INITIATIVES TO COVID-19 CASES: A TREND ANALYSIS

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ABSTRACT

Utilizing the five-tier model of the Theory of Needs by Abraham Maslow, safety from disease outbreaks is a fundamental human need (Mcleod, 2020). As such, this study aims to evaluate the national-level initiatives implemented by the Philippine government through a trend analysis of the number of cases and recoveries from February 27, 2020, until April 26, 2023. Moving averages, trend analysis, content analysis, and systems synthesis were used to develop concrete conclusions. Findings show a direct relationship between the number of COVID-19 cases and recoveries, with a two-week interval between their uptrends. Surges in cases also occur around the holiday season. The most prominent initiatives the government introduced during uptrends in COVID-19 cases are community quarantine protocols, border control measures, and vaccination efforts. Other inventions include: engineering and administrative control, economic and financial assistance, open information system, case definitions of COVID-19, management of non-COVID-19 patients, research centers and testing laboratories, remains of COVID-19 cases and PUIs, and strategic planning. These interventions led to an uptrend in COVID-19 recoveries after two weeks. These strategies could be implemented in health emergencies to mitigate its effects and curb further transmission.

Keywords*: COVID-19 cases, COVID-19 recoveries, initiatives*

INTRODUCTION

In December 2019, the People's Republic of China experienced a new illness from the novel coronavirus 2019-nCoV, eventually known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). By January 31, 2020, it had been deemed a worldwide health emergency; by March 11, it had been labeled a pandemic (Gralinski & Menachery, 2020; Dhama et al., 2020).

The COVID-19 pandemic has caused a shocking loss of life on a global scale and poses an unprecedented threat to food systems, public health, and the workplace. Several businesses face an existential threat, and tens of millions of people risk falling into extreme poverty due to the pandemic's devastating economic and social devastation. The livelihoods of over half of the 3.3 billion workers worldwide are in jeopardy. The informal economy's workforce is especially vulnerable because most need access to social safety, high-quality healthcare, or productive assets. Many people cannot provide for themselves and their families during lockdowns because they lack the means of earning a living (Wang et al., 2021; World Health Organization, 2020d). As of September 14, 2022, the World Health Organization (2022a) tallied over 607 million COVID-19 cases worldwide.

With no remedy at hand, governments turned towards containment and mitigation strategies to reduce the severe health consequences brought on by COVID-19. When the pandemic struck the country, the Philippine government, through the IATF-EID (Inter-Agency Task Force on Emerging Infectious Diseases), outlined various quarantine measures and other nonpharmaceutical interventions (Talabis et al., 2021). In line with the university's research agenda for the year 2022, the Mathematics Education researchers created a trend

analysis of the recorded cases and recoveries of COVID-19 in the Philippines. They also analyzed the implications of national-level initiatives implemented by the government against the trend of data generated.

The researchers pursued this study as no research of the exact nature exists at UM Panabo College. Moreover, despite the current decline in cases (Villanueva, 2022), the need to suppress the further spread of the virus is still present, as surges may occur occasionally. Hence, an updated trend analysis will remain vital in the country's countermeasures during the COVID-19 pandemic. The objectives of this study are to generate trend analysis on data of COVID-19 cases from February 27, 2020, until April 26, 2023, to generate insights on initiatives and responses to COVID-19 cases, and to determine the relevance of initiatives and responses to the trend of data on COVID-19 cases.

This research provides new and updated insights into the knowledge about the COVID-19 pandemic. Through this research, the government, different agencies, and the community will further realize the benefits of implementing interventions as a preventive measure against COVID-19. As conclusions were derived empirically, this could also greatly enhance people's compliance with government measures during disease outbreaks. Furthermore, the analysis presented in this study will impart valuable information for future research of new theories regarding disaster and disease mitigation strategies.

