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Assignment 2:

Visualization Project Report: Impact on COVID-19 on Students in New Delhi

Introduction

The global COVID-19 pandemic caused significant disruptions in educational systems worldwide, including those in the Delhi National Capital Region (NCR). A survey involving 1182 students from diverse age groups and educational institutions in the region was conducted to explore their adaptation to online learning, experiences, and lifestyle adjustments during the pandemic. This report aims to analyze the survey data to address key inquiries concerning students' time management, device preferences for online education, health concerns, and social media usage, among other aspects. The insights gleaned from this analysis will be instrumental for educational institutions and policymakers in gaining a deeper understanding of student requirements and refining educational strategies.

The data required for this examination encompasses details about students' demographics (e.g., age, residential area), their educational encounters amid the COVID-19 crisis (time devoted to online classes, assessment of online learning experiences, devices utilized for online education), lifestyle elements (time spent on self-study, physical activity, sleep, social media, television), preferences (favorite social media platform, coping mechanisms, aspects they miss the most), health-related information (incidents of health issues during the lockdown), and any indicators related to mental well-being.

The provided dataset from Kaggle ("COVID19 and its Impact on Students") contains a variety of variables related to students' experiences during the pandemic.

The dataset is available on Kaggle at the following link:

<https://www.kaggle.com/datasets/kunal28chaturvedi/covid19-and-its-impact-on-students?resource=download>

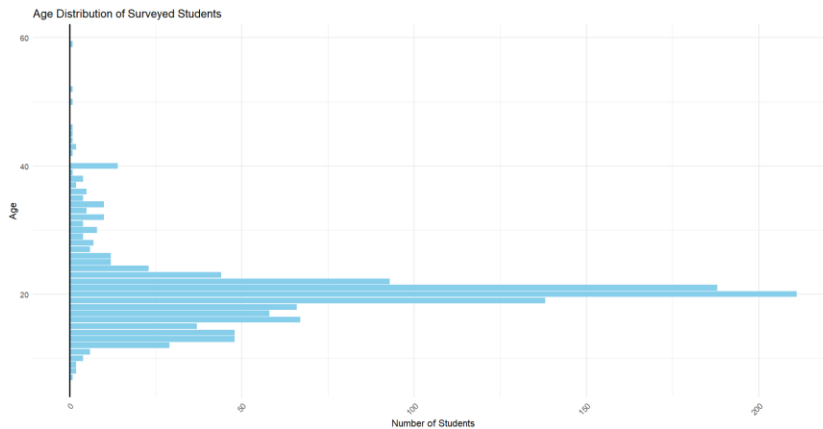
The key questions to be addressed include:

1. How is time spent on various activities distributed among students at different schooling levels?
2. What are the preferred devices for online learning among students?
3. Which social media platforms are most popular among students across different schooling levels?
4. Are there significant differences in health issues reported by students based on their schooling levels?
5. How do students rate their online class experiences, and does this vary by schooling level?
6. Can we identify any trends or patterns in student behavior that could inform educational strategies?

Visualizations and their Results

In this section, visualization is used to explore the data to further understand the effects of the COVID-19 pandemic on students. The graphics focus on various aspects, including age distribution, time allocation, health issues, and preferences for learning devices and social media platforms.

