DSC640-T301_Week_1&2_Damico

September 7, 2024

[96]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[97]:
```
# Load the datasets
file_path_countries = r"C:\Users\Joseph\Desktop\School\Masters Data␣
  ↪Science\Data Presentation\all-weeks-countries-netflix.xlsx"
file_path_global = r"C:\Users\Joseph\Desktop\School\Masters Data Science\Data␣
  ↪Presentation\all-weeks-global-netflix.xlsx"
file_path_popular = r"C:\Users\Joseph\Desktop\School\Masters Data Science\Data␣
  ↪Presentation\most-popular-netflix.xlsx"
```

[98]:
```
# Reading the Excel files
df_countries = pd.read_excel(file_path_countries)
df_global = pd.read_excel(file_path_global)
df_popular = pd.read_excel(file_path_popular)
```

```
C:\Users\Joseph\anaconda3\Lib\site-packages\openpyxl\styles\stylesheet.py:226:
UserWarning: Workbook contains no default style, apply openpyxl's default
  warn("Workbook contains no default style, apply openpyxl's default")
C:\Users\Joseph\anaconda3\Lib\site-packages\openpyxl\styles\stylesheet.py:226:
UserWarning: Workbook contains no default style, apply openpyxl's default
  warn("Workbook contains no default style, apply openpyxl's default")
C:\Users\Joseph\anaconda3\Lib\site-packages\openpyxl\styles\stylesheet.py:226:
UserWarning: Workbook contains no default style, apply openpyxl's default
  warn("Workbook contains no default style, apply openpyxl's default")
```

[99]:
```
# Displaying the first few rows of each dataset to inspect
print("Countries Dataset:")
print(df_countries.head())
```

```
Countries Dataset:
  country_name country_iso2        week category  weekly_rank  \
0    Argentina           AR  2024-04-14    Films            1
1    Argentina           AR  2024-04-14    Films            2
2    Argentina           AR  2024-04-14    Films            3
3    Argentina           AR  2024-04-14    Films            4
4    Argentina           AR  2024-04-14    Films            5
```

```
                      show_title season_title  cumulative_weeks_in_top_10
0                  The Tearsmith          NaN                           2
1                         Stolen          NaN                           1
2                  Love, Divided          NaN                           1
3  Woody Woodpecker Goes to Camp          NaN                           1
4                  Rest In Peace          NaN                           3
```

[100]:

```
print("\nGlobal Dataset:")
print(df_global.head())
```

```

Global Dataset:
         week         category  weekly_rank                     show_title  \
0  2024-04-14  Films (English)            1              What Jennifer Did
1  2024-04-14  Films (English)            2  Woody Woodpecker Goes to Camp
2  2024-04-14  Films (English)            3                          Scoop
3  2024-04-14  Films (English)            4                          Glass
4  2024-04-14  Films (English)            5                   Megan Leavey

  season_title  weekly_hours_viewed  runtime  weekly_views  \
0          NaN             26100000   1.4500    18000000.0
1          NaN             19600000   1.6667    11800000.0
2          NaN             14600000   1.7167     8500000.0
3          NaN             11000000   2.1500     5100000.0
4          NaN              9700000   1.9333     5000000.0

   cumulative_weeks_in_top_10  is_staggered_launch episode_launch_details
0                           1                False                    NaN
1                           1                False                    NaN
2                           2                False                    NaN
3                           2                False                    NaN
4                           1                False                    NaN
```

[101]:

```
print("\nMost Popular Dataset:")
print(df_popular.head())
```

```

Most Popular Dataset:
          category  rank              show_title season_title  \
0  Films (English)     1              Red Notice          NaN
1  Films (English)     2           Don't Look Up          NaN
2  Films (English)     3        The Adam Project          NaN
3  Films (English)     4                Bird Box          NaN
4  Films (English)     5  Leave the World Behind          NaN

   hours_viewed_first_91_days  runtime  views_first_91_days
0                   454200000   1.9667            230900000
1                   408600000   2.3833            171400000
2                   281000000   1.7833            157600000
```

```
3                    325300000    2.0667            157400000
4                    339300000    2.3667            143400000
```

[102]:

