Introduction to Special Issue on Financial Market and Healthcare in COVID-19 Pandemic: From the Perspective of Data Science

Wen Long² · Wikil Kwak¹ · Cheng-Few Lee³

Published online: 10 February 2022
© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2022

The outbreak of COVID-19 disease has become a global pandemic as announced by the World Health Organization (WHO) on March 12, 2020. In the last two years, the COVID-19 pandemic has hit over 200 countries and regions around the world. As of this writing, many parts of the world are still shaking, with over 330 million cases, and a cumulative death toll of 5.5 million.

COVID-19 has led to a global public health emergency and put health organizations worldwide on high alert. The nature of the disease saw several strategies to curb its spread rolled out. These strategies included closing of businesses and borders, restriction of movements and working from home, mask mandate among others. It’s inevitable that the economic costs are also enormous. The pandemic has caused the long-term economic shutdown and higher likelihood of economic insecurity, which resulted in severe volatility and prolonged downturns for financial market. The disruption to economic activity, as the result of both the human toll of the pandemic, as well as changes in human behavior, some of which were mandated by government policy, has cost untold amounts in almost every corner of the globe.

When we are now mourning the loss of our beloved ones as well as the loss of that certainty that we used to have about the ways of our lives, the pandemic still remains hard to predictable in terms of spread, life cycle and consequences. Even though it is

Wen Long
longwen@ucas.ac.cn

Wikil Kwak
wkwak@unomaha.edu

Cheng-Few Lee
cflee@business.rutgers.edu

¹ School of Accounting, College of Business Administration, University of Nebraska, Mammel Hall 370K, 67th & Pine Street, Omaha, NE 68182, USA
² School of Economics and Management, University of Chinese Academy of Sciences, Beijing 100190, People’s Republic of China
³ Rutgers Business School, Rutgers University, Room 5188, 100 Rockefeller Road, Piscataway, NJ 08854, USA
the one thing that everyone has been talking about in the past two years, we still have a myriad of unanswered questions, and most importantly, we are still very uncertain and apprehensive of the shape of things to come.

This special issue has been motivated exactly by this state of things, which can be expected to be resolved by abundant first-hand data and scientific modeling that can help us understand and learn from what we have experienced and guide us in developing informed expectations and actions. Consequently, the goal of this special issue is to offer enlightening researches that comprehensively apply interdisciplinary techniques including statistics, artificial intelligence, optimization and big data modeling for healthcare, social event and financial market analysis in the pandemic, which is expected to provide effective tool for comprehending and forecasting the spread and influence of the pandemic from the perspective of data science. We believe that the special issue will provide a platform to share the most recent ideas and innovations across the above sectors and enhance interdisciplinary research collaboration.

The nine papers contained herein are international in scope and broad in topic, and will provide a comprehensive view of the state of the art of COVID-19 research and important contributions to the study of the economic and social outcomes of the pandemic.

Several studies in this special issue provide confirmation and support for applying statistic models and data mining techniques to evaluate the situation of the pandemic and forecast the recovery cases, suspected patients or patient cases. These research samples have widely involved in some countries, including Pakistan, India, Egypt, United Kingdom, Canada, etc. This special issue also discusses the effects of temperature and humidity on the transmission of SARS-CoV-2 and the Spread Covid-19, and the analysis revealed that both the temperature and humidity inversely affected the daily number of deaths and new cases of COVID-19.

The studies in this special issue also highlight the negative impact of the pandemic to the financial market. The study based on a dataset of South Asian Association for Regional Cooperation (SAARC) Countries confirms that SAARC Region significantly reacts to Mad COVID-19 with falling markets and rising volatility. However, this effect is heterogeneous. Another research shows market sentiments towards the pandemic have significantly impacted the price differences, and the stock performance across sectors is characterized by the level of digital intensity, with the most digitally advanced sectors demonstrating resilience against negative market sentiments on the pandemic.

The pandemic had caused great loss of lives and disrupted the way of lives in many ways. The need to significantly modify both personal lives and the operation of workplaces, schools, and social interactions created unprecedented disruptions that wreaked havoc for many and elicited a variety of emotional responses, including increases in anxiety, depression, and social isolation. The individual’s sentiment polarization has been investigated based on tweets related to the pandemic posted on Twitter, and showed that mental health issues, lack of supplies were the direct effects of the pandemic, which can help governments combat the consequences of COVID-19 like mental health issues, lack of supplies such as food, and also gauge the effectiveness or the reach of their guidelines.

It should be noted, of course, that the COVID-19 pandemic is still ongoing, and the long-term consequences are not yet clear. But we have seen the world’s major
economies are recovering from the pandemic. There is still a long way to go, however, we believe our challenging and creative work will definitely contribute to conquer the COVID-19 and recover our normal lifeway. Much remains to be learned.

**Author contributions** All authors have equal contributions.

**Funding** Not applicable.

**Availability of data and material** Not applicable.

**Code availability** Not applicable.

**Declarations**

**Conflict of interest** Authors declare that they have no conflict of interest.

**Ethics approval** Data has been collected from reliable sources. We follow all the ethical rules.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.