YouTube Trending Video Analytics Project

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1. Introduction

This project focuses on analyzing YouTube trending video data using Power BI. The aim is to understand how videos perform over time, explore audience engagement patterns, and uncover sentiment-based trends based on video metadata such as titles and tags. Four dashboards were developed to provide deep insights into trends, viewer sentiment, engagement behaviors, and regional dynamics.

2. Dataset Overview

The dataset includes over 160,000 trending video records from YouTube. Each record contains the video's ID, trending date, title, channel name, category, publish time, country, tags, and performance metrics such as views, likes, dislikes, and comment count. Additionally, sentiment analysis was performed on the tags or titles to classify content as Positive, Neutral, or Negative.

Key columns include:
- video_id, trending_date, title, channel_title
- category_id, publish_date, time_frame, published_day_of_week
- publish_country, tags, views, likes, dislikes, comment_count
- comments_disabled, ratings_disabled, video_error_or_removed, Sentiment

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3. Dashboard 1: Time Trends

This dashboard highlights how video popularity and uploads trend over time.

Key Visuals:

- Number of trending videos over time
- Total views over trending dates
- Most active publishing hours and weekdays
- Trending and publishing date lag
- Country-wise and category-wise publishing patterns

These visuals help identify peak times for uploads and when videos are more likely to trend, providing insights for content scheduling.

4. Dashboard 2: Sentiments & Tags

This dashboard explores viewer sentiment and tag analysis.

Key Visuals:

- Sentiment distribution (Positive, Neutral, Negative)
- Sentiment vs. engagement (views, likes, dislikes)
- Most frequent tags and their impact
- Sentiment over time and by country
- Tags categorized by sentiment

This analysis uncovers what kind of tags and sentiments are associated with higher engagement, offering guidance for optimizing video metadata.

5. Dashboard 3: Engagement

The engagement dashboard focuses on how viewers interact with videos.

Key Visuals:
- Likes, dislikes, and comment counts per video
- Top 10 videos by likes, dislikes, and comments
- Engagement ratios (likes/views, dislikes/views)
- Country and category engagement breakdowns
- Comments and ratings disablement patterns

These visuals show which types of content generate the most viewer interaction and how disabling comments or ratings affects engagement.

6. Dashboard 4: Region

The region dashboard focuses on how YouTube video trends vary across different countries.

Key Visuals:
- Number of trending videos by country
- Total views and likes by country
- Comment counts and dislikes by country
- Average engagement metrics (views, likes, comments) per country
- Top performing categories by country
- Sentiment distribution across countries
- Country-wise trending patterns over time
- Comments and ratings disabled by country
- Most active countries in terms of trending videos

These visuals help in understanding which regions are most active, how viewers from different countries engage with content, and how regional trends differ in terms of sentiment and interaction.

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7. Insights & Observations

- Videos published in the evening tend to trend more frequently.
- Positive sentiment videos often receive more likes and views.
- Tags play a significant role in video visibility.
- Videos with active engagement (comments, likes) have higher chances of trending.
- U.S. and India dominate in terms of trending videos and engagement rates.
- Certain countries consistently show high viewer interaction and positive sentiment.

These insights are drawn directly from patterns in the dashboards and help in content strategy and optimization.

8. Conclusion

This project demonstrates how YouTube trending data can be leveraged to gain actionable insights using Power BI dashboards. By analyzing time trends, sentiments, tags, engagement, and regional patterns, creators and marketers can better understand content performance and audience behavior globally.