

Gender Differences in Social Media Communication by National Leaders During the COVID-19 Pandemic

Nabamallika Dehingia, Arnab Dey, Anita Raj

Center on Gender Equity and Health, University of California San Diego, USA

Background

Since the onset of the pandemic, popular media and academic scholarship have highlighted how COVID-19 outcomes have been better in countries with women as heads of state, compared to countries led by men [1, 2]. This gender imbalance has been attributed to underlying cultural and societal factors that promote progressive and feminist styles of leadership in a country [3, 4]. Research has also shown women leaders to be preferred over men leaders in times of crisis or emergency [5]. One key reason for this is that men are more likely to be associated with traits perceived to be masculine such as “assertive,” “forceful,” and “adventurous,” which are believed to be desirable during times of success. In contrast, traits perceived to be feminine such as “courteous,” “tactful” and “understanding,” are seen as more appealing during crises [6].

Public communication and engagement play a critical role in times of crisis. However, research on understanding gender differences in political leaders’ communication styles during the current pandemic is sparse. An analysis of COVID-19-related speeches made by heads of state found that men were more likely than women to use war metaphors and generally aggressive language[7]. In this brief, recognizing the use of Twitter as a key medium of public communication by global leaders, we examine gender differences in COVID-19 related communication on Twitter by heads of state, spanning a year of the pandemic.

Our Approach

We searched for official Twitter accounts of heads of state for all countries; 62 accounts were identified that were active between January 1, 2020 and February 28, 2021. Fifty-one accounts belonged to men, and eleven belonged to women.¹ Heads of state were defined as someone who holds executive authority, such as commanding a military. Monarchal leaders

were not included unless they held executive power. Our analysis covered 42,949 tweets posted by 62 heads of state that were extracted using the official Twitter API. Prior to any analysis, all non-English tweets were translated to English using Google Translate.

We first identified tweets that referenced the pandemic. COVID-19 related tweets were identified as posts that included specific keywords (covid, ncov, coronavirus, pandemic, corona, and outbreak). Around 16 percent of the overall tweets were related to the pandemic (6,854 tweets); both men and women posted similar percentage of tweets related to COVID-19 (15 percent and 17 percent respectively). This subset of posts was used for further analysis.

We assessed characteristics of the COVID-19 related tweets with a lexicon-based method, used commonly in Twitter text analysis. A lexicon is a list of keywords that captures specific topics or themes. We categorize a tweet as a certain topic if the post includes any of the corresponding keywords for the topic. In our analysis, we examined seven unique topics that covered thematic content related to COVID-19, as well as sentiments or emotions attached to the content [Table 1]. For thematic content related to COVID-19, we examined prevalence of tweets on: a) COVID-19 surveillance (tests, number of cases, deaths etc.); b) COVID-19 practices; c) COVID-19 and the economy; and d) COVID-19 and gender (gender based violence, women’s health etc.). With respect to sentiments of the tweets, we examined: a) whether tweets included language that mentioned the need for togetherness and solidarity during this time of crisis; and b) whether tweets included empathetic language. Keywords for the topics were identified based on a previous study [8], and by reviewing a random sub-sample of tweets by two researchers experienced in social media research.

Next, we assessed the overall emotions reflected by the tweets, using a lexicon-based sentiment analysis — a popular

1. Women-led countries include Aruba, Bolivia [female President till November 2020], Finland, Serbia, Belgium [female President till October 2020], Norway, Taiwan, New Zealand, Iceland, Barbados, Moldova. For gender identities of the heads of state, we relied on available information from the media/news.

method of analyzing text sentiments. This method also relies on a set of pre-defined keywords to categorize each tweet as negative, positive, or neutral.² We used the *TextBlob* library in Python to carry out sentiment analysis, which uses a large dictionary of text classifying negative and positive words.

Table 1: Example keywords for each topic

Topics	Example Keywords
Thematic content	
COVID-19 surveillance	"cases", "deaths", "contact trace"
COVID-19 practices	"hand wash", "mask", "social distance"
COVID-19 and the economy	"economy", "trade", "business"
COVID-19 and gender	"domestic violence", "maternal", "reproductive"
Sentiments or emotions attached to content	
Unity and solidarity in responding to COVID-19 (collective efficacy)	"solidarity", "community", "together"
Empathy	"compassion", "sympathy", "sorry"

