netflix-data-analysis-and-visual

October 12, 2024

1 Netflix Data: Cleaning, Analysis and Visualization

2 Introduction:

[1]:
```
# This project involves Netflix data cleaning, analysis, and visualization␣
 ↪using Python and SQL.
# We extracted insights by querying and organizing content based on attributes␣
 ↪such as type and country.
# Data analysis was performed to uncover trends, patterns, and key metrics in␣
 ↪Netflix's dataset.
# Python libraries like pandas, matplotlib, and seaborn were used for effective␣
 ↪data visualization.
# The project aimed to provide a comprehensive view of Netflix's content␣
 ↪distribution and statistics.
```

3 Importing Libraries:

[2]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import mysql.connector
import numpy as np

db = mysql.connector.connect(host = "localhost",
                             username = "root",
                             password = "1012",
                             database = "netflix")
cur = db.cursor()
```

4 Importing Dataset:

[3]:
```
data = pd.read_csv("C:/Users/ASUS/Desktop/Power BI Practice/netflix1.csv")
data.head(10)
```

[3]:

	show_id	show_type	show_title	director	\
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	
1	s3	TV Show	Ganglands	Julien Leclercq	
2	s6	TV Show	Midnight Mass	Mike Flanagan	
3	s14	Movie	Confessions of an Invisible Girl	Bruno Garotti	
4	s8	Movie	Sankofa	Haile Gerima	
5	s9	TV Show	The Great British Baking Show	Andy Devonshire	
6	s10	Movie	The Starling	Theodore Melfi	
7	s939	Movie	Motu Patlu in the Game of Zones	Suhas Kadav	
8	s13	Movie	Je Suis Karl	Christian Schwochow	
9	s940	Movie	Motu Patlu in Wonderland	Suhas Kadav	

	country	date_added	release_year	rating	duration	\
0	United States	9/25/2021	2020	PG-13	90 min	
1	France	9/24/2021	2021	TV-MA	1 Season	
2	United States	9/24/2021	2021	TV-MA	1 Season	
3	Brazil	9/22/2021	2021	TV-PG	91 min	
4	United States	9/24/2021	1993	TV-MA	125 min	
5	United Kingdom	9/24/2021	2021	TV-14	9 Seasons	
6	United States	9/24/2021	2021	PG-13	104 min	
7	India	05-01-2021	2019	TV-Y7	87 min	
8	Germany	9/23/2021	2021	TV-MA	127 min	
9	India	05-01-2021	2013	TV-Y7	76 min	

	listed_in
0	Documentaries
1	Crime TV Shows, International TV Shows, TV Act…
2	TV Dramas, TV Horror, TV Mysteries
3	Children & Family Movies, Comedies
4	Dramas, Independent Movies, International Movies
5	British TV Shows, Reality TV
6	Comedies, Dramas
7	Children & Family Movies, Comedies, Music & Mu…
8	Dramas, International Movies
9	Children & Family Movies, Music & Musicals

5 About Dataset

[4]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8790 entries, 0 to 8789
Data columns (total 10 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   show_id       8790 non-null   object
 1   show_type     8790 non-null   object
```

```
 2   show_title    8790 non-null   object
 3   director      8790 non-null   object
 4   country       8790 non-null   object
 5   date_added    8790 non-null   object
 6   release_year  8790 non-null   int64
 7   rating        8790 non-null   object
 8   duration      8790 non-null   object
 9   listed_in     8790 non-null   object
dtypes: int64(1), object(9)
memory usage: 686.8+ KB
```

6 Count the Number of Movies and TV Shows.

[5]:
```
query = """SELECT show_type, COUNT(*) AS count
FROM netflix1
GROUP BY Show_type"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Type","Count"])
df
```

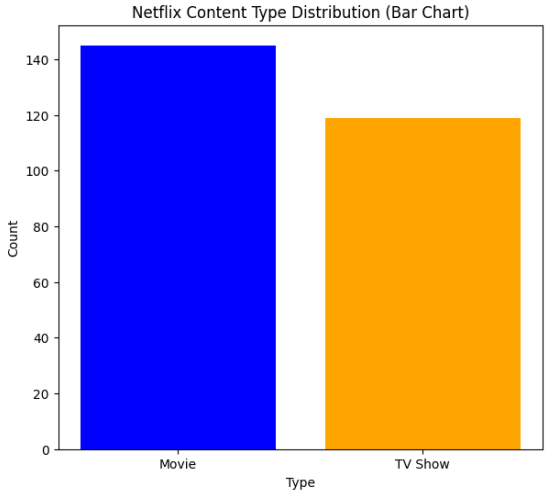
[5]:

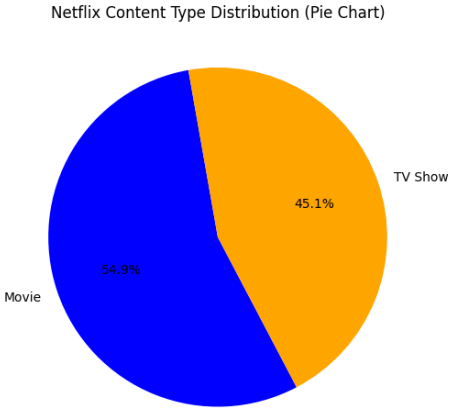
	Type	Count
0	Movie	145
1	TV Show	119

[6]:
```
fig, axes = plt.subplots(nrows=1, ncols=2, figsize=(15, 6))

# Bar Chart
colors = ['blue', 'orange',]
axes[0].bar(df['Type'], df['Count'], color=colors)
axes[0].set_xlabel('Type')
axes[0].set_ylabel('Count')
axes[0].set_title('Netflix Content Type Distribution (Bar Chart)')

# Pie Chart
colors = ['blue', 'orange']  # Customize colors as needed
explode = (0.1, 0)  # Explode the first slice
axes[1].pie(df['Count'], labels=df['Type'], colors=colors, autopct='%1.1f%%',␣
 ↪startangle=100)
axes[1].set_title('Netflix Content Type Distribution (Pie Chart)')
plt.show()
```