METHODS

Dataset. This study utilized secondary data gathered through open data sources available on the Internet. There exist regulated websites that only share accurate data and can be relied on by researchers. Most of these websites are managed by the government or private organizations that are paid data collectors (Formplus Blog, 2020). Additionally, the Department of the Army Washington DC (2012) asserted that open sources are reshaping the world. A wide range of individuals can use publicly available information to achieve a wide range of goals. The significance and relevance of open-source intelligence serve as a forced economy, a new leverage capability, and a cue for technical or classified assets to refine and validate information and intelligence. During their research, they conducted open-source reliability ratings and content credibility ratings, proving that open-source information is credible and reliable.

This study covered only the COVID-19 cases and recoveries, as well as the national-level initiatives from February 27, 2020, until April 26, 2023, to generate an updated trend analysis and insight into the initiatives implemented by the government. The DOH started tracking the COVID-19 cases by February 27, 2020; hence, this was also the starting point of analysis of the researchers.

This study used the open-source statistics on COVID-19 provided by the Department of Health. The Department of Health (DOH) is the Philippines' primary health agency. The agency uploaded a tracker that indicates the number of cases, recoveries, and deaths from the beginning of the pandemic in the country until the present. On the other hand, the list of initiatives and policies included only national-level issuances of the Office of the President, the IATF, the House of

Representatives, and DOH within the target period of the researchers. These agencies are at the forefront of the country's battle against COVID-19 and passed several resolutions and interventions to mitigate the aftermath of COVID-19 in the country (Parrocha, 2021).

Materials and Instruments. This study utilized secondary data as an alternative to collecting information. It is similar to the study of Goel (2022), who transitioned from gathering primary data through interviews to utilizing readily available secondary data. Turner (2018) also suggested using secondary analysis of existing datasets as a substitute for the traditional qualitative interview or similar kinds. Holm (2021) further states that there are other methods of gathering data besides interviews and surveys.

Design and Procedure. The researchers applied the mixed-method design in this study. Shorten and Smith (2017) state that the mixed method is a way of conducting research that involves gathering and examining quantitative and qualitative data for the same topic. Based on the order of utilization, this research specifically employed the explanatory sequential mixed method design wherein quantitative data will first be collected. This was followed by collecting qualitative data to interpret the quantitative results (Plano, 2011, as cited in Subedi, 2016).

Quantitative phase. The moving average analysis was generated first to know the uptrend and downtrend of the study. Fernando (2022) claimed that the rising and declining moving averages indicate the increased and decreased numbers affected. This was followed by trend analysis—a technique for creating future predictions based on historical data because it enables the comparison of data points over a certain period (Coresignal, 2022).

Qualitative phase. The researchers used content analysis to quantify and examine the occurrence, significance, and connections of specific words, themes, or concepts (Content Analysis, 2022). Lastly, Wyborn et al. (2018) state that synthesis combine's information already known with relevant research findings. By integrating those discoveries, synthesis seeks to make them more universal and applicable while also creating new knowledge.

RESULTS AND DISCUSSION

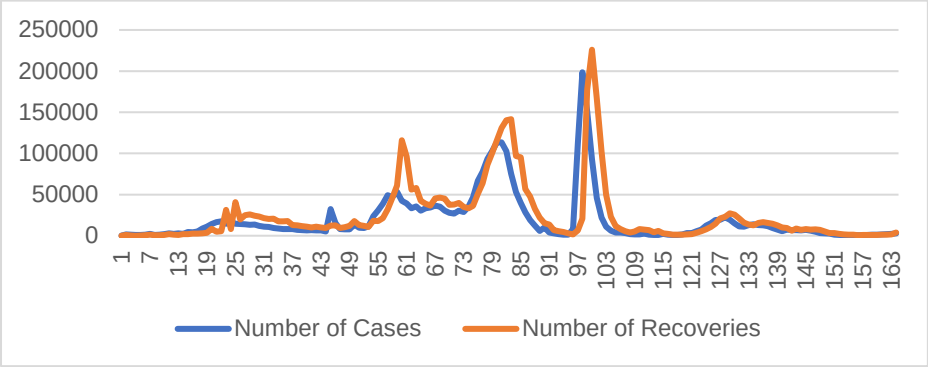
Trend analysis on data of COVID-19 cases and recoveries from February 27, 2020, to April 26, 2023

