KEMENTERIAN KESEHATAN REPUBLIK INDONESIA

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Impact of COVID-19 on Routine Immunization in Indonesia

Quarterly assessment using Interactive Voice Recording (IVR) technology to assess the continuity of immunization services across all 34 provinces during the COVID-19 pandemic

Ministry of Health and UNICEF Indonesia

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Executive Summary

Following reported declines of routine immunization coverage in 2020 across Indonesia, in 2021, the Ministry of Health, along with UNICEF, worked with Viamo, an organization specializing in mobile-based solutions, to develop an assessment of subnational immunization services using interactive voice response technology.

The assessment was conducted in four rounds from April to November 2021 and sought to determine continuation of the National Immunization Programme amid the COVID-19 pandemic and impacts of the pandemic on routine immunization. More than 4,350 vaccinators working at health facilities across all 34 provinces participated in the assessment.

Across all rounds, the assessment found that:

- Approximately 40 per cent of reporting health facilities (puskesmas) only provided routine immunization services once per week.
- More than two-thirds of the respondents reported that the only one to five vaccinators were deployed.
- In terms of the availability of personal protective equipment, over a third of the respondents reported stock-out.
- Approximately 40 per cent of respondents reported vaccine stock-out, mainly of pentavalent vaccines.
- Approximately 5 per cent of respondents reported cases of vaccine-preventable diseases, with most of them reporting cases of measles.
- More than 50 per cent of respondents reported difficulties in implementing school-based immunization (BIAS).
- More than 70 per cent of respondents also consistently reported *perceived* reluctance among parents and caregivers to get their children vaccinated.

Throughout 2021, the findings of the assