Interdisciplinary Research Review
Volume 19, Number 5, Pages 20 – 29

Cost Effectiveness of Implementing Community Quarantine in Selected Areas of the Partido District, Philippines

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Abstract

The study measured the cost-effectiveness of Community Quarantine (CQ) enforced by selected local government units in the Partido District, Philippines. It tracked the incidence of COVID cases; traced the decrease or increase in the number of COVID cases; calculated the average cost of each COVID case; and extrapolated the amount of saving or dissaving. It utilized key informant interview to gather specific sets of data. Based on the raw assumptions of Efficiency and Input-Output Analysis, this is a typical example of inefficiency because there were costs incurred but the benefits were undeterminable. However, the study uncovered that the after-CQ periods presented a relatively lower cost per day than the within-CQ periods. Therefore, it may be surmised that the CQ accomplished what it was meant to carry out—to arrest the transmission of the virus and decrease the number of cases and the cost of caring for patients. Based on the findings and the foregoing discussion, this study posited that the CQ in the study areas was cost-effective. The number of COVID cases dropped considerably after the CQ periods. Correspondingly, the COVID patients' average cost per day also decreased after the CQ periods. The reduction in the cost, logically, represented saving on the part of the local government units.

Keywords: cost-effectiveness, community quarantine, efficiency, COVID case

Article history: Received 11 February 2024, Revised 19 October 2024, Accepted 21 October 2024

1. Introduction

The whole world was apparently caught unprepared by the COVID-19 outbreak. In January 2020, the number of cases around the globe started at about 1,900 then rapidly increased to around 1.2 million in June 2020 and then to 4.5 million by year-end [1]. Governments and health organizations were scurrying to cope with the unprecedented rate of transmission of the virus across countries and continents. The Philippines was no exception. Both the national and local governments installed safety protocols and systems to prevent the spread of the virus.

To control the transmission of the COVID-19 virus, the national government established several community quarantine protocols which were directed to all local governments in the Philippines, as follows: (a) Enhanced Community Quarantine (ECQ); (b) General Community Quarantine (GCQ); (c) Modified Enhanced Community Quarantine (MECQ); and (d) Modified General Community Quarantine (MGCQ). The last two categories were intended to control community transmission but at the same time open opportunities, albeit restricted, for economic engagements of business firms and households. Under any circumstance, it cannot be argued that the government needed to establish an infection transmission suppression mechanism because human lives are far more important than any other consideration. Therefore, all branches and levels of government should ensure that community transmission is under control. ECQ was implemented in the Partido District in March 2020, GCQ in May 2020, MECQ in June 2020, MGCQ in August 2020 and up until the rest of the year 2021, and Alert Level in 2022.

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Controlling the transmission of the virus was essential because it was in the interest of everyone, regardless of income and social class. Nonetheless, many sectors in the local community have expressed the detrimental effects of the policy, especially on their economic well-being. Staying at home without certainty of meeting their food and non-food needs is not only an economic concern but psychological and mental as well. A review of literature pointed in two directions: (a) that the lockdown/quarantine was more beneficial than costly; or (b) that the lockdown/quarantine was more costly than beneficial.

As claimed in a study by Rowthorn and Maciejowski [2], there is a growing recognition of the damage the lockdown has caused to economic and social life. Additionally, an examination of over 100 COVID-19 studies by Allen [3] revealed that many relied on false assumptions that overestimated the benefits and underestimated the costs of lockdown. The most recent research has shown that lockdowns have had, at best, a marginal effect on the number of Covid-19 deaths. Generally speaking, the ineffectiveness stemmed from individual changes in behavior: either non-compliance or behavior that mimicked lockdowns [3].

While our understanding of viral transmission mechanisms leads to the assumption that lockdowns may be an effective pandemic management tool, this assumption cannot be supported by the evidence-based analysis of the present COVID-19 pandemic. The price tag of lockdowns in terms of public health is high. It was estimated that, even if somewhat effective in preventing death caused by infection, lockdowns may claim 20 times more lives than they save [4]. Miles et al. [5], in their economic assessment of the first pandemic wave in Europe, recognized that the costs of widespread severe restrictions likely exceeded the benefits. They also pointed out that economics suggests using more targeted measures to deal with the particular effects of COVID-19. Unfortunately, lockdown proponents have often portrayed arguments like this as a type of 'moral bankruptcy' [5].

