



Netflix Dashboard Report

Content Analysis, Insights, and Predictive Outlook

Netflix Introduction:

Netflix is a subscription-based streaming service that offers a wide variety of award-winning TV shows, movies, anime, documentaries, and more on internet-connected devices.

Launched in 1997 as a DVD-by-mail service, Netflix transitioned to streaming in 2007 and has since become a global entertainment giant with millions of subscribers.

Dateset:

The dataset used for this analysis is the **Netflix Titles dataset** with rich columns like type, country, release year, rating, duration, listed in (genre), and prediction outputs.

This report analyzes 24,000 Netflix titles (1925–2021) using the Netflix Titles dataset. The study covers content trends, audience insights, geography, duration patterns, and machine learning predictions, presented through an interactive Power BI dashboard.

Dataset Overview

A **data analyst** acts as the bridge between raw data and decision-making. In this Netflix dashboard project, the analyst's role includes:



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1. **Total Records:** 8,807 titles
2. **Time Period:** 1925 – 2021
3. **Key Attributes:** Title, Type (Movie/TV), Country, Rating, Duration, Genre (listed_in), Date Added

4.  **Limitations:** Dataset ends in 2021, so insights may not reflect Netflix's latest strategies (gaming, ads tier, 2022–2025 originals).

1. Data Cleaning & Preparation

- Filled missing values with “*Unknown*”.
- Standardized dates & extracted **year, month**.
- Grouped countries into **Top 5 + Others**.
- **Missing Values:**
 1. Director → 2,632 missing
 2. Cast → 718 missing
 3. Country → 831 missing
 4. Date Added → 10 missing

2. Exploratory Data Analysis (EDA)

- Identify trends (growth of titles over time, top genres, country contributions).
- Encoded ratings into **Kids, Teens, Adults** categories.
- Split **duration** into numeric + unit (minutes/seasons).
- **Cluster into Age Groups (3 colors):**
 1. Kids: TV-Y, TV-Y7, TV-G, PG
 2. Teens: PG-13, TV-14, TV-PG
 3. Adults: TV-MA, R, NR

3. Visualization & Dashboard Building

- Create KPIs (Total Titles, Movies %, Top Genre, Content Growth, etc.).

- Design visual stories (charts for genres, maps for countries, bar charts for ratings).
- Use storytelling dashboards to make insights clear and actionable.

4. Insights & Business Value

- Highlight Netflix's **content strategy** (heavy adult focus, international expansion).
- Show **regional strengths** (U.S. leads, India growing fast).
- Analyze **trends** (slowing growth, shorter TV show lifespans).
- Provide **predictive outlook** (future content trends, expected growth/decline).

5. Communication

- Translate data findings into **executive-level insights**.
- Support stakeholders (strategy, marketing, content teams) with data-driven decisions.

Code for Data Preparation:

Setup → Load Data → Data Cleaning → Feature Engineering → Prepare Data for ML
 → Train Model → Predictions & Export



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Document: Netflix Content Analysis using Google Colab

◆ **Step 0: Setup**

We start by importing essential Python libraries:

- **Pandas, NumPy** → Data handling

- **Matplotlib, Seaborn** → Visualization
- **Scikit-learn** → Machine Learning & preprocessing

Google Drive is mounted to access the raw dataset (`netflix_titles.csv`).

◆ **Step 1: Load Data**

- Imported Netflix dataset into a Pandas DataFrame.
 - Checked **shape, datatypes, missing values**.
 - No rows dropped initially to preserve all data.
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◆ **Step 2: Data Cleaning**

- **Handled Missing Values:**
 - Filled director, cast, rating, and country with "Unknown".
 - Forward-filled missing date_added.
 - **Removed duplicates** to ensure data consistency.
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◆ **Step 3: Feature Engineering**

1. **Duration:**

- Extracted numeric value (`duration_int`) and unit (`duration_unit`).
- Filled missing values with median duration per content type.

2. **Country:**

- Grouped into **Top 5 countries** and labeled others as "Other".

3. Date Added:

- Converted to datetime.
- Extracted added_year and added_month.

4. Categorical Encoding:

- Used **LabelEncoder** for rating.
 - Created **One-hot encoding** for top countries.
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◆ Step 4: Prepare Data for ML

- Features selected: duration_int, added_year, added_month, rating_encoded, and country dummies.
 - Target variable: type → Movie (0) / TV Show (1).
 - Train-test split (80-20).
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◆ Step 5: Train Model

- Trained a **Random Forest Classifier** with 100 trees.
 - Achieved accuracy on test set, along with **classification report** and **confusion matrix**.
 - Visualized **feature importance** to understand key predictors.
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◆ Step 6: Predictions & Export

- Added prediction probabilities (prediction_proba_TV_Show) and labels to the dataset.

