

Streaming the World: A Comprehensive Analysis of Global YouTube Usage and Content Trends

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Abstract- Professor, Department of Computer Science and Engineering, Methodist College of Engineering and Technology, Hyderabad, In This research utilizes the Global YouTube Statistics dataset to analyze and visualize the performance and distribution of YouTube content across various countries. By exploring key metrics such as subscriber counts, video views, average likes, comments, and video counts, the study aims to uncover regional trends, identify top-performing content categories, and understand how digital engagement varies globally. Through the use of dimensions like country and channel type, and quantitative measures like viewership and engagement statistics, the research establishes a comprehensive framework for examining the influence and reach of YouTube as a digital platform. Data visualization techniques are employed to enhance the interpretability of patterns and relationships, thereby transforming raw numerical data into actionable insights. The significance of this study lies in its ability to demonstrate the growing impact of digital media consumption in different parts of the world, and its implications on cultural, economic, and social levels. The findings of this research not only provide a clear view of global digital engagement but also serve as a reference point for content creators, marketers, and media strategists seeking to optimize their presence on the platform. Ultimately, this study bridges the gap between data-driven insights and real-world digital influence, offering a holistic perspective on the global YouTube ecosystem.

Keywords: YouTube Analytics, Content Performance, Data Visualization, Digital Media Trends and Visualization using Tableau Function Virtualization.

I. INTRODUCTION

In the digital age, online video platforms have emerged as dominant channels for content consumption, social interaction, and cultural exchange. Among these platforms, YouTube stands out as a global leader, with billions of users engaging with diverse content every day. Its widespread reach and accessibility make it a powerful medium for

creators, advertisers, and audiences across the world. However, understanding the dynamics of content performance and audience engagement on a global scale requires a structured, data-driven approach.

This study focuses on analyzing the Global YouTube Statistics dataset to investigate patterns in viewer behavior, content popularity, and channel performance across different countries. By

evaluating core metrics—such as subscriber counts, video views, likes, comments, and content volume—the research aims to identify regional trends, highlight top-performing content categories, and examine the role of cultural and geographic factors in digital media engagement. Additionally, the use of data visualization tools allows for clearer interpretation of complex patterns and enhances the accessibility of insights derived from the data.

II. LITERATURE SURVEY:

Thousands of videos are being uploaded on a daily basis by numerous YouTube content creators. Some videos are successful in gaining millions of views, while others hardly achieve hundreds of them. Although this depends on various factors of the video, it becomes necessary to know which characteristics are more likely to make a video a hit[1]. In a world of online social life and social media development, more people are interested in developing video content-based businesses, including YouTube channels, and information sharing with the main purpose of making money[2]. This dissertation was written as a part of the Master in Information Systems at the University of Macedonia. YouTube has become one of the most popular social media platforms in recent years. The purpose of this study is to investigate the sentiment behind user engagement and content consumption on YouTube [3].

Given the popularity, reach, and variable accessibility of online platforms as channels for informal education by higher-education institutions (HEIs), it becomes practically and theoretically important to better understand the factors that affect the impact and reach of any such Internet-delivered ICT informal learning[4]. The research will specifically evaluate results of YouTube using tools like Tableau and Rapid Miner, focusing in the most famous channels in different industries, helping companies to select a target and choose the right segment where to view their advertisements, which results in an increase in profit in the long term[5]. The popularity of YouTube provides an effective way to propagate epidemic prevention knowledge by analyzing the video preferences of viewers from

different locations. However, it is challenging to analyze video preferences due to the dispersed geographical locations of the YouTube viewers and the indistinguishable video categories and subcategories[6]. YouTube is an online platform where users may view, share, like, comment on, and subscribe to videos that are created by content creators. The quantity of views, likes, and the age of the video are used to select which videos are included in the trending video category on YouTube[7].

With the emergence of social media and the Internet, bulks of data are generated every day in different fields. However, filtering useful information, which can be turned into knowledge, requires significant effort. This can be achieved using various statistics, data mining and a variety of ML algorithms [8]. Almost billions of videos are watched on YouTube every single day, generating a mammoth amount of data daily. Since YouTube data is generally in unstructured form, there is an increased demand to store, process and analyze such real time Big Data. YouTubers can analyze their own channel performance with YouTube Analytics [9]. Surgeons in training often review videos to familiarize themselves with new techniques, YouTube being one of the most used platforms. The objective of this study is to carry out an evaluation of the 10 most viewed videos on YouTube of inguinal hernia repair by transabdominal preperitoneal approach (rTAPP) to determine if the 10 golden rules are met [10].

III. MATERIALS & METHODS:

The Global YouTube Statistics dataset offers a comprehensive and insightful look into the dynamics of content creation and viewer engagement on YouTube across different countries. It serves as a valuable resource for examining how various channels perform on a global scale, highlighting key metrics that define success on the platform. This dataset not only reflects the widespread influence of YouTube as a leading hub for digital media but also sheds light on regional disparities, audience behavior, and the popularity of different content genres. With detailed breakdowns by country and channel type, the dataset enables a nuanced

comparison of performance indicators such as subscriber counts, video views, and engagement rates. In doing so, it opens up opportunities to understand the socio-cultural and economic factors that shape digital interaction in different parts of the world. Whether for marketers, content strategists, educators, or digital media researchers, the dataset offers a solid foundation for identifying trends, benchmarking success, and making data-informed decisions within the ever-evolving landscape of online video content.

The dataset includes both dimensions and measures that help break down and quantify YouTube activity. Dimensions in this dataset primarily include categorical data such as Country, Channel Name, Channel Type, and potentially other identifiers like Continent or Language, depending on the extended structure. These dimensions help segment the data into meaningful groups for comparison and trend analysis. On the other hand, the measures are quantitative values that indicate performance and reach, such as Subscribers, Video Views, Video Count, Average Likes, Average Comments, and potentially other monetization metrics like Estimated Earnings or Engagement Rate. These measures allow for evaluating the magnitude of success or activity of YouTube channels and regions, facilitating deeper insights when grouped by their respective dimensions.

DATA VISUALIZATION

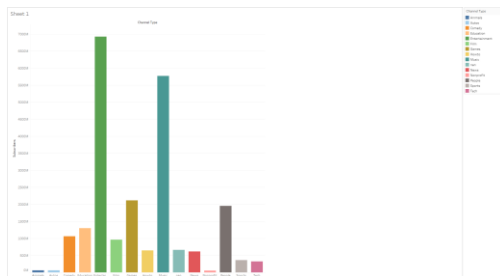


Chart -1: Subscriber Count by Channel Type

The chart shows the total number of subscribers based on different YouTube channel types. Entertainment and Music channels dominate with the highest subscriber counts, far ahead of other categories. Categories like Games, People and

Education also gather substantial subscribers, while Animals, Sports, and Tech remain comparatively lower.

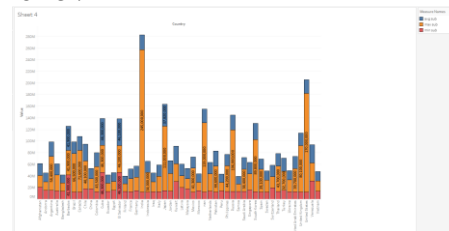


Chart-2: Average, Maximum and Minimum Subscribers by Country

The chart compares the average, maximum, and minimum subscriber counts of YouTube creators across different countries. It shows that countries like India, United States, and Indonesia have significantly higher maximum subscribers compared to others. However, the average and minimum subscriber counts remain relatively low in all countries, highlighting the gap between top creators and the rest.

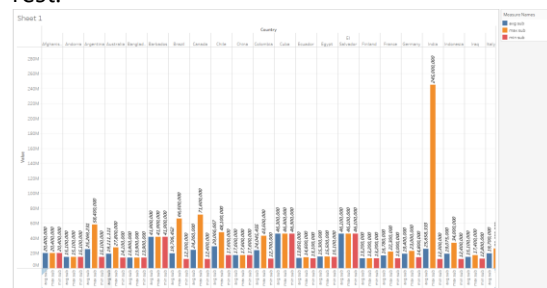


Chart -3: Maximum Subscriber Count per Country

This chart compares the average, maximum and minimum YouTube subscriber counts across different countries. India leads by huge margin with the highest maximum subscriber count at 245 million, while other countries like Brazil, Indonesia, and the U.S show much lower values. Overall, most countries have a consistent range of average and minimum subscribers, except India's exceptionally high peak.

