

**SCIENCE-POLICY NEXUS OR GAP?¹:
Science-Based Policies vs. the COVID-19 Pandemic in the Philippines**

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Abstract

Science is the bedrock of evidence-based policymaking. It provides an objective analysis of problems and solutions through the use of rigorous scientific methods. Thus, many governments have embedded scientists, experts, or academics in circles of advisers for public policymaking. In the majority of instances, the tandem of scientists and politicians work. However, the relationship between the two is also fraught with deficiencies such that clear-cut policies are forestalled or remain unimplemented, hence, almost all of the literature end up discussing the “gap” rather than the “nexus.” The COVID-19 pandemic and epidemic responses of the Philippine government highlight science-policy gaps. There were many instances that gaps between the extant and emerging medical knowledge and the policies that were formulated to manage the pandemic were called out by the public, i.e., the government’s refusal to heed the call for an immediate travel ban vis-à-vis Chinese visitors when the infection rate was still low; did not make mandatory immediately the wearing of face masks in crowded public places; conducted disinfection spraying and misting in public places; and, refused to conduct mass testing. All of these occurred in the first seven months of 2020. Thus, this paper investigates the causes of these gaps and the factors that contributed to them. It was found out that science-policy gaps were created by public pressure, resource constraints and economic considerations, adoption of best (effective) practices from other countries, cognitive dissonance, and lack of scientific consensus.

Keywords: science-policy nexus/gap, COVID-19, pandemic, travel ban, face mask, mass testing, disinfection, Philippines

I Introduction

In the seven months of 2020, from January up to July, the Philippine government wrestled with time to address the gradual creeping in the country of the Coronavirus disease (COVID-19) then

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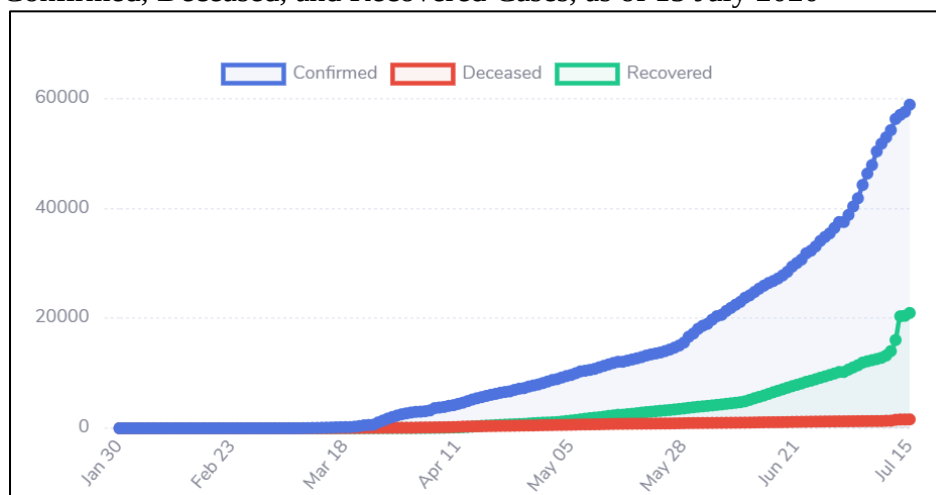
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¹ Originally, the title of this paper was “Science-Policy Nexus.” However, almost all of the literature highlight the science-policy disconnect, gap, or divergence. It appears that “nexus” is the ideal state but the “gap” is the reality. Hence, this paper uses both in the title with a question mark to underscore the conundrum. In the body of the paper, “nexus” is used to emphasize that policies should be science-based, and to avoid analytical bias.

known as “Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2).” The government had to do with whatever emerging knowledge came out from experts, especially from the World Health Organization (WHO), to design effective public policies. Some stated that the window of opportunity for the Philippines was lost because as early as January, visitors from Wuhan, China had already infected a few locals. From then on, the virus infection slowly but surely spread in the country. Even with lockdowns imposed in March, confirmed cases have been on the rise (**Figure 1**) and the Reproduction Rate (R_t) > 1 was already reached (**Figure 2**). By the start of July 2020, the new infections averaged at the thousand level (**Figure 1**), and it was projected by experts that by the end of August 2020, the cumulative infections would have reached 131,000 to 309,000 (**Figure 3**).

Figure 1.

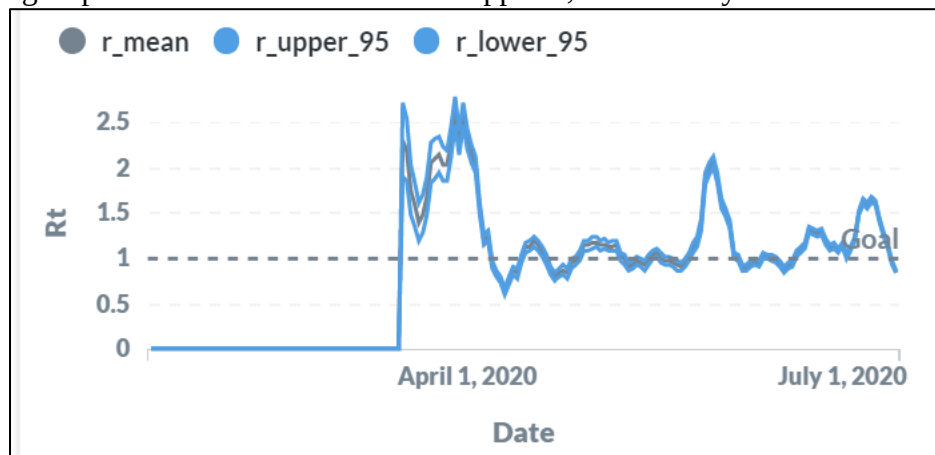
Number of Confirmed, Deceased, and Recovered Cases, as of 15 July 2020



Source: UPRI, 2020

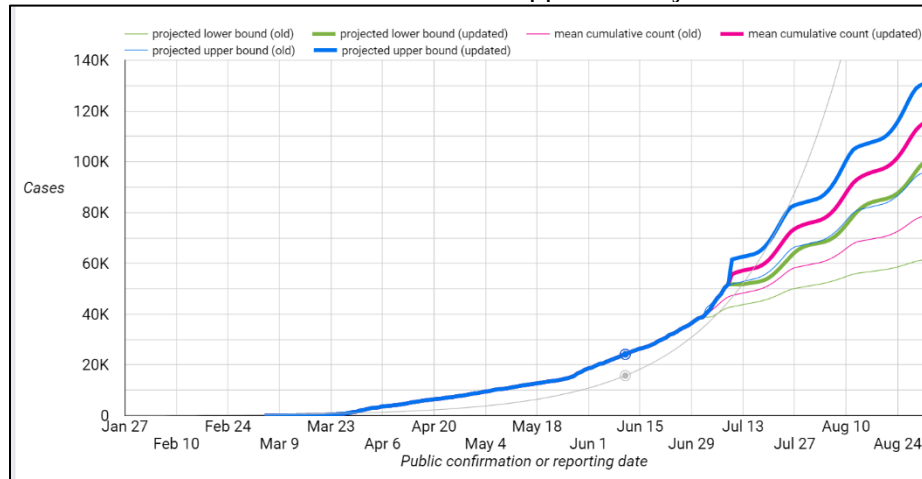
Figure 2.

