A Comparative Study of the Effects of the COVID-19 Vaccine on Global Politics in China and the United States

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

Shivani Das

Spring, 2021

On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Signature _____Shivani Das_____ Date _05/12/2021_____

Shivani Das

Approved _____ Date ___05/12/2021_____

Dr. Tsai-Hsuan Ku, Department of Engineering and Society

STS Prospectus

The sociotechnical component of the COVID-19 pandemic involves the public perception of a potential COVID-19 vaccine. My STS topic is the global political impact of a potential vaccine through the lens of a comparative study of China and the US. I want to specifically examine vaccine development, diplomacy, cultural differences, and the deployment and distribution strategies of both countries. This topic is perfect for STS investigation due to its complicated nature, global impact, and wide-scale repercussions. The COVID-19 vaccine is the ultimate example of a wicked problem since the solution of the problem is dependent upon how the problem is framed, stakeholders have radically different world views and different frames for understanding the problem, the constraints that the problem is subject to and the resources needed to solve it are constantly changing, and the problem will never be solved definitely.

Research Questions

In order to find the proper scope for investigating my STS prospectus, I came up with some questions that could help me frame the problem: *How does the response to the COVID-19 vaccine vary among various social groups in China and the US? Why should we not accept the claim that a COVID-19 vaccine will be the magic bullet? How do responses vary between countries with strict and loose regulations such as China and the United States?*

Literature Review

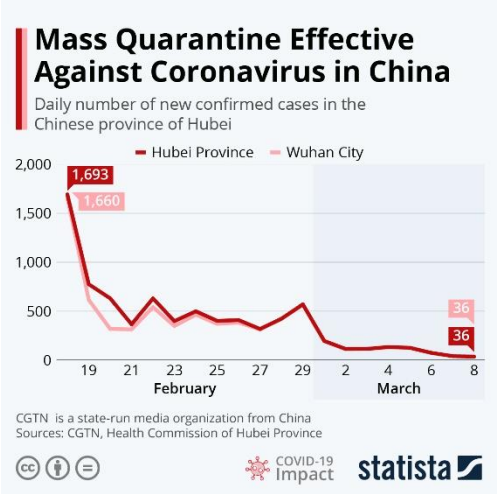
By conducting a literature review, I was able to gain additional insight into the effect of a potential COVID-19 vaccine on global politics. I began by researching the public perception of a potential COVID-19 vaccine. The article directly correlates to my STS prospectus research of the political impact and perception of the COVID-19 vaccine since it discusses the acceptability

of the COVID-19 vaccine. The researchers found that 69% of participants were willing to get a COVID-19 vaccine. Additionally, participants were more likely to be willing to get vaccinated if they thought their healthcare provider would recommend vaccination or if they were moderate or liberal in their political leaning. Participants were also more likely to be willing to get vaccinated if they reported higher levels of perceived likelihood of getting a COVID-19 infection in the future (Katz et al., 2020).

Transitioning to the federal government and pharmaceutical industry, the federal government and the pharmaceutical industry continue to push for the rapid development and deployment of a COVID-19 vaccine despite some public doubts. This article examines the perception of bioinformatics and information published by public health officials. I found that this study was perfect for my STS prospectus since it discusses in detail how the public interprets information given by public health officials. Similar to the US federal government's rapid deployment strategy, this article examines how the development and deployment of a COVID-19 vaccine is essentially a race for a safe and effective vaccine. The author also discusses how pharmaceutical formulation science plays an essential role throughout the development, manufacturing, distribution, and vaccination phases of a COVID-19 vaccine. Viewing the vaccine as a race could be incredibly helpful to study the impact of the COVID-19 vaccine from the perspective of big pharmaceutical companies (Cui et al., 2020).