A study by Alfano [6] showed that lockdown was effective in reducing the number of new cases in the countries that implement it, compared with those countries that did not. This was especially true around 10 days after the implementation of the policy. Its efficacy continues to grow up to 20 days after implementation [6]. An investigation by Melia et al. [7] found that the average expected cost of isolating a patient at home is relatively lower compared to the cost of hotel quarantine. However, this cost significantly increases when there are seniors sharing the house with the patient zero, and hotel isolation may be a cost-saving measure in the context of large families, boarding houses and other group living situations [6]. In sporadic and cluster outbreaks, the isolation of infectious cases and quarantine of individuals exposed to the infected were the most cost-effective measures [8]. A study by Gandjour [9] concluded that the cost-effectiveness ratio of a lockdown policy in conjunction with a booster dose with 95% efficacy is €44,214 per life year gained. A lockdown is cost-effective when the probability of approving a booster dose with 95% efficacy is at least 48%, and 76% when considering uncertainty in input factors [9].

A study conducted by the Asian Development Bank [10] on cost-effectiveness inferred that the community lockdowns were cost-effective ADB 2020. From the perspective of effectiveness and cost-effectiveness of controlling the spread of COVID-19, the joint strategy of personal protection and isolation-and-quarantine was the optimal choice, averting more cases than only isolation-and-quarantine [8]. The study revealed a marked increase in the number of infections when the quarantine delay time reached 6 days. There was no significant difference in numbers in the sporadic area when the quarantine probability changed from 25 to 100%. However, the two-way analysis suggested that at 25% probability, more infections were likely to occur when the quarantine delay time was >2 days [8].

A published article by Boettke and Powell [11] asserted that it has been a sad irony that the COVID-19 policy has not been driven by economics, the discipline that specializes in the study of costs and benefits, but by

epidemiologists who have 'no expertise in weighing health benefits against other costs.'

Given all these developments, the researcher found it imperative to look into these issues at the local level, particularly in selected municipalities of the Partido District, using the Efficiency Analysis and Input-Output Analysis. Partido is the fourth congressional district of Camarines Sur, a province of Bicol Region. Of its ten municipalities, six are among the top ten poorest towns in the province in 2021 [12]. It is located at the far east end of the region and separated from the main thoroughfare of Camarines Sur and other provinces of Bicol. It is bounded on the right by Lagonoy Gulf, on the north by the Philippine Sea and on the west by San Miguel Bay [13]. That is why nine of its municipalities are coastal. Partido was chosen as study area to provide additional information about the community quarantine in poor, remote, rural and coastal communities of the country.

1.1 Objectives

General Objective: The study measured the cost-effectiveness of the Community Quarantine (CQ) enforced by selected local government units in Partido in compliance with the directives of the national government to prevent transmission of the COVID-19 virus.

Specific Objectives. To achieve the general objective, the study sought to:

1. Track the incidence of COVID cases before and during the various categories of the CQ;
2. Trace the decrease or increase in the number of COVID cases at various levels of the CQ;
3. Calculate the average cost of each COVID case as experienced by the LGU; and
4. Extrapolate the amount of saving or dissaving to determine the cost-effectiveness of the CQ.

The selected municipalities were Goa and Siruma. The first is at the commercial center, with relatively greater incidence of COVID cases, and with health facilities and resources. The second one is a coastal area and far from the business hub, with relatively smaller population and inadequate health facilities and resources.

2. Methodology

The study utilized the Efficiency Analysis and Input-Output Analysis. Theoretically, this method is described by Raa [14] in his article entitled "Performance measurement in an input-output framework." Efficiency analysis measures firm performance relative to the best practice, which is determined by a firm or collection of firms operating on the frontier of production possibilities. On the other hand, input-output analysis examines output per unit of input. Efficiency is basically defined as a firm's ability to achieve maximum output with minimum input, making it an essential metric for evaluating performance and identifying areas for improvement. It is calculated by determining the ratio of the output to the input. In this study, the firm was the local government unit, the input was the implementation cost of CQ while the output was the resulting decrease in the number of COVID patients. Each COVID patient represented a specific amount of health care cost. Therefore, a decrease in COVID cases would mean a decrease in cost which then translates into savings.

The implementation cost of the Community Quarantines (CQ) covered all cash outlay from the local government units to implement the said policy. It involved all categories, whether enhanced, general or modified. It included the cost of personnel services in charge of monitoring compliance to health protocols, transport bans, curfew hours and lockdown restrictions, among others.

