2022

Geographic Correlation of Mental Health Google Search Terms and COVID-19 Fatality Rates

Sofia Stirpe
Binghamton University--SUNY

Geographic Correlation of Fear-Related Google Search Terms and COVID-19 Fatality Rates

Sofia Stirpe

Source Project Pandemic! Stream, Binghamton University, Binghamton NY 13902

Introduction

Not only have COVID-19 social distancing and quarantining measures transformed today's society, but they have also exacerbated the youth mental health crisis in the United States. For example, researchers compared data from March to April of 2019 with data from the same period in 2020, finding that there was a substantial increase in self-harm patients in 2020 within psychiatric emergency service locations in ten countries (Plener, 2021).

Numerous studies have utilized Google Trends to assess the popularity of keywords during the COVID-19 Pandemic. For instance, Halford et al. utilized keywords such as "kill myself," "I lost my job," and "anxiety" to understand the influence of the COVID-19 Pandemic on Americans' mental health. Halford et al. discovered that searches related to financial difficulty, general mental health, and help-seeking behaviors increased, while suicide-related search terms were lower than expected, meaning that Americans were likely reaching out to crisis services due to the immediate stressors of isolation and job loss instead of focusing on their long-term consequences (Halford et al., 2020).

The research objective of this experiment is to assess individuals' responses to unprecedented and fearful situations through examining the psychological effects of the COVID-19 Pandemic on Americans. Individuals' attention to mental health keywords can serve as a reflection of potential increased drug abuse, mental health crises, and other COVID-19 related issues.

Methodology

This study correlates various mental health Google search terms with COVID-19 fatality rates in the United States. Google Trends is an anonymized resource, providing largely unfiltered search requests made to Google across many regions. Analyzing this data, researchers can draw conclusions concerning public interest in a topic (Google, 2022).

In this study, the following time series are analyzed: (1) Daily Google Trends data from 3/20/2020 to 9/20/2020 in the United States and (2) Daily COVID-19 deaths from the Centers for Disease and Control (CDC) over the same period, in the United States.

