Science and Policy: Why Can't We Be Friends?

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With Special Credit to:
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Abstract: The purpose of this study is to inspect the dynamics between scientists and policy makers during the coronavirus pandemic. It is obvious that as a country the United States was inadequately prepared for the pandemic, which led to both loss of life and economic downturn. There is a disconnect between the science and the medical regulations enforced by politicians, causing tremendous confusion and allowing the virus to evolve into a political matter. Resulting from the unfortunate circumstances of the pandemic, the US needs a permanent “Epidemic Plan”. This plan advises three components: science being at the forefront of communication and knowledge, equal distribution of resources with a set amount of money reserved for when the next epidemic transpires, and continuous refinement to the epidemic plan with every new presidency, to make sure that it is able to endure over time.

Preface: I have always been interested in environmental studies. Particularly, I've questioned why the United States couldn't change bad habits that scientific fact has proven to negatively affect the environment. Due to the disconnect between science and policy, frequently scientific fact and political statements are contradictory. This makes it difficult from a citizen's perspective to understand what information correct and what actions is to take based on the advice given. When the pandemic started in 2020, I saw the same trends occurring, including the pandemic being politicized similar to issues like climate change. The science advice was different from the medical guidelines enforced by political leaders, and many scientists were being silenced or ignored. This made it difficult to make informative decisions as a citizen of the US, causing the virus to spread more quickly. It also made it last longer, affecting the economy and human safety for an extended period of time. Due to an internship with Dr. Roger Pielke Jr. on the EScAPE Plan, I was able to look further into the phenomenon of the disconnect between science and policy. The research spoke loud and clear, proving that this has been an extensive issue globally, and the US needed a new plan for when epidemics like COVID-19 happen again. So, I went forward to create an "Epidemic plan for the US" in which science is given the ability to lead decisions based on their research, and the correct recommendations are given to the citizens of the US. This paper talks about the US's difficulties with the pandemic, and what my advice is for the future.

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Introduction

This document is a Senior Thesis independent research study analyzing the disconnect between science and policy during the COVID-19 pandemic. I examine the rules and regulations implemented by governments, both at the local and national levels, and how closely they adopt the advice the scientists were giving. Then, I looked at how these policies affected the US's ability to deal with the pandemic, in comparison to other countries and the different presidential administrations during the pandemic. After that, I advise a new epidemic plan that focuses on bridging the gap between science and policies and having a clear message to the public on what precautions they should practice. The research question I aim to answer through my research is as follows: In what ways did the science behind the COVID-19 pandemic drive the policies created in the US, and was it effective? To research, I read news articles and scientific journals and compared them to what the federal and local governments advise. I have also read and listened to interviews with scientific advisors about their experience advising presidents and their opinion on the way the pandemic has panned out in the US. I then used this research along with research on past pandemic strategies to create a new "Epidemic Plan", as discussed earlier. By advising my plan, I hope to prevent future epidemics such as these from taking such a large toll on the lives of US citizens and on the US economy by being more prepared.

Background

COVID-19 has changed the world. Every single person has been affected by the virus, and its impacts will never be forgotten. One would assume that the United States

would have been more than able to protect themselves from the toll that COVID-19 took. However, the virus exposed extensive discrepancies in the US's epidemic procedure.

The Virus

When COVID-19 emerged, it revealed one distinct problem: the world's ability to react quickly to epidemics. An epidemic is a widespread occurrence of an infectious disease. COVID-19 is an acute respiratory infection, meaning that it affects a victim's respiratory system. Victims extend further from humans to include animals and other species as well. Because it attacks one's ability to breath, most of the deaths have occurred in those who have underlying health conditions, such as those with asthma and the elderly. The virus is believed to have originated in animals. It then spread to humans in the wet market in Wuhan City, China (Chaplin, 2020). There is still much speculation around this as some believe it could have originated from a lab outbreak as well. COVID-19, also known as SARS-CoV-2, is spread to others through respiratory aerosol droplets. This virus is deadly and is extremely contagious, which caused it to overtake the world quickly. Variants have also emerged due to the mass circulation of the virus which are even more contagious and deadly.

After the virus emerged from Wuhan City on December 31, 2019, the first case arrived in the US 15 days later. In May of 2020, just five months later, there were 280,000 worldwide deaths, and the death toll of the virus did not stop there (Chaplin, 2020). At the end of March in 2021, there were 2.79 million confirmed deaths worldwide, and 550 thousand deaths in the United States alone. This virus spread quickly, covering the planet in a month and causing chaos across the world, with most countries being unprepared.

