



THE COST OF DELIVERING COVID-19 VACCINES IN THE PHILIPPINES

STUDY REPORT | DECEMBER 2023



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RECOMMENDED CITATION

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ACRONYMS

ADB	Asian Development Bank
AFP	Armed Forces of the Philippines
ASMPH	Ateneo School of Medicine and Public Health
C19	COVID-19
CHD	Center for Health Development
DICT	Department of Information and Communications Technology
DILG	Department of the Interior and Local Government
DOH	Department of Health
DSWD	Department of Social Welfare and Development
GAA	General Appropriations Act
LGU	Local Government Unit
LVOC	Local Vaccine Operations Center
NCR	National Capital Region
NTF	National Task Force
NVD	National Vaccination Day
NVDP	National Vaccine Deployment Plan
NVOC	National Vaccine Operations Center
OCD	Office of Civil Defense
PDOHO	Provincial Department of Health Office
PHO	Provincial Health Office
PHP	Philippine Peso
RHU	Rural Health Unit
RVOC	Regional Vaccine Operations Center
SJREB	Single Joint Research Ethics Board
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
USD	United States Dollar

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EXECUTIVE SUMMARY

RATIONALE

The delivery of COVID-19 (C19) vaccines posed unprecedented challenges in terms of delivery volume and reaching new target populations. Meanwhile, what it costs to deliver these vaccines in low- and middle-income countries remains highly uncertain. To support the government of the Philippines, ThinkWell and the Ateneo School of Medicine and Public Health conducted a study on the cost of C19 vaccine delivery through various strategies.

METHODOLOGY

This was a retrospective, bottom-up costing study that estimated the financial and economic costs of delivering C19 vaccines during the first National Vaccination Days (NVDs) held in November-December 2021 and a period of routine-style delivery from May-July 2022. The study was conducted from a payer perspective, including costs incurred by health service providers and development partners at all levels of the health system. Data was collected retrospectively in August-September 2022 from a purposively selected sample of 28 implementation units which oversaw approximately 496 vaccination sites, as well as from provincial and regional offices, the National Vaccination Operations Center and development partners.

The sample included rural health units, city health offices, temporary mall sites and private providers. Costs were disaggregated across program activities and resource types to analyze cost drivers. Volume-weighted average unit costs were estimated for each administrative level and then aggregated to obtain the overall volume-weighted cost per dose. A qualitative assessment was also conducted to identify operational challenges in the implementation of the vaccination effort, as well as to better understand financial flows and help contextualize cost findings.

IMPLEMENTATION OF THE C19 VACCINATION PROGRAM IN THE PHILIPPINES

The Philippines launched its C19 vaccination program in March 2021, first delivering vaccines to frontline health workers before the target population was expanded to include adults aged 60 years and older, and adults with co-morbidities. Other priority groups were added as the vaccine supply increased, and the general adult population became eligible in October 2021. At the time of data collection for this study, approximately 70% of the total population had received two doses. As of March 2023, over 183 million doses had been administered.

Doses were delivered at fixed and temporary sites, including mass sites set up at shopping malls, schools and sports centers, as well as by mobile teams operating at sites in barangays (smallest administrative division). In response to slow progress towards coverage targets, particularly outside of the National Capital Region, four mass vaccination campaigns, called National Vaccination Days (NVDs), were implemented from November 2021 to March 2022. In addition to leveraging existing infrastructure and the health workforce, there was substantial recruitment and redeployment of personnel to meet the need.

The following operational challenges in implementing the C19 vaccination program were identified during the qualitative interviews:

- Some rural health units were understaffed during the roll-out, while some temporary mall sites reported idle time during the later period of the roll-out when demand had dropped
- While reporting of insufficient funding for the program was rare, many sites experienced funding flow issues, including delays in the disbursement or reallocation of funding
- Due to a lack of cold-chain capacity at rural facilities, sharing arrangements were required, increasing the number of trips needed to collect vaccines
- Fragmented systems of record keeping and reporting introduced risks to the accuracy and safety of COVID-19 vaccination data

COST OF DELIVERING C19 VACCINES

The economic cost per dose delivered during the campaign in November-December 2021 ranged from \$1.75-\$2.59 (₱95-₱141) across the different types of sites, and increased to \$3.28-\$12.05 (₱179-₱656) during the routine delivery period in May-July 2022. Generally, higher delivery volumes were associated with lower delivery costs, though the unit cost of delivery varied widely across the sample. Delivery costs per dose were substantially higher during the routine period than the campaign, as delivery volumes were 54-94% lower. Financial costs made up a greater share of the cost during the campaign, as there were more incremental expenditures such as for additionally recruited personnel and refreshments. Combining the cost estimates from all types of sites, delivery during the campaign costed on average \$2.16 per dose, and an average of \$4.42 during the routine delivery period in May-July 2022.

The economic cost per dose delivered was highest at rural health units compared to other sites, especially during the routine delivery period when the average reached \$12.05 (₱656), as volume delivered had dropped significantly. Moreover, rural health units were more reliant on existing health workers than other unit types, reflected in the high opportunity cost, which consists mainly of the value of labor from existing staff. Due to the significant number of additional hires at private provider sites, temporary mail sites, and other sites managed by city health offices, financial costs made up the majority of the economic cost at these sites. At rural health units, where additional hiring was minimal, worker refreshments and vaccine injection and safety supplies were the main financial cost drivers.

Economic cost per C19 dose delivered at different types of sites during the campaign and routine delivery periods



KEY TAKEAWAYS

- **The C19 vaccination program in the Philippines was successful in rapidly reaching high coverage levels, and one distinctive success factor was its ability to rapidly mass hire additional health workers.**

The program was a success mainly thanks to strong political will and commitment at all levels of government and multi-sectoral collaboration to plan and mobilize resources. Few sites reported funding shortages, though many highlighted challenges in funding disbursements and reallocation. The country was able to rapidly mobilize additional health workers through mass hiring, a health worker redeployment program, and engaging staff from from sectors such as the police and military, and volunteers.

- **Financial delivery costs were high compared to other low- and middle-income countries, particularly due to mass hiring and refreshments provided to health workers.** While other countries often reported funding shortages, health worker shortages, and a lack of compensation for the additional workload associated with the C19 vaccination program, the Philippines' program was well-resourced, resulting in higher financial delivery cost levels. Contrary to other low- and middle-income countries, the Philippines did not engage a large number of unpaid volunteers. Mass hiring was a significant cost driver, particularly at city health offices, temporary mall sites, and privately managed sites, while in countries such as Côte d'Ivoire and Vietnam, there was almost no additional recruitment for the C19 vaccination program. Refreshments offered to health workers were a large cost driver as well, particularly at some rural health units.

- **The C19 vaccination program leveraged many different delivery strategies, and our study found high variation in the cost profiles and delivery rates across different types of implementation units, as well as between similar types of sites.** The implementation units in our sample varied a lot in terms of the size and manner of operating, with some managing a large number of temporary vaccination sites, while some solely managed fixed-based delivery at the unit itself. Cost profiles varied greatly, though some cost drivers stood out.

Generally, higher delivery volume was associated with lower delivery costs, and financial cost differences between sites were primarily explained by the extent to which they had hired a lot of additional staff for the C19 vaccination program. Other financial cost drivers included refreshments provided to health workers, and vaccination supplies. The economic costs were largely driven by the value of existing health workers' time, especially at rural health units where additional hiring was limited.

- **Temporary vaccination sites run by city health offices, including temporary mall sites, were very effective during the early, large-volume National Vaccination Days, and although less so once delivery volumes dropped and sites reported idle time, the cost per dose delivered remained far below that of smaller rural health units.** The country was able to put in place many dedicated mass vaccination sites, managed by both the public and private sector, to quickly ramp up delivery volumes and reach high coverage when vaccination opened up to the general population. Although very effective during the first large campaign held in November-December 2021, these sites were less efficient by the time of the low-volume routine period of May-July 2022. As staff at the sites were fully dedicated to C19 vaccination, temporary mall sites reported idle time. Nevertheless, daily delivery volumes at the mall sites remained high enough to keep the cost per dose similar to that incurred by city health offices and private provider sites, while the cost at many rural health units for C19 vaccine delivery significantly increased during the low-volume routine period. This is likely explained by C19-specific outreach activities that continued at rural health units throughout this period. Identifying synergies and possibilities for integration of C19 vaccine delivery with other services may have reduced the delivery cost during the low-volume periods, as shown in the Province of Iloilo in the Western Visayas. There, from October 2022 to April 2023, patient registration, screening and provision of family planning services were successfully implemented alongside C19 vaccination at 36 primary care facilities.

I INTRODUCTION

To support the government of the Philippines, ThinkWell and Ateneo de Manila University School of Medicine and Public Health (ASMPH) conducted a study to estimate the cost of delivering COVID-19 vaccines in the Philippines.

The COVID-19 (C19) vaccination program was unprecedented in terms of its scale, range of target populations, and number of vaccine products delivered in the country simultaneously. The actual costs of implementing the program are not known and there is a lack of evidence on the cost of delivering vaccines in general in the Philippines. ThinkWell and ASMPH conducted a bottom-up study of what it costs to deliver C19 vaccines to support the government in planning and financing for future strategies for the C19 vaccination program.

This study estimated the financial and economic costs incurred at all levels of the health system of delivering C19 vaccines through a short and intense campaign-style effort (National Vaccination Days) and during a period of routine-style delivery from May to July 2022. It also documented the flow of funding and vaccines, and noted operational and financial challenges and lessons learned identified at various levels of the health system.

ESTIMATING THE COST OF DELIVERING COVID-19 VACCINES IN LOW- AND MIDDLE-INCOME COUNTRIES

This study is part of a multi-country project that utilizes standardized methods to generate cost evidence on the delivery of C19 vaccines in low- and middle-income countries. The project is led by ThinkWell, and supported by the Bill & Melinda Gates Foundation, and covers studies in Côte d'Ivoire, the Democratic Republic of Congo, Mozambique, Uganda, Vietnam, Bangladesh, and the Philippines.

For more information, please see: <https://immunizationeconomics.org/covid19-vaccine-delivery-costing>

II STUDY OBJECTIVES AND METHODS

RATIONALE AND OBJECTIVES

Effective resource allocation is essential for successfully implementing immunization programs such as for C19 vaccine delivery, and this requires accurate cost estimates to determine variations in resource needs.

There is a great variation in resource needs for health care delivery across the Philippines, and the health system is also challenged by an inequitable distribution of resources. Each Local Government Unit (LGU) faces challenges unique to their area owing to factors such as geographical characteristics of the locality, political climate, prioritization of programs, and the availability of resources. Understanding the differences in resource needs and costs incurred across regions can better inform resource allocation decisions for future C19 vaccine delivery and other vaccination programs.

The primary objective of this study is to estimate the cost of delivering C19 vaccines in the Philippines.

The specific objectives of the study are to:

- Estimate the average cost per dose of delivering C19 vaccines in the Philippines through different types of delivery strategy and in different regions
- Map funding flows and document funding sources against different C19 vaccination program activities
- Describe how the vaccination effort was implemented, and identify operational challenges and lessons learned

STUDY DESIGN

This study estimated vaccine delivery costs in the Philippines through a retrospective, bottom-up costing approach, capturing financial and economic costs. This study captured all costs associated with the delivery of vaccines including administration and storage, but excluded the cost of the vaccine itself. This study used a bottom-up costing approach, complemented with the review of financial expenditure reports and budgets to fill data gaps when needed. Program-related activities (defined in [Annex 1](#)) at each administrative level were costed by measuring the quantity of resource inputs (defined in [Annex 1](#)) used to implement these activities, which were then multiplied by the price for each of these inputs. The use of both existing and additional resources was costed, the former including capital equipment already in use and a share of health worker salaries, while incremental resources included the purchase of cold chain equipment and vehicles for the vaccination program, and the hiring of staff. The study was granted an exemption from review by the Single Joint Research Ethics Board (SJREB) of the Department of Health (DOH) on August 15, 2022. The SJREB protocol number was SJREB-2022-72.

The study estimated the cost for a mass vaccination campaign in November-December 2021, as well as a routine-style vaccination period from May to July 2022. C19 vaccine delivery during two time periods was costed as part of this study, the first being a mass vaccination campaign, or National Vaccination Day (NVD) in November-December 2021. The NVD lasted between three to five days at sites and was implemented four times nationwide between November 2021 and March 2022. The routine-style strategy was implemented as a daily vaccination drive through sites open to the public for vaccination by walk-in or by schedule.

The time period of May to July 2022 was chosen to minimize recall bias. By this time, vaccination of the primary series had been opened to everyone over the age of 5. The study also captured costs of start-up activities which were incurred in the month prior to the beginning of the roll-out in March 2021 and purchases of equipment and vehicles which occurred at any time during the program.

Cost data was collected from a payer perspective, including costs incurred at all levels of the health system, as well as development partners and donors, where available. Costs were captured at implementation level, provincial offices, regional offices, and the national level. At the implementation unit level, data was collected from rural health units (RHU) and city health offices, as well as from private hospitals and temporary sites such as shopping malls. At the provincial level, costs were acquired from Provincial Health Offices (PHOs) and Provincial Department of Health Offices (PDOHO), which performed functions in support of the lower-level facilities. At the regional level, data was collected from the regional offices of the DOH. Costs and input prices were collected from the National Vaccine Operation Center (NVOC), and through publicly available procurement documents. Cost data were also obtained from development partners and used to validate and complement data collected at the local level.

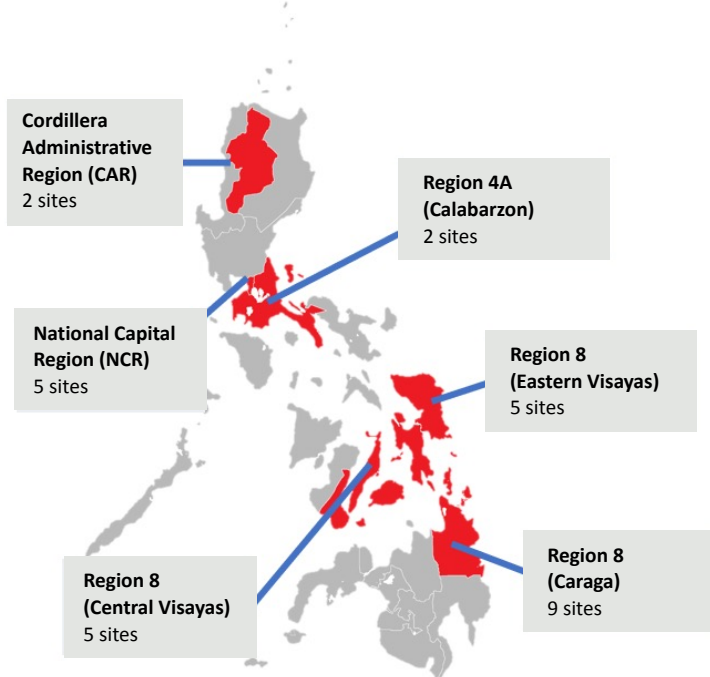
A qualitative assessment was conducted to complement the costing study. Interviews were conducted with government officials and health workers at all levels for which cost data were gathered. Staff were interviewed to gain a better understanding of program implementation, map funding flows and identify challenges and lessons learned.

SAMPLING

The sample includes sites from six regions across the archipelago, as well as relevant intermediary provincial and regional level offices, the NVOC and national level DOH, and development partners. A purposive sampling design was used to select six regions from all major island groups and include both remote rural areas as well as highly urbanized cities. The six regions from which sites were chosen ranged from the north to the south of the archipelago, as shown in [Figure 1](#).

The sample consisted of 28 implementation units of different types, including city health offices, temporary mall-based sites, rural health units, and hospitals, together covering 496 vaccination sites (see [Table 1](#)). The sampled units were chosen in coordination with the DOH and leveraged the existing relationships of ASMPH with staff at sites to facilitate data collection. In rural areas, rural health units were chosen as the sampling unit, which offered C19 vaccination services themselves, managed delivery at temporary sites, and deployed mobile teams to community sites such as Barangay Health Stations (health posts), and conducted house-to-house delivery. We did not explicitly include Barangay Health Stations as a sampling unit, though the doses they delivered and most of their cost incurred were captured at the rural health unit or city health office that managed them, including staff that were delegated from rural health units and city health offices to work at these stations. In cities, many temporary vaccination sites were in place for short periods of time, and therefore no longer active by the time of our study. Therefore, city health offices were chosen as the sampling unit rather than the vaccination sites themselves.

Figure 1. Map of regions included in the study



City health offices managed a range of fixed, temporary and community sites in each city such as hospitals, malls, community sites, schools, and Barangay Health Stations. Data for most of these sites was collected at the city health offices, and in addition, we collected data from 4 temporary mall sites run by one of the city health offices in our sample. Most sampled units were public (24 out of 28), which is where most routine vaccination was usually provided¹. We included 15 out of the approximate 2,608 rural health units that exist throughout the country, and 4 out of the country's 49 city health offices².



Table 1. Overview of the sample

Level		Number of units				Sampled units
Administrative sites	National	1				1
	Regional	3				3
	Provincial	6 (2 provincial offices each in 3 provinces)				6
Subtotal						10
	Region	City health office	Temporary mall site	Rural health unit	Private providers	-
Implementation units	National Capital Region	2	-	-	3	5
	Cordillera Administrative Region	1	-	1	-	2
	Region 4A (Calabarzon)	1	-	-	1	2
	Region 7 (Central Visayas)	1	4	-	-	5
	Region 8 (Eastern Visayas)	-	-	5	-	5
	Region 13 (Caraga)	-	-	9	-	9
Total number of implementation units		5	4	15	4	28
Number of vaccination sites covered by the sample		214*	4	273	5	496
Total number of data collection sites						38

*Excludes the 4 temporary malls in the sample which were managed by one of the sampled city health offices to avoid double counting

The sample also included four private providers, covering hospitals and mall-based sites (Table 2). These were included due to the importance of the private sector in the Philippine health system, as private sites are the first point of care for over half of the population, and preferred vaccination point by wealthier households^{1,3}. Two private sites were hospitals, and two were temporary sites based in malls during the campaign. These temporary mall sites were not open to the general public, but were set up for the employees of certain private companies and their dependents who could take appointments at these sites to get vaccinated. Both of these mall-based sites closed in March 2022, and one of the private providers moved its vaccine operations to a hospital. Therefore, the routine period covers three private hospital-based sites during the May-July 2022 routine period, while for the mall-based site that closed indefinitely, routine data was captured for the period of January-March 2022 instead.

Table 2. Overview of private providers included in the sample

	Campaign (NVD1)	Routine delivery period covered in this study
Private provider 1	Managed a temporary mall-based site during the first NVD (November-December 2021)	Moved to a private hospital: May-July 2022
Private provider 2	<i>Did not participate</i>	Temporary mall-based site: January-March 2022 (<i>as it was closed after this</i>)
Private provider 3	<i>Did not participate</i>	Private hospital: May-July 2022
Private provider 4	<i>Did not participate</i>	Private hospital: May-July 2022

DATA COLLECTION

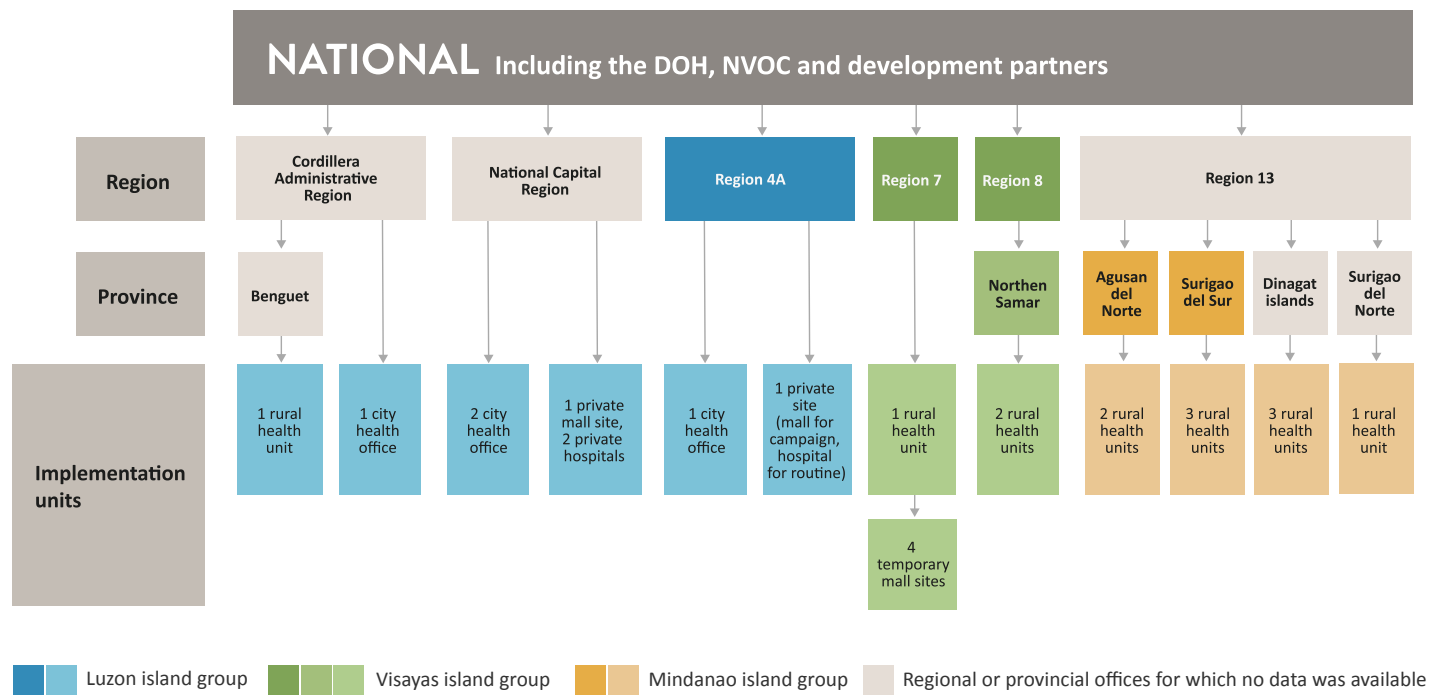
Data was collected through in-person site visits using Excel-based tools from August to September 2022, with data follow-ups conducted remotely from October to December 2022, and national data collection concluding in July 2023. Prior to field data collection, the project team conducted a hybrid online and in-person training program and in-person pilot testing of the tools at two sites in the sample from August 16 to 24, 2022. Cost data were collected in Excel-based tools tailored to each administrative level which were finalized based on the feedback from the training and piloting. Twelve project team members worked in pairs to collect both the quantitative and qualitative data. Each qualitative interview was recorded and extensive notes and a summary per site in English were produced by the study team. National level data required more time to collect as some of the requested data were deemed sensitive or unavailable.

Cost data were collected from interviews with staff as well as reviews of documents and financial reports. Key informants interviewed were personnel identified by sites as being the most involved either in the overall management and supervision of the vaccination program, or in the management of their information systems. For implementation units, respondents included medical officers acting as site leaders, the head of the hospital infectious disease control and epidemiology center, and a medical director of the facility. In city health offices, respondents were commonly medical health officers and public health nurses. In regional-level sites, most respondents were coordinators of the National Immunization Program (NIP) who were reassigned to manage the COVID-19 vaccination program. Data such as staff hours and allowances were obtained directly

from key informants or through other staff. Data from operational and financial reports, and from vaccine inventory management systems was also obtained. Cost data on the procurement of items such as vaccine administration supplies, stationery, IT equipment and cold chain equipment for the program were obtained through the DOH website. Missing data imputation methods are listed in [Annex 2](#). Useful life years for existing equipment were acquired primarily from the Immunization Costing Action network and the Philippine’s Audit Commission, other sources are listed in [Annex 3](#)^{4,5,6,7}. The cost of vaccine administration and safety supplies was provided by UNICEF, procurement orders and through Freedom of Information requests.

Partial provincial, regional and national level data were collected. Provincial data from PHO and PDOHO offices was collected in Region 13 (Caraga region) and Region 8 (Eastern Visayas) region and regional data was obtained in Region 4A (Calabarzon), Region 7 (Central Visayas) and Region 8 (Eastern Visayas). In other provinces and regions, offices declined to provide cost data. National level government data was collected from the NVOC, DOH and through Freedom of Information requests, and consisted mostly of staff time at the NVOC, equipment purchases for the program and contracts for social media campaigns and vaccine distribution. Data was not available for staff working at other national level agencies involved in the vaccination program, and for costs such as staff transport, stationery and printing. The structure of the sample can be seen in [Figure 2](#). white boxes indicate where offices exist and where costing data was requested but could not be obtained.

Figure 2. Diagram of data collection sites



Data collected was cleaned and validated through multiple rounds of checks. Field editing was done to ensure accuracy, validity, and completeness of collected data. Two researchers were then tasked to review the data for completeness and identify any outliers in the data, such as in the numbers of hours worked or quantity of supplies used.

Requests for clarifications or additional data were sent to the data collection team, who would address the concern directly or contact a key informant remotely for additional data. This process was ongoing until data were satisfactory, or if some data could still not be obtained after following up with respondents, assumptions were made based on data from similar sites.

DATA ANALYSIS

Costs at each site were estimated and allocated to each type of cost, resource type, activity, and time period.

For resources that were shared across the health system, a proportion was allocated to the C19 vaccination program as per respondent’s estimates. The allocation rules are detailed in [Annex 2](#). Costs were reported in 2022 US Dollars (USD) and Philippine Pesos (PHP). Costs collected in 2022 PHP were converted to USD using an exchange rate of PHP 54.48 per USD 1, the World Bank average for 2022⁸. Staff time in 2021 was costed using 2021 salary grades or if the 2022 salary amount was given, this was deflated to 2021 value using the percentage change between 2021 and 2022 according to the salary scale, and inflated to 2022 level using the IMF inflation factor⁹. Staff time in 2022 was costed using 2022 salary levels. Depreciation of existing capital equipment was computed using the replacement price and the useful life of the item, using a 3% discount rate. Resources were allocated based on indicators that

best reflected how the resource was used, which may be delivery period, cost activity, or delivery volume. [Annex 2](#) provides further details on allocation rules used.

A volume-weighted average cost per dose was calculated for both the campaign and routine periods in Excel. The number of sites included for the campaign analysis was 25, as some sites did not participate in the campaign. The routine analysis included 27 of the 28 sampled sites as the doses delivered at one city health office could not be obtained. We calculated average unit costs by dividing the sum of the total costs from all sites (weighted by volume) by the sum of the delivery volume across all sites (weighted by volume), as shown in the formula below:

$$unit\ cost_{site/prov/reg} = \frac{\sum_{i=1}^n C_i * w_i}{\sum_{i=1}^n Q_i * w_i}$$

Where n is the number of implementation unit/provinces/regions in the sample, C_i represents the total service delivery cost at implementation unit/province/region i , Q_i represents the total service delivery volume at implementation unit/province/region i , and w_i is the volume weight for the implementation unit/province/region i . As the data collected at the national level represents the enumeration of the population at that level (rather than a sample), we calculated a simple average across the total number of doses delivered during the study time periods.

LIMITATIONS

The average cost per dose in this study may not be nationally representative due to the small sample size of sites that were purposively selected. However, the sample was purposively selected to capture the wide variety in cost estimates. There were 28 implementation sites taken from six regions, with sites differing by private or public ownership and the level of urbanization of the locality it is situated in. The implementation units covered over 496 vaccination sites, and varied widely in terms of the target populations they were expected to serve, and the volume they delivered. Therefore, the range of delivery costs found in this study is likely a good reflection of the different delivery cost structures that could be found across the country.

Contributions provided at the national level by other agencies, such as the Office of Civil Defense (OCD) and the Armed Forces of the Philippines (AFP) were not included due to confidentiality. The Department of Health served as the chair of the national coordinating body on the vaccination, but respondents from the DOH could not provide data that was considered confidential.

A total unit cost per dose was computed by aggregating the volume-weighted average unit costs at various administrative levels. When calculating the aggregated cost per dose across the Philippines, provincial level costs were folded into implementation level costs to become a single level, which was summed together with the regional average and national level costs. Combining implementation level and provincial level costs was carried out as only sites in three regions had an intermediary provincial office.

This involved the contributions of the OCD and AFP in the distribution of the vaccines. Data provided by the NVOC and implementing partners was also very limited, meaning that the cost estimates are likely to be underestimated. However, as we expect their contributions to have been small, we do not expect this to have significantly impacted the results of this study.

The cost estimates do not include an analysis by target population. Our study originally aimed to estimate the cost of reaching different target groups, such as the cost of reaching health workers and the elderly compared with the cost reaching the general population. Sites did not report this level of detail when reporting on doses delivered, and therefore we could not estimate this. However, the study does offer insights on how costs varied from campaign-style delivery during the NVDs which reached a very large target population, to later routine-style delivery in May-July 2022, during which smaller volumes were delivered, as well as how costs varied by site type and region, which all can be used to plan for targeted delivery strategies in the future.



Image: Cold chain equipment storing COVID-19 vaccines, Caraga region

OVERVIEW OF THE C19 VACCINATION PROGRAM IN THE PHILIPPINES

TIMELINE OF THE C19 VACCINE ROLLOUT

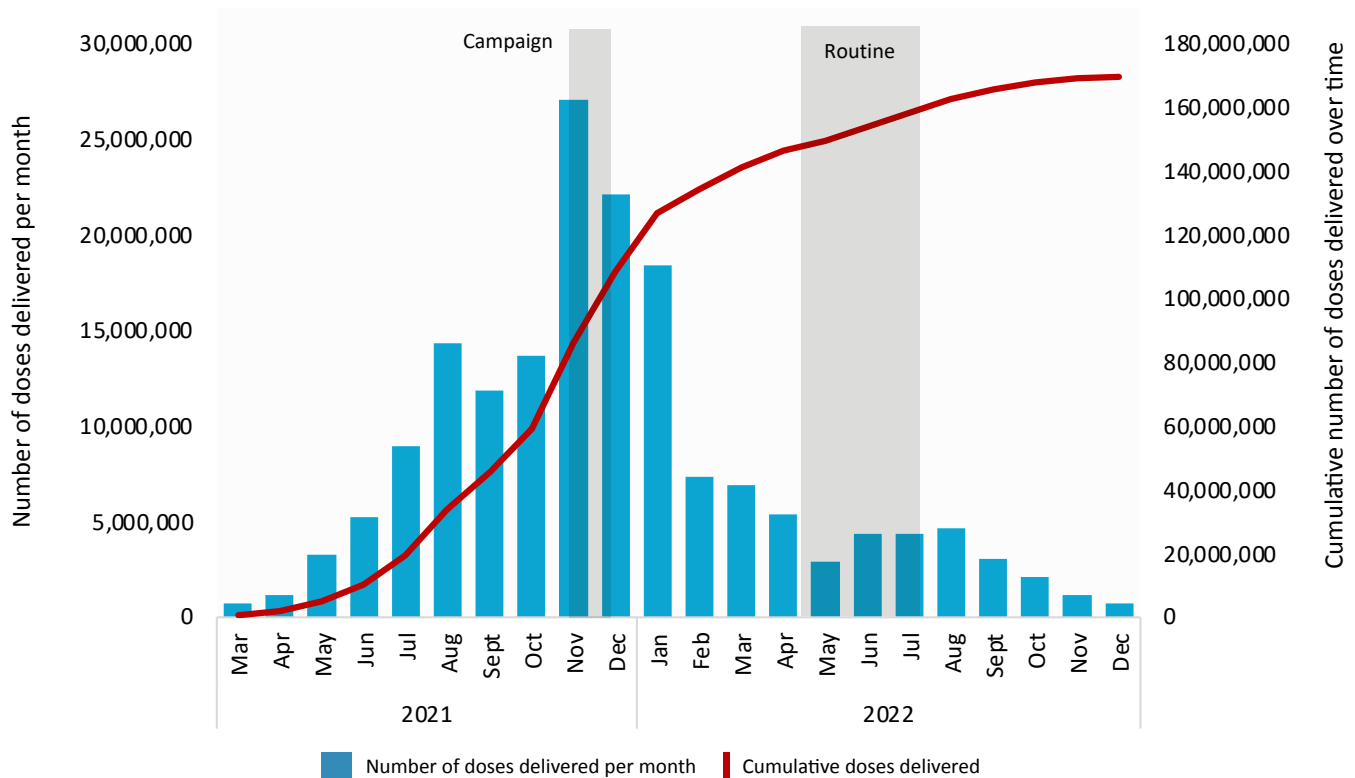
The Philippine government declared a state of national public health emergency on March 9, 2020 due to confirmed local transmission of COVID-19 and its threat to national security. The pandemic saw most nations of the world implement movement restrictions or lockdowns on their populations. Despite enforcing one of the world’s longest and strictest lockdowns, the Philippines had the second highest number of cases in Southeast Asia in 2020^{10,11}. Successful vaccine deployment was essential in controlling the spread of COVID-19 and supplementing the nation’s efforts to achieve rapid economic recovery¹².

The rollout of the C19 vaccine officially began on March 1, 2021, delivering vaccines first to frontline health workers, with the whole adult population eligible by October 2021. The program commenced following the receipt of 600,000 donated CoronaVac (Sinovac) doses from China, with the initial aim of vaccinating 60-70% of the entire eligible population by 2022, and the remaining population by the end of 2023^{13,14}. The program began with only frontline health workers being vaccinated in hospitals before expanding to those aged 60 years and older, and adults with co-morbidities by the end of March 2021.

As vaccine supplies increased, outbound overseas Filipino workers and the immediate families of frontline health workers became eligible in May 2021, followed by frontline personnel in essential sectors and the rest of the indigent population in June, and pregnant women in August. Vaccination of the rest of the adult population began in October 2021, closely followed by adolescents with co-morbidities and the rest of the adolescent population, and finally children aged 5-11 years in February 2022.

By the time of data collection for this study in September 2022, 162,844,138 doses had been administered, and over 73 million people had completed their primary series (approximately 67% of the total population)^{15,16}. Figure 3 below shows the cumulative vaccine doses administered. By the start of the first National Vaccination Day on November 29, 2021, eighty-one million doses had been administered. This grew to over 146 million doses by the start of the second period of data collection in May 2022. By March 2023, over 183 million vaccine doses had been administered.