7 Finding the Most Common Genre Combinations.

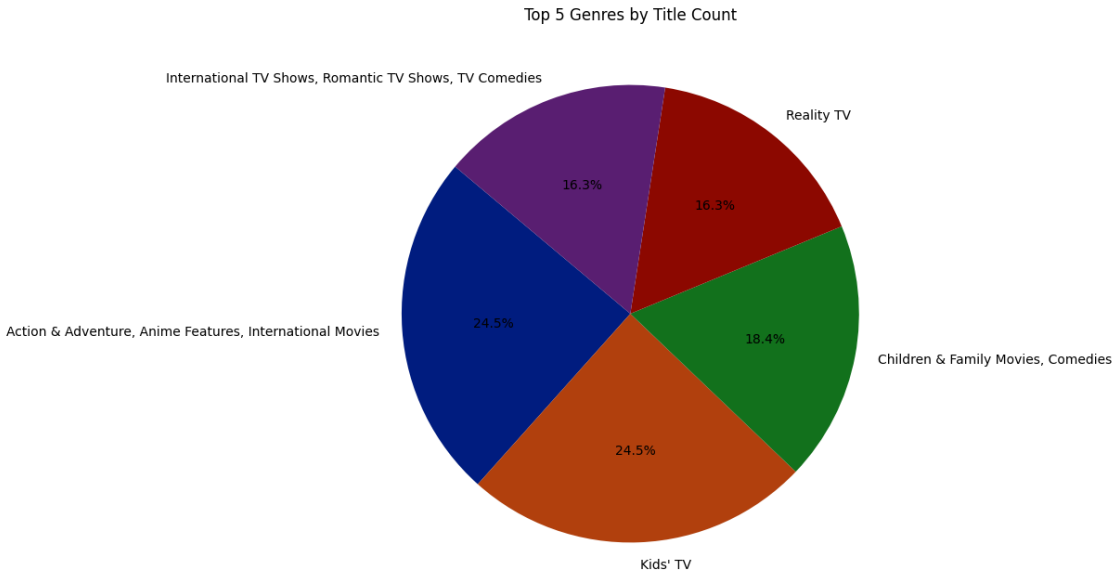
[7]:
```
query = """SELECT listed_in, COUNT(*) AS genre_count
FROM netflix1
GROUP BY listed_in
ORDER BY genre_count DESC
LIMIT 5"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Categories","Genre"])
df
```

[7]:

	Categories	Genre
0	Action & Adventure, Anime Features, Internatio…	12
1	Kids' TV	12
2	Children & Family Movies, Comedies	9
3	Reality TV	8
4	International TV Shows, Romantic TV Shows, TV …	8

[8]:
```
query = """SELECT listed_in, COUNT(*) AS genre_count
FROM netflix1
GROUP BY listed_in
ORDER BY genre_count DESC
LIMIT 5"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Categories","Genre"])
colors = sns.color_palette("dark", len(df))  # Choose a color palette
plt.figure(figsize=(8, 8))
```

```
plt.pie(df['Genre'], labels=df['Categories'], colors=colors, autopct='%1.1f%%',␣
 ↪startangle=140)
plt.title('Top 5 Genres by Title Count')
plt.show()
```



8 Top 10 years having most numbers of content.

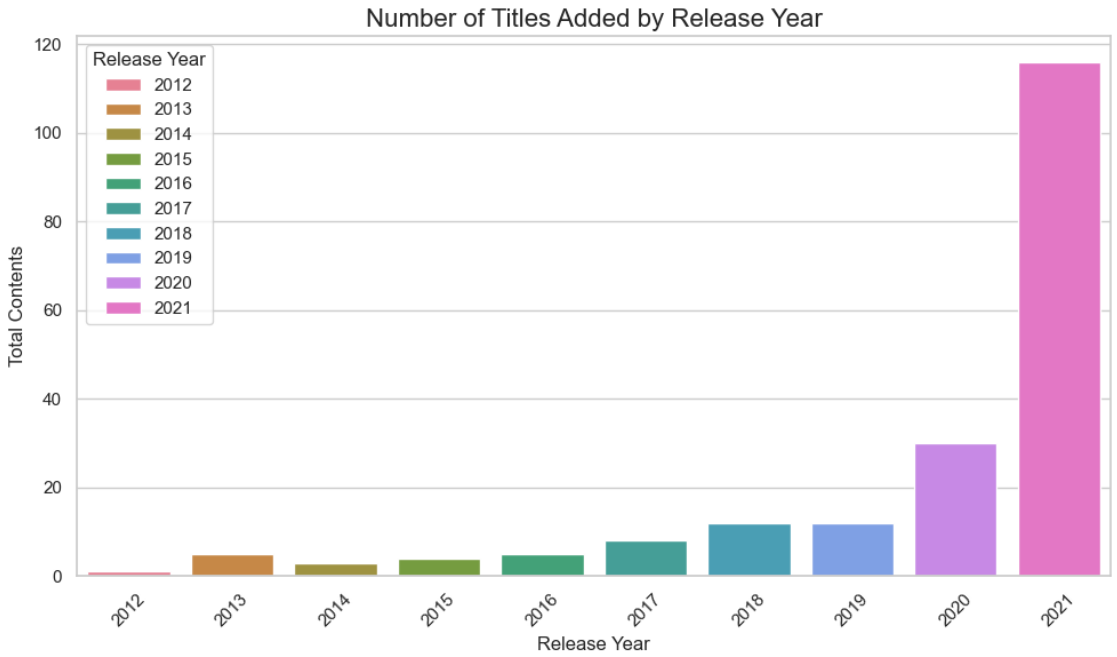
[9]:
```
query = """SELECT release_year, COUNT(*) AS titles_added
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Total Contents"])
df
```

[9]:

	Release Year	Total Contents
0	2021	116
1	2020	30
2	2019	12
3	2018	12
4	2017	8
5	2016	5
6	2015	4
7	2014	3

```
8           2013                5
9           2012                1
```

[10]:
```
query = """SELECT release_year, COUNT(*) AS titles_added
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Total Contents"])
df = pd.DataFrame(data, columns=["Release Year", "Total Contents"])
sns.set(style="whitegrid")
palette = sns.color_palette("husl", len(df))
plt.figure(figsize=(10, 6))
bar_plot = sns.barplot(x="Release Year", y="Total Contents", hue='Release␣
 ↪Year', data=df, palette=palette)
plt.title("Number of Titles Added by Release Year", fontsize=16)
plt.xlabel("Release Year", fontsize=12)
plt.ylabel("Total Contents", fontsize=12)
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



9 Finding the Top 10 Directors with the Most Titles.

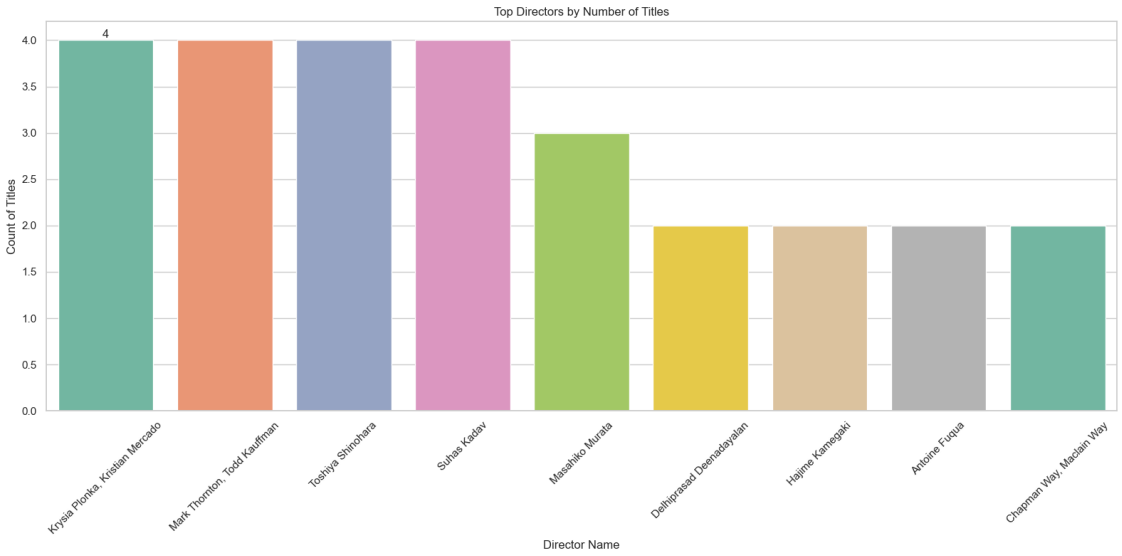
[11]:
```
query = """SELECT director, COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY director
ORDER BY title_count DESC
LIMIT 9 OFFSET 1"""           # becouse top rank holds "Not Given"
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Director Name","Count"])
df
```

[11]:

	Director Name	Count
0	Krysia Plonka, Kristian Mercado	4
1	Mark Thornton, Todd Kauffman	4
2	Toshiya Shinohara	4
3	Suhas Kadav	4
4	Masahiko Murata	3
5	Delhiprasad Deenadayalan	2
6	Hajime Kamegaki	2
7	Antoine Fuqua	2
8	Chapman Way, Maclain Way	2

[12]:
```
query = """SELECT director, COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY director
ORDER BY title_count DESC
LIMIT 9 OFFSET 1"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns=["Director Name", "Count"])
df = df.sort_values(by="Count", ascending=False)
color_palette = sns.color_palette("Set2", len(df))
plt.figure(figsize=(16, 8))
ax = sns.barplot(x="Director Name", y="Count", data=df, palette=color_palette,␣
 ↪hue="Director Name", dodge=False, legend=False)
ax.bar_label(ax.containers[0])
plt.xticks(rotation=45)
plt.title("Top Directors by Number of Titles")
plt.xlabel("Director Name")
plt.ylabel("Count of Titles")
plt.tight_layout()