The Spanish Flu

The last time that a global epidemic of this scale emerged, it was the Spanish flu, also known as the H1N1 virus, in 1918. This disease also originated from an animal, specifically pigs. It returned again in 2009 and at this point, the public health system had a plan. The US had been preparing a pandemic preparedness plan and countries were able to respond according to the specific plan, enabling them to be more prepared. Even though they had a pandemic preparedness plan, it was not competent. The H1N1 virus killed around 50 million people worldwide and 675,000 in the US. Victims were mostly people under the age of 5, between the years of 20-40, or over 65 years of age (CDC, 2019). In 1918, they were unable to create a vaccine and there were no antibiotics, which meant that they were left to non-pharmaceutical interventions, allowing the Spanish Flu to take its toll more easily (Teasdale, 2011). The Spanish Flu pandemic shows that the US has previously had a pandemic plan, however, it was inadequate, as were the plans thereafter.

The United States

Countries during the COVID-19 pandemic were taken horribly off guard, especially the US. The virus has taken over the United States and caused issues economically and politically. Wearing masks turned into a political issue quite early, and many policy drivers talked about the virus like the US would be immune to it, and there was no possible way it would enter into the US. However, the virus came quick, and over a year later, is still controlling the country, the economy, and the people. While other countries such as New Zealand closed their borders and shut things down early on following science advice, the US still has not contained the virus. One of the biggest concerns currently is distributing the vaccines. Ensuring that each person has an equal

chance to receive the vaccine and that there is a desire to take the vaccine will have a considerable effect on the future of the US, especially with the new variants coming.

Though it may seem unnecessary, it is important to look back and understand why the US failed to prepare itself for this pandemic or react to it in a timely manner. It is also important to understand why the pandemic became a political issue rather than a human safety issue that should have everyone's support. Finally, becoming aware of why the science and the policies did not always coincide and the instructions were unclear. For the United States to do better in the future with global problems, it is important to understand what has been done poorly in the past and apply that to future problems.

Literature Review

Numerous pieces of literature have been written since the start of the pandemic, discussing the impact that it has had on the US, and evaluating the policies that were put in place. The following is a quick overview of some of the policies and what they aimed to assist in. It also gives an idea of where things may have gone awry.

Fiscal Policies

In the US, the main focus during the pandemic was to keep the country running, which evolved into focusing most efforts on the economy. This can be seen through fiscal policies that were passed like the Coronavirus Aid, Relief and Economic Security (CARES) Act on March 27, 2020(International Monetary Fund, 2021). This act aimed to help unemployed US citizens, small businesses, hospitals, and students. The money for the CARES Act was allocated as follows:

Allocation of Money in the CARES Act (2020)

Amount of Money	What it is for
$510 Billion	Prevent corporate bankruptcy by providing loans, guarantees, and backstopping Federal Reserve 13(3) program
$349 Billion	Forgivable Small Business Administration loads and guarantees to help small business that retain workers
$293 Billion	On-time tax rebates to individuals
$268 Billion	Expand unemployment benefits
$150 Billion	Transfers to state and local governments
$100 Billion	Hospitals
$49.9 Billion	International Assistance (including SDR 28 billion for the IMF's New Arrangement to Borrow)
$25 Billion	Provide food safety net for the most vulnerable

International Monetary Fund, 2021

Most of the money provided by the CARES Act went to keeping businesses afloat. During the pandemic, keeping businesses going was paramount, especially small businesses which were the second most funded area in the CARES Act. Finally, hospitals, international help, and food for people who needed it were the last three matters that were allocated money. All of these areas of interest were invaluable at the time and that money was well placed. However, there was no allocation of funds to the scientists that were studying the virus and creating a vaccine. If scientists are not funded to create a vaccine, then it will take longer for businesses to go back to normal, causing these companies, hospitals, and people to need more money, food, and help overall.

Further fiscal policies included $877 billion and another $44 billion of funding for unemployment benefits. Plus, another $900 billion was given to small businesses in

the Health Care Enhancement Act (IMF, 2021). In this act, there is finally funding for virus testing, which allocated about $25 billion. Science was funded again in the Coronavirus Preparedness and Response Supplemental Appropriations Act (IMF, 2021). This act gave money not only to virus testing but also to therapeutics and diagnostics as well to support the Center for Disease Control and Prevention (CDC). From these fiscal policies, it is obvious that little to no money was given to the scientists that were working hard to investigate the virus and understand it. Not only were they expanding knowledge about the virus, but they were also advising the government and the public on the best safety precautions and preventive measures. In April of 2021, over a year later, scientists are now reporting that air circulation is best to not spread the virus as quickly, over masks and sanitizing surfaces (Allen, 2021). Imagine if the world had known this earlier. Would less people have gotten sick?

Executive Power

President Donald J Trump, US president during the first year of the COVID-19 virus, was able to take a substantial amount of executive direction when the pandemic began. During national emergencies, presidents are given extra power so that they can easily distribute funding and help where it is needed. Due to the Robert T Stafford Disaster Relief and Emergency Assistance Act of the Stafford Act, President Trump was given the ability to act quickly with what he felt was necessary to protect the American people (Price and Myers, 2020). He used these abilities to commit federal resources to the National Guard in several states who were responding to the pandemic and needed extra help. The Department of Defense as well as the Department of Security were to use 100% of their government funds to help the National Guard support the states' response

to COVID-19. Along with giving resources to these departments, he also implemented a second executive order directing the Secretary of the Department of Housing and Urban Development to identify funds to assist renters and homeowners that had been financially impacted by the pandemic. These funds were meant to fulfill their rental and mortgage obligations. The executive orders that he gave would oftentimes take an extensive amount of time to be passed through the government. However, with the emergency act, he was able to bring support to these areas swiftly, which is paramount during an emergency, especially global crises.

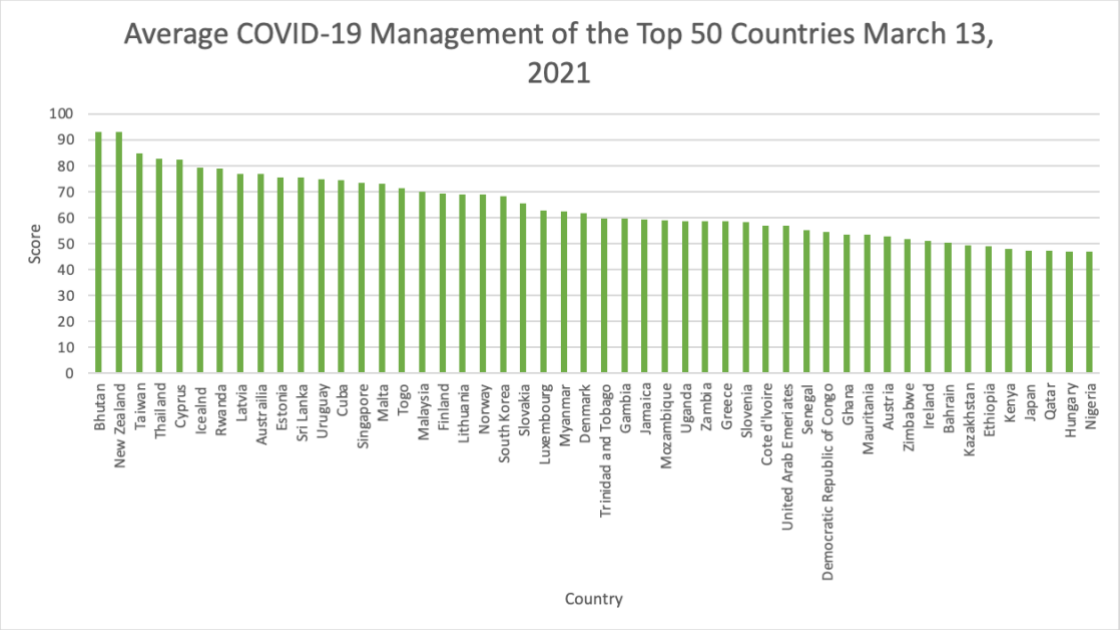
After these executive orders were put in place, President Trump also wrote three presidential memorandums. The first memo was meant to relieve student loans and waive interest on these loans until December 31, 2020. Though this was implemented under the CARES act, it was set to expire in September. Because the pandemic lasted longer than originally thought, this memo extended that relief for students. The second memo was directed to the Treasury Secretary. This memo instructs them to defer "the withholding, deposit, and payment of the payroll tax" from the beginning of September to the end of December 2020 for employees who make less than $4,000 pretax, every two weeks. This memo gave impactful relief to employees, allowing them to take time off if they needed to, and help with budget cuts due to the virus. The final memo delivered requests that the Federal Emergency Management and state governments give disaster relief funds to compensate those who are entitled to unemployment benefits (Price and Myers, 2020). All of these memorandums are meant to lessen the heavy financial burden that the pandemic has held over American citizens. Many people became unemployed during the pandemic, and students were impacted heavily as well. These