Figure 3. Vaccine doses administered and study time periods

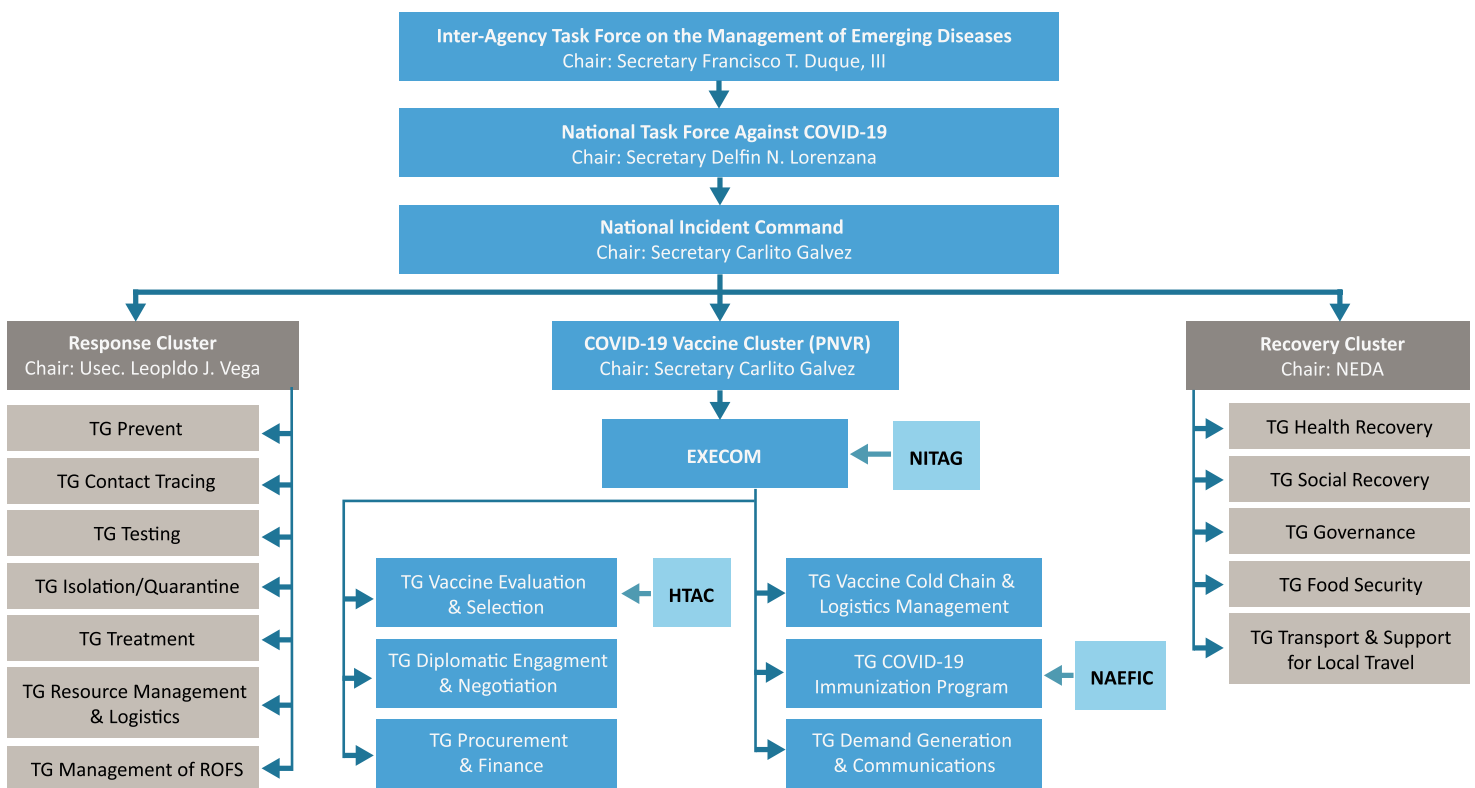


MANAGEMENT OF THE C19 VACCINATION PROGRAM

The C19 vaccination program was implemented by an interagency body called the National Task Force against COVID-19 (NTF). The NTF was created in response to the C19 pandemic, to focus on operational guidance and implementation¹⁷. A part of the NTF was the C19 Vaccine Cluster, which served as a unified command, control, coordination, communication, and cooperation mechanism for the roll-out of the vaccination program¹⁸.

The cluster was supported by several independent bodies composed of multidisciplinary groups of national experts as part of six task groups on Scientific Evaluation and Selection, Diplomatic Engagement and Negotiation, Procurement and Finance, Cold Chain and Logistics Management, Immunization Program, and Demand Generation and Communications, as shown in Figure 4.

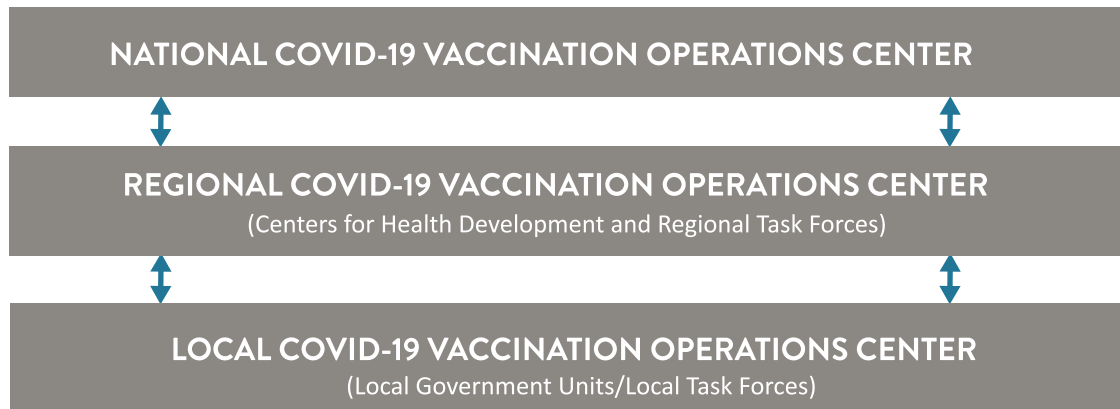
Figure 4. COVID-19 Vaccine Cluster organizational structure¹⁴



To ensure that policies and recommendations made at the national level were implemented on the ground, an Incident Command System was activated, and COVID-19 Vaccine Operations Centers (VOCs) were established at multiple levels of the health system. Operations Centers were created at the national (NVOC), regional (RVOC) and local levels (LVOC).

The NVOC was headed by the COVID-19 Vaccine Cluster Chair, while the RVOC was led by DOH Centers for Health Development (CHDs) together with the participation of other government agencies, and the LVOC were led by local government units as shown in Figure 5. VOCs were composed of various teams covering all aspects of the rollout as shown in Figure 6.

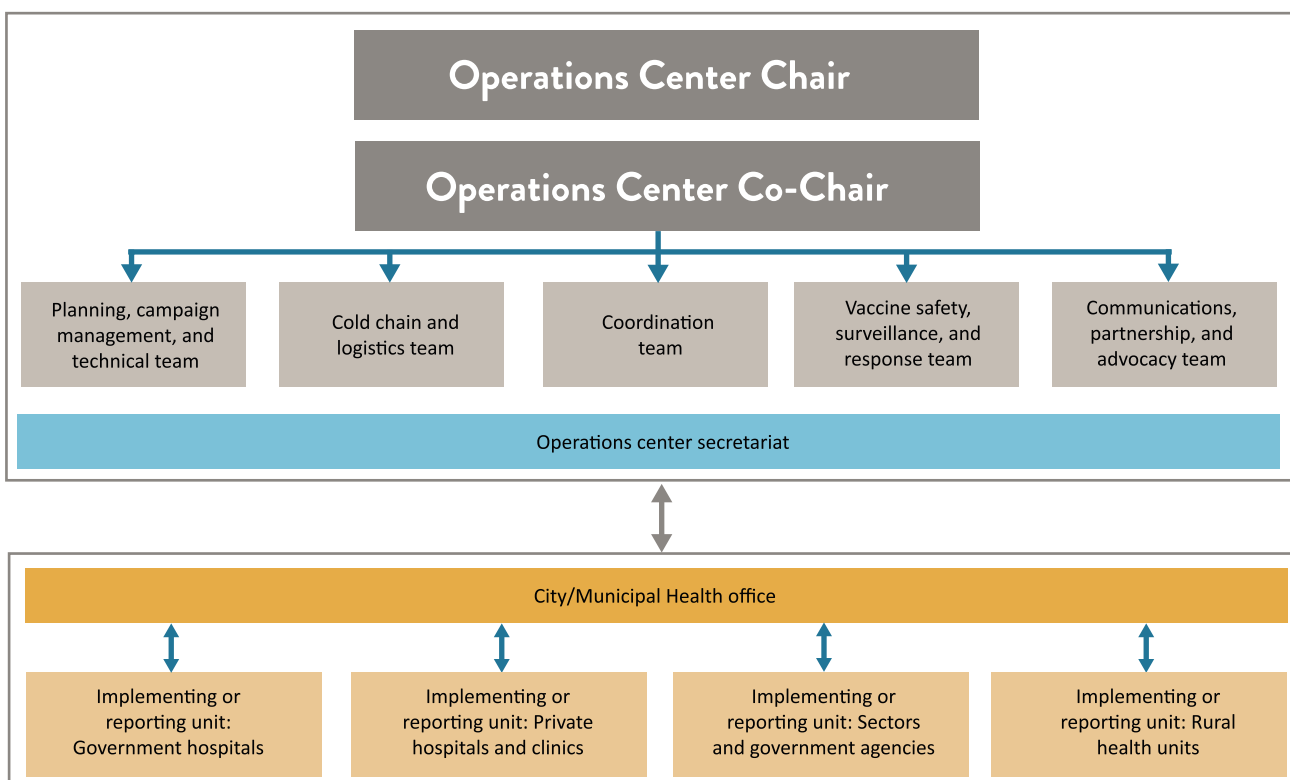
Figure 5. COVID-19 Vaccination Operations Center overview¹⁴



The NVOC consisted of representatives from other government sectors and the military, and was responsible for policy development and coordination between levels, as well as providing technical assistance. The responsibilities of the NVOC included developing and releasing national guidelines and policies, coordinating with CHDs and local government units to ensure sufficient allocations and proper storage, handling, and distribution of supplies, providing technical assistance to the lower administrative levels, and monitoring and overseeing the overall implementation of the program. The NVOC was comprised of representatives from other agencies as well as the DOH, such as the Department of Interior and Local

Government (DILG), Department of Social Welfare and Development (DSWD), Armed Forces of the Philippines (AFP), Office of Civil Defense (OCD), Department of Education (DepEd), Philippine Information Agency (PIA), Presidential Communications Operations Office (PCOO), among others. This overall structure and attached responsibilities were mirrored at the RVOC level, with the Assistant Regional Director of the DOH CHDs acting as lead. The Provincial Vaccination Operations Center oversaw the Municipal and City Vaccination Operations Center. LVOCs managed program implementation and monitoring, and coordinated with local stakeholders, led by the local government’s health officer¹⁴.

Figure 6. Teams under the COVID-19 Vaccine Operations Center¹⁴



At provincial level, the Provincial Health Office (PHO) and the Provincial DOH Office (PDOHO) worked collaboratively in leading the C19 vaccination program.

By law, the PHO led the operation and implementation of health programs and services held by the provincial government. The PHO reports to the governor but does not oversee the health programs and health officers of component cities or municipalities¹⁹. The government’s vaccination plan however tasked Provincial Health Offices with collating and synthesizing microplans for

vaccination developed by lower administrative units. The Provincial DOH Office is a representative of the national government, and is tasked primarily with providing technical assistance to the Provincial Health Office, and acting as the representative of the DOH at the provincial level²⁰. Provincial DOH Offices provided supervision for municipalities, disseminated information, and monitored inventory. Some also deployed staff to vaccination sites during the campaign.

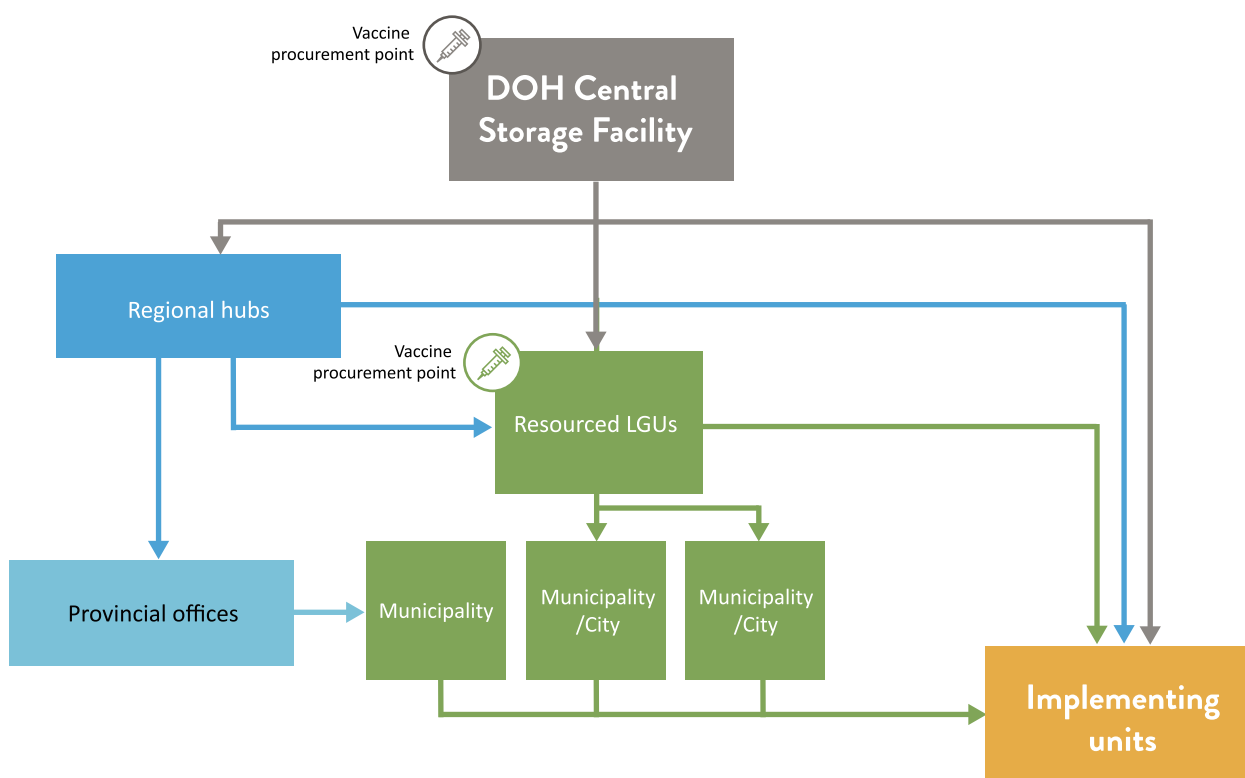
C19 VACCINE STORAGE AND DISTRIBUTION

Vaccine doses were distributed from the DOH Central Storage Facility to regional hubs, local governments, or directly to implementation sites, as seen in

Figure 7. A variety of vaccine products were delivered as part of the C19 vaccination program, including Moderna, Pfizer (pediatric and adult preparations), AstraZeneca, Sinopharm, Sputnik-V, and Janssen. Vaccine dose allotments for each region were prepared by the DOH central office with input from the different LGUs, and then distributed to the corresponding regional DOH CHDs. The regional hubs were then tasked to deliver to the LGUs, who then distributed them to the different implementing units. This process was not always followed. As the DOH central storage facility was in the National Capital Region, direct deliveries were made to LGUs and implementing units within

this region and other areas in proximity. Some provinces were in islands separate from the DOH’s regional CHD, and vaccine doses were delivered straight by provincial LGUs, bypassing the regional hubs. Some LGUs would find themselves lacking in vaccine doses, and local governments would request for vaccines from LGUs which had a surplus. Furthermore, some LGUs which invested in cold chain equipment, especially the ultra-low freezers needed for vaccine brands such as Pfizer and Moderna, reported storing for other local government units who were unable to make the same investments. While most vaccines were procured at the national level, local government units with sufficient resources were allowed to procure additional doses facilitated through a tripartite agreement coursed through the DOH.

Figure 7. Vaccine flow in the public sector as described by study key informants



In addition to public and private healthcare providers, other private companies were exceptionally allowed to procure vaccines under the COVID-19 Vaccination Program Act of 2021 for their personnel and their dependents. The private sector was empowered to take a larger role in the national vaccination program and could procure AstraZeneca and Moderna

vaccines through a tripartite agreement with vaccine manufacturers and the national government, represented by the DOH and the NTF^{21,22}. Upon arrival in the country, these vaccines were received, stored, and distributed by a third-party logistics provider, and administered by contracted private sector providers.

C19 VACCINATION DELIVERY

The Philippine government initially adopted a permanent fixed-post vaccination strategy for the conduct of its C19 vaccination program. The country's vaccine deployment plan provided a framework that implementing units used as a guide in identifying and preparing vaccination sites. Each vaccination site needed to have the following areas: 1) waiting area for vaccinees awaiting their turn for vaccination, 2) a vaccination area with dedicated sections arranged in sequential order for registration, health education, screening, and vaccine administration, and a 3) post-vaccination monitoring area²³. Immunization services initially commenced leveraging the routine immunization program. C19 vaccination was offered at rural health units, local hospitals, Barangay Health Stations, and other fixed sites managed by city health offices.

