

**Distrust or Diligence: How Public Health Communication Strategies Affected COVID-19
Response and Effectiveness in Multiple Countries**

by

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Abstract

This essay presents a case study of Germany, Senegal, and the U.S. and how each jurisdiction's Public health communication strategy impacted its ability to respond to global the COVID-19 pandemic. The goal of effective public health communication is to convince the public to make choices designed to keep them safe and healthy. Public health communication is critical to prevent the spread of misinformation and increase societal cooperation in public health efforts. This essay will examine the public health communication strategies of three countries used to address the COVID-19 pandemic. Further, it will analyze how their choice of strategy affected COVID-19 case numbers, mortality, and trust in governmental competency to address the pandemic. The public health significance of this analysis is twofold. First and foremost, it will help individuals understand the various types of public health communication and how they can be used effectively. Second, it provides country leaders with an understanding of how to best utilize public health communication strategies to address pandemic and epidemic related events. The result is that individuals receive timely and effective health information and countries minimize misinformation surrounding public health topics and improve public response to pandemic events.

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1.0 Introduction

Major public health events, including infectious disease outbreaks and natural disasters, have occurred more frequently over the past couple of decades. Climate change is behind many of these events. One way climate change increases the possibility of pandemics is habitat loss for animals (Harvard, 2020). Deforestation and changing climate patterns worldwide force animals to migrate to more populated areas, increasing contact with humans which leads to the sharing of germs. Contact with these animals increases the risk for infections among people and can lead to an upsurge in epidemics and pandemics (Harvard, 2020). When they arise, individuals need information on how react, be safe, find resources, and avoid misinformation. This is the function of public health communication. An effective public health communication strategy can prevent panic and distrust in the authorities responding to emergent situations. Conversely, an effective health communication strategy can significantly improve the spread and public ingestion of information as well as the public's behavior.

Public health communication is convincing the public to make choices that can keep them safe and healthy (Bernhardt, 2004). There is no single approach to effective communication and multiple strategies can be utilized. Public health mainly relies on education and advocacy in order to impart the seriousness of a situation, and without successful communication, the proper education and advocacy will not occur. Public health communication strategies can help address pandemics like COVID-19, promote health and exercise, and address issues surrounding quality of life. But most importantly, successful public health communication is a means to increase awareness of issues while simultaneously helping to shift social and societal norms that influence the way people handle these public health situations.

1.1 Types of Public Health Communication

There are four “categories” of public health communication strategy which have slightly different goals: education, risk communication, advocacy, and, disaster communication (Tulane University School of Public Health and Tropical Medicine, 2020). Education involves helping the population to understand a public health topic, like malaria, HIV, or tobacco use. For example, public health education provides information and background on what malaria is biologically, how it is transmitted, and how to protect against transmission. Education plans include the use of pamphlets, school sessions, awareness campaigns, doctor’s office campaigns and resources, or a combination of these. The desired outcome for an education-based strategy is awareness and informed decision making.

The second type of communication strategy, risk communication, helps the public understand risks and their impact on health. This knowledge can be used to assess whether certain behaviors should be engaged (Tulane, 2020). Risk communication informs people of health risks they may not be aware of and conveys information about specific health risks. The most prevalent example in the United States of America is the discussion of risks surrounding vaccinations and the “anti-vax” movement. Current vaccination risk communication plans convey the importance of immunization, the science behind vaccines, and the risks associated with not getting vaccinated, while taking into account public sentiments and possible avenues to prevent backlash (Dittman 2001).

The third type of public health communication is advocacy which is designed to promote public health policies or programs and develop strategies for getting individuals access to health and public health services. Social determinants of health are often a focus of advocacy communication and campaigns are created to inform targeted communities of specific issues that

may impact population health. An example of an advocacy strategy is the campaign by the Allegheny County Health Department to bring access to free health insurance counseling (Allegheny County Health Department, 2021). The Allegheny County Health Department partnered with Wesley Family Services and the Area Agency on Aging to develop counseling services focused on health insurance. They focus on helping individuals understand the various Medicare options including eligibility and enrollment, and work to help them enroll in a policy that is best suited for them.

The final type of public health communication is disaster communication. The most urgent of the public health communication strategies, this is employed during a crisis or outbreaks such as the Ebola outbreak and the California wildfires. Disaster communication usually revolves around daily public services announcements and works best when the communicator(s) are being as transparent as possible, and building trust with the audience they are addressing. One example is the crisis communication plan created by the CDC and multiple international and domestic partners. They created communication materials for different group subsets, sent out messages over radio, television, and cell phones, and were honest and transparent on case numbers, deaths, and safety information related to Ebola (Bedrosian & Young, 2017).

1.2 Public Health Communication Strategies

After determining which public health communication category to use, the next step is the develop an effective a public health communication strategy around it. Several key factors should be considered when creating the strategy including:

[1] *Knowing the issue:* The public health entity addressing the issue should have a multilevel understanding of the subject matter implicit in the communication (Felter, 2020). The entity should understand the population affected by the communication strategy, what impact the strategy is likely to have, and why the communication is necessary. Multiple solutions with analyses and scientific data to back up decisions should be developed.