- Exported results to CSV for **Power BI visualization**.

Technical Information

Chart Information:

Content Landscape

1. Top genres by frequency

- **What it tells you:** Shows which genres dominate Netflix's library (e.g., Drama, Comedy, Documentaries).
- International Movies has most share for context you see that exact figure in Tooltip.
- **Nice visual usage:** Horizontal bar chart (sorted by frequency) with color-coded bars.

2. Content title distribution

- **What it tells you:** How content titles are spread across different categories Movies = 71.04% vs TV Shows = 28.96%.
- **Nice visual usage:** Donut/Pie chart → proportion is clear and direct.

3. Multi-genre combination

- **What it tells you:** Which genre pairings or trios appear most often (e.g., "Comedy + Drama" or "Action + Thriller").
- Most common genre pairings (Action + Drama, Anime Features, British TV Shows).
- **Nice visual usage:** Network/tree flow works well → shows connections between genres.

4. Title (Type Distribution Waterfall)

- **What it tells you:** Contribution of each content type to Netflix's overall library (Movies > TV Shows).
 - **Nice visual usage:** Waterfall chart → highlights growth/decline well.
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🌐 Country

1. Genre distribution across countries

- **What it tells you:** Genre availability by geography (e.g., U.S. has most uploads, India = strong Drama & Bollywood presence).
- Heatmap normalized by country's total content (avoid bias from bigger catalogs).
- **Nice visual usage:** Map with bubbles → intuitive for global spread.

2. Content upload trends by leading countries

- **What it tells you:** Growth of Netflix titles from top countries over time. U.S., India, U.K. lead uploads; growth spikes visible (e.g., U.S. post-2015 boom).
 - Overlay Netflix expansion timeline (launch years per country).
 - **Nice visual usage:** Line chart (multiple lines, top 10 countries).
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🎯 Rating & Audience

1. TV Shows: count & % by year & age group

- **What it tells you:** How Netflix balances kid/teen/adult content over years. Adult content dominates; Kids/Teens content has minor but growing presence.
- Group ratings into Kids, Teens, Adults to simplify legend.
- **Nice visual usage:** Combo of bar (count) + line (% share) is excellent.

2. Entertainment split across age group & formats

- **What it tells you:** How movies vs TV shows are distributed across different ratings (G, PG, R, TV-MA).
- Adults dominate both Movies & TV; Teens mostly Movies; Kids more TV shows.
Show **growth by age group over years.**
- **Nice visual usage:** Grouped stacked bar → allows comparing both Age & Format.

3. Count of Title by Rating and Type

- **What it tells you:** Which ratings dominate movies vs TV shows (e.g., most TV shows = TV-MA). TV-MA dominates (36.5%); Movies mostly R, PG-13.
 - Sort by proportion; add tooltip with example titles.
 - **Nice visual usage:** Side-by-side bar chart + Heatmap table
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⌚ Content Trends over Time

1. Top Netflix genre each year

- **What it tells you:** Genre that leads every year. Dramas and International Movies rise sharply post-2016.
- Show **top 3 per year** instead of only #1 → richer trend.
- **Nice visual usage:** Stacked bar or bump chart (ranking over years).

2. Top director

- **What it tells you:** Directors with most content on Netflix. Filter directors by genre. (top documentary director, top action director).
- Youssef Chahine leads Netflix directors list.

- **Nice visual usage:** Horizontal bar works fine → word cloud is optional for creative dashboards.

3. Top cast

- **What it tells you:** Most frequently appearing actors/actresses on Netflix.
- Anupam Kher dominates cast appearances.
- **Nice visual usage:** Bar chart → best for frequency count.

4. Average of duration_int by listed_in

- **What it tells you:** How long content runs by genre (e.g., documentaries average shorter than dramas).
 - Some genres average longer runtimes (Action, Drama); others shorter (Documentary).
 - **Nice visual usage:** Scatterplot with error bars.
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⌚ Duration Analysis

1. Duration-wise title breakdown

- **What it tells you:** Distribution of movie lengths & number of TV show seasons. Most movies 90–119 mins; then <30 mins & 120+ mins
- Separate Movies vs TV seasons for cleaner story. Separate histograms for Movies (minutes) vs TV (seasons).
- **Nice visual usage:** Horizontal stacked bar → clear breakdown.

2. Average watch length through the years

- **What it tells you:** Whether content is trending shorter/longer over time. Avg. duration rose around 2014, then stabilized.

- **Nice visual usage:** Stacked bar line works, but **line chart with duration buckets** may be cleaner.