The highest number of COVID-19 cases, based on Figure 1.1, occurred in the 98th week (January 6-12, 2022), with a peak of nearly two hundred thousand active cases. During this period, the extensive holiday season in the country that began in September was concluded through the celebration of the "Feast of Three Kings" (WorldRemit Content Team, 2022). The lowest recorded number of COVID-19 cases was during the first week of COVID-19 monitoring and on January 26 until March 8, 2023. As it is still the first week, cases were expected to be on the lowest spectrum during the former period. On the other hand, the standard case metrics of the latter period may be attributed to the initiatives taken by the government (Umakanthan et al., 2020; WHO, 2020a; Centers for Disease Control and Prevention, 2021).

Subsequently, Figure 1.1 shows that the highest number of recoveries of COVID-19 cases was recorded on January 13, 2022, until February 2, 2022, with over 225,948 recoveries at its peak. This occurred a day after the highest number of COVID-19 cases was recorded. Conversely, the lowest number of recoveries was recorded during the first six weeks of COVID-19 monitoring (February 27, 2020, until April 8, 2020). As active cases are on the lower end during these

periods, it is reasonable that the reflected number of recoveries would exhibit the same behavior.

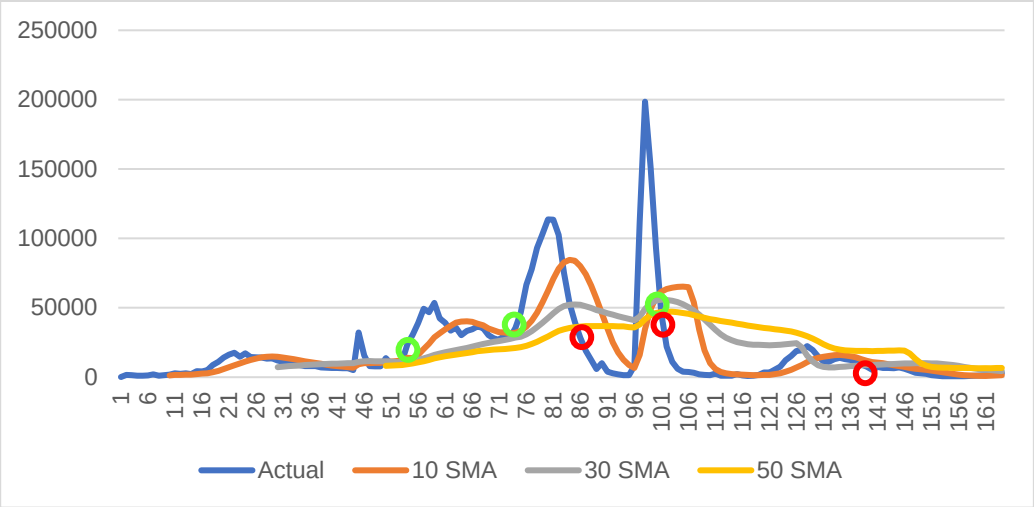
Figure 1.1. ***Number of COVID-19 Cases and Recoveries***



Additionally, peaks in cases and recoveries occur almost simultaneously. Hence, there is a direct relation between the number of cases and recoveries. Whenever there is a spike in COVID-19 cases, the number of recoveries will also increase soon after (Direct & Inverse Variation, n.d.).

Moving on, Figure 1.2 shows the moving averages (MAs) of COVID-19 cases. The trend moved slightly on the 25th week (August 13-19, 2020) and into April 26, 2023. The actual number of cases broke past the three MAs in three moves (highlighted in green) and fell below the MAs three times (highlighted in red). The uptrends of COVID-19 cases began on the 54th (March 4 to April 28, 2021), 74th (July 22 to September 29, 2021), and 97th (December 30, 2021, to February 2, 2022) week. Health officers posit that the most likely cause of the first uptrend is the emergence of new coronavirus variants in the country and the citizens' disobedience of the preventive measures (not wearing face masks and face shields and not exercising social distancing and stay-at-home protocols) (Cortez, 2021; David, 2021; Gotinga, 2021).

