COVID-19 and Effective Management of Public Transport: Perspective from the Philippines

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ABSTRACT

The fight of COVID-19 resulted to the suspension of main public transportation services in the Philippines to avoid the spread of the virus on March 16, 2020. This raised questions on how people can travel to access essential services. A study estimated that there can be 7 billion infections and 40 million deaths globally this year in the absence of interventions. Thus, in this paper, the authors reflect on key transport-related issues arising from the pandemic and analyse potential policy recommendations. Particularly, the paper provides a focus on public transport services. The authors recommend focusing on reducing virus transmission in surfaces found in public transport vehicles, use of digital technology to speed up information generation and distribution for contact tracing, and exertion of efforts to reduce transport demand by incentivizing and supporting telecommuting among companies. In conclusion, the authors believe that the central government should be on top of this COVID-19 response. Though delegating the management to local government units and various sectors has its benefits, one wrong decision from a certain unit can lead to a ripple of infections. Standards and protocols, especially on how public transport should operate, must be scientifically commissioned to avoid one big trial and error experiment considering the wealth of information already available in literature.

Keywords: *Covid-19; Public transport; Philippines; Policy*

Introduction

The intensity and speed Covid-19 spread vary by locations and is now planet-wide. A study [1] estimates 7.0 billion infections and 40 million death globally

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this year in the absence of interventions. As of 25th of July 2020, there has been 15,581,009 confirmed cases, 635,173 deaths globally according to World Health Organization [2]. While the Centers for Disease Control and Prevention [3] claims that most coronaviruses will not survive high temperatures and humidity levels, the recent summer in Southeast Asia make it seem otherwise. This is explained in [4] where they estimated that the 2019-nCov only rapidly inactivated when exposed to 70 °C. In recent times, the hottest summer in the Philippines only reached a record high of 36.6 °C in April 2019 [5], while historically, the highest temperature recorded in the Philippines was 42.2 °C in Tuguegarao in 1969 [6].

To fight COVID-19, the Philippine government suspended public transportation on March 16, 2020. This decision has met significant disagreement from the public [7]. As a result of the travel ban, workers were forced to walk back to their homes outside of Metro Manila. Particularly, these were mostly the blue-collar workers who were not able to catch the last bus trips when the quarantine order was immediately raised. Without public transport, the public can only rely to private vehicles, bicycles, and when possible, walking. The vital role of public transport in the daily tasks of the public is undeniable and can never be met fully by private vehicles. People living in areas that are only accessible by tricycles and jeepneys are particularly affected the most [8].

Temporarily, the emphasis ought to be on demand control, and this will incorporate the exacting execution of physical distancing measures, regular transportation disinfection, implementation of safety rules in every single casual method of transport and control of travel demand. In the medium-term, there should be an emphasis on public transport improvement including interjurisdictional coordination of public travel and better administration of informal transport providers. This can be accomplished by acquiring multi-modular arrangements, for example, mass travel frameworks like Metro and bus transport and begin considering elective arrangements like bikes and e-vehicles to offer different versatility answers for individuals [9]. A study [10] reported the financial implications brought about by the pandemic. Manufacturing may lose PhP 82.1 billion to PhP 855.2 billion; wholesale and retail trade may suffer a loss of at least PhP 93.2 billion to PhP 724.8 billion; and transport, storage, and communication due to expected declines in tourism may lose between PhP 11.7 billion to PhP 124.3 billion. Those are among the expected worst-hit sectors. Philippines on the other hand is not expected to recover in the third quarter because of the long strict lockdown aimed to contain the outbreak of the virus. The country is the only country in the Asia-Pacific (APAC) region to implement the longest lockdown [11]. In addition, COVID-19 has become a devastating world-wide human catastrophe and has disrupted lives and livelihoods. The degree of change will affect the way people work and interact daily with several companies and organizations

imposing a telecommuting (work-from-home) setup for their employees who can still be productive while working from home. This new trend of mobility may present a unique opportunity to innovate for different sectors [12].