3. Genre popularity across ratings & watch length

- **What it tells you:** Which genres are popular for short/long duration and rating groups.
 - Certain ratings (TV-MA) dominate across longer runtimes.
 - **Nice visual usage:** Scatterplot with bubble size = count.
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Netflix Prediction (ML Modeling)

1. Prediction proba content format split

- **What it tells you:** Model's probability distribution for Movies vs TV Shows.
- AI predicts 71% Movies vs 29% TV (matches actual).
- **Nice visual usage:** Bar chart is simple and correct.

2. How length & genre shape TV Show odds

- **What it tells you:** Which factors (duration, genre) increase likelihood of being a TV show. Certain durations & genres increase odds of being a TV show.
- Use SHAP values or feature importance chart → stronger interpretability.
- **Nice visual usage:** Waterfall plot → good choice for variable effect.

3. Likelihood of a title being a TV Show (by genre)

1. **What it tells you:** Probability split of TV vs Movie within each genre. International TV Shows & Dramas have highest TV odds.

2. Sort genres by probability.
3. **Nice visual usage:** Horizontal bar with % scale.

4. How length & genre shape TV show odds (detailed view)

- **What it tells you:** Combination-level impact (e.g., Long duration + Drama → more likely TV show).
- TV show probability rises sharply after 2010s.
- **Nice visual usage:** Line chart → perfect for time series.

KPI / Cards Information:

1. Content Breakdown

1. Total Titles (24K)

- **Insight:** Netflix has ~24,000 titles globally. This represents its vast content library and variety.
- **Extra Context:** Helps benchmark Netflix against competitors (e.g., Prime Video, Disney+).

2. Movies % (71.04%)

- **Insight:** Movies dominate Netflix's library (almost 3/4th).
- **Extra Context:** Indicates Netflix still prioritizes movies, even though shows drive engagement.

3. TV Shows % (28.96%)

- **Insight:** Nearly 7,000 titles are TV shows. While smaller in volume, they often bring higher retention (binge-watching).

- **Extra Context:** This balance is critical for analyzing churn vs. acquisition strategy.

4. Top Genre (International Movies)

- **Insight:** International Movies are the single most common genre.
- **Extra Context:** Reflects Netflix's global expansion and licensing strategy (strong growth in India, Korea, Spain).

5. Content Growth (YoY Growth % = -0.38%)

- **Insight:** Slight YoY decline → suggests Netflix has slowed uploads compared to peak years (2018–2020).
- **Extra Context:** Could indicate pivot to *quality over quantity* or budget constraints.

2. Country & Region Focus

6. Top Producing Country (United States)

- **Insight:** U.S. dominates production, contributing the largest share of content.
- **Extra Context:** However, non-U.S. content (India, UK, Korea) is growing faster, driving international subscriber growth.

7. Unique Countries Represented (124)

- **Insight:** Netflix content spans 124 countries.
- **Extra Context:** Diversity ensures cultural relevance and boosts adoption in local markets.

3. Ratings & Audience

8. Most Common Audience Group (Adults)

- **Insight:** Majority of titles are targeted at Adults (especially TV-MA and R).

- **Extra Context:** Strong tilt towards mature/adult audiences may explain Netflix's brand perception compared to Disney+.

9. Top Individual Rating (TV-MA, 36.5%)

- **Insight:** Over one-third of Netflix titles are TV-MA, confirming heavy adult focus.
 - **Extra Context:** This also matches user demand for edgy and mature content globally.
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4. Netflix Time

10. Top Director (Youssef Chahine)

- **Insight:** The Egyptian filmmaker leads in terms of Netflix catalog availability.
- **Extra Context:** Highlights Netflix's licensing of regional cinema, not just mainstream Hollywood.

11. Top Cast (Anupam Kher)

- **Insight:** The Indian actor is most frequently featured in Netflix content.
- **Extra Context:** Signals India's significant role in Netflix's expansion strategy.

5. Duration Analysis

12. Average Movie Duration (103 mins)

- **Insight:** Netflix's average movie is ~1h 43m, in line with traditional cinema standards.
- **Extra Context:** Suggests Netflix maintains standard runtimes despite digital format flexibility.

13. Average TV Show Length (2.6 Seasons)

- **Insight:** Average series runs ~2–3 seasons, shorter than traditional TV.
 - **Extra Context:** Reflects Netflix's "quick cycle" strategy — produce fast, test performance, renew only successful ones.
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6. Netflix Prediction / Trends

14. Projected Titles Next Year (-5.0)

- **Insight:** AI model forecasts a decline in new additions (negative growth).
- **Extra Context:** May indicate a **pivot to fewer but higher-quality originals**.

15. Category CAGR (5Y) (5Y = 0.29)

- **Insight:** Compound annual growth rate over last 5 years shows moderate expansion.
- **Extra Context:** Growth has plateaued compared to the 2015–2019 boom era.

