

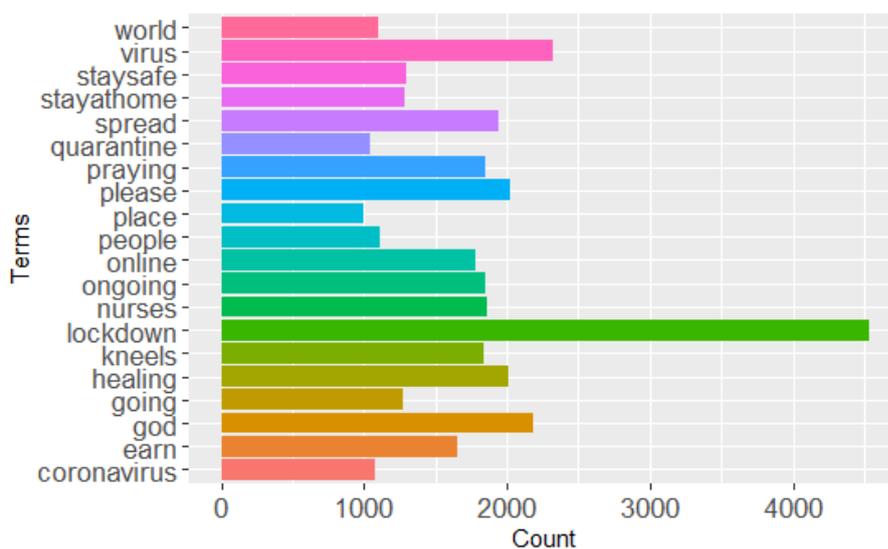
# THE IMPACT OF COVID-19 ON THE MENTAL WELL-BEING OF INDIVIDUALS

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Several months have passed since COVID-19 has continued to wreak havoc globally. While the pandemic has had a major impact on the physical health of individuals, it has also had a considerable effect on their mental well-being. With lockdowns of different extents being imposed throughout the world, this effect is becoming increasingly visible on social media platforms.

Recent tweets regarding the epidemic indicate a polarity of sentiment amongst individuals. There are a lot of tweets spreading positivity and hope, but many others which are exhibiting panic and chaos. The graph below shows the most frequent terms occurring in tweets relating to the pandemic.

*Figure 1: Frequency Plots*



Based on the frequency plot shown above, there is a common set of terms which aim to cautioning others and spreading awareness. Examples of such terms include ‘stayathome’, ‘quarantine’ and so on. Another set of terms tends to revolve around a central theme, religion.

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Words like ‘god’, ‘praying’ and ‘kneels’ tend to show how these tweets are filled with elements of religiosity.

Similarly, a *WordCloud* (see Figure 2) generated from these tweets tends to show the same trends. Again, these words are indicating a sense of concern as well as caution. The word ‘please’ has recurred a lot of times in these tweets, emphasizing the seriousness and risk associated with the spread of the virus.



Figure 2: World Cloud

### SENTIMENT ANALYSIS

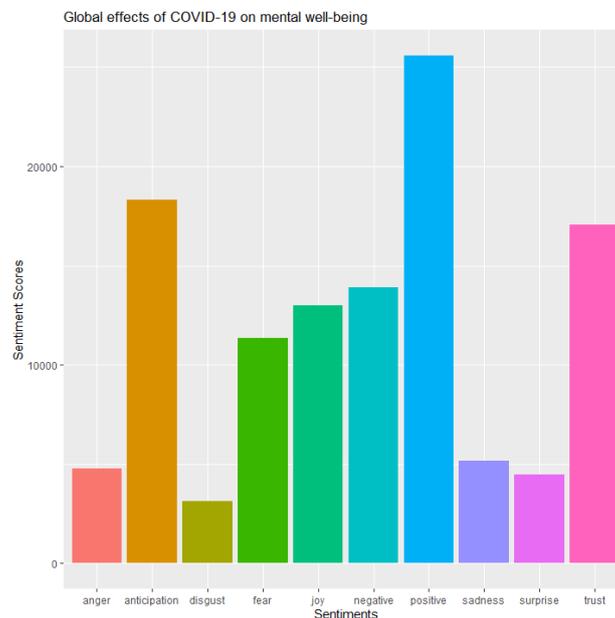


Figure 3: Sentiment Analysis

Figure 3 shows results of sentiment analysis which classifies tweets on the given parameters or expressed sentiments. It shows that the proportion of positive tweets is significantly higher than the proportion of negative tweets. Secondly, there are very few tweets containing sadness,

thereby indicating a somewhat healthy state of mind as far as the majority is concerned. Lastly, while anticipation and fear were expected to be commonly exhibited sentiments in these uncertain times, surprisingly there was a very high proportion of tweets with the element of trust in them. It is likely that this sense of trust is attributed to the religiosity associated with these tweets.