[2] *Know the audience:* Even the most valuable communication strategy will not help if the developer is unfamiliar with the population it is educating. Understanding the population will help form the basis for what materials need to be created and how messages are conveyed. For example, the way information is conveyed to the scientific community will be much different from the community strategy developed for a middle school parent teachers association (PTA). The audience matters as does the message, and it should be targeted to the population. (Felter, 2020). It is also helpful to try and anticipate audience questions and reaction so that responses can be prepared ahead of time to address them.

[3] *Choose messages and channels tactically:* The format used to convey messages should be strategic and targeted. The type of message and the modality used to convey the public health message should be chosen based on research and the chosen population (Felter, 2020). For example, using television and radio can be more effective at reaching a large public audience. Newspapers may be effective at reaching rural populations. Social and digital media may be more effective for younger generations.

[4] *Engage in Partnerships:* Partnerships can be used to convey messages more effectively than simply using a single entity. A collaboration with the right partner adds credibility to a message and helps to reach a wider audience. Partnerships can also help to dissolve social stigma around

certain issues. For example, MTV (Music Television) partnered with multiple public health agencies to run HIV/AIDS public service announcements helping to mitigate stigma surrounding the disease and reach the youth audience (Kaiser Family Foundation, 2019).

Utilizing these tools helps to create a well thought out and well-rounded public health communication strategy but they are not the only factors. The public health communication strategy should be unbiased and culturally competent. Cultural competency refers to focusing on the data and science behind the issue while considering the differences in population characteristics, including age, gender, sexual orientation, religion, and cultural beliefs. The targeted public health communication strategy should also be available to as many people as possible and easy to understand.

2.0 The COVID-19 Pandemic

In January of 2020, the World Health Organization (WHO) announced that there was an unknown respiratory-like disease occurring in Wuhan, China. This new disease, a novel coronavirus SARS-CoV-2, was not previously seen in humans (Kantis et al., 2020). The colloquial name for this virus is COVID-19 in which CO stands for corona, VI for virus status, D for disease and 19 for its discovery year (Centers for Disease Control and Prevention, 2021). The virus spreads through respiratory droplets which can infect others through sneezing, coughing, or close contact. Symptoms for COVID-19 appear anywhere from two to 14 days after infection and sometimes mirror those of the common flu, but can also result in respiratory distress, loss of smell and taste, and difficulty moving limbs (World Health Organization, 2020). COVID-19 also has a long recovery time with many individuals reporting that it took months before they were asymptomatic while others known as “long haulers” still not fully recovered.

During the week of January 18, 2020, the United States and Europe began to see the appearance of COVID-19 cases. Soon after, Australia and other countries also had confirmed cases (Kantis et al., 2020). On January 30th, the WHO declared the outbreak of novel coronavirus to be a public health emergency of international concern. With the exception of countries bordering China, interjurisdictional travel restrictions were not in place.

Beginning in February 2020, the WHO pledged \$675 million to help stop the spread (Kantis et al., 2020). The allocation focused especially on countries considered to have less effective health systems and public health infrastructures. By the middle of February, 25 countries had confirmed COVID-19 cases and the number of individual cases increased (Katella, 2021).

Also by this time, COVID-19 related deaths passed the number of deaths during 2002 SARS epidemic.

In March and April, cruise ships were quarantined, international travel was restricted, and infection rates and number of deaths continued to rise. At the end of April, Wuhan started to reopen, reporting no new cases, while other countries like the United States and England, experienced exponential rises in case numbers. The pandemic continued through the end of 2020. Some countries, like New Zealand, returned to relative normalcy and others, like United States, continued to be in various stages of lockdown.

The new year brought the introduction of multiple COVID-19 vaccines to market, which countries have begun to distribute (Katella, 2021). As the battle against this public health pandemic continues, it is important to compare public health communication strategies implemented by different countries to analyze their effectiveness.

2.1 Masking Mandates: One Strategy to Address COVID-19

The case study jurisdictions used different public health communication strategies to educate their communities regarding masks and each had different health outcomes. In April of 2020, most countries began to implement mask-wearing policies based upon direction from the World Health Organization, the Centers for Disease Control and Prevention and aimed at encouraging mask wearing to stop the spread. However, many countries issued conflicting and often times confusing messages regarding the requirements of masks which lead to delayed policies, mandates, and public adoption (The Lancet, 2020).

