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The Distribution of COVID-19 Vaccines: A Geopolitical and Strategic Analysis of Southeast Asia

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Introduction

Southeast Asia is comprised of eleven countries, each with distinctly unique economic, political, and cultural landscapes. As the coronavirus pandemic evolves and the race to develop a vaccine transitions to a race to efficiently and effectively distribute a vaccine, leaders are faced with a series of operational challenges. Through this paper, we take the Philippines, Myanmar, and Singapore as case studies of countries with low to high levels of development, respectively, and conduct a strategic analysis of differences in vaccine distribution plans based on existing infrastructure as well as vaccine country of origin. These nations were chosen based on their level of development, contingent on GDP per capita, and their COVID-19 cases per million at the beginning of this study. Additionally, these countries were found to have data that, based on cross-analysis, appeared to be a relatively accurate reporting of COVID-19 rates and domestic response. Although these states' differing domestic situations hinder international application, the primary challenges they faced due to COVID-19 are reflective of the resources and governance at their disposal. This analysis is dual-part in nature, focusing first on the economic, political, and cultural spheres of the Philippines, Myanmar, and Singapore (Section 1), and second on the impact of the relationship between China, the United States, and the United Kingdom with these countries on vaccine distribution plans (Section 2).

Section 1: A Review of the Economic, Political, and Cultural Spheres of Myanmar, Singapore, and the Phillippines

According to Michael Vatikiotis, the Asia Regional Director for The Centre for Humanitarian Dialogue, COVID-19 has not affected mainland Southeast Asia as badly as other regions. Vatikiotis notes that fatalities are extremely low with many nations having death rates in the double digits. However, he concedes that the island regions of Southeast Asia, such as the Philippines, have much higher infection rates. The burden of COVID-19 has been relatively low due to the levels of public awareness, decisive action on the part of health authorities, domestic lockdowns, and borders being shut down (Vatikiotis). Additionally, the general levels of public fear for the virus have contributed to low levels of COVID-19 given compliance with mask initiatives and domestic lockdowns (Vatikiotis). Furthermore, the history of viruses in the region means that many of the nations in Southeast Asia have historically invested a high degree in public health so many doctors are available on the ground (Vatikiotis). However, despite general public compliance with regulations and regional history with similar viruses, the differences in infrastructure across nations in Southeast Asia changes optimal COVID-19 vaccine distribution plans.

Myanmar

Prior to a coup on February 1st, Myanmar was rapidly undergoing transition, attempting to compete in the global economy and break away from its past of corruption and authoritarian rule (BBC). The political fracitoning in Myanmar can be seen highlighted in the governments late orders of vaccines (Vatikiotis). Despite Myanmar undergoing a coup and its generally unique political situation, many of the challenges it faces as a developing nation remain relevant to the analysis executed in this paper. The Myanmar case study highlights some of the important issues developing states may face, such as fear of great power conflict, late vaccine orders, and infrastructural limitations.

The nation experienced its first democratic elections in 2015 which generated optimism throughout the liberal world (World Bank, Myanmar). This shift allowed the nation access to global markets it had previously been excluded from. The domestic situation also drastically improved and Myanmar experienced a 6.8% 5-year compounded annual growth rate (World Bank, Myanmar). As of 2017, the nation's exports accounted for $9.8 billion while imports accounted for $15.8 billion (CIA, Myanmar). Myanmar was projected to continue its economic growth before the COVID-19 pandemic hit. The pandemic came with substantial economic cost to the country with growth projected to be at just 0.5%, with the potential for the

economy to contract by as much as 2.5% (World Bank, Myanmar).

This stalling economic growth poses a threat to recent social improvements in the nation. It compounds existing domestic challenges such as infrastructural limitations that have been highlighted in previous vaccine campaigns (TechNet). Additionally, Myanmar still faces gender and ethnic based exclusion which has severely limited human capital in the nation (World Bank, Myanmar). These social issues are highlighted in the international attention Myanmar has faced following the massacre of the Rohingya people in the Rakhine state. (World Bank, Myanmar). These domestic uses have geopolitical implications, as they have been weaponized in great power conflict. Myanmar is bordered by both India and China, with historic ties to both states, positioning it to be taken advantage of in conflicts between both states (CIA, Myanmar).

Singapore

Singapore's economy is characterized by value-addition. Singapore's rapid industrialization following its declaration of independence allowed the country to establish manufacturing and services as pillars of the economy, both of which remain drivers of growth today. The gross domestic product is $565.8 billion dollars with a 3.2% annual growth rate (World Bank, Singapore). This highly developed free-market economy operates in an open and corruption-free environment (CIA, Singapore).The level of development characteristic of Singapore's economy translates directly to lifestyle: rated the best country in the world in human capital development by the World Bank Human Capital Index, Singapore has a population of 6.21 million people with a median age of 35.6 years (World Bank Human Capital Index). The Singapore government has a high degree of cohesion and coordination; all significant decisions made by the Executive are first agreed upon by the sixteen members of Cabinet (Prime Minister's Office, Singapore). This coordination extends to the dissemination of healthcare.