The study gathered data on the incidence of COVID cases before and during the quarantines. The average cost of each COVID case was calculated from the time a person was tested positive until a person was tested negative. This included hospitalization, doctor's fees, medicines, food and accommodation in quarantine facilities, among others. The number of COVID cases was traced along different quarantine categories and across particular periods.

The amount of savings was determined by estimating the cost that would have been

incurred with each COVID case that was prevented. This was indicated by the decrease in the number of cases on each day after the CQ was implemented. The cost-effectiveness was determined by comparing the cash outlay to implement the CQ with the amount of savings brought about by the decrease in the number of COVID cases under each category of the CQ. The required data from each target municipality were gathered from key informants, as follows: (a) mayor or representative; (b) health officer; (c) finance officer; and (d) person-in-charge of the CQ.

3. Results and Discussion

In the year 2020, the municipalities covered by this study complied with the declaration of community quarantine periods as ordered by the national government. In the entire duration of that year, the municipalities experienced zero cases of COVID. Therefore, there was no basis on analyzing whether or not the community quarantines were cost-effective.

However, the years 2021 and 2022 were a different story. In 2021, the declaration of community quarantine periods was both in compliance with national directives, as well as in response to the existence of COVID cases in the localities. There were particular periods, lasting for two to four weeks at a time, when the local governments announced community quarantine, albeit at different modes depending on the increase or decrease in COVID cases. In 2022, to prevent further transmission of the virus, the national and local governments intervened through the declaration of certain measures of Alert Level depending on the seriousness of the situation.

In the succeeding section, tables present an overview of the community quarantine experiences in the study areas. The data were organized based on the periods when the community quarantine or alert level was declared because the researcher wanted to determine the number of cases and the cost to the local government in caring for the patients during and after these periods.

Table 1 is included herein to show that in 2020, the community quarantines were established to follow the nationwide pronouncement of the chief executive. This was done even if there were zero cases of COVID in the study areas for the whole year of 2020.

Table 1. Community Quarantine periods, number of COVID cases and average cost per case, 2020

Period	Community Quarantine	No. of days	No. of cases
3.16-5.15	ECQ	61	0
5.16-8.15	GCQ	92	0
8.16-12.31	MGCQ	138	0

3.1 Incidence of COVID Cases at Various Levels of Community Quarantine

To accomplish the first and second research objectives, the succeeding section discloses the incidence of COVID cases before and during the various categories of CQ. It also indicates the decrease or increase in the number of COVID cases at various levels of CQ.

Table 2 pertains to the CQ in the first half of 2021. The periods were divided into the first 15 days and the second 15-16 days of each month from January to June. These intervals were based on the observed intervals of the CQ periods. The data exhibited the number of cases in each set of days, broken down into asymptomatic and symptomatic, then the average cost per case in Philippine Pesos.

It may be inferred from Table 2 that the number of cases was relatively higher within the CQ than without. This may be precisely the reason why the quarantines were declared—to arrest the spread of the virus. It may be stated further that outside of the quarantine periods, the number of cases was comparably lower. There were even three 15-day periods of zero-COVID case.

A case in point, after Alert Level 2 on January 15, 2021, there was zero-COVID case

on January 16-31. Moreover, cases were relatively nil until April 15 except on February 1-15 where there was an abnormally high number of cases at 23. The author surmised that the celebration of Valentine's Day may have been one of the probable factors for that sudden increase in COVID cases.

Table 2. Community Quarantine periods, number of COVID cases and average cost per case, 2021, 1st half

Period	Community Quarantine	No. of days	No. of cases	No. of asymptomatic	No. of symptomatic	Average cost per case (PhP)
1.1-15	AL2	15	10	7	3	1286
1.16-31	None	16	0	0	0	0
2.1-15	None	15	23	12	11	1000
2.16-28	None	13	0	0	0	0
3.1-15	None	15	1	0	1	1000
3.16-31	None	16	0	0	0	0
4.1-15	None	15	2	2	0	3000
4.16-30	AL1	15	15	12	3	2200
5.1-14	None	14	12	6	6	1286
5.15-31	MGCQ	17	26	12	14	1769
6.1-15	None	15	24	19	5	1167
6.16-30	None	15	10	2	8	1200

Table 3 illustrates the CQ in the second half of 2021 demonstrating the same data as in Table 2. As in Table 2, the number of COVID incidence was comparably higher during the quarantine periods particularly under an Alert Level 4 on September 16-31, 2021 with 78 cases; and under a Modified General Community Quarantine on October 16-31, 2021 with 41 cases. COVID incidence was observably much lower right after the quarantine periods like on September 1-7, 2021 with only 4 cases which was after a General Community Quarantine, and on December 16-31, 2021 with zero case which was right after the declaration of an Alert Level 2.