The policies were created because masks are recognized as the single most effective tool to help diminish the public spread of coronavirus. Masks reduce transmission of respiratory droplets by covering the face and preventing close contact (Gostin et al., 2020). It is the easiest measure to implement on a large scale for the general population and one of the least expensive. Specific rationale for mask mandates include:

- Stopping the spread of asymptomatic transmission
- Lessening the chance of infection in situations where social distancing is not possible
- Leveraging cost effectiveness because masks are easy to buy or make and can be easily distributed among the general population

Mask mandates focused on multiple different kinds of masks including cloth, surgical, N95, and face shields with some countries and states recommending specific types while others broadly advocated for masks in general. Cloth masks are most available and can be made at home. Therefore, they became the de facto standard option during this pandemic. Cloth masks usually include two loops around the ears and a filter paper inserted into the mask front. N95 and other surgical personal protective equipment are the most effective forms of masks as they can have respirators built into their masks and filter out air more efficiently, making them better for a clinical setting (Maragakis, 2021).

Some Asian countries routinely practice mask wearing to prevent the spread of sickness while western countries typically do not. China and South Korea began rolling out mandates in February 2020. Later, in April of 2020, other countries began to implement mask-wearing policies based upon direction from the WHO and the Centers for Disease Control and Prevention; however, many countries issued conflicting and confusing messages which lead to delayed policies, mandates, and public adoption (The Lancet, 2020). Mask mandates were strongly recommended

for the general public to prevent the transmission of COVID-19 between individuals but not required. Similarly, masks were recommended to help prevent spread in compromised environmental situations like public transport or hospitals.

As seen in Figure 1, all countries had some form of mask mandate in place by August 2020, although the specifics of the mandate still varied greatly by country and by individual states within countries (Sixula, 2020). While public health institutions are well aligned on the use and benefits of mask wearing, country and state governments remain divided and therefore, masking mandates continue to vary in 2021.

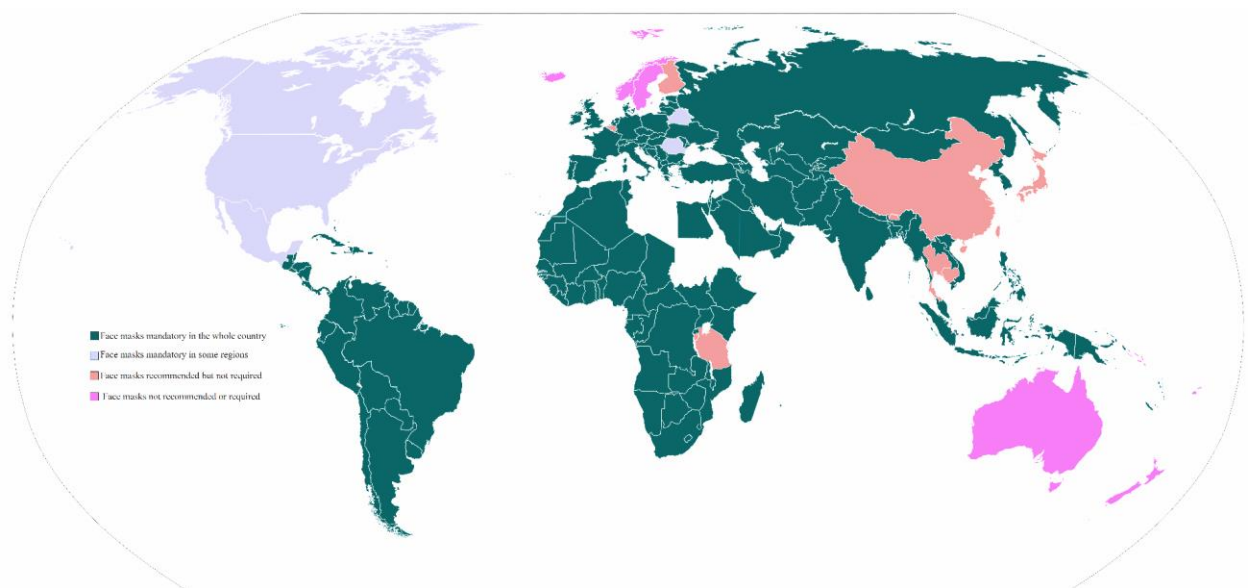


Figure 1. Mask Mandates by Country August 2020 (Sixula, 2020)

3.0 Measuring Emergency Preparedness

When examining the response of multiple countries to the COVID-19 pandemic, it is important to look at what the perceived preparedness and public health response from each country was. This essay focuses on Germany, Senegal, and the United States and examines how each addressed the pandemic. These three countries were chosen based on individual preference. The United States was chosen for simple reasons. The United States seemingly has endless resources to address such an issue yet it appears to suffer more than the rest of the world and this investigator wanted to know why. Germany was selected for personal reasons. After reading an article on how Germany was addressing the pandemic, this investigator became intrigued and decide to include them in the study. Needing a third country for comparison, a search on articles about various countries responses to the pandemic revealed an interesting article about Senegal and their unique COVID-19 communication approach. Given that they are so much smaller than the other two countries and had seemingly much fewer resource it was thought that they would serve as a perfect contrast to the other two nations. Each had very different levels of preparedness, employed different communication strategies, and experienced very different outcomes.