In addition, hotline-related and therapy-related queries were utilized as Google search terms. These include the terms "Help Hotline," "Abuse Hotline," "Crisis Text Line," and "Therapy Near Me." For this study, a cross correlation analysis was conducted utilizing the Pearson correlation coefficient (PCC) with time series data. The PCC is a value between -1 and 1 that measures the strength of a linear association between two variables. Fluctuations in Google search term data were graphically analyzed over both time series in the context of social, economic, and political events occurring during the time period.
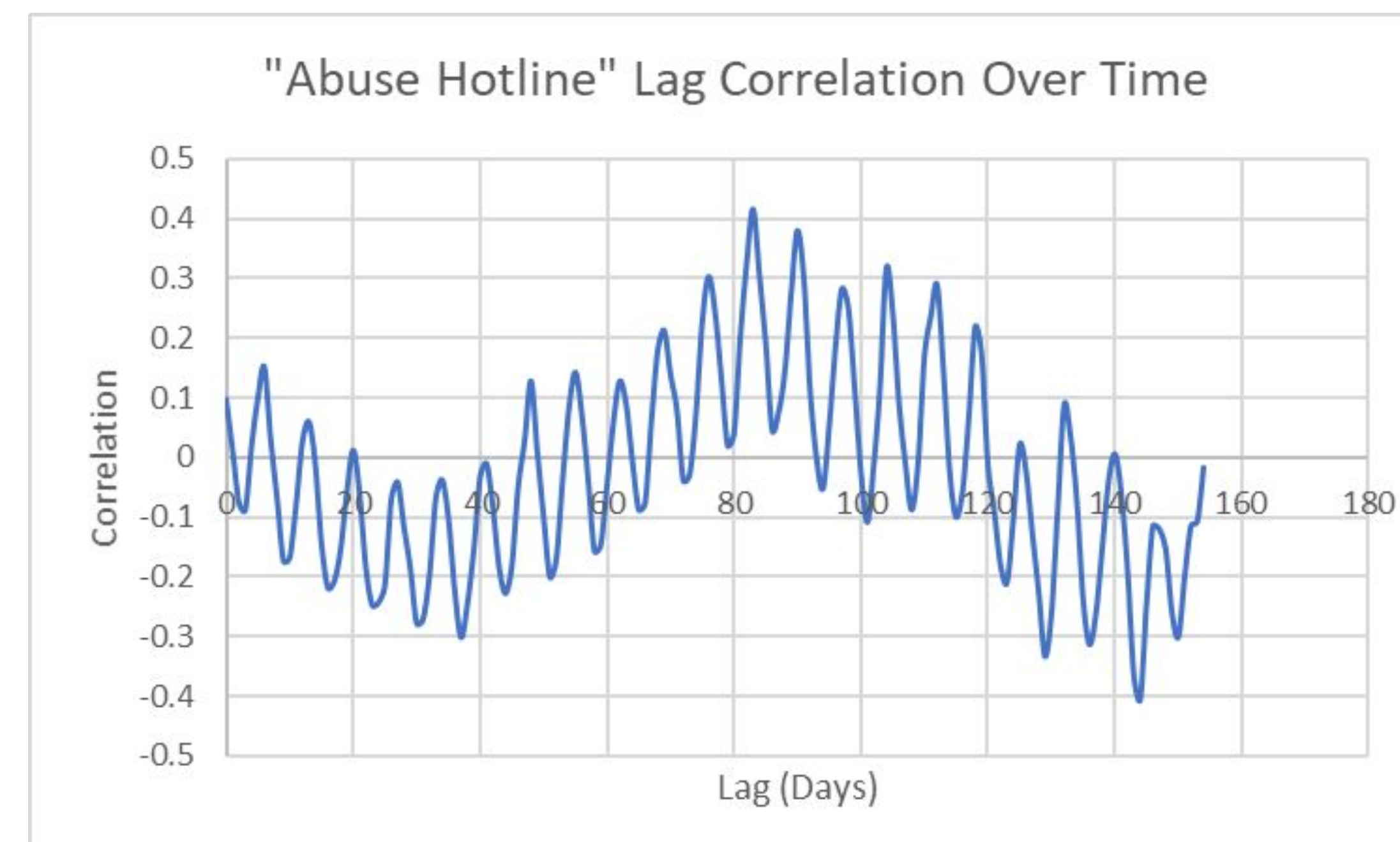
Results