As restrictions on movement were implemented, in July 2021, mobile vaccination teams were deployed and temporary sites were established to bring vaccination closer to the population. As the pandemic continued and infections rose, mobility restrictions were imposed in more areas. To ensure that the provision of vaccination services was uninterrupted, the NVOC made provisions in July 2021 that allowed for the deployment of mobile vaccination teams or the establishment of temporary vaccination sites²⁴. This strategy allowed city health offices and rural health units to deploy mobile vaccination and AEFI composite teams to conduct vaccinations in houses, facilities, or workplaces. Private off-site facilities such as shopping malls, arenas, and hospitals were also transformed into vaccination sites²⁵. Some rural health units moved their vaccine operations to temporary sites such as gyms in 2021 and delivered doses only at these temporary sites and through mobile teams in barangays either at Barangay Health Stations, other sites in the community and through house-to-house delivery.

Many temporary sites were closed in early 2022 as delivery volumes decreased and operations were moved back to the rural health unit. Other rural health units delivered doses at the rural health units themselves during the entire program as well as through other strategies. Some companies also contracted private sector providers to offer services to their staff and their dependents.

In response to slow progress towards coverage targets, particularly outside the National Capital Region, four mass vaccination campaigns, called national vaccination days (NVDs), were implemented starting from November 2021 to March 2022. With only 30,239,030 Filipinos fully vaccinated with primary doses near the end of November 2021, there were concerns about the feasibility of reaching the target of vaccinating 50-70 million Filipinos by the end of 2021, particularly outside of the National Capital Region²⁶. To reach the national targets, the Philippine president declared November 29 to December 1, 2021, as "*Bayanihan, Bakunahan National COVID-19 Vaccination Days*", calling for the implementation of large-scale vaccination drives and the mobilization of different sectors²⁷. The initial target was to vaccinate 15 million Filipinos in the span of three days, though this was later lowered to 9 million due to supply shortage and logistical difficulties^{28,29}. The first NVD, which this study focused on, was considered a success, with 10.1 million doses delivered, and was extended to last five days in some LGUs³⁰. The coverage achieved during the three subsequent NVDs held in December 2021, February 2022 and March 2022 was progressively lower^{31,32}.

FUNDING OF THE VACCINATION PROGRAM

The C19 vaccination program was financed by the Philippine government and supplemented by funding from loans, donors, and the private sector.

The Philippine government financed the country's C19 response and vaccination program through the General Appropriations Act (GAA). This funding was supplemented by multiple sources including national loans from the World Bank (WB) and the Asian Development Bank (ADB), and grants and donations from international development partners such as the United States Agency for International Development (USAID) and the United Nations International Children's Fund (UNICEF), local non-governmental organizations (NGOs) and partners, and the private sector. Modalities used in financing the purchase of vaccines include the GAA, bilateral and multilateral financing, and contractual joint ventures (JV) with the private sector¹⁴. At the national level, the primary manager of the COVID-19 response fund was the DOH. Unprogrammed funds from the 2019 and 2020 GAA allotments from foreign and domestic multilateral and bilateral loans, taxes and revenues were earmarked for use at the Central Office level or for distributing to the various regional offices³³.

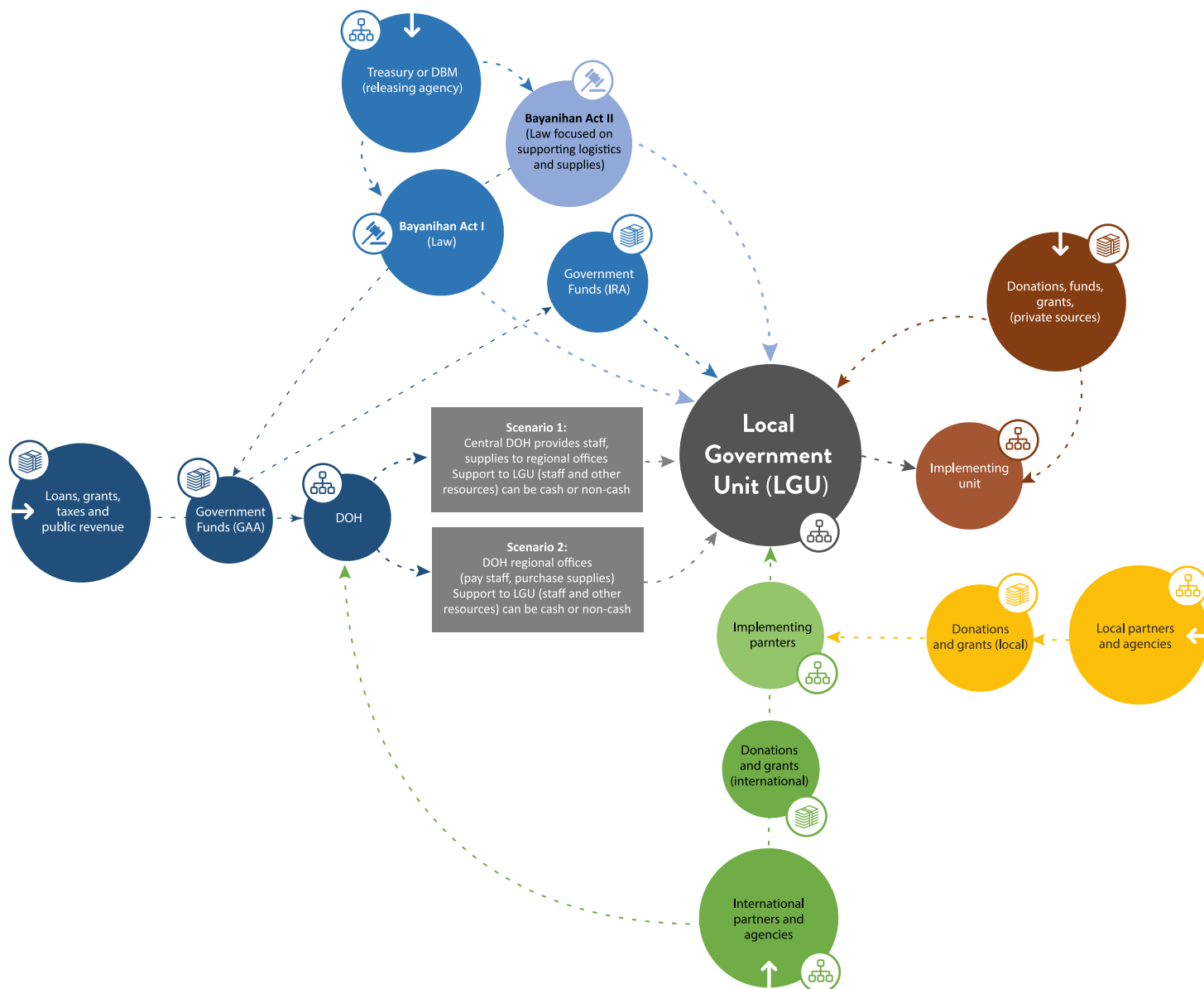
Figure 8 below summarizes the different funding flows for COVID-19 vaccination activities.

Funds in the public sector moved through the system either through the national level government, or via direct entry to the LGUs or implementing units. Funds at the Central Office were used for the national level response which included operations of the NVOC, vaccine procurement, contracting third-party logistics organizations or companies, procurement of cold chain equipment and facilities, among others. Funds that were cascaded from the national level to the regional offices were typically used to hire additional staff and purchase goods and supplies to meet the needs of the LGUs under their jurisdiction. All DOH accounts, including activities conducted at provincial level, were charged to the DOH Regional Office COVID-19 funds. At LGU level, funds came from the LGU budget, the LGU's share in national internal tax revenues, and grants and donations from international partners, local donors and other private sources.

Private sites coordinated with local government and financed the vaccination program through corporate fees, hospital funds and/or patient donations. Each private mall site was funded by and reported to the company that contracted them to provide immunization services to their employees and their dependents. Other private sites based at hospitals operated on their own, with staff coming mainly from the existing staff of the hospital in one case, and recruited specifically in the other. These sites were funded by the hospital's own budget or through donations from patients, which were sufficient to cover the costs of the program. Privately operated sites still coordinated with their respective local government units for meetings and trainings.

International and local development partners and the private sector contributed through funding for hiring additional staff, purchasing materials, funding social mobilization activities and donating refreshments and personal protective equipment. International development partners such as USAID, UNICEF, ADB, Japan International Cooperation Agency, and Korea International Cooperation Agency supplemented the financing by donating supplies and equipment, providing technical assistance, and directing funds to local implementing organizations in select priority LGUs. As of early 2023, these donations included over 800 refrigerators, 42 vehicles (mostly refrigerator vans), 5000 vaccine carriers and 23 laptops amongst other items. These local implementers used the funds to augment LGUs' C19 response operations through the hiring of additional personnel, purchasing of goods and supplies, and funding of social mobilization activities. Local NGO partners similarly augmented local C19 response operations. Smaller grants and donations also came from private sector sources, often from national corporations and small businesses in the local areas. These were typically in-kind donations such as food and refreshments for the staff as well as personal protective equipment.

Figure 8. Funding flow for the Philippine COVID response in the public sector



LEGEND

- Funds entry point
- Agencies/Organization
- Money/funds
- Law

OVERVIEW OF THE SAMPLE

The 28 implementation units in our sample covered a total of 216 vaccination sites that were active during the campaign of November-December 2021, and 333 vaccination sites during the routine period of May-July 2022 (Table 3). The sample from which data has been collected consists of a mix of vaccination sites (rural health units, sites managed by private providers, temporary mall sites) as well as city health offices that did not provide immunization services themselves but rather oversaw a multitude of vaccination sites. The rural health units in our sample conducted vaccination at the rural health units themselves and in a few cases at a local hospital, and deployed mobile teams to deliver doses at Barangay Health Stations, other community sites, and house-to-house. Most of the rural health

units in this study (11/15) also managed temporary sites which delivered doses until delivery volumes had heavily reduced, usually by early 2022. By then, 9 rural health units had entirely moved vaccine operations to these temporary sites and did not deliver doses at the rural health unit while those were open. Rural health units each delivered doses at up to 4 temporary sites, and 13 barangay/community sites during the campaign, and up to 26 barangay/community sites during the routine period. City health offices managed sites in dense urban areas in locations such as malls and sports centers, which together delivered a high number of doses per day. During the campaign, they managed as many as 91 sites, and up to 71 per month during routine, mostly pop-up vaccination sites in the community.

Table 3. Overview of sampled vaccination sites

	Type of implementation unit				
	All	City health office	Temporary mall site	Rural health unit	Private provider
Number of implementation units in the sample	28	5	4	15	4
Total number of vaccination sites covered by this sample	496	214*	4	273	5
Campaign	216	133	4	75	4
Routine	333	109	4	216	4
Average number of vaccination sites managed by each implementation unit (range)					
Total vaccination sites during campaign	28 (5-91)		1	5 (1-13)	1
Facilities and hospitals	4 (0-16)		-	0 (0-2)	-
Temporary sites	8 (3-15)		1	1 (0-4)	1
Community/barangay sites	17 (0-82)		-	3 (0-13)	-
Total vaccination sites during routine	22 (1-89)		1	14 (9-27)	1
Facilities and hospitals	1 (0-3)		-	1 (1-2)	1
Temporary sites	5 (1-7)		1	0 (0-4)	1
Community/barangay sites	21 (0-82)		-	13 (0-26)	-
Doses delivered per day					
Campaign – Total per implementing unit	2,922	10,971*	883	843	567
Average per vaccination site	471	455	883	486	567
Routine – Total per implementing unit	291	1,355*	258	44	188
Average per vaccination site	139	226**	258	30	188

* Excludes the 4 temporary mall sites that were managed by one of the city health offices also included in our sample

** Excludes pop-up community vaccination sites (up to 63 open per month) as daily delivery volume was not available

C19 VACCINE DELIVERY PRACTICES AT SAMPLED SITES

All city health offices and temporary malls in our sample hired additional staff for the vaccination program, as well as half of the rural health units during the campaign, which was exceptional compared to many other low-and middle-income settings. City health offices, temporary mall sites, and rural health units all reported needing additional personnel. Between 25% and 65% of staff at the sites that city health offices managed during the campaign were new hires. Eight out of 15 rural health units reported having hired staff specifically for the campaign. The additional hiring that occurred in the Philippines was exceptional compared with other low- and middle- income countries, and was made possible by a ban on migration of health workers during the pandemic. City health offices recruited on average 160 staff during the campaign, temporary mall sites and private providers around 20-21, and rural health units only on average 5 additional staff. Hired staff were both health workers funded by the public and private sectors, and encoders who were usually donor funded.

At city health offices and temporary sites, most hired and redeployed staff were still supporting routine delivery by May-July 2022 (Table 4). Most of the staffing complement working at city health offices during the November-December 2021 campaign were still part of the staffing roster during May-July 2022. By that time, delivery volume had reduced significantly, and city health offices closed up to 80% of their vaccination sites. The sites that remained active delivered fewer doses per day than during the campaign period. Though the number of staff involved at these sites remained relatively constant, and the number of hours spent on C19 vaccination decreased only slightly (from an average of 9 to 7 hours per day). The exception to this was the city health office in Region 7, where the number of active sites was reduced by 42%, while the number of staff was reduced by much more than that (80% when excluding staff at the four temporary mall sites in the sample). There, the average daily working hours of staff remained constant at 8 hours for both the campaign and routine periods.

Rural health units relied more heavily on their existing staff, especially by the time of the routine delivery period in May-July 2022. Rural health units, located in municipalities, were one of the primary delivery modalities of the C19 vaccination program, delivering doses continually throughout the rollout. During the initial phase of the roll-out, several rural health units reported staffing shortages, though this was largely addressed by the first campaign in November-December 2021, by leveraging staff that were redeployed staff from

the DOH and other agencies, including the police and military, as well as some additional hiring. A third of the sites indicated that staff shortages persisted beyond the initial roll-out. Most of the redeployed staff and additional hires were no longer present by May-July 2022. The number of redeployed staff as a share of the total fell from an average of 38% during the campaign to 13% by July 2022. The average number of hours worked per day by staff was 10 during the campaign, the highest of types of sites in the sample. This fell to 4 hours per day during the routine delivery period of May-July 2022, as the delivery volume decreased, and staff were working on delivering other health services.

Most of the temporary mall sites in our sample reported being overstaffed during the period of May-July 2022 and staff spending long periods of the day being idle. Temporary mall sites were staffed mostly by redeployed or recruited staff during both the campaign and routine periods. At two of the sites, staff were mostly from the health staff redeployment program and other agencies such as the police and military, while the other two sites were staffed mostly by newly recruited personnel. Staff were fully dedicated to C19 vaccination and did not deliver other services at the site. This meant that as delivery volume decreased significantly from the campaign to the later routine period, their working day remained the same (8 hours per day), resulting in an issue of slack resources at these sites. To avoid idle time at temporary mall sites, city health offices closed many of them, but this issue was still present at the sites that remained active. This is reflected in the time spent on service delivery, which increased from an average of 19 to 58 minutes per dose.

The time spent per dose delivered on service delivery and other activities related to C19 vaccination increased as delivery volume reduced after the campaign period, though there were large variations across site types (see Table 4). During the campaign period, implementation units spent between 5 and 19 minutes delivering a single dose of C19 vaccine. When including other C19 vaccination program activities, such as program management, social mobilization, and reporting, the range increases, from 12 minutes per dose at city health offices to 107 minutes at rural health units. During routine, time spent on all activities increased per dose, as delivery volumes were lower. The time spent on service delivery per dose delivered at rural health units increased from an average of 16 minutes during the campaign to 106 minutes during routine periods, the highest average across all types of sites.

Including other programmatic activities, time per dose reached 267minutes. This was a surprising finding, as contrary to temporary mall sites, where all staff were fully dedicated to C19 vaccination delivery, rural health units could pivot towards the delivery of other health services when C19 vaccine delivery volumes dropped. A possible explanation for the particularly lengthy time per dose spent at rural health units, both on service delivery and other activities, might be that many sites delivered doses primarily through mobile teams in the community, and therefore staff may still have spent a considerable amount of time on activities dedicated exclusively to C19 vaccination.

Three of the four private providers in the sample hired the majority of the health workers specifically for the program, while the other reported difficulties recruiting. None of the private provider sites reported being involved in the DOH staff redeployment program

and instead hired staff themselves. At the three provider sites where most of their staff were new hires, a small number of regular staff worked on the program in a supervisory role (between 2 and 6) and 17-30 vaccination team members were recruited through hiring calls. The provider which did not hire additional staff reported a shortage of and difficulty in recruiting doctors. During the routine period, private providers had the lowest number of minutes spent delivering each dose both in terms of all activities and service delivery, though this varied across the sites from 16-48 minutes spent on all activities per dose. The provider which participated in the campaign and where staff had moved to a hospital in March 2022 had downsized its staffing dedicated to the program from 23 to 3 by May 2022 though were still slightly less efficient in terms of delivery rate when compared to the campaign period (7 minutes of vaccine administration time per dose during the campaign and 10 minutes to 17 minutes during routine).

