**Module 6 - Assignment - Final Project Report**

**Karan Salunkhe, Tanisha Kriplani, Suprit Mestry, Riddhish Patel (GROUP 4)**


**Northeastern University**

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**Prof. Mykhaylo Trubskyy**

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**Introduction**

Meta creates technologies for connecting people, joining communities, and growing businesses. In 2004, Facebook changed how people communicated and introduced a model wherein people could connect around the world on one platform. In addition, Meta is moving toward immersive experiences like augmented and virtual reality to help shape the next transition in social networking. Meta later introduced messaging apps such as Messenger, Instagram, and WhatsApp that have further connected billions.

In this assignment, we will be showcasing one aspect of Meta: **Instagram**. Once a typical mobile application, Burbn (later Instagram) has achieved worldwide recognition. Today, Instagram has more than a billion monthly active users each year. The photo and video sharing platform has established itself as one of the most admired and famous apps globally.

After being launched in 2010, the app has outgrown its competitors by continually upgrading its features and engaging itself in constant evolution. As a result, it is the 2nd most downloaded app by 2021, as per Forbes. In recent years, most of the downloads were due to the video-sharing app TikTok being banned in India. So Instagram has created the feature Instagram Reels as an alternative that drove content creators towards them.

**Mission**

Instagram's mission is to give people the power to share and make the world more open and connected. People use Instagram's technologies to stay connected and updated with friends, family and news to discover what's going on globally and share and express what matters to them.
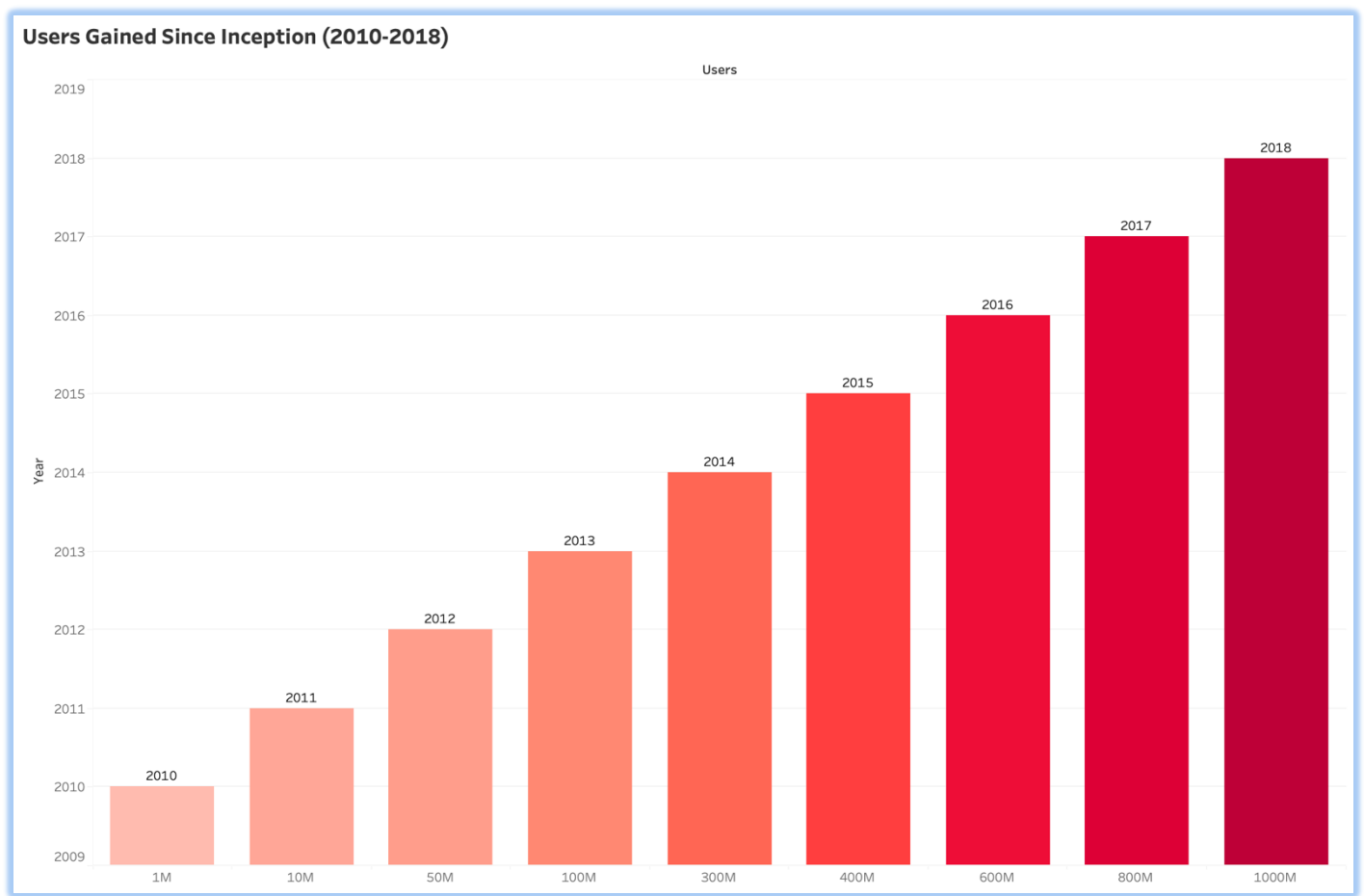
**Users Gained Since Inception (2010-2018)**