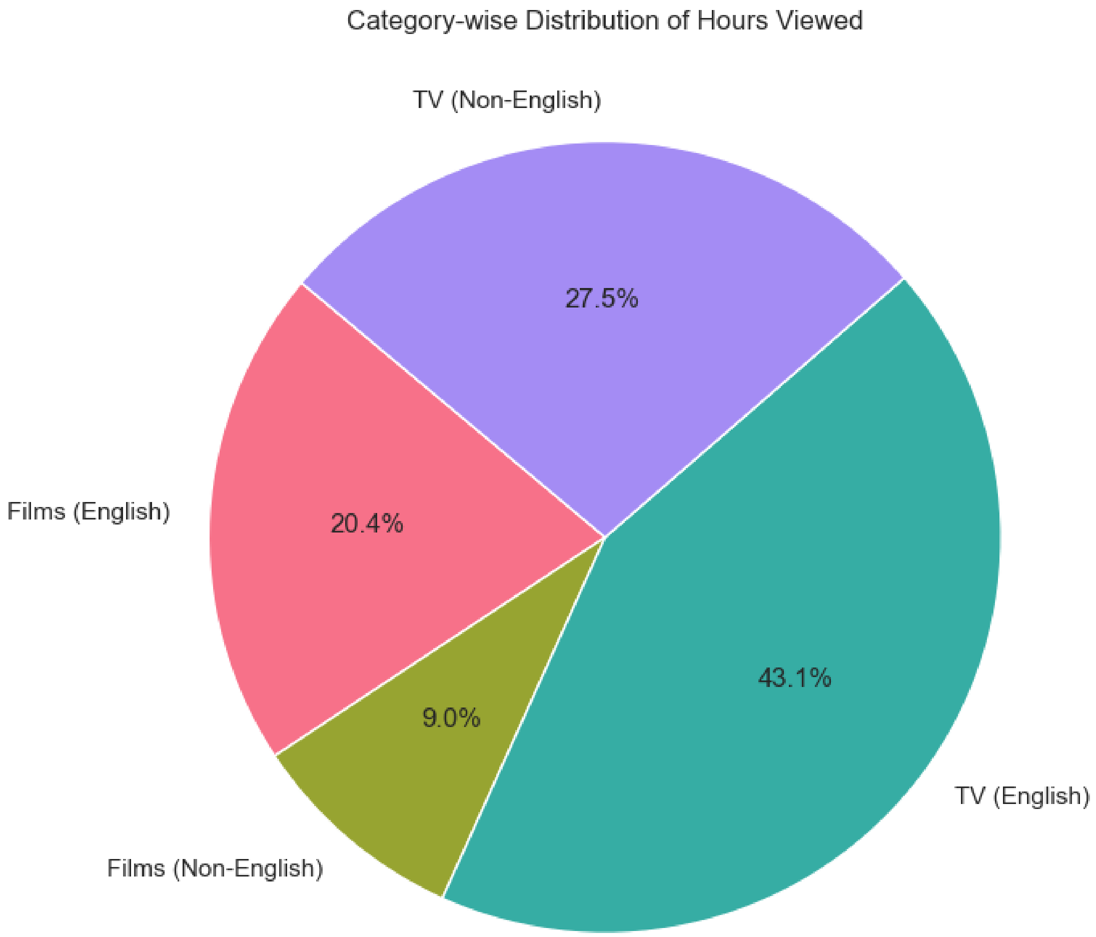
```
# Assign the datasets to variables
countries_df = pd.read_excel("C:/Users/Joseph/Desktop/School/Masters Data␣
 ↪Science/Data Presentation/all-weeks-countries-netflix.xlsx")
global_df = pd.read_excel("C:/Users/Joseph/Desktop/School/Masters Data Science/
 ↪Data Presentation/all-weeks-global-netflix.xlsx")
most_popular_df = pd.read_excel("C:/Users/Joseph/Desktop/School/Masters Data␣
 ↪Science/Data Presentation/most-popular-netflix.xlsx")
```

```
C:\Users\Joseph\anaconda3\Lib\site-packages\openpyxl\styles\stylesheet.py:226:
UserWarning: Workbook contains no default style, apply openpyxl's default
  warn("Workbook contains no default style, apply openpyxl's default")
C:\Users\Joseph\anaconda3\Lib\site-packages\openpyxl\styles\stylesheet.py:226:
UserWarning: Workbook contains no default style, apply openpyxl's default
  warn("Workbook contains no default style, apply openpyxl's default")
C:\Users\Joseph\anaconda3\Lib\site-packages\openpyxl\styles\stylesheet.py:226:
UserWarning: Workbook contains no default style, apply openpyxl's default
  warn("Workbook contains no default style, apply openpyxl's default")
```

0.1 Hours viewed shows vs. films

[116]:

```
# Aggregate the total hours viewed by category
category_hours = df_global.groupby('category')['weekly_hours_viewed'].sum().
 ↪reset_index()

# Generate a color palette
palette = sns.color_palette("husl", len(category_hours))

# Plot a pie chart
plt.figure(figsize=(10, 8))
plt.pie(category_hours['weekly_hours_viewed'],
        labels=category_hours['category'],
        autopct='%1.1f%%',
        colors=palette,
        startangle=140)
plt.title('Category-wise Distribution of Hours Viewed')
plt.show()
```

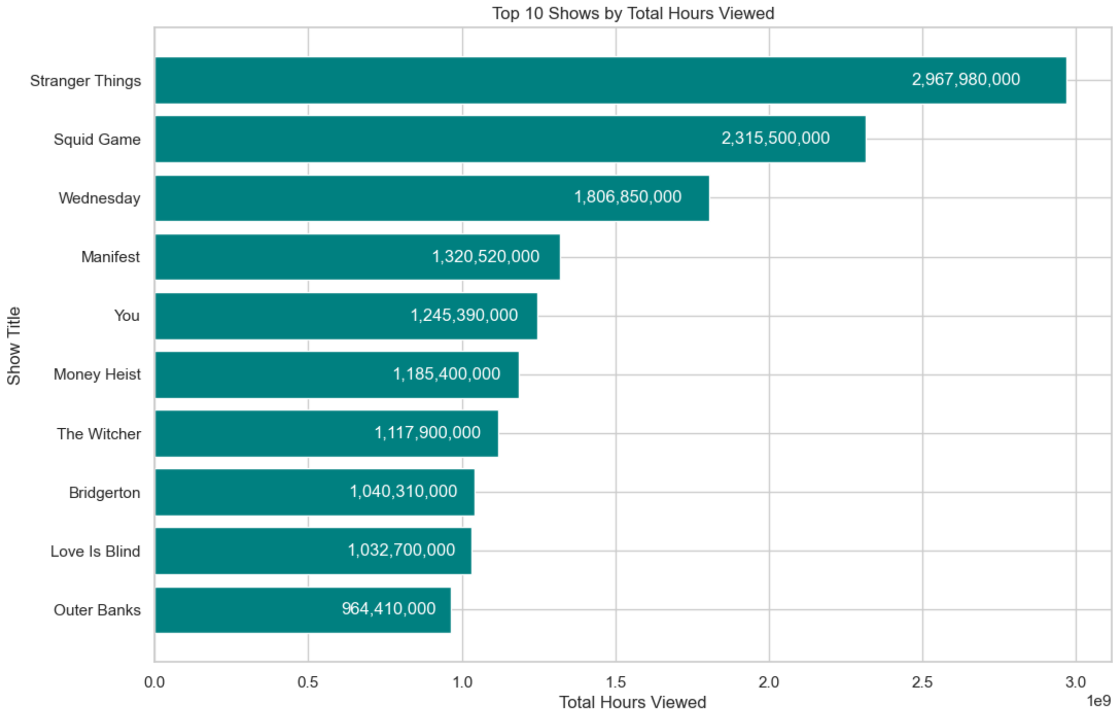


0.2 Top 10 Shows by Hours Viewed

[117]:

```
# Aggregate hours viewed by show title
top_shows = df_global.groupby('show_title')['weekly_hours_viewed'].sum().
  ↪reset_index()
top_shows = top_shows.sort_values('weekly_hours_viewed', ascending=False).
  ↪head(10)

# Horizontal bar chart
plt.figure(figsize=(12, 8))
bars = plt.barh(top_shows['show_title'], top_shows['weekly_hours_viewed'],␣
  ↪color='teal')

# Add text annotations inside the bars
```

```
for bar in bars:
    width = bar.get_width()
    plt.text(width - width * 0.05,
             bar.get_y() + bar.get_height()/2,
             f'{width:,.0f}',
             va='center',
             ha='right',
             color='white')

plt.xlabel('Total Hours Viewed')
plt.ylabel('Show Title')
plt.title('Top 10 Shows by Total Hours Viewed')
plt.gca().invert_yaxis()
plt.show()
```