Figure 1.2. ***Moving Average of COVID-19 Cases***



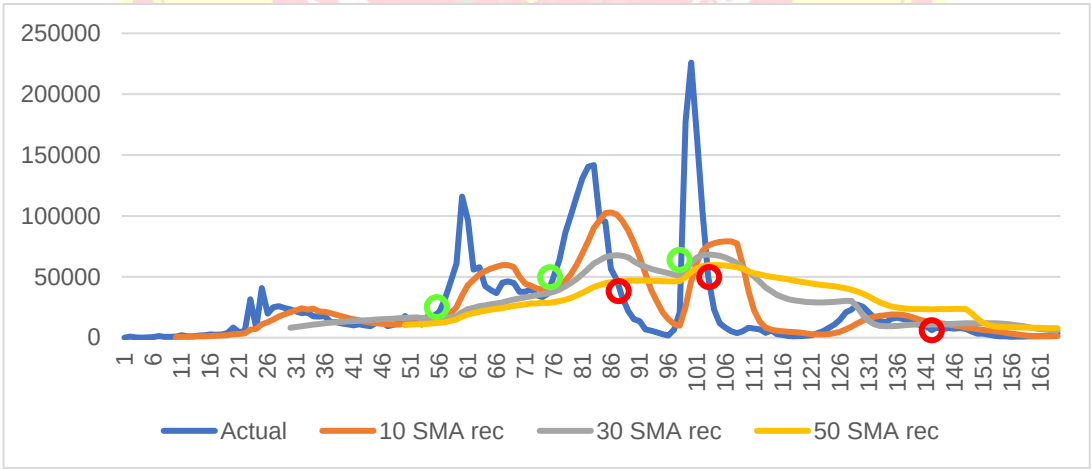
Moreover, reports point to Delta variant emergence and low vaccination rate as one of the causes for the second uptrend of cases in the country (Wee & Elemia, 2022; Caritas Australia, 2021; Toole, 2021). The third uptrend came in the country's final days of the holiday season, wherein New Year's celebration is only a mere extension of the extensive festivities celebrated since September (Walden, 2021). On the other hand, the downtrend in COVID-19 cases began on the 86th (October 14 to December 29, 2021), 102nd (February 3 to April 20, 2022), and 139th (October 20, 2022, to March 1, 2023) week.

Furthermore, Figure 1.3 displays the moving average of COVID-19 recoveries. The trend moved slightly by the 31st week (September 24-30, 2020) until April 26, 2023. The number of

recoveries exceeded the MAs three times (highlighted in green) and dropped below the Mas in three moves (highlighted in red). The uptrend in recoveries began on the 56th (March 18 to May 19, 2021), 76th (August 5 to October 13, 2021), and 99th (January 13 to February 16, 2022) week. The first uptrend in recoveries is due to improved contact tracing and accessibility of information expended by DOH with its *Oplan Recoveries* (Magsambol, 2021). The two other uptrends could be best explained by the efficacy of the initiatives enacted by the government. Inversely, the downtrend in recoveries started on the 88th (October 28, 2021, to January 12, 2022), 103rd (February 10 to May 4, 2022), and 142nd (November 10, 2021, to February 22, 2023) week.

As mentioned, the number of cases and recoveries have a direct relationship; therefore, it is no coincidence that their uptrends and downtrends occur in close intervals.

Figure 1.3. *Moving Average of COVID-19 Recoveries*



Insights on initiatives and responses to COVID-19 cases

The researchers identified over 441 national-level initiatives out of 511 initiatives (with 22 localized initiatives and 48 missing copies of interventions) released by the Office of the President, House of Representatives, Inter-Agency Task Force (IATF), and Department of Health (DOH). After analyzing its contents, the researchers identified twelve major themes in Table 1.