#### THE IMPACT OF COVID-19 ON THE MENTAL WELL-BEING IN PAKISTAN

Pakistan is in its early stages in dealing with the pandemic. A week has passed since a lockdown was imposed in the country. As millions of people are now required to stay indoors, they have resorted to social media platforms to voice their opinions. To understand the impact of COVID-19, tweets with the hashtag, #CoronaVirusPakistan were extracted and analyzed.

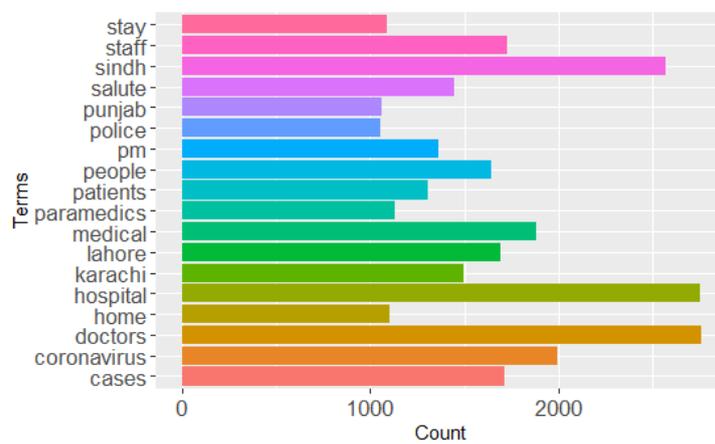


Figure 4: Frequency Chart (Pakistan)

Figure 4 shows some of the frequently occurring terms in the tweets. COVID-19 began to spread initially in Sindh. The growth in daily cases seemed exponential at first and therefore it created panic amongst a lot of individuals. Consequently, ‘Sindh’ has shown up repeatedly in tweets. Moreover, most of the positive content in these tweets was related to ‘medical’ professionals and ‘hospitals’ such as ‘doctors’, ‘staff’, ‘paramedics’ since they are the ones who are risking their lives to contain the spread of virus. The term ‘PM’ also frequently featured in the tweets. Initially, this was because not much directive was being given by the Prime Minister of Pakistan. Subsequent tweets talked about the PM’s address to the nation.



Figure 5: WordCloud – Pakistani Tweets

Figure 5 shows a *WordCloud* where the central theme in tweets by Pakistani users tends to revolve around how the spread of the virus seems to be concentrated in two regions i.e. Punjab and Sindh. It is interesting to note how the content and theme of this wordcloud is different from the global one. Firstly, there is a lot less cautioning about the awareness and the spread of the virus. Secondly, the element of religiosity, based on the visualizations produced, seems to be much lesser than the global trend. This, however, will be further probed into and investigated in a latter part of the paper.

#### SENTIMENT ANALYSIS:

To gauge the state of mental wellbeing in Pakistan at this point in time, a sentiment analysis was performed. Firstly, the tweets were classified into different sentiment dictionaries and consequently assigned with a positive or negative sentiment score. Figure 6 shows sentiment analysis which was done by classifying the tweets based on specific sentiments. This visualization shows that the proportion of positive tweets is significantly higher than the proportion of negative tweets. In sync with the global trend, very few tweets contained elements sadness, indicating a generally healthy state of mind as far as twitter users are concerned. Also, as seen globally, elements of anticipation are fairly high in these tweets. Similarly, the element of trust is again very high. At this point however, it is unclear as to why this level of trust exists. It could possibly be due to the very gradual spread of the virus, or other factors such as religiosity could also be at play, which at this point is not very apparent.