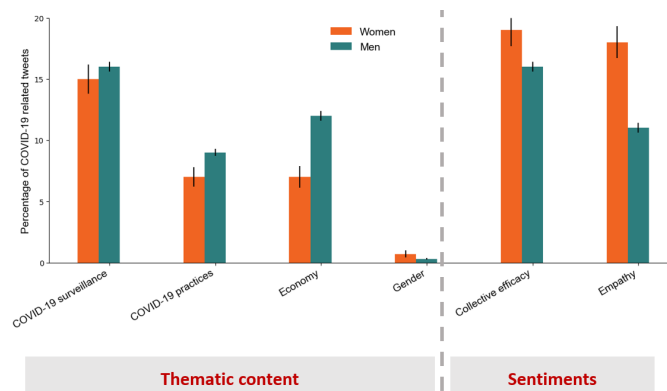
Results

We find that women started tweeting about COVID-19 earlier than men. We did not observe any overlapping patterns between the frequency of COVID-19 tweets and trends in global COVID-19 cases [Figure 1]. The initial months after COVID-19 was declared a pandemic by the World Health Organization (March–May) saw peaks in the volume of tweets on COVID-19, both for men and women leaders of the world.

Among tweets related to COVID-19, around 15 percent and 16 percent of tweets by women and men respectively were

about COVID-19 surveillance, identified by phrases such as COVID-19 cases, deaths, and contact tracing [Figure 2]. The difference was however not statistically significant ($p > 0.05$ for chi-square test). A significantly higher number of tweets by men were about COVID-19 practices such as handwashing, quarantining, and social distancing (9 percent for men vs 7 percent for women; $p < 0.05$). Men also posted more than women about the economy in the context of COVID-19 (12 percent vs 7 percent; $p < 0.05$).

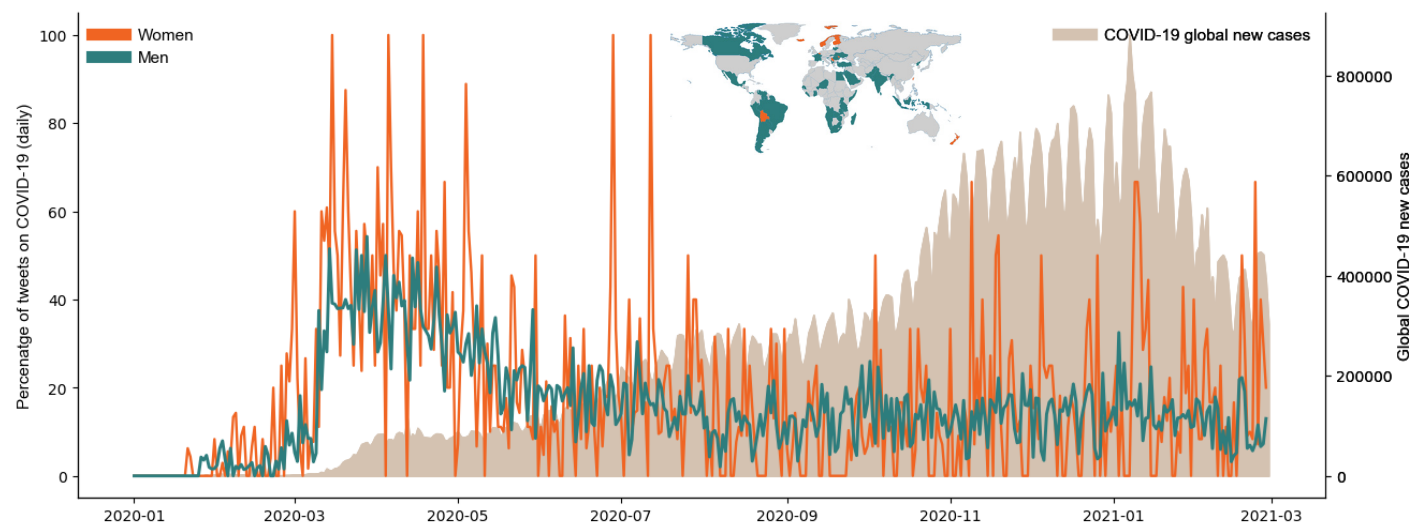
Figure 2: Percentage tweets by thematic areas



In terms of sentiments of the tweets, women were significantly more likely to use language that was empathetic, and post about the need for collective action (keywords included solidarity, neighbors, together, etc.).