Figure 1. Cross correlations with lag for the Google Search Term "Abuse Hotline"
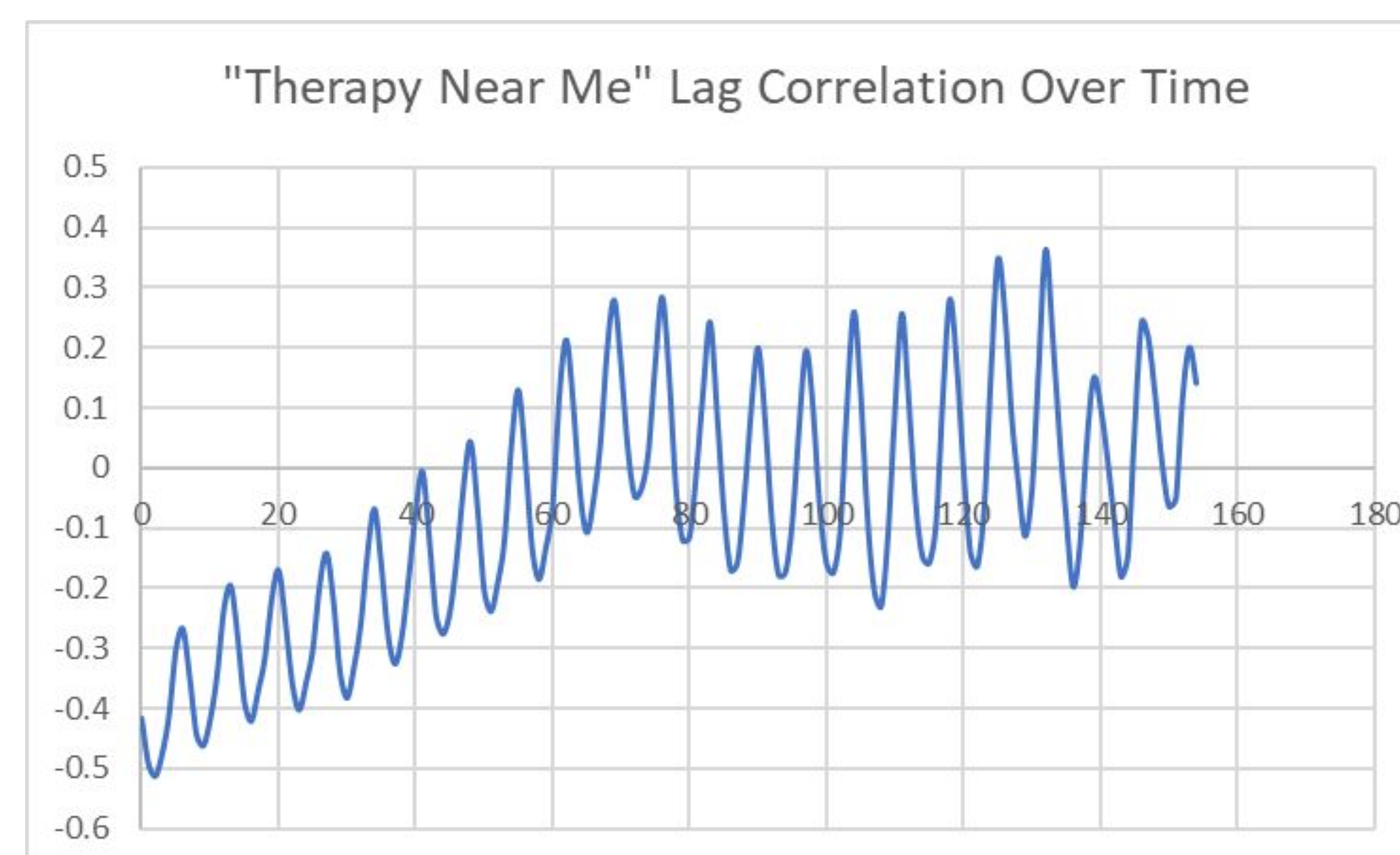