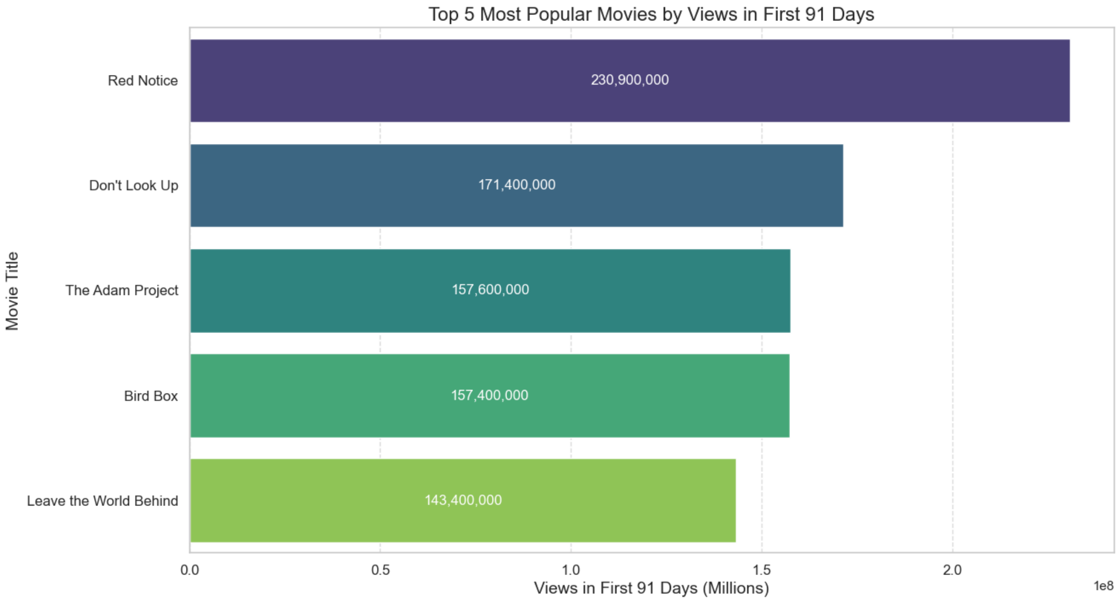
0.3 Most Popular Movies

[118]:

```
# Filter top 5 most popular movies globally by views in the first 91 days
top_popular_movies = most_popular_df[most_popular_df['category'] == 'Films␣
 ↪(English)'].sort_values('views_first_91_days', ascending=False).head(5)

# Horizontal bar chart for most popular movies globally
plt.figure(figsize=(14, 8))
```

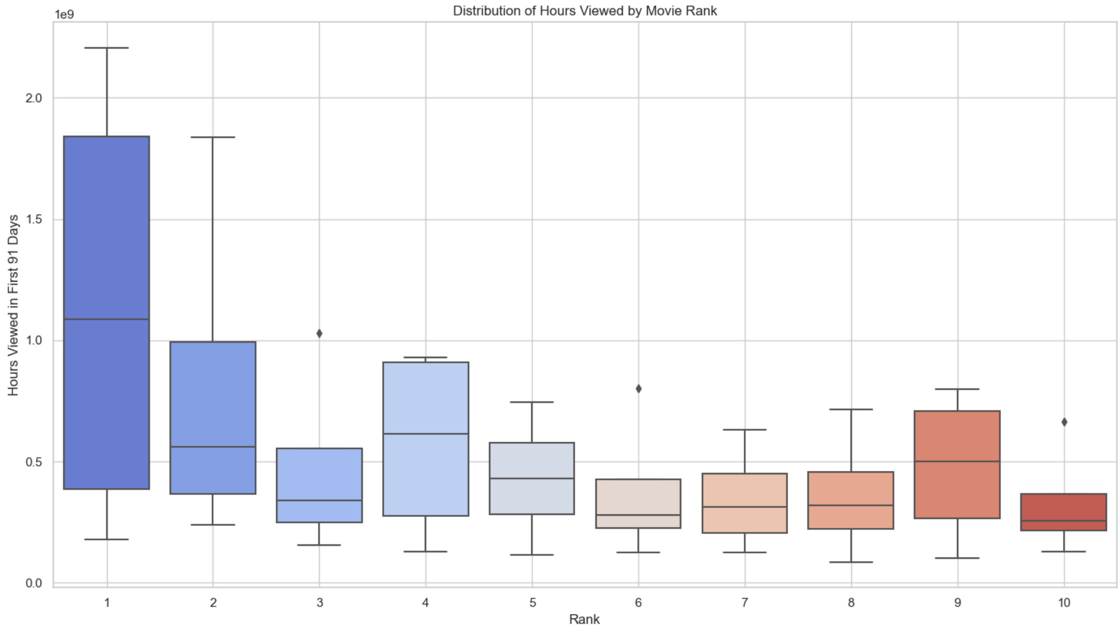
```
bars = sns.barplot(x='views_first_91_days', y='show_title',␣
 ↪data=top_popular_movies, palette='viridis', ci=None)

# Add data labels inside the bars
for bar in bars.patches:
    width = bar.get_width()
    plt.text(width * 0.5,
             bar.get_y() + bar.get_height()/2,
             f'{width:,.0f}',
             va='center',
             ha='center',
             color='white',
             fontsize=12)

# Add grid lines and style
plt.grid(axis='x', linestyle='--', alpha=0.7)
plt.title('Top 5 Most Popular Movies by Views in First 91 Days', fontsize=16)
plt.xlabel('Views in First 91 Days (Millions)', fontsize=14)
plt.ylabel('Movie Title', fontsize=14)
plt.xticks(fontsize=12)
plt.yticks(fontsize=12)
plt.show()
```

```
C:\Users\Joseph\AppData\Local\Temp\ipykernel_18024\383498399.py:6:
FutureWarning:

The `ci` parameter is deprecated. Use `errorbar=None` for the same effect.

  bars = sns.barplot(x='views_first_91_days', y='show_title',
data=top_popular_movies, palette='viridis', ci=None)
```