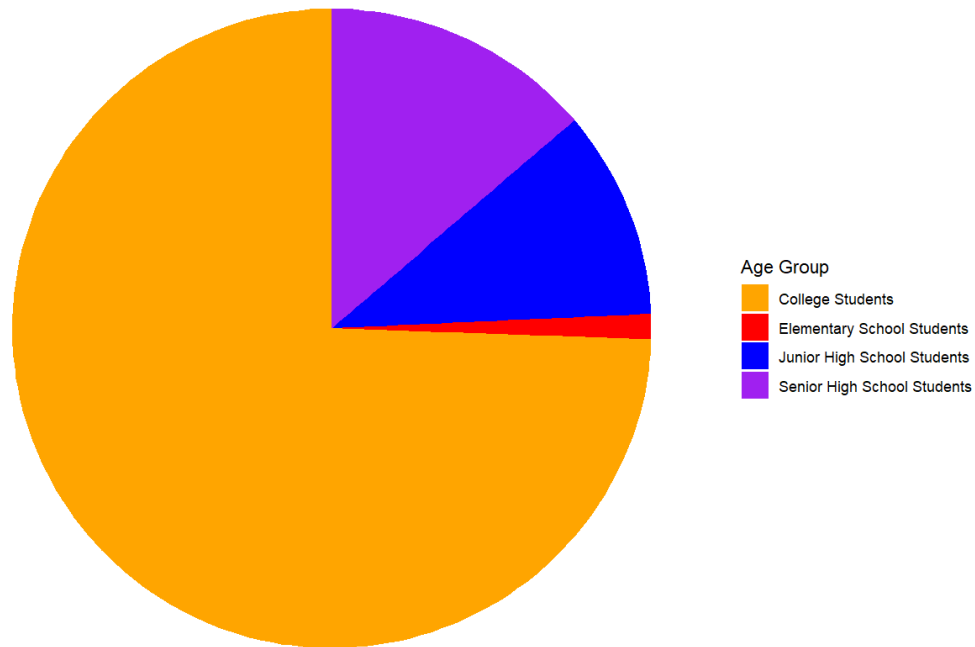
1. The Age Distribution of the Students Surveyed.



The age distribution chart shows that most of the dataset comprises students aged 20. This indicates that college students are the primary subjects of the survey. Understanding the age distribution helps contextualize subsequent analyses, as the predominant age group might influence other survey responses.

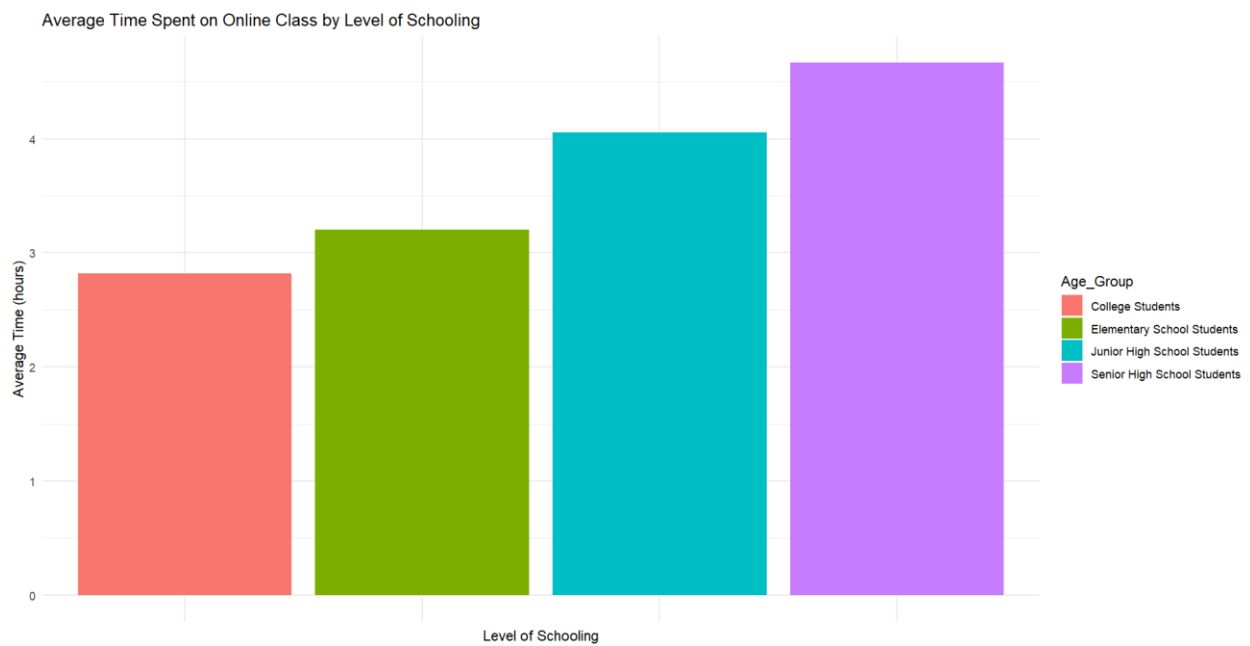
2. The Distribution of Students by Level of Schooling

Distribution of Students by Level of Schooling



This visualization reinforces that most survey respondents are college students, followed by senior high school, junior high school, and elementary school students.