The Johns Hopkins Center for Health Security created a global health security index (GHS) to measure and benchmark health securities and capabilities of 195 countries (Johns Hopkins University Bloomberg School of Public Health, 2020). Each country was given an index score for the following categories: prevention, detection, rapid response, health systems, international norms, and risk environment. The categories are described as:

- *Prevention*: The prevention of the rise of pathogens and disease
- *Detection and Reporting*: The ability to have early detection and reporting for pandemic and epidemic related events, especially on international level
- *Rapid Response*: The ability to respond quickly and ease the damage of an epidemic situation
- *Health System*: The presence of a strong and satisfactory health system to treat the sick and protect health care workers
- *Compliance with International Norms*: The country is committed to improving their plans, address gaps on a national scale, and remaining with global standards
- *Risk Environment*: The measurement of the country's vulnerability and risk to a pandemic or epidemic related event

The GHS index examines 34 indicators and 85 sub-indicators across the categories that assess a country's capacities and capabilities for stopping outbreaks (Johns Hopkins University Bloomberg School of Public Health, 2020). The countries were assigned a ranking between 1 and 195 based upon fulfillment of the designated categories. Germany, Senegal, and the United States were three of the 195 countries assigned an overall ranking. Table 1 highlights the index scores of each country out of 100 (Johns Hopkins University Bloomberg School of Public Health, 2020).

Table 1. Global Health Security Index scores for the United States, Senegal, and Germany (Johns Hopkins University Bloomberg School of Public Health, 2020)

Country	Overall Index Score	Prevent	Detect	Respond	Health	Norms	Risk
United States	83.5	83.1	98.2	79.7	73.8	85.3	78.2
Senegal	37.9	25.4	35.1	45.4	18.5	57.0	48.2
Germany	66.0	66.5	84.6	54.8	48.2	61.9	82.3

Of the three comparison jurisdictions, the United States received the highest index score of 83.5 and ranked first of all 195 countries. Germany, another western industrialized country, received a 66.0 index score and ranked 14 out of 195 countries. Senegal, received the lowest index score of the three, 37.9 and an overall ranking of 95 out of 195. These scores will be considered as each country's public health communication plan is examined.

3.1 Case Study: The German Scientific Front

Given Germany's favorable Johns Hopkins Global Health Security Index preparedness ranking, it is fair to assume that they were well prepared to handle a global health emergency. A wealthy industrial country, they scored above average in most measured categories except for their health system index. Unfortunately, like many other western european countries, Germany encountered a lot of unexpected issues.

Germany was one of the first countries to adopt a socialized health care system, combining both public and private health care to ensure access for all its citizens. Furthermore, Germany dedicates a large amount of money to their health care system with their per capita spending being second only to the United States (The World Bank, 2021). Despite this dedication to universal healthcare, Germany's COVID-19 response focused on scientific fact finding and testing rather than adequately addressing its public health communication strategy and the public reaction (Seervai, 2020).

The first case of COVID-19 was reported in Germany in late January 2020, and reported cases rose exponentially beginning in March. At this point, Germany began implementing its public health communication strategy focusing on education and advocating for testing. Germany was able to originally keep the number of cases low compared to other European countries like Italy and France due to an early and broad testing strategy (Wieler et al., 2021). Their leaders also engaged in scientifically focused outreach. Chancellor Angela Merkel was a nuclear chemist before becoming a politician. She believed in and advocated for having prominent scientists around the country openly communicate with the public to educate them on safe practices and lessen the spread of misinformation. Germany introduced "Das Coronavirus-Update", an NPR style podcast that is currently up to 87 episodes and includes updates on testing, vaccine development, German pandemic policies, and answers to questions from citizens on COVID-19 (Norddeutscher Rundfunk, 2020). The podcast features prominent German virologist Christian Drosten who many are equating as the German Dr. Fauci (Norddeutscher Rundfunk, 2020).

The podcast also has political buy in and has formed important partnerships with regular guests such as the Minister of Health Jens Spahn. Chancellor Merkel herself led a podcast

episode which broke down the complicated topic of reproductive numbers for viruses and explained exactly how contagious COVID-19 is in order to encourage German citizens to adhere to lockdown orders. The podcast reaches a wide audience of citizens and is accessible on public transportation. It also focuses on translating complex scientific concepts into easily understood soundbites for citizens of all ages and educational backgrounds. This public health communication strategy educated the public which, in turn, led to community support of COVID-19 safety protocols and public health efforts.

Germany further bolstered their communication efforts by partnering with children's television programs to reach family and child audiences. "Die Sendung mit der Maus", the German equivalent of "Sesame Street", ran episodes explaining how to properly wear masks, what kind of virus COVID-19 was, and ways to stay safe during the pandemic (Körnich, 2021). Germany utilized multiple open communication channels to reach the broadest possible audience and allowed scientific data to lead the discussion. This approach resulted in its citizens believing that their government was being open, honest, and forthcoming which in turn rallied them to battle the pandemic together.