0.4 Hours by Movie Rank

```
[111]: # Box plot to show distribution of hours viewed by rank
       plt.figure(figsize=(14, 8))
       sns.boxplot(x='rank', y='hours_viewed_first_91_days', data=df_popular,␣
        ↪palette='coolwarm')
       plt.title('Distribution of Hours Viewed by Movie Rank')
       plt.xlabel('Rank')
       plt.ylabel('Hours Viewed in First 91 Days')
       plt.grid(True)
       plt.tight_layout()
       plt.show()
```

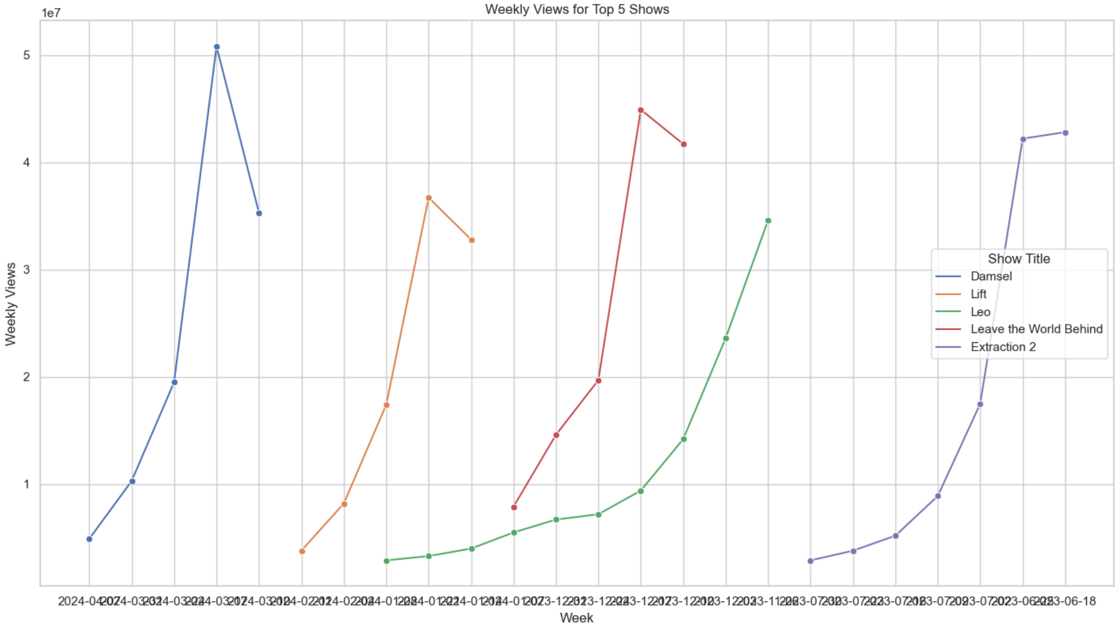


0.5 Line Chart of Weekly Views for Top 5 Shows

```
[113]: # Identify the top 5 shows by total weekly views
       top_shows = df_global.groupby('show_title')['weekly_views'].sum().reset_index()
       top_shows = top_shows.sort_values('weekly_views', ascending=False).head(5)

       # Filter the global dataset for these top 5 shows
       top_shows_data = df_global[df_global['show_title'].
        ↪isin(top_shows['show_title'])]
```

```
# Plot line chart
plt.figure(figsize=(14, 8))
sns.lineplot(data=top_shows_data, x='week', y='weekly_views', hue='show_title',␣
  ↪marker='o')
plt.title('Weekly Views for Top 5 Shows')
plt.xlabel('Week')
plt.ylabel('Weekly Views')
plt.legend(title='Show Title')
plt.grid(True)
plt.tight_layout()
plt.show()
```

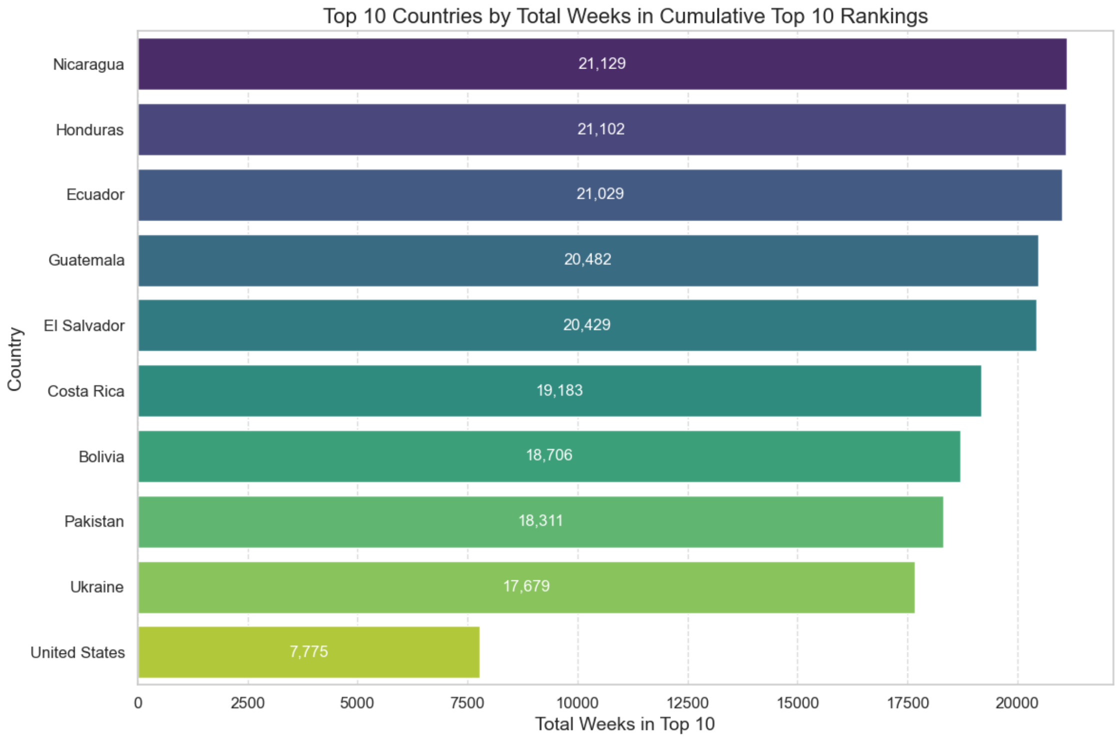
```
C:\Users\Joseph\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a
future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
C:\Users\Joseph\anaconda3\Lib\site-packages\seaborn\_oldcore.py:1119:
FutureWarning: use_inf_as_na option is deprecated and will be removed in a
future version. Convert inf values to NaN before operating instead.
  with pd.option_context('mode.use_inf_as_na', True):
```