Table 1. Themes of Initiatives and Responses to COVID-19 Cases

Major Theme	Core Ideas
Community Quarantine Protocols	Physical distancing Work from home Class suspension Limited business operations Transportation protocols Minimum public health standards Risk classification Isolation and quarantine protocols
Testing	Distribution of test kits Guidelines on the use of test kits Mass testing Waste disposal of test kits
Engineering and Administrative Control	Physical barriers Ventilation Hygiene and sanitation facilities Screening and Triage Visual cues Proper storage, collection, treatment, and disposal of used PPE
Economic and Financial Assistance	Incentives for healthcare workers Social amelioration Price freeze and suggested retail price of emergency medicines and devices

Vaccination	Participation in clinical trials of COVID-19 vaccines Procurement and distribution of vaccines Management and administration of vaccines Subgroups
Open Information System	Transparent and accessible information Contact tracing Surveillance
Case Definitions of COVID-19	Suspected, probable, and confirmed case
Management of Non-COVID-19 Patients	Treatment and nursing of pregnant women, women about to give birth, and newborns
Research Centers and Testing Laboratories	Establishment and utilization Licensing Activation of DOH Subnational laboratories
Remains of COVID-19 Cases and PUIs	Handling and disposal of remains
Border Control Measures	Country risk classification Travel restriction Travel ban Suspension of VISA issuances
Strategic Planning	Generic outline for preparation, response, and recovery intentions Declaration of State of Calamity

2.1. Community quarantine protocols

Community quarantine protocols cover measures on physical distancing, quarantine, working from home, suspension of classes, implementation of minimum public health standards (hand hygiene, cough etiquette, and wearing of masks and other personal protective equipment), operational guidelines of establishments and premises, and

transportation protocols (Department of Health, 2022b; & Amit, Pepito, & Dayrit, 2021). The IATF provisioned for community quarantine protocols via IATF Resolution No. 144-D, series of 2021, which states that:

> *…the IATF approved under IATF Resolution No.136-A (s.2021), the shift in the policy of classifying Provinces, Highly Urbanized Cities (HUCs), and Independent Component Cities (ICC) for purposes of community quarantine wherein the new classification framework focuses on the imposition of granular lockdown measures and having an alert-level system (Alert Level 1 to 4) with each alert level limiting restrictions only to identified high-risk activities. (Par. 5, October 18, 2021)*

Initiatives outlining the community quarantine protocols are one of the most prominent interventions enacted by the government, with the country's lockdown being dubbed as one of the 'longest' in the world (See, 2021). It all began when the entire Luzon was placed under Enhanced Community Quarantine (the highest risk classification) to curb a rise in COVID-19 cases in the country (Luna, 2020). Shortly after a few months, the whole country was under different levels of risk classification.

2.2. Testing

Testing is vital in containing and relieving the widespread COVID-19 by distinguishing contaminated people to intercept further person-to-person transmission of COVID-19 (*Why Is COVID-19 Testing Important?* n.d.). Testing includes the distribution, guidelines, and use of antigen, antibody, and reverse transcription-polymerase chain reaction (RT-PCR) test kits (WHO Western Pacific, 2022).

Guidelines for COVID-19 Mass Testing have been developed by DOH and were approved by the IATF, to wit:

> *The IATF shall exhaust all means necessary to increase the COVID-19 testing capacity of the country, and for this reason, hereby adopts and approves the Guidelines for COVID-19 Mass Testing as presented by the Department of Health. (IATF Resolution No. 21, s. 2020, Item B, April 6, 2020)*

Mass testing involves taking pharyngeal or nasal swabs to test for DNA, frequently using the polymerase chain reaction method. It is regarded as an effective method for containing the COVID-19 pandemic because it may be able to locate and isolate cases that are still in the early stages of infection and reduce the risk of virus transmission, more so with the existence of various and more lethal variants (Mendoza et al., 2021; & Shen et al., 2021).