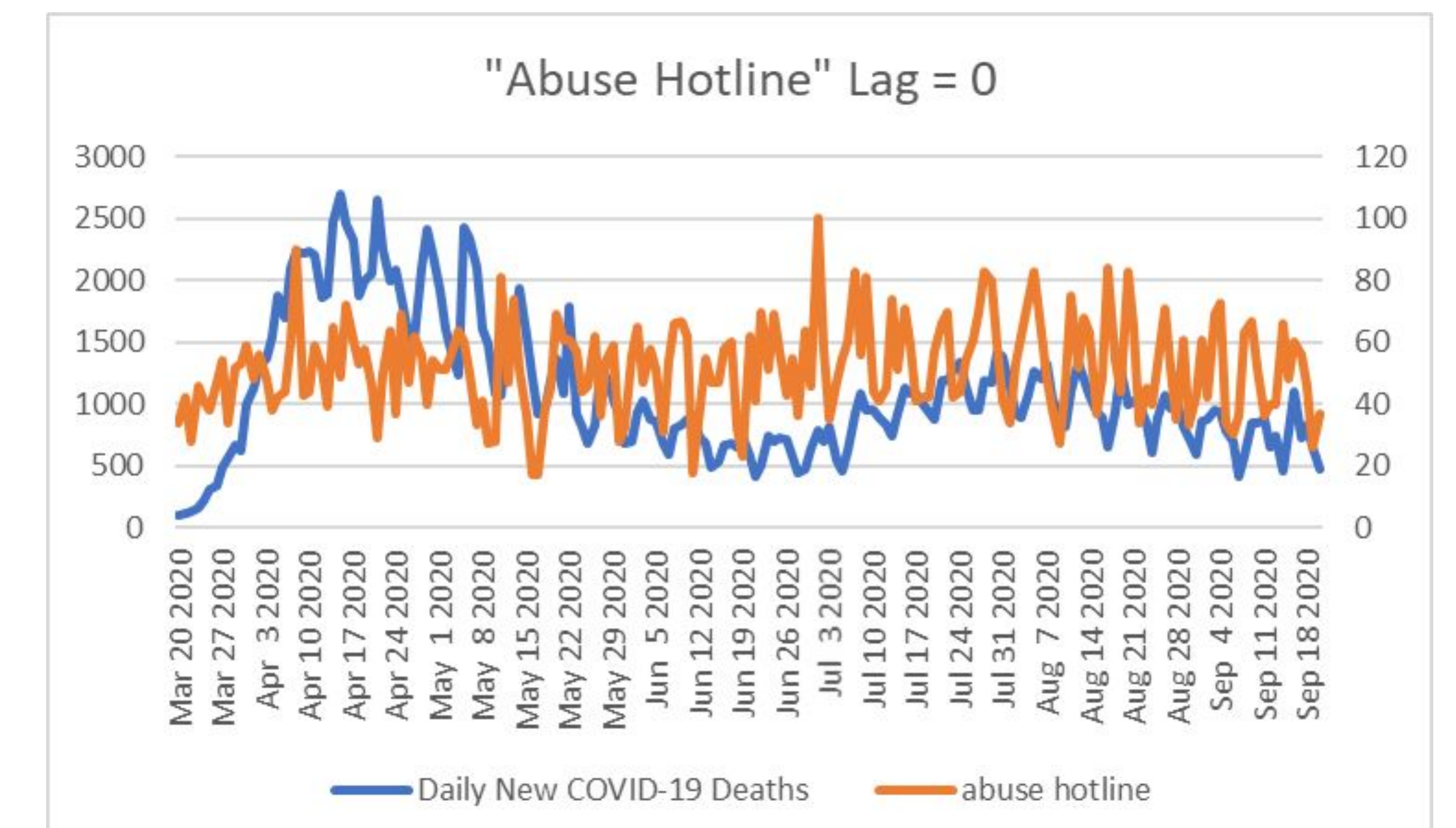Figure 3. Cross correlations with lag for the Google Search Term "Therapy Near Me"