The government controls all public health initiatives from school-based campaigns to 18 polyclinics used largely for primary care to public hospitals that service 80% of the population (Carroll 2019). The level of infrastructure development coupled with the consistent ability to implement coordinated efforts given the governmental structure has allowed for a high degree of control throughout the COVID-19 pandemic. To date, Singapore has a COVID-19 death rate of 0.0496%, ranking amongst the lowest rates worldwide (CSIS). According to Vatikiotis, the variance across infrastructure and development in Southeast Asia further highlights Singapore's high degree of cohesion; Singapore seems to be in a contained bubble, allowing people to cross the border in both directions, but strictly enforcing a quarantine period that maintains the low death rate.

Phillippines

The Philippines interval governance has been described as the "most persistently undemocratic democracy in Asia," a pattern which continues into current President Duterte's regime (Rocamora). The Philippines has recently enjoyed sustained significant jumps in GDP, increasing over 6% annually for the past five years. President Duterte's neoliberal macro- economic approach increased spending for social and government programs, such as raising government salaries, constructing a free national irrigation system, and providing tertiary public education (Timerberton 13).

Based on the historical context of epidemics in the Philippines, the Philippines can serve as a case study for overcoming vaccine hesitancy as well as more generally, understanding issues that may be faced by countries characterized by lower levels of development. In 2012, national dengue infection rates took off in the Philippines: cases jumped 65% in 2014, flooding hospital emergency rooms that began to resemble war zones (Cepeda). In response, the Department of Health launched a national vaccination program, armed with Sanofi's Dengvaxia vaccine (Arkin). Dengvaxia was recalled soon after it was released due to potential complications in patients who had never been infected with dengue previously. A highly political controversy soon swept the country, replete with disinformation biased against scientific authorities, an excitable and encouraging media, and medical irresponsibility. The FDA quickly suspended the vaccine program, but not before sixty-two children who had received Dengvaxia died. This debacle produced widespread public anxiety and fear around vaccinations as well as other health interventions and the impact is still reflected today in current public opinion polling concerning COVID vaccines (Larson et. al. 626). Surveys from September 2020 found that 66% of Filipinos would receive a COVID vaccine right now if it was available, while only 42% would be willing to

have any member of their family be vaccinated with Dengvaxia, and 62% supported the sale of Dengvaxia in the Philippines (SWS Survey). The public is not entirely embracing either vaccine, but it is still notable that the anticipated COVID vaccine is received with more excitement than dengue, over four years post-facto. More damning, however, is a poll conducted by Pulse Asia in late December 2020, finding that only 32% of respondents would get a COVID vaccine when available, compared with 47% that would refuse it over safety concerns (Reuters 2021, Philippine News Agency 2021).

Section 2: Vaccine Distribution Challenges in Myanmar, Singapore, and the Phillippines

The study of Myanmar, Singapore, and the Philippines points to different issues regarding COVID-19 containment policies and vaccine distribution programs. Despite all three states having unique political environments, the primary challenges with COVID-19 containment and vaccine distribution highlighted by each state are seen paralleled in many other nations. Domestic challenges such as infrastructural capacity, lack of government mobilization, public hesitancy surrounding healthcare, and supply chain limitations are issues that are not confined to the specific population, culture, nor politics of any one of the case studies. However, the capacity of each nation to combat these issues, in addition to the severity of these issues, is seen reflected in the nation's level of development.

Additionally, the source of vaccines has drawn international attention as fear grows over vaccines being weaponized as part of geopolitical struggles. China appears to have been prominently considered by Myanmar as well as many other Southeast Asian nations as a means of obtaining a COVID-19 vaccine (Strangio). Although Xinhua (Chinese state news) declared that China had no intention of utilizing the vaccine as a diplomatic tool, it appears that Beijing is prepared to use the vaccine to leverage itself within the regional community (Strangio). This theory gains traction when considering Beijing's desire to foster goodwill after failing to contain the pandemic in the first place (Strangio). Vatikiotis states that there is an assumption that nations such as China and India will use the vaccine as a way to manipulate geopolitics, but he cautions that strong evidence of this has not yet been seen. Furthermore, the United States is expected to play a role in vaccine distribution in the region. Vatikiotis states that U.S. companies like the Gates Foundation have played a large role, far larger than the U.S. government, following the U.S.'s retreat from the world stage in recent years. Based on this, Vatikiotis expressed doubts that the U.S. government would play a large direct role in the region. However, despite setbacks in U.S. development, U.S. pharmaceutical companies still hold a credibility advantage over Chinese ones worldwide. This is particularly true in Southeast Asia where the companies have operated for decades (Heydarian).