plt.show()
```



10 Geting the Longest Movies in Terms of Duration.

[13]:
```
query = """SELECT show_title, duration
FROM netflix1
WHERE show_type = 'Movie'
ORDER BY CAST(SUBSTRING_INDEX(duration, ' ', 1) AS UNSIGNED) DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Titles","Duration"])
df
```

[13]:

	Titles	Duration
0	Headspace: Unwind Your Mind	273 min
1	Once Upon a Time in America	229 min
2	King of Boys	182 min
3	Jeans	166 min
4	Avvai Shanmughi	161 min
5	The Guns of Navarone	156 min
6	Cold Mountain	154 min
7	Minsara Kanavu	147 min
8	Omo Ghetto: the Saga	147 min
9	Tughlaq Durbar (Telugu)	145 min

11 Getting Yearly releases of Movies and TV Shows on Netflix.

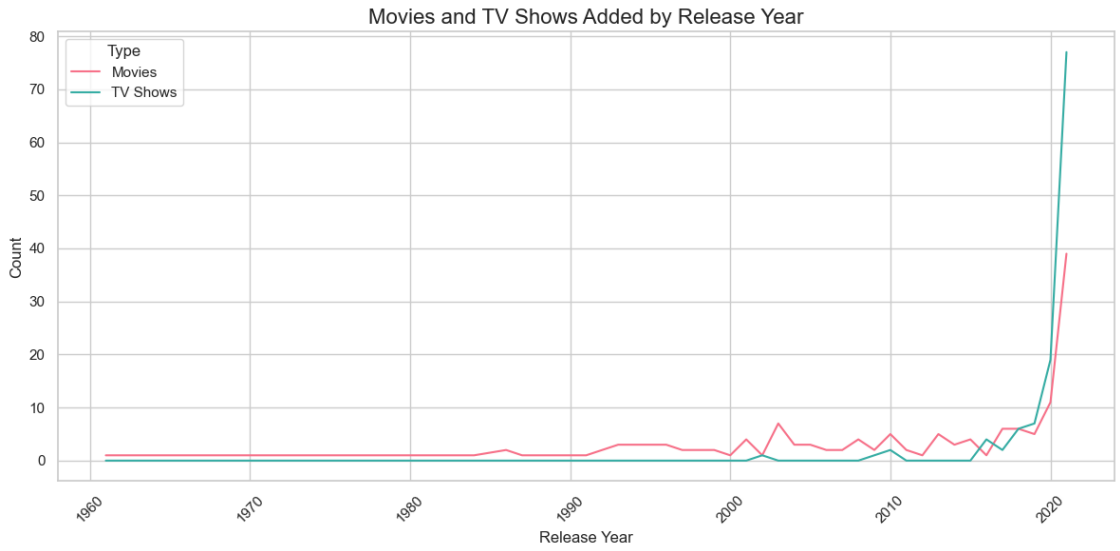
[14]:
```
query = """SELECT
  COUNT(CASE WHEN show_type = 'Movie' THEN 1 END) AS movie_count,
  COUNT(CASE WHEN show_type = 'TV Show' THEN 1 END) AS tv_show_count,
  release_year
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Movies","TV Shows","Release Year"])
df
```

[14]:

	Movies	TV Shows	Release Year
0	1	0	1961
1	1	0	1975
2	1	0	1978
3	1	0	1980
4	1	0	1982
5	1	0	1983
6	1	0	1984
7	2	0	1986
8	1	0	1987
9	1	0	1989
10	1	0	1990
11	1	0	1991
12	3	0	1993
13	3	0	1994
14	3	0	1996
15	2	0	1997
16	2	0	1998
17	2	0	1999
18	1	0	2000
19	4	0	2001
20	1	1	2002
21	7	0	2003
22	3	0	2004
23	3	0	2005
24	2	0	2006
25	2	0	2007
26	4	0	2008
27	2	1	2009
28	5	2	2010
29	2	0	2011
30	1	0	2012
31	5	0	2013

```
32        3          0          2014
33        4          0          2015
34        1          4          2016
35        6          2          2017
36        6          6          2018
37        5          7          2019
38       11         19          2020
39       39         77          2021
```

[15]:
```
query = """SELECT
  COUNT(CASE WHEN show_type = 'Movie' THEN 1 END) AS movie_count,
  COUNT(CASE WHEN show_type = 'TV Show' THEN 1 END) AS tv_show_count,
  release_year
FROM netflix.netflix1
GROUP BY release_year
ORDER BY release_year"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Movies","TV Shows","Release Year"])
sns.set(style="whitegrid")
palette = sns.color_palette("husl", 2)
plt.figure(figsize=(12, 6))
sns.lineplot(data=df, x="Release Year", y="Movies", label="Movies",␣
 ↪color=palette[0])
sns.lineplot(data=df, x="Release Year", y="TV Shows", label="TV Shows",␣
 ↪color=palette[1])
plt.title("Movies and TV Shows Added by Release Year", fontsize=16)
plt.xlabel("Release Year", fontsize=12)
plt.ylabel("Count", fontsize=12)
plt.legend(title='Type')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



12 Top 10 countries with most content on Netflix.

[16]:
```
query = """SELECT country, COUNT(*) AS count
FROM netflix1
WHERE country IS NOT NULL
GROUP BY country
ORDER BY count DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Country","Count"])
df
```