0.6 Cumulative top 10 rankings

```
[119]: # Aggregate total weeks in top 10 by country
country_top10_weeks = df_countries.
  ↪groupby('country_name')['cumulative_weeks_in_top_10'].sum().reset_index()
```

```
# Sort and get the top 9 countries
top_9_countries = country_top10_weeks.sort_values('cumulative_weeks_in_top_10',␣
 ↪ascending=False).head(9)

# Check if USA is in the top 9
if 'USA' not in top_9_countries['country_name'].values:
    # Add USA if not in the top 9
    usa_data = country_top10_weeks[country_top10_weeks['country_name'] ==␣
 ↪'United States']
    top_9_countries = pd.concat([top_9_countries, usa_data]).
 ↪sort_values('cumulative_weeks_in_top_10', ascending=False).head(10)

# Create the bar chart
plt.figure(figsize=(12, 8))
bars = sns.barplot(x='cumulative_weeks_in_top_10', y='country_name',␣
 ↪data=top_9_countries, palette='viridis')

# Add data labels inside the bars
for bar in bars.patches:
    width = bar.get_width()
    plt.text(width * 0.5,
             bar.get_y() + bar.get_height()/2,
             f'{width:,.0f}',
             va='center',
             ha='center',
             color='white',
             fontsize=12)

# Add grid lines and style
plt.grid(axis='x', linestyle='--', alpha=0.7)
plt.title('Top 10 Countries by Total Weeks in Cumulative Top 10 Rankings',␣
 ↪fontsize=16)
plt.xlabel('Total Weeks in Top 10', fontsize=14)
plt.ylabel('Country', fontsize=14)
plt.xticks(fontsize=12)
plt.yticks(fontsize=12)
plt.tight_layout()
plt.show()
```


Top 10 Countries by Total Weeks in Cumulative Top 10 Rankings
Country
Nicaragua
21,129
Honduras
21,102
Ecuador
21,029
Guatemala
20,482
El Salvador
20,429
Costa Rica
19,183
Bolivia
18,706
Pakistan
18,311
Ukraine
17,679
United States
7,775
0
2500
5000
7500
10000
12500
15000
17500
20000
Total Weeks in Top 10