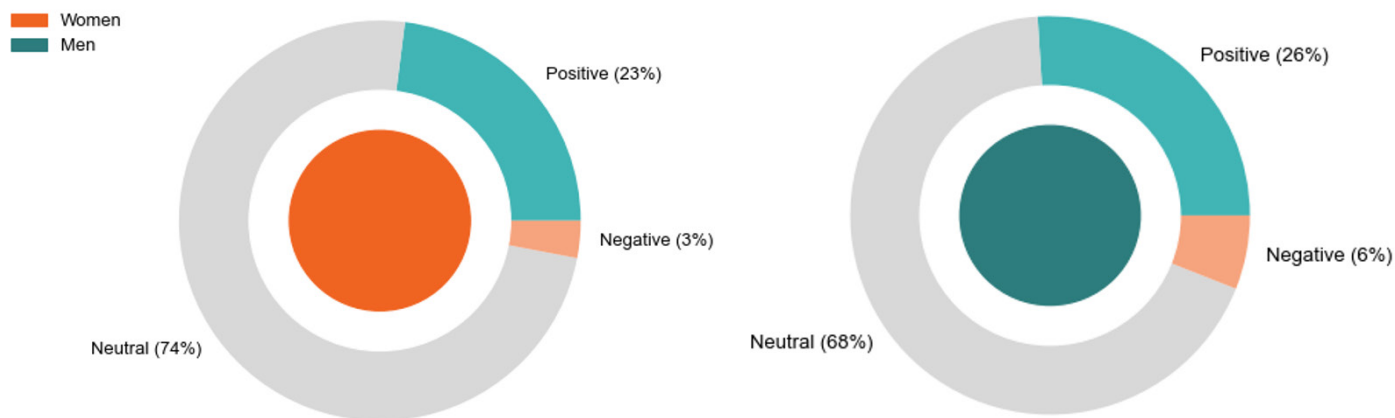
Results from sentiment analysis indicated no significant difference in the overall emotions of the tweets posted by men and women ($p > 0.05$ for a t-test). The majority of the tweets were of neutral sentiment. Around 3 percent of tweets by women had a negative sentiment whereas 6 percent tweets by men were negative [Figure 3].

Figure 1: Percentage of daily tweets by national leaders that included keywords related to COVID-19, by gender (62 countries; 11 led by women and 51 led by men). Figure also shows the daily number of new COVID-19 cases (globally).



2. Positive sentiments contain positive words or appraisals (eg. good, happy), while negative sentiments are those, which contains bad words or criticize any statement, news, expression. Neutral sentiments are neither positive nor negative.

Figure 3: Sentiment of COVID-19 related tweets by heads of states.



Implications

With this analysis, we try to highlight how men and women differ in terms of language used to communicate about a crisis. While a national leader's communication style as well as their country's COVID-19 response is likely to be influenced by a myriad of geo-political and socio-cultural factors, our findings indicate significant gender differences. Women leaders displayed greater empathy and a larger focus on collectivism and solidarity during the current crisis. In contrast, men posted more about COVID-19 surveillance, directives for COVID-19 practices, and the status of the economy in the context of the pandemic. Messaging by leaders can have a direct impact on citizens' decision making and health behavior, particularly during a time of crisis. In the current context of the pandemic, it is thus imperative that world leaders, irrespective of their gender, provide correct information to the general population, while reflecting sentiments that are empathetic and positive.

References

1. Garikipati, S. and U. Kambhampati, Leading the Fight against the Pandemic: Does Gender really matter? *Feminist Economics*, 2021: p. 1-18.
2. Wittenberg-Cox, A., What Do Countries With The Best Coronavirus Responses Have In Common? *Women Leaders*, in *Forbes*. 2020.
3. Taub, A., Why Are Women-Led Nations Doing Better With Covid-19?, in *The New York Times*. 2020.
4. Windsor, L.C., et al., Gender in the time of COVID-19: Evaluating national leadership and COVID-19 fatalities. *PloS one*, 2020. 15(12): p. e0244531.
5. Stajkovic, A., Leadership During the Pandemic: States with Women Governors Had Fewer COVID-19 Deaths. 2020: *Wisconsin School of Business*.
6. Darrah, K. The glass cliff: why women rise to leadership positions during crises. 2018 [cited 2021 10 May].
7. Dada, S., et al., Words matter: political and gender analysis of speeches made by heads of government during the COVID-19 pandemic. *BMJ global health*, 2021. 6(1): p. e003910.
8. Sutton, J., S.L. Renshaw, and C.T. Butts, COVID-19: Retransmission of official communications in an emerging pandemic. *PloS one*, 2020. 15(9): p. e0238491.

The code for the analysis can be found here:

<https://github.com/mdehingia/worldleaderstweets>