

Netflix Data Analysis Using Python

1.Introduction: Netflix was founded in 1997 by Reed Hastings and Marc Randolph in California as a DVD rental-by-mail service. The idea was to make movie rentals more convenient and customer-friendly compared to traditional video rental stores. In 2007, Netflix introduced its online streaming service, which allowed users to instantly watch movies and TV shows. This marked a major turning point in its business model.

By 2013, Netflix began producing its own original content, starting with the critically acclaimed series House of Cards. Over the years, it has grown into one of the world's leading entertainment platforms, known for global hits like Stranger Things, The Crown, and Squid Game. Today, Netflix has over 250 million subscribers across more than 190 countries, transforming how the world consumes entertainment.

2.Objective :

- ⌚ To explore Netflix's content library in detail and find key patterns in content types, genres, release years, regions, and creators.
- ⌚ To understand what audiences prefer and how different types of content perform, showing how Netflix attracts and engages viewers.
- ⌚ To find opportunities for future content, regional growth, and programming based on popular genres, release trends, and market focus.
- ⌚ To give a complete, data-based view of Netflix's content strategy, diversity, and position in the global streaming market.

3.Prerequisites Steps:

- 1.Importing Necessary Libraries.
- 2>Loading and Reading the Netflix Data File.
- 3.Data Shape
- 4.Data Cleaning

5.Checking Datatypes

6.Dropping Duplicates

7.Understanding Data (info and summary)

-- The dataset has 8790 rows and 10 columns.

4.EDA (Exploratory Data Analysis)

1.Types:

1.1 Distribution of Types (Movies Vs TV Shows)

-- Insight: Most people (69.7%) prefer watching movies over TV shows (30.3%).

-- Reason:

1.Movies are shorter and give a full story in one go.

2.TV shows take more time and need longer commitment.

2. Temporal Distribution of Netflix Content:

1.Distribution of Netflix Content Over the Years.

Insight:

1.After 2015, Netflix added a lot more content as it grew worldwide.

2.Movies were the main focus and always more than TV shows.

3.TV shows started growing quickly after 2015.

4.Content peaked around 2020–2021 and dropped a bit in 2022 as Netflix changed its plan.

2.Content Added to Netflix per year and per Month.

3.Growth of Movies and Tv Shows Over Years.

- 1.After 2008, both movies and TV shows on Netflix increased, with movies always higher in number
- 2.Movies peaked around 2017 and then slowed down, because major studios withdrew licenses and Netflix shifted to original series while TV shows grew strongly after 2015 and peaked in 2020 (Netflix invested heavily in original series production).
- 3.Between 2018–2020, movie releases dropped, but TV shows kept rising during that time.

4. Growth of Movies and TV Shows over Months.

- 1.Netflix adds the most movies in July (565), with April and December also high, and the fewest in February (382).
- 2.Netflix adds the most TV shows in December (265), followed by July and September, and the fewest in February.

Reason:

- 1.Netflix adds more movies in July and December to match holidays and vacations.
- 2.TV shows peak in December when people have more free time to watch.
- 3.February has fewer releases because of slower production and lower viewer demand.

5.Growth of Movies and TV Shows Over Quarters:

Highest content released: 3rd quarter – Movies: 1601, TV Shows: 749.

Lowest content released: 1st quarter – Movies: 1455, TV Shows: 585.

Reason:

- 1.More content in Q3: Netflix releases more shows and movies in mid-year to match summer holidays when people watch more.
- 2.Less content in Q1: Fewer releases after the holidays because of production schedules and lower viewer demand.

6.Growth of Movies and TV Shows over weekdays.

- 1.Most content added on Friday: Movies: 1565, TV Shows: 932.
- 2.Least content added on weekends: Movies on Saturday: 557, TV Shows on Sunday: 182.

Reason:

- 1.Netflix adds most content on Fridays to attract viewers for the weekend when people have more free time.
- 2.Fewer titles are added on Saturdays and Sundays, likely because production and scheduling are slower during weekends.