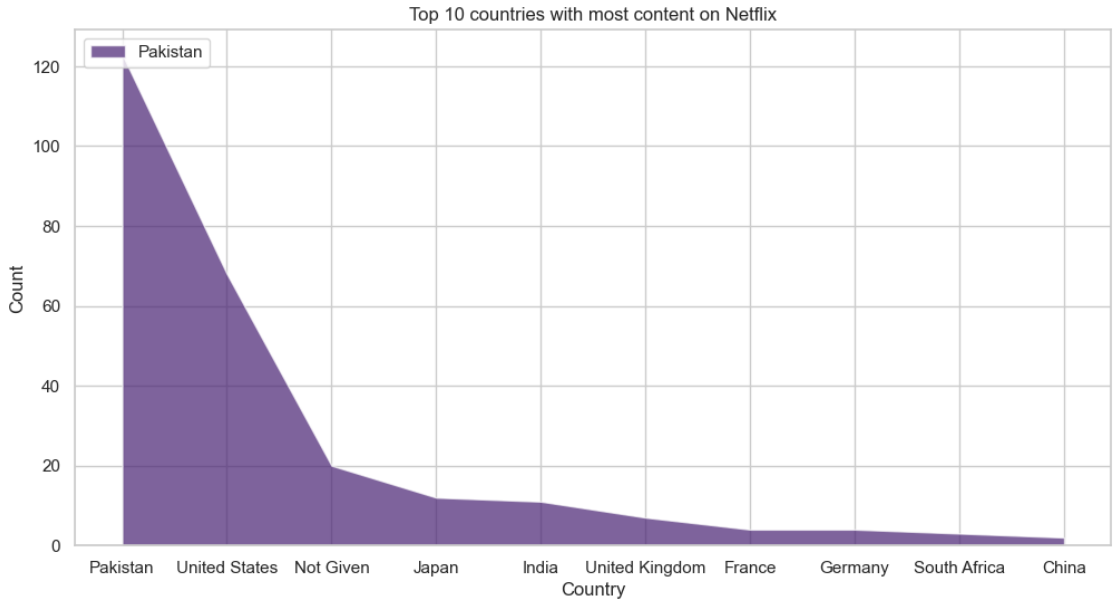
[16]:

	Country	Count
0	Pakistan	123
1	United States	68
2	Not Given	20
3	Japan	12
4	India	11
5	United Kingdom	7
6	France	4
7	Germany	4
8	South Africa	3
9	China	2

[17]:
```
query = """SELECT country, COUNT(*) AS count
FROM netflix1
WHERE country IS NOT NULL
```

```
GROUP BY country
ORDER BY count DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Country","Count"])
colors = sns.color_palette("viridis", len(df))  # Choose a color palette

# Create the area chart
plt.figure(figsize=(12, 6))
plt.stackplot(df['Country'], df['Count'], labels=df['Country'], colors=colors,␣
 ↪alpha=0.7)
plt.xlabel('Country')
plt.ylabel('Count')
plt.title('Top 10 countries with most content on Netflix')
plt.legend(loc='upper left')
plt.show()
```



13 Calculating the Average Duration of Movies by Country.

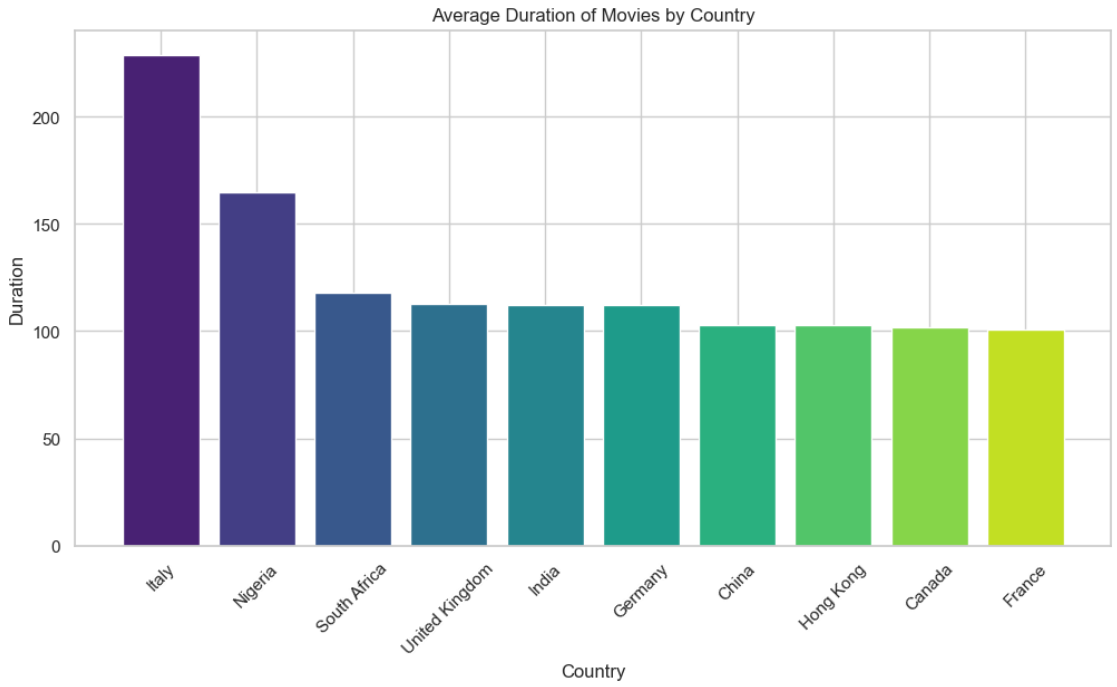
[18]:
```
query = """SELECT country, round(AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
 ↪UNSIGNED)),0) AS avg_duration
FROM netflix1
WHERE show_type = 'Movie' AND country IS NOT NULL
GROUP BY country
ORDER BY avg_duration DESC
```

```
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Country","Duration"])
df
```

[18]:

	Country	Duration
0	Italy	229
1	Nigeria	165
2	South Africa	118
3	United Kingdom	113
4	India	112
5	Germany	112
6	China	103
7	Hong Kong	103
8	Canada	102
9	France	101