Time-Varying Reproduction Number of the Philippines, as of 14 July 2020



Source: UPRI, 2020

Figure 3.
Cumulative Number of COVID-19 Cases in the Philippines: Projections



Source: UPRI, 2020

It is said that the window of opportunity, however narrow or small, was lost due to the indecisiveness of the government headed by then President Rodrigo R. Duterte to deal with absolute resoluteness on issues related to travel ban, face mask wearing, and mass testing (ABS-CBN News, 2020; Aguilar, 2020; Galvez, 2020). Then, there was confusion on the spraying of disinfectants to people and inanimate objects (Mercado, 2020). The belated, confused, or adamant refusal of the government to immediately impose policy measures vis-à-vis the spread of COVID-19 have yet to be explained in the context of the slowly emerging knowledge or science² in the first months of 2020 about the novel virus then called SARS-CoV-2 vis-à-vis the controversial public policies enumerated above. Therefore, this paper aims to answer the following questions: (1) Why were there confusion on the public policies to deal with the pandemic in the Philippines? and (2) What factors contributed to the seemingly “disconnect between science and public policies during the January-July 2020 period? To answer these questions, the author reviewed literature about the connection between science and policy, the contributing factors, and a brief discussion on the literature about science-policy nexus/gap during the early years of the COVID-19 pandemic worldwide. Then, after developing a framework for analysis, the author analyzed documents and newspaper reports about the controversies regarding the issues above to write four case studies. It is hoped that this study will contribute to the deeper understanding about the importance of science to policymaking in the context of the COVID-19 pandemic in the Philippine setting.

II Science-Policy Nexus or Gap?: Its Nature and the Contributing Factors

2.1 Science-Policy Nexus or Gap?

Many literature making a connection between science and policy end up discussing the disconnect, gap or divergence between them (see Hoppe, 2005; Skodvin, 2000; Tieberghien, 2017). For example, an author characterizes “science-policy connection” as “scientists and policy-makers

² In context, “science” and “knowledge” in this paper refer to medical (epidemiological) science and knowledge.

as part of two communities with different world views, values, and language, separated by a huge gap” (Tieberghien, 2017, p. 38). Another author validates this by stating the differences in the systems of behavior of science and politics:

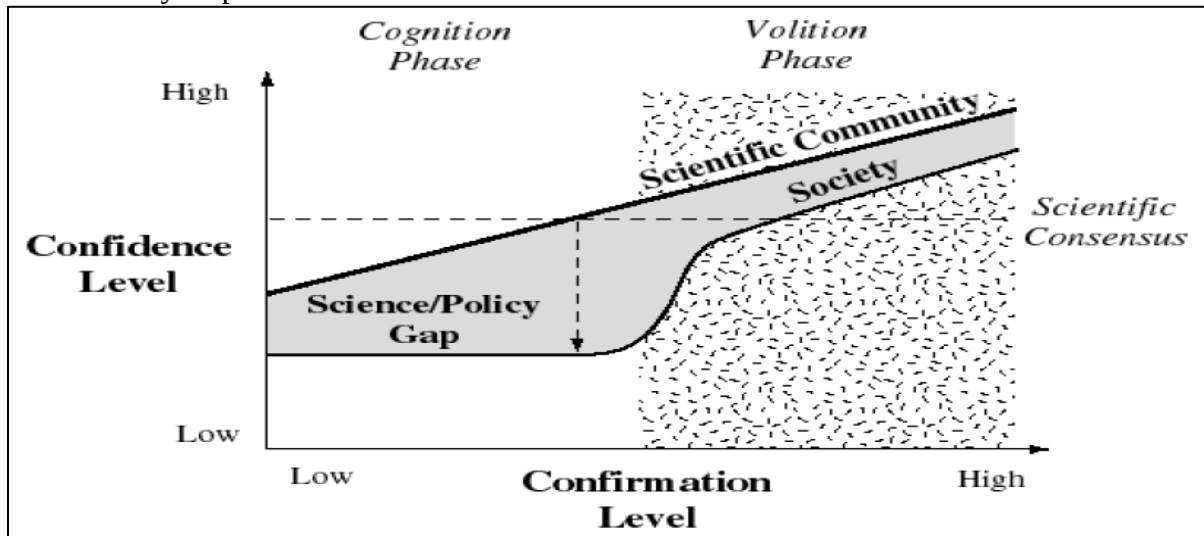
Science and politics constitute two distinct systems of behaviour, each with its own purpose, constitutive norms and internal logic. Science is (ideally) conceived of as a truth-seeking endeavour whose norms and guidelines for behaviour are directed towards the generation of impartial and disinterested knowledge. Politics constitutes a system for the generation of (collective) decisions, where behaviour is directed towards the realisation of (individual) rational interests in these decisions. In contrast to the ideal of impartiality characterising the scientific method, political behaviour is characterised by a strategic reasoning where the instrumental utilisation — as well as manipulation and distortion — of knowledge may constitute central elements in political strategies whereby individual interests are sought realized (Skodvin, 2000, p. 27).

The term “science-policy gap” emerged as early as 1663 with the formation of the Royal Society of London but only came out in the literature in the 1990s (Sumbly, 2012, p. 16). Many had written about it mainly in the context of environmental protection and climate change (see Avishek et al., 2012; Parkhurst, 2017; Sarewitz, 2004; Šucha & Sienkiewicz, 2020; Sumbly, 2012; Sundqvist et al., 2018; van den Hove, 2007; Wellstead et al., 2018). The discourse on science-policy gap by Bradshaw and Borchers (2000) (see **Figure 4**) provides a more succinct explanations on how the gap is developed from the cognition phase to the volition phase. The *cognition phase* is the stage where the knowledge is accepted by the scientific community and the society³. On the other hand, the *volition phase* is where decisions, policies, and actions are made and implemented. Bradshaw and Borchers define science-policy gap “the difference in levels of confidence for a given scientific finding expressed by the scientific community and society” (2000). This reference to the society’s level of confidence of knowledge is not appropriate because it is policymakers who make policies; the society only contributes to its making. This paper, therefore, utilizes Sumbly’s (2012) definition, i.e., it is **“(t)he distance, or gap, between what the best available science advises and what policymakers actually decide”** (Sumbly, 2012, p. ii).