Netflix Analysis

Joseph Damico

09/07/2024

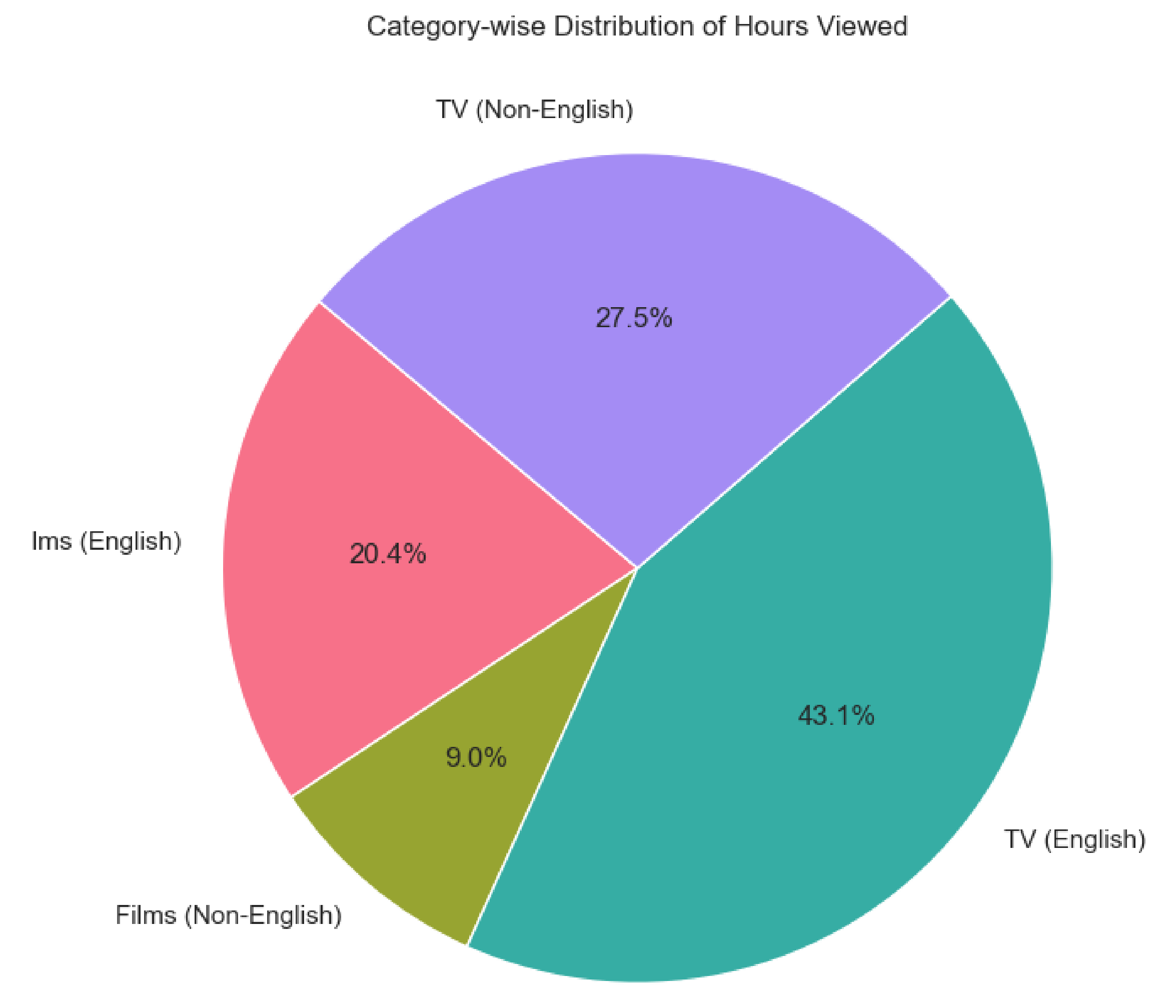
Data Presentation & Visualization

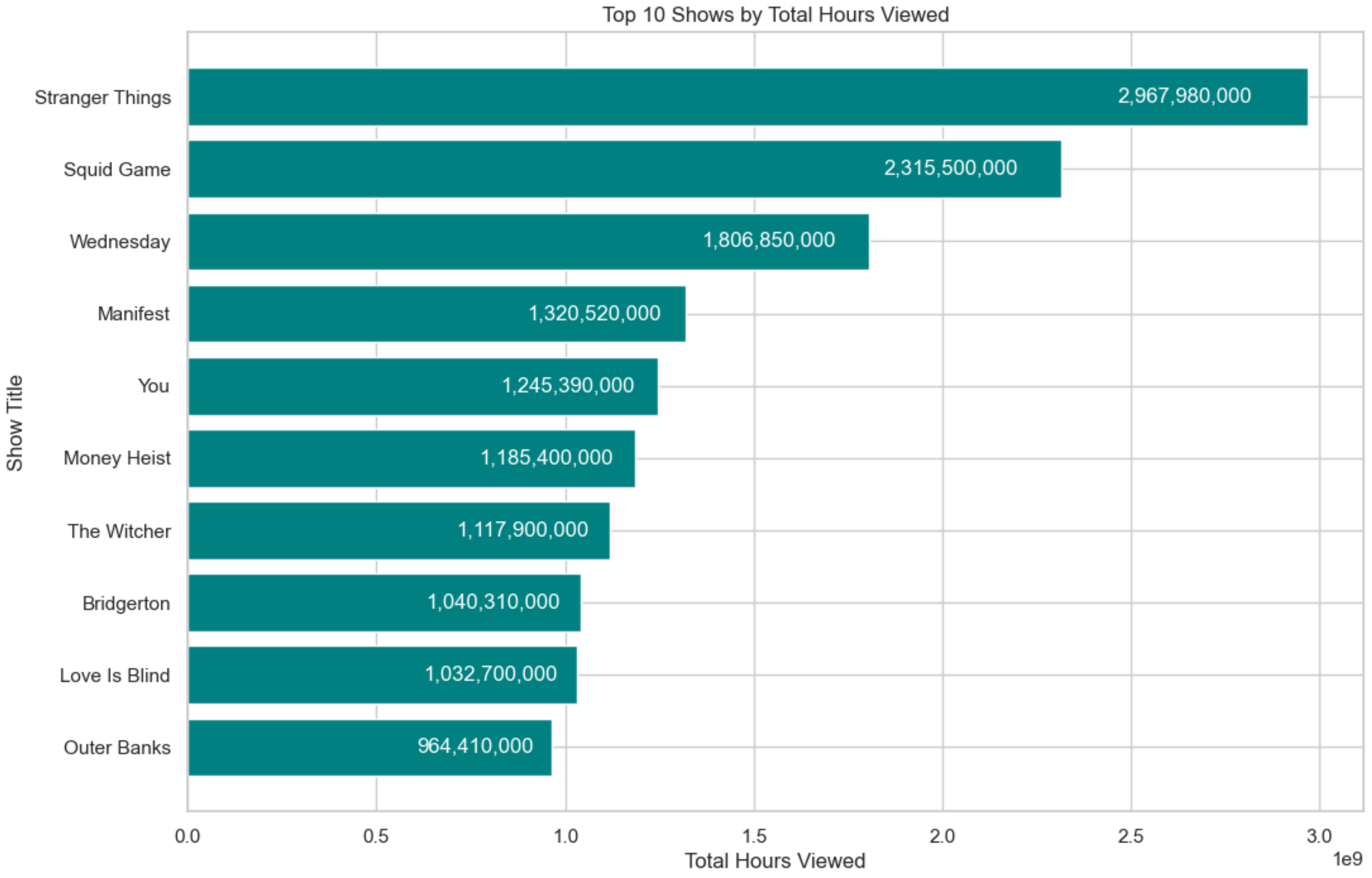
Call to Action

- To effectively leverage viewership data for optimizing Netflix’s content strategy and expanding global reach, it's crucial to understand viewer preferences and trends. By examining the popularity and performance of different shows across various categories and countries, Netflix can tailor its content offerings and marketing strategies to maximize engagement and satisfaction.

Hours viewed shows vs. films

- **Description:** This chart illustrates the proportion of weekly hours viewed by category on Netflix.
- **Relation to Call to Action:** By highlighting the dominant categories—TV (English) and TV (Non-English)—this visualization emphasizes the importance of diversifying content offerings. This data supports the call to action by suggesting a need to focus on popular categories to enhance viewer engagement.