2.3. Engineering and Administrative Controls

Engineering controls are used to eliminate hazards or to create a barrier that separates employees from them. Administrative controls are adjustments to work practices made to shorten exposure's duration, frequency, and severity (UC San Diego, 2022). IATF Resolution 118-A, series of 2021, articulates:

> *Improved implementation of engineering and administrative controls, especially ventilation standards and actions against crowding and gatherings. (Item E-1, May 31, 2021)*

Engineering and administrative controls may be implemented by installing physical barriers in closed spaces and ensuring proper ventilation using windows, fans, exhaust fans, and air filtration devices with High-Efficiency Particulate Air (HEPA) filters. Moreover, there should be hand hygiene and sanitation facilities present in the most

conspicuous areas of public and private premises, as well as a triage area where symptom assessment is conducted. Visual cues may also remind the public to exercise physical distancing, cough, sneezing etiquette, and proper hand hygiene. Furthermore, adequate storage, collection, treatment, and disposal of used PPE and other infectious waste must be maintained at all times (Department of Health, n.d.).

2.4. Economic and Financial Assistance

Economic and financial assistance comprises the provision of a price freeze and suggested retail prices of essential emergency medicines and devices, as well as providing cash incentives to healthcare workers and social amelioration programs for citizens ("Financial Assistance," n.d.; & Dimagiba, 2020). The Department of Social Welfare and Development launched a social amelioration program (SAP), which the IATF later approved. One initiative indicates:

> *The recommendations of the Department of Labor and Employment for the social amelioration program for the formal workers' sector as presented are at this moment approved (IATF Resolution No. 21, s. 2020, Item A, April 6, 2020)*

When the country's economy hit bottom-low due to the pandemic, the Philippine poverty index rose to almost 20 million (18.1% of the population) by 2021, based on the report of the Philippine Statistics Authority (Dela Cruz, 2022). Hence, financial assistance during the pandemic is indeed essential to recover from the loss of economic opportunities (Zoleta, 2021).

2.5. Vaccination

By increasing vaccination rates, the nation has been able to control the spread of COVID-19 and open up more economic

opportunities, accelerating the country's recovery rate (World Bank Group, 2022). On February 26, 2021, the Office of the President approved the Republic Act No. 11525 or the "COVID-19 Vaccination Program Act of 2021," whose primary objective includes:

> *Address the adverse impact of COVID-19 through the procurement and administration of safe and effective COVID-19 vaccines by the National Government through the Department of Health (DOH) and the National Task Force Against COVID-19 (NTF), and other duly constituted authorities and instrumentalities.*

The IATF also supports the *"Bayanihan, Bakunahan"* program, which aims to increase vaccination coverage and mobilize stakeholders from all sectors to support the government's goal of ensuring a safe environment for its citizens (Department of Health, 2021).

> *In support of the whole-of-nation and whole-of-society approach to COVID-19 vaccination, the IATF fully supports the National Vaccination Days or the "Bayanihan, Bakunahan" from November 29 to December 1, 2021. All member agencies are directed to extend full support for this simultaneous vaccination rollout. (IATF Resolution No. 149, s. 2021, item C, November 18, 2021)*

2.6. Open Information System

Information held by the government, such as details about its activities, publications, and spending, is proactively released and made accessible to the general public via various channels in user-friendly formats (Executive & Indigenous Affairs, n.d.). To track COVID-19 cases, recoveries, and deaths daily and weekly basis, DOH launched the COVID-19 tracker (*COVID-19 Tracker*, n.d.). This is evident in item C

under Resolution No. 22, series of 2020, released by IATF on April 8, 2020, which states that:

> *The IATF adopts the policy of mandatory public disclosure of personal information relating to positive COVID-19 cases to enhance the contact-tracing efforts of the government.*

Information systems are crucial during the pandemic as it facilitates the communication chain of disease surveillance. It provides nationwide access to data regarding COVID-19, especially in case monitoring and outlining its possible implications to one's community, workplace, or livelihood (Liu, 2020). Kilroy and Somma (2020) also affirmed that monitoring systems enable tracking, real-time feedback, course correction, and learning. Consequently, it ensures that interventions developed are delivered to the target groups, and information available can be utilized to generate further knowledge, making the creation of new and better initiatives possible.

2.7. Case Definitions of COVID-19

For public health surveillance, a disease is defined according to a set of uniform standards called a surveillance case definition (Division of Health Informatics and Surveillance, 2021). The DOH released case definitions to classify cases into suspect, probable, and confirmed COVID-19 cases (Department of Health, 2022c).