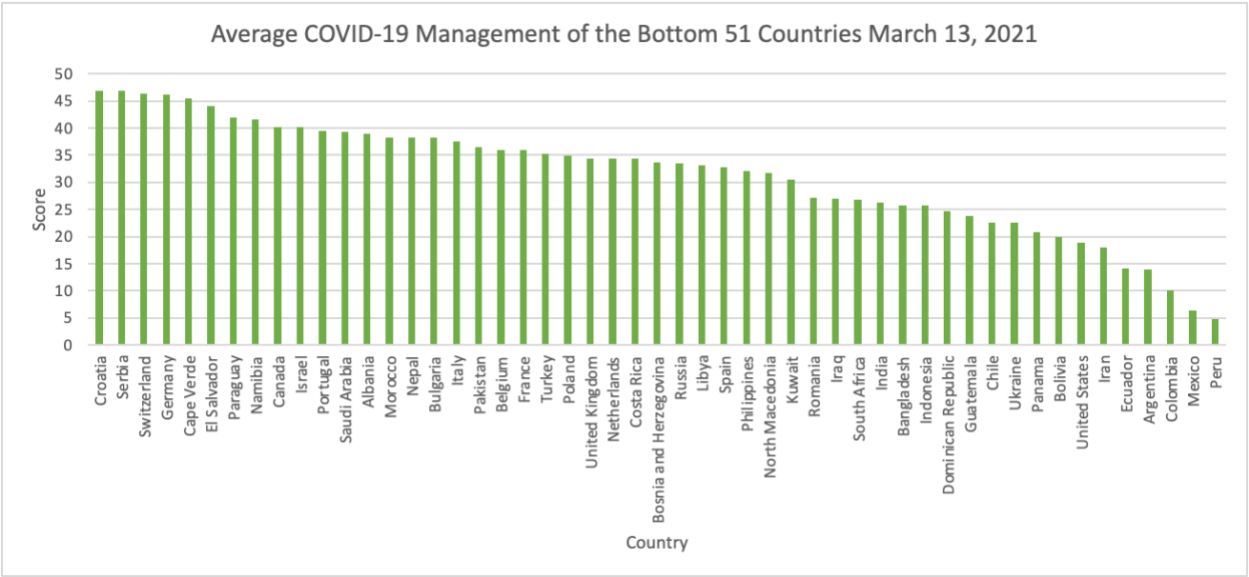
memorandums aim to help these citizens out of this financial crisis that occurred because of the pandemic.

The US in Comparison to the Rest of the World

Despite all of the policies put in place to help with finances during the pandemic, the US, along with the rest of the world, still struggled to control the pandemic from a scientific and public health standpoint. Most countries started out disorganized and unprepared. When the World Health Organization, or WHO declared a "public health emergency of national concern" on January 30, 2020, all countries except for Asia did not react quickly, if at all, including the US (Maxmen, 2021). For countless days after that, the president of the US continued to say that the virus would not affect the country, even though it had already breached the borders of the country. While assessing the response of countries to their public health emergency, WHO came to the conclusion that there had been a failure of the world to take the pandemic seriously, and that there needed to be a change in preparedness for future events such as this.

After the first year of the pandemic, the Lowy Institute performed a study that rated countries grounded in how they managed the pandemic 36 weeks after their hundredth confirmed case of COVID-19. These ratings were based on confirmed cases, confirmed deaths, confirmed cases per million, confirmed cases as proportion of tests, and tests per thousand people. China was not involved in the study as they didn't have information available to the public. The countries scores in comparison to others as of March 13, 2021 can be seen in the following graphs:





The study found that Pacific-Asian countries proved the most successful at containing the virus, even though the virus originated in that area. The US and Europe were the most overwhelmed by the virus at the beginning, though Europe ended up being the most improved over time. North and South America were found to be the

worst affected continent globally due to the rapid spread of the virus in these areas and the lack of ability to control the spread of the virus. Middle and East Africa started off on top of the virus, halting the initial progress of the disease, but it eventually worsened. In the last half of 2020, Middle and East Africa were able to get it under control. The Lowy institute observed that richer countries were quickly overwhelmed by the virus due to international air travel. Because developing countries do not have as much international air travel, they had more time to prepare while watching the virus spread in other countries and learning from their successes and failures.