Table 4. Service delivery statistics at sampled implementation units

	Type of implementation unit				
	All	City health office	Temporary mall site	Rural health unit	Private provider
Average number of vaccination days per month during routine period					
	17	21	24	15	12
Average staff per implementation unit					
Total number of staff, campaign	111	302	49	71	23
Regular staff, campaign	30	39	7	35	2
Redeployed staff, campaign	42	103	22	31	0
Recruited staff, campaign	39	160	20	5	21
Total number of staff, routine	60	153	42	42	15
Regular staff, routine	22	33	5	27	4
Redeployed staff, routine	18	48	18	12	0
Recruited staff, routine	20	72	19	3	11
Average staff hours worked per day					
Campaign	9	9	8	10	8
Routine	5	7	8	4	6
Total time spent by all staff per dose delivered in minutes (average)					
Campaign (all activities)	72	12	28	107	20
Campaign (service delivery)	14	5	19	16	7
Routine (all activities)	178	42	88	267	32
Routine (service delivery)	75	18	58	106	17

KEY PROGRAMMATIC AND FINANCIAL CHALLENGES

- **While the efforts to augment personnel levels were successful in many cases, there was also a misalignment in staff allocation, with the occurrence of under-staffing at some sites during the initial rollout and over-staffing at others at a later timepoint.** A small number of sites were unable to mobilize sufficient staff for the vaccination program, notably rural health units in poorer municipalities. Despite attempts to address this through requesting staff from the DOH, much of the work to address staffing gaps fell to the local government’s health offices. Existing staff in these offices were required to extend hours, often without additional compensation, and made them prone to burnout. There was a steep decline in the demand for vaccination during the early part of 2022, and though several sites at city health offices were closed in the meantime, staff at some mass vaccination mall-based sites that were managed by a city health office and that were still active reported being idle for hours each day due to a lack of beneficiaries.
- **Reporting of insufficient funding for the program was rare but many sites experienced funding flow issues, including delays in the disbursement or reallocation of funding.** At all levels, staff reported delays in the release of funds and procurement of supplies. At the local level, a lack of capacity to plan and budget was also reported, and the rules for procurement and purchasing did not allow for advanced payments that were needed, which hindered the timely availability of supplies. Local governments were exceptionally allowed to procure additional vaccines locally, but they did not always have the capacity to do so. Sites sometimes ended up using supplies from other programs, or in some cases, this resulted in staff having to purchase their supplies out-of-pocket to support the vaccination program. Some LGUs did not have funds dedicated for the C19 vaccination program, requiring the reallocation of resources from other programs. Authorization to reallocate funding relied on the support and political will of local chief executives, i.e., mayors which could take a considerable amount of time.
- **Lack of cold-chain capacity increased the number of trips needed to collect vaccines, and several sites reported stock outs of vaccine safety supplies.** Several rural sites did not have adequate cold storage capacity, requiring them to store their vaccines at other facilities. This created the need for cold chain-sharing arrangements with neighboring municipalities and increased transport costs to retrieve small batches of vaccines on a regular basis. In addition, limited ancillary supplies such as needles, syringes, and diluents were provided together with the delivery of vaccine doses. These were frequently allocated on a 1:1 basis, wherein one syringe is provided for every allocated vaccine dose, meaning that in the cases of defective supplies, sites had to use resources allocated for other programs. Several sites mentioned depletion of stocks which hampered their ability to conduct uninterrupted vaccination implementation in their areas.
- **Fragmented systems of record keeping and reporting introduced risks and threats to the accuracy and safety of COVID-19 vaccination operations data.** The DOH, in coordination with the Department of Information and Communications Technology (DICT), developed several information management systems and platforms. However, in practice, due to challenges with connectivity, lack of capacity to use the systems (despite training), and the pressure for daily submissions of reports, various other methods were used for tracking data. Some sites compiled records manually in Excel, a considerable number of sites reported using paper-based records, and some reported using informal messaging applications such as Viber or Facebook Messenger. When several areas were hit by Super typhoon Odette in December 2021, much of the paper records in these areas were lost. Sites that did not have a back-up had to go through a lengthy process of retrieving their data from the reports submitted to provincial and regional offices.

THE COST OF DELIVERING C19 VACCINES

Delivery costs per dose were substantially higher during the routine period than the campaign, as daily delivery volumes were 50-94% lower

The economic cost per dose delivered during the campaign in November-December 2021 ranged from \$1.75-\$2.59 and increased to \$3.28-\$12.05 during the routine period in May-July 2022 (Figure 9). Figure 9 shows the financial and economic cost per dose at the various types of vaccination site during both the campaign and routine periods. The economic cost per dose delivered was highest at sites managed by rural health units, at \$2.59 for the campaign and \$12.05 for routine delivery. Labor cost (salaries of both existing and recruited staff) was the main economic cost driver across sites. The labor unit cost was particularly high at rural health units during the routine delivery period, as delivery volumes had significantly reduced.

Incremental financial expenditures accounted for the majority of the cost at most vaccination sites, particularly during the campaign. At units that recruited staff specifically for the program (city health offices, temporary mall sites and private providers), salaries of newly hired staff were the major financial cost driver, while at implementation units that generally did not (rural health units), worker refreshments and vaccine supplies drove the financial cost.

Generally, financial costs made up for a smaller share of the cost by the routine delivery period of May-July 2022 compared with the earlier campaign, as there was greater reliance on existing resources, and fewer incremental expenditures such as for additionally recruited personnel and refreshments.

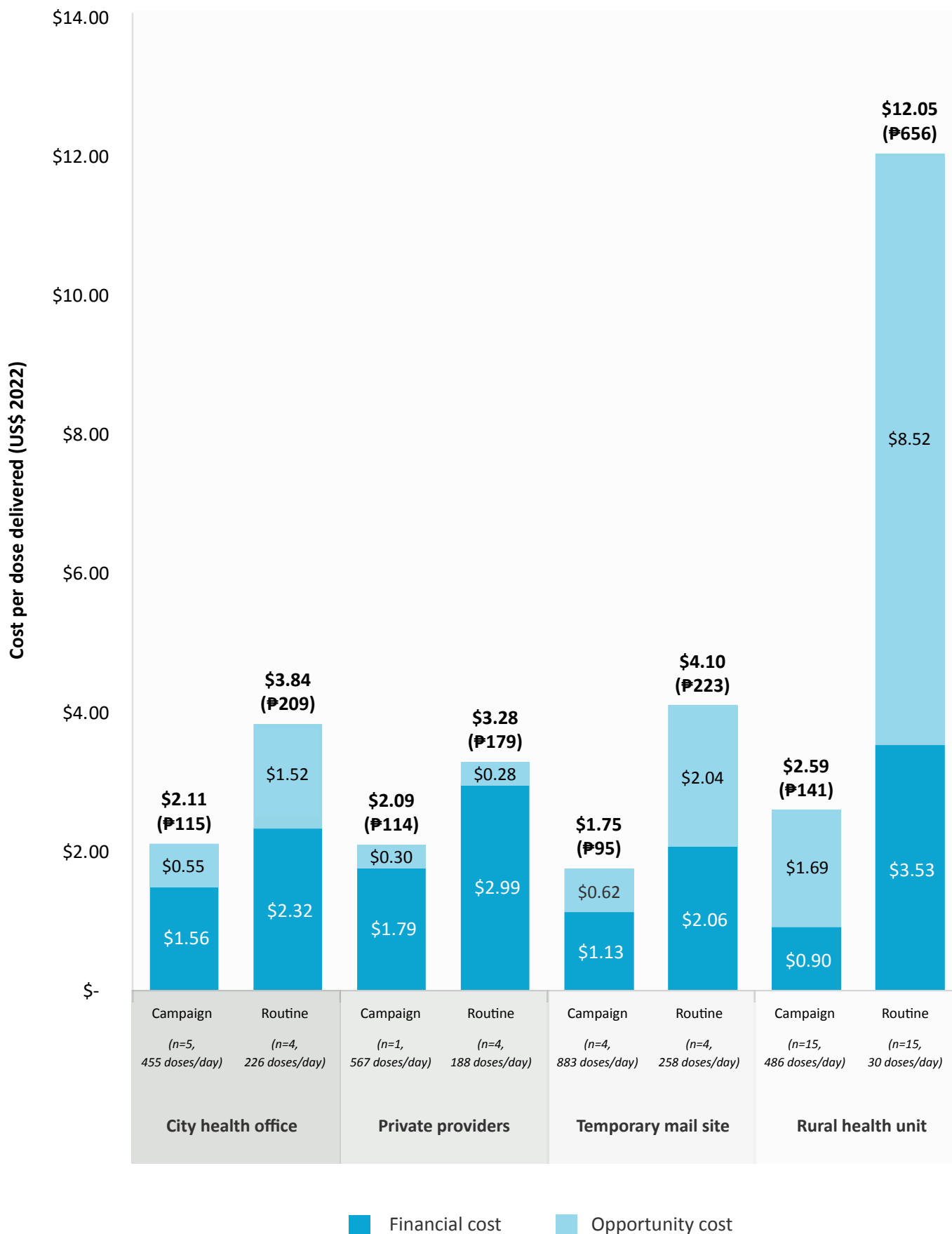
Costs incurred at the regional and national level were generally driven by labor, transport and contracts for vaccine distribution and waste disposal. Regional level costs collected amounted to only a small cost per dose during the two delivery periods, at less than \$0.03 per dose during the campaign and \$0.12 for the routine delivery period between May and July 2022. Costs incurred at the regional level mostly consisted of labor of existing health workers, with no hires specifically for the program reported. At national level, the main cost drivers were contracts for warehouse space to store vaccines, transportation of vaccines, and for the entity providing reverse logistics and waste disposal services. A full breakdown of the unit costs by program activity, resource type and administrative level can be found in [Annex 4](#).

Despite the additional hires, the delivery cost at temporary mall sites and at most city health offices was low compared to other vaccination sites

Thanks to high delivery volumes during the campaign, despite additional hiring, the economic cost per dose delivered by temporary mall sites was generally lower than at other types of vaccination site (Figure 10). All city health offices hired additional personnel to meet staffing needs, and two of the four temporary mall sites were staffed primarily by staff hired specifically for the program, which is reflected in the financial cost per dose at these sites. Despite the additional recruitment, the financial costs per dose delivered at four of the city health offices were the lowest unit costs in the sample at \$1.18 or lower for economic costs and \$0.70 or lower for financial costs. The city health office in Region 7 had a much higher economic unit cost of \$3.36 per

dose delivered during the campaign, likely because the daily delivery volume at each of the vaccination sites it managed was lower (314 compared with 399-1,898 at other city health office sites). This region also reported considerably higher refreshment costs (\$0.69 per dose) during the campaign than other city health offices, where these costs varied from \$0.004 per dose to none, as well as higher printing costs. This drove up the average financial delivery cost for city health offices, though because many of their existing resources could be shared across the large number of sites they managed, the opportunity costs at city health offices were generally low, and their economic unit cost of delivery during the campaign period still fell below that of rural health units.

Figure 9. Economic cost per dose delivered incurred at all levels for campaign and routine delivery by vaccination sites managed by various implementation units



The financial and economic unit costs for the routine delivery period were higher as daily delivery volumes fell by between 50 and 94%. By May-July 2022, city health offices reduced operations through closing sites. Nonetheless, the economic unit cost for routine delivery at city health offices was higher when compared to campaign delivery, between \$2.44 to \$4.88. Among the temporary mall sites, the staffing levels at two of the sites had been reduced due to declining delivery volumes, with the economic labor cost per dose at these sites lower than the site which retained the full staffing complement (\$1.69-\$2.71 compared to \$3.29-\$5.45). Labor made up 94% of economic costs at mall sites compared to 85% at city health offices. Mall sites had similar cost structures, with labor, printing costs, and refreshments as the main cost drivers. As these sites did not conduct outreach, transport costs were low.

REGION KEY

CAR: Cordillera Administrative Region

NCR: National Capital Region

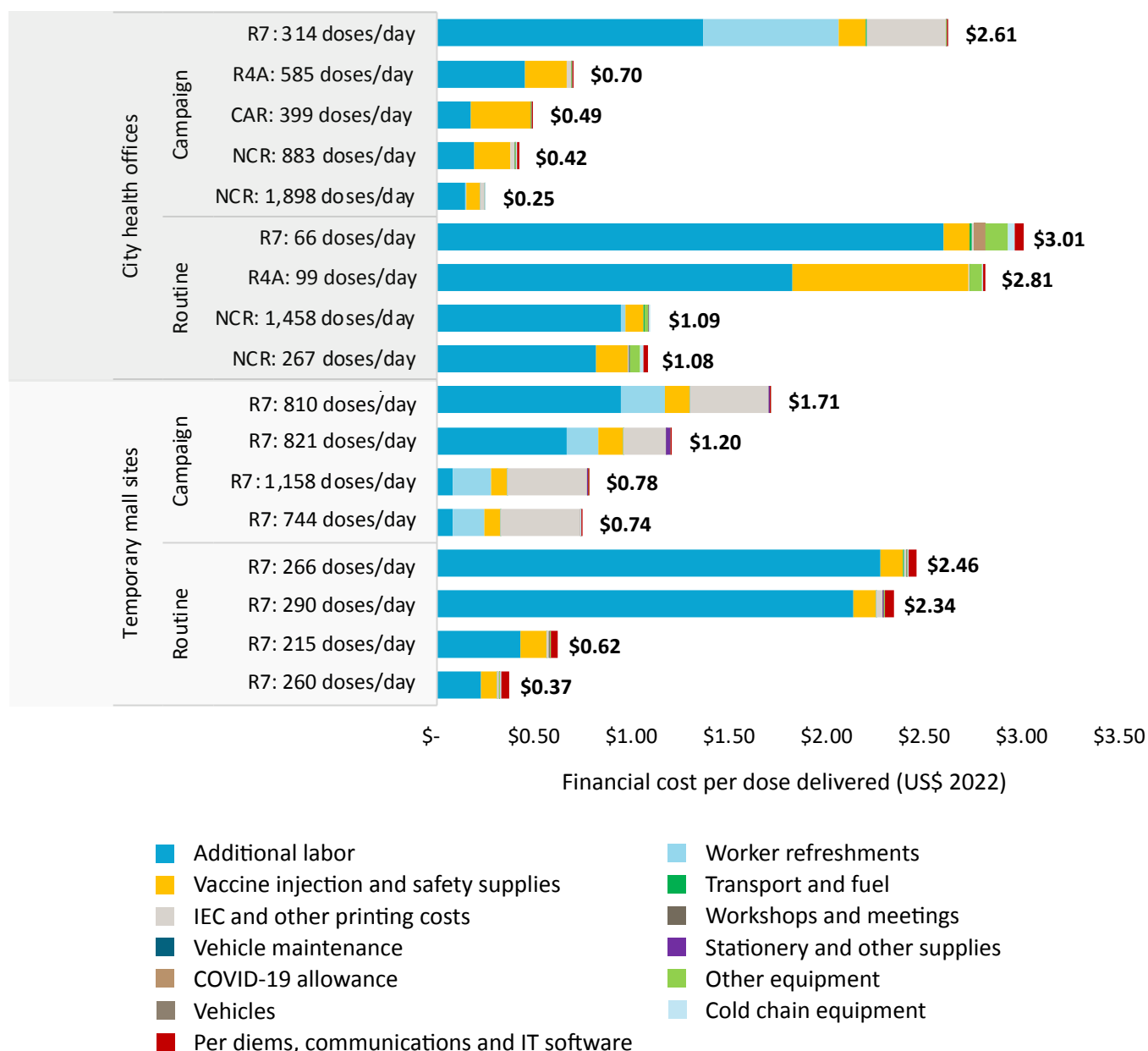
R4A: IV-A Calabarzon

R7: VII Central Visayas

R8: VIII Eastern Visayas

R13: XIII Caraga Administrative Region

Figure 10. Financial cost per dose delivered through city health offices and temporary mall sites during the campaign and routine periods, implementation level costs only

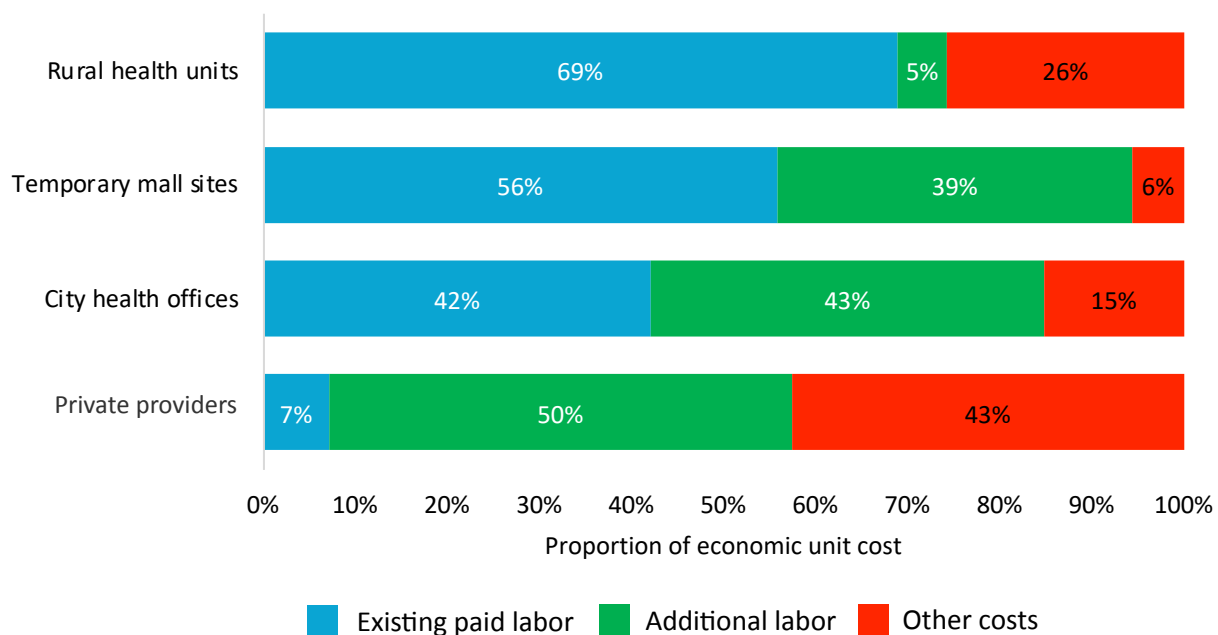


Rural health units were more heavily reliant on existing health workers than other site types

Existing paid labor was the main economic cost driver across most rural health units, making up the majority of the cost during the campaign and as well as during routine delivery (Figure 11). The economic cost per dose delivered at rural health units varied from \$1.25 to \$8.13 during the campaign and \$5.36 to \$35.69 for routine delivery. Additional labor was a minor cost across most of these sites with the exception of a rural health unit in Region 13 where it accounted for 28% of the economic cost during the routine period, representing the cost of three staff members recruited for the program, out of the 15 staff working on the program at the time. The limited recruitment of additional health workers for the vaccination program at rural health units was reflected in the high proportion of the economic cost for existing paid labor when considering the costs incurred

at service delivery and provincial levels (\$1.64 out of the average total cost of \$2.53 for the campaign and \$7.89 out of \$11.44 for routine). Rural health unit staff reported working more overtime during the campaign (19% of hours worked) than staff at other types of sites. Across rural health units, reported staff shortages were associated with a higher rate of overtime during the campaign. No sites reported overtime hours during routine delivery in May-July 2022 as time spent on the program had considerably reduced by then. Unpaid volunteers, usually students, were only used at a few units to supplement the workforce during the campaign and were reported at one city health office (constituting an opportunity cost per dose of \$0.21) and four rural health units (\$0.02-\$0.13).