Given that mobility is almost front and centre in this pandemic, the authors recognize the need for governments to act swiftly and make key mobility-related decisions that would minimize further impacts to the economy and well-being of the people. Thus, in this paper, the authors reflect on key transport-related issues arising from the pandemic and analyse potential policy recommendations. Particularly, the paper provides a focus on public transport services. Moreover, the authors will be interchanging between COVID-19, SARS-CoV-2, and 2019-nCov throughout the manuscript as other published literature are cited. To clarify, 2019-nCov will be used to refer to the virus itself, COVID-19 to refer to the disease obtained from the virus, and SARS-CoV-2 to refer to the virus as part of a larger family of viruses.

Immediate issues for public transport

In this section, three key immediate issues are discussed: (1) the need to reduce virus transmission within the vehicles; (2) speeding up information generation and distribution in light of non-compliance reporting and contact tracing; and (3) keeping up with the demand.

Reducing virus transmission within the vehicles

Findings in literature about the transmission of the 2019-nCOv through aerosols vary. However, a computational fluid dynamics simulation by [13] showed that 85% to 100% of virus-carrying droplets deposit on surfaces or fall to the floor, instead of getting directly inhaled. Moreover, [14] noted that the residence of SARS-CoV-2 in the air is not long. [15] did not find SARS-CoV-2 in air samples obtained from the rooms of COVID-19 hospitalized patients. Furthermore, it has been observed that the disease is not transmitted to healthcare workers directly in contact with COVID-19 patients when they are wearing simple surgical masks [16]. Thus, the focus now should likely be on how the virus spreads through contact with infected surfaces. For public transport patrons, there is a huge chance that they can bring home the virus to unsuspecting family members through their clothing, bank notes (i.e. paper money) and unwashed arms or hands after getting into contact with various surfaces in public transport.

Most cases of COVID-19 are reported to be mild, but the infection tends to be transmitted quickly. Tiny droplets from coughing and sneezing can carry the virus by as far as one to two meters. If they happen to make it into another person's airways, they could become infected, but the virus can also live on surfaces where these droplets land [17].

A comprehensive report by [18] and [4] evaluated the survival of 2019-nCov on different sorts of surfaces (see Table 1). They analysed the aerosol

and surface stability of SARS-CoV-2 and contrasted it with SARS-CoV-1, the most firmly related human coronavirus. Results demonstrated that SARS-CoV-2 was more stable on plastic and stainless steel compared to copper and cardboard, and reasonable virus was recognized as long as 72 hours after application to these surfaces. Despite the fact that the infection (titer) was significantly diminished, it was still discernible in aerosol for as long as three hours, on copper for as long as four hours, on cardboard for as long as 24 hours and on plastic and stainless steel for up to a few days (two to three days) – proposing that individuals can be infected through the air and coming in contact with contaminated objects. Information on the stability of SARS-CoV on surfaces and in the environment can also be obtained from the World Health Organization (WHO) [19]. Starter discoveries have been summed up by the WHO multi-focus community-oriented system on SARS conclusion. Emergency clinic samples from a few locales, specifically from walls and the ventilation system, tested PCR positive in Canada.

Table 1: Stability of 2019-nCov on various surfaces [4], [17]

Type of Material	Length of stability of 2019-nCov on the surface
Plastic	3 to 7 days
Stainless Steel	3 to 7 days
Copper	Up to 4 hours
Paper (including paper money)	Up to 4 days
Glass	Up to 4 days
Cardboard	24 hours
Wood	Up to 2 days
Clothing	Up to 2 days

Common materials found on local public transport vehicles include plastic, steel, glass, and wood. In addition, the survival of the virus on clothing and paper would also be crucial, as it cannot be guaranteed that each seat will be sanitized every time a new passenger unboards, and his/her place is taken by a new passenger. Moreover, it is common practice in the Philippines to pass around money as fare payment from passenger to passenger to the conductor or driver. In addition to the challenges of physical distancing in crowded public transport vehicles and terminals, regular sanitation of a previously occupied seat and passing around fare payment are the primary threats to spreading the 2019-nCov inside public transport vehicles.

Speeding up information generation and distribution in public transport

The speed of information generation and distribution is crucial in controlling the spread of a virus like the 2019-nCov. Countries which have implemented strict contact tracing measures have been seen to beat COVID-19 faster than others [20]. Contact tracing, including case investigations, are part of the process of warning individuals who may have been exposed to the virus and have potentially contracted the disease as well. Countries such as South Korea and New Zealand [21] have shown that good contact tracing and case investigation strategies can stop chains of transmission of the virus. However, contact tracing is a specialized skill and time is of the essence [22].