[19]:
```
query = """SELECT country, round(AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
 ↪UNSIGNED)),0) AS avg_duration
FROM netflix1
WHERE show_type = 'Movie' AND country IS NOT NULL
GROUP BY country
ORDER BY avg_duration DESC
LIMIT 10"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Country","Duration"])
colors = sns.color_palette("viridis", len(df))
plt.figure(figsize=(12, 6))
plt.bar(df['Country'], df['Duration'], color=colors)
plt.xlabel('Country')
plt.ylabel('Duration')
plt.title('Average Duration of Movies by Country')
plt.xticks(rotation=45)
plt.show()
```



14 Listing Titles Released Each Year with Their Count of Directors.

[20]:
```
query = """SELECT release_year, COUNT(DISTINCT director) AS director_count,␣
 ↪COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY release_year
ORDER BY release_year DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Director Count","Title␣
 ↪Count"])
df
```

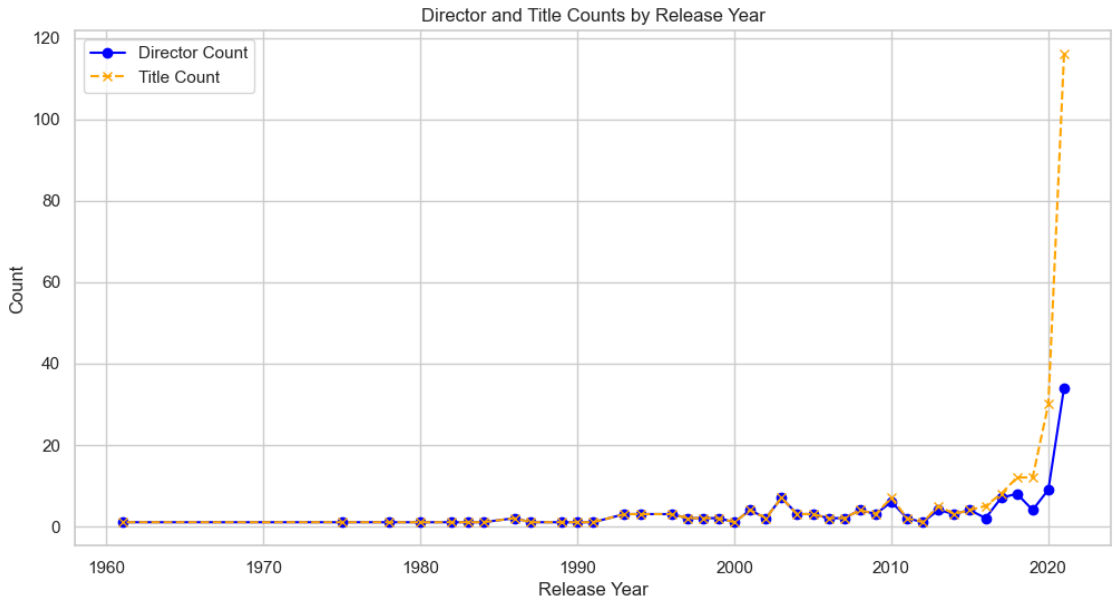
[20]:

	Release Year	Director Count	Title Count
0	2021	34	116
1	2020	9	30
2	2019	4	12
3	2018	8	12
4	2017	7	8
5	2016	2	5
6	2015	4	4

7	2014	3	3
8	2013	4	5
9	2012	1	1
10	2011	2	2
11	2010	6	7
12	2009	3	3
13	2008	4	4
14	2007	2	2
15	2006	2	2
16	2005	3	3
17	2004	3	3
18	2003	7	7
19	2002	2	2
20	2001	4	4
21	2000	1	1
22	1999	2	2
23	1998	2	2
24	1997	2	2
25	1996	3	3
26	1994	3	3
27	1993	3	3
28	1991	1	1
29	1990	1	1
30	1989	1	1
31	1987	1	1
32	1986	2	2
33	1984	1	1
34	1983	1	1
35	1982	1	1
36	1980	1	1
37	1978	1	1
38	1975	1	1
39	1961	1	1

[21]:
```
query = """SELECT release_year, COUNT(DISTINCT director) AS director_count,␣
 ↪COUNT(*) AS title_count
FROM netflix1
WHERE director IS NOT NULL
GROUP BY release_year
ORDER BY release_year DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Director Count","Title␣
 ↪Count"])
plt.figure(figsize=(12, 6))
plt.plot(df['Release Year'], df['Director Count'], label='Director Count',␣
 ↪marker='o', linestyle='-', color='blue')
```

```
plt.plot(df['Release Year'], df['Title Count'], label='Title Count',␣
 ↪marker='x', linestyle='--', color='orange')
plt.xlabel('Release Year')
plt.ylabel('Count')
plt.title('Director and Title Counts by Release Year')
plt.legend()
plt.grid(True)
plt.show()
```