Overall, I discovered that the attitude towards a potential COVID-19 vaccine varies a lot by social group. For instance, the public seems hesitant and even skeptical towards a potential vaccine while the US government and public industry have an agenda to develop and deploy a vaccine as soon as possible. In complete contrast to the US, China's control of the COVID-19 pandemic has been strict and well-regulated. Restrictions in China are similar to those in place in

the US, however widespread public adherence is the key difference. A system of health codes is woven into the fabric of everyday life such as assigned color-coded designations based on a person's health status, masks, temperature checks, and mass testing. The Chinese government has been scrutinized for a lack of candor and negligence since the inception of the outbreak. President Trump has been one of the most vocal critics, accusing Beijing of early failures that intensified the spread of the virus (Baculinao & Talzaman, 2020). Despite any criticism, China has done a phenomenal job of regulating and containing the spread of the virus, and unlike the US, is not relying on a potential COVID-19 vaccine to act as a "magic bullet." Based on China's stricter regulations and protocol during the pandemic, the Chinese government's strategy is entirely different from the US government's strategy.



STS Frameworks and Methods

There are many STS frameworks and methods available to frame my STS prospectus. However, I found that Winner's perspective is perfect for framing my STS prospectus since I can directly examine the effect that a political artifact, a potential COVID-19 vaccine, has on various social groups.

Invention/Design: The intention behind the vaccine is to mitigate the symptoms of

COVID-19 to either completely eliminate or lessen its effects. China and the US both have very different stances towards the invention and design of a potential vaccine. The Chinese government hasn't disclosed their progress on vaccine development, whereas the US government has quickened their testing process for vaccine development to deploy and distribute to the American public as soon as possible.

Technical Arrangements and Social Order: The Coalition for Epidemic Preparedness Innovations (CEPI) is working with global health facilities around the world to develop a COVID-19 vaccine. The majority of potential vaccines are being developed by private industries, however, there are also academic, public, and non-profit sectors involved in the production of a vaccine. The organization and control of vaccines on a large scale (globally) have not yet been achieved, but organization differs within the various aforementioned sectors.

Decision Making: In the United States, much of the American population believes that President Trump may pressure the Food and Drug Administration (FDA) to approve the emergency use of at least one COVID-19 vaccine. Public concerns have intensified even further recently when Trump suggested in a tweet that the FDA is partaking in a "deep state" conspiracy to sabotage the Trump campaign. By directly contradicting the statements of the Center for Disease Controls (CDC) and FDA officials, Trump is further confusing the American public by who is exactly in charge of deployment of a COVID-19 vaccine.

There is little information currently available about vaccine progress in China, but with China's current containment of the virus, a vaccine will only act as a secondary measure for Chinese citizens. Due to varying degrees of compliance and contradictory statements made by US government officials and health agencies, a potential vaccine in the US is being treated as a "magic bullet" cure to the COVID-19 virus.

Deployment: As mentioned in the previous section, the deployment of a vaccine is usually regulated by governmental health agencies such as the FDA and the CDC. However, President Trump seems to be forcing his hand over the deployment of a COVID-19 vaccine. The technology most certainly reconfigures social order and power. This leads to social unrest with respect to statements made by governmental health agencies. In China, as aforementioned, deployment isn't a primary concern due to proper containment of the COVID-19 pandemic and proper compliance with social distancing/preventative measures.

Broader Impact: When developed and deployed, the COVID-19 vaccine will have a monumental impact. The world has not faced a pandemic of similar nature since the Spanish Influenza over a century ago. The vaccine would be able to relieve hospitals and healthcare practitioners all over the world of their current COVID situation. Economies would be able to return back to their normal pace.

Due to a significant decline in COVID-19 cases in China, the Chinese economy has slowly but surely rebounded. During the July to September quarter compared to the same months last year, the Chinese economy has surged 4.9%. Additionally, Chinese companies are making up a greater share of the world's exports, manufacturing consumer electronics, personal protection equipment, and other goods in high demand during the pandemic (Bradsher, 2020). On the other hand, the US economy is recovering at a much slower rate and industries/businesses are still reliant on financial assistance from sources like the US government.

