YOUTUBE TRENDING VIDEO ANALYTICS SUMMARY REPORT

INTRODUCTION: - This project explores patterns in YouTube trending videos using datasets from different regions also focusing on India. By analyzing metrics like views, likes, sentiment, and category trends, we aim to understand what drives virality on the platform. We aim to uncover the key factors that make videos quickly gain widespread popularity on the platform.

ABSTRACT: -The main goal is to pinpoint the most popular video categories, assess the sentiment of titles and tags, and present trend patterns using data analytics, so that actionable insights can support smarter decisions for creators, marketers, and platform analysts.

TOOLS USED: -Python (Pandas, Matplotlib, Seaborn, Word Cloud, SQLite, Text Blob etc.)

SQL (for ranking and aggregations)

Tableau / Power BI (for dashboard visualizations)

STEP INVOLVED IN BUILDING THE PROJECT: -

DATASET DETAIL: - The project analyzes the "YouTube Trending" dataset across multiple regions with a combined frame reaching 363,372 rows and 16 columns after consolidation, with examples spanning regions such as US, MX, CA, DE, FR, GB, IN, JP, KR, and RU. Shows the share by year at roughly 76.82% for 2018 and 23.18% for 2017.

DATA CLEANING: - Combined Multiple Dataset into 1 main dataset, removed duplicates and null rows, removed unnecessary columns to make data more compact. Created a new dataset from multiple JSON files by pasting in ChatGPT and converting it to CSV and named that category name.

DATA STANDARDIZATION: - Standardization steps include lowercasing and underscoring column names, parsing trending_date with format %y.%d.%m, parsing publish_time as datetimes, and removing duplicates to ensure consistent schema and quality. Made a new column as region. and proper boolean handling for flags like comments_disabled and video_error_or_removed. Category ID to title mapping is established for readability (e.g., 1→Film & Animation, 2→Autos & Vehicles, 10→Music, 15→Pets & Animals, 17→Sports), supporting interpretable category-level EDA.

FEATURE ENGINEERING: - Derived time features include trending_year, publishing_day, and publishing_hour, enabling time-based analysis of publishing behavior and trending patterns.

SQL-BASED CATEGORY RANKING: - Queried average views grouped by category_id.

TIME SERIES ANALYSIS: - Measured how long each video stayed trending. Analyzed correlation between trending duration and views.

SENTIMENT ANALYSIS: -Analyzed video titles and tags using Text Blob. Classified sentiment into: positive, neutral, negative.

POWER QUERY EDITOR: - Renaming some of the column content for better understanding.

DASHBOARDING: - Made 3 dashboards one for the global level of trend analysis, one only for India region specific and a sentiment analysis dashboard ending this with an overview page.

SUMMARY REPORTING: - Compiled key findings into a report to highlight actionable insights.

CONCLUSION: - **FOR YOUTUBE TRENDING VIDEO ANALYSIS DASHBOARD** – Music dominates total views among all categories, accounting for about 59.5% of total views, followed by Entertainment at 23.73%. Entertainment is the most frequently uploaded content type, with 104K uploads, while Music and People & Blogs also have significant numbers. The highest number of trending videos are uploaded on Friday, with 60K uploads, while the lowest is on Saturday (44K). Videos tend to receive the most average views when published during two peak hours, as shown by distinct spikes exceeding 3 million views. USA, Canada, and Germany have the highest number of uploaded trending videos, each over 40K.Great Britain, Korea, and India have noticeably fewer uploads with India at 32.64K and Japan at the lowest with 14.64K uploads. Average stats from the dashboard include 4.30K comments, 38.41K likes, and 1.34M views per trending video.

FOR YOUTUBE TRENDING VIDEO ANALYSIS DASHBOARD – INDIA REGION SPECIFIC - Entertainment is the most frequently uploaded content type (14.5K), followed by News & Politics (4.6K) and Music (3.2K). Entertainment also drives the majority of total views (45.92%), with Music as the second largest contributor (28.73%).The highest number of videos are uploaded on Friday (5.5K), and the lowest on Sunday (3.5K). Average views by publishing hour show a major peak around the late evening (approximately 18:00), exceeding 1.25 million average views.Average engagement per trending video in India: 2.52K comments, 25.59K likes, and 996.34K views.Maximum daily views spike on Tuesday (125M), while Sunday and Friday have lower maximum daily view counts, around 44-45M.Minimum views per day occasionally dip below 5K, especially on weekends.These insights indicate that trending YouTube content in India is heavily entertainment-focused, with audience engagement peaking in the evenings and on mid-week days like Tuesday and Thursday.

SENTIMENT ANALYSIS DASHBOARD- Video titles with negative sentiment receive the highest average views (3.2M) and likes (80K), significantly more than positive or neutral sentiment.Positive sentiment in titles achieves about 1.5M average views and 45K likes, while neutral sentiment gets 1.2M views and 34K likes. Neutral sentiment is most common in both video tags (243K) and titles (294K). Positive sentiment is moderately present (96K in tags, 50K in titles), while negative sentiment is the least frequent (24K in tags, 20K in titles). Friday has the highest sentiment activity by publishing day (60.8K total), with Sunday and Saturday being lower. Sentiment volume by publishing hour peaks in the afternoon and evening (15:00–18:00), with global regions contributing to the surge, especially at 28.19K total sentiment activity at the peak hour. These insights show that although negative sentiment is least frequent, it attracts the most engagement per video, and neutral sentiment is the most commonly used across YouTube.

RECOMMENDATION: - To enhance the virality of videos

1. Focus on Entertainment and Music Content-Producing videos in the Entertainment and Music categories offers the highest potential for views and engagement, as these categories consistently attract the largest audiences across regions and specifically in India.

2. Schedule Uploads for Peak Days and Hours-To maximize visibility, upload videos on Fridays and midweek (especially Tuesday and Thursday), and target publishing during late afternoon to evening hours (around 18:00), as these times show the highest average views and sentiment engagement.

3. Optimize Video Titles with Negative Sentiment-While neutral titles are most common, negative sentiment in titles results in the highest average views and likes per video, suggesting that emotionally charged or attention-grabbing titles can significantly boost virality.

4. Use Tags with Neutral or Positive Sentiment-For tags, prioritize neutral and positive sentiment, as they are most prevalent in viral content and help reach broader audiences while maintaining community standards.