Figure 4.

³ Bradshaw and Borchers are not clear if “society” includes government. This should have been made clear because only governments can create public policies. Society may provide inputs like problem identification for the consideration of policymakers.

Science-Policy Gap



Source: Bradshaw & Borchers, 2000

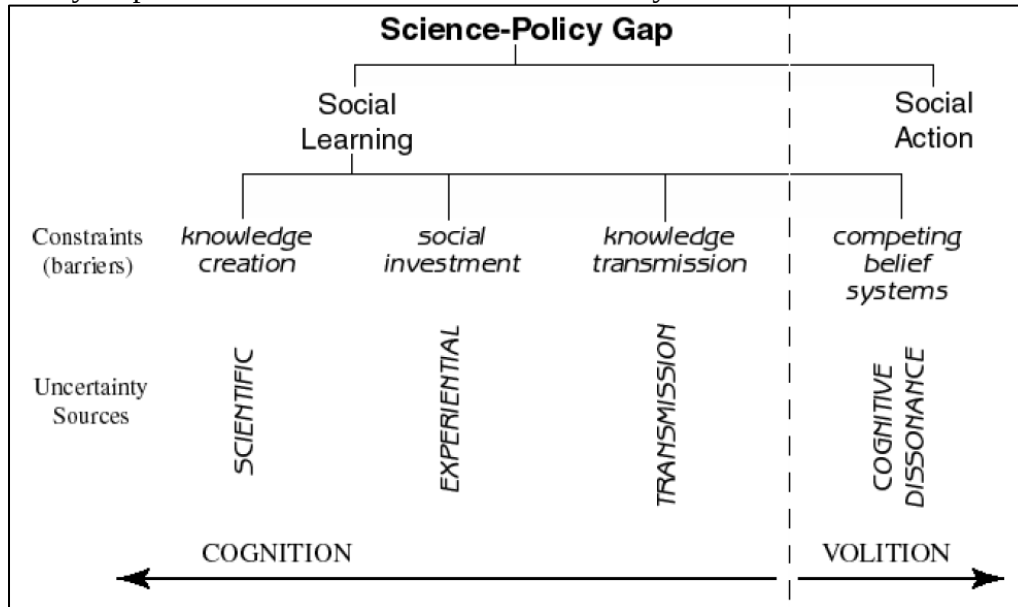
According to Bradshaw and Borchers, gaps can be reduced by increasing the robustness of the scientific knowledge through the conduct of more research leading to increase in the *confirmation level*. This, in turn, could increase the *level of confidence* in the knowledge by the scientific community and the society. However, it would take a considerable amount of time before the scientific findings are assimilated into the society. Thus, the science-policy gap may differ for every individual scientific finding. At the outset, Bradshaw and Borchers clarified that the diagram is not based on reality but a mere visual representation of the possible interactions among the variables involved (Bradshaw & Borchers, 2000).

2.2 Contributing Factors

What creates the gap? As shown in **Figure 5**, it is created in the areas of social learning and social action. *Social learning* refers to the acceptance of knowledge, thus, is along the cognition phase. This is where majority of the sources of uncertainties (knowledge creation, social investment, and knowledge transmission) are based. In social learning, uncertainties create barriers leading to the gap. Scientific knowledge creates uncertainty when the former is not sufficient or unconvincing; experiences creates doubt when society has invested on knowledge and traditions that provide alternative explanations; and, faulty transmission generates misinformation or disinformation that confuse the society (Bradshaw & Borchers, 2000).

Figure 5.

Science-Policy Gap: Constraints and Sources of Uncertainty



Source: Bradshaw & Borchers, 2000

On the other hand, *social action* is the decision, action, and policy adopted by the society based on what they know or learned, thus, it is at the volition phase. “Cognitive dissonance” is created here when new knowledge from social learning compete or in conflict with the behavior and belief of the members of a society (Bradshaw & Borchers, 2000).

In the course of integration into a policy, policymakers and the general public may react favorably or aversely to a new knowledge that threatens their extant behaviors and beliefs resulting to “cognitive dissonance.” This could lead to either non-adoption of the policy, non-implementation or failure of implementation. On the other hand, if the new knowledge is consistent with the behaviors and beliefs of the society (and its government), it will result to favorable adoption and implementation (Bradshaw & Borchers, 2000).

There are other factors that could create gaps aside from confidence in the new knowledge or trust with science. Politics in public policymaking drives the wedge between science and policy. In public policymaking, decisions are made considering the various interests of stakeholders. Hence, decisionmakers/policymakers do a lot of political balancing act to please their stakeholders or the latter actively engage the former to take their sides. According to Parkhurst (2017), science could be politicized, i.e., the misuse, manipulation or cherry picking of evidence to promote political interest. Or it could depoliticize the politics of a body of scientific knowledge (e.g., climate change) by marginalizing it through the promotion of a competing forms or bodies of evidence (Parkhurst, 2017, pp. 7–8). The politicization or depoliticization could be undertaken by creating one’s own bodies of relevant, legitimated facts, utilize the lenses of various disciplines to compete with one another, or pinpoint the lack of coherence among competing scientific understandings coupled with the amplification of conflicts with current cultural and institutional contexts (Sarewitz, 2004, p. 386). In a broad stroke, Sumbly (2012, p. 13) summarized other factors that create gaps between science and policy. These are cultural differences between science and policy, dialogue and

communication, the role of science in policy, the use and effect of science in policy, interference in the science-policy relationship, lack of scientific knowledge in policymaking, differing motives in science and policy, and uncertainty.

Policy-Science Nexus/Gap during the COVID-19 Pandemic: What do the literature tell so far

The COVID-19 pandemic brought to the fore the debates about the science-policy nexus/gap (Ball, 2021; Highfield, 2021; Nay & Barré-Sinoussi, 2022; Safford et al., 2021; Yin et al., 2021). All of them echo the cumulative knowledge about the nature of the science-policy nexus/gap and the contributing factors which had been discussed above. Some interesting findings/conclusions are worth discussing here. Yin et al. (2021) note that during the first year of the pandemic (2020), there was a surge in the literature about pandemic policy-relevant studies not only from the biomedical field but also from economics, and the social sciences. It also found out that many of their findings found their way rapidly into policy documents. The article raises the concern that these documents may be influenced not only by reliable science but also by “dubious” ones (Yin et al., 2021, p. 5). In a study conducted by Safford et al. (2021) about the trust issue of the public vis-à-vis their politicians and scientists in the US, politicians like President Donald Trump appeared to be more trusted than the scientific community. Thus, it is suggested that scientists need to pivot from being seen as technical authorities but as individuals with integrity who prioritize rigor in their practices (Safford et al., 2021, p. 2494). Ball (2021), in his study of the policies of the UK government toward the pandemic, validates that contextual factors shape science-based policies more than science – “the pandemic has made it clear how contingent the effectiveness of scientific and technological interventions are on wider social factors, in particular socioeconomic inequalities and poor public health... science does not operate in a social or political vacuum, but is shaped by as well as shaping the societies and cultures in which it unfolds” (Ball, 2021, p. 17).

III Analytical Framework

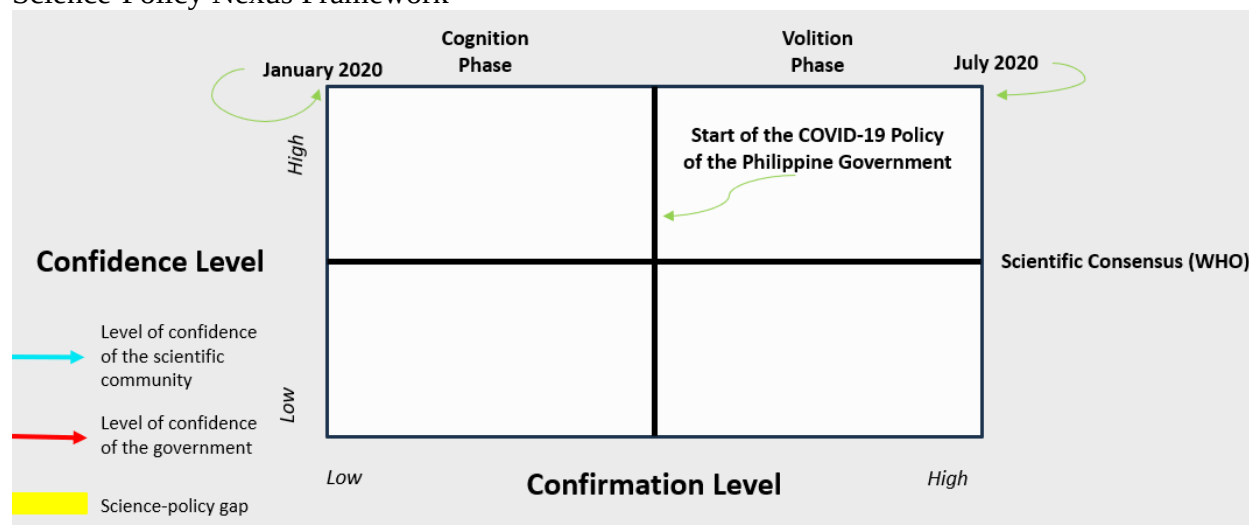
This paper adopts the science-policy gap diagram of Bradshaw and Borchers (2000) as a framework with a few additions (**Figure 6**) and the definition by Sumby (2012). However, from here forward, this paper uses the term “science-policy nexus” to emphasize that policies should be science-based, and to avoid analytical bias.

In the analytical framework, the confidence level, confirmation level, cognition phase, volition phase, and scientific consensus are retained with the same meanings. In addition, the time period from January 2020 until July 2020 is incorporated in the left end and right end to limit the analysis to the initial reaction and policies of the government towards the emerging knowledge about the novel coronavirus. The indicator of “scientific consensus” (horizontal line at the middle) is the issuance of guidance by the WHO because it signifies that majority of, if not all, health experts all over the world have reached a decision. The vertical line at the center represents the start of the COVID-19 policy or measure of the Philippine government. The latter is made the proxy for society because it is the one which issues and implements public policies. The science-policy gap will be plotted inside this per each case where the confidence levels of the science community and the Philippine government (not society)⁴ on the emerging knowledge about the COVID-19

⁴ As pointed out earlier, it is governments that create policies, not just the society.

pandemic within the January-July 2020 period will be plotted and explained. It must be pointed out that the plotting of the confidence and confirmation levels vis-à-vis cognition and volition phases are not exact just like how the diagram of Bradshaw and Borchers was made. The framework and the subsequent diagrams for the four cases are mere visual representations to illustrate the science-policy gap, if there were any.

Figure 6.
Science-Policy Nexus Framework



VI The Science-Policy Nexus in the COVID-19 Policies of the Philippine Government

4.1 Policymaking during the COVID-19 Pandemic

Before diving into the analysis of the cases, a short description of the policymaking structure to manage the pandemic in the Philippines is presented to contextualize the formulation of policies in the first seven months of 2020.

The primary policy-making and decision-making agency that managed the COVID-19 pandemic in the Philippines is the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF-EID or IATF for short) was created through Executive Order No. 168 in 2014 during the previous administration of President Benigno Aquino III. Originally, it only had seven member-agencies but was expanded to 34⁵ under Executive Order No. 112 issued in 2020 in

⁵ The original member-agencies were Departments of Health, Foreign Affairs, Interior and Local Governments, Justice, Labor and Employment, Tourism, and Transportation and Communication. In 2020, the following agencies were added: Departments of Agriculture, Budget and Management, Education, Energy, Environment and Natural Resources, Finance, Information and Communication Technology, National Defense, Public Works and Highways, Science and Technology, Social Work and Development, and Trade and Industry; and other agencies like the National Security Council, Presidential Communications Operations Office, Office of the Executive Secretary, Office of the Presidential Spokesperson, Commission on Higher Education, Technical Education and Skills Development Authority, National Economic and Development Authority, Office of the Chief Presidential Legal Counsel, Office of the Cabinet Secretary, Anti-Red Tape Authority, Metro Manila Development Authority, Office of the Presidential Adviser on the Peace Process, Armed Forces of the Philippines, Philippine Coast Guard, Philippine National Police.

keeping with the whole-of-government approach of President Duterte's administration. The decisions of the IATF were issued through resolutions. The secretariat of the task force is the Department of Health (DOH). At the local level, the Regional IATFs made assessments and imposed restrictions depending on the severity of infections in their areas (Atienza, 2021). Being the chief executive, President Duterte was the over-all chairman of the IATF. His Health Secretary, Dr. Francisco Duque III, was its chairman.