Methods for Data Collection

Since my STS Prospectus topic is the global political impact of a COVID-19 vaccine in China and the US, I think that an interview with students or a health agency in both of these

counties would provide me with much-needed insight about their respective countries' attitude towards the vaccine. Furthermore, by conducting interviews myself I would be able to get the chance to get a firsthand feel for the opinions of some of these groups. Both of my parents work for the FDA, so I could use them as a resource to set up an interview with health officials from the FDA or big pharma.

For China, Professor Ku has very graciously offered to connect me to students at a Chinese university and individuals responsible for helping develop the Chinese health code during the pandemic. I think both of their perspectives will be particularly useful since there isn't much literature available about the Chinese government and public's perception towards a potential COVID-19 vaccine.

Document Analysis is also an integral source for my STS research. To gauge the perception of certain groups within China and the US, I will have to rely heavily on published studies and news articles that discuss the impact of the COVID-19 vaccine on public perception. For my literature review, I found some studies that conducted surveys of the public with regard to their opinions on the COVID-19 vaccine. I also found an article that discusses conspiracy theories, expert disagreement, and the federal government's agenda all with regard to the COVID-19 vaccine. All of these secondary sources, which I cited in my annotated bibliography, would be useful to analyze for my STS prospectus. Since I was not able to find much information about the Chinese public perception on the vaccine from STS sources and databases, I will have to expand the scope of my sources to news articles and published studies by Chinese journalists and researchers to incorporate into my prospectus.

Timeline

After narrowing down my scope and research methods, I plan to more thoroughly examine research and articles from my sources for the document analysis part of my research collection while also conducting interviews as a primary source. Finding potential interviewees, conducting, and transcribing interviews in both China and the US will likely take a few months or so in total, so I plan to start the process now and finalize my findings from the interviews by February. After all the document analysis and interviews have been conducted, I'm presuming, tentatively, by mid-February, I will work on writing my research paper and refining my findings. Condensing and correlating my research to my research topics will likely also take about a month, so I hope to conclude this entire part of the project by mid-March 2021.

Conclusion

The primary goal of my STS prospectus project is to evaluate the politicization of the COVID-19 vaccine with respect to its reception among various social groups: anti-vaccine protestors, large governmental health agencies, large institutions such as colleges, the general public, and the government in China and the US. The pandemic is an unprecedented time for the entire world, and by evaluating the reception of a potential vaccine, I plan to contribute to categorizing the societal impacts of a vaccine. The expected outcome through document analysis is to see the diverse range of reactions due to how the vaccine is politicized and perceived. Additionally, the interviews I plan to conduct with FDA employees, Chinese students, and Chinese healthcare workers will provide valuable insight into a first-hand account of their experiences. I want to maintain an objective stance when evaluating the reception of all of the aforementioned groups with regard to a COVID-19 vaccine. My findings can help future organizations, companies, governments, and media outlets gauge the public and societal perception of a COVID-19 vaccine.

References

Bogel-Burroughs, N. (2020, May 4). Antivaccination Activists Are Growing Force at Virus Protests. *The New York Times*. https://www.nytimes.com/2020/05/02/us/anti-vaxxers-coronavirus-protests.html

Clarke, A. E. (2020). (Feminist) STS and Autobiography: Early Inspirations, Current Concerns. *Science as Culture, 0*(0), 1–18. https://doi.org/10.1080/09505431.2020.1819224

Coronavirus Government Response Tracker. (n.d.). Retrieved October 28, 2020, from https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker

Don’t Hate, Isolate: Vulnerable Sea Turtles Return to Bay of Bengal Amid Indian Lockdown. (2020, April 12). *Wessex Scene*. https://www.wessexscene.co.uk/features/2020/04/12/vulnerable-sea-turtles-return-to-bay-of-bengal-amid-indian-lockdown/

Dozens of COVID-19 vaccines are in development. Here are the ones to follow. (2020, October 13). Science. https://www.nationalgeographic.com/science/health-and-human-body/human-diseases/coronavirus-vaccine-tracker-how-they-work-latest-developments-cvd/