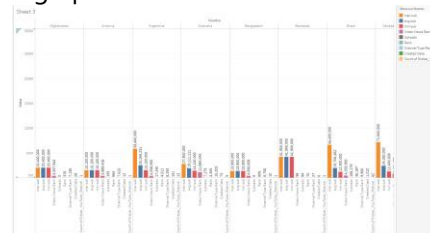


Chart -4: Comparative Metrics of YouTube Channels by Country

Each country is represented with a set of color-coded bars that visualize different metrics such as maximum, average, and minimum subscriber counts, video views rank, uploads, overall rank, channel type rank, and more. Countries like Afghanistan, Andorra, Argentina, Australia, Bangladesh, Barbados, Brazil, and Canada are included in the analysis. The chart offers a visual breakdown of these metrics, allowing for a clear comparison of YouTube activity and popularity among the top channels in each country.

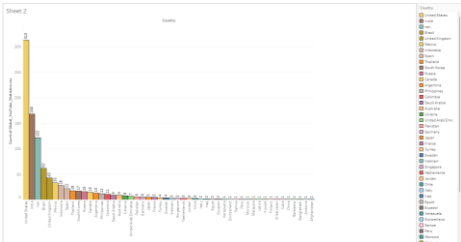


Chart -5: Global Distribution of Recognized YouTube Channels

The image shows a bar chart from Tableau visualizing the number of globally recognized YouTube channels per country. The United States leads significantly with 313 channels, followed by India with 148 and Brazil with 122. The chart highlights a steep drop-off after the top few countries, showing a wide disparity in YouTube presence across the globe.

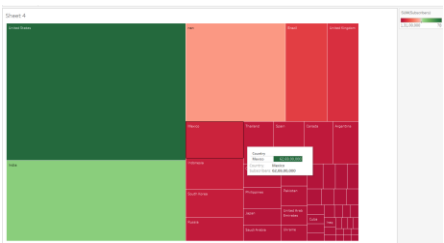


Chart -6: Global Subscriber Share by Country

This image shows a tree-map visualization representing the number of subscribers by country. The United States and India have the largest areas, indicating they have the highest number of subscribers. Other countries like Brazil, the United Kingdom, Mexico, and Indonesia follow with smaller but significant portions of the total subscriber base.

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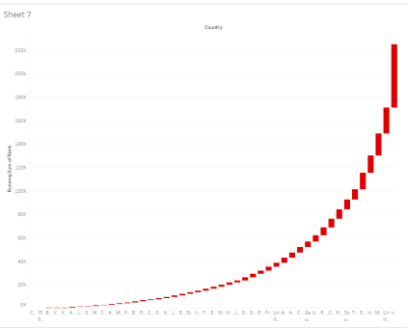


Chart -7: Cumulative Rank Progression by Country

This Gantt bar chart displays a running sum of ranks by country, indicating a steep upward trend. The distribution shows a rapid increase in values towards the right, suggesting a few countries dominate in rank contribution. The visual highlights stark disparities among countries in the measured metric.



Chart -8: Subscriber Count by Country and Content Category

This heatmap represents subscriber counts by country across various content categories such as Music, Education, Gaming, and more. Darker shades indicate higher subscriber numbers, with India standing out across multiple categories, especially Music and Education. The visualization highlights category-wise content consumption trends across different regions.

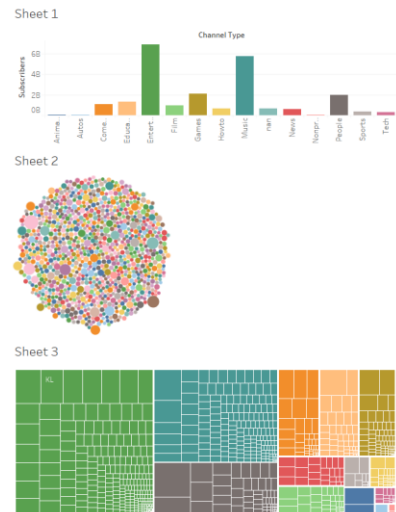


Chart -9: Multi- Visual Dashboard of Channel Type and Regional Distribution

This dashboard features three visualizations: a bar chart (Sheet 1) showing subscriber distribution by channel type, where Entertainment and Music dominate with the highest numbers. Sheet 2 presents a colorful bubble chart, likely representing individual channels or data points. Sheet 3 is a treemap that visually breaks down the dataset by category or region, with varying block sizes indicating different subscriber volumes.