Users

| Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2019 | | | | | | | | |
| 2018 | | | | | | | | 2018 |
| 2017 | | | | | | | 2017 | |
| 2016 | | | | | | 2016 | | |
| 2015 | | | | | 2015 | | | |
| 2014 | | | | 2014 | | | | |
| 2013 | | | 2013 | | | | | |
| 2012 | | 2012 | | | | | | |
| 2011 | 2011 | | | | | | | |
| 2010 | 2010 | | | | | | | |
| 2009 | | | | | | | | |

| 1M | 10M | 50M | 100M | 300M | 400M | 600M | 800M | 1000M |

Fig. User Gained Since Inception (2010-2018)

**Data Analytics and Big Data Culture at Instagram**

At Instagram, they collect data for good. Every piece of data helps them understand the technologies and growth, identify opportunities, and execute ideas worldwide. As a result, they can make smarter, more informed decisions using this valuable data and develop better products. By using analytics, they can build experimentation frameworks that measure the performance of new and existing employees. Metric goals are created, progress is measured against them, and key contributors are identified. In addition, Instagram works with Facebook's communications team to make their work more transparent. The culture at Instagram is highly data driven and moving towards the future.

**Using AI and Data Analytics to Drive Business Decisions**

As we can tell, Instagram is primarily concerned with user data and interactions, which include features such as improving consumer acquisition, providing marketing insights and solving advertisers' problems, promoting content creation, and assisting in the promotion of businesses and brands. Therefore, Instagram can achieve a competitive edge by utilizing current user information at the appropriate time and making better decisions which will help reduce gaps by detecting inefficiencies, errors, and discrepancies.

To improve competitiveness in the industry of user data to boost financial and market departments, the following are the key metrics in which INSTAGRAM can make better business decisions and product offerings with the help of Business Intelligence, AI and Big data technology.

- **Target Advertising:** An individual's exposure to ads varies according to how much time they spend on the app. Recently, however, there have been more ads. The company made a significant change in 2017 by allowing anyone to advertise on Instagram rather than just big brands who negotiated directly with them. In addition, Instagram also revealed that the ads it displays are specifically selected based on each individual's preferences. Moreover, Facebook and Instagram use extensive data mining algorithms to generate a very detailed and accurate understanding of you as a person. In other words, almost every action you take on Facebook, including who your friends are, what posts you like, what posts you don't like, what brands you follow, etc., is used to better target ads to you. Instagram obtains user insights by analyzing users' browse preferences and engagement insights. As a result, Instagram can sell ads to businesses that want to reach that specific customer profile and are