While Germany excelled as a country in their public health communication strategy, they failed to align their communication and education strategies with prevention efforts. Germany, like the United States, has a federalistic system of government (Ewert & Loser, 2020). This means that multiple governmental units have authority over the same geopolitical unit. While the top German government rolled out a specific COVID-19 pandemic plan called the National Pandemic Plan, it was up to the sixteen individual federal states known as Länder and over 400 individual counties to execute the public health response strategy (Lu et al., 2021). This meant that the National Prevention Plan needed to be disseminated to and adapted by the federal, state,

and local levels before being implemented. When the roll out occurred in Germany in early April, confusion began across the federal states. There was variance in school closures, mask mandates, and prohibitions on gatherings.. The local public health prevention strategies were contradicting each other. Politicians were hesitant to change or pass strict policies because German citizens have a history of opposing prevention policies, even health related ones (Ewert & Loser, 2020). Overall, Germany had a great public health communication plan targeting education, but failed to effectively communicate prevention plans, inhibiting a full and well rounded pandemic response.

3.2 Case Study: Senegalese Transparency

When the pandemic began, public health leaders were concerned that countries with less developed health systems like Senegal would be less capable of addressing COVID-19. Senegal is a small semi-presidential democratic republic nation located in West Africa (Nations Online Project, 1998). Based on the Johns Hopkins Global Health Security Index, Senegal was not prepared for a global pandemic of this nature (Johns Hopkins University Bloomberg School of Public Health, 2020). With low index scores and an overall rating which is average compared to other countries, Senegal was expected to have some difficulty addressing COVID-19. However, by developing an innovative and open public health communication plan, Senegal was able to capably address the pandemic.

Senegal developed their public health communication strategy early and was aggressive in its delivery. Unlike United States leaders whose initial response to COVID-19 and its ability to spread was one of skepticism, Senegal began their policy rollout and messaging in March 2020.

Starting with a disaster response communication approach, the Senegalese government focused on introducing policies that would decrease the risk of spread while being open and transparent with their citizens. When Senegal had less than 50 cases in the country, the democratic republic began to close international travel, restricted regional travel, and enforced a curfew with closures on gathering places that housed large numbers of people (Potter, 2020). The approach was effective because it began an open dialog with constituents while making citizens feel safe; however, it also created a burden on businesses and individuals' way of life. Realizing this, the Senegalese government moved to adjust their public health communication strategy.

Having addressed the initial panic surrounding the COVID-19 pandemic, the government focused their public health communication plan on advocacy and education. Health officials at Senegal's Ministry of Health and Social Action realized that the new travel policies were having a significant adverse impact on its citizens. This is because Senegal is an agricultural nation and moving food between regions is important for economic stability. Therefore, in order to support citizens throughout the country, the government created an Economic and Social Resilience Program hoping to offset income loss and support the poor (Shryock, 2020). The program offered a variety of incentives from the government to stay home and to practice social distancing when in public including, payment of electrical bills, food purchases, and reimbursement for expenses (Leo & Winn, 2020). With over a million households receiving food, and even more receiving reimbursements, cases were low enough to start a gradual reopening of businesses by early May and travel was opened in July (Leo & Winn, 2020).

Simultaneous with its advocacy efforts, the Senegalese Ministry of Health and Social Action started a transparent education and awareness campaign to incentivize safe practices and testing. Their communication strategy began the same way every day. A member of the Health

Ministry would announce important COVID-19 information on tv and streamed online for the country to hear, including the number of new cases and deaths, new policies, the number of recoveries, and more (Leo & Winn, 2020). Radio, television, and video streaming platforms were used to reach the broadest audience. Utilizing television and digital streaming platforms, which can be streamed on televisions without cable, the government knew that their audience would listen daily and give feedback in the form of comments and emojis on Facebook and other platforms where the announcements took place.

These broad and transparent communication techniques allowed the Senegalese government to continually gauge the emotional pulse of the nation and improve or tweak the way they were delivering their address. They even described every individual who had died and offered condolences across the airwaves to create a sense of responsibility and community across the nation (Shryock, 2020).

In addition to television, the public health communication was conveyed via murals. Murals showed citizens covering their faces with masks, washing hands, and provided encouraging messages about protecting each other from sickness (Sall, 2021). This served as an effective way to promote the Senegalese masking mandate which was introduced in April of 2020, requiring masks in all public spaces and on transportation (Sall, 2021). This creative and eye-catching medium proved to be a simple but effective way to showcase good public health practices and reach people in both low income and higher income areas. By combining different communication delivery methods (digital media and artistic), the Senegalese government created an effective, comprehensive, transparent way to convey important scientific COVID-19 information while educating citizens about safety practices and other pertinent recommendations.

Senegal also targeted its communication strategy on partnerships and science. The Ministry of Health and Social Action worked with the WHO after the 2014 Ebola outbreak to create new international partnerships, including collaborating with other nations to participate in mock epidemic outbreak trainings. This led to the creation of an Emergency Operation Center in Senegal which has contributed significantly to the COVID-19 response. The Ministry of Health used these partnerships to address the pandemic before the first case was confirmed in Senegal. Leveraging their partnerships, the Senegalese government added hundreds of hospital beds to existing hospitals, hotels, and health centers. They then announced COVID-19 isolation rules and contact tracing policies that were implemented in early March. The Senegalese government announced that there would be “a bed for every case” regardless of the severity of symptoms (Shryock, 2020). Public health officials also encouraged quarantining at government run facilities to prevent spread within family units and promised to provide meals for the two weeks of quarantine - an incentive which garnered much support from citizens. President Sall voluntarily continued his two-week quarantine despite testing negative for COVID-19 to demonstrate that everyone should follow the policies set out and that no one, even the president, was above the set regulations (Potter, 2020). Finally the government implemented free rapid testing with results being available within 24 hours of taking the test (Yeung, 2020). By encouraging citizens around the country to get tested while making it free and easily available, Senegal has been able to identify and isolate COVID-19 cases easily and ensure that the one bed for every person policy continues.

3.3 Case Study: The Failure of Federalist America

The United States was expected to be the gold standard by which all countries would base their pandemic response. President Obama created a Federal pandemic response team as well as multiple supporting policies prior to the end of his presidency for addressing an epidemic or pandemic. (Johns Hopkins University Bloomberg School of Public Health, 2020). Instead, the United States leads the world in COVID-19 cases and deaths.

The issues with the United States' COVID-19 response surfaced almost immediately beginning with inconsistent information and messaging. As previously mentioned in this essay, a cornerstone to successfully handling a health crisis is a well thought out and coordinated communication plan; one that establishes needed partnerships and places trust in science, (e.g. Germany) and builds trust with the public to rally them to action (e.g. Senegal).

In the United States, the poor communication began with the preliminary reactions from the Trump Administration. Statements from the President in early February called into question the seriousness of the situation stating, "I think the virus is going to be—it's going to be fine" and disregarding scientists' warnings on the seriousness of the virus itself by saying "This is a flu. This is like a flu" (Beer, 2020). Statements like this, from our highest government official, which directly contradicted scientists and public health professionals resulted in confusion, conflict, public misunderstanding, and lead to a slow and inconsistent response. It laid the foundation for the ineffective response which was to result.

Downplaying the danger of the virus resulted in unexpected consequences. The opinions of scientific experts were dismissed by the president and his supporters, and as a result, a large segment of the public. The CDC issued statements explaining the possible severity of the pandemic after President Trump's comments but these statements took a back seat to the President's

comments and the White House soon became the main news source for COVID-19 related updates (Carter & May, 2020). Furthermore, the CDC is an Executive Branch agency and as such, its messaging is intertwined with that of the president and his staff. This prevented accurate scientific information from being announced to the community. It was around this same time, that case levels began to increase substantially (as shown in Figure 2) (CDC, 2021).

