MEDIA AND TECHNOLOGY

Vignes Vinod

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1. What are the top 10 YouTube channels based on the number of subscribers?

- T-Series is the largest channel with 245M subscribers.

- MrBeast is the most popular independent creator with over 166M subscribers.

- It is also observed that most of the top 10 channels are either official music or entertainment channels. Many of them also mostly appeal to children.

```
1. Top 10 YouTube channels by subscribers:
                        Youtuber    subscribers
0                       T-Series    245000000.0
1                 YouTube Movies    170000000.0
2                        MrBeast    166000000.0
3        Cocomelon - Nursery Rhymes 162000000.0
4                      SET India    159000000.0
5                          Music    119000000.0
6              ýýý Kids Diana Show   112000000.0
7                       PewDiePie    111000000.0
8                    Like Nastya    106000000.0
9                  Vlad and Niki     98900000.0
```

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2. Which category has the highest average number of subscribers?

- The category "shows" has the highest number of average subscribers.

Category with highest average subscribers: Shows

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3. How many videos, on average, are uploaded by YouTube channels in each category?

- News & Politics leads with the highest uploads which makes sense since daily updates are required in this field.

- Categories like 'Nonprofits & Activism' and 'Shows' have notably high average uploads, indicating these are highly active content areas.

- In contrast, categories such as 'Travel & Events' and 'Autos & Vehicles' show lower average uploads, which may reflect niche or less frequent content production.

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Average uploads per category:
 category
Autos & Vehicles              1550.666667
Comedy                        1202.557143
Education                     3087.086957
Entertainment                12052.445378
Film & Animation              2861.844444
Gaming                        4285.273684
Howto & Style                 1695.500000
Movies                        3553.000000
Music                         2325.945813
News & Politics             112484.384615
Nonprofits & Activism       102912.000000
People & Blogs                9256.793893
Pets & Animals                3562.800000
Science & Technology          2114.058824
Shows                        27443.692308
Sports                       19129.833333
Trailers                      6839.000000
Travel & Events                766.000000
Name: uploads, dtype: float64
```

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4. What are the top 5 countries with the highest number of YouTube channels?

- The United States has the most YouTube channels (315). The USA's top position could be influenced by its large population and strong internet infrastructure, which together create a favorable environment for content creation and high user engagement on YouTube.

- The US is followed by India and Brazil.

```
Top 5 countries with the highest number of YouTube channels:
 Country
United States      315
India              169
Brazil              62
United Kingdom      44
Mexico              33
dtype: int64
```

5. What is the distribution of channel types across different categories?

- The Output shows how content varies within each category—for example, the 'Entertainment' and 'Gaming' categories feature a broad mix of channel types,

- While some categories like 'Howto & Style' or 'Tech' are more specialized.

```
Channel type distribution by category:
 channel_type          Animals  Autos  Comedy  Education  Entertainment  Film \
category
Autos & Vehicles             0      2       0          0              1     0
Comedy                       0      0      39          0             20     1
Education                    0      0       0         36              3     2
Entertainment                0      1       5          2            168     6
Film & Animation             0      0       1          2             16    17
Gaming                       0      1       1          0             18     2
Howto & Style                0      0       0          0              7     0
Movies                       0      0       0          0              0     2
Music                        0      0       0          1             12     5
News & Politics              0      0       0          0              3     0
Nonprofits & Activism        0      0       0          0              0     0
People & Blogs               1      0       5          3             26     3
Pets & Animals               2      0       0          0              1     0
Science & Technology         0      0       0          0              4     0
Shows                        0      0       1          2              6     2
Sports                       0      0       0          0              1     0
Trailers                     0      0       0          0              1     0
Travel & Events              0      0       0          0              1     0

channel_type          Games  Howto  Music  News  Nonprofit  People  Sports \
category
Autos & Vehicles          0      0      0     0          0       0       0
Comedy                    3      0      0     0          0       5       0
Education                 2      0      0     0          0       3       0
Entertainment            11      0     22     3          0      11       0
Film & Animation          3      0      3     0          0       2       0
Gaming                   64      0      0     0          0       6       0
Howto & Style             0     27      0     0          0       2       0
Movies                    0      0      0     0          0       0       0
Music                     2      0    175     1          0       2       1
News & Politics           0      0      1    22          0       0       0
Nonprofits & Activism     0      0      0     0          2       0       0
People & Blogs            8      9      8     4          0      58       1
Pets & Animals            0      0      0     0          0       0       0
Science & Technology      0      0      0     0          0       0       0
Shows                     0      0      1     0          0       0       0
Sports                    0      0      0     0          0       0      11
Trailers                  0      0      1     0          0       0       0
Travel & Events           0      0      0     0          0       0       0

channel_type          Tech
category
Autos & Vehicles         0
Comedy                   0
Education                0
Entertainment            1
Film & Animation         0
Gaming                   1
```

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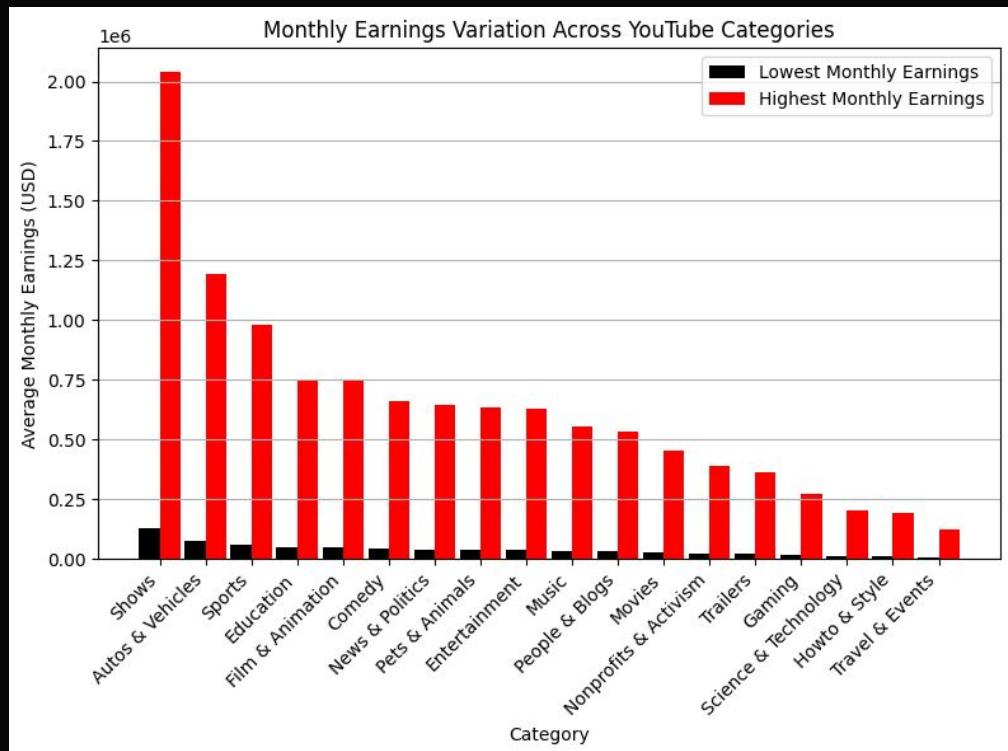
6. Is there a correlation between the number of subscribers and total video views for YouTube channels?

- Correlation (~0.75) is strong positive.

- This indicates there is a strong relationship between subscribers and video views. Meaning, higher subscribers usually mean higher video views.

- This relation isn't perfect, there are some channels that have low subscribers but have viral videos.

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Correlation between subscribers and video views:
 0.7481786016237689
```
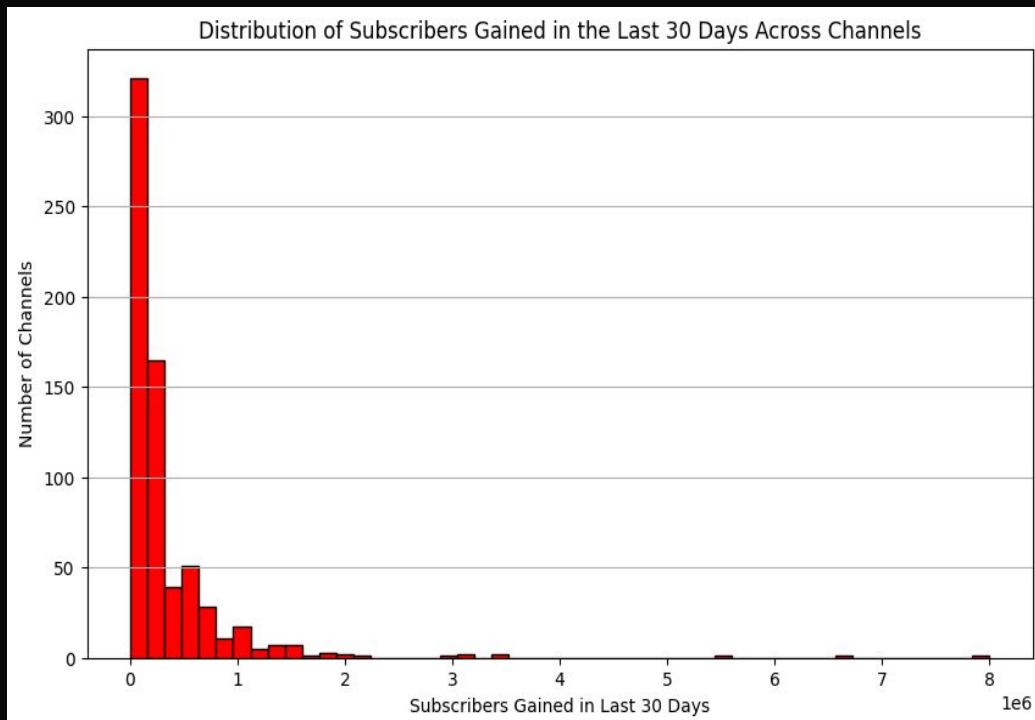
7. How do the monthly earnings vary throughout different categories?