Power BI File:



Conclusion:

🚀 Netflix Content Analytics: A Deep Dive into 24,000 Titles Worldwide 📺

Over the past few weeks, I explored a dataset of **24K Netflix titles** and built an interactive dashboard to uncover content trends, audience insights, and predictive analytics. Here are some fascinating findings:

🌐 Content Landscape

- **Movies dominate** Netflix's library with **71% share**, while TV Shows hold **29%**.

- **International Movies** top the genre chart, followed by **Dramas** and **Comedies**.
 - Despite this, Netflix recorded a **slight YoY growth dip (-0.38%)**, hinting at a stabilization phase in content expansion.
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Geography & Upload Trends

- Netflix content spans **124 unique countries** .
 - The **United States** leads in uploads, followed by **India** and the **United Kingdom**.
 - India shows noticeable **content spikes**, driven by its growing audience demand and regional content expansion.
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Audience & Ratings

- The **most common audience: Adults**, with **TV-MA (36.5%)** being the dominant rating.
 - Netflix heavily caters to mature audiences, though kids & teens segments remain consistent in growth.
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Content Duration Insights

- The **average movie length: 103 mins**.
 - The **average TV Show run: 2.6 seasons**.
 - Titles between **90–119 mins** dominate, making up **9.1K titles** — the sweet spot for engagement.
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Directors & Cast

- **Youssef Chahine** emerges as the most featured director.
 - **Anupam Kher** leads the cast chart, reflecting Netflix's emphasis on international inclusivity.
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AI Predictions & Trends

- Using predictive models, we explored the **likelihood of content being a TV Show**.
- **International genres and documentaries** show higher odds of becoming TV series.
- However, the **5-year CAGR (0.29)** suggests a slower expansion pace, with projections showing a **slight decline next year (-5 titles)**.

Business Value & Strategy Insights

1. Strategy Team – Growth & Global Expansion

- **Insight:** Netflix's library has ~24,000 titles, with 71% Movies and 29% TV Shows.
- **Story:** Netflix is shifting from *volume growth* to *quality growth*. While earlier years saw rapid expansion, the current slowdown signals a strategic focus on **originals** and **regional hits** rather than bulk acquisitions.
- **Actionable Strategy:**
 - Double down on **regional productions**
-  **Key Takeaway:** Netflix's growth is no longer just about volume. The platform is moving towards **curated, audience-targeted, and regionally diverse content strategies**, with **International and Adult segments** shaping the future.
- **Content Strategy**

- Heavy adult focus (36% TV-MA).
- Actionable: Balance with **family-friendly content** to compete with Disney+.

- **Duration & Engagement**

- Shorter TV lifespans (avg. 2.6 seasons).
- Actionable: Test **mini-series formats** to improve retention.

- **Growth Outlook**

- YoY uploads slowing (-0.38%), projected **5-title decline next year**.
- Actionable: Shift from *quantity* → *high-quality originals* + global partnerships.

Netflix Branding Color Palette

Purpose	Color	Hex Code	Notes
● Primary Red	Netflix Red	#E50914	Use for highlights, KPIs
● Primary Black	Rich Black	#141414	Main background color
○ Secondary White	Pure White	#FFFFFF	Text or chart backgrounds
○ Accent Gray	Dark Gray	#221f1f	Card/Panel backgrounds
□ Light Gray	UI Gray	#B3B3B3	Labels, borders, muted text

LinkedIn-style post

Netflix Content Analytics: Insights from 24K Titles

I recently explored a dataset of **24,000 Netflix titles** and built an interactive dashboard to uncover content patterns, audience behavior, and predictive trends.

- ◆ **Movies vs TV Shows:** Movies dominate Netflix's library (**71%**) compared to TV shows (**29%**).
- ◆ **Top Genres:** *International Movies, Dramas, and Comedies* lead the way.
- ◆ **Global Reach:** Content spans **124 countries**, with the **United States, India, and the**

UK driving the most uploads.

- ◆ **Audience & Ratings:** Netflix mainly caters to **adults**, with **TV-MA (36.5%)** being the most common rating.
- ◆ **Duration Trends:** The average movie runs **103 mins**, while TV shows average **2.6 seasons**. Titles between **90–119 mins** dominate.
- ◆ **Key Figures:** **Youssef Chahine** ranks as the most featured director, and **Anupam Kher** as the top cast member.
- ◆ **AI Predictions:** International genres and documentaries are more likely to be TV series, but growth is stabilizing, with a **5-year CAGR of 0.29%**.

💡 **Takeaway:** Netflix is shifting from volume to **targeted, regionally diverse, and audience-driven strategies**.

👉 Do you think Netflix should focus more on **regional content (like India & Korea)** or continue chasing **global hits**?

#Netflix #DataAnalytics #StorytellingWithData #PowerBI #AI #Entertainment