most willing to receive a particular marketing message. In addition, Instagram has a robust analytics network that can help target advertising.
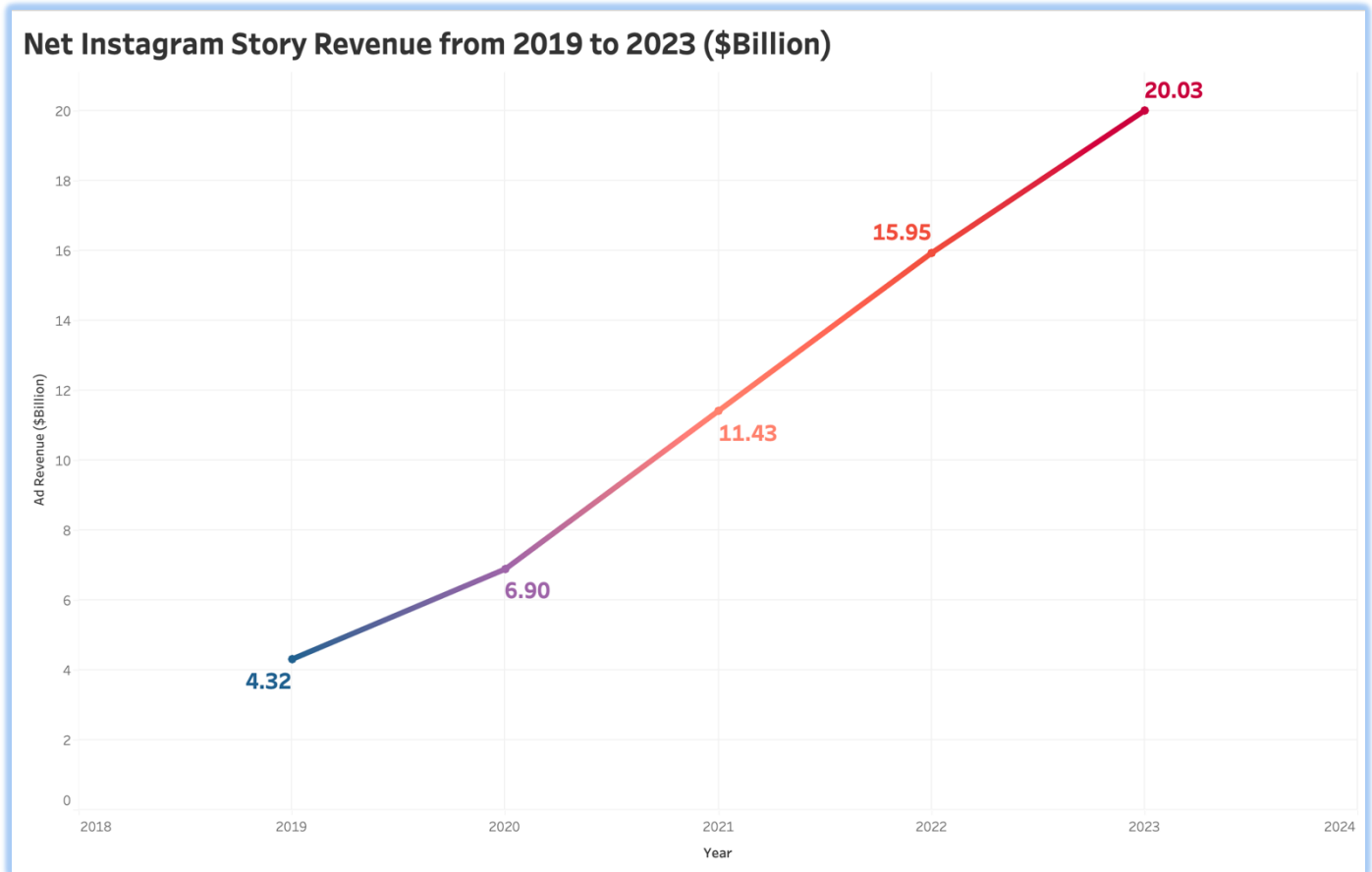


**Net Instagram Story Revenue from 2019 to 2023 ($Billion)**

Fig. 2 Net Instagram Target Ad Revenue from 2019 to 2023 ($Billion)

- **Search Function with Explore Page:** Instagram users can find photos for a specific activity, topic, or event by using markers such as tags and trending information, or they can discover trending experiences, restaurants, and locations in the world by using trending information. The search tools, which are enabled by tagging, assist Instagram users in discovering things of interest among millions of photos and videos using a machine learning algorithm termed as "Word Embedding".