Table 3. Community Quarantine periods, number of COVID cases and average cost per case, 2021, 2nd half

Period	Community Quarantine	No. of days	No. of cases	No. of asymptomatic	No. of symptomatic	Average cost per case (PhP)
7.1-15	None	15	35	6	29	1114
7.16-22	None	7	1	1	0	1000
7.23-31	MGCQ	9	5	5	0	1000
8.1-13	AL4	13	4	3	1	1000
8.14-31	GCQ	18	28	25	3	2333
9.1-7	None	7	4	0	4	1000
9.8-15	GCQ	8	32	5	27	1375
9.16-31	AL4	16	78	17	61	1101
10.1-15	None	15	9	0	9	1000
10.16-31	MGCQ	16	41	14	27	1146
11.1-15	MGCQ	15	14	11	3	1143
11.16-30	AL2	15	5	3	2	1000
12.1-15	AL2	15	1	0	1	1000
12.16-31	None	16	0	0	0	0

Table 4 displays the CQ in the first half of 2022, indicating the same data as in Table 2 and 3. During this period, the local government manifested a paranoid stance by issuing a long-term alert level status from January 15 to May 31, 2022. The continuous alert levels paid up as exhibited by the significant decrease in the number of cases from 24 down to single-digit figures including zero cases in five 15-day periods, i.e., February 1-15, March 16-31, April 1-15, April 16-30, and May 16-31.

Table 4. Community Quarantine periods, number of COVID cases and average cost per case, 2022, 1st half

Period	Community Quarantine	No. of days	No. of cases	No. of asymptomatic	No. of symptomatic	Average cost per case (PhP)
1.1-14	None	14	3	1	2	1000
1.15-20	AL3	6	24	8	16	1000
1.21-31	AL2	11	13	8	5	1000
2.1-15	AL2	15	0	0	0	0
2.16-28	AL2	13	3	1	2	1000
3.1-15	AL2	15	1	1	0	1000
3.16-31	AL2	16	0	0	0	0
4.1-15	AL2	15	0	0	0	0
4.16-30	AL2	15	0	0	0	0
5.1-15	AL2	15	4	4	0	1000
5.16-31	AL2	16	0	0	0	0

Table 5 discloses the CQ in the second half of 2022, showing the same data as in Table 2, 3 and 4. The alert levels were up on a sustained basis from June 1 to September 30, 2022. This decision of the local government still paid up as manifested by the substantially low number of cases in the said period. Except on August 1-5 and September 1-15, all the rest of the 15-day periods illustrated only 0-4 cases each, including zero cases on June 16-30, 2022; August 16-31, 2022; and September 16-30, 2022.

Table 5. Community Quarantine periods, number of COVID cases and average cost per case, 2022, 2nd half

Period	Community Quarantine	No. of days	No. of cases	No. of asymptomatic	No. of symptomatic	Average cost per case (PhP)
6.1-15	AL2	15	2	1	1	1000
6.16-30	AL2	15	0	0	0	0
7.1-15	AL1	15	3	3	0	1000
7.16-31	AL1	16	4	4	0	1000
8.1-15	AL1	15	10	10	0	1000
8.16-31	AL1	16	0	0	0	0
9.1-15	AL1	15	17	9	8	1000
9.16-30	AL1	15	0	0	0	0

3.2 Cost of Each COVID Case and Cost-effectiveness of the Community Quarantines

To accomplish the first and second research objectives, the following section discussed the calculation of the cost per COVID case and the saving or dissaving that resulted from the declaration of CQ, including the alert levels. Each COVID case represented an amount of expenditures. In the study areas, the cost of each case was composed of medicine, hygiene kit, food pack, water and electricity. The asymptomatic cases went on home quarantine and were provided with medicine and food pack. The symptomatic were sent to a quarantine facility or hospital depending on the seriousness. They were provided with medicine, food, water, electricity and health care services. The expenses per case ranged from PhP1,000 to 3,000.