- Categories like "Shows," "Autos & Vehicles," and "Sports" have the potential for the highest monthly earnings, suggesting that creators in these niches may achieve greater financial success.
This might be because of higher viewership or more sponsorship opportunities.

- Categories like Travel & Events and Howto & Style earn the least. There is huge difference in the earnings.

Monthly Earnings Variation Across YouTube Categories

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8. What is the overall trend in subscribers gained in the last 30 days across all channels?

- Most channels gained relatively few subscribers, 0-200k, with a sharp drop-off as the number of new subscribers increases.

- Only a small number of channels experienced very large subscriber gains, indicating that rapid subscriber growth is uncommon

Distribution of Subscribers Gained in the Last 30 Days Across Channels
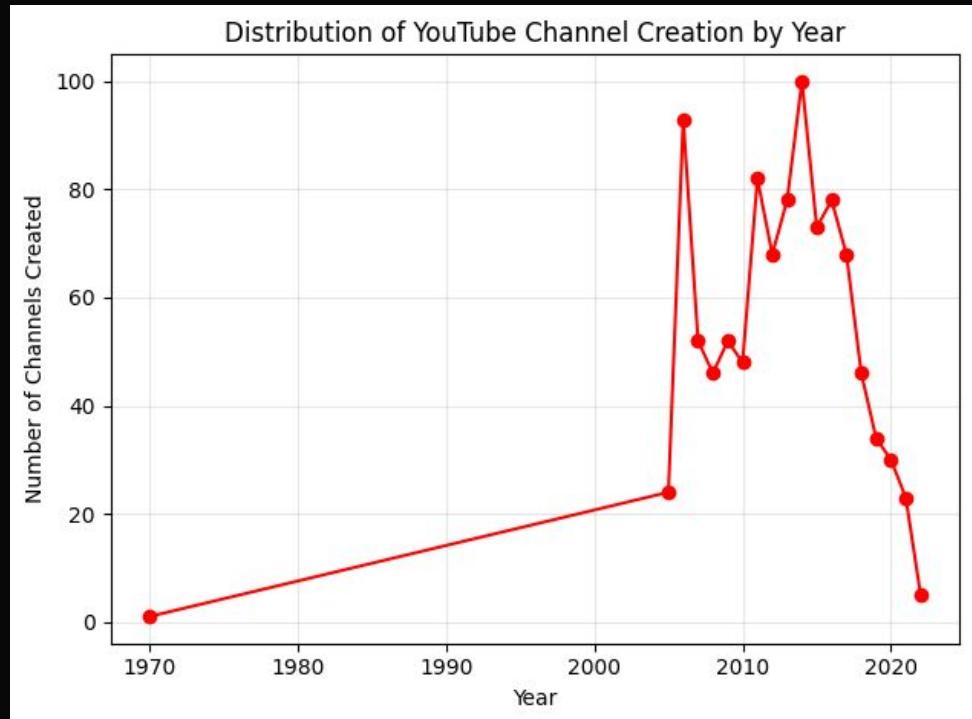
9. Are there any outliers in terms of yearly earnings from YouTube channels?

- There are quite a few channels that are extreme high-earning outliers (e.g., T-Series, MrBeast, Cocomelon).

- Interestingly, no channels were detected as outliers with unusually low yearly earnings, suggesting that most lower earners do not deviate far from the average in this dataset.

- This shows that all outliers are in the upper bound.

```
Outliers with unusually high earnings in highest_yearly_earnings:
                    Youtuber   highest_yearly_earnings
0                   T-Series              108400000.0
2                    MrBeast               64700000.0
3     Cocomelon - Nursery Rhymes           94800000.0
4                  SET India               87500000.0
6          ýýý Kids Diana Show             35100000.0
..                       ...                       ...
908              Susy Mouriz                17700000.0
970                 _vector_                43400000.0
990             Natan por Aï¿                26500000.0
995                      WWE                34300000.0
999          Infobells - Hindi             39200000.0

[101 rows x 2 columns]
Outliers with unusually low earnings in highest_yearly_earnings:
 Empty DataFrame
Columns: [Youtuber, highest_yearly_earnings]
Index: []
```