- **To enhance User Experience:** Since the amount and variety of data on the platform has grown in recent years, Instagram modified its feed from reverse order to display posts that are aligned with user interests. Machine-learning algorithms were used to help sort the information and knowledge to understand what is most preferred and appropriate for each user to create a customized feed.

- **Filter Spam and preventing Cyber-bullying:** Instagram can identify spam in over nine languages. When these messages are detected, they get automatically discarded. Instagram utilizes Facebook's "DeepText" AI text analytics algorithm, which can understand the spam content based on the user feed. Using this algorithm, INSTAGRAM added a "Restrict" functionality to shadow ban users commenting or posting offensive content after monitoring a set of words and phrases that were reported offensive in the past or present, further notifying its users whether their captions for a specific photo or video could be deemed offensive as a caution before posting the same.
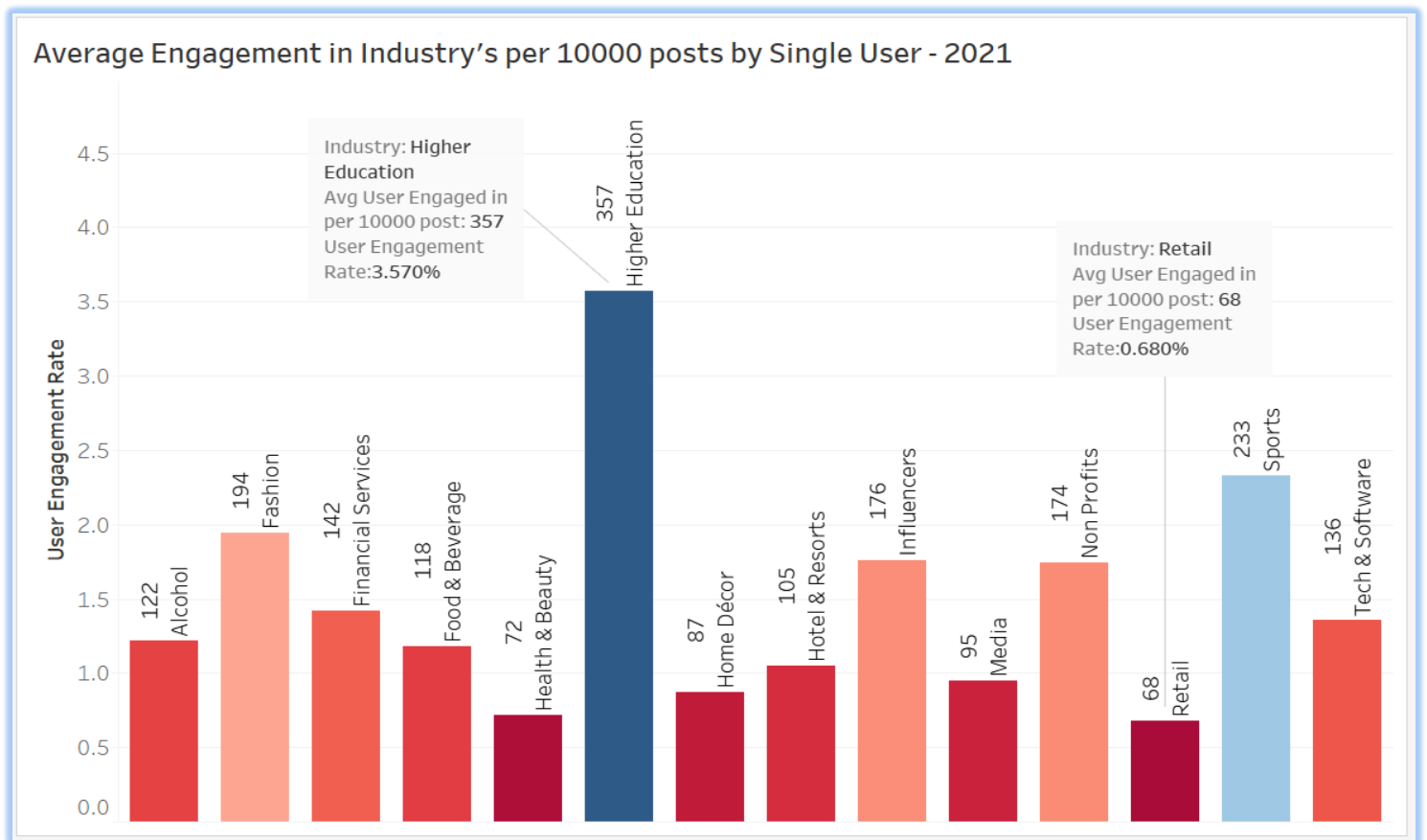
# Instagram Engagement Overview



