

**Contentious Politics of Pandemics:
Comparison of Telegram Networks of the Black Death 1900-1903 and Twitter Network of COVID19 2020**

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Abstract This study examines comparison of communication networks of two pandemic cases, Bubonic plague in 1900-1904 and the coronavirus disease(COVID-19) in 2020. During the Bubonic plague in San Francisco in 1900-1903, state, federal and health authorities have shown differences in coping with the highly fatal infectious disease by political position. Compared to the current COVID-19 pandemic, San Francisco plague was smaller in its infection circle, yet its extreme fatality led to highly polarized politics over the infectious. This study compares political polarization occurred in the bubonic plague pandemic and the Coronavirus outbreak using social network analysis in a historical perspective. The polarized discourse dynamics among state, federal government and health authorities that are commonly found in both cases. Empirical data of bubonic plague networks are based on San Francisco's telegram data. To measure political polarization with COVID-19, the study uses the twitter data on COVID-19 response from the state, the federal government, and the health authorities accounts from January to December 2020. Utilizing textual data of 20th century pandemic and 21st century COVID-19, the study aims to capture the pattern of polarized communication around the infectious disease in both pandemics. This study provides a method to extract common pattern of polarization with different data from two distinct pandemics. The discovery of common network patterns will provide further understanding of how bureaucratic and political dynamics around the pandemic interact with unfolding trajectories of the infectious.

Keywords: pandemic, network analysis, political polarization, disease response

Introduction

As the coronavirus has prolonged to be a major threat to public health at a global level, different reactions on the disease and quarantine policies have emerged. Democrats tend to focus on severity of the disease, whereas Republicans place greater importance on economic issues. Democrats and Republicans have shown different pattern of disease response in congress and political discourse(Green, 2020). Following previous research on congressional discourse polarization(Gentzkow, 2019), coronavirus continuously exacerbates political polarization among political parties. The same phenomenon occurs not only in politicians but also in the public opinion. Studies show that corona virus has split public opinion of disease response and recognition in United States(Milligan, 2020). Polarized public opinion covers a wide range of topics. Not only political opinions, social distancing, lock-down and disease policies of government are main topics of public. The evaluation of government policies differed depending on the parties preferred(Green, 2020). Media also put more emphasis on different topics depending on their political tendencies(Aleem, 2020). Polarized opinions also lead to a divided evaluation on scientists in charge of responding to coronavirus(Funk et al, 2020).

This study investigates the communication technology's role in the process of discourse making around the infectious disease. I compare two pandemic cases, Bubonic plague in 1900-1904 in San Francisco and the coronavirus in 2020. By comparing telegram data of 20th century pandemic and twitter data of 21st century pandemic, the study aims to explain the political polarization of the two pandemics with 120 years gap. Through comparisons of past and present pandemics data, this study examines how pandemic debates may have been shaped by the particularities of the available communication technology and depicts different structures of discourse during the epidemiological crises.

Polarized reaction along with an epidemic is not new. For example, the bubonic plague had the three iterations of global epidemic crises. Especially in the third wave (1850-1930), existence of the black plague caused a wide range of polarized opinions due to its fatality and contagious characteristics. Among many cities and countries, one of the most polarized debates on the black plague occurred in San Francisco. As a port city that connects the Pacific Ocean and the U.S continents, San Francisco had an important economic position. Since the first outbreak in January 1900, the San Francisco community has been extremely polarized over the plague from 1900 to 1904. State politicians and local commercial groups strongly argued against the existence of the bubonic plague. From the perspective of politicians and businessman, the bubonic plague was the worst enemy for city's reputation and economic growth. Concerns led to polarized debate over the existence of the bubonic plague. Polarization of the community has occurred in a multi-dimensional contexts: bureaucratic dispute, public health, economy, media and race. The governor, the San Francisco's media and the business community have been at odds with city and federal health authorities, denying the existence of the disease altogether, putting the local community in a severe confrontation (Kalisch, 1972). Power struggle between bureaucratic organization of city, federal, and state led to segregated disease response and recognition (Chase, 2003; Barde, 2003). Previous research illustrates polarization and conflicts of San Francisco mostly by qualitative methodology. Documents, letters, reports, and newspaper articles were used as qualitative material, not in perspective of quantitative, especially in network analysis. In case of political polarization, social network analysis is an efficient tool for identifying polarization (Butters et al, 2020 ; Eveland, 2013). From network perspective, archived documents of San Francisco's bubonic plague telegram data between politicians and health authorities are efficient data that shows political polarization during the pandemic.

This study examines and compares the dynamics among major agents in two pandemic cases through network analysis. Political, business, medical and media figures from the San Francisco during the bubonic plague pandemic and coronavirus pandemic are included in network. By examining the communication network, this study depicts the polarized features of disease response and public opinion at each period.

Data and Methods

To measure polarization of two pandemic cases, the study compares telegram data from 1900-1904 and twitter data of 2020. Telegram data are from annual report of the surgeon general of the public health service of the United States, 1900-1903. 565 telegram messages between city, state, federal and health authorities are collected. To compare with telegram data, twitter data from state and federal politicians and health authorities during the coronavirus pandemic in 2020 are also used in the analysis. The study collected total number of 650,714 tweets using Python package Twint 2.1.20, among them 146,248 of tweets were coronavirus related tweets.