4.2 To Ban or Not to Ban

4.2.1 The Public Policy

Even though the world has been warned by the WHO that the new coronavirus is capable of human-to-human transmission, the Philippine government did not impose travel restrictions immediately against visitors from Mainland China except those coming from Wuhan who were banned by the Philippine Civil Aeronautics Board on January 23, 2020. However, even with the ban imposed by the Chinese government against traveling to and from Wuhan, still, 135 passengers onboard a Royal Air Charter flight arrived in the morning on the same day at the Kalibo International Airport in the Philippines from Wuhan. The local airport authorities immediately identified the 80 Wuhan tourists and repatriated them to China two days after (January 25) (Zabal, 2020). This incidence alarmed the national government at the national capital region. However, six days after (January 29), President Duterte, a self-professed admirer of China, announced that his government will not impose travel restrictions against all travel visitors from Mainland China because it will be difficult since they "continue to respect the freedom flights that we enjoy." He also announced that he was leaving the precautionary measures to the proper authorities (Peralta, 2020).

The President's alter ego, Health Secretary Duque III, echoed the same opinion when he was questioned at the House of Representatives of Congress. Speaking more like a trade or foreign affairs secretary, Duque III cautioned the legislators against temporary travel restrictions, not on public health reason but on the possible repercussions of singling out China when the spread was no longer limited to it. He also said that the health department was just following the advice from the WHO not to impose travel bans so as not to disrupt international trade and relations. At that time, there were already 23 persons being investigated for possible infection (Cepeda, 2020; Peralta, 2020). Two days after (January 31), on the same day that the WHO declared the public health emergency of international concern (PHEIC) and the announcement of the country's first confirmed case, Pres. Duterte ordered a temporary travel ban covering all tourists coming from Hubei Province only of China (SunStar, 2020). Later, on February 2, this restriction was expanded to the whole Mainland China including its administrative regions Hong Kong and Macau. However, this ban, still, did not deter 78 tourists from the mainland to visit world famous resort Boracay resort on 4 February (Burgos Jr., 2020).

4.2.2 The Science and Evidence

On 29 June, the Philippine Health Secretary revealed that his department just followed the advice of the WHO which issued a travel advisory on January 10 not recommending health measures for travelers, and advised against any travel or trade restrictions on China.

WHO does not recommend any specific health measures for travelers. It is generally considered that entry screening offers little benefit, while requiring considerable resources. In case of symptoms suggestive to respiratory illness before, during or after travel, travelers are encouraged to seek medical attention and share travel history with their health care provider. WHO advises against the application of any travel or trade restrictions on China based on the information currently available on this event (WHO, 2020h).

This advisory were reiterated in its updated travel advice issued on January 24 and 27, and February 29, 2020 (Nebehay, 2020; WHO, 2020e, 2020f, 2020g). The last advisory rationalizes it by saying that travel restrictions are ineffective, and may interfere with humanitarian efforts and trade relationships, etc.

In general, evidence shows that restricting the movement of people and goods during public health emergencies is ineffective in most situations and may divert resources from other interventions. Furthermore, restrictions may interrupt needed aid and technical support, may disrupt businesses, and may have negative social and economic effects on the affected countries (WHO, 2020g).

This advisories were based on the *International Health Regulations* (IHR 2005) which aims to “prevent, protect against, control and provide a public health response to the international spread of disease” while avoiding “unnecessary interference with international traffic and trade”(WHO, 2005) and the new *Pandemic Influenza Risk Management Guidance* which can be used to “inform and harmonize national and international pandemic preparedness and response” (WHO, 2018) . However, the latter reveals that the IHR 2005 do not prevent countries from imposing travel and trade measures. They are only required to inform the WHO with the justification.

While the IHR (2005) do not prevent States Parties from implementing specific trade and travel related measures, they do require States Parties to inform WHO of these measures and the justification for their introduction when they will result in significant interference. This is defined in the IHR (2005) as resulting in delays to movement of international travelers, baggage, cargo, containers, conveyances, goods, and the like, of greater than 24 hours (WHO, 2018).

4.2.3 The Science-Policy Nexus: To Ban or Not to Ban

Case 1 shows that there was science-policy congruence between the scientific community and the Philippine government. At the first month of 2020, the Philippine government’s policy on travel ban reflected those of the WHO even though there was **no scientific consensus** yet on the effectiveness or non-effectiveness of such measure in preventing the spread of COVID-19 all over the world. Geopolitics and trades considerations were also the reasons why the government of President Duterte refused to ban incoming travelers from China amidst the public outcry for its

respiratory viral diseases, including COVID-19” it is “insufficient to provide an adequate level of protection, and other measures should also be adopted” (WHO, 2020a). It added that studies of other pandemic diseases like influenza, influenza-like illnesses, and human coronaviruses reveal that medical masks prevent infection from droplets⁷ from an infected person to another person. Then, it qualified that there is limited evidence that prove that healthy individuals, contacts of sick patients, and attendees of mass gatherings may be beneficial as preventive measure. Thus, it only recommended that only sick patients, home caregivers, and medical frontliners use medical masks, and that the general public should stick to social distancing, frequent hand washing, and avoiding large gatherings (WHO, 2020a). The WHO officials also cautioned the public about the false sense of security that wearing of masks could give to them, similar to removing or touching them which makes it less effective (Lacina, 2020).

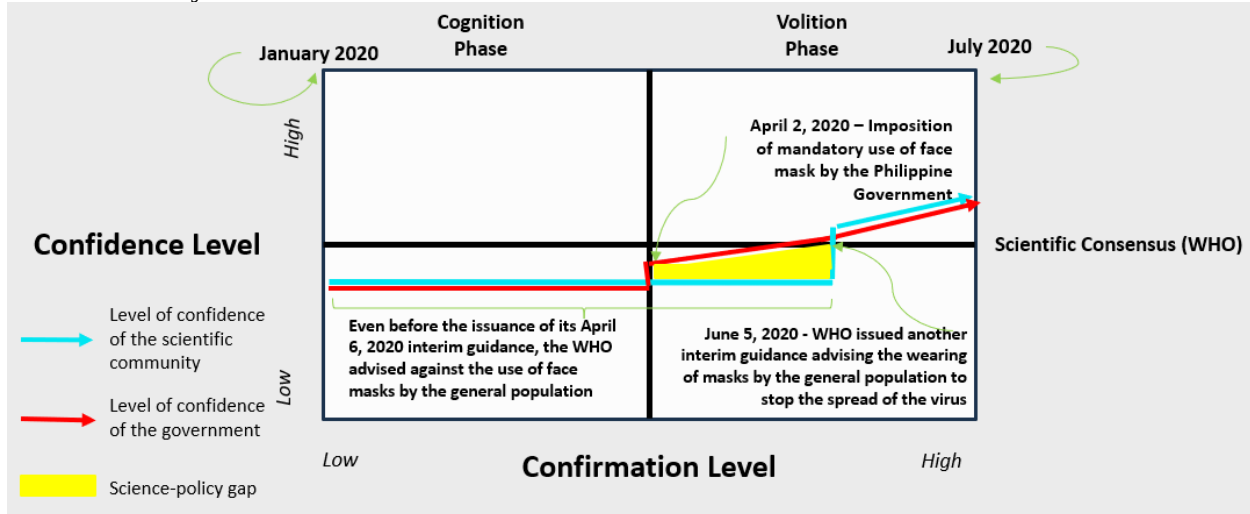
4.3.3. The Science-Policy Nexus: To Mask or Not to Mask