The problem now is, how can contact tracing be implemented in public transport? A person would roughly get into close physical contact with at least 5 people in public transport. Additionally, these interactions are multiplied by the multi-modal nature of public transport. A person can take jeepney route A, and then transfer to rail route B, before finally taking jeepney route C to the final destination.

Recently, public transport operators in the Philippines have implemented their own approaches, such as requiring passengers to fill out information sheets before getting on board the vehicle [23]. However, though this is possible in terminal-based services, this will be challenging to implement in fast-paced services which implement road-side loading and unloading such as jeepneys. Moreover, given the paper-based system, how fast can contact tracing be done and who will be responsible to do the tracing? Will it be faster than the speed of transmission of the disease?

Furthermore, non-compliance among public transport operators and drivers must be promptly reported and acted on. Non-compliance to safety protocols put in place by policymakers carelessly spread the virus. Thus, the rapid generation and distribution of information among public transport stakeholders (i.e. operators, drivers, and commuters) would facilitate timely testing of potential virus carriers and stop random transmission of the virus. Contact tracing is the weakest link in the Philippine COVID-19 response. The adequacy of resources to identify people exposed to the virus, especially those who are asymptomatic can help manage the spread of the virus in public transport.

Keeping up with the demand

After the first phase of the quarantine order, the gradual reopening of shopping malls, public transit, and other selected services were proposed, should the government lift or extend the enhanced community quarantine (ECQ). The transportation department is looking into the possibility of allowing 30% capacity resumption of public transportation, mostly buses and trains, to allow the observation of physical distancing measures. In line with the resumption

and reduction of public transportation capacity, [24] reported the guidelines for public transportation in areas deemed at low risk for transmission of the virus (COVID-19). This guideline requires a special permit for public utility vehicles (PUV) to operate and the reduction of passenger capacity for buses, jeeps, and UV Express to 50% in adherence to a 1 meter physical distancing rule. A report retrieved from [25] on April 30, 2020 during the transition of Metro Manila from ECQ to general community quarantine (GCQ) stated that all allowed PUVs and transport terminals and administrators must stick to all three basic parts directed - Safety, Capacity and Coverage or Scope. Safety as expressed refers to the rules to decrease contact, transmission and spread of the virus through obligatory utilization of face cover and gloves by drivers, careful sanitation of vehicles, terminals, and even among travellers are likewise required. The admissible capacity is 50%, excluding driver and conductor to guarantee distancing in public utility buses (PUBs) and public utility jeepneys (PUJs). For utility vans and taxis, passengers ought to not surpass two persons for every row, aside from the driver's row where just a single passenger is permitted. Tricycles must not exceed one person in the sidecar, while back riding will not be permitted. With respect to private vehicle and motorcycle owners, they will be permitted to operate on essential purposes as approved by the Inter-Agency Task Force (IATF). Private vehicles will be permitted one person in the front row, while the rear seats should not surpass two persons for each row. Motorcycles are restricted from having back-riding travellers. The utilization of bicycles and comparative modes are likewise profoundly empowered, and local government units (LGUs) are additionally urged to identify dedicated bicycle paths or lanes.

This guideline was further amended, allowing motorcycles to have back-riding passengers with the use of barriers to demarcate the back-rider. While people are trying to observe physical distancing in public transport, there will be a rise on personal transport modes like bicycle, electric scooters, and other forms which are expected to gain popularity following this pandemic.

Possible issues of reducing transportation capacity by 50% will be the rise of more private vehicle trips thereby resulting to traffic congestion; stranded passengers at vehicles terminals; and loss of time. Similarly, the proposed barrier used for motorcycles may not be the best. This may lead to potential accidents and fatal injuries for both the motorist and the back-rider when driving on free roads where high speeds are inevitable.