Fig. 3 Engagement Rate of Industries in Instagram

Engagement rates of 1% to 3% are typical on Instagram. Engagement rates over 3% indicate a very engaged audience, and engagement rates below 1% indicate a less engaged audience as a whole.

## AI in Instagram

Content that violates our Community Guidelines (post, reels, story) is deleted from Instagram. However, when the AI detects some violation of laws but is not entirely sure, it may limit the content from the explore page if it's inappropriate, disrespectful, or offensive. Instagram's Community Guidelines are what the AI uses to decide what stays on the platform, and these guidelines change from country to country based on many different aspects. The

platform is designed to encourage positive expression and create a safe and healthy environment.

**AI and Decision-making**

AI teams start by constructing machine learning models to recognize what's in a photo or analyze text in posts, reels or stories. Next, the AI models are built to review and determine whether the content contains nudity, graphic content or other offensive matter. The AI models may then decide to take action on the content, such as removing it from the platform or reducing its distribution.

Sometimes the AI model cannot decide whether the content is completely violating guidelines. The content would need further review, so the AI sends it to a human reviewer for a closer look. Review teams make the final decision, and the AI model learns and improves itself from every case that it could not complete. The AI model gets better after learning from thousands of human decisions over time.

**Industry 4.0 for Instagram**

The fourth industrial revolution is also known as Industry 4.0. Industry 4.0 is about bringing digital transformation to industries that are in the manufacturing and production field. This revolution has many advantages like merging the departments, fuel efficiency, cost trimming, etc. Many things like Real-time data analysis, Artificial intelligence-backed machines, predictive analytics, and machinery with the Internet of Things can be implemented which can bring more advancement in industries. Companies started revolving and improving their performance using data in Industry Revolution 4.0. This revolution helps companies to be more profitable and increase productivity using advanced technology along

with data. In this revolution, everything should be smart and updated with technology. Industry 4.0 is more of Internet technologies in industry and changing the way of living.