Dror, A. A., Eisenbach, N., Taiber, S., Morozov, N. G., Mizrachi, M., Zigron, A., Srouji, S., & Sela, E. (2020). Vaccine hesitancy: The next challenge in the fight against COVID-19. *European Journal of Epidemiology*, *35*(8), 775–779. https://doi.org/10.1007/s10654-020-00671-y

Everyone Included: Social Impact of COVID-19 | DISD. (n.d.). Retrieved October 27, 2020, from https://www.un.org/development/desa/dspd/everyone-included-covid-19.html

Freire-González, J., & Font Vivanco, D. (2020). Pandemics and the Environmental Rebound Effect: Reflections from COVID-19. *Environmental & Resource Economics*, 1–4. https://doi.org/10.1007/s10640-020-00448-7

Grant, R. C. and P. (2020, July 27). Google to Keep Employees Home Until Summer 2021 Amid Coronavirus Pandemic. *Wall Street Journal*. https://www.wsj.com/articles/google-to-keep-employees-home-until-summer-2021-amid-coronavirus-pandemic-11595854201

Hinton, M. (2019). Why the Fence Is the Seat of Reason When Experts Disagree. *Social Epistemology*, *33*(2), 160–171. https://doi.org/10.1080/02691728.2019.1577512

How the race for a COVID vaccine is revolutionizing Big Pharma. (n.d.). Fortune. Retrieved October 28, 2020, from https://fortune.com/longform/covid-vaccine-big-pharma-drugmakers-coronavirus-pharmaceutical-industry/

Lockdown Protesters Take To Streets In Anger, But Poll Finds 60% Of Americans Fear Restrictions Will Lift Too Early. (2020, April 20). *Kaiser Health News*. https://khn.org/morning-breakout/lockdown-protesters-take-to-streets-in-anger-but-poll-finds-60-of-americans-fear-restrictions-will-be-lift-too-early/

Martin, B. (2020). Dealing with Conspiracy Theory Attributions. *Social Epistemology*, *34*(5), 409–422. https://doi.org/10.1080/02691728.2020.1748744

Mody, C. (2020). Normal Science in the Time of Corona. *Engineering Studies*, *12*(1), 1–7. https://doi.org/10.1080/19378629.2020.1751397

Most Americans see politics driving Covid-19 vaccine approval process. (2020, August 31). *STAT*. https://www.statnews.com/pharmalot/2020/08/31/most-americans-believe-the-covid-19-vaccine-approval-process-is-driven-by-politics-not-science/

Peeples, L. (2020). News Feature: Avoiding pitfalls in the pursuit of a COVID-19 vaccine. *Proceedings of the National Academy of Sciences*, *117*(15), 8218–8221. https://doi.org/10.1073/pnas.2005456117

Reiter, P. L., Pennell, M. L., & Katz, M. L. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated? *Vaccine*, *38*(42), 6500–6507. https://doi.org/10.1016/j.vaccine.2020.08.043

Thunstrom, L., Ashworth, M., Finnoff, D., & Newbold, S. (2020). Hesitancy Towards a COVID-19 Vaccine and Prospects for Herd Immunity. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3593098

Up Is Down—Pharmaceutical Industry Caution vs. Federal Acceleration of Covid-19 Vaccine Approval | NEJM. (2020, October 23). https://www.nejm.org/doi/full/10.1056/NEJMp2029479

Wahlberg, A. (2020). Justice and Solidarity in Post-genomic, Post-personalized Times. *Science as Culture*, *0*(0), 1–5. https://doi.org/10.1080/09505431.2020.1802710

Wang, J., Peng, Y., Xu, H., Cui, Z., & Williams, R. O. (2020). The COVID-19 Vaccine Race: Challenges and Opportunities in Vaccine Formulation. *AAPS PharmSciTech*, *21*(6), 225. https://doi.org/10.1208/s12249-020-01744-7

Why is China containing COVID-19 better than the US? (n.d.). Retrieved October 28, 2020,

from https://news.northeastern.edu/2020/06/26/new-cases-of-the-coronavirus-in-china-leveled-off-in-less-than-a-month-of-restrictions-why-hasnt-the-us-had-the-same-success/