Just like case 1, this case illustrates a science-policy gap that commenced in the volition phase where there was **no scientific consensus** on the effectiveness of wearing mask by the general population. However, this time, that gap was closed in the end. Since January 2020, the Philippine government did not recommend the use of face masks to the general population, and only to frontliners and the sick ones because the health department argued the infection was not that yet widespread and there was a high demand from residents affected by a volcanic explosion. This was also in keeping with the advisory from the WHO. However, after learning from the **practice and experiences** of its Asian neighbors (i.e., Singapore, Hong Kong, Japan, and South Korea) who ordered their citizens to wear masks as a preventive measure and were reported as a success in preventing widespread infection. Meanwhile, in a complete turn-around, the WHO reversed its previous interim guidance by advising people to wear masks in the mid-2020. In this case, the science-policy gap was created because the Philippine government learned and emulated a “best” (effective) practice from other countries, rather than continuously follow a science-backed advisory, which was reversed later by the WHO.

methods (ASTM F2100, EN 14683, or equivalent) that aim to balance high filtration, adequate breathability and optionally, fluid penetration resistance” (WHO, 2020a).

⁷ At that time, the WHO still believed that the coronavirus was not airborne.

Figure 8.
Science-Policy Nexus: To Mask or Not to Mask



4.4 To (Mass) Test or Not to (Mass) Test the Asymptomatic Carriers

4.4.1 The Public Policy

On May 18, 2020, the presidential spokesperson, in response to clamor for the government to conduct mass testing, announced that the government does not intend to conduct “mass testing” and would rather leave it up to the private sector to test their employees. He actually equated “mass testing” with testing of all the people when he said, “in terms of mass testing like what is being done by Wuhan where they’re testing all 11 million residents, we don’t have a similar program and we’re leaving it to the private sector,” (CNN Philippines Staff, 2020) which he later denied (Madarang, 2020). Two days after that, the DOH, thru one of its undersecretaries, clarified to the general public that the department will not conduct mass testing for asymptomatic persons because testing them is not cost-effective, and not rational as well as 85% of coronavirus transmission came from symptomatic patients. In addition, according to the official, the testing might give them a false sense of security, and might give false results. The official informed the public that the department is, instead, focused on improving its testing capacity at 30,000 tests per day by the end of May 2020 (Esguerra, 2020; Panti, 2020). According to DOH Department Order No. 258 issued on May 29, 2020, the prioritized groups for testing under the expanded testing program are those who are at-risk of COVID-19 infection, and then followed by sub-groups of at-risk individuals arranged in order of greatest to lowest need for testing, which includes patients, healthcare workers, frontliners, and other vulnerable patients with comorbidities, those who will undergo high-risk, elective surgical procedures, those living in confined spaces such as persons deprived of liberty or institutionalized persons, and others. The testing was rationalized due to the shortage of testing kits. There is no mention of mass testing of other groups of people like workers, civil servants, asymptomatic carriers, etc.

4.4.2. *The Science and Evidence*

The mantra of the WHO is “test, test, test” (BBC News, 2020). However, it does not use the term “mass testing.” Instead, it uses the words “prioritized,” and “focused.” According to its interim guidance issued on March 21, 2020, the following should be prioritized for the early identification and protection, i.e., vulnerable patients and health care workers. In addition, focused testing shall be conducted in health care facilities to prevent and control infection (WHO, 2020d). The priority in the WHO interim guidance is as follows:

- people who are at risk of developing severe disease and vulnerable populations, who will require hospitalization and advanced care for COVID-19 (see Clinical management of severe acute respiratory infections when novel coronavirus is suspected).
- health workers (including emergency services and non-clinical staff) regardless of whether they are a contact of a confirmed case (to protect health workers and reduce the risk of nosocomial transmission)
- the first symptomatic individuals in a closed setting (e.g. schools, long-term living facilities, prisons, hospitals) to quickly identify outbreaks and ensure containment measures. All other individuals with symptoms related to the close settings may be considered probable cases and isolated without additional testing if testing capacity is limited (WHO, 2020d).

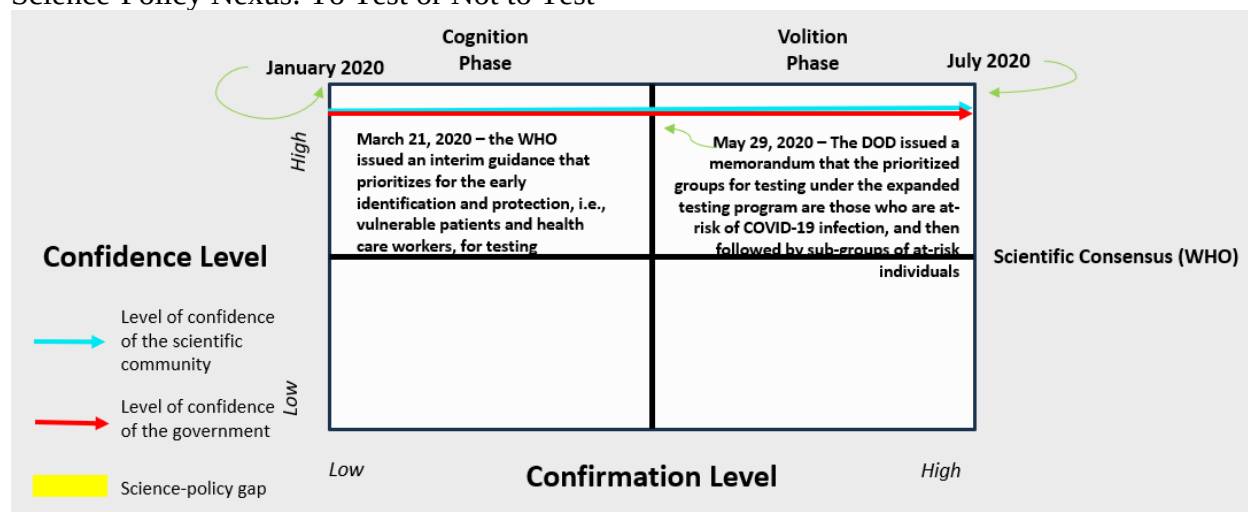
In the case definitions listed in the interim guidance issued by the WHO on March 20, 2020, confirmed asymptomatic carriers are included for case surveillance. However, there is no mention about testing them (WHO, 2020c).