3. A Visualization of Average Time Spent on Online Class by Level of Schooling



This chart illustrates the average time students spent in online classes, segmented by their level of schooling. The data reveals that senior high school students spent the most time in online classes than any other level of schooling, followed by junior high schools and then elementary school. This is quite surprising, leading us to believe that the younger age groups had longer online class hours than college students. This might be because they require more direct instruction and supervision.

The lower average time spent by college students could also indicate varying levels of engagement and attendance. College students often have more freedom in their schedules, which might result in lower attendance or participation rates in online classes. Additionally, they might have relied more on recorded lectures rather than attending live sessions.

4. The Distribution of Ratings of Online Class by Level of Schooling

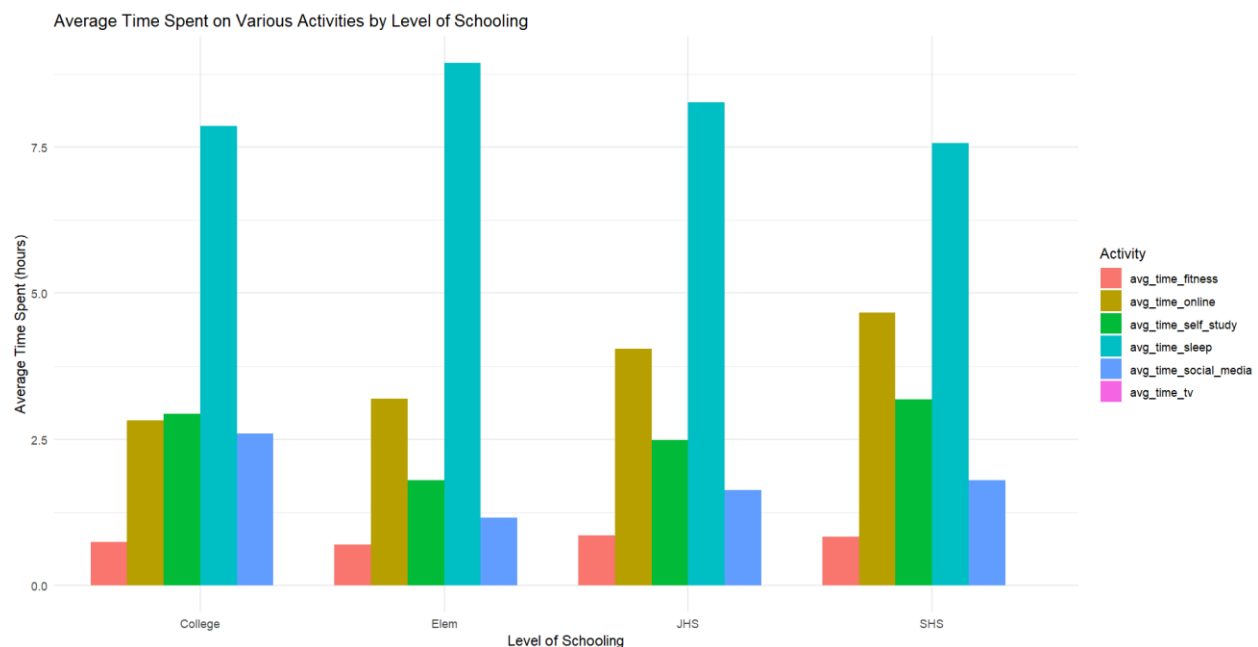


Regardless of the average time spent on online classes, the ratings of online classes are symmetrical across all levels of schooling. Most students across all levels rated their online classes as 'average'. There are some negative ratings, primarily from college and senior high school students, but overall, the ratings skew towards a positive assessment.

All levels of schooling faced similar challenges in adapting to online learning technologies. The transition required both students and teachers to quickly adapt to new platforms and methods, potentially leading to a uniform perception of the experience as 'average.'