3. Country Insight:

1.Distribution of Netflix Content by Country:

Netflix originated in the U.S., so most of its early and original content was produced there. **The U.S. dominates global entertainment**, with major production studios and a massive English-speaking audience, leading to the largest content count.

2.Content Type By Each Country:

3.Top 10 Movies dominating countries:

Netflix's movie content library is dominated by the U.S., followed by India and the UK.

4.Top 10 TV Shows Dominating countries:

Pakistan, Japan, and South Korea show a clear preference for TV shows due to their strong drama industries, global fan bases, and binge-friendly formats. Netflix capitalizes on this by investing heavily in regional series, aligning with audience demand and cultural storytelling traditions.

5.Netflix's content growth in the leading content-producing countries by type over the years.

Netflix content production surged after 2016, led by the United States and India. Emerging markets like Pakistan, Japan, and South Korea showed rapid TV show growth in later years. This reflects Netflix's global expansion and focus on diverse, regional content creation.

4. Genre Insight:

1. Most Common Genre on Netflix:

“International Movies” and “Dramas” are the most dominant genres on Netflix, followed by “Comedies” and International TV Shows.”

Netflix prioritizes global appeal, led by International Movies and Dramas, highlighting its focus on diverse, emotional, and cross-cultural content while balancing genres with Comedies and Documentaries.

2. Most Popular Genre in the Top 10 Leading Content-Producing Countries:

India and the United States lead in Netflix content — India focuses on *International Movies*, while the U.S. dominates with *Dramas*. Other top countries mainly produce *International* or *TV Show* genres, showing Netflix’s strong emphasis on region-specific and globally appealing storytelling.

3. Year-wise Top Genres on Netflix for the Top 10 Leading Countries

From 2014 onward, Netflix’s catalog saw a global shift toward **International Movies and TV Shows**, highlighting its worldwide expansion. The **U.S.** focused on **Dramas and Documentaries**, while **India, France, and Spain** favored **International Movies**. **Japan and South Korea** stood out with regional strengths in **Anime** and **Korean TV Shows**, reflecting Netflix’s strategy to diversify and localize content over time.

4. Genres on Netflix which experienced the highest growth in content additions between 2016 and 2020.

From 2016 to 2020, Netflix added a lot more content in almost every genre. The biggest growth was in romantic, reality, and LGBTQ movies, showing Netflix’s goal to reach a wider and more diverse audience.

5. Directors Insight:

1. Most Popular director by the top 10 Netflix Content Producing Countries.

India leads in Netflix content direction with Rajiv Chilaka producing the highest number of titles (over 20), followed by Alastair Fothergill from the United Kingdom and Marcus Raboy from the United States.

2. Most Popular director who mainly focus on movies:

The top three most popular directors who have produced more movies than TV shows are Rajiv Chilaka, Jan Suter, and Raul Campos

3.Most Popular director who mainly focus on TV Shows:

The top three directors who have produced more TV shows than movies are Alastair Fothergill, Ken Burns, and Stan Lathan

4. Directors who worked in most genres:

Most Versatile director by Genre Diversity on Netflix is Anurag Kashayap and Martin Scorsese involved in 9 Genres.

5.Other Key Insights:

1. There are 18,161 titles directed by a single director.
2. There are 629 titles directed by multiple directors.
3. The title directed by the highest number of directors is *Walt Disney Animation Studios Films Collab*, which involved 13 directors.
4. There are 4025 Multi-GENRE directors and 967 Specialist Directors.

6.Rating Insights:

There are total 14 unique ratings:

1.Distribution of Netflix Content Ratings:

The most diverse rating on Netflix is TV-MA followed by TV-14 and TV-PG

2.Distribution of Rating by Type:

1. Top 3 most common ratings for Movies are TV-MA, TV-14 and R.
2. Top 3 most common ratings for TV Shows are TV-MA, TV-14 and TV-PG.

3.Average Duration of Movies by Rating:

Netflix movie ratings with the highest average durations are NC-17 (125 minutes), TV-14 (110 minutes), and PG-13 (108 minutes).

4.Average Seasons of TV Shows by Ratings:

Netflix TV shows have an average of 2 seasons for ratings such as NR, TV-14, TV-G, TV-MA, TV-PG, TV-Y, TV-Y7, and TV-Y7-FV, and 1 season for the R rating.

