COVID19: Mask Misinformation and Social Noise

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Abstract

Disinformation and misinformation are pervasive in unregulated social-media environments, which are used habitually for obtaining news. Fenn et al in 2019 stated that "Given that people tend to share interesting information to maintain social relationships or to manage their impressions, information that receives more likes may subsequently be shared more often" (Fenn, Ramsay, Kantner, Pezdek, & Abed, 2019, p.133) Recent studies also revealed that misinformation from politicians and celebrities has increased in recent years which lead to more engagement on Twitter (Brennen, et al. 2020). There has been a lot of misinformation pertaining to COVID-19 masks on Twitter. Due to the misinformation, many people might not believe in the effectiveness of masks. Even though studies have shown the effectiveness of wearing masks in different countries (Lyu and Wehby, 2020). Not wearing masks affects people's health and indirectly increases the spread of COVID-19. Studies of social noise and misinformation cases on social media are needed, specifically focusing on how social noise influences and contributes to the spread of misleading and possibly harmful messages.

Facebook on July 20th, 2020 removed a group called themselves Unmasking America that had more than 9,000 members for spreading COVID19 misinformation (Lynos 2020). The group claimed that masks obstruct the flow of oxygen and have a negative psychological impact on wearers. Facebook responded to an inquiry from the *Verge* and stated that "We have clear policies against promoting harmful misinformation about COVID 19 and have removed this group while we review the others," according to the Verge article. This is one of many groups on social media spreading lies and conspiracy theories about COVID19 and against wearing masks for various reasons. In the US, wearing masks has become a partisan issue and represents more of a political statement than a safety and health care guidance issue. Most social media platforms such as Facebook, Twitter and others are coming under pressure to encounter such negative messaging and take steps to minimize the spread of COVID19 misinformation.

The challenge faced by social media and Internet platforms is their ability to identify factual information from fake news and doctored narratives. Technical solutions such as artificial intelligence and recommendation systems could indirectly promote fake news and misinformation as such tools group users based on their shared interests. Other mechanisms used to combine human and artificial intelligence include displaying potential misleading content and asking users to rate content as trustworthy. It is also the user's responsibility to question content presented to them and rely more on reliable sources of information. However, social

circles affect the way we receive and interpret information. Relationships and psychological needs impact a user's ability to separate fact from fiction most of the time.

Zimmerman (2020) introduced the concept of Social Noise to understand user information behavior in social media. She defines Social Noise as being made up of four constructs that could help in explaining the spread of misinformation. The four constructs are: Image Curation, Relationship Management, Cultural Agency, and Conflict Engagement. Image Curation is defined as the attempt by social media users to consciously or unconsciously craft their online identity and create a personal exhibition that satisfies them (Hogan, 2010). Relationship Management refers to a user's desire to build community with individuals or groups with deep importance or high social value to them. This can be driven by a desire to be included as a member of a particular group (whether formal or informal) or to connect with and maintain good relationships with other people (Lin & Lu, 2011).

Cultural Agency on the other hand encompasses a user's understanding of their roles and responsibilities within social institutions as well as their public engagement with issues of personal importance. Cultural Agency is characterized by civic participation and is exhibited by individuals who believe in their own power to be heard and to shape culture and beliefs (Garry, 2014). Conflict Engagement on the other hand refers to the level of social conflict with which a user is comfortable.

In this paper, we examine the impact of masks misinformation and related conspiracy theories on social media users in the context of social noise. What is social noise? What is the relationship between misinformation and social noise. What are the factors that influence social media users' participation in social noise and mask misinformation? The results from the study can help both users and organizations to develop a better understanding of social noise and its role in combating the spread of misinformation. Data pertaining to COVID-19 masks wearing are collected. Face mask wearing as a measure for mitigating the spread of COVID 19 is highly contested and as a result a large amount of information generated on social media. The data for this study is collected from Twitter Hashtags. The hashtags used are Masks, Masksup, WhyIWearAMask ,WorldMaskWeek, Masksdontwork, MasksSaveLives, MasksoffAmerica & Masksoff.

The study aimed at exploring different methods to analyze face mask data generated on Twitter. Given the size of the data, it is critical to try and use efficient and effective methods in analyzing big data. The first step is to try and identify keywords or phrases indicative of social noise. One of the methods used here is topic modeling technique. Topic modeling is an unsupervised machine learning technique used to scan a large set of documents (in this case tweets) detecting keyword and phrase patterns with the goal of automatically clustering word groups and similar expressions that best characterize the original data. The similar and related words and phrases are then clustered to form meaningful topics. To achieve better results, four different topic modeling techniques are used. The methods used are Latent Dirichlet Allocation, Latent Semantic Analysis, and K-means and clustering. The results generated from the four different methods are then scanned for the presence of keywords or phrases that might represent one of

the four constructs identified by Zimmerman as a social noise. This includes image curation, relationship management, cultural agency, and conflict engagement. The results are also analyzed and checked to see if additional keyword constructs that might be identified in addition to those identified by Zimmermerman.

