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ANALYZING PUBLIC HEALTH CONCERNS THROUGH TEXT MINING AND SOCIAL NETWORK ANALYSIS: A CASE STUDY OF COVID-19 PUBLIC OPINION ANALYSIS FROM ONLINE COMMUNITY FORUMS IN TAIWAN

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Abstract

In the past, many quantitative studies in public health relied on traditional descriptive statistical data and less on analyzing unstructured text data. However, in the era of close online communication, a huge amount of text information related to public health issues is generated in online communities every day. COVID-19 pandemic should be one of the most important public health events in Taiwan since 2020. Many people express their views and feelings on the epidemic issue in online forums. In this research, the aim is to apply text mining and social network analysis to analyze the sentiment and topics related to COVID-19 in PTT, the most popular online community forum of social media in Taiwan. We used topic modeling to extract COVID-19 related topics and keywords, as well as sentiment analysis to explore the attitudes and emotional tendencies of the online community towards various issues, and data visualization methods such as word clouds and network graphs to present the research results.

Additionally, we plan to conduct cluster analysis on the authors and accounts of the articles to determine if there is a phenomenon of specific groups influencing the COVID-19 public opinion. The expected outcome of this research is to provide a reference for the implementation of public health policies and to promote the value of sentiment analysis in public health management.

After conducting text mining analysis on the articles published in the COVID-19 forum of PTT in 2021, especially the period of Taiwan's COVID-19 escalation from June to August 2021. The overall discussion volume and sentiment can be roughly divided into three peaks. The first peak started to rise in mid-May and reached its peak in mid-June. The second peak occurred in mid-July, and the negative sentiment was significantly higher than the positive sentiment. The last peak occurred in late August and had the highest discussion volume among the three peaks. In each peak of sentiment, negative sentiment was mostly higher than positive sentiment. Our suggestion is to focus on the following research results that Public health managers can use daily text mining results by our way to assist in judging public reactions under current epidemic policies, and the positive and negative sentiment levels in sentiment analysis can reflect whether policies may lead to a crisis outbreak. Observing the subsequent changes in sentiment can avoid affecting the implementation effectiveness of the next policy or causing a more serious public opinion crisis. This research hopes to promote the value of sentiment analysis in public health management by visualizing the complex online forum opinions into easy-to-understand charts, which can serve as a reference for decision-makers in judging online public opinion.

Keywords

COVID-19, Text Mining, Social Network Analysis, Sentiment Analysis, Topic Model