In this study, the cost was expressed in terms of the average figure per COVID patient. The calculation was done covering particular periods, specifically those that fell within the CQ and those that were without the CQ. Then for each period as mentioned, the average number of cases per day was computed. The last step was the determination of the average cost per day.

For example, in Table 6, January 1-15, 2021 was under Alert Level 2. This represented a 15-day period within the CQ period. The number of cases was determined. Next were the calculations of the average cost per case, the average number of cases per day, and the

average cost per day. For the period earlier mentioned, the average cost per day was PhP857.33. This can now be compared with the average cost per day of the periods under the CQ or outside of it.

Table 6 clearly shows that the average cost per day was increasing from January 1 to May 31, 2021. Nonetheless, it is also apparent that the after-CQ periods presented a relatively lower cost per day. First, the average cost per day on January 16 – April 15, 2021 decreased by 43% from the CQ period on January 1-15, 2021. Second, the average cost per day on May 1-14, 2021 went down by 50% from the CQ period on April 16-30, 2021. Third, the average cost per day on June 1-30, 2021 dropped by 51% from the CQ period on May 15-30, 2021.

This may reveal that the declaration of the CQ was done right in time. It accomplished what it was meant to accomplish—to arrest the transmission of the virus and significantly decreased the number of cases and the cost of caring for patients.

Table 6. Community Quarantine periods, average cost per case, average number of cases per day, and average cost per day, 2021, 1st half

Period	Community Quarantine	No. of days	No. of cases	Average cost per case	Average no. of cases per day	Average cost per day (PhP)
1.1-15	AL2	15	10	1286.00	0.67	857.33
1.16-4.15	None	90	26	1666.67	0.29	481.48
4.16-30	AL1	15	15	2200.00	1.00	2200.00
5.1-14	None	14	12	1286.00	0.86	1102.29
5.15-31	MGCQ	17	26	1769.00	1.53	2705.53
6.1-30	None	30	34	1183.50	1.13	1336.79

Table 7 exhibits a similar trend as illustrated in Table 6. The after-CQ periods demonstrated a comparably lower cost per day. First, the average cost per day on July 1-22, 2021 declined by 36% from the CQ period on May 15-21, 2021. Second, the average cost per day on September 1-7, 2021 fell by 58% from the CQ period on July 23–August 31, 2021. Third, the average cost per day on October 1-15, 2021 diminished by 89% from the CQ period on September 8-31, 2021. Fourth, the cost on December 16-31, 2021 was zero as there were no more COVID cases at this time, compared to PhP1,072.25 average daily cost on October 16 – December 15, 2021.

Table 7. Community Quarantine periods, average cost per case, average number of cases per day, and average cost per day, 2021, 2nd half

Period	Community Quarantine	No. of days	No. of cases	Average cost per case	Average no. of cases per day	Average cost per day (PhP)
7.1-22	None	22	36	1057.00	1.64	1729.64
7.23-8-31	MGCQ, AL4, GCQ	40	38	1444.33	0.95	1372.12
9.1-7	None	7	4	1000.00	0.57	571.43
9.8-31	GCQ, AL4	24	110	1238.00	4.58	5674.17
10.1-15	None	15	9	1000.00	0.60	600.00
10.16-12.15	MGCQ, AL2	61	61	1072.25	1.00	1072.25
12.16-31	None	16	0	0	0	0

Table 8 displays the same situation as in Table 6 and 7. The average cost per day was comparatively lower on January 1-14, 2022 which may presumably be traced back to the prevention of transmission resulting from the CQ on October 16 – December 15, 2021.

Table 8. Community Quarantine periods, average cost per case, average number of cases per day, and average cost per day, 2022

Period	Community Quarantine	No. of days	No. of cases	Average cost per case	Average no. of cases per day	Average cost per day (PhP)
1.1-14	None	14	3	1000.00	0.21	214.29
1.15-5.31	AL2, AL3	137	45	1000.00	0.33	328.47
6.1-9.30	AL1, AL2	122	36	1000.00	0.30	295.08

4. Conclusion and Recommendation

In 2020, the community quarantines were established to follow the nationwide pronouncement of the chief executive. This was done even if there was zero incidence of COVID in the study areas for the whole year. Based on the raw assumptions of Efficiency and Input-Output Analysis [14], this is a typical example of inefficiency. In other words, there was no need to input anything because there was no intended output or no problem at hand. While there was zero instance of COVID in 2020, costs were incurred from the stoppage of economic activities and closure of enterprises producing goods and services. However, there was no evidence that COVID was zero because of the CQ. With or without the quarantine, there may still be no COVID case due to other factors such as remoteness of the study areas or lack of mobility of the residents. There were sacrifices made but the direct benefits were undeterminable. Therefore, the CQ at the time of zero COVID case created only costs but no gain.

