Use of Social Media During The Covid-19 Pandemic of 2020

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Abstract

Nowadays billions of people use social media platforms as a way to keep in touch with family and friends, fill spare time, find content, find inspiration for things to do and buy, share, and discuss opinions with others; the list goes on. This project focused on and investigated the use of social media during the years, in particular during quarantine/lockdown. Utilizing the public source data, I explored several research questions including how many hours people spent on social media, the popularity of social media apps, as well as what age group uses social media platforms (teenagers, young adults, adults). After data cleaning, the data visualization followed, and multiple dashboards were created using Tableau; the data analysis was mainly completed in R. The findings and analysis results were also presented in this research.

KEYWORDS: Social Media, Pandemic, Covid-19, data analysis

Introduction

What is social media? Social media is a web-based technology where you can interact, communicate, and connect with people all over the world. On this platform, users can create, exchange, and share content such as videos, pictures, music, news, and so on. However, during the Covid-19 pandemic, social media played a crucial role, in connecting people, giving information, keeping them creative, entertained, and keeping them informed about the newest discoveries linked to the virus. Some of the most used social media sites were TikTok, Instagram, YouTube, Twitter, and Facebook. With the lockdowns, these social media platforms were used to enable online social engagement and communication among people who were physically separated. People were also interacting electronically with friends, family, and coworkers using Zoom, Teams, and Google Meet to help with minimizing feelings of loneliness and isolation. People took advantage of these platforms to do video conferences, workshops, etc. Not to forget that these exact platforms were the ones used for online classes and remote work.

However, social media also provided some problems during the pandemic, such as the spreading of false information and conspiracy theories related to Covid-19. With that, the platforms had to do something about it, by deleting posts and accounts that were spreading false information. Social media was also used to promote and organize social justice movements, such as the worldwide Black Lives Matter protests.

During a challenging quarantine/pandemic, social media significantly influenced public debate and served as a channel for communication and connection.

Methodology

I first started with data collection. Then I proceeded to analyze social media usage data during the early days of covid lockdown in India. With this public source data from Kaggle, I explored the number of hours that people spent on different social media apps, the social media apps that are most used, and the age group that uses the platforms more. Our study focused on about 600 responses from people during those times. The data has about 33 or more variablese from the form responses, such as name, email, sex, lockdown zone category, the average hours that people sleep, the amount of time people exercise per day, the type of exercise, skills that people acquired during the lockdown, the time spent on social media, and video streaming, the social media apps, video streaming app, and TV channels that they used the most. The age group is between 10 to over 60 years old, which is divided into 6 age groups, 10-20, 21-30, 31-40, 41-50, 51-60, and 60+. However, when I did the chi-square independent test I divided the age into 3 groups, < 21 y/o, 21-30 y/o, and > 30 y/o.

After coming up with some research questions, I had to clean the data. By cleaning the data, I had to check for errors, such as missing values, duplicate entries, and incorrect data formats as well as revising and structuring the data. This process was really important because it helped me get the data ready so I could concentrate more intently and accurately on the analysis and visualization. It was a good method to maintain the data organized

The next step was data visualization. Since the data was clean, I created some graphs, and charts then interactive dashboards to have a better understanding of the data. Then I proceed with the Chi-square independence test. The Chi-square independence test was used in this study to evaluate the association between the independent and dependent variables using categorical data. It was used because it is a common statistical technique for assessing the relationship between the two categorical variables along with being appropriate for data analysis when the variables of interest are not assumed to have a normal distribution. To run the test, I used R (programming language) where the outcomes were interpreted based on the calculated Chi-square statistic and associated p-value.

Analysis Results

In this section on analysis, I'll go over the findings of our statistical research on how people from India used social media during the pandemic. The data gathered facts on how much time each age group spent on social media, as well as which social media platforms they used and video streaming services they used the most. Some of the results discussed were related to the chi-square independent test between the time spent on social media apps and age groups, along with the chi-square independent test between the top 3 social media apps used and age groups.

With the chi-square independent test, I explored the relationship between the usage of social media and the various age groups. The outcomes of this analysis are shown in Table 1, as well as Graph 1 and Graph 2.

Variable I	Variable II	x^2 test statistic	p-value
Social Media App	Age	31.546	0.0002*
Video streaming	Age	16.149	0.0028*
TV Channels	Age	293.35	< 0.00001*
Time spent on social media	Age	218.7	< 0.00002*

Table 1: *Chi-Square Independent Test between Social Media and Age Group*

The chi-square test statistic of 31.546 indicated that there is a statistically significant correlation between the age group and the social media apps (Graph 1) with a very low p-value of 0.0002*, it was highly unlikely that the relationship was found between the social media apps use and age group occurred by chance. Since there was a significant relationship between the two variables, we could reject the null hypothesis (i.e., that there is no association between the two variables). In addition, Graph 1 revealed that the top 3 social media apps are: WhatsApp, Instagram, and Facebook. People under 30 years old used WhatsApp and Instagram more, while people older than 30 years old used WhatsApp and Facebook more compared to others.