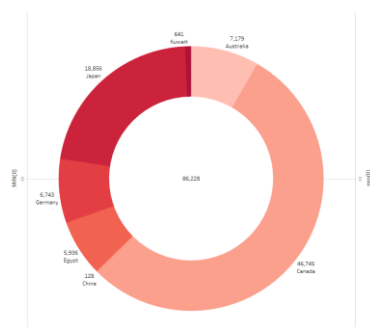


Chart -10: Global Upload Distribution by Country

This donut chart visualizes the number of uploads by country, with the central value representing a total of 86,228 uploads. Canada and Japan contribute the most among the listed countries, while China and Kuwait show the least. The varying shades of red represent different upload volumes across the countries.

IV. RESULTS AND DISCUSSIONS

The YouTube data analysis project focused on exploring global digital engagement patterns using the comprehensive Global YouTube Statistics Dataset. This dataset included vital metrics such as subscriber counts, video views, average likes and comments, upload frequencies, and overall channel performance, categorized by country and channel type. The primary goal was to uncover which regions and content categories dominate the YouTube platform and understand the key factors behind this digital influence.

Through structured data exploration and visualization using Tableau, we translated complex data into clear insights. Charts like bar graphs, treemaps, heatmaps, and bubble plots revealed striking trends, such as India's leading subscriber count and the global dominance of entertainment and music content. The project not only achieved its analytical goals but also emphasized the importance of data literacy in understanding digital behavior and storytelling through data.

V. CONCLUSION

The objective of this research to analyze and visualize global YouTube data for deeper insights into digital content performance was successfully achieved. By leveraging the Global Youtube Statistics dataset and applying visualization techniques through tools like Tableau, the study illuminated key trends, disparities, and engagement patterns across countries and channel types. The combination of quantitative metrics and visual storytelling made it possible to extract meaningful conclusions about content popularity, user interaction, and regional digital presence. Findings such as India's dominance in subscriber count, the global appeal of entertainment and music content, and the variance in video uploads across countries provided valuable perspectives into how YouTube functions as a worldwide platform. These insights are instrumental for advertisers seeking effective targeting strategies,

creators aiming to understand audience behavior, and organizations looking to track digital influence. The visual representations brought clarity to complex data structures and supported actionable interpretations. Overall, the research demonstrated the value of structured data analysis and visualization in the field of digital media, confirming that a data-driven approach is essential for navigating and succeeding in today's content-saturated online environment.

REFERENCES

1. Nima, Prateek. "Exploration of Youtube Statistics Data using Hadoop Technologies."
2. Lupşa-Tătaru, Dana Adriana, and Radu Lixăndroi. "YouTube channels, subscribers, uploads and views: a multidimensional analysis of the first 1700 channels from july 2022." Sustainability 14.20 (2022): 13112.
3. Γεωργιάδης, Ηράκλής. "User engagement and sentiment analysis on YouTube food videos." (2023).
4. Bello-Bravo, Julia, Jane Payumo, and Barry Pittendrigh. "Measuring the impact and reach of informal educational videos on YouTube: The case of Scientific Animations Without Borders." Heliyon 7.12 (2021).
5. Aljabr, Najla, et al. "Analysis of a Social Data Visualization Web Site: YouTube." International Journal of Computer Networks and Communications Security 6.5 (2018): 87-91.
6. Fan, Jiali, and Tingru Lian. "Youtube data analysis using linear regression and neural network." 2022 International Conference on Big Data, Information and Computer Network (BDICN). IEEE, 2022.
7. Hasan, Md Sakibur, et al. "Trending YouTube Video Analysis." (2023).
8. Khanam, Sana, Safdar Tanweer, and Syed Sibtain Khalid. "Youtube Trending Videos: Boosting Machine Learning Results Using Exploratory Data Analysis." The Computer Journal 66.1 (2023): 35-46.
9. Shaikh, Farzana, et al. "YouTube data analysis using MapReduce on Hadoop." 2018 3rd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT). IEEE, 2018.
10. Sánchez, Alexis, et al. "Is YouTube a reliable tool for approaching robotic assisted transabdominal preperitoneal surgery? A critical review of the available resources." Cirugía Española (English Edition) 102.4 (2024): 188-193.