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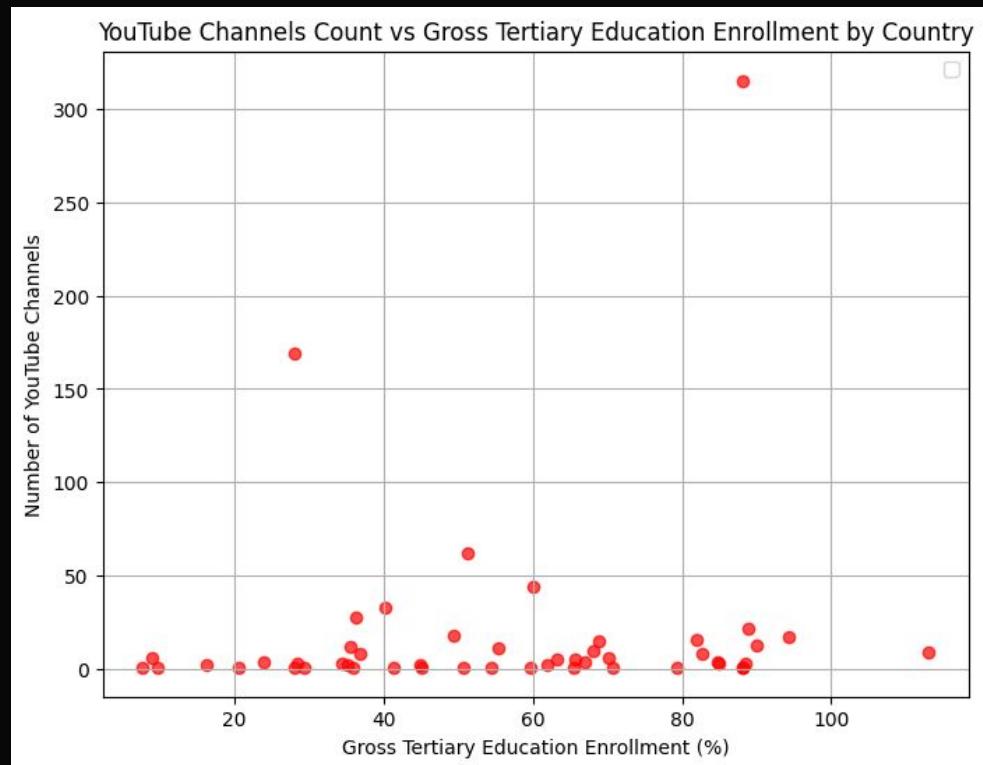
10. What is the distribution of channel creation dates? Is there any trend over time?

- Only 1 channel from 1970.

- Channel creation surged rapidly after the mid-2000s, peaking around the late 2010s, which reflects the platform's rapid growth and popularity during that period

- Gradual decline from 2015 onward. The noticeable drop after 2020 may indicate a recent slowdown in new channel creation.


Distribution of YouTube Channel Creation by Year

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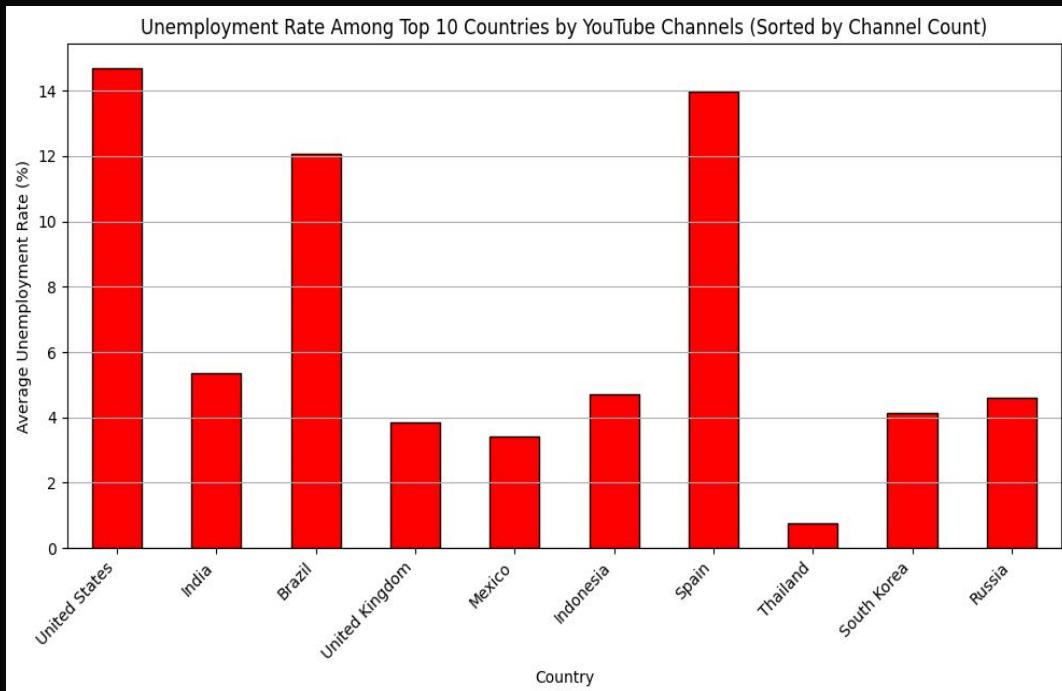
11. Is there a relationship between gross tertiary education enrollment and the number of YouTube channels in a country?

- The plot suggests there isn't a strong, direct correlation between gross tertiary education enrollment and the number of YouTube channels by country in this dataset.

- A few countries (outliers) have very high channel counts despite varying education levels.

- Most countries cluster at low channel counts regardless of enrollment %.

YouTube Channels Count vs Gross Tertiary Education Enrollment by Country

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12. How does the unemployment rate vary among the top 10 countries with the highest number of YouTube channels?

- The US and Spain have the highest unemployment rates (~14%).

- Countries like Thailand and Mexico have very low unemployment (<4%).