Moreover, this investigation did not recognize assumptions that were not validated to observe the assertion in the study by Allen [3] and Yanovsky [4]. The former pointed out some studies that used false assumptions which led to the overestimation of benefits and underestimation of costs while the latter concluded that some studies made assumptions that cannot be supported by evidence-based analysis.

It may be inferred from the data that the number of cases was relatively higher within the CQ than without. This may be precisely the reason why the quarantines were declared—to arrest the spread of the virus. It may be stated further that outside of the quarantine periods, the number of cases were evidently much lower as manifested by several 15-day periods of zero COVID case. Furthermore, in the year 2022, the local government exhibited a paranoid stance by issuing a long-term alert level status. The continuous alert levels paid up as revealed by the significant decrease in the number of cases.

Results of the data analysis uncovered that the after-CQ periods presented a relatively lower cost per day than the within-CQ periods. Based on this, it may be surmised that the declaration of the CQ was done right in time. It accomplished what it was meant to accomplish—to arrest the transmission of the virus and significantly decreased the number of cases and the cost of caring for each patient.

Based on the findings and the foregoing discussion, this study posits that the CQ in the study areas were cost-effective. The number of COVID cases dropped considerably after the CQ periods. Correspondingly, the average cost per day on COVID patients also decreased after the CQ periods. The reduction in the cost, logically, represented saving on the part of the local government units.

As supported by data and evidence, this inquiry affirms the conclusion of Alfano [6] and ADB [10] that lockdowns were effective in reducing the number of new cases. The average cost per day as used in this research was mostly based on the amount of government subsidy for patients on home quarantine. The results align with the study of Melia [7] that home quarantine was more cost-efficient than hotel quarantine. The findings likewise confirm the study of Wang [8] that isolation of cases and quarantine of those exposed was highly cost-effective. This inquiry likewise affirms the conclusion of Wang [8] that the joint strategy of personal protection and isolation-and-quarantine was the optimal choice. The findings of this study were consistent with the claim of Wang [8] that more infections were likely to

occur when the quarantine delay was greater than two days.

Local government units may be guided by the findings of this study, which manifested that when the rate of COVID cases increased, the community quarantine was declared. The period-specific data clearly revealed that COVID cases significantly decreased, which translated into monetary savings due to the reduction in the cost of patient care. As concluded in the study of Gandjour [9] that a lockdown is cost-effective, when the probability of approving a booster dose with 95% efficacy is at least 48%, it is further recommended that the local government implement a lockdown coupled with 95% of efficacy booster dose.

Local government units will always face the predicament between minimizing economic costs and maximizing health benefits. Community quarantine certainly prevents transmission and promotes health benefits, but it entails economic costs. While economic costs may be easily measured, health benefits cannot be fully quantified. Health benefits have far-reaching effects such as higher productivity, sound physical and mental fitness, and better quality of life, now and in the future. That is why this research would be inclined to give more value to health, being one of the main goals of CQ, since good health has continuous and long-term benefits to an individual and society, over the financial sacrifice at present. The value of money continues to decline due to increasing prices while the value of health may be considered priceless as it sustains an individual's capacity to effectively function as a member of society in particular and a human being in general.

Recommendation for Future Research

For future research, a more detailed cost-benefit analysis may be done, which may account for other variables—that could influence COVID cases and costs—such as vaccination rollouts and natural immunity. A future study may identify potential confounding factors relevant to the matter being investigated. Multivariate regression analysis may be used to isolate the effect of community quarantine; discuss how the confounding factors might have influenced the results; and consider their implications in the findings. A sensitivity analysis may be done to determine how robust the results are to the variations in the confounding factors. Future research may incorporate a more detailed examination of indirect economic costs and benefits to provide a fuller picture of the impact of community quarantine. Additional data may be gathered on the comprehensive breakdown of the cost component, e.g., hospitalization expenses and doctor's fees. Lastly, there is a need for further research on the long-term effects of community quarantine.

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