The statistical test result of 218.7 showed that there was a strong and significant association between the time spent on social media and age group (Graph 2). The correlation between these variables was significant because the very low p-value of <0.00002* indicated that it was highly unlikely that this relationship came up by

chance. However, to properly comprehend the nature and underlying causes of this relationship, additional research or analysis may be required. It's crucial to keep in mind that statistical relationships do not always imply causality. Graph 2 also showed that the age group between 21 to 30 years old spent more time on social media compared to the other age groups, younger and older. The age group 21-30 years spent about 2 to 4 hours on social media per day.
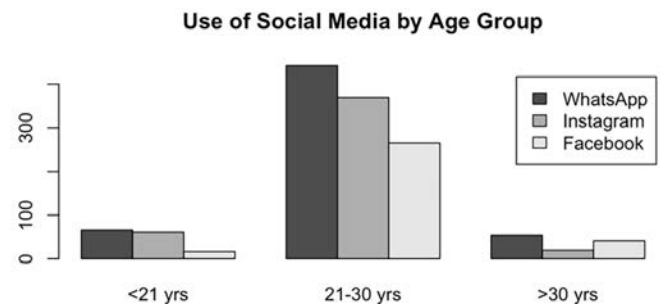

Graph 1: *Top 3 Social Media App Vs Age Group*
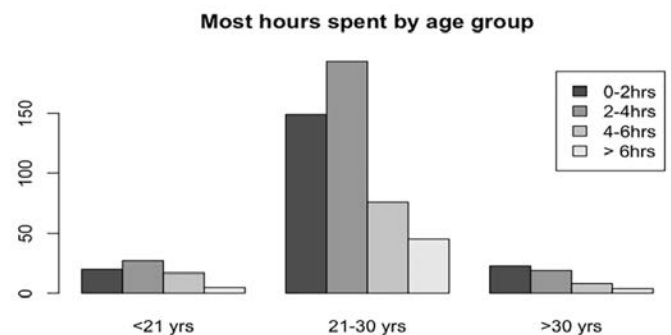
Graph 2: *Time Spent Vs Age Group*

As for other observations from Dashboard 1, it can be concluded that between 2-3 hours was the most time spent on social media apps, especially by 21-30 years old. Also, that same age group spent about 1 hour to 3 hours on a video streaming app. Spotify was the top 1 app used for music streaming. Graph 3 displayed that the top
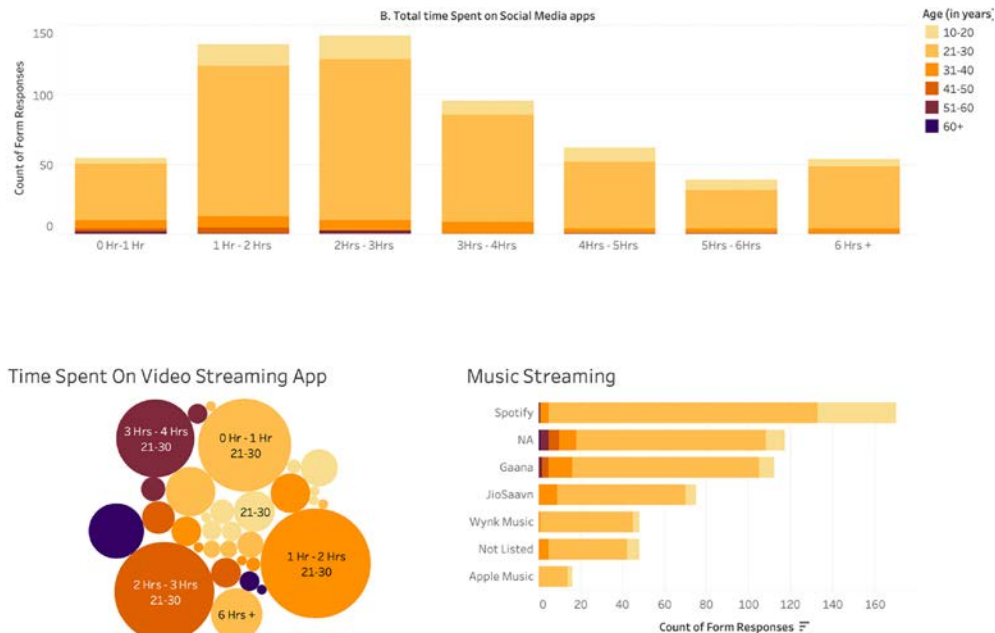
Dashboard 1

3 video streaming apps among the different age groups were YouTube, Netflix, and Amazon Prime.

Conclusion

In conclusion, social media became a fundamental component of daily life during the pandemic in India, especially when it comes to reconnecting with people who are geographically separated as a result of lockdowns and social isolation measures. In this project, the data from Kaggle was analyzed to see how much time people of different ages spent on social media platforms, with 21 to 30 years old spending more time than the younger or older ones. WhatsApp, Instagram, and Facebook were revealed to be the most frequently used social media platforms. This project also suggested strong evidence between age and the amount of time spent on social media which was presented by the chi-square independence test. It showed that the association was highly unlikely to have happened by accident due to its extremely low p-values. Age and social media usage do not correlate directly, indicating that other factors might potentially affect how people use social media. These results helped us understand how different age groups use social media, but further study is interesting to understand the underlying causes and implications of this association. Social media was a useful tool for keeping people in touch, entertained, and informed during that time.

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Mathematics

Aliya Goncalves Almeida moved from the Cape Verde Islands in the summer of 2018 to follow her dream of attending college in the United States. In May of 2023, this was accomplished as she graduated from Bridgewater State University, earning a Bachelor of Science in Mathematics and a minor in Computer Science. Aliya is taking her passion for academic excellence to the next level, currently attending Bridgewater State University to pursue her Master's Degree in Computer Science. She also concluded her honors thesis under the mentorship of Dr. Wanchuzi Yu, Associate Professor of Statistics in the Mathematics Department. During the Summer of 2023, Aliya interned at BitSight, an industry leader driving innovation in the cybersecurity industry.