- The chart reveals significant variation in unemployment across leading YouTube channel countries, indicating that high YouTube channel activity is not solely associated with countries having low or high unemployment rates.

Unemployment Rate Among Top 10 Countries by YouTube Channels (Sorted by Channel Count)
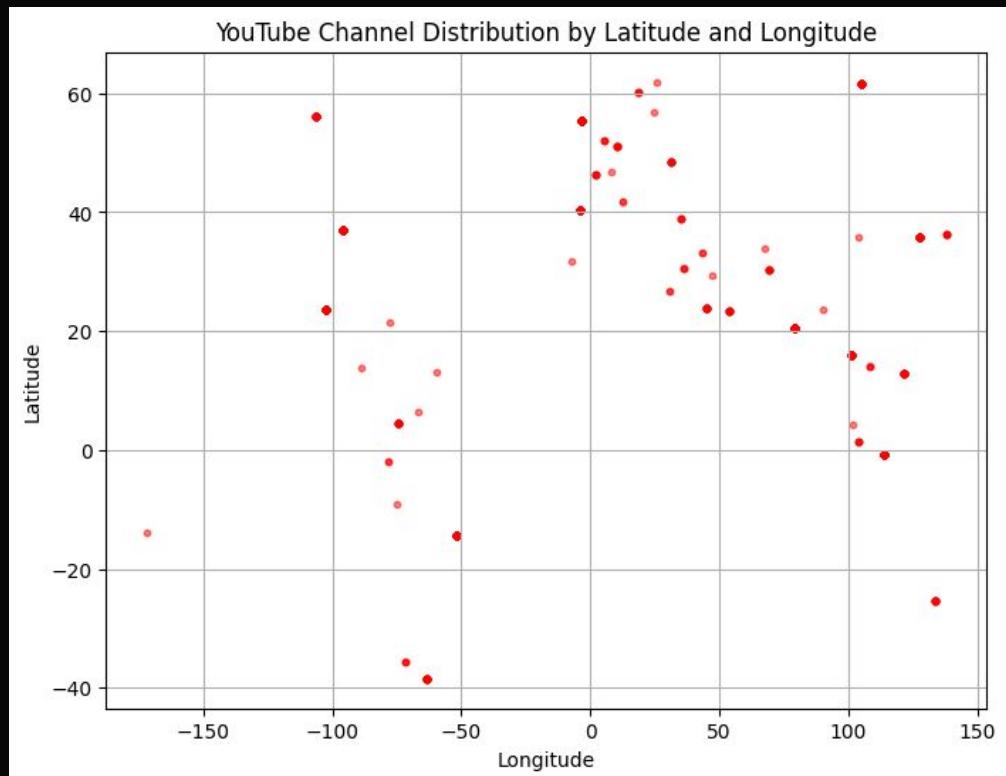
13. What is the average urban population percentage in countries with YouTube channels?

- Countries with YouTube channels have an average of ~22.4M urban residents.

- This shows a strong concentration of YouTube activity in nations with large urban populations.

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Average urban population percentage:
223974718.82045454
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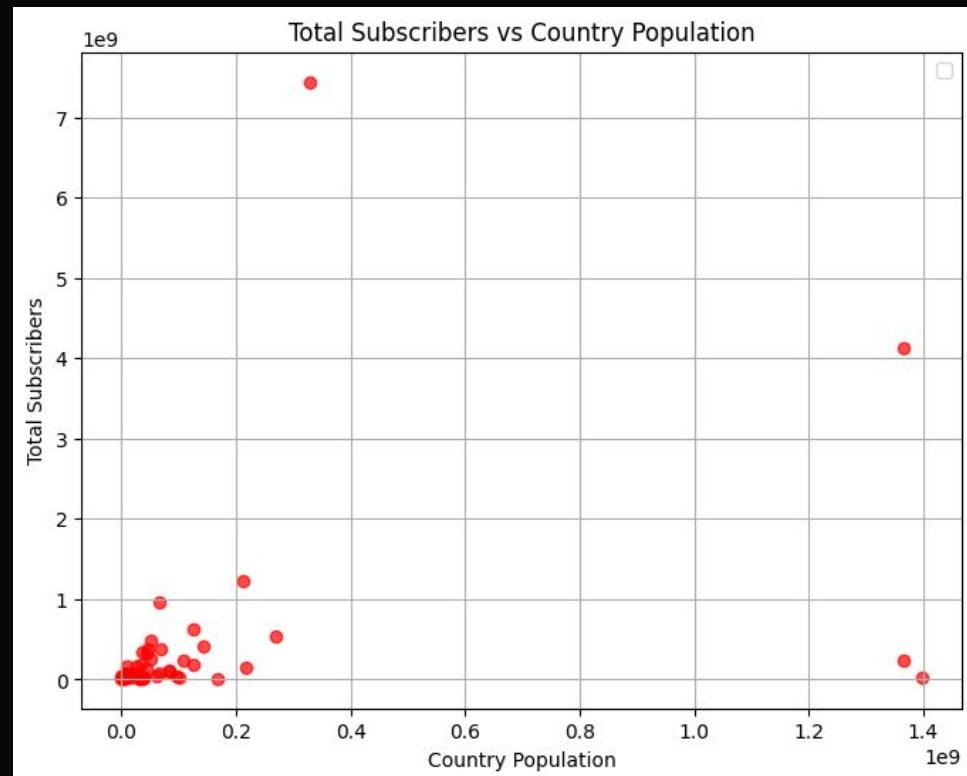
14. Are there any patterns in the distribution of YouTube channels based on latitude and longitude coordinates?

