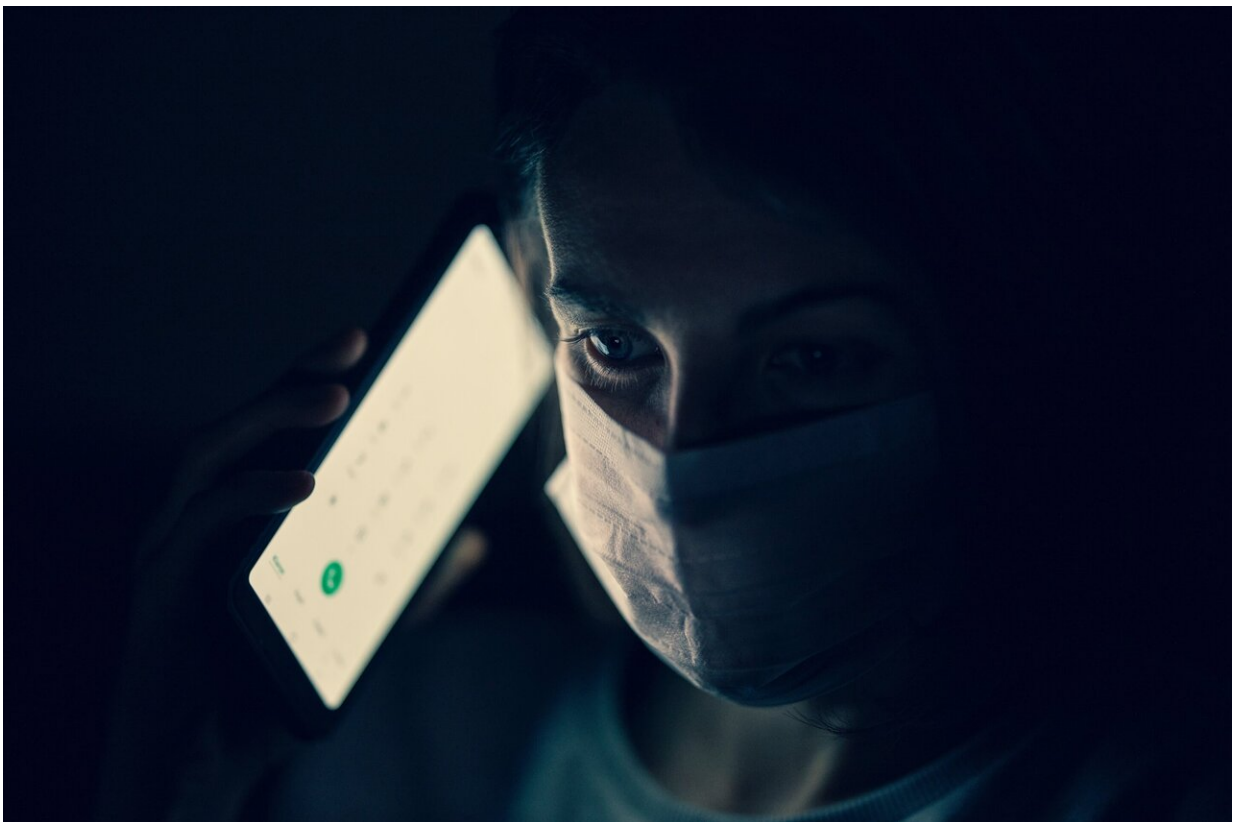


Deep dive into global Twitter posts reveals possible drop in negativity towards COVID-19 pandemic

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The devastation and distress brought by the COVID-19 pandemic to millions of lives goes without question, but trying to gauge an entire

planet's changing perception of the disease over time can seem an almost impossible task.

Yet with [some estimates](#) showing that almost 4.5bn people now use some form of social media, researchers are now tapping into this vast resource in an attempt to create a clearer picture of how the perception of this life-changing event has shifted since early 2020.