Instagram itself has been a revolution and has been part to promote the revolution. People have started using social media a lot and give importance to it. Instagram plays a major role in sharing the news and making trends online. After getting success on Instagram, people started photos and videos more on the internet. Instagram can be a good platform to collect a vast amount of unstructured data. As big data analysis is getting in trend and companies want more and more data about people and their behaviour, social media platforms are getting more important as they are very good and updated sources of information. To remain a leader, Instagram has to keep updating its app interface and bring better features that can make people updated with news and check the authenticity of the information shared through it so more people believe in Instagram and give importance to it. On Instagram, more videos are shared in the form of reels which get into trend and change viewers' perspectives. Now people share trending videos and make trends through sharing videos. Instagram can serve multiple roles in spreading news, it can be used in the good and bad ways people can share good or bad things depending on the user's intentions.
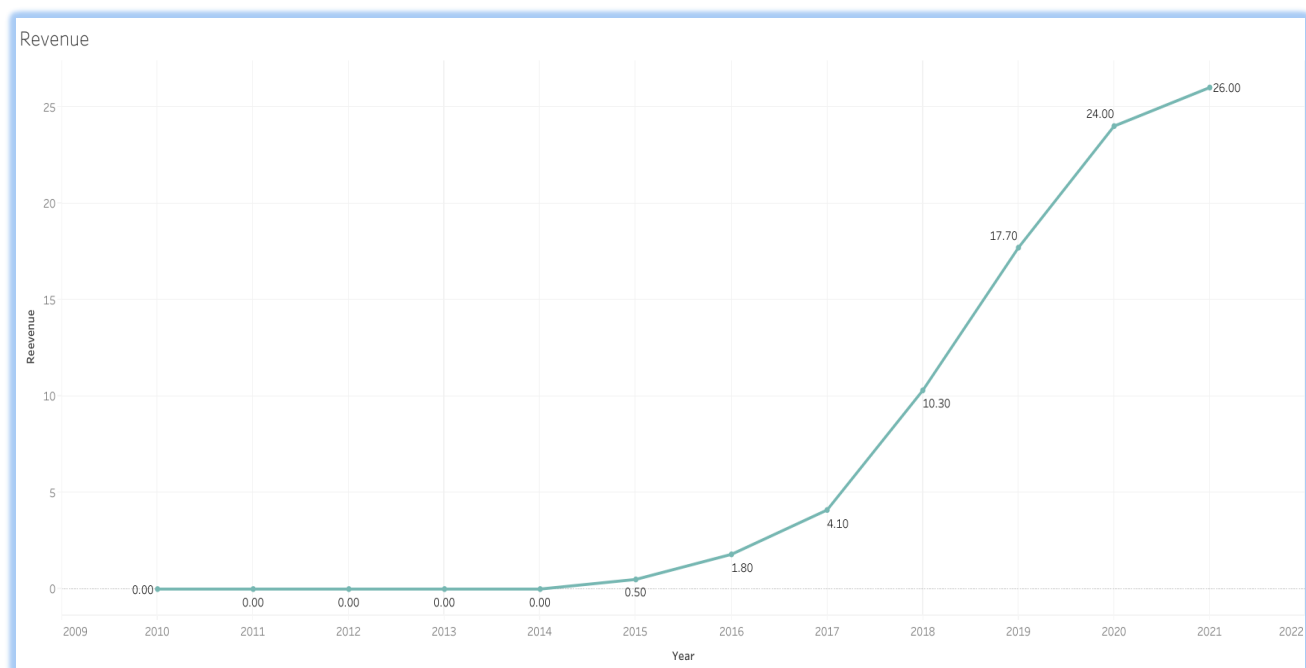
Fig 4. Total Instagram Revenue Trend Line