- YouTube channels are spread across all continents.

- High concentration is seen in North America, Europe, and Asia.

- Certain areas exhibit much higher densities of channel presence.

YouTube Channel Distribution by Latitude and Longitude
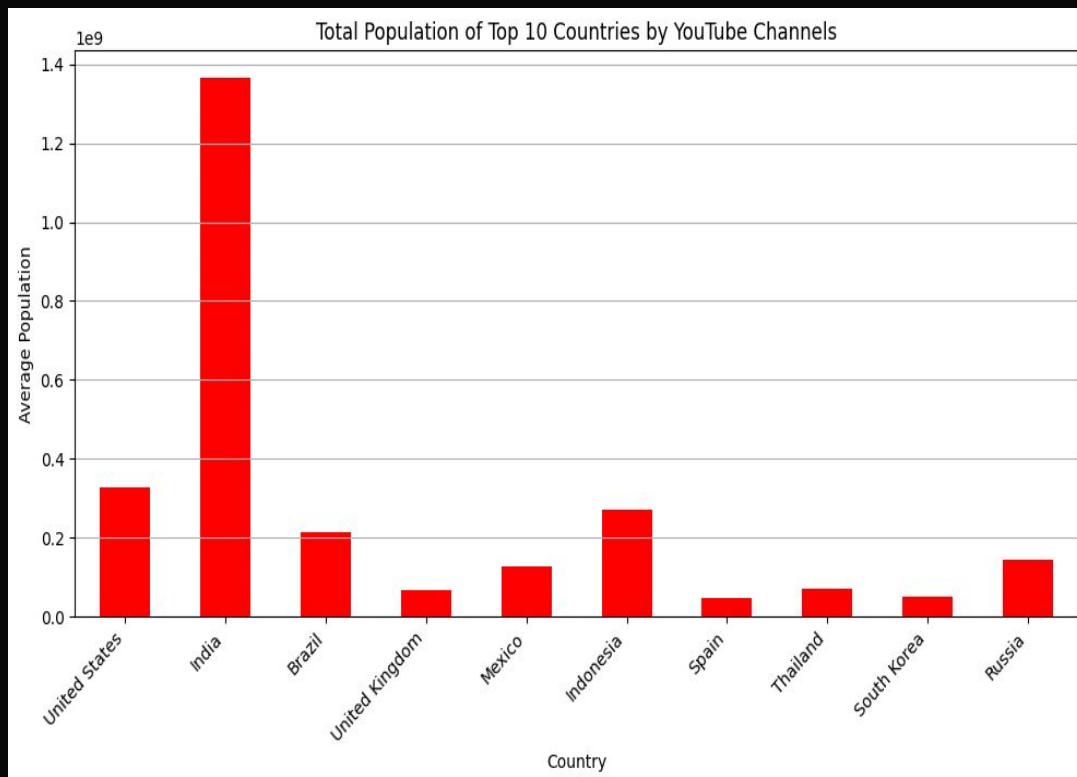
15. What is the correlation between the number of subscribers and the population of a country?

- While larger populations generally correspond to higher total subscribers, the relationship is not strictly linear.

- Some countries with moderate populations have a disproportionately large number of subscribers.

- This suggests that factors other than population, such as digital adoption and YouTube popularity, strongly influence the total subscriber count in each country.