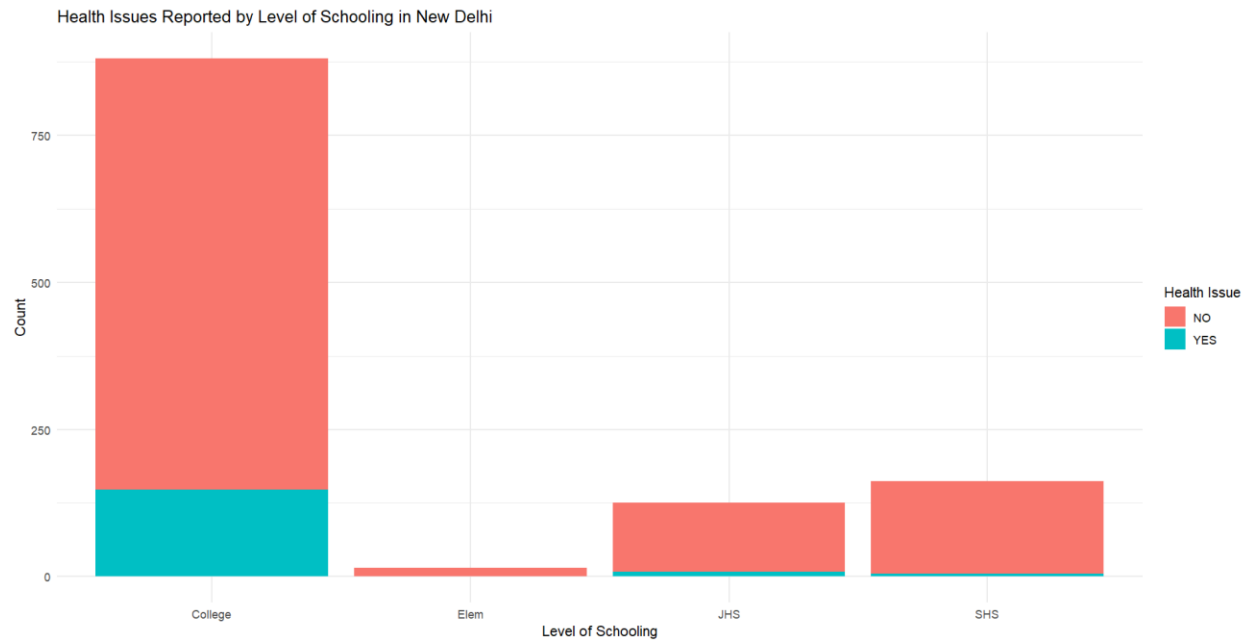
College and senior high school students might have had higher expectations for online learning due to their advanced academic needs. The negative ratings from these groups could indicate a gap between their expectations and the reality of online learning.

5. The Distribution of Average Time Spent on Various Activities by Level of Schooling



This visualization highlights the average time spent on different activities among students across various schooling levels during the pandemic. As seen above, the various levels of schooling exhibited a similar pattern. The time spent on sleep was more than time spent on any other activity while fitness activities show the lowest time allocation, indicating potential challenges in maintaining physical activity levels during the pandemic. Similarly, for all levels of schooling, the average time spent online was the second highest, reflecting the shift towards digital platforms for various purposes, including education, social interaction, and entertainment. This was then followed by average time spent on self-study and then average time spent on social media.

6. A Visualization of Health Issues Reported by Level of Schooling



Most students surveyed reported no health issues during the COVID-19 pandemic, indicating a healthy population. This trend is attributed to the swift transition to online learning, which contributed to curbing the spread of illnesses.

The absence of significant health issues reported among students during the pandemic suggests the adoption of online learning platforms potentially contributed to maintaining student health.