Final results found that the top three most successful countries were New Zealand, Vietnam, and Taiwan. The bottom five countries were the United States, Iran, Columbia, Mexico and Brazil. These results show that though the US has access to many resources resulting in the US having an advantage over other countries to combat a global epidemic such as the COVID-19 pandemic. These advantages did not lead to overall success. In this situation, the lack of preparedness and ability to adapt cost many lives and caused many more problems to emerge. The question is: why wasn't the US prepared and did anything else contribute to the uncontrollability of the COVID-19 virus?

Discussion

A sizable factor in the US's failed response to the pandemic was the relationship between science and policy, or lack thereof. The impacts of this problem are seen in the disconnect of real science advice and the advice given by policymakers and politicians. In the first year, President Trump and his administration were the political leaders of the pandemic. Recently, experts have come forward saying that the Trump

administration did not have a good relationship with scientists, both at the pandemic level and in many other areas of the scientific world. This lack of trust and communication between scientific experts and political leaders during the beginning of the pandemic created great confusion within the people, and over-politicized much of the valuable information which came from the scientific community meant to help keep people safe.

A Timeline

There are several examples of this relationship between experts and the Trump administration. Warnings from WHO, the CIA, and Trump's scientific advisor Navarro of the potential of the COVID-19 virus started in late 2019. Yet, the Trump administration did not start taking action until March of 2020. Also, the Health and Human Services Secretary Alex Azar warned President Trump of the possibility of the virus's effect on the US in a phone call on January 30, 2020. Trump told his staff that Azar was being an "alarmist" (Rutledge,2020).

Before COVID-19 hit, the Obama administration had been working on a new pandemic plan. However, in the eight years that Obama was in office, the plan was never finished. The beginning of the plan was disbanded by President Trump in the first years of his presidency, and he never started a new one, leaving him completely unprepared (Routledge, 2020). Then, when WHO published reports and sent out their public health emergency, President Trump underplayed the threat. His response to WHO saying "The whole world needs to be on alert now. The whole world needs to take action and be ready for any cases that come from the epicenter" was ""We only have five people. Hopefully, everything's going to be great. They have somewhat of a problem, but

hopefully, it's all going to be great" in an interview with CNBC's Joe Kernen. From this data, it can be seen that a majority of policy leaders, and specifically President Trump completely ignored WHO's recommendation within the first month of the global pandemic, and disbanded any kind of help others could provide, like the beginning of the Obama administration pandemic plan.