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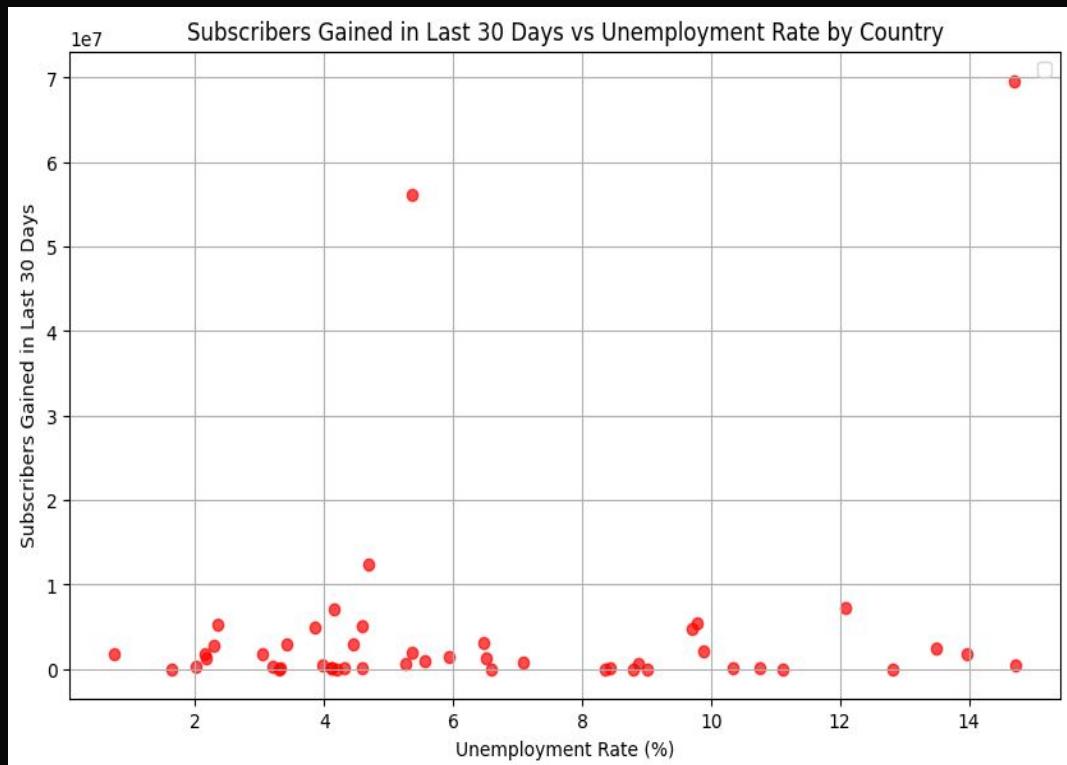
16. How do the top 10 countries with the highest number of YouTube channels compare in terms of their total population?

- India dominates with the highest population among YouTube channel-rich countries.

- United States, Indonesia, and Brazil also show large populations and strong YouTube presence.

- This highlights that many of the countries leading in YouTube channel count also have large populations, which can contribute to a bigger potential creator and audience base.


Total Population of Top 10 Countries by YouTube Channels

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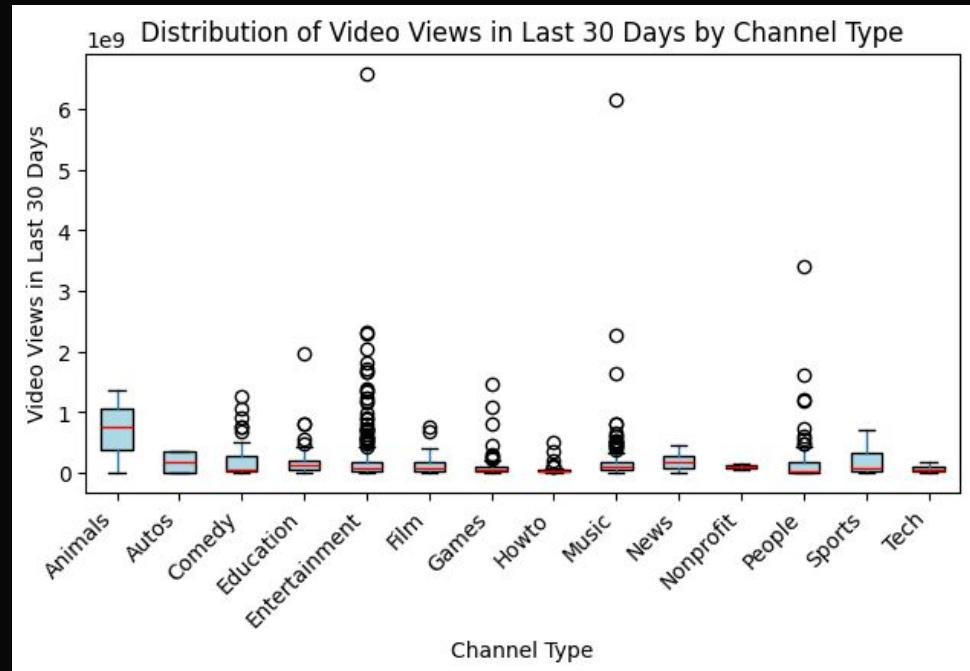
17. Is there a correlation between the number of subscribers gained in the last 30 days and the unemployment rate in a country?

- The points are spread fairly evenly across different unemployment rates, and there is no clear trend linking higher or lower unemployment to subscriber growth.

- This suggests that recent subscriber gains by country are not strongly influenced by unemployment rates in this dataset.

- Two countries are major outliers with extremely high subscriber gains.

- Data is heavily clustered at lower unemployment rates.