The study focuses on communication between political and health agents during both pandemics. In case of telegram, relations between addresser and recipient are used. In twitter data, relations between tweet-retweet are included. By comparing relations of sender and receiver in telegram and twitter data, study extracted polarized communication in both pandemics.

Result and Implications

The study found common polarized pattern in both pandemics. Depending on the political position, polarization of the intensity, contents and structure of communication were observed. Fig 1 shows polarized relations between politicians and health agents 120 years ago. The pattern of sending and receiving telegrams was clearly separated by political side. The same phenomenon was repeated 120 years later in twitter space. Fig 2 shows polarized tweet-retweet relations between democrats and republican agents. These results indicate that infectious diseases are politicized by political context in both pandemics.

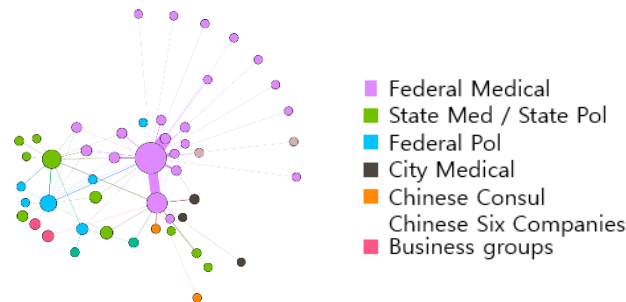


Fig 1. Telegram data in San Francisco, 1900-1903

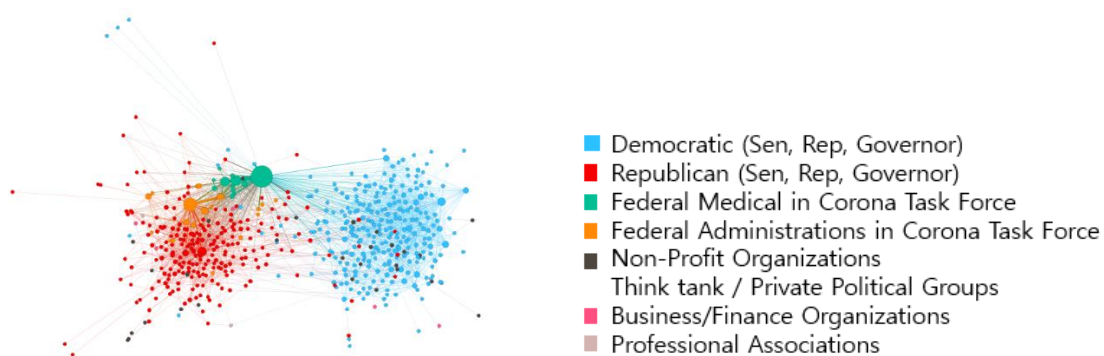


Fig 2. Retweet relations in twitter, 2020

References

- Kalisch, P. (1972). The Black Death in Chinatown: Plague and Politics in San Francisco 1900-1904. *Arizona and the West*, 14(2), 113-136.
- Gentzkow, Matthew & Shapiro, Jesse & Taddy, Matt. (2019). Measuring Group Differences in High-Dimensional Choices: Method and Application to Congressional Speech. *Econometrica*. 87. 1307-1340. 10.3982/ECTA16566.
- Robert Barde, Prelude to the Plague: Public Health and Politics at America's Pacific Gateway, 1899, *Journal of the History of Medicine and Allied Sciences*, Volume 58, Issue 2, April 2003, Pages 153–186, <https://doi.org/10.1093/jhmas/58.2.153>
- Milligan, S. (2020). The political divide over the coronavirus. *US News & World Report*. <https://www.usnews.com/news/politics/articles/2020-03-18/the-politicaldivide-over-the-coronavirus>

Funk, C., Kennedy, B., & Johnson, C. (2020, May 21). Trust in medical scientists has grown in U.S., but mainly among Democrats. Pew Research Center Science & Society. <https://www.pewresearch.org/science/2020/05/21/trust-in-medicalscientists-has-grown-in-u-s-but-mainly-among-democrats/>

Green, Jon & Edgerton, Jared & Naftel, Daniel & Shoub, Kelsey & Cranmer, Skyler. (2020). Elusive consensus: Polarization in elite communication on the COVID-19 pandemic. *Science Advances*. 6. eabc2717. 10.1126/sciadv.abc2717.

Aleem, Zeeshan. 2020. A new poll shows a startling partisan divide on the dangers of the coronavirus. *Vox*. March 15. <https://www.vox.com/2020/3/15/21180506/coronavirus-poll-democrats-republicans-trump>.

Butters, R. & Hare, C. (2020) Polarized Networks? New Evidence on American Voters' Political Discussion Networks. *Polit Behav*. <https://doi.org/10.1007/s11109-020-09647-w>

Eveland, William & Kleinman, Steven. (2013). Comparing General and Political Discussion Networks Within Voluntary Organizations Using Social Network Analysis. *Political Behavior*. 35. 10.1007/s11109-011-9187-4.

Chase M. *The Barbary Plague: The Black Death in Victorian San Francisco*. New York: Random House, 2003:51.