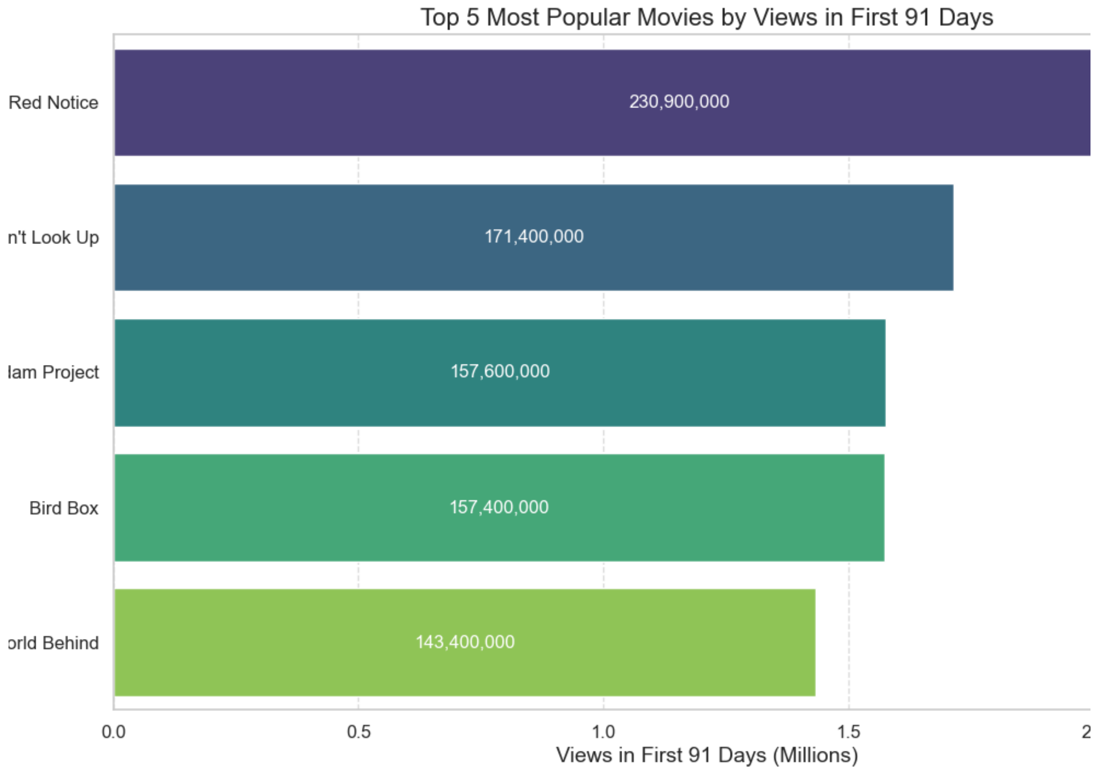


Top 10 Shows by Hours Viewed

- **Description:** This bar chart displays the top 10 shows by total hours viewed.
- **Relation to Call to Action:** The chart shows which shows have captured the most attention, indicating viewer preferences and trends. This insight is vital for content strategy, suggesting which genres or types of shows might be more successful if replicated or expanded.