Subscribers Gained in Last 30 Days vs Unemployment Rate by Country
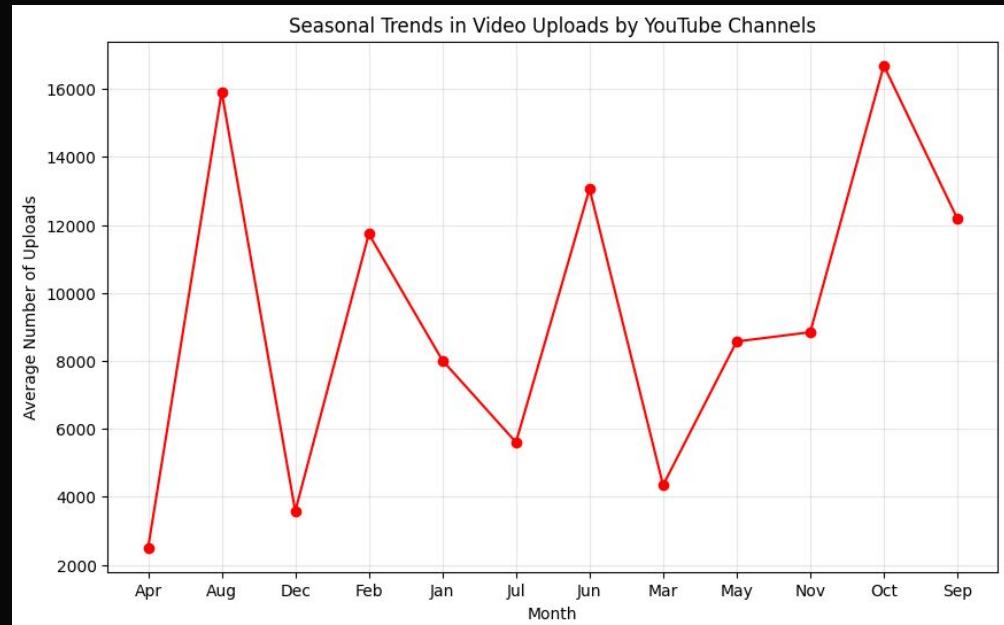
18. How does the distribution of video views for the last 30 days vary across different channel types?

- Entertainment and Music channels have some of the highest video views, including extreme outliers (above 6 billion views).

- Animals channels have a high median and relatively consistent view counts compared to others.

- Most channel types, however, have typical view counts clustered towards the lower end, reflecting that a few highly popular channels drive much of the recent viewing activity.


Distribution of Video Views in Last 30 Days by Channel Type

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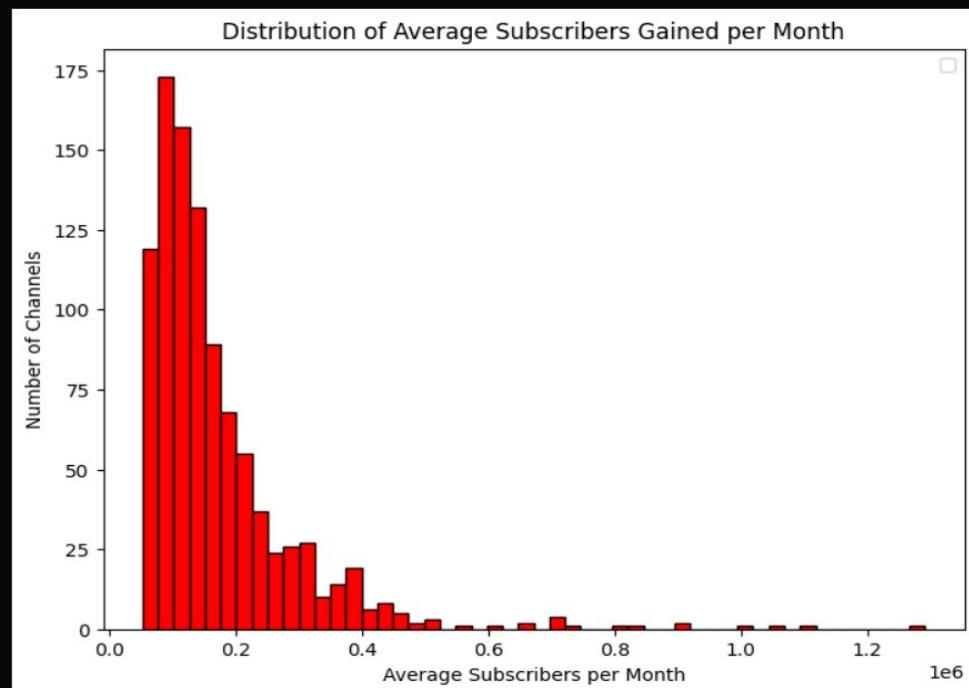
19. Are there any seasonal trends in the number of videos uploaded by YouTube channels?

- Peaks in average uploads are observed in August and October, suggesting increased channel activity during these months.

- Dips in December, April, and March point to slower periods.

- These fluctuations indicate that certain times of the year consistently see more upload activity, possibly linked to holidays, school breaks, audience engagement cycles or more sponsorship opportunities.

Seasonal Trends in Video Uploads by YouTube Channels

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20. What is the average number of subscribers gained per month since the creation of YouTube

- Most channels consistently gain a modest number of subscribers each month, with only a few experiencing very high monthly growth.

- The mean value, approximately 171,108 subscribers per month, is influenced by these top-performing channels, indicating a highly skewed distribution where super popular channels drive up the overall average significantly.

Distribution of Average Subscribers Gained per Month

Average number of subscribers gained per month since channel creation: 171107.50708318167

THANK YOU!