and distributions in Netflix's content library. Future analyses could explore content popularity trends, viewer ratings, and personalized recommendations for even deeper insights.

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Thank you for reviewing this analysis. For any questions or feedback, please contact me. ck, please contact me.