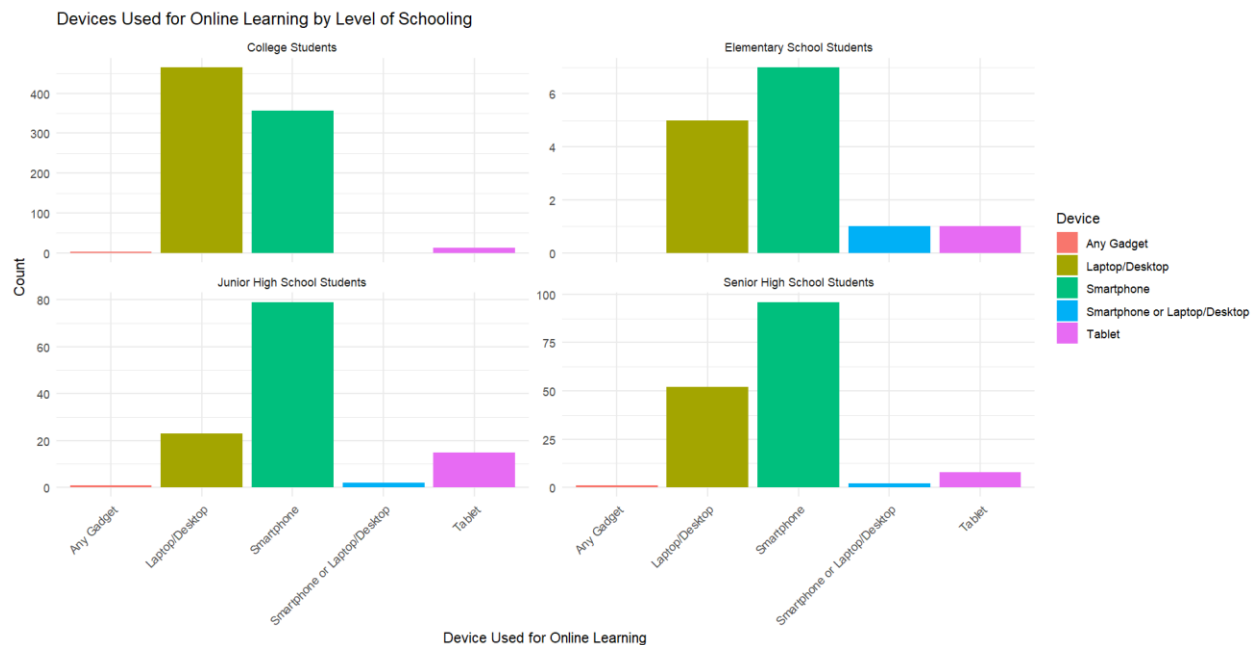
7. The Distribution of the Top 3 Social Media Platforms by Level of Schooling



Here we can see that among surveyed students, Instagram emerged as the most popular social media platform among college students. In contrast, junior and senior high school students favored YouTube. Elementary students spent the lowest time on each of the top 3 social media platforms, possibly due to age-related restrictions or parental guidance.

This is crucial to know as social media platform preferences often reflect peer interactions and trends within specific age groups, shaping how students connect, share, and engage online.

8. Visualization of Devices Used for Online Learning by Level of Schooling



Here we can see that college students predominantly used laptops for online learning, while elementary, junior, and senior high school students favored smartphones. However, laptops remained a close second choice for these younger age group.

This may be because laptops offer functionality and multitasking capabilities conducive to higher education tasks such as research, writing, and managing various projects. Meanwhile, smartphones are preferred for their portability, accessibility, and familiarity, catering to younger students' learning styles, communication needs, and digital fluency. India's educators can leverage students' device preferences to design interactive, mobile-friendly learning activities, assessments, and collaborative projects tailored to different age groups and learning contexts.

Discussion: Comparative Analysis with Pre- and Post-COVID Data

While this study provides a comprehensive analysis of student experiences during the COVID-19 pandemic, it would be valuable to compare these findings with data from years before and after the pandemic. Such a comparative analysis could help in understanding the long-term impacts of the pandemic on students' education and well-being.

Potential Areas of Comparison

Time Allocation

Before the pandemic, students spent more time on in-person classes and extracurricular activities. During the pandemic, there was a significant increase in time spent on online classes and self-study, as well as an increase in screen time related to social media and TV. Post-pandemic, while online classes have decreased, time allocation has not entirely reverted to pre-pandemic levels. More students continue to engage in online learning and self-study, balancing it with a slight increase in fitness and sleep compared to during the pandemic.

It is therefore safe to say that there were significant shifts in students' daily routines and priorities. During the pandemic, students prioritized online learning and self-study due to lockdown measures. Post-pandemic, students have adopted a more hybrid approach, combining online and in-person learning. Prioritization of mental and physical well-being has increased, leading to more time spent on fitness and adequate sleep.