4.4.3. *The Science-Policy Nexus: To Test or Not to Test*

In case 3, the confidence levels between the scientific community and the government are closely in parallel with one another. Therefore, there is no science-policy gap. This is because the DOH adhered to the WHO interim guidance to prioritize the testing of home care givers, medical frontliners, and symptomatic persons. This policy is also justified because of **resource constraints or the economics**, i.e., cost-benefit, of “mass testing.” Due to cost of RT-PCR testing and the demand, the DOH could not possibly administer even to asymptomatic carriers even though it is the mantra of the WHO to “test, test, test.”

Figure 9.

Science-Policy Nexus: To Test or Not to Test



4.5 To Disinfect or Not to Disinfect People and Public Places

4.5.1. The Public Policy

The use of liquid disinfectants to spray streets, buildings, rooms, and even people confused the Filipino public when the DOH issued a department circular informing them that it is not effective and may even cause medical and environmental problems. It was a startling announcement that sowed confusion because at the onset of the epidemic in the Philippines, local governments, business establishments, and government agencies set-up decontamination tents in front of their buildings to spray people who entered their areas, and sprayed streets, rooms, houses, and buildings as well. For example, as early as April 2020 the Metropolitan Manila Development Authority (MMDA), a coordinating body for the management of Metro Manila, set-up decontamination tents in several government offices and public hospitals in various places Metro Manila like in the Philippine Heart Center, East Avenue Medical Center, Malacañang Palace (the official residence and office of the President), Department of Health-Central Office in Tayuman, Department of Social Welfare and Development-National Relief Operations Center in Pasay and its satellite office in Commonwealth, Quezon City “to decontaminate and disinfect health workers, frontliners and everyone visiting the hospitals and government offices to help contain the entry and spread of COVID-19” according to the agency head (MMDA, 2020). Meanwhile, the health officials of Pasig City, a city within Metro Manila, imported three drones from Wuhan, China and sprayed disinfectant along streets and over buildings in the fight against the coronavirus in the first weeks of April 2020 (Newsflare, 2020). In another area, Quezon City, the largest city in Metro Manila in terms of land size, issued guidelines on the second week of April to disinfect outdoor spaces which includes public outdoor spaces, including but not limited to parks, roads, markets, and other open spaces, building facades, health care and community caring facilities environment and vehicles used to transport suspected, probable and confirmed COVID-19 cases. Residential areas and communities were also included for spraying (Hallare, 2020).

After spending taxpayers' money on the tents, gadgets, and the chemicals, these agencies and local governments were surprised with the guidance issued by the DOH on April 9, 2020. It warned the public "to AVOID spraying and misting for COVID-19" because "there is no evidence to support that spraying surfaces or large-scale misting of areas, indoor or outdoor with disinfecting agents, kills virus." It also informed the public that spraying pose health and safety concerns to them, i.e., (1) cause any pathogens to be dispersed further from the direct application of a spray, (2) result to skin irritation or inhalation of chemicals and subsequent development of respiratory side effects, and (3) may also cause environmental pollution." It recommended to soak objects or disinfect surfaces to kill the virus (Department Circular No. 2020-0172: Guidance on Misting or Spraying for COVID-19 (9 April 2020), 2020). This did not sit well with legislators and local government executives who demanded that the DOH take back its warning because they have invested on the tents, chemicals, and gadgets, and they have seen/learned that it is being practiced in China, Taiwan, South Korea, etc. (Parrocha, 2020; Taylor, 2020). Health Secretary Duque III, when quizzed on this in a Congressional inquiry seven days after he issued his warning, clarified that they are only prohibiting direct spraying or misting on human and not on inanimate objects. However, he did not retract the cautionary statement that there is no proof that they could kill the SARS-CoV-2 (Mercado, 2020).

4.5.2. *The Science and Evidence*

The DOH department circular echoes the recommendations of the interim guidance of the WHO on cleaning and disinfection of environmental surfaces in the context of COVID-19, which was released on May 15, 2020. The WHO interim guidance quoted recent studies about the persistence of the virus to linger on different surfaces which could range from as short as 4 hours on copper and as long as 7 days on the outer layer of a medical mask. It also considered other studies about the ability of the virus to survive in a wide range of pH values⁸ and ambient temperatures, and its susceptibility to heat and standard disinfection methods (WHO, 2020b).

In consideration of the recent science and evidences above, the WHO stated in the interim guidance that it does not recommend spraying or fumigation of outdoor spaces such as streets or marketplaces to kill COVID-19 virus because disinfectants are inactivated by dirt and debris. It is also ineffective in porous surfaces such as sidewalks and unpaved walkways. In the first place, streets and sidewalks are not considered as reservoirs of COVID-19 infection. As for spraying humans with disinfectants in tunnels, cabinets or chambers, the WHO strongly advises against it for two reasons. First, it may have physical and psychological harm on them. Moreover, it could cause eye and skin irritation, bronchospasm due to inhalation, and gastrointestinal effects such as nausea and vomiting. Furthermore, spraying infected persons would not reduce their ability to spread the virus through droplets or contacts (WHO, 2020b).

⁸ pH (power of Hydrogen) is a measure of how acidic/basic water is.