Myanmar

Myanmar's COVID-19 response highlights the tragic combination of poor governance and limited infrastructure. While the nation reportedly already received the first round of COVID-19 vaccines from India, this order was perceived as late compared to other nations in the region (Vatikiotis). Although a second shipment of 1.5 million shots has been planned, there has been no confirmation for when the delivery will take place (Miglani). Given current domestic instability, there are also questions about how vaccines will be distributed given Myanmar's limited infrastructural capacity .

Based on previous vaccination campaigns, the challenges Myanmar may face in regards to successful COVID-19 distribution strategies have been made clear. At the "14th TechNet Conference" in May of 2015, Dr. Kyaw Kan Kaung from the Myanmar Ministry of Health outlined some of the domestic distribution issues the nation faces in terms of vaccination campaigns. Dr. Kuang highlighted the physical barriers present for effective vaccine distribution, the result of rough topography and poor basic infrastructure in the nation (TechNet). In extreme cases, helicopters are needed to access target groups. Additionally, Dr. Kuang noted that there was insufficient human resources and "cold chain capacity"; effectively, there was a lack of human resources at certain sub-national levels compounded by a lack of training (TechNet).

Prior to the coup there were questions of how Myanmar's historic diplomatic ties may impact vaccine distribution. Before 2015, Beijing often intervened on behalf of Myanmar to shield its military regime from international investigation (Marston). Despite a brief fracturing in the relationship between

the two states, following Aung San Suu Kyi's response to the Rohingyan genocide, relations improved and Myanmar's government was once again reliant on Beijing (Ott). Major Belt and Road (BRI) investment projects are linked to the China-Myanmar Economic Corridor (CMEC) (Marston). Myanmar's position allows Beijing to have continued access to the Indian Ocean, essential for not only BRI but for Beijing's growing competition with India (Marston). The close relations between the states is highlighted in China's promise to allow Myanmar priority access to Chinese-made vaccines (Strangio). It has been suggested that India's pledges of "vaccine friendship" came as a part of an effort to "push back against China's political and economic dominance of the region and win goodwill"(Reuters).

Myanmar's strategic position in Southeast Asia has also drawn U.S. interest as a means of reducing the influence of China in the region. Following Myanmar's reform progress, the United States began to take more concrete steps to support political reform and promote economic growth in the nation (DOS). The primary focus of U.S. investment appears to have been in the health sector, improving healthcare access across the nation and spearheading several key vaccination and treatment campaigns (DOS). However, relations have soured following escalation of the genocide in the Rhakine state that destroyed much of the goodwill built up between the nations (Kundu). This political tension poses potential issues for the U.S. and European distribution of a vaccine in Myanmar, especially considering Beijing's "vaccine diplomacy" campaign (Heydarian). The situation grows increasingly complicated as the position of the United States as a champion of international healthcare is placed under scrutiny following the poor domestic response to the virus.

The above issues faced by Myanmar's government and other developing states have been compounded by Myanmar's unique political situation. After the nation's government was overthrown in a coup, severely impacting the nation's ability to effectively operate health centers, medics in Myanmar went on strike (al jazeera). This mass walk out of workers impeded the already flawed vaccine distribution strategy (al jazeera). Prior to the coup, Myanmar was facing challenges regarding the limited infrastructural development, specifically in reaching remote regions during vaccination campaigns (TechNet). These limitations were made all the more dire by the nation's growing COVID-19 mortality rate and late orders of vaccines (Vatikiotis).

Singapore

Singapore's close relationship with opposing great powers provides an example of a case wherein one may expect geopolitics to come to head in vaccine distribution. Bilateral economic ties between China and Singapore have strengthened since 1990. In 2017, Singapore's largest trade partner was China and in one year alone, invested $4.8 billion in the Chinese economy (Enterprise Singapore). This has engendered a mutual reliance between the two countries. While economic codependence drives relative importance, perhaps of equal note is that approximately 80% of Singapore's population, over two million people, are ethnic Chinese. This demographic breakdown makes Singapore the only country in Southeast Asia with an ethnic Chinese majority (Vaughn 2006).

While the number of Sinovac coronavirus vaccine doses given to Singapore by China is, amongst other things, a factor of (1) the ties between the nations which include but are not limited to direct foreign investment and reliance on trade partnership and (2) willingness to pay, given the value-oriented nature of Singapore's economy and the proven history of economic dependency between the nations, the number of doses given to Singapore is, to date, on the higher end relative to neighboring countries in the Southeast Asia region. This serves as an example of Beijing's vaccine diplomacy strategy through which China can broaden its sphere of influence through the use of vaccines as political bargaining chips. Importantly, Singapore's influence is not limited to China and thus has been successful in receiving vaccine doses from larger drug companies including Pfizer-BioNTech and Moderna, both of which have published detailed clinical trial results with proven efficacy rates. In contrast, the lack of transparency in clinical trial data for the Sinovac vaccine has hurt public confidence in the Chinese vaccine (Dou and Mahtani 2021). The lack of faith in the Sinovac vaccine compared to the Pfizer-BioNTech and Moderna vaccines poses potential issues for the distribution of the Sinovac vaccine in Singapore.