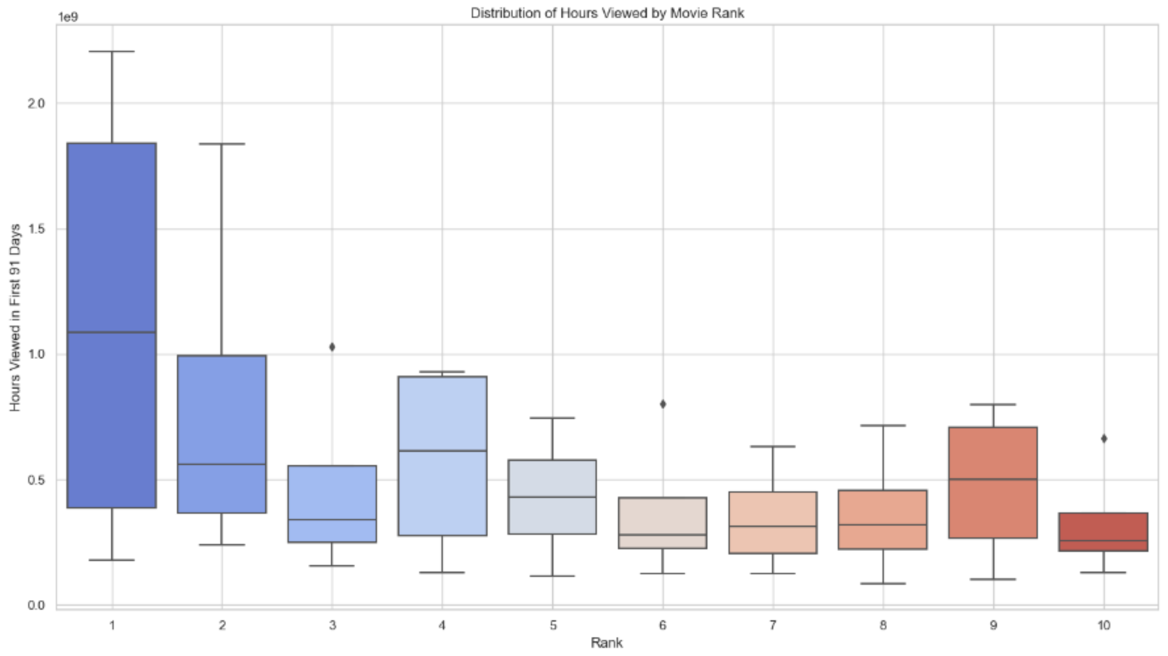
Most Popular Movies

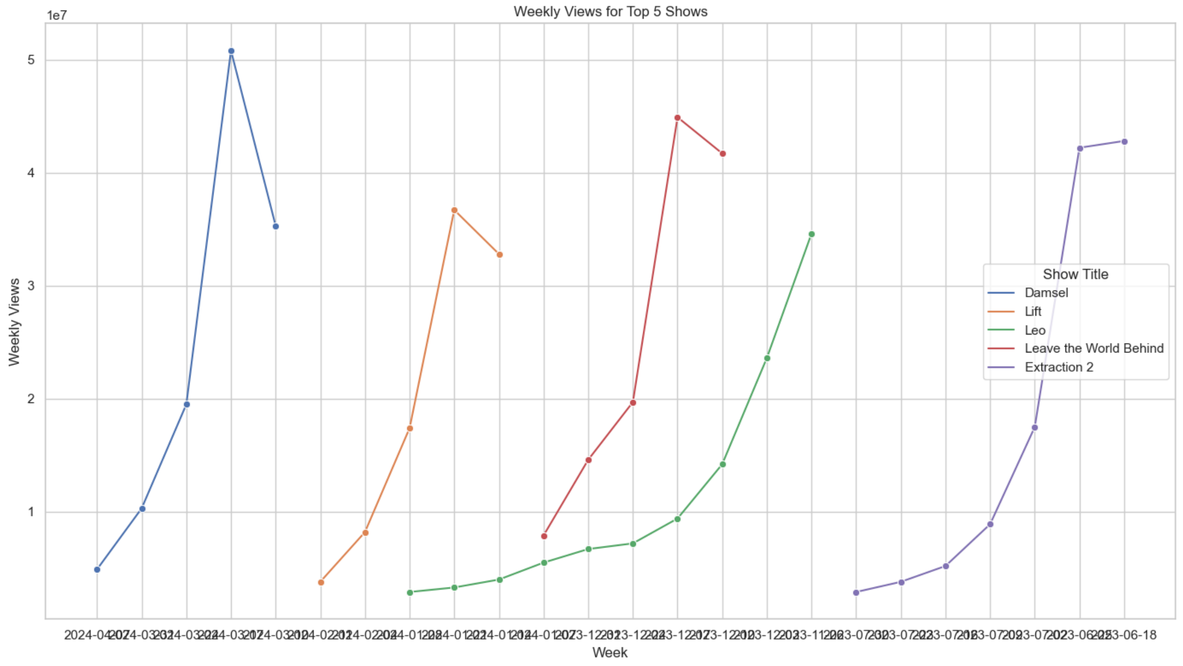
- **Description:** This summary lists the top 5 movies based on views in the first 91 days.
- **Relation to Call to Action:** This data reveals which movies gained the most traction quickly. Understanding these trends helps in making data-driven decisions about future movie productions and marketing strategies.



Hours by Movie Rank

- **Description:** This Box Plot lists the hour watched for movies depending on current rank.
- **Relation to Call to Action:** This data reveals how movie rankings affect longevity of the movie. Showing lower ranked movies as an area to cut cost for licensing or storage reasons quicker.



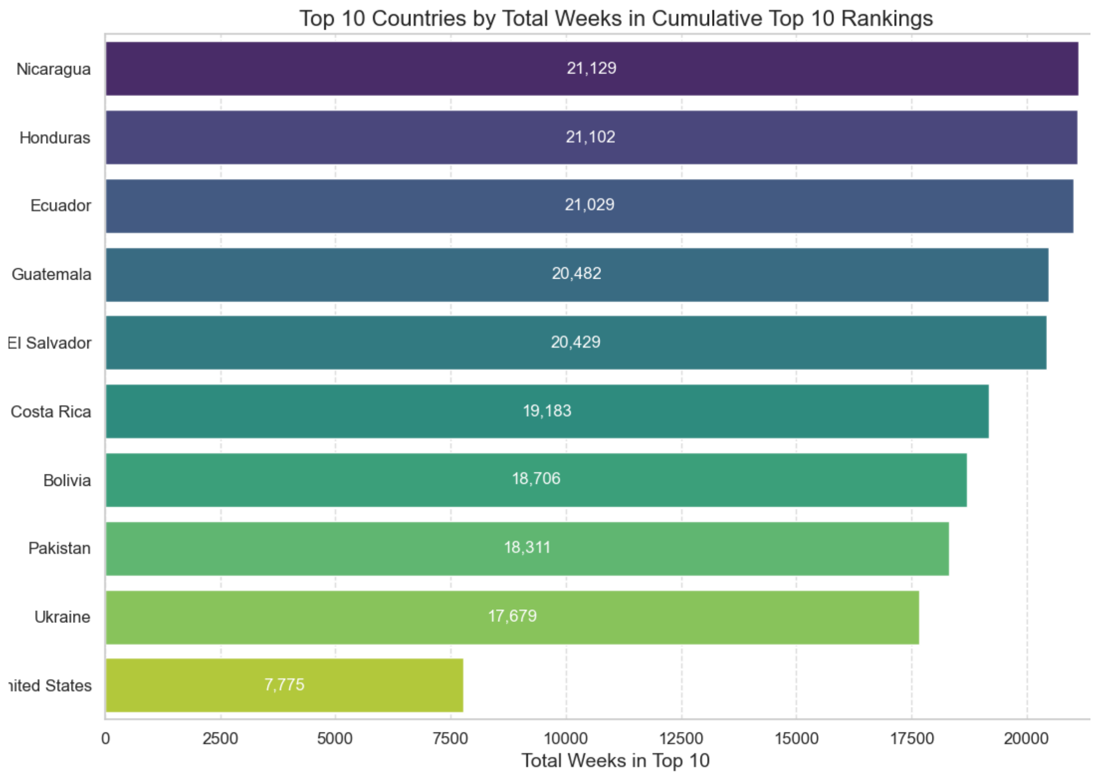


Line Chart of Weekly Views for Top 5 Shows

- **Description:** This line chart shows the average weekly views for the top 5 shows.
- **Relation to Call to Action:** By identifying which shows maintain high viewership over time, Netflix can focus on producing similar content or ensuring continuous engagement with successful shows. This helps in optimizing content based on viewer habits.

Cumulative top 9 rankings

- **Description:** This chart highlights the top 9 countries by cumulative weeks in the Netflix Top 10, with the USA included.
- **Relation to Call to Action:** Identifying the countries with the most consistent top 10 performances can guide Netflix's regional content strategies and marketing efforts. The inclusion of the USA helps in understanding its competitive position globally.



Summary & Recommendations

The data highlights that TV shows, especially in English, dominate Netflix viewership. Top titles like *Stranger Things* and *Squid Game* show significant engagement. The line chart reveals high average weekly views for certain shows, while popular movies like *Red Notice* also perform well. Notably, viewership is strong in specific countries. To capitalize on these insights, focus on promoting successful content categories and tailored regional strategies.

To optimize content strategy and drive global engagement, leverage these insights to tailor Netflix's offerings and marketing efforts. Prioritize high-performing content categories and regions to maximize viewer satisfaction and growth.