Preferred Learning Devices

Before the pandemic, laptops and desktops were primarily used for learning purposes. During the pandemic, there was a noticeable increase in the use of tablets and smartphones due to their portability and ease of access. Post-pandemic, the preference for versatile and portable devices like tablets remains high, although there is a resurgence in the use of laptops for their comprehensive functionality.

The pandemic also accelerated the adoption of educational technologies such as learning management systems, virtual classrooms, and collaborative tools. Students have become more adept at using online resources, and many continue to utilize these tools post-pandemic for their convenience and efficiency.

Health Issues

The prevalence of health issues, particularly mental health concerns, increased during the pandemic due to isolation and stress. Post-pandemic, while there has been some improvement, the prevalence of mental health issues remains higher than pre-pandemic levels. However, physical health issues related to sedentary lifestyles have decreased as students return to more active routines.

Social Media Usage

Social media usage spiked during the pandemic as students sought social interaction and entertainment online. Post-pandemic, usage has slightly decreased but remains higher than pre-pandemic levels. Students use social media for both socialization and educational purposes more than before.

platforms that offered live streaming, video conferencing, and interactive features saw lasting increases in popularity. Platforms like Zoom, Teams, and Discord, initially used for educational purposes, continue to be popular for both academic and social interactions.

Online Class Ratings

Initially, students were critical of online classes due to technical challenges and lack of engagement. Over time, perceptions improved as both students and educators adapted to the format and institutions invested in better infrastructure. Post-pandemic, students appreciate the flexibility of online classes and rate them more favorably than during the initial stages of the pandemic.

Implications for Educational Strategies

Long-term Adjustments

Understanding these trends can help educational institutions and policymakers make informed decisions about integrating online learning into regular curricula.

Long-term strategies can be developed to address any persistent issues or leverage positive changes brought about by the pandemic.

Student Support

Tailored support systems can be designed to address the specific needs of students at different schooling levels, considering the long-term effects of the pandemic.

Future Research

Conducting longitudinal studies to track these changes over a more extended period would provide deeper insights into the evolving educational landscape.

Collaboration with institutions to gather and analyze pre- and post-pandemic data can enhance the understanding of the pandemic's impact on education.

By considering these aspects, we can better understand the broader implications of the COVID-19 pandemic on students and develop more effective strategies to support their education and well-being in the future.

Conclusion

The visualizations conducted in this study offer valuable insights into students' experiences and behaviors during the COVID-19 pandemic. The age distribution analysis revealed a predominant representation of college students in the dataset, highlighting their significance in the study's context. This emphasis on college students underscores the need to understand and address their specific needs and challenges in online education.

The distribution of students by level of schooling reaffirmed the dominance of college students, aligning with the age distribution findings. Senior high school students were found to spend more time on online classes, prompting considerations about their academic engagement and time management strategies compared to other schooling levels.

Despite variations in time allocation for activities like sleep, fitness, and social media, consistent patterns across different schooling levels suggest adaptability and continuity in students' daily routines amidst pandemic disruptions. The reported absence of significant health issues among surveyed students, due to online learning's preventive measures, underscores the potential benefits of digital education in maintaining student well-being during crises.

Social media platform preferences varied by age group, with Instagram being popular among college students and YouTube among junior and senior high school students. This diversity reflects age-related content consumption and interaction preferences, highlighting the need for tailored digital engagement strategies.

Device preferences for online learning showed a preference for laptops among college students and smartphones among younger students, emphasizing the importance of technological equity and optimizing digital learning environments.

The comparative analysis between pre and post-COVID data offers a profound understanding of the transformative impact of the pandemic on various aspects of students' lives and educational experiences. The data reveals the significant increase in time spent on online classes across all schooling levels post-pandemic, the adoption of smartphones and laptops for online education, reflecting the changing dynamics of technological integration in education and positive trends observed in students' mental and physical well-being post-pandemic.

References

Chaturvedi, Kunal. (2021). COVID-19 and Its Impact on Students [Data file]. Retrieved from <https://www.kaggle.com/datasets/kunal28chaturvedi/covid19-and-its-impact-on-students?resource=download>