Figure 11. Average economic unit cost by labor cost and other costs during May-July 2022 routine delivery period



Per diems and allowances were minimal during the C19 vaccination campaign, but meals provided for health workers were a financial cost driver in several rural health units

Financial cost structures varied greatly across rural health units, though the key cost drivers were primarily worker refreshments and vaccine injection and safety supplies (Figure 12). The financial unit cost ranged from \$0.12-\$1.70 during the campaign and \$0.49-\$13.04 during routine delivery from May-June 2022 (Figure 12 and Figure 13). There was not a pattern evident when looking at the unit costs of rural health units located in different regions or provinces with different income classes.

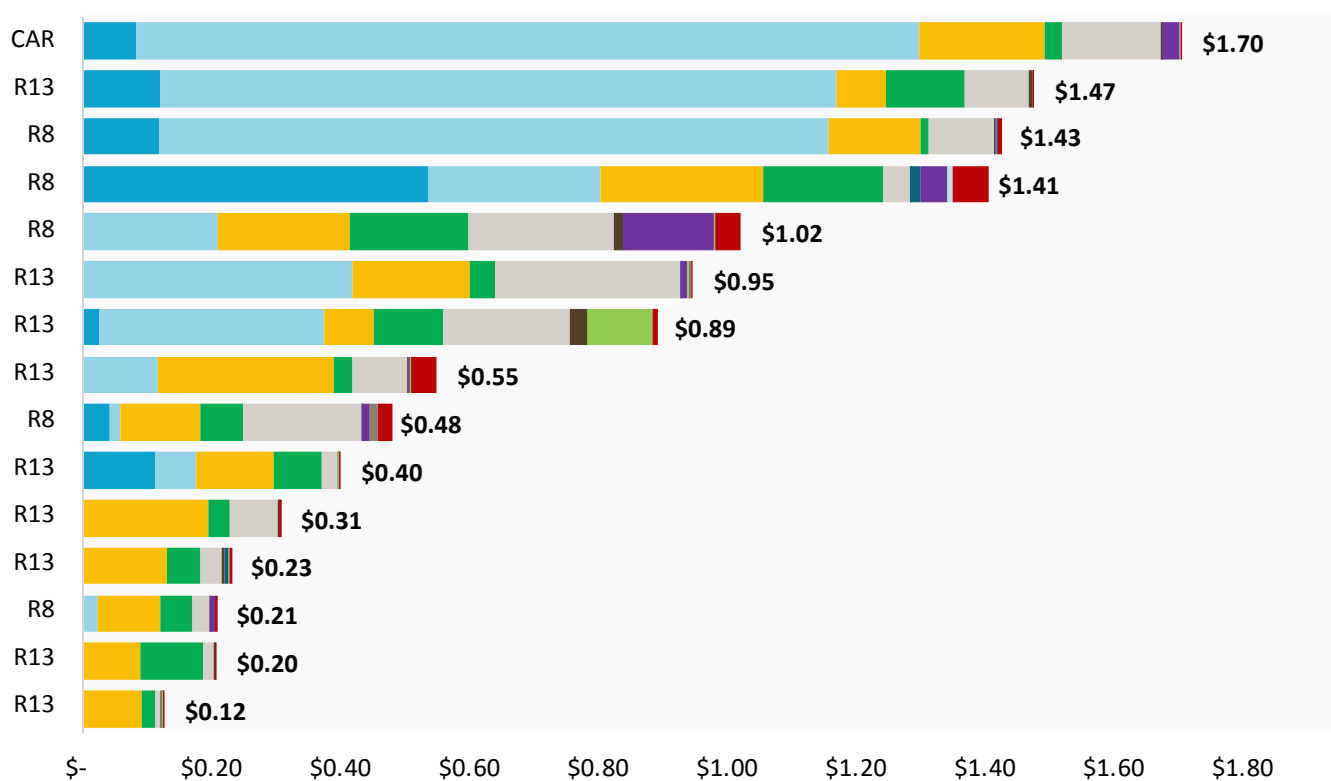
Most rural health units (73%) provided meals and snacks during the campaign, up to two meals per day at a cost of 150PHP (\$2.75) per meal, amounting to a financial unit cost of up to \$1.21 per dose delivered. By May-July 2022, only 4 rural health units were still providing meals for vaccination teams though as volume delivery had dropped, the overall volume weighted average cost per dose for this resource type was higher than during the campaign (\$0.86 compared to \$0.47).

The other top financial cost drivers during the campaign were vaccine injection and safety supplies at 7 sites, and printing costs at 2 sites. At the only rural health unit that hired a significant number of additional health workers, this was the primary financial cost driver.

None of the rural health unit staff received service delivery per diems specifically for the campaign, and these made up less than 3% of the economic cost across sites. Staff at one rural health unit received per diems throughout 2021 and mobile teams at another unit

received per diems for routine delivery. Per diems for mobile teams at this site amounted to an overall cost of \$0.39 per dose delivered during this period and were the third highest financial cost driver at this site. A COVID-19 allowance was received by staff in two rural health units in 2022, accounting for 2-30% of the economic unit cost, and was expected but not yet received by staff in a further two rural health units for the time period of January-June 2022.

Figure 12. Financial cost per dose delivered at rural health units during the campaign by resource type, rural health unit and provincial level costs



Financial cost per dose delivered (US\$ 2022)

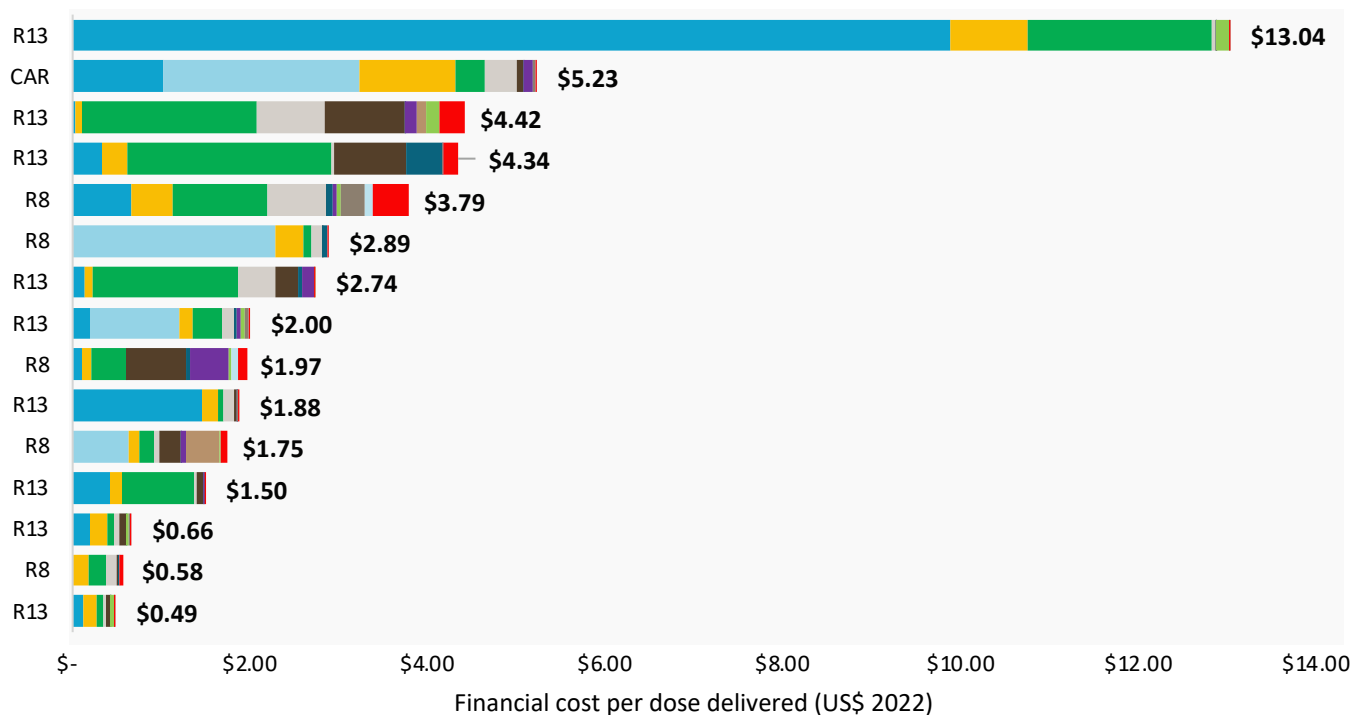
- Additional labor
- Vaccine injection and safety supplies
- IEC and other printing costs
- Vehicle maintenance
- Other equipment
- Worker refreshments
- Transport and fuel
- Workshops and meetings
- Stationery and other supplies
- Vehicles
- Cold chain equipment
- Per diems, communications & IT software

Rural health units conducted outreach regularly using mobile teams, and transport and fuel costs constituted a cost driver at several sites during the routine period

Transport and fuel costs were generally minimal on a per dose level during campaigns (\$0.01-0.19) but higher during routine periods (\$0.07-\$2.30), constituting a cost driver at several sites (Figure 13). Vehicles were most commonly used during the campaign and routine periods for transporting vaccines and mobile teams, while three rural health units paid for beneficiaries to be transported to sites during the campaign. Some rural health units continued to use vehicles daily even after the campaigns, while others reduced the number of trips made. The two sites with the highest transport costs used boats to transport personnel and vaccines. Despite the relatively low transport costs per dose at many rural sites found in this study, only one site reported an insufficient budget for gasoline.

The rural health unit with the highest financial delivery cost per dose was the only one that hired a lot of additional health workers for the C19 vaccination program, while its delivery volume was relatively low. If excluded, the volume weighted average cost for rural health units is only slightly reduced, and the finding that on average rural health units had much higher delivery costs compared with other site types during the routine period still holds.

Figure 13. Financial cost per dose delivered at rural health units during the routine delivery period by resource type, rural health unit and provincial level costs



- Additional labor
- Transport and fuel
- Vehicle maintenance
- Other equipment
- Per diems, communication & IT software
- Worker refreshments
- IEC and other printing costs
- Stationery and other supplies
- Vehicles
- Vaccine injection and safety supplies
- Workshops and meetings
- COVID-19 allowance
- Cold chain equipment

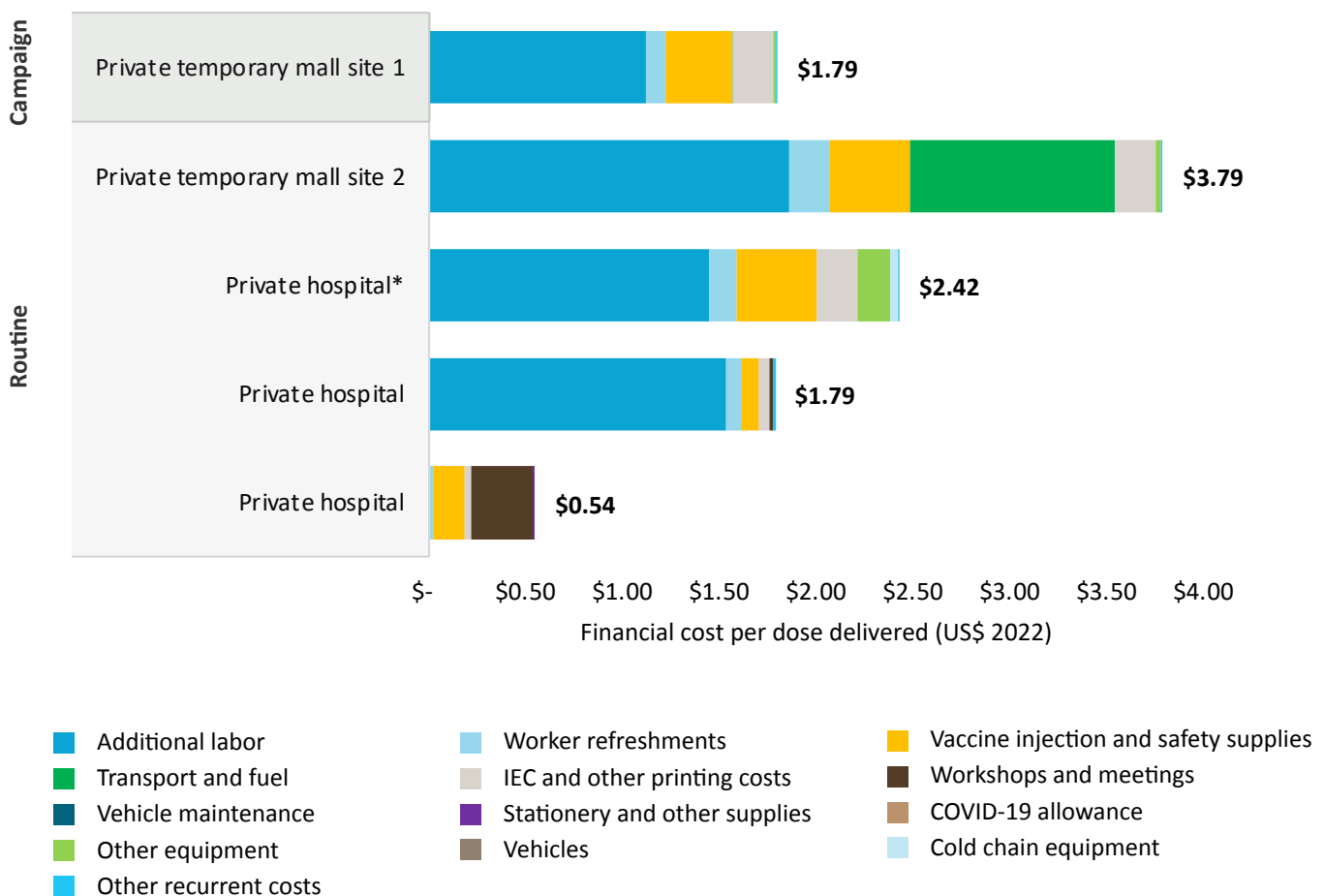
Private sites were all run very differently, though additional hiring was a key cost driver

Only one of the private sites participated in the campaign, having one of the highest financial unit costs and the median economic unit cost compared to other sites in the sample. The majority of staff working at this temporary mall site during the campaign were hired specifically for the C19 vaccination program (91%). Additionally, the site had the highest cost per dose for vaccine injection and safety supplies, driven by glove use. Other costs were comparable to those at public sites. The private provider that managed this mall-based site moved its operations to a hospital later on, and for the routine period of May-July 2022, its hospital-based C19 vaccination activities were costed out.

During the routine period, the financial cost per dose delivered varied from \$0.54-\$3.79 across private sites, with the lowest cost site (both financially and

economically) being the only one that did not hire any additional personnel (Figure 14). Three of the privately managed sites included in the routine analysis showed high unit costs, which were driven by both the high proportion of staff hired and higher wage levels. The providers that hired additional staff had an economic cost of labor per dose of between \$1.58 and \$2.09, while the hospital that did not hire additional staff had a lower cost of \$0.98. None of the private provider sites incurred transport costs for service delivery, though one reported renting an ambulance to wait outside during vaccination in case of AEFIs which resulted in a high transport cost per dose (\$1.06) at that site. The two mall sites purchased numerous equipment items including footbaths and stretchers in case of AEFIs, while one also purchased four laptops.

