

Social media key for tracking flu, Zika, depression and more, says new book

November 10 2017



Credit: University of Colorado at Boulder

Search the hashtag "flu" on Twitter and you'll find a free-flowing stream

of comments from people across the country. In 140 characters or fewer, they offer threads of information about their symptoms, how long they've been sick, whether they received a flu shot, and more.

While these tweets may seem inconsequential on their own, they collectively weave together a vast quilt of information not only about who is sick, where and when, but also about how people think and behave throughout flu season.

For researchers like Michael Paul, author of the new book *Social Monitoring for Public Health*, this type of [social media](#)-based data represents a massive opportunity to better monitor, understand and carry out public [health](#).

"If you think of social media as people sharing things in their everyday lives, then social media data is helpful for understanding how those everyday things intersect with people's health," said Paul, who is an assistant professor of information science at CU Boulder.

In 2010, when Paul and his co-author, Johns Hopkins University Associate Professor Mark Dredze, first considered the possibility of mining social media for data, Twitter was only four years old. The two wondered if people ever discussed health issues on the platform, which led them to write a paper outlining the ideas that have driven much of their work since.

Today, researchers like Paul use data from social media to monitor everything from diseases like the flu and Zika virus, to opinions like anti-vaccination sentiments and [mental health issues](#) like suicide prevention.

"The work is taken a lot more seriously now," Paul said. "It's not just this niche thing in the computer science community. It is being picked up by actual public health practitioners."

Government entities like the Center for Disease Control and Prevention do a good job of tracking infectious diseases like influenza, but researchers can forecast diseases even faster using social media data, the authors note.

"Official monitoring by government health agencies is delayed by at least one to two weeks," Paul and Dredze write in their book. "So social media has been used as a real-time supplementary source of monitoring."

With an infectious disease like the flu, an extra week or two can make a big difference for health agencies. If an outbreak is severe, agencies may need that time to increase hospital staffing, alert or close schools and advertise vaccination programs, the authors write. In some areas around the globe, like South Africa, data from Twitter can beat traditional forecasting methods by more than a month.

Not only do platforms like Twitter offer real-time results, they also provide cheaper, easier access to data than many traditional disease forecasting methods.

"I think it's had the most impact on [disease](#) surveillance and forecasting like the flu," Paul said of social media data.

However, he sees broader prospects for the field in the future, especially when it comes to understanding and monitoring mental health.

Sites like Twitter and Reddit offer users a particular combination of visibility and anonymity. People who may fear judgment or embarrassment when speaking with doctors, psychologists or loved ones can sometimes more comfortably discuss illness, depression, anger or any other sentiment with a community of strangers online.

"On Reddit, you're sort of anonymous," Paul said. "People might even create a new account just for this one community, so it's not even tied to their other Reddit identity."

As research develops, Paul believes social media data will be most useful in understanding these types of mental health issues and in creating and assessing [public health](#) campaigns.

"All the things people share about what they're doing or thinking—that they don't tell their doctors but still affect their health—are things that social [media](#) will help us understand," he said.

More information: Michael J. Paul et al. Social Monitoring for Public Health, *Synthesis Lectures on Information Concepts, Retrieval, and Services* (2017). [DOI: 10.2200/S00791ED1V01Y201707ICR060](https://doi.org/10.2200/S00791ED1V01Y201707ICR060)

Provided by University of Colorado at Boulder

Citation: Social media key for tracking flu, Zika, depression and more, says new book (2017, November 10) retrieved 15 August 2024 from <https://phys.org/news/2017-11-social-media-key-tracking-flu.html>

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