> *Under the updated guidelines of DOH on the classification of individuals for the surveillance and management of the COVID-19 health event, all agencies and Local Government Units (LGUs) are directed to apply said category in all subsequent issuances related to COVID-19, as well as to update existing issuances in accordance therewith. (IATF Resolution No. 23, s. 2020, Item C, April 13, 2020)*

2.8. Guidelines on Management of Non-COVID-19 Patients

This outlines the guidelines for the treatment and nursing of non-COVID-19 patients (pregnant women, women about to give birth, and newborns) to ensure continuity of services during the onslaught of the pandemic (Department of Health, 2020a). DOH Memorandum No. 2020-0319, dated July 13, 2020, indicates that:

> *Protocols and guidelines in preventing, controlling, and treating infectious diseases during the prenatal period, childbirth, the immediate postpartum and postnatal periods, and the newborn's first 28 days of life are already in place and have incorporated the rights-based approach to health. The continuity of services to deliver quality maternal, newborn, and child care for women, infants, and children are assured in various laws (Par. 2)*

2.9. Research Centers and Testing Laboratories

Due to the increasing number of cases throughout the globe, the WHO declares the COVID-19 outbreak as a Public Health Emergency of International Concern (PHEIC) (World Health Organization, 2020b). To amplify the country's affirmative testing capacity, the DOH has:

> *sub-allotted funds to the Research Institute for Tropical Medicine (RITM) to facilitate the activation of the following existing subnational laboratories: ... (DOH Memorandum No. 2020-0071, Par. 3)*

Furthermore, The IATF supports the plan of the Department of Science and Technology (DOST) to establish research centers that can initiate the local vaccine development, as per IATF Resolution No. 39, series of 2020, dated May 22, 2020, which states:

The IATF supports the plans of the DOST on the establishment of the following research centers that can initiate and strengthen local vaccine development towards the country's vaccine self-reliance and self-sufficiency: … (Item C)

2.10. Remains of COVID-19 Cases and PUIs

Remains of COVID-19 confirmed cases and PUIs must be handled and disposed of properly since it poses a danger of contamination even after death. According to the report published online on April 11 as a preprint for the Journal of Forensic and Legal Medicine, a forensic physician working in Bangkok, Thailand, most likely contracted the virus from a deceased patient (Geggel, 2020). DOH Memorandum No. 2020-0158 discussed the proper handling of the remains of suspect, probable, and confirmed COVID-19 cases, to wit:

This Department Memorandum is being issued to reiterate the proper handling of the remains of confirmed COVID-19 cases issued under Department Memorandum 2020-0067 dated February 3, 2020, on the Guidelines on the Disposal and Shipment of the Remains of Confirmed Cases of 2019 Novel Coronavirus Acute Respiratory Disease (2019-nCoV ARD) and to provide guidance on the proper handling of remains of suspect, probable, and confirmed COVID-19 cases. (I, Par. 2)

2.11. Border Control Measures

Due to the quick spread of the virus across nations, each government imposed various interventions to reduce its transmission, including border controls (Hossain et al., 2020). Border control refers to the measures a nation or a group of countries takes to monitor the

borders and control the cross-border movement of people, goods, and animals (*Border Control*, n.d.). In a press release dated February 2, 2020, the Philippine President issued a travel ban covering all travelers from any part of China to curb the spread of the virus (Senate of the Philippines, 2020).

> *Upon the recommendation of the Department of Health (DOH) and Senator Christopher Lawrence "Bong" Go, President Rodrigo Duterte will order the expansion of the temporary travel ban over the 2019-nCoV ARD or the Novel Coronavirus Acute Respiratory Disease to include travelers coming from any part of China and its Special Administrative Regions to help combat the spread of the disease.*

2.12. Strategic Planning

Since the beginning of the pandemic, the PH government has released various strategies to curb the transmission of COVID-19 throughout the country. Republic Act No. 11469, or the "Bayanihan to Heal as One Act" approved on March 24, 2020, declares a national emergency due to the increasing number of COVID-19 cases. With this declaration, the different government offices have outlined further specific guidelines to manage the current situation. On September 11, 2020, the "Bayanihan to Recover as One Act" (RA No. 11494) was approved, whose primary aim is to lay down the response and recovery interventions of the Philippine economy, along with the mechanisms that should be taken to accelerate its recovery and strengthen its resiliency.