Figure 14. Financial cost per dose delivered during the campaign and routine delivery at private provider sites, vaccination site costs



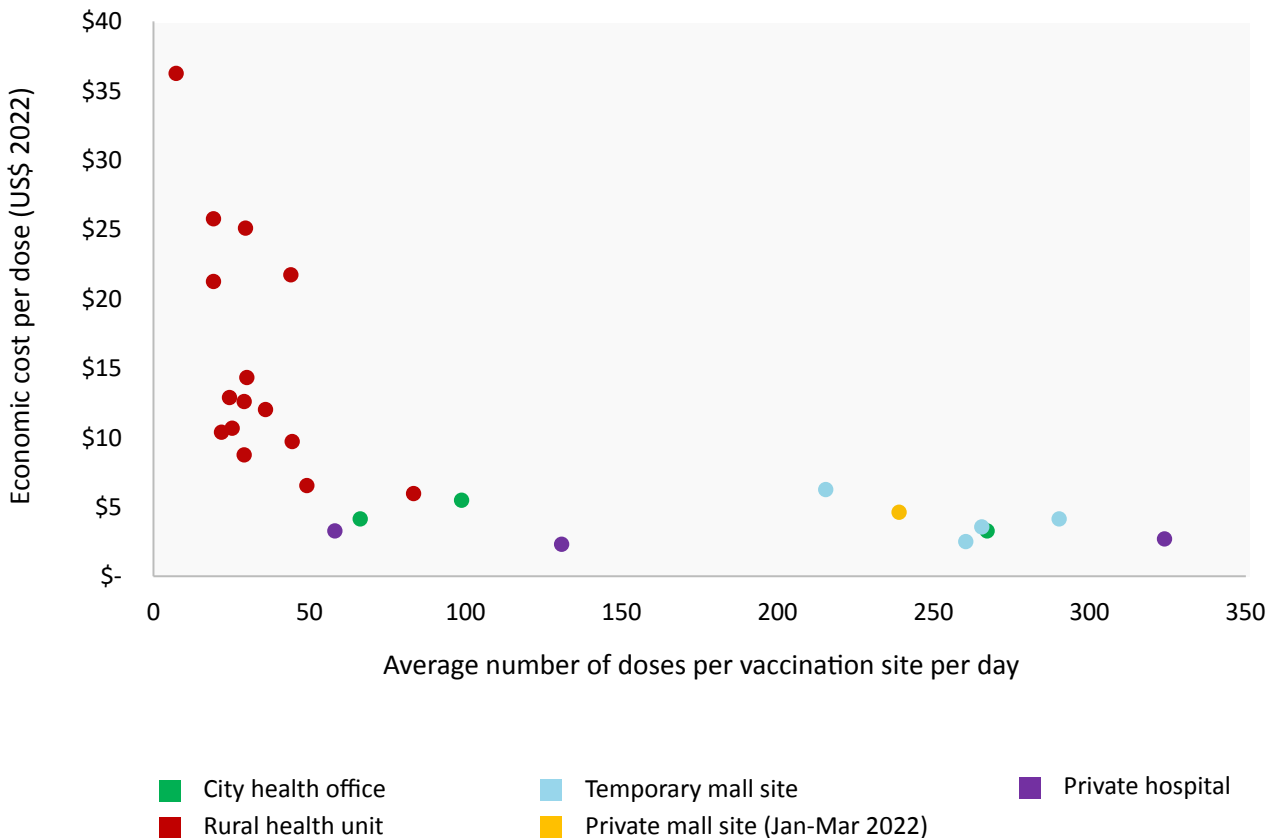
*The private provider that operated the temporary mall site during the campaign moved its operations to a hospital by the routine period of May-July 2022

Higher delivery volume was generally associated with lower delivery cost, though cost varied widely across the units in the sample

There is a weak relationship between the delivery cost per dose and the daily volume delivered by vaccination sites, both for the campaign and routine periods, and for the financial and economic cost. Figure 15 shows this for the routine period, when the economic cost per dose delivered varied from \$2.31 at a private hospital to \$36.30 per dose at a rural health unit during the May-July 2022 routine period, all administrative levels included. We mostly observe variation in delivery costs at low delivery volumes, while as volume increases, delivery costs are more similar. This is likely because economies of scale reach a limit, with the remaining cost drivers are constant on a per dose basis (i.e. vaccine injection and safety supplies).

While the unit cost of doses delivered at sites operated by city health offices did not vary as much as at other vaccination site types, the range in daily delivery volume was wider, largely due to one outlier in delivery volume—a city health office which was only conducting vaccination at one site. Temporary mall sites delivered a large number of C19 vaccines, while private sites varied in size, but generally had lower delivery cost at similar delivery volumes compared with the public sites. Rural health units managed fewer sites and delivered much lower volumes, reflected in higher delivery costs per dose, though among rural health units, there was a lot of variability observed at similar delivery volumes.

Figure 15. Economic cost per dose during routine delivery by average number of doses delivered per day at vaccination sites including costs incurred at all levels*



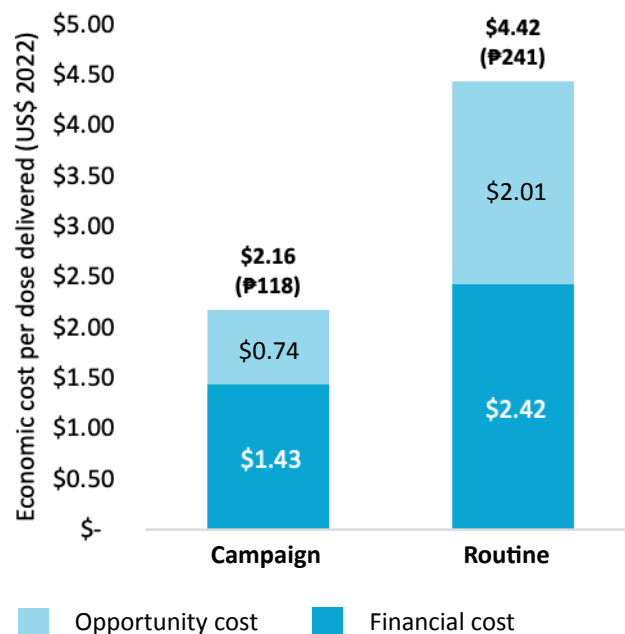
*Outlier not shown in graph – city health office delivering an average of 1458 doses per day at a cost of \$3.05 per dose

Combining the cost estimates from all types of sites, delivery during the campaign costed on average \$2.16 per dose, and an average of \$4.42 during routine

The volume-weighted average economic cost per dose delivered in the Philippines was \$2.16 (₱118) during the campaign in November-December 2021 and \$4.42 (₱241) through routine delivery during May-July 2022 (Figure 16). When combining the costs and doses delivered from both delivery periods, the average financial cost per dose was estimated to be \$2.03, and the economic unit cost was found to be \$3.58. Compared with other countries where C19 vaccine delivery costing studies have conducted, we observed much more variability in delivery strategies and types of sites in the Philippines. Therefore, the overall volume-weighted averages shown in Figure 16 should be interpreted with caution, given the large variability in cost and delivery volumes observed across sites, discussed in earlier sections of this report. When planning for future vaccine roll-outs, the needs of each site in each region would need to be carefully assessed when estimating the cost for resource allocation purposes.

The financial unit costs in this study are much higher than was estimated by the COVAX Readiness and Delivery Working Group, as the Philippines recruited many more health workers for the C19 vaccination program than the COVAX model projected. The model developed by COVAX estimated a financial cost per dose for the Philippines ranging from \$0.70-\$0.99 across several scenarios, which is double the average found in this study (\$2.03)³⁴. The range varied based on the share of doses that would be delivered through outreach vs fixed sites, and assumptions on the extent to which the existing health workforce could be leveraged to implement the C19 vaccination program, and therefore the number of additional health workers that would need to be recruited to fill gaps. Even under the costliest scenario, called “Protecting human resources for essential health services fully”, the model included no additional HRH surge costs for the Philippines.

Figure 16. Economic cost per C19 dose delivered in the Philippines



However, at the time that the COVAX report was published, in January 2022, the implementation units in our sample had already recruited 39 staff on average for the campaign. Due to the unprecedented additional recruitment for the C19 vaccination program, the financial cost found in this study is also higher than other immunization delivery cost evidence on the Philippines. The delivery cost of childhood routine immunization in the Philippines has been estimated at \$1.05 per dose, as well as the cost estimated for delivering Japanese Encephalitis vaccines in the Philippines through campaign (\$1.04, compared with \$1.43 for the C19 vaccination campaign) and routine (\$1.01, compared with \$2.42 in our C19 vaccination study)^{35,36}.

KEY TAKEAWAYS

The C19 vaccination program in the Philippines was successful in rapidly reaching high coverage levels, and one distinctive success factor was its ability to rapidly mass hire additional health workers.

The program was a success mainly thanks to strong political will and commitment at all levels of government and multi-sectoral collaboration to plan and mobilize resources. Few sites reported funding shortages, though many highlighted challenges in funding disbursements and reallocation. The country was able to rapidly mobilize additional health workers through mass hiring, a health worker redeployment program engaging staff from sectors such as the police and military, and volunteers³⁷.

Financial delivery costs were high compared to other low- and middle-income countries, particularly due to mass hiring and refreshments provided to health workers.

While other countries often reported funding shortages, health worker shortages, and a lack of compensation for the additional workload associated with the C19 vaccination program, the Philippines' program was well-resourced, resulting in higher financial delivery cost levels. Contrary to other low- and middle-income countries, the Philippines did not engage a large number of unpaid volunteers. Mass hiring was a significant cost driver, particularly at city health offices, temporary mall sites, and privately managed sites, while in countries such as Côte d'Ivoire and Vietnam, there was almost no additional recruitment for the C19 vaccination program^{38,39}. Refreshments offered to health workers were a large cost driver as well, particularly at some rural health units.

The C19 vaccination program leveraged many different delivery strategies, and our study found high variation in the cost profiles and delivery rates across different types of implementation units, as well as between similar types of sites.

The implementation units in our sample varied a lot in terms of the size and manner of operating, with some managing a large number of temporary vaccination

sites, while some solely managed fixed-based delivery at the unit itself. Cost profiles varied greatly, though some cost drivers stood out. Generally, higher delivery volume was associated with lower delivery costs, and financial cost differences between sites were primarily explained by the extent to which they had hired a lot of additional staff for the C19 vaccination program. Other financial cost drivers included refreshments provided to health workers, and vaccination supplies. The economic costs were largely driven by the value of existing health workers' time, especially at rural health units where additional hiring was limited.

Temporary vaccination sites run by city health offices, including temporary mall sites, were very effective during the early, large-volume National Vaccination Days, and although less so once delivery volumes dropped and sites reported idle time, the cost per dose delivered remained far below that of smaller rural health units

The country was able to put in place many dedicated mass vaccination sites, managed by both the public and private sector, to quickly ramp up delivery volumes and reach high coverage when vaccination opened up to the general population. Although very effective during the first large campaign held in November-December 2021, these sites were less efficient by the time of the low-volume routine period of May-July 2022. As staff at the sites were fully dedicated to C19 vaccination, temporary mall sites reported idle time. Nevertheless, daily delivery volumes at the mall sites remained high enough to keep the cost per dose similar to that incurred by city health offices and private provider sites, while the cost at many rural health units for C19 vaccine delivery significantly increased during the low-volume routine period. This is likely explained by C19-specific outreach activities that continued at rural health units throughout this period. Identifying synergies and possibilities for integration of C19 vaccine delivery with other services may have reduced the delivery cost during the low-volume periods, as shown in the Province of Iloilo in the Western Visayas. There, from October 2022 to April 2023, patient registration, screening and provision of family planning services were successfully implemented alongside C19 vaccination at 36 primary care facilities⁴⁰.

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ANNEX 1. PROGRAM ACTIVITIES, RESOURCE TYPES : ESTIMATION METHODS

Table 5. Program activities and definitions

Activity	Definition
Program management	Planning, budgeting, managing the COVID-19 vaccination campaign.
Supervision	Supervising subordinate or peer health or community workers.
Vaccine distribution, and storage	Collecting vaccines at the airport or other distribution points, storing vaccines in national or provincial cold stores, distributing vaccines down to the facility and to delivery sites, storing vaccines at facilities and delivery sites.
Cold chain maintenance	Maintaining and repairing the cold chain for the purpose of the COVID-19 vaccine rollout.
Training	Attending and/or providing COVID-19 vaccination-related training, including topics such as administering vaccines, storage and logistics, record keeping, pharmacovigilance, social mobilization, planning, supervision, etc.
Social mobilization and advocacy	Mobilizing and sensitizing the community and households, conducting events, and advocating for COVID-19 vaccination.
Vaccine administration	Administering the vaccine to people within a fixed facility, a temporary site, or via mobile teams, and supporting vaccine administration (including screening, counselling and taking vital signs).
Waste management	Time and resources spent on disposing sharps and infectious non-sharp wastes.
AEFI monitoring and management	Monitoring beneficiaries post-vaccination and following up on post-vaccination events following COVID-19 vaccine administration.
Record-keeping, HMIS, monitoring and evaluation	Data entry and analysis, reporting, monitoring.

Table 6. Resource types and definitions

Resource types	Description	Financial vs. opportunity cost	Start-up vs. recurrent
Recurrent costs			
Additional labor	Paid salary for new staff that were hired specifically for C19 vaccination program. These costs were derived from the total working time of each staff member and their annual salary.	Financial cost	Operating, unless related to start-up activities
Existing paid labor	Paid salary for existing health staff and government officers. These costs were derived from the total working time of each staff and their annual salary in 2021.	Opportunity cost	Operating, unless related to start-up activities
Volunteer labor	Value of volunteer labor (medical students, local youth members, etc.) for those staff who are not receiving salary from local government or the DOH.	Opportunity cost	Operating
COVID-19 allowance	Other allowances provided to staff hired specifically for the C19 vaccination program.	Financial cost	Operating
	Other allowances provided to regular staff working on the C19 vaccination program.	Opportunity cost	Operating
Worker refreshments	Food, beverages, and meals provided to regular and volunteer staff.	Financial cost	Operating
Per diem and travel allowances	Per diem and travel allowances paid to regular staff as well as volunteers for participation in activities related to the C19 vaccination program.	Financial cost	Operating, unless related to start-up activities
Vaccine injections and safety supplies	Cost for immunization supplies and personal protective equipment.	Financial cost	Operating
Stationery and other supplies	Cost for stationery and other related supplies used for the program.	Financial cost	Operating
Transport and fuel	Fuel costs specifically for travelling required for one-off events.	Financial cost	Start-up
	Fuel costs specifically for C19 vaccination program activities that required travelling (supervision, trainings, vaccine distribution, etc.)	Financial cost	Operating
Vehicle maintenance	Routine and non-routine vehicle maintenance done in 2021 and 2022 for vehicles used for the C19 vaccination program.	Financial cost	Operating
Cold chain equipment repairs and energy costs	Cost for cold chain equipment maintenance specifically done for C19 vaccination program in 2021 and 2022.	Financial cost	Start-up
	Electricity bill for the cold chain.	Opportunity cost	Operating
IEC and other printing costs	Cost incurred on printing and production of IEC materials for one-off events in 2021 or 2022.	Financial cost	Start-up
	Cost incurred on printing and production of IEC materials for recurring events and other C19 related activities in 2021 or 2022.	Financial cost	Operating

Resource types	Description	Financial vs. opportunity cost	Start-up vs. recurrent
Recurrent costs			
Workshops and meetings	Cost incurred specifically for one-off C19 vaccination workshops and meetings in 2021 or 2022.	Financial cost	Start-up
	Cost incurred specifically for recurring C19 vaccination workshops and meetings in 2021 or 2022.	Opportunity cost	Start-up
Communication	Costs incurred for internet and cellular data used by paid or volunteer staff, promotional and advertising costs.	Financial cost	Operating
Other recurrent cost	Other financial outlays that are not included in the categories above, including third party labor for waste collection and development of IT software.	Financial cost	Operating, unless related to start-up activities
Capital costs			
Cold chain equipment	Depreciation costs of existing cold chain equipment used for C19 vaccine storage at study sites.	Opportunity cost	Operating
	New cold chain equipment acquired in 2021 or 2022 and used for C19 vaccination program.	Financial cost	Start-up
Vehicles	Depreciation costs of existing vehicle(s) used for C19 vaccination activities (trainings, supervision, vaccine collection/distribution) at study sites.	Opportunity cost	Operating
	New vehicle(s) acquired in 2021 or 2022 and used for C19 vaccination program.	Financial cost	Start-up
Other equipment	Depreciation costs of existing equipment items used for the C19 vaccination program.	Opportunity cost	Operating
	New equipment items acquired and used for the C19 vaccination program.	Financial cost	Start-up

ANNEX 2. IMPUTATION METHODS AND COST ALLOCATION RULES

Missing data imputation methods

If after following up with the respondent some data still could not be obtained, assumptions were made to impute the data from the same site or other sites, as detailed in Table 7 below:

Table 7. Imputation methods used for missing data

Missing data	Methods
Electricity costs for cold chain operation	Where only total facility electricity costs are available, a proportion of said cost is used based on an estimate from interviewees
Fuel costs	An estimated fuel cost is calculated using an estimated travel distance, published fuel consumption of the specific brand and model, average fuel cost for the time period relevant, and where necessary a modifier for traffic congestion
Acquisition cost of vehicle	If no costs are provided, the published purchase cost of the vehicle of the same brand and model is used. Where vehicle brand and model is unavailable, a model and brand based on a similar type is assumed
Staff hours	Where staff hours are missing, an estimate of the staff hours is used based on similar cadres within the same province
Salary for health staff	Imputed based on the average salary for staff of the same cadre at the same study site
Volunteer staff equivalent salary	This cost was calculated based on the estimated government salary expected for when the student graduates e.g. medical students are given a rate equivalent to an entry level medical officer
Vaccine cards	An average cost per card is computed from other sites and used

Allocation of shared resources

Resources that were shared between the C19 vaccination program and the health system were allocated based on indicators that best reflected how the resource was used (see Table 8).