5. Country Producing the Most Adult-Rated Content.

The United States produces the most adult content on Netflix, followed by the United Kingdom and India.

6 .Country Producing the Most family friendly content.

The United States produces the most family-friendly content on Netflix, followed by Pakistan and the United Kingdom.

7. Country Producing Content Across All Ratings.

The United States is the only country that produces content across all ratings. Canada and France produce content in 13 ratings.

7.Months producing the most matured content.

The months in which highest adult content is produced are June (369), July(366), April(364).

9 .The most common ratings among the top 10 highest content-producing directors are TV-MA, TV-Y7, TV-Y, and TV-PG.

10 . Growth of Ratings in Top Content-Producing Countries Over the Years

Since 2015, **TV-MA** has dominated across most countries, showing Netflix's shift toward mature content. The **U.S.** led this trend, while **France** and **Japan** occasionally produced family-friendly titles.

7.Distribution of Duration for Movies and Tv Shows:

1.For movies:

- 1.Maximum number of movies have a duration between 90 and 100 minutes.
- 2.There are a total of 1,476 movies with a duration between 90 and 120 minutes.
- 3.The movie with the highest Duration is Black Mirror : Bandersnatch (312 Minutes)
- 4.The Movies with the lowest Duration is Silent (3 Minutes)

2 . TV Shows:

Approximately 1,791 TV shows have one season, followed by 421 with two seasons and 198 with three seasons. Grey's Anatomy is the TV show with the highest number of seasons, totaling 17.

8. Insights on Movies and TV Shows: Release Year vs. Added Year on Netflix"

1. Maximum year of content release: **2021**
2. Minimum year of content release: **1925**
3. Maximum year content was added to Netflix: **2021**
4. Minimum year content was added to Netflix: **2008**

5. Netflix title which took the longest year to stream on Netflix before its release date.

The Tv Shows Pioneers: First Women Filmmakers which originates from pakistan took the longest time (93 Year) to Stream on Netflix.

6. Netflix titles that were streamed on Netflix first and later released in theaters:

Jake Taylor is a TV show that was first streamed on Netflix and took 3 years to release in theaters.

Sense8 is a TV show that was first streamed on Netflix and took 2 years to release in theaters.

7. Number of Netflix titles whose release year and date added year is same:

There are total 3239 titles whose release year and streamed year on netflix is same.

– Conclusion :

Netflix's content library shows steady global expansion after 2015, led by the United States, India, and the United Kingdom, with strong emerging contributions from Japan, South Korea, and Pakistan.

Movies still dominate the platform, but TV shows have grown rapidly, especially after Netflix's investment in originals.

Genres like International Movies, Dramas, and Comedies form the backbone of global engagement, while TV-MA and TV-14 ratings dominate Netflix's catalog, reflecting a tilt toward mature audiences.

Overall, Netflix has evolved from a U.S.-centric catalog into a diverse, global platform, adapting content to regional tastes and audience behavior.

– Recommendations to Increase Content Engagement

1. Expand Regional Originals:

Focus on localized stories in fast-growing regions (India, Pakistan, Japan, and South Korea) to boost engagement and attract new audiences.

2. Diversify Genre Mix:

Increase investment in **Romantic, Reality, and Documentary content**, which show strong cross-cultural appeal and steady growth.

3. Balance Content Length:

Since most movies range between 90–120 minutes, experiment with **short-form and mid-length content** to cater to casual viewers.

4. Season Optimization:

Release more content during **Q3 (summer)** and **December holidays**, when viewer activity peaks.

5. Promote Family-Friendly Content:

Although mature-rated content dominates, producing more **PG and TV-G** content can attract family audiences and younger demographics.

6. Director and Creator Collaborations:

Encourage collaborations with **multi-genre directors** (like Anurag Kashyap and Martin Scorsese) to create diverse, engaging titles.

7. Leverage Data for Personalization:

Use advanced **viewing pattern analytics** to tailor recommendations by country, rating, and genre — boosting watch time and retention.