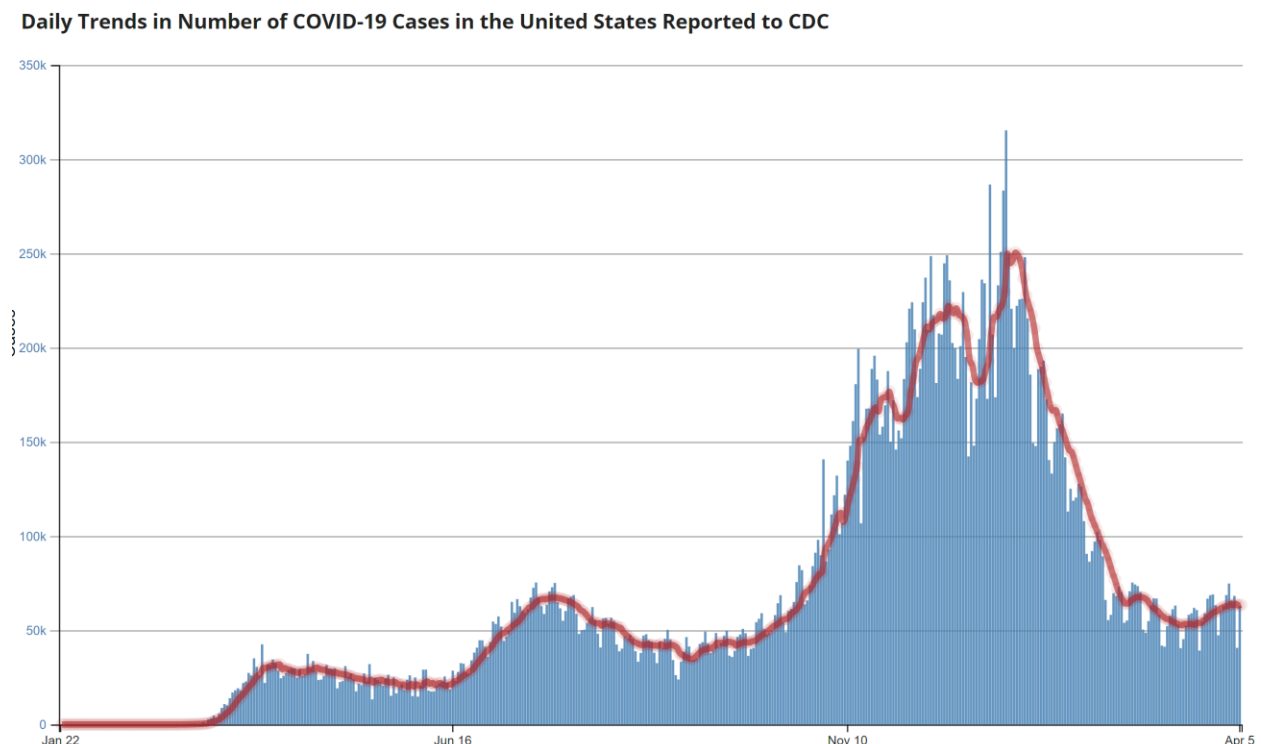


Figure 2. Daily COVID-19 Case Numbers in the United States from January 2020-April 2021 (CDC, 2021)

Compounding the miscommunication between the federal government and the CDC was an increasing disconnect between the federal and individual state governments. Washington and California experienced the first US cases of COVID-19. These states adopted their own public health communication strategies that embodied plans to stop the spread (Lewis, 2021). This resulted in separate sources of information from the federal government, state governments, and

individual local agencies like health departments and public health groups, each different and sometimes contradictory to the others, and each claiming to be the authoritative source and the best for its constituency. This resulted in more confusion and skepticism and made it increasingly difficult for any single entity, i.e., any level of government, scientific establishment, or public health entity to create a communication plan. The absence of a detailed and clearly communicated action plan made it less likely that the public would understand and/or consistently follow guidelines, which is exactly what happened.

The United States adopted a decentralized response to the pandemic and prevention strategies. This is best exemplified through the different communication strategies utilized by federal, state, and local leaders; particularly on mask wearing. The federal strategy was largely non-existing and did not include a federal mask mandate; with only the CDC issuing public health guidance that masks should be worn to stop the spread (Gostin et al., 2020). Moreover, the President continued refusing to wear a mask in public directly contradicting a federal agency's advice which demonstrated a complete lack of support. The absence of a federal public health communication strategy and policies resulted in 51 individual state jurisdictions and countless local jurisdictions establishing their own.

States began slowly rolling out regulations and strategies for face coverings with 31 states implementing such strategies by the end of July 2020 (Haffajee & Mello, 2020). Similar to the issues faced by Germany, allowing the individual states to create and implement prevention plans created a patchwork solution. In some states like Georgia, governors signed orders preventing a mask mandate, which was in contravention to public health departments and health care entities that created public health communication strategies urging the use of masks (Kaiser Health News, 2020).

In contrast, Pennsylvania took a more forward-thinking approach when it began recommending face coverings earlier than most states on November 18th, 2020, which eventually became a full mask mandate. Pennsylvania used multiple communication strategies in order to communicate the necessity and benefits of mask wearing and prevention activities. Pennsylvania has a hybrid health department system, with one state department, six county departments, and four municipal health departments spread across its 67 counties. Given this unique structure, public health communication channels were carefully chosen based on the message to be conveyed. For the mask mandate, the state health department's Secretary Dr. Rachel Levine and Governor Tom Wolf held regular press conferences explaining the reasoning behind business closures, mask mandates, and social distancing practices (Pennsylvania Pressroom, 2020). A partnership strategy was established with hospitals, health care providers and the state department of health to coordinate advertising and encourage the use of mask wearing and social distancing within their own communities. Local health departments were given resources but left largely to choose their own public health communication strategies. The Allegheny County Health Department focused on education and advocacy, using posters to show the importance of mask wearing, advocating for testing in lower income areas, and bringing in faith-based partnerships through their REACH program to increase awareness and safe practices (Allegheny County Health Department, 2021).

Taken as a whole, the United States was left without an overarching plan but rather with a patchwork of policies and communication plans, none of which fully address the needs of the nation. Federalism allowed for the state and local governments to intervene as they saw fit to fill gaps in federal leadership and guidance. Shifts to state and local governments also stifled prevention and communication efforts because they were unable to implement, regulate, and track results at the national level.

4.0 Discussion

While it is reasonable to assume that different countries will implement different approaches and public health communication strategies to combat the COVID-19 and other pandemics, it is clear that some strategies are more effective. Overall, Senegal was more successful than either Germany or the United States in their public health communication plan, even though it was considered to be the least prepared country due to its lower income status and lack of health care resources. Senegal unveiled an extremely transparent, community-based public health communication plan which centered around open communication at all levels of government. It also provided national backing and monetary incentives for those citizens who complied with pandemic safety measures. This was also seen in more populous countries like Australia and Taiwan. This shows that the cost of creating and communicating content can be re-couped through timely, accurate, open and transparent communication that starts at the top and permeates upward, downward, and sideways. It was probably less costly to execute the communications strategy and all it entailed than it would have been to provide medical care to the sick and dying. In essence, while it was thought that money was an overriding factor in success in Senegal's case it was actually planning and execution.