Allocation rules were also used to allocate costs to the study period. Start-up costs (such as initial one-off meetings and trainings) were annualized with the assumption that they would have a useful life of a year, and subsequently apportioned to the three days for the campaign, and three-months for the routine vaccination. Newly purchased vehicles or cold chain equipment were annualized using useful life assumptions in [Annex 3](#).

Multiple implementation sites used resources from a single site one administrative level above it. That single site had data aggregated from the component sites. In this case, a proportion was developed between the doses administered by the component site and the aggregate doses administered. These proportions were used to calculate an estimate of the varied costs incurred by each site.

Table 8. Methods for allocating shared resources

Resources	Allocation methods
Paid labor	Time allocation based on self-reporting by interviewed staff
Vehicle capital costs	Vehicle usage was allocated based on responses from staff on usage
Fuel	The proportion was taken from the % working time related to C19 vaccination program at the study site.
Vaccine distribution and waste management contracts	These national level contracts were allocated to the delivery periods depending on the number of doses delivered during these times, proportional to the entire time period that the contracts covered

ANNEX 3. USEFUL LIFE ASSUMPTIONS

Table 9. Useful life values

Resource	Useful life value	Source
Ambulance	10	Philippine's Audit Commission 2003
Auto Rickshaw	4	Immunization Costing Action Network
BP apparatus	6	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Buzzer Timer for AEFI monitoring	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Cabling and Peripherals	15	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Censor thermometer and sanitizers	10	Immunization Costing Action Network
Cloth	10	United Policyholders. Depreciation Guide. 2004
Cold box	5	Immunization Costing Action Network
Cover van / Truck	10	Philippine's Audit Commission 2003
Defibrillator with cardiac monitor	5	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Desktop computers	5	Philippine's Audit Commission 2003
Dial thermometer	10	Immunization Costing Action Network
Disinfecting Foot Bath	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Dividers	15	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
E Cart	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Foot Pedal	15	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Freezing van / Truck	10	Philippine's Audit Commission 2003
Habal habal (motorcycle)	10	Philippine's Audit Commission 2003
Hard drive	5	Philippine's Audit Commission 2003
Industrial fan	5	Immunization Costing Action Network
Laptops	5	Philippine's Audit Commission 2003
Laryngoscope	3	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Microphone	5	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Nebulizer Machines	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Non-contact thermometer	10	Immunization Costing Action Network
O2 tank and regulator	8	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Office Chairs	5	Philippine's Audit Commission 2003
Office Tables	10	Philippine's Audit Commission 2003
Oximeter	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.

Resource	Useful life value	Source
Oxygen Regulators	7	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Patient Stretcher	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Portable Sound System	6	Immunization Costing Action Network
Printer	3	Immunization Costing Action Network
Projector	8	Immunization Costing Action Network
Pulse Oximeters	7	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
PVC pipes and sink	20	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Stethoscopes	5	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Suction Machine	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
SUV/4x4	6	Immunization Costing Action Network
Tablets	2	Immunization Costing Action Network
Trash Bins	15	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Television	8	Immunization Costing Action Network
Waiting Chairs	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Water dispenser	10	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Wheelchairs	5	American Hospital Association. Estimated Useful Lives of Depreciable Hospital Assets. 2008.
Wooden beds	10	Immunization Costing Action Network

Table 10. Cost findings by activity and resource type during the campaign at implementation unit level

		Overall			Implementation unit type											
					City health office			Temporary mall site			Rural health unit			Private provider		
<i>*Note: True zero values in grey</i>		Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco
Program activities	Program management	0.01	0.04	0.05	0.01	0.02	0.03	0.00	0.03	0.03	0.04	0.09	0.13	0.06	0.18	0.25
	Vaccine collection, distribution and storage	0.01	0.02	0.03	0.01	0.02	0.02	0.00	0.01	0.01	0.01	0.07	0.08	0.03	0.00	0.03
	Cold chain maintenance	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.02	0.02	0.00	0.00	0.00
	Training	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
	Social mobilization and advocacy	0.01	0.05	0.06	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.33	0.36	0.02	0.00	0.02
	Supervision	0.02	0.04	0.06	0.02	0.03	0.06	0.00	0.04	0.04	0.00	0.08	0.08	0.00	0.07	0.07
	Vaccine administration	0.76	0.26	1.10	0.81	0.27	1.07	0.57	0.50	1.08	0.62	0.60	1.23	1.04	0.00	1.04
	Record-keeping, monitoring and evaluation	0.25	0.08	0.34	0.27	0.06	0.33	0.45	0.02	0.47	0.09	0.24	0.33	0.37	0.02	0.39
	Waste management	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.02	0.00	0.02
	AEFI monitoring & management	0.31	0.13	0.44	0.39	0.14	0.53	0.05	0.00	0.05	0.02	0.18	0.20	0.25	0.02	0.27
Resource types	Existing paid labor	0.00	0.56	0.63	0.00	0.43	0.43	0.00	0.61	0.61	0.00	1.61	1.61	0.00	0.27	0.27
	Additional labor	0.65	0.00	0.65	0.79	0.00	0.79	0.41	0.00	0.41	0.05	0.00	0.05	1.12	0.00	1.12
	Volunteer labor	0.00	0.08	0.08	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
	Per diems & travel allowances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COVID-19 allowance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker refreshments	0.35	0.00	0.35	0.34	0.00	0.34	0.19	0.00	0.19	0.47	0.00	0.47	0.11	0.00	0.11
	Vaccine injection & safety supplies	0.16	0.00	0.16	0.16	0.00	0.16	0.10	0.00	0.10	0.16	0.00	0.16	0.34	0.00	0.34
	Stationery & other supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
	Transport & fuel	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00
	Vehicle maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cold chain repairs & energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
	IEC & printing	0.20	0.00	0.20	0.21	0.00	0.21	0.36	0.00	0.36	0.10	0.00	0.10	0.21	0.00	0.21
	Workshops & meetings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Other recurrent costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cold chain equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Other equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
	Vehicles	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.02
	Incinerators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	OVERALL	1.38	0.72	2.10	1.51	0.54	2.05	1.08	0.62	1.70	0.83	1.65	2.48	1.79	0.30	2.09

Table 11. Cost findings by activity and resource type during routine delivery at implementation unit level

		Overall			Implementation unit type											
					City health office			Temporary mall site			Rural health unit			Private provider		
	<i>*Note: True zero values in grey</i>	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco
Program activities	Program management	0.05	0.17	0.22	0.06	0.15	0.21	0.00	0.06	0.07	0.14	0.70	0.84	0.02	0.05	0.07
	Vaccine collection, distribution and storage	0.03	0.12	0.16	0.03	0.09	0.12	0.00	0.02	0.02	0.17	0.70	0.86	0.01	0.16	0.17
	Cold chain maintenance	0.05	0.02	0.07	0.06	0.02	0.07	0.04	0.02	0.05	0.01	0.14	0.15	0.04	0.01	0.05
	Training	0.01	0.01	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.05	0.11	0.17	0.03	0.01	0.03
	Social mobilization and advocacy	0.03	0.07	0.10	0.02	0.02	0.04	0.00	0.09	0.09	0.22	0.61	0.83	0.04	0.00	0.04
	Supervision	0.08	0.16	0.24	0.09	0.13	0.22	0.05	0.07	0.12	0.01	0.88	0.89	0.00	0.03	0.03
	Vaccine administration	1.10	0.89	2.00	1.04	0.59	1.63	0.97	1.61	2.58	1.61	3.18	4.78	1.75	0.01	1.76
	Record-keeping, monitoring and evaluation	0.22	0.28	0.50	0.16	0.33	0.49	0.30	0.07	0.37	0.50	0.46	0.96	0.43	0.01	0.44
	Waste management	0.02	0.02	0.03	0.01	0.02	0.03	0.01	0.00	0.01	0.08	0.10	0.18	0.01	0.01	0.02
	AEFI monitoring & management	0.30	0.17	0.39	0.33	0.07	0.40	0.14	0.01	0.14	0.03	0.52	0.56	0.67	0.00	0.67
Resource types	Existing paid labor	0.00	1.76	1.76	0.00	1.36	1.36	0.00	1.93	1.93	0.00	6.89	6.89	0.00	0.23	0.23
	Additional labor	1.33	0.00	1.33	1.38	0.00	1.38	1.33	0.00	1.33	0.52	0.00	0.52	1.65	0.00	1.65
	Volunteer labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Per diems & travel allowances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00
	COVID-19 allowance	0.01	0.01	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.12	0.13	0.00	0.00	0.00
	Worker refreshments	0.07	0.00	0.07	0.01	0.00	0.01	0.00	0.00	0.00	0.86	0.00	0.86	0.16	0.00	0.16
	Vaccine injection & safety supplies	0.29	0.00	0.29	0.31	0.00	0.31	0.11	0.00	0.11	0.46	0.00	0.46	0.33	0.00	0.33
	Stationery & other supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.06	0.00	0.00	0.00
	Transport & fuel	0.07	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.46	0.62	0.00	0.62
	Vehicle maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00
	Cold chain repairs & energy	0.00	0.04	0.04	0.00	0.04	0.04	0.00	0.01	0.01	0.01	0.13	0.14	0.00	0.02	0.02
	IEC & printing	0.03	0.00	0.03	0.00	0.00	0.00	0.02	0.00	0.02	0.21	0.00	0.21	0.17	0.00	0.17
	Workshops & meetings	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.14	0.02	0.00	0.02
	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Other recurrent costs	0.02	0.00	0.02	0.02	0.00	0.02	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
	Cold chain equipment	0.01	0.02	0.04	0.02	0.02	0.03	0.00	0.01	0.01	0.00	0.11	0.11	0.01	0.02	0.03
	Other equipment	0.04	0.01	0.05	0.05	0.01	0.06	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.00	0.04
Vehicles	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.13	0.14	0.00	0.00	0.00	
Incinerators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
OVERALL		1.89	1.84	3.73	1.80	1.43	3.23	1.52	1.95	3.47	2.82	7.28	10.21	2.99	0.28	3.28

Table 12. Cost findings by activity and resource type during the campaign at provincial level

				By province											
				Overall			Region 13 (Caraga) Province 1			Region 13 (Caraga) Province 2			Region 8 (Eastern Visayas) Province 1		
<i>*Note: True zero values in grey</i>				Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco
Program activities	Program management	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	
	Vaccine collection, distribution and storage	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02		
	Cold chain maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Training	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Social mobilization and advocacy	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Supervision	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.02	0.02		
	Vaccine administration	0.01	0.00	0.01	0.02	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	
	Record-keeping, monitoring and evaluation	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	
	Waste management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	AEFI monitoring & management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Resource types	Existing paid labor	0.00	0.03	0.03	0.00	0.03	0.03	0.00	0.02	0.02	0.00	0.04	0.04		
	Additional labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Volunteer labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Per diems & travel allowances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	COVID-19 allowance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Worker refreshments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Vaccine injection & safety supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Stationery & other supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Transport & fuel	0.02	0.00	0.02	0.03	0.00	0.03	0.02	0.00	0.02	0.01	0.00	0.01	0.01	
	Vehicle maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Cold chain repairs & energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01		
	IEC & printing	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Workshops & meetings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Other recurrent costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Cold chain equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Other equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Incinerators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
OVERALL	0.02	0.03	0.05	0.03	0.03	0.06	0.02	0.02	0.04	0.01	0.05	0.06			

Table 13. Cost findings by activity and resource type during routine delivery at provincial level

		Overall			By province								
					Region 13 (Caraga) Province 1			Region 13 (Caraga) Province 2			Region 8 (Eastern Visayas) Province 1		
<i>*Note: True zero values in grey</i>		Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco
Program activities	Program management	0.00	0.18	0.18	0.00	0.19	0.20	0.01	0.23	0.24	0.00	0.08	0.08
	Vaccine collection, distribution and storage	0.02	0.15	0.17	0.03	0.09	0.12	0.02	0.15	0.16	0.01	0.25	0.25
	Cold chain maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
	Training	0.00	0.03	0.04	0.00	0.02	0.02	0.00	0.07	0.07	0.00	0.01	0.01
	Social mobilization and advocacy	0.01	0.23	0.24	0.01	0.24	0.25	0.02	0.26	0.28	0.00	0.19	0.19
	Supervision	0.02	0.20	0.22	0.02	0.14	0.16	0.03	0.32	0.35	0.01	0.14	0.16
	Vaccine administration	0.02	0.00	0.02	0.03	0.00	0.03	0.01	0.00	0.02	0.00	0.00	0.00
	Record-keeping, monitoring and evaluation	0.10	0.24	0.33	0.20	0.23	0.43	0.02	0.31	0.33	0.00	0.15	0.15
	Waste management	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.00	0.03
	AEFI monitoring & management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Resource types	Existing paid labor	0.00	0.99	0.99	0.00	0.92	0.92	0.00	1.29	1.29	0.00	0.76	0.76
	Additional labor	0.09	0.00	0.09	0.20	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00
	Volunteer labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Per diems & travel allowances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
	COVID-19 allowance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker refreshments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vaccine injection & safety supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Stationery & other supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
	Transport & fuel	0.06	0.00	0.06	0.06	0.00	0.06	0.07	0.00	0.07	0.02	0.00	0.02
	Vehicle maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
	Cold chain repairs & energy	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.04	0.04
	IEC & printing	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
	Workshops & meetings	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
	Communication	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.02	0.01	0.00	0.01
	Other recurrent costs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cold chain equipment	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.02
	Other equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
	Vehicles	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.02	0.02	0.00	0.00	0.00
Incinerators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
OVERALL		0.18	1.03	1.21	0.29	0.93	1.22	0.11	1.37	1.48	0.05	0.82	0.87

Table 14. Cost findings by activity and resource type during the campaign at regional and national level

		National						Regional									By region								
		National			Regional			Region 4A (Calabarzon)			Region 7 (Central Visayas)			Region 8 (Eastern Visayas)											
		Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco									
<i>*Note: True zero values in grey</i>																									
Program activities	Program management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Vaccine collection, distribution and storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Cold chain maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Training	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Social mobilization and advocacy	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01									
	Supervision	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Vaccine administration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Record-keeping, monitoring and evaluation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Waste management	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	AEFI monitoring & management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
Resource types	Existing paid labor	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02									
	Additional labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Volunteer labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Per diems & travel allowances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	COVID-19 allowance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Worker refreshments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Vaccine injection & safety supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Stationery & other supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Transport & fuel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Vehicle maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Cold chain repairs & energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	IEC & printing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Workshops & meetings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Other recurrent costs	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Cold chain equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
	Other equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
Incinerators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
OVERALL	0.04	0.00	0.04	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.03	0.03										

Table 15. Cost findings by activity and resource type during routine delivery at regional and national level

		National						Regional			By region					
								Region 4A (Calabarzon)			Region 7 (Central Visayas)			Region 8 (Eastern Visayas)		
		Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco	Fin	Opp	Eco
<i>*Note: True zero values in grey</i>																
Program activities	Program management	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.02	0.00	0.01	0.01
	Vaccine collection, distribution and storage	0.46	0.00	0.46	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.02	0.00	0.02	0.02
	Cold chain maintenance	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	Training	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Social mobilization and advocacy	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01
	Supervision	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.03	0.03	0.00	0.01	0.02	0.00	0.02	0.02
	Vaccine administration	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.00	0.00
	Record-keeping, monitoring and evaluation	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.02	0.00	0.01	0.01	0.00	0.00	0.00
	Waste management	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
	AEFI monitoring & management	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00
Resource types	Existing paid labor	0.00	0.01	0.01	0.00	0.07	0.07	0.00	0.07	0.07	0.00	0.05	0.05	0.00	0.04	0.04
	Additional labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Volunteer labor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Per diems & travel allowances	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COVID-19 allowance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker refreshments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vaccine injection & safety supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Stationery & other supplies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transport & fuel	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.04	0.00	0.04	0.01	0.00	0.01
	Vehicle maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cold chain repairs & energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	IEC & printing	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Workshops & meetings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
	Communication	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Other recurrent costs	0.46	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cold chain equipment	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.02
	Other equipment	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
	Vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Incinerators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
OVERALL	0.50	0.02	0.51	0.02	0.07	0.10	0.02	0.08	0.09	0.05	0.07	0.12	0.02	0.07	0.09	

THINK
WELL