15 Identifying the Rating Distribution Over Time.

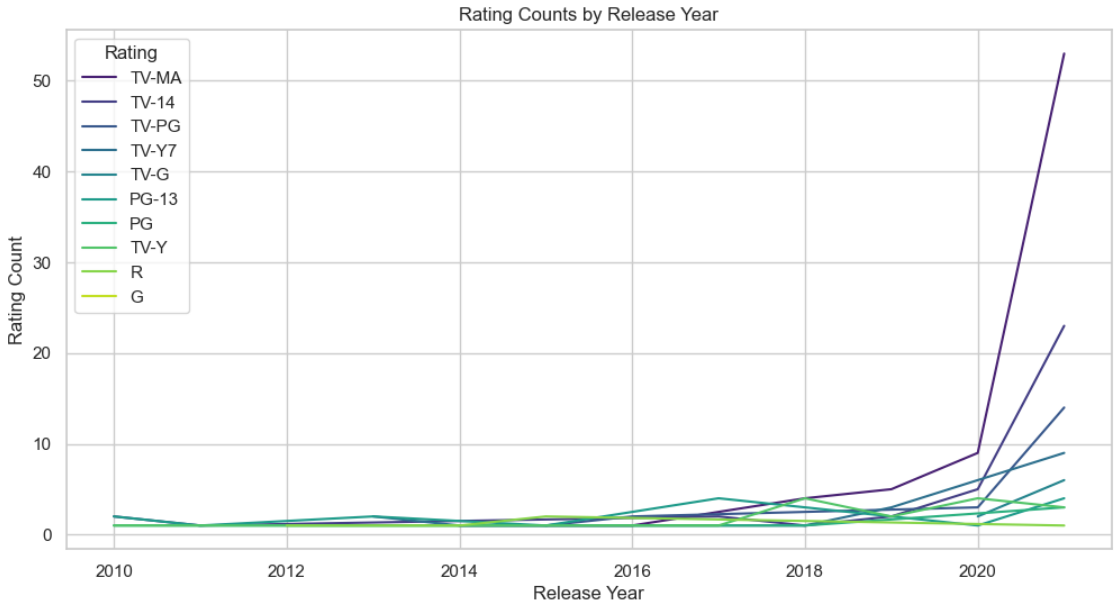
[22]:
```
query = """SELECT release_year, rating, COUNT(*) AS rating_count
FROM netflix1
WHERE rating IS NOT NULL
GROUP BY release_year, rating
ORDER BY release_year DESC, rating_count DESC
LIMIT 50"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Rating","Rating Count"])
df
```

[22]:

	Release Year	Rating	Rating Count
0	2021	TV-MA	53
1	2021	TV-14	23
2	2021	TV-PG	14

3	2021	TV-Y7	9
4	2021	TV-G	6
5	2021	PG-13	4
6	2021	PG	3
7	2021	TV-Y	3
8	2021	R	1
9	2020	TV-MA	9
10	2020	TV-Y7	6
11	2020	TV-14	5
12	2020	TV-Y	4
13	2020	TV-PG	3
14	2020	TV-G	2
15	2020	PG-13	1
16	2019	TV-MA	5
17	2019	TV-Y7	3
18	2019	TV-Y	2
19	2019	TV-14	2
20	2018	TV-Y	4
21	2018	TV-MA	4
22	2018	TV-14	1
23	2018	PG	1
24	2018	G	1
25	2018	TV-Y7	1
26	2017	PG-13	4
27	2017	TV-14	2
28	2017	TV-Y	1
29	2017	TV-Y7	1
30	2016	TV-PG	2
31	2016	TV-Y	1
32	2016	TV-Y7	1
33	2016	TV-MA	1
34	2015	R	2
35	2015	TV-PG	1
36	2015	PG-13	1
37	2014	TV-MA	1
38	2014	TV-Y7	1
39	2014	R	1
40	2013	PG-13	2
41	2013	TV-Y7	2
42	2013	TV-Y	1
43	2012	R	1
44	2011	TV-14	1
45	2011	PG-13	1
46	2010	TV-14	2
47	2010	PG-13	2
48	2010	TV-Y	1
49	2010	PG	1

[23]:
```
query = """SELECT release_year, rating, COUNT(*) AS rating_count
FROM netflix1
WHERE rating IS NOT NULL
GROUP BY release_year, rating
ORDER BY release_year DESC, rating_count DESC
LIMIT 50"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Release Year","Rating","Rating Count"])
color_palette = sns.color_palette("viridis", len(df['Rating'].unique()))
plt.figure(figsize=(12, 6))
sns.lineplot(x='Release Year', y='Rating Count', hue='Rating', data=df,␣
 ↪palette=color_palette)
plt.xlabel('Release Year')
plt.ylabel('Rating Count')
plt.title('Rating Counts by Release Year')
plt.legend(title='Rating')
plt.grid(True)
plt.show()
```



16 Average Duration of Movies by Rating.

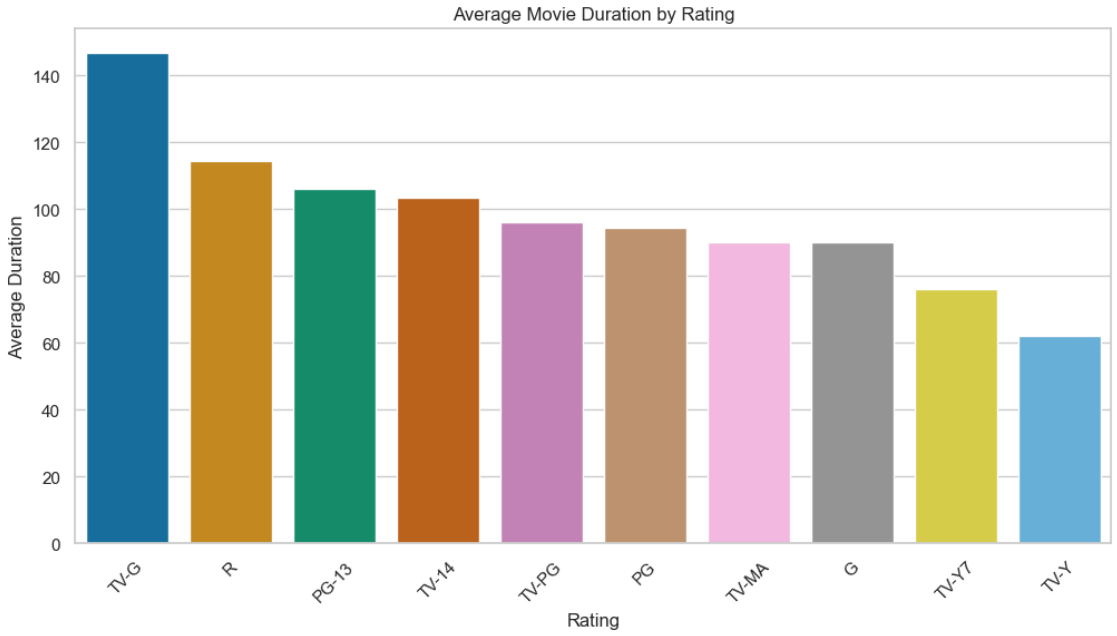
[24]:
```
query = """SELECT rating, AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
 ↪UNSIGNED)) AS average_duration
FROM netflix1
WHERE show_type = 'Movie' AND duration IS NOT NULL
```

```
GROUP BY rating
ORDER BY average_duration DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Rating","Avrage Duration"])
df
```