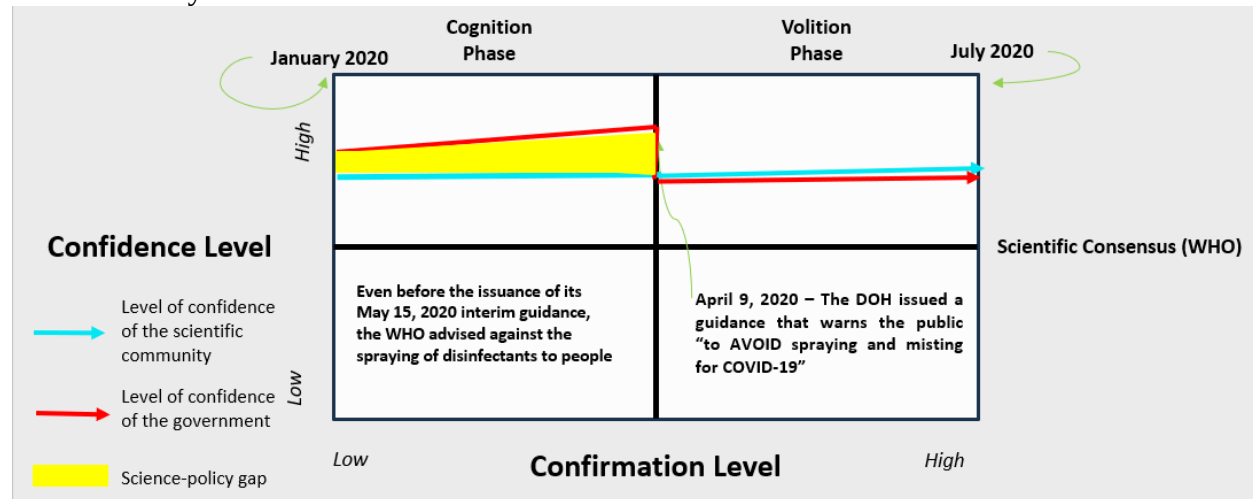
4.5.3. Science-Policy Nexus: To Disinfect or Not to Disinfect

Case 4 illustrates a science-policy gap caused by cognitive dissonance at the cognition level but with a new twist. As shown in the diagram of Bradshaw and Borchers (**Figure 4**), the confidence level of the society is normally *below* compared to those of the science community. However, in this case, there was congruence between the Filipino society including government instrumentalities, and medical community in the need for disinfection for protection against the virus, but the former **overdid** it by disinfecting not only inanimate objects but also people, hence, the confidence level line of the government is higher than that of the scientific community. It has always been the practice of government agencies to spray people and public places to disinfect them from pathogens (Colcol, 2020).

Another important lesson related to the overreaction in this case is that, contrary to Bradshaw and Borchers' assertion that cognitive dissonance emerges at the volition phase, this shows that prior experience-turned-habits *even at the cognition phase* could result to cognitive dissonance when presented with new information or challenges. Immediately, the Filipinos' default response is to act based on what has been done in the past because they had been used to disinfecting or spraying people during disease outbreaks in the past. The dissonance came about when people and some national and local government agencies questioned the health department's advisory admonishing them to stop spraying people with disinfectants.

Figure 10.

Science-Policy Nexus: To Disinfect or Not to Disinfect



V. Conclusions

The COVID-19 pandemic provided a context to show how far science could be used to make better, informed or evidence-based public policies. The four cases discussed here show different cases of science-policy gaps, with varying extent, within the first seven months of the Philippine government's policy responses to urgent need to stop the novel coronavirus from spreading in the whole country based on still emerging medical/scientific explanations.

The policy of not conducting mass testing illustrates a perfect science-policy congruence. There was already a high degree of consensus in the WHO that the testing of the symptomatic patients and frontliners should be prioritized. The Philippine government strictly adhered to this not only because of the science behind it but due to **resource constraints and the economics** of it.

The three other cases show varying degrees of the gaps between science and policy in the first seven months of 2020. The cases of the travel ban and the wearing of face masks depict science-policy gaps that emerged *in the volition phase* (which seem to contradict Bradshaw and Borchers' proposition that gaps occur in the cognition phase). In both cases, the Philippine government, initially, adopted the instructions of the WHO interim guidance issuances but later adopted policies contrary to them. First, the government went against the WHO advise not to impose travel bans and instead, caved in to the clamor of the Filipinos to impose that drastic measure. For lack of a better word to describe it, this seems to imply that policy actions could be based not only on science but on **public pressure**. Second, the government decided against the WHO advise not to make it mandatory for the general population to wear face masks when it followed its Asian neighbors which required their people to wear masks as a preventive measure. These countries had been relatively successful in stemming the pandemic tide of infection at that time. Again, for lack of a better word, it can be inferred that policy actions could be based not only on science but on the **"best" (effective) practices of others**. It should be pointed out that in these two cases, there was no scientific consensus yet on the effectiveness of travel bans and limited use of face masks. It may be safe to infer that the **lack of scientific consensus** might have made it easier for the Philippine government (and those of other countries) to change its policies.

The disinfection case shows the appearance of **cognitive dissonance in the cognition phase** (which is again, contrary to the Bradshaw and Borchers' claim that it occurs in the volition phase). This shows that prior **experience-turned-habits** in the cognition phase could result to cognitive dissonance when presented with new information or challenges. During the first months of the pandemic in the Philippines in 2020, the default response of Filipinos' and some government agencies was to spray people with disinfectants because they got used doing it in the past. The dissonance came about when people and national legislators questioned the health department's advisory advising them to stop spraying people with disinfectants. It must be pointed out also that the cognitive dissonance here displays a new twist, i.e., the people and some government agencies **overreacted** vis-à-vis the novel coronavirus due to their past actions.

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科學與政策的連結還是差距？： 基於科學的政策與菲律賓的 COVID-19 大流行*

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摘要

科學是循證決策的基石。它透過使用嚴格的科學方法對問題和解決方案進行客觀分析。因此，許多政府將科學家、專家或學者納入公共決策顧問圈。在大多數情況下，科學家和政治家的聯手發揮作用。然而，兩者之間的關係也存在缺陷，導致明確的政策被擱置或得不到落實，因此幾乎所有的文獻最終都討論「差距」而不是「聯繫」。COVID-19 大流行和菲律賓政府的流行病應對措施凸顯了科學與政策的差距。在許多情況下，現有和新興的醫學知識與為應對這一流行病而製定的政策之間的差距被公眾指出，即政府拒絕響應立即對中國人實施旅行禁令的呼籲感染率仍較低時的訪客；沒有立即強制要求在擁擠的公共場所佩戴口罩；對公共場所進行噴霧、噴霧消毒；並且，拒絕進行大規模測試。所有這些都發生在 2020 年前 7 個月。因此，本文調查了這些差距的原因以及造成這些差距的因素。結

果發現，科學政策差距是由公眾壓力、資源限制和經濟考量、採用其他國家的最佳（有效）做法、認知失調和缺乏科學共識所造成的。

關鍵字：科學與政策的關係/差距、COVID-19、大流行、旅行禁令、口罩、大規模檢測、菲律賓、消毒

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