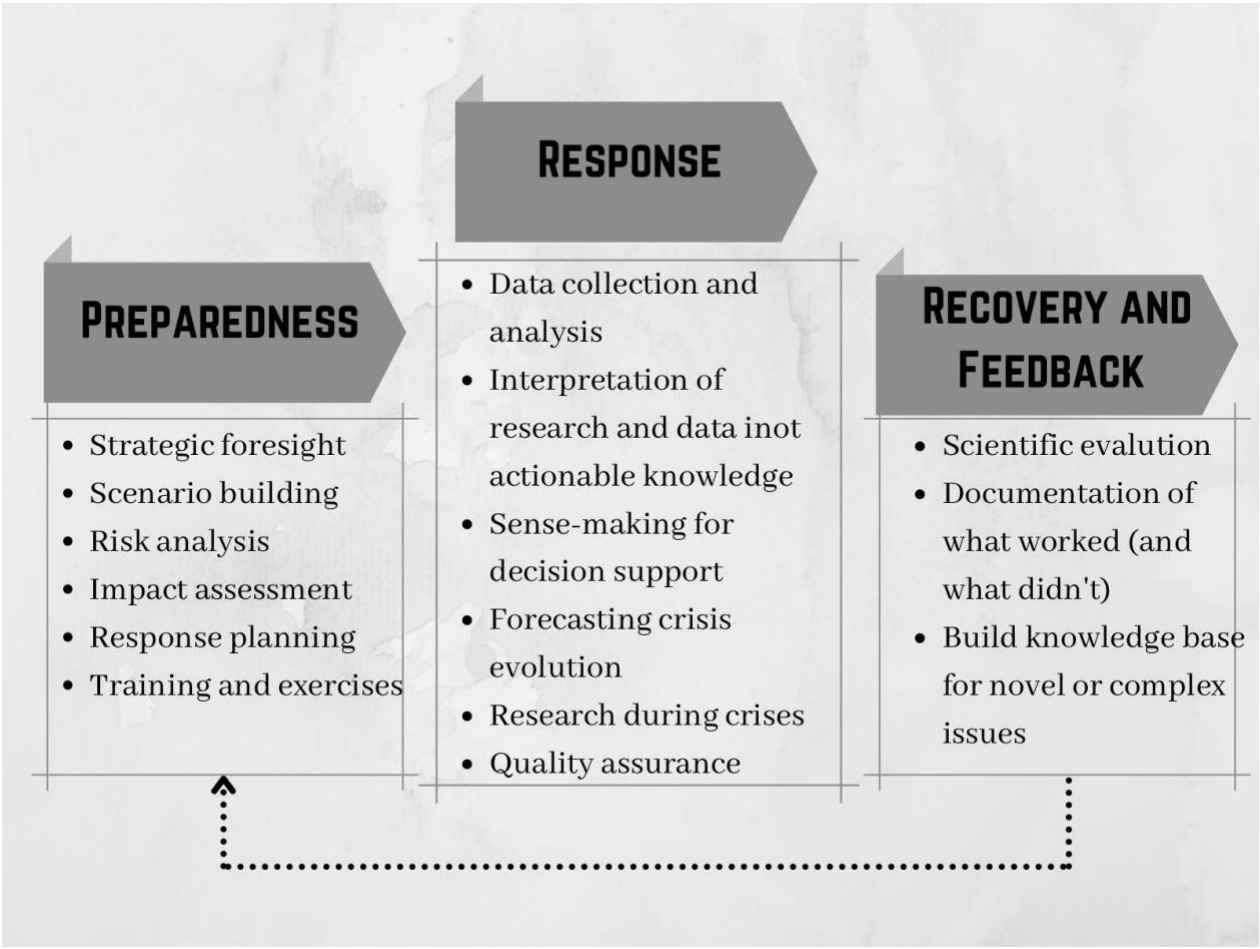
In February, there were reports of around 15 people hospitalized with COVID-19. The Trump administration continued to claim that they had it completely under control while WHO was raising the global risk of the virus from "high" to "very high". When the Trump administration finally took steps to slow the spread of the virus, there were already 4,500 confirmed cases of the virus in the US. After not reacting to the virus and pretending like the United States would be unaffected, Trump blamed the lack of preparedness on WHO and the first responders. He went online saying that the scientists, WHO, and the first responders "blew it" and he would be looking into it (Rutledge, 2020). At the beginning of the pandemic, President Trump and his administration continued to ignore the advice of scientists and ignore the imminent danger of the pandemic. It resulted in an under preparedness for the United States and explains greatly why it was rated in the bottom five in Lowy's study. The United States has some of the strongest resources to be able to deal with a global pandemic, including health care, government responsibility, and development. However, due to the lack of heading expert advice and understanding fully the impact that the virus could have, many lives were lost and there was a strong economic downturn.

Crisis Management Failures

The Trump administration also lacked clear messaging to the public in describing the extent to which the virus would affect them and how they should be protecting themselves. President Trump ignored expert scientific advice and quieted those who spoke against him. Dr. Anthony S. Fauci's relationship with President Trump is one of the most prominent examples of silencing such advice. When the US was deliberating about letting schools and public stores open again, Fauci came out against this with support from the CDC, saying it was too early and dangerous, which was opposite of what President Trump had been saying at the time. In response to Fauci's comments, Trump said that his answers were "unacceptable, especially when it comes to schools," and then saying that Fauci, "likes to play both sides of the equation" (Rutledge, 2020). He stifled the advice of other scientists including Nancy Meissonier and Mark Asper. In interviews, experts studying the pandemic discussed how many were scared to speak out against President Trump's word which helped lead to confusing advice to the general public and causing the virus to spread even more rapidly. Interaction between scientists and policy makers is key in unprecedented times such as a worldwide pandemic. Scientists at this time are working towards understanding the virus, how it spreads, and what precautionary measures need to be taken to keep people safe and healthy. On the other hand, national leaders are trying to keep their countries and citizens afloat economically and get the country running normal again as soon as possible. For people to be healthy and for countries to stay economically intact during a global pandemic, policy makers and scientific experts need to work together and be clear about what is expected of their citizens.