On 11th and 14th of September 2020, the Philippine government planned the easing of physical distancing in public transports. This will be done with strict monitoring of the daily reported cases after its implementation to know the effects of the adjustments from the approved one-meter distance by WHO to a reduced distance of 0.75 meters. This will be further reduced to 0.5 meters and then 0.3 meters with two-weeks progressive monitoring of each

implemented reduced physical distancing, and if there are no issues then the policy will remain [26,27]. Furthermore, DOTr noted that with full compliance of the use of face masks and face shields in public transport, the one-meter distancing can successfully be reduced to 0.3 meters. A report from the International Union of Railways (UIC) further explained that the use of a face mask and face shield is 100 percent safe even if you come in contact with someone who is the carrier of the virus [28]. With this at hand, there has been complaints from the masses noting that the reduced physical distancing should only be encouraged when the number of reported cases and active cases flatten. With regards to this, there are a lot of oppositions to the implementation of reduced physical social distancing, mostly medical practitioners who have criticized and noted that the reduced spacing among commuters will further increase the spread of the virus [29]. Due to the strong opposition from the masses, the government decided to suspend this new policy on 17th September 2020 [30].

Policy Recommendations

Considering the key issues raised in the previous section, the authors would like to propose the following policy implications.

- *Provide standards*. The government should provide scientific and data-driven standards, rather than allowing local government units and sectors to implement their own strategies. The minimum requirements should at least come from the centralized government. For example, what safety features should be found in jeepneys at the minimum? Some operators are installing plastic sheets to shield passengers away from each other. Instead of helping, that can even help spread the virus further because it will add more surfaces for the virus to live on to. If the government does not publish standards about this, operators will just implement what they want, and our pandemic response will become one big experiment. There is enough information in literature now to narrow down the options and help the country develop minimum standards now. Standards should be developed scientifically and in consultation with academics.
- *Manage the demand*. You cannot expect a service to run smoothly when you decrease its capacity (supply) by half without creating a similar reduction in demand. To reduce demand, it is recommended that the government encourage companies to maintain their telecommuting (work-from-home) setups until after a viable vaccine becomes available. This can be done by providing fiscal and non-fiscal incentives to companies willing to do telecommuting. Without this kind of support, companies might be forced to risk their employees commuting or opt to suspend operations, which will be detrimental to the economy. In addition to the

said incentives, this is also prime time to improve the internet infrastructure of the country and strengthen our data security policies and protocols. It is also recommended to encourage schools capable of distance-learning to keep doing this until after a viable vaccine becomes available.

- *Improve the supply.* Supply can be improved by allowing modern jeepney fleets to operate and co-exist with conventional jeepneys. Modern jeepneys are more spacious, which could make physical distancing easier to implement. This can be a good opportunity to accelerate the implementation of the Public Utility Vehicle Modernization Program of the government. However, the welfare and livelihood of conventional jeepney operators and drivers should be put first and foremost. Social programs need to be set up for them.
- *Improve the services.* This can be done by leveraging and promoting digital technologies in transportation. The government should fund the development of fleet management systems, which would speed up information generation and distribution in public transport. This would manage non-compliance among operators and drivers. Also, the fleet management system should provide an efficient means to keep record of which vehicles each commuter takes and at which date and time to enable fast contact tracing in public transport. This can be done by creating an end-user app that commuters can use to book seats in advance, or just to log their vehicle boarding and unboarding activities.

Conclusions

In conclusion, the authors believe that the central government should be on top of this COVID-19 response. Though delegating the management to local government units and various sectors has its benefits, one wrong decision from a certain unit can lead to a ripple of infections. Standards and protocols, especially on how public transport should operate, must be scientifically commissioned. The country's COVID-19 response does not have to be a one big trial and error experiment considering the wealth of information already available in literature, especially when the lives of many people are on the line.

This is also a good time to embrace innovation, not only technologically but also on how certain business processes are carried out. The country should leverage on the telecommuting experience it has obtained during this time, including distance learning. These alternatives are better maintained even beyond the pandemic from a sustainability perspective.

Based on literature, the best protection for commuters, public transport operators and drivers are plain and simple wearing of face masks, good personal hygiene, and regular sanitation of surfaces which get into contact with

passengers. Thus, additional structures (e.g. shielding) might not be necessary after all. Proper management of supply and demand, the use of digital technology to speed up information generation and distribution, and the implementation of scientific safety standards should allow our commuters to use public transport safely and comfortably.

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