Additionally, the DOH released the Prevent-Detect-Isolate-Treat-Reintegrate (PDITR) strategy, a focal point in the National Action Plan to transition to the "new normal" (Department of Health, 2020b).

Under the Prevent component, the DOH enforces quarantine restrictions, measures, and minimum public health requirements even in evacuation centers. In its Detect component, contact tracing efforts and the research laboratories' continuous monitoring of the virus samples were outlined. In the Isolate component of the strategy, government hospitals, private hospitals, and other concerned agencies were tapped as additional quarantine facilities. On the other hand, under the Treat and Reintegrate component of the strategy, emergency medical supplies were distributed to facilitate the growing number of cases in several healthcare facilities nationwide.

> *Intensifying the Prevent-Detect-Isolate-Treat-Reintegrate strategies in Region IV-A and other areas experiencing COVID-19 surges and ensuring prompt distribution of vaccines to Priority Groups A1-A3… (IATF Resolution No. 121, s. 2021, Item A-vi-a, June 14, 2021)*

CONCLUSION AND RECOMMENDATIONS

Three years into the pandemic has been nothing but a rollercoaster. The devastating consequences of COVID-19 proved almost impossible to overcome but were somehow managed after expending arduous efforts. Still, its threatening presence remains. Governments should always be wary of a possible surge in cases and consider this a matter that calls for efficient preparation and response.

The trend analysis of COVID-19 cases and recoveries affirms that most surges occur around the holiday seasons, except in 2022, since vaccination efforts were more extensive during the year's Yuletide period. It was also discovered that the number of cases and

recoveries have a direct relationship–an increment in cases would signal a similar behavior in the number of recoveries.

Out of the 441 national-level initiatives, the researchers classified them into 12 themes, wit: (i) community quarantine protocols, (ii) testing, (iii) engineering and administrative control, (iv) economic and financial assistance, (v) vaccination, (vi) open information system, (vii) case definitions of COVID-19, (viii) management of non-COVID-19 patients, (ix) research centers and testing laboratories, (x) remains of COVID-19 cases and PUIs, (xi) border control measures, and (xii) strategic planning.

Upon analyzing the relevance of initiatives to the number of cases, community quarantine protocols, border control measures, and vaccination covers the majority of interventions released whenever a surge in COVID-19 cases occurs. These initiatives are the critical elements that lessened the pandemic's adverse effects in the country. They added that any nation's capacity to respond to future health emergencies would benefit from the standardization of these policies.

On May 4, 2023, the director of the World Health Organization concluded that COVID-19 is no longer a public health emergency of concern on a global scale (World Health Organization, 2023). Even though COVID-19 is no longer considered a global health emergency, experts warn the public to remain vigilant (Cabico, 2023b). With the entry of XBB.1.16 subvariant in the Philippines, cases were increased since the end of April 2023. As precautionary measures, the DOH advised the citizens to maintain the minimum public health standards. They also encouraged the people to receive their vaccination and booster shots (Cabico, 2023a).

Moving forward, containment policies like strict border control and community quarantine remain the principal element in repressing the impact of any health disaster. Introducing these interventions early during a health disaster could slow or reverse the impending growth rate of mortality (Dergiades et al., 2022). Along with these interventions, governments must also expend extensive efforts to develop vaccines to counter the virus strains. The Philippines, in particular, should primarily invest in improving the country's health systems to prevent the recurring hopelessness brought about by COVID-19 in the past years (Sarker et al., 2021; & Morens et al., 2020).

As this study focuses on a national scope, the researchers recommend that future researchers venture into and analyze local COVID-19 initiatives to arrive at a locally-applicable conclusion. Including the interventions released by other government offices could also improve the implications of this study. Future research may also utilize different in-depth methods to assess the implication of initiatives to the trend of COVID-19 cases.

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