The preliminary results obtained in this study are presented in the figures below. Figure 1 shows the results obtained from Topic 2 which is represented as a word cloud. The word cloud shows the emphasis on the occurrences of certain work associated with the use of masks such as “wear” and “safe,”. Other keywords include “warrior.” “bright” and “maintain”. which indicates that users were urged to wear masks to maintain safety. Those who wore masks are referred to as a warrior.

Fig. 1. Topic 2 of LDA results

The LSA results are shown in the bar bar chart in Figure 2. For example, Topic 4 shown in Figure 2 appears to be about urging the community to wear masks and includes words such as “wear,” “want,” and “continue.” These words are possible indicators of Relationship Management and Image Curation as well as a Cultural Agency. Similarly, Topic 6 shown in Figure 2 appears to be about mask protection and staying healthy. It includes words such as “keep,” “make,” “protect,” and “close,” which are the words about relationship management.

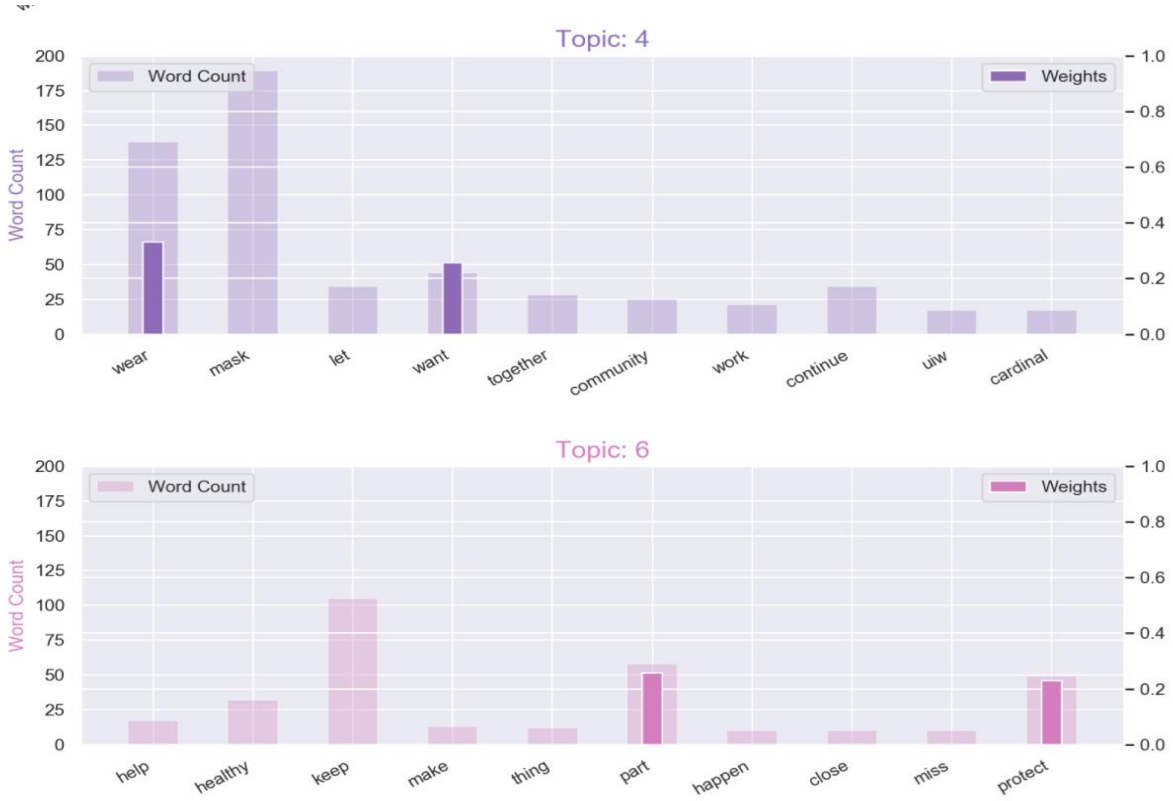

Fig.2. Topic 4 & 6 of LSA results.

The preliminary results confirm the presence of keywords that support the notion of social noise. However, to produce more meaningful results, there is a need to expand this work to include word association and natural language processing. This is an ongoing research and we hope to expand on this work and produce further publications.

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