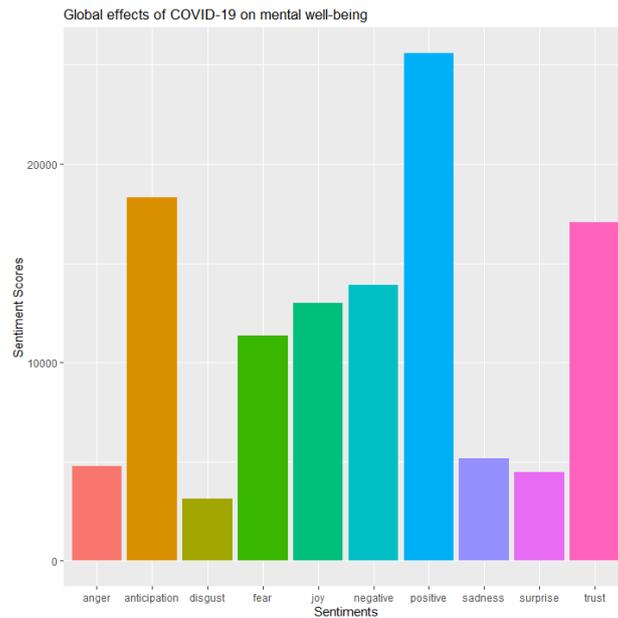


Figure 6: Sentiment Analysis – Pakistani Tweets

### RELIGION AS A COPING MECHANISM IN TIMES OF HARDSHIP

As previously stated, a relationship between the spread of the virus and an increase in religiosity was unclear at this point. Therefore, additional data was analyzed to understand what relationship exists between the two, if any at all. To analyze the impact of COVID-19 on religiosity, a separate set of tweets with ‘#prayer’ was analyzed. Analysis was done based on the location metric and the results are summarized below.

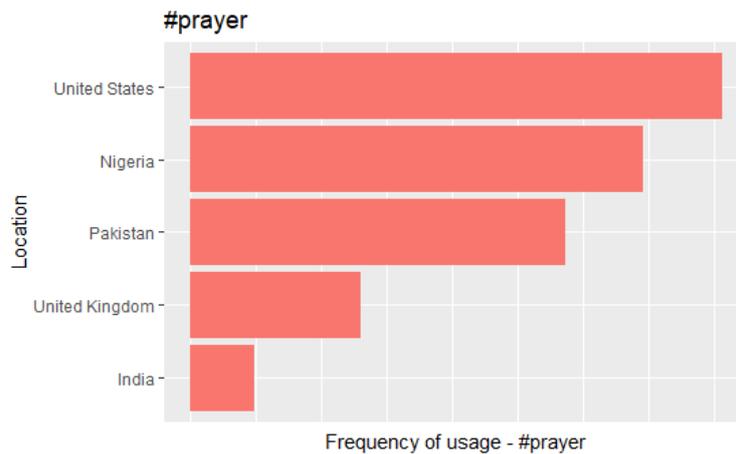


Figure 7: Religion as a Coping Mechanism

Upon analysis, it was found most of these tweets were being generated from countries like Nigeria, USA and Pakistan. While USA had been the most adversely affected country from this virus, Nigeria had become one of the first African countries to witness positive COVID-19 tests. Pakistan, however, had positive cases for quite some time and the increase in the number of daily

cases had been somewhat linear as opposed to the global trend of an exponential increase in daily cases.

It is established that religious coping results lesser anxiety and with the passage of time, people have used religion to cope with times of strain and uncertainty<sup>2</sup>. This proposition also helps us to understand a similar pattern of behavior being exhibited via these tweets. The skyrocketing increase in the use of word ‘#prayer’ and also the previously mentioned terms associated with prayer and religion reflect how once again, religion is being used as a coping mechanism in times of hardship.

## CONCLUSION

Analysis of the data has shown that at this point in time, while the global twitter population does seem to exhibit characters such as anticipation and fear, judging by the sentiment analysis, overall, the state of mental wellbeing has not been too adversely affected. Current behavior pertaining to an increased religiosity in uncertain times is in harmony with the existing literature on this matter. While this trend was not very apparent from the sentiment analysis performed on tweets from Pakistani users, when further probed, similar results of religious coping were found to be true for these users as well. It is likely that this increased religiosity has prevented COVID-19 from having a deeper impact on the mental wellbeing of individuals.

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<sup>2</sup> Ano, Gene G., and Erin B. Vasconcelles. “Religious Coping and Psychological Adjustment to Stress: A Meta-Analysis.” *Journal of Clinical Psychology*, vol. 61, no. 4, 2005, pp. 461–480., doi:10.1002/jclp.20049