Now, publishing their findings in *Frontiers in Psychology*, scientists from Vanderbilt University in the US and the Federal Technological University of Paraná in Brazil have tapped into one enormous dataset of Twitter posts (tweets) to show that the number of negative posts about COVID-19 is dropping, especially in countries which rolled out extensive vaccination programs.

The '[COVID-19 Twitter chatter dataset](#)'—freely available online for researchers to use containing more than 1bn tweets posted during the pandemic—was the basis for this research. For the sake of accuracy in detecting negative sentiment, the researchers focused on 120m English-language posts between 1 March 2020 and June 2021.

The power of Trump

Dozens of negative words were analyzed by the team—including 'anxiety', 'idiot', 'rage' and 'horrible' – with a particular feature of this database being that it contains only original tweets, meaning it discards retweets (a re-post of an original [tweet](#)) which could skew their results.

Instead of relying on previously tested sentiment algorithms, the researchers followed the traditional procedure of counting the number of negative words.

The process of counting the number of negative words in a post, they

wrote, is much less computationally intensive than computing a sentiment score through machine learning algorithms giving their approach a "clear advantage".

"We showed that the negative perception skyrocketed in April 2020 and decreased steadily since then," said Alexander Maier, associate professor of ophthalmology and visual sciences at Vanderbilt University.

"As time progressed over the past year, we found that fewer and fewer negative emotional words were used in tweets mentioning the pandemic."

Interesting discoveries were also made in the data, such as the influence of former US president Donald Trump on Twitter's conversation around COVID-19.

"We observe the negative perception in tweets shows spikes from 2 October to 6 October 2020, probably related to the news released on 2 October that [Trump] tested positive for COVID-19. After this event, the negative perception in tweets started dropping steadily."

Surprising paradox

Furthermore, some other unexpected appeared when looking at tweets in the US. While it could be presumed that an increase in COVID-19 deaths would see an increase in negative perception, the opposite was the case.

"What the data reveal is that the increase of COVID-19 deaths in the US, after November 2020, coincides with a pronounced decrease in negative perception—a paradox," the authors wrote.

"Curiously, a similar paradox emerged when the pandemic started in the

US: the psychological distress index rapidly diminished just after a few weeks while the number of deaths remained increasing."

Attempting to understand this paradox, they analyzed the vaccination statistics of the US, the UK, and Canada; revealing a strong relation between dropping negative perception of the pandemic on Twitter and increased vaccination in those countries.

A previous study into Twitter sentiment revealed that out of 4m tweets written in English, most tweets came from the US (42.5%), India (10.8%), Canada (5.9%), and the UK (5.9%).

Impact of vaccinations

"The takeaway message from this paper is as follows: the people's negativity has dropped," they wrote. "In particular, people's negativity declined almost linearly as the vaccination rose exponentially, suggesting slow emotional adaptation to a rapidly evolving situation. For this reason, it seems reasonable to affirm that the vaccination campaign has played a crucial role in decreasing people's negativity."

However, the rise of science denialism on platforms such as Twitter towards COVID-19 vaccines and the spread of so-called 'fake news' potentially skews the data.

So is it possible that the negative perception dropping on Twitter is related to the company taking action against COVID misinformation/disinformation?

"We do not have a definitive answer to this question," Maier said. "That being said, we have found a long-term trend of negative [perception](#) that steadily declined, monitoring massive amounts of tweets and users. This decrease in the [negative perception](#) seems more suggestive of a natural

process, mirroring a genuine change of mood in the English-speaking population."

With this new knowledge, Maier and the team are considering applying similar analyses to study the emotional underpinnings of COVID-19 vaccine hesitancy.

More information: Alessandro N. Vargas et al, Negative Perception of the COVID-19 Pandemic Is Dropping: Evidence From Twitter Posts, *Frontiers in Psychology* (2021). [DOI: 10.3389/fpsyg.2021.737882](https://doi.org/10.3389/fpsyg.2021.737882)

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