Having clear science advice is extremely important to being successful during a health emergency. It has the ability to create a sense of security and unification of a large number of people, which is needed to keep people healthy and safe. This happens because the majority of people trust science, whether they trust the government or not (Gallup, 2019). The trust between the public and experts can be used by the government to establish rules and regulations during unprecedented times like the COVID-19 pandemic. Science also has a valuable role in the "Crisis Management Cycle" (shown below) that a country goes through when these epidemics occur.

Crisis Management Cycle



Crisis Management Cycle from OECD

The ‘Response’ category of the management cycle requires a great deal of involvement from the scientific community, with extensive amounts of research and forecasting. However, this research will not mean anything if it is not backed up by the policy leaders. When health experts reached consensus that masks were effective, President Trump refused to wear them and mocked those who did. If mask wearing was universal, and not politicized, nearly 130,000 lives could have been saved (Reiner, R.C., Barber, R.M. *et al., 2021)*. Clear science advice with the support of leadership is crucial in putting an end to an epidemic quickly, without having as much of a disastrous impact like the coronavirus had.

Even though the US was extremely underprepared for the pandemic, the rest of the world was not quite as prepared as they would have liked either. As said before, the areas who should have been more prepared, considering they are more developed and therefore have more resources, the US and Europe, struggled during the pandemic. WHO has evaluated their pandemic response and the pandemic responses of other countries at the beginning of this outbreak. They found significant gaps in the countries across the world, including in areas of: “surveillance, health systems, equipment and training, essential public health function and the role of national IHR focal point, emergency legislation, risk communication and coordination.” (Director general WHO, 2021) They found that most policies in most countries do not support regulations regarding pandemic response and how a country's economy reacts during the pandemic response. Under most leadership in countries, pandemic preparedness planning is not an integral part of their public health system, and the COVID-19 pandemic has shown this. Most countries were underprepared for this pandemic and had to adapt. Some countries adapted better than others, and the United States struggled to adapt and use

their resources. Due to the lack of communication between the scientists and the policymakers, the US was unable to quickly react to the pandemic and fully understand its capabilities.

Current Administration

In 2021, the Biden administration took over political leadership in the US and created a new pandemic plan. This pandemic plan aims to have a "decisive public health response" getting rid of any cost barriers to prevent and treat COVID-19, including the creation and distribution of the vaccine (Biden Administration, 2020). One of the main goals of the administration is to give trustworthy leadership that is grounded in science. During the Obama-Biden administration, President Biden led the response to the H1N1 pandemic and the 2014 Ebola pandemic. During the current pandemic, he intends to put science back into the center of the decision making. By bringing science back into the group that is making decisions for the next pandemic, he believes he will be able to have better communication to the public, with more direct and clear information about what is happening with the health of Americans, what things the community can do, and what the future looks like. After the reaction of the US to the first year of the pandemic, Biden's goal is to correct the mistakes made and push for a better future. The way he believes he will be most successful in achieving these goals is by bridging the gap between scientific experts and policy makers. This will give experts the liberty to act quickly and give the best advice possible to the public.

Conclusion

Science advice to policymakers during the COVID-19 pandemic has had its evident problems. One of the greatest hurdles to overcome as a leader in science or in

policy is communicating the most helpful and precise information to the public. Under the Trump administration, science advisors were silenced. Most advice was either unwelcome or not used based on what the political party wanted to provide to the public. This caused a slow start to combating the pandemic, resulting in many more deaths and complications than there needed to be. During the COVID-19 pandemic, the US failed to present its best self, leaving countless lives at risk. The administration under Biden has goals to resolve these issues in the near future, however, there are still many things that the US can work on to be better prepared for when the next epidemic arrives.

Giving liberties to the president during this time is important, though it is also important to make sure that these decisions are not being made by only one knowledgeable person. To balance out the effect of the executive liberties, power should be distributed equally between science and policy leaders, and there should be a strong, positive relationship between these groups. In this way, the US will be able to pass important regulations quickly while also coming to the best conclusions based on as much expert knowledge as possible.