Figure 2. United States COVID-19 fatalities for the Google search term "Abuse Hotline" at lag = 0 days
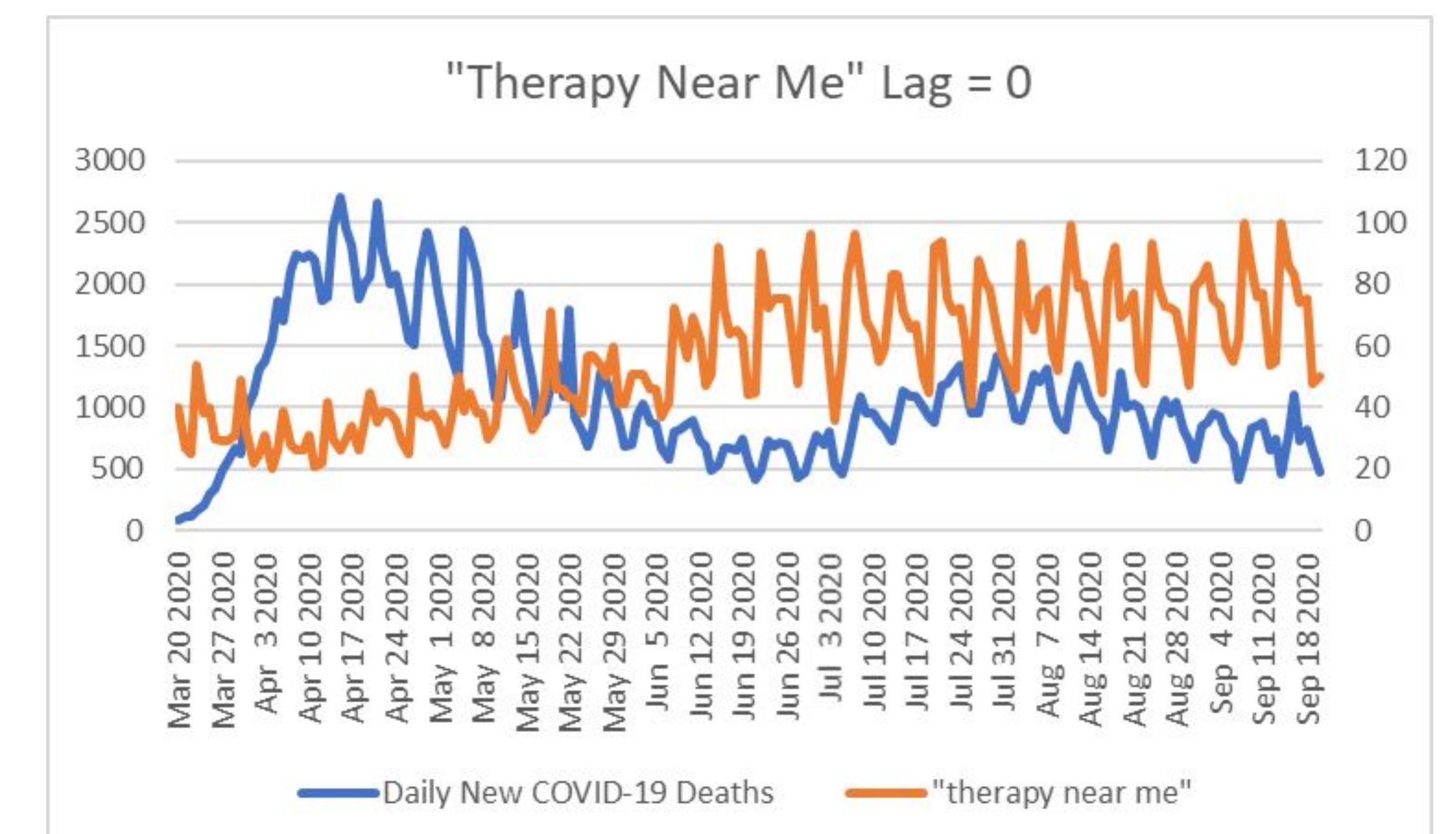

Figure 4. United States COVID-19 fatalities for the Google search term "Therapy Near Me" at lag = 0 days

Discussion

For the Google search term "Abuse Hotline," there is a positive correlation of 0.42, meaning that the popularity in the keyword "Abuse Hotline" was most correlated with COVID-19 deaths eighty three days after COVID-19 deaths commenced on March 20th, 2022. This could reflect a moderate reliance on hotlines as sources of support as the COVID-19 Pandemic goes on. This could also be a result of abuse situations aggravated by long-term quarantine.

For the Google search term "Therapy Near Me," there is a negative correlation of -0.51, indicating that the popularity of the query "Therapy Near Me" is most closely correlated with COVID-19 deaths two days prior to COVID-19 deaths commencing on March 20th, 2022. This can illustrate the anxious response of society seeking therapeutic health in reaction to news or other media events, underscoring attention to immediate coronavirus-related stressors.

References

Centers for Disease Control and Prevention. (n.d.). Trends in Number of COVID-19 Cases and Deaths in the US Reported to CDC, by State/Territory. COVID Data Tracker. Retrieved March 28, 2022, from https://covid.cdc.gov/covid-data-tracker/#trends_dailydeaths

Google. (n.d.). FAQ about Google Trends data. Google Trends Help. Retrieved March 28, 2022, from https://support.google.com/trends/answer/4365533?hl=en

Halford, E. A., Lake, A. M., & Gould, M. S. (2020). Google searches for suicide and suicide risk factors in the early stages of the COVID-19 pandemic. PLoS One, 15(7), 15-7. http://doi.org/10.1371/journal.pone.0236777

Plener, P. L. (2021). COVID-19 and Nonsuicidal Self-Injury: The Pandemic's Influence on an Adolescent Epidemic. American Journal of Public Health, 111(2), 195-196.