Regarding the United States, while the US is less dependent on Singapore to maintain the 2.9% GDP growth rate, there are over 4,200 American businesses in Singapore leading to more than $180 billion invested in Singapore by American businesses. Additionally, the Free Trade Agreement between the United

States and Singapore supports more than 215,000 American jobs (DOS). This mutually beneficial relationship also exists between the United Kingdom and Singapore, as well. As of March 2021, the UK and Singapore governments published a joint statement on their countries' partnership, reaffirming their commitment to free trade, sustainability, and climate action. The statement also outlines a series of rules both countries will follow and uphold in regards to technology, education, security, and human rights (Joint Statement).

Given the levels of cooperation between the United States and the United Kingdom with Singapore and Singapore's high level of coordination symptomatic of the government structure,

Singapore was able to receive shipments of the Pfizer and Moderna vaccines relatively early in comparison to neighboring countries. As of December of 2020, Singapore was the first country in Asia to receive the Pfizer-BioNTech's COVID-19 vaccine (Reuters 2020). Since the initial rollout, Singapore has been able to negotiate additional contracts with Pfizer-BioNTech as well as with Moderna. Coupling the dose supply with the promising clinical trial results, the question becomes primarily a function of dose allocation to optimize efficiency and efficacy.

Phillippines

The distribution of COVID-19 vaccines in the Philippines is hampered by various political barriers, feeding into public hesitancy surrounding the vaccinations. These issues have been compounded by complications from the government of the Philippines attempting to play into great power conflict. These issues have painted a picture strikingly similar to the Dengvaxia controversy. One crucial issue amplifying the Dengvaxia controversy was the political context: Rodrigo Duterte was elected president in late May 2016, and one of outgoing president Benigno Aquino III's final political acts was the approval of the dengue vaccination program (Piot et. al. 8). Duterte, amongst other critics, believed Aquino profited directly from the Sanofi deal (Former DOH Consultant Francis Cruz in Valenzuela 256), arguing that the sheer fiscal irresponsibility of the Sanofi program suggested corruption (Bello 3). Critics also claimed that then-Secretary of Health, Janette Garin, attempted to spin Dengvaxia as a "legacy project" she could use in future campaigns for public office (Bello 2).

The World Health Organization's representative to the Philippines in 2020 claimed that Duterte used the crisis to "bury" the previous administration and his opposition (Skopeliti 2020). Others claim he manipulated the scientific community to serve his interests by "publishing articles and results that [favored his] agendas" (Manahan 1). One research team even termed Duterte's response "Medical Populism" (Lasco and Curato 2019), in that he discredited the Philippines' public health infrastructure by characterizing it as a "corrupt system where public officials and multinationals collude to make money" and top political officials fanned the flames by frequently asking "Who owns [the medical professionals]?" (Lasco and Curato 4). Duterte's consistent negative rhetoric contributed to widespread distrust in the health system.

With the Philippines' 2022 election season fast approaching, many worry Duterte will somehow leverage COVID-19 vaccine distribution for political gain (De Jesus 2021) Indeed, similar tropes from Dengvaxia are being repeated, but with an odd twist: Duterte called the United States and its vaccine producers "all profit, profit, profit" (Venzon 2020) but only as part of a wider request for vaccines, trying to leverage the Philippines/American security relationship. Duterte has bemoaned the vaccine shortages and delivery delays from the international community, such as the recent month-long delay of nearly one million AstraZeneca doses from COVAX, claiming that countries are hoarding vaccines for themselves (Salaverria 2021). Duterte combines blatant self-preservation with a disdain for the western vaccine procurement complex. This geopolitical angle, combined with the potential leveraging of vaccines for use in the upcoming elections, prove to be political barriers hazarding smooth public relationships with vaccine delivery. The lack of public confidence in vaccines because of the Dengvaxia crisis also sets the stage for potential conflicts with the distribution of coronavirus vaccines.

Proposed Solutions

The analysis of the Philippines, Myanmar, and Singapore's economic, political, and cultural landscapes, corresponding strategic positioning, and resulting COVID-19 vaccine distribution plans, can be extended more broadly to apply to countries at similar levels of development. According to Michael Vatikiotis, the Asia Regional Director for The Centre for Humanitarian Dialogue, all three governments have settled on a "blended strategy" to combat COVID-19, utilizing both

private deals with vaccine companies as well as government-to- government negotiations. This strategy highlights the importance of speed in distribution; the race to vaccinate entire populations raises the question of best-practices in mitigating the spread of COVID-19. Ultimately, there is truth in both rapid and targeted vaccination strategies: the ultimate decision is a tradeoff between maximizing the number of people vaccinated and prioritizing those of highest risk, independent of timeline.