Recommendations

The place to start with a new epidemic plan would be to reconcile the way leaders initially prepared for and reacted to the virus. The US and countries in Europe showed how even the strongest of leadership can be thrown off course if they are not prepared. There have been over half a million deaths due to COVID in the US, and if we had been more prepared as a country, I strongly believe we could have fought off the tragedy of the virus quite well, similar to countries like New Zealand. Even though it may seem like

we are pushing through this pandemic and seeing the light at the end of the tunnel, this will not be the last epidemic of this nature. With population growth, we as a species will continue to run into problems as grand as these and it is important to stay well ahead of the upcoming impacts. This is why my recommendation for the future is to create an epidemic plan for the US, that is continuously worked on and upheld. This epidemic plan will consist of three key aspects:

1) Science at the forefront of communication and knowledge
2) Equal distribution of resources with government money set aside at all times for epidemics
3) Continuous updates to the plan with every new presidency

An emerging theme within the pandemic was the lack of a positive relationship between science and politicians. Both types of leaders are required during epidemics to help the people to safety as soon as possible. However, time and time again we see science pushed aside when it comes to these decisions. This could be seen in many countries such as Canada and European countries during COVID-19, but especially in the US, where scientists were being silenced and false news was a constant threat. This led to a great amount of confusion from US citizens, and advice like mask wearing, getting tested, and other precautionary measures being politicized. To do better in the future, this cannot happen. Opinions can skew scientific evidence which can make it difficult to implement safety measures to slow the spread of any epidemic, including the COVID-19 virus. This is why I believe it is important to allow scientific experts liberty and leadership in the United States epidemic plan. Allowing scientists to study and understand what is happening and then give their advice to leaders and the public is really important to keeping everyone on the same page and understanding exactly what

needs to be done. Social scientists should also be involved in advising US leaders as they have strong knowledge about human nature and how to best communicate with large groups of people. They also have a strong understanding of culture, which is invaluable to making regulations that everyone will be willing and able to follow. With the push for science experts to be the primary advisors and giving all science, including social science, a place to speak up and help, I feel the health measures implemented will have a stronger pull to a larger population of US citizens, allowing normalcy to arrive quicker.

About a fourth of the country has been fully vaccinated which is higher than most other countries. However, there is definite inequality in who is getting the vaccines. Despite President Biden's best efforts to roll out vaccines and money quickly to those who need it, there are still obvious discrepancies with who is getting vaccinated, who was hit the hardest economically and in their daily lives by the pandemic, and who is receiving the most help. There were many policies put in place to prevent inequalities from occurring and help frontline workers take the time that they needed to be healthy. Along with the policies, many communities are using trusted community leaders to help distribute the vaccine. Some groups fear the vaccine, and so having a community leader that they trust giving them out and showing their support to the vaccine helps people feel more comfortable with getting vaccinated. I believe that if there is continuous improvement towards these policies and methods in the epidemic plan, scientists and advisors can try out new things, and see what works and doesn't work for equal distribution of help. Also, having money set aside at all times for when these "unprecedented times" occur, can help leaders feel more comfortable with distributing equally from the beginning, rather than having to pick and choose who is helped and who isn't.

My final recommendation is to have this epidemic plan continuously amended and edited. In the past, we have seen presidents create pandemic plans. Bush created a plan during the H1N1 pandemic and that is what most of the Trump administration's decisions were based on. Though it was a good plan, it was not up to speed with the growth of the population or how much the US and the world had changed since then. With population growth and more countries becoming industrialized, epidemics will keep occurring. We as a country need to stay ahead of this and plan accordingly. My recommendation is that each president, with the help of their scientific board, should edit the epidemic plan, based on the situations of the time and their expertise. Every president and group of scientists have their own experience and advice to give, and with "unprecedented times" becoming more and more frequent, being prepared is key to being a successful country and species.

Overall, it is crucial to have a good relationship between politicians and scientists. In the future, the US and the rest of the world will see many more problems that have the equivalent ability to do as much damage, or more, than the COVID-19 virus did. Having our decision makers be knowledgeable about the best way to move forward, and having clear-cut health measures put in place, allows the US as a country to focus on other things during epidemics, which can be unpredictable. This continuous epidemic plan will allow the US to plan ahead and to not be dismantled to the extent that it was during the 2020-2021 COVID-19 outbreak.

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