[24]:

	Rating	Avrage Duration
0	TV-G	146.6667
1	R	114.5909
2	PG-13	106.2143
3	TV-14	103.4091
4	TV-PG	96.0000
5	PG	94.6429
6	TV-MA	90.1481
7	G	90.0000
8	TV-Y7	76.2500
9	TV-Y	62.2000

[25]:
```
query = """SELECT rating, AVG(CAST(SUBSTRING_INDEX(duration, ' ', 1) AS␣
 ↪UNSIGNED)) AS average_duration
FROM netflix1
WHERE show_type = 'Movie' AND duration IS NOT NULL
GROUP BY rating
ORDER BY average_duration DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Rating","Avrage Duration"])
colors = sns.color_palette("colorblind", len(df))
plt.figure(figsize=(12, 6))
sns.barplot(x="Rating", y="Avrage Duration",  hue='Rating', data=df,␣
 ↪palette=colors)
plt.xlabel("Rating")
plt.ylabel("Average Duration")
plt.title("Average Movie Duration by Rating")
plt.xticks(rotation=45)
plt.show()
```



17 Analysis of Content Distribution by Country and Rating.

[26]:
```
query = """SELECT
    country,
    COUNT(*) AS total_titles,
    MAX(rating) AS most_common_rating,
    round(AVG(release_year),0) AS avg_release_year
FROM
    netflix1
WHERE
    country IS NOT NULL AND rating IS NOT NULL AND release_year IS NOT NULL
GROUP BY
    country
ORDER BY
    total_titles DESC"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Countries","Total Titles","Most Comman␣
 ↪Rating","Average Release Year"])
df
```

[26]:

	Countries	Total Titles	Most Comman Rating	Average Release Year
0	Pakistan	123	TV-Y7	2020
1	United States	68	TV-Y	2007
2	Not Given	20	TV-Y7	2019

3	Japan	12	TV-PG	2006
4	India	11	TV-Y7	2011
5	United Kingdom	7	TV-14	2003
6	France	4	TV-MA	2017
7	Germany	4	TV-MA	2014
8	South Africa	3	TV-MA	2016
9	China	2	TV-14	2011
10	Nigeria	2	TV-MA	2019
11	Brazil	1	TV-PG	2021
12	Spain	1	TV-MA	2019
13	Philippines	1	TV-MA	2020
14	Australia	1	PG	2001
15	Argentina	1	TV-MA	2014
16	Canada	1	TV-14	2018
17	Hong Kong	1	TV-MA	2010
18	Italy	1	R	1984

18 SUMMARY

[27]:
```
query = """SELECT
    show_type AS content_type,
    COUNT(*) AS total_titles,
    AVG(CASE WHEN show_type = 'Movie' AND duration IS NOT NULL THEN␣
 ↪CAST(SUBSTRING_INDEX(duration, ' ', 1) AS UNSIGNED) ELSE NULL END) AS␣
 ↪avg_duration,
    MIN(release_year) AS earliest_release_year,
    MAX(release_year) AS latest_release_year
FROM netflix1
WHERE show_type IS NOT NULL
GROUP BY show_type"""
cur.execute(query)
data = cur.fetchall()
df = pd.DataFrame(data, columns = ["Content", "Total Titles", "Average␣
 ↪Duration", "Earliest Year Release", "Latest Release Year"])
df
```

[27]:

	Content	Total Titles	Average Duration	Earliest Year Release	Latest Release Year
0	Movie	145	99.4483	1961	2021
1	TV Show	119	None	2002	2021

19 Conclusion

[28]:
```
# Data Cleaning: Efficiently handled missing values and removed duplicates for␣
 ↪accurate analysis.
# SQL Queries: Extracted key insights by summarizing content type, country, and␣
 ↪release patterns.
# Python Analysis: Applied pandas, matplotlib, and seaborn for comprehensive␣
 ↪data exploration and visualization.
# Content Trends: Identified top genres, countries, and patterns in content␣
 ↪type distribution.
# Viewer Preferences: Analyzed relationships between release years and␣
 ↪popularity to uncover trends.
# Insightful Visuals: Created engaging charts, graphs, and heatmaps to␣
 ↪communicate findings clearly.
# Impactful Results: Delivered actionable insights to enhance strategic␣
 ↪decision-making for content production.
# Effective Workflow: Demonstrated proficiency in data cleaning, SQL querying,␣
 ↪and Python visualization.
```

20 Presented By Kumar Siddharth.

21 Thank You.