Critically, both these approaches imply popular confidence in vaccines, which is not a given. Ultimately, governments have pursued a mixture of both paths, depending on circumstance. While strategies differ across the eleven countries in Southeast Asia, a constant response seems to be enforcing a strict lockdown policy. While global resurgences of COVID-19 are largely due to citizen's inability to quarantine effectively over long periods of time, Vatikiotis argues that broadly speaking, most Southeast Asian citizens reflect an increased willingness to sacrifice freedom to comply with health regulations relative to other parts of the world. Granted, inherent differences exist between Southeast Asian countries and the rest of the world, which challenges the global application of policy solutions. However, in this paper, the varying levels of development characteristic of the Philippines, Myanmar, and Singapore serve as the metric by which to apply solutions to other countries. Additionally, an analysis of past precedent in Southeast Asia serves as the basis for policy recommendations to mitigate popular vaccine hesitancy. Note: after the coup in Myanmar, Vietnam was substituted as a case study, given similar levels of development between both countries.

Developed Countries: An Extension of Singapore's Vaccine Distribution Strategy

Countries with a centralized public healthcare system trusted by residents like that of Singapore should leverage this built-out infrastructure to efficiently and effectively disseminate a vaccine. Vatikiotis points to Singapore as an example of a "picture perfect" strategy thus far, having already received high levels of doses of both Sinovax and Pfizer. Additionally, Vatikiotis notes Singapore's easy access to free vaccines and controlled strategy offers no room for error. Importantly, in Singapore, upwards of 80% of the population regularly visit or have visited a public medical institution. This signifies (1) a level of trust in public institutions and (2) the network of patient records that these institutions have. Countries with similar healthcare systems

and high literacy rates can leverage the network created through interaction with these public medical facilities to distribute necessary information about the vaccine to the broader population.

Developing Countries: An Extension of Myanmar and Vietnam's Vaccine Distribution Strategy

Countries with more limited infrastructural resources have greater potential issues for effectively combating COVID-19. Myanmar serves as an example of the infrastructural challenges that nations may face and reforms to the healthcare sector that should be applied. Dr. Kuang highlights the nation's rough topography, lack of human resources, poor basic infrastructure, and limited Cold Chain Capacity. Dr. Kuang outlined how the introduction of innovative new technologies helped improve on these issues, including in the area of weak information systems (TechNet). Despite these challenges, Myanmar's ministry of health had undertaken a reform that involved procurement and reorganization to improve supply chain efficiency and the implementation of the GAVI health system strengthening grant that went into place until 2020 to strengthen human resources. Additionally, the nation looked to potential partnerships with international organizations such as UNICEF (TechNet). Finally, there have been increases in government funding for human resources (TechNet). However, these reforms reflect long term goals that may not lend themselves to a developing nation's COVID-19 response policy.

In contrast, the nation of Vietnam provides a model that can be rapidly implemented for developing states moving forward. Vietnam serves as a unique example of a nation able to largely contain COVID-19. The nation has focused on effective prevention over investing in treatment options, avoiding the infrastructural capacity issue some developing nations may face. The most recent outbreak of COVID-19 was detected on January 27th and accounted for approximately a fifth of the nation's total COVID-19 cases (1,981 cases in February) (Vu). Despite being classified as a developing country with a GDP per capita of $8,041 in

2019, Vietnam has also remarkably only recorded 35 deaths, one of the lowest death tolls in Asia (CIA).

The key to Vietnam's success can be attributed to two different factors: effective government policy, and large local compliance. Following an outbreak in Da Nang, the nation implemented the strategy of initiating a full shut down in cities or provinces enduring an outbreak, effectively limiting the spread (Nguyen). In addition to containment, the government of Vietnam implemented a policy of "contact tracing, strict quarantine and rigorous testing"(Nguyen). This has been incorporated as part of Vietnamese Health's official COVID-19 policy, referred to as "third-degree contact tracing" (Nguyen). This policy accounts for the highly infectious nature of COVID-19 that renders victims a "weapon" that can generate a "network of closely connected sufferers"(Nguyen). In light of this, accurate contact tracing has been emphasized as the "road map for Vietnamese medical officials to tackle all legs of this network and prevent it from spreading further"(Nguyen). This policy has allowed the nation to only shut down infected areas, allowing the rest of the country to remain relatively open and economically productive.

The second element of Vietnam's success is the public solidarity towards a common goal. Vietnam's COVID-19 response policy has been able to tap into existing facets of Vietnamese culture, inspiring the public to collaborate before government policies were invoked (Nguyen). In a Global Asia article, Sen Nguyen provides the cultural example of "hospital phobia." Nguyen argues that fear of public hospitals inspired people to strictly adhere to guidelines and take care of themselves and loved ones in order to not be hospitalized. Additionally, there has been large public compliance and support for regions struck hard by COVID-19, as evidenced by the support given to Da Nang. When Da Nang went into lockdown, social media campaigns pledging support were organized and "volunteers formed groups to provide free meals and essentials to the poor and those in need in locked-down areas" (Nguyen). This created a sense of national pride and unity in combating the virus, providing support to government issued policies.