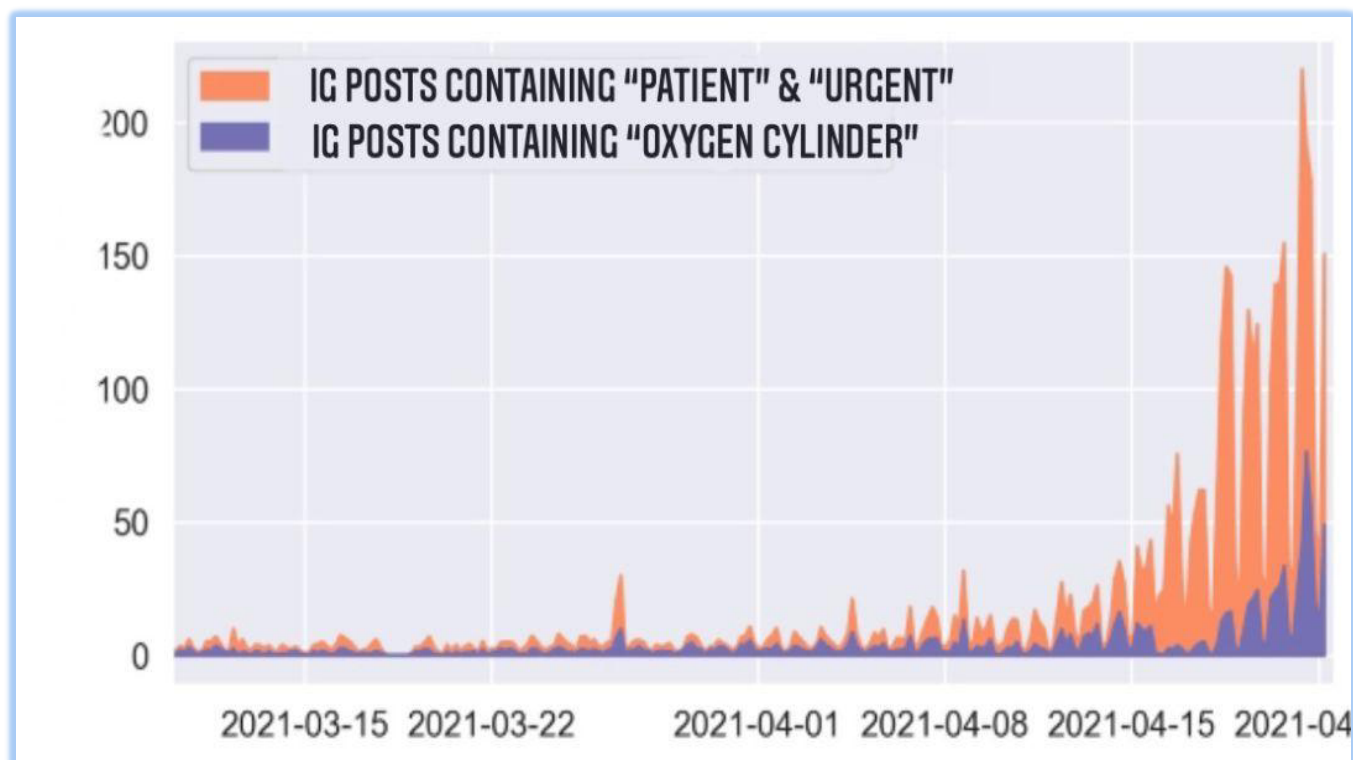**Instagram Support During Global Affairs**



Fig 5. Instagram turned to a resource sharing platform for Covid-19 requirements.

In the past decade since the inception and invention of Instagram, social media has dramatically changed our lives, for better and worse, both. Increased engagement and a sub-sequent rise in power for social media companies like Instagram has result-ed in impactful consequences, which make the users more cognizant about the rapid spread of information or news by creating awareness amongst them. In a global affair like the onset of a pandemic or an outbreak of a war, users are bound to check their social media platforms such as Instagram, Twitter and Facebook to find out what is trending and refresh their feeds for quick updates.

Instagram has made almost 8 content policy revisions since Russia invaded Ukraine last month. It has been the industry leader for making apparent use of its Big Data for crisis communication. For instance, during the ongoing Ukraine crisis, Instagram was a helpful source as numerous Ukrainian citizens found leads to find shelters, food, medicine and other essentials, while seeking refuge. Various users, ranging from photojournalists to humanitarian organizations and commoners acted as the link to help the affected victims to get to safe conditions. The company has also contended with pressure from Russian and Ukrainian authorities over the information battle about the conflict. Russia's invasion of Ukraine is by far the most internet-accessible war in history, with images from the battlefield, hacked drone surveillance, and other kinds of digital communications, making Instagram into a key source of war news.

Another instance where Instagram has acted as a helpful resource has been in times of the Covid-19 pandemic. During the second wave in India, there were strict lockdowns and citizens were in need of specific medications, and during these dire times, people found the provisions through their Instagram Feed which served as a medium to share communications

and highlights, not just in one particular area or community, but throughout the country. By making use of simple hashtags, one could easily look for all resources related to Covid-19.

Many users made use of their pages to post sensitive and relevant information on their stories that would highlight necessary information for 24 hours. Social media influencers, celebrities and politicians also got involved in the crowdsourcing effort, with some of them helping to arrange for beds and oxygen cylinders as India's daily case count spiked in early 2021. To encourage the sharing of open access content pertaining to the pandemic, distinct sections were rapidly established. Instagram in these times launched its feature called 'guides', wherein relevant educational links, guidelines/protocols, and other content was actively circulated, with rapid updates as the pandemic kept advancing.

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