Germany performed the second best out of the case study jurisdictions. Like Senegal, Germany used a similar science-based public health communication plan. Germany was more proactive and thorough than their original global index ranking suggested, specifically they succeeded with their education and advocacy public health communication plans involving not only the government and top scientists but also a national podcast and a children's show to educate the entire public on the pandemic situation. There is no doubt that Germany is a leader in

Europe in addressing COVID-19. The lesson learned should lead to improvements when creating and communicating prevention policies to address this ongoing crisis as well as future ones.

Germany and Senegal both clearly knew and understood their audiences and took the correct actions in developing and executing their communication plans.

The United States was expected to be the world leader in its responding to the pandemic. Instead, it was the least effective of the case study jurisdictions when executing a health communication strategy plan. Similar to Germany, the communication strategy problems in the United States stemmed from a federalist infrastructure, which confused and divided strategists on who was supposed to implement what plan. However, unlike Germany, there was a lack of scientific belief from those in positions of authority. The conflicting messages from the President, the CDC, and local and state authorities prevented an early and aggressive public health communication plan, which could have helped the United States to taper down the spread of COVID-19 and increase public health prevention practices. A local based approach with state oversight worked well to create individualized plans of communication and execution, but created opportunity for misinformation and confusion. One has to wonder if President Trump had demonstrated the same leadership as President Sall or had partnered with the scientific community like Chancellor Merkel, how much better the results may have been in the U.S. There are not enough policies and plans in place to efficiently and effectively respond to a global pandemic given the current structure and function of federalism in the United States. The United States can learn from the mistakes it and other countries made during the COVID-19 pandemic and while they are already working to correct them under the new presidency, more extreme measures are needed so that public health communication can be effectively utilized on a national scale, should future need arise.

Recommendations for effectively addressing future pandemics and epidemics including developing related health communication plans include:

1. Plan for future pandemics now so that plans can be fully vetted before they are needed.

Much like the efforts of President Obama forming the pandemic task force after the Ebola epidemic, countries need to take what they have learned from this pandemic and begin planning on how best to address the next one.
2. Introduce a public health communication plan as early as possible that is regularly updated, accounts for funding, and includes buy-in across governmental levels.
3. Communicate the response plan from a single source, preferably at a national level by the highest ranking official. It is possible that there is more than one logical or appropriate entity to voice the message. The President of the country should select the most appropriate voice whether it is his/hers or someone else's and gain consensus. Once that person is selected, all other entities should support the message by echoing it to their audiences.
4. Begin pandemic related public health communication strategies with proactive disaster mitigation efforts and conclude them with education and advocacy. This supports wide spread and fast initial prevention efforts while maintaining and building long-term effective measures throughout, without over taxing resources.
5. Develop a national communication plan with input from state secretaries of public health to devise guidelines for pandemic mitigation that include a timeline of implementation and monitoring regulations.

6. Utilize financial resources to incentivize citizens to follow public health guidelines including but not limited to, income supplement, bill reimbursement, and food distribution. This will help ease the national economic burden, encourage equity, and induce cooperation in public health efforts.
7. Emphasize collaboration between stakeholders to form partnerships between the national government, public health entities, hospitals and provider networks, digital resources include television, streaming, or radio, and community stakeholders including faith-based groups and community leaders.

5.0 Conclusion

There are multiple universal strategies that, when implemented, increase the likelihood of a successful response to a pandemic. One of the main tenets is a trusted, effective, transparent communication strategy. An effective public health communication plan helps to ease the public health burden. Based on early mapping and assessment, the United States of America should have had the best public health response and Senegal the worst, but when the concept of public health communication is taken into account, a completely different picture emerges. Overall, Senegal was expected to struggle under the pressures of COVID-19. Instead, a small country ravaged by the Ebola epidemic only years prior took the lessons learned from that event and built an entire public health communication strategy made to withstand a behemoth of a disease like SARS-CoV-2. While originally ranked 95th in the world for preparedness to face a global pandemic, Senegal now ranks number 2 (only behind New Zealand) on the COVID-19 global response index with a score of 97.2 and a death count of only 1068 people (Foreign Policy Analytics, 2020).

The public health communication plan should be focused and use appropriate delivery channels to garner the most influence with audiences while remaining culturally competent. Communication plans should involve multiple partnerships and focus on scientific and political stakeholders who can help to implement them. Using the recommendations above and the health communication strategies addressed in this essay will ensure that future health communication plans better address epidemic and pandemic type events not only on a national scale but on a global scale as well.

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