Vietnam's success embodies the "issue" posed by Vatikiotis, that the nation has contained the virus so remarkably well that there is no pressing concern driving the purchasing of vaccines. Vietnam's vaccine strategy has, therefore, been able to unfold slowly. Deputy Health Minister Truong Quoc Cuong announced that "Vietnam would receive around five million COVID-19 vaccine doses by the end of February" (VN express). Nations such as Myanmar, that ordered the vaccine late, may be able to look to Vietnam as an example of effective COVID-19 containment (Vatikiotis). The nation may have a messy distribution strategy, typical of a nation with infrastructural challenges and that is receiving a vaccine late. However, with effective government coordination, it will be able to utilize methods such as the army to distribute vaccines (Vatikiotis). In short, Vietnam's effective prevention measures mean that late orders of vaccines are not fatal and the nation has time to develop solutions to infrastructural challenges, such as limited Cold Chain Capacity.

Additionally, Vietnam's strategy will allow it to mitigate potential great power conflicts in the vaccine arena. Vietnam has implemented a strategy to gain access to vaccines via the COVAX sharing scheme (Vu). COVAX is an effort run jointly between the GAVI alliance, World Health Organization, the Coalition for Epidemic Preparedness Innovations and UNICEF (Vu). In addition to adopting the COVAX scheme, the government of Vietnam has announced its intention to "buy up to 30 million doses of the AstraZeneca vaccine and the first batch would arrive by the end of March" (Vu). By ordering vaccines from many different sources, Vietnam avoids the risk of becoming too reliant on one provider. Therefore, in the event that powerful states begin "cashing in" on vaccines, Vietnam will have strategically positioned itself to not be indebted to any one state.

Geopolitical Tensions

Utilizing the COVID-19 vaccine as a soft power tool has been highlighted as a potential danger as nations develop their vaccine distribution strategies. However, as evidenced by the COVID-19 situation in the Philippines, it appears that nations would be better suited to collaborate with various countries in ordering vaccines rather than playing into great power conflicts. Although states' eagerness to provide COVID-19 vaccines has been speculated to relate to geopolitical conflicts (ex. India and China), emphasizing power politics over humanitarian relief can prove disastrous for nations' COVID-19 policies.

The Philippines' strategy in vaccine procurement was aimed at strengthening ties with China, while creating further distance with traditional allies, such as the United States. While accepting some doses from the

COVAX project, SinoVac has been its primary supplier (Philippine News Agency 3/22/21), although almost all of these shipments have been delayed. Duterte attempted to leverage the security relationship his country enjoys with the United States for vaccines, claiming "If [the US] fails to deliver...20 million vaccines, [their military] better get out - no vaccine, no stay here" (Asia Nikkei). However, this deal struggled like many of Duterte's attempts to embrace Chinese support, and the Philippines have been receiving less SinoVac doses than expected on a delayed timeline (XinhuaNet).

Vatikiotis's statement that the Philippines decision to prioritize great power conflict and lack of clarity in the responsibility for vaccine distribution caused him to perceive it as the nation he had the least faith in out of the three case studies. Vatikiotis notes that the Philippines strategy for ordering vaccines was particularly flawed given the structure of the government was highly centralized around the president. In contrast to the Philippines, states such as Vietnam and Singapore have focused on prevention measures and ordered vaccines from a variety of different sources. This is highlighted in Vietnam joining the COVAX sharing scheme in addition to ordering AstraZeneca and Singapore ordering both the Pfizer-BioNTech and Moderna vaccines.

Vaccine Hesitancy

Analyzing the successful and unsuccessful approaches to Dengvaxia will simplify and improve the recommendation process, and can be extrapolated to other countries struggling with vaccine hesitancy. Two related issues arise from an attitudinal perspective on the Philippines' situation:

- A: Residual vaccine hesitancy from Dengvaxia;
- B: President Duterte's continued politicization of the distribution process and potential weaponization of the vaccine for political gain leading to distrust of the vaccine and healthcare professionals.

Learning from *Dengvaxia*

Lesson 1: Trust can't be brute-forced

Two years after Dengvaxia, with a measles outbreak brimming1 and vaccination rates at a record low, DOH launched a massive boots-on-the-ground public-relations campaign, sending health workers to remote rural communities. This failed miserably, when townspeople "chased the vaccinators out of town...they would set the dogs on them and slam the doors" (NPR). Remarkably, many of these communities experienced measles outbreaks firsthand, but had no reported Dengvaxia-related issues. The fear of a fictionally rogue vaccine was enough to paint 1 over 25,000 cases and 355 deaths by March 2019 (Piot et. al. 8) over the real and imminent images of measles. Distrust spread throughout civil society, and health officials in these villages reported parents pulling their children out of school, presumably angry at teachers who had organized Dengue vaccination campaigns. Anything tenuously connected to the vaccine was branded guilty. Force failed.

Interestingly, this idea of forcing trust has not been abandoned, despite its disastrous application in the wake of Dengvaxia. A recent article by the Director of Regional Health for the Philippines, Dr. Rio Magpantay, in ReliefWeb, a website run by the UN's Office for the Coordination of Humanitarian Affairs, advocated expanding their Doctor to the Barrio program, which sends small medical teams of nurses and doctors to remote towns. This was in response to his partly-attributing low immunization rates for measles, rubella and polio to parental fears of side effects (reliefweb.int), particularly in these hard-to-access villages.

Lesson 2: Changing Popular Opinion

The importance of public opinion in the Philippines is not to be understated, as it is "frequently measured by credible survey firms and closely monitored by all politicians" (Timberman 12). The Philippines public opinion of Russia and China during the Dengvaxia years was nearing an all-time high, specifically in levels of trust.2 However, Filipino confidence in China has plummeted since then, with the U.S. sitting comfortably at a +60 trust rating (Japan, for comparison, at +46) and China at -35 in 2018 (Timberman 23). Since then, U.S. trust rates have slid to +42 in 2020, while China remains stuck at -36, despite Duterte's vehement "China Pivot" (CNA) and attempts to "build, build, build" the crumbling Filipino infrastructure supported by the Chinese Belt-and-Road Initiative (De Castro 182).

These opinions manifest in action. Dissatisfied with the government-endorsed prospect of Sinovac, private companies in the Philippines have turned to purchasing doses themselves from what they believe to be more reliable western sources.3 While certainly a challenge

for a leader who has spent years building on a $24 billion infrastructure relationship with China, accepting and encouraging the private sector to continue pursuing their own venues will be critical to creating public trust in whatever vaccine is eventually procured. [As of March 31, 2021, President Duterte indeed authorized companies to continue purchasing their own vaccines "at will," as shortages and Filipino bureaucracy slowed the process to a standstill (Inquirer).

Lesson 3: Good Social Media Usage and Civil Society

The Philippines has a high rate of political participation (91% vote), with 71% saying they would take political action on poor healthcare (Pew Research). They're also avid internet users. In 2017, 58% of the population had access to the internet, spent on average 9 hours online, and 90% of those spent at least four hours a day on social media, most notably, Facebook (Rappler). Activating civil society through social media will be key to successfully engaging the public around COVID.

With Dengvaxia, posts from disease specialists at top universities denigrating the vaccine, blaming the international community, and mourning the sorry state of the Filipino victims went viral (Valenzuela 254). Analysis of DOH's Facebook page over the period showed thousands of comments from concerned and confused parents meeting silence from the DOH (259). Various international studies4 have illustrated that viewing negative media portrayal and political statements about vaccines is "one of the strongest factors for vaccine hesitancy" (260).

With COVID-19, the Philippines has been exemplary in modeling good communication between the government and public through social media platforms. DOH has been particularly active on Facebook, Filipinos' social media platform of choice, with a variety of different communication methods, such as:

- **Town Halls**: Three-hour sessions in mixed English and Tagalog, hosting expert presentations on a variety of COVID-related topics and a Q/A period. These often call attention to and explain in further detail noteworthy data points from the almost daily COVID "Situation Reports" reporting numbers like new and total cases, and hospital capacity.
- "**Vaxplainer" Informational Shorts**: A series of quick (6-10 minute) videos explaining different procedural and medical aspects of the vaccine delivery process. For instance, Episode 3 (released 23 March 2021), is titled "Is the SinoVac vaccine safe?" and covers which other countries are using SinoVac, expected side effects, and general advice such as to not mix different vaccines to cover doses. These are pushed out by state media channels, and are overtly political, with prominent doctors urging people to "Set aside their bias against non-western vaccines".5 The video ends with doctors claiming SinoVac is "safe and effective", reinforcing Duterte's preferences for a Chinese partnership.
- **"Fast Five" Informational Shorts:** A more informal version of Vaxplainer, Fast Five features two young, energetic internet personalities that team up to interview medical experts on different vaccine-related issues, such as defining terminology. One episode, for example, simply outlines what vaccine efficacy means. This similar blunt and directed Q/A style is typical of DOH publications, and can be seen in one of their recent Facebook posts (Figure 2 below)
- **Creative Methods**: DOH has been exploring creative avenues as well, even posting a music video on March 20th titled "Vax to Normal". The song focuses on proper hygiene and social distancing protocols, urges people to declare symptoms, and ends with images of frontline workers holding signs reading "Say Yes to the COVID Vaccine"

Filipinos' fears of getting COVID dwarf past epidemics such as Ebola in 2014 and SARS in 2003 by nearly 20 percentage points, on average (Figure 3, below). Hopefully, this will translate into higher vaccination rates than in other cases. Due to politicization and past precedent, Philippines approach COVID vaccines with "mixed hopes and doubts… wanting a vaccine while also suspecting it" (Mendoza 272). Optimistic analysts see this mere vaccine ambivalence, more mild than hesitancy. Countries facing vaccine hesitancy should follow these recommendations: namely, to establish a robust social media campaign, encourage civil society to explore extra-governmental avenues towards vaccine procurement, and to refrain from brute-forcing trust prematurely through direct confrontations. This will hopefully reduce that vaccine hesitancy to ambivalence, ambivalence to trust, and trust to hope and confidence.

Appendix

Cultural Impact of DNGV

The DNGV crisis had immediate and drastic consequences, particularly and predictably in vaccine-confidence and hesitancy, vaccination rates, and trust in the health system. The London School of Hygiene'sVaccine Confidence Projectfound shocking decreases in vaccine confidence between 2015 and 2018. Contrasting the percentage of strongly agree answers to the question "Vaccines are...", they found (Larson et. al. 626): ●

- "important" decreased from 93% to 32% (-61%)●
- "safe" decreased from 82% to 21% (-61%)●
- "effective" decreased from 82% ● 22% (-60%) ●
- Some respondents even found their faith shaken, with the percentage answering that vaccines are "theologically compatible with my religious beliefs" decreasing from 84% to 68% (-16%)

Practically, DNGV resulted in decreased vaccination rates across the board. Dengue vaccination rates obviously suffered most. One year after the crisis, Health Undersecretary Enrique Domingo observed that only about 60% of Filipino children were fully vaccinated (the target is 90%) (Vaccine Confidence Project 2). The DOH declared a "national dengue epidemic" in November after witnessing an 106% case-jump in 2019, bringing total annual cases to 372,000 (Lancet1265).

Dengue wasn't the only areathat suffered, however, and previously inoculated-against diseases reappeared. In Manila, only 36% of children received the measles vaccine in 2018 (Vaccine Confidence Project 3) and the HPV vaccine for cervical cancer dropped from 77% accepting the firstdose, to only 8% accepting the second dose after Dengvaxia. Refusal rates ranged from 50-80% (Vaccine Confidence Project 4). Diphtheria cases in 2019 spiked 47% compared with the same period in 2018 and coverage rates dropped (Lancet 1265). A2019 WHO and UNICEF reportshows a comprehensive steady decline in immunizationcoverage across a variety of vaccines. While the data shows a slight decrease in rates starting in 2008, 2016-17 (corresponding with DNGV) clearly houses the most precipitous drops.

Figure 1: Differences between willingness to get the COVID-19 vaccine and Dengvaxia vaccine

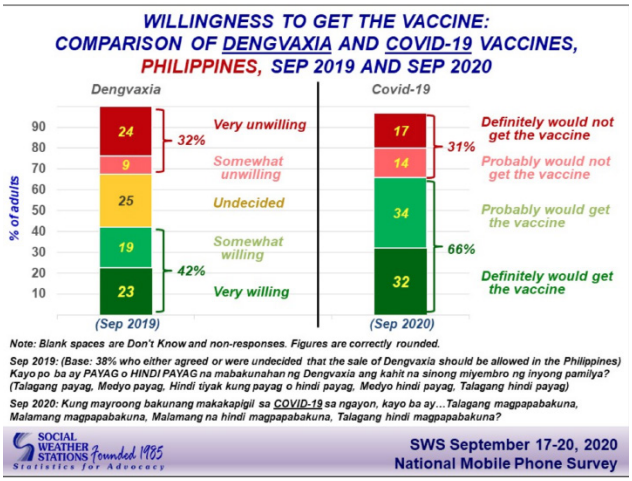


Figure 2: SWS Survey, published 3/10/21. Filipinos' levels of trust of different countries

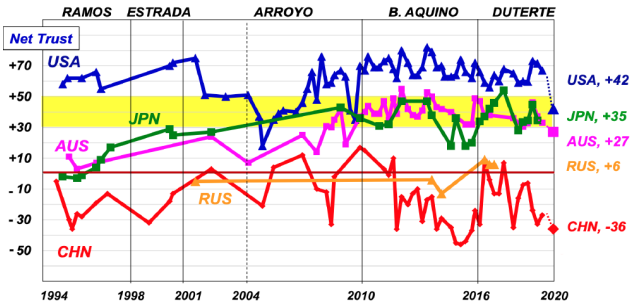
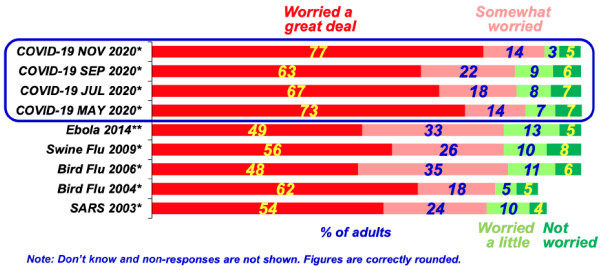


Figure 3: DOH Facebook Page, acc. 4/1/21

Figure 4: SWS Survey from Jan 2021, pub. 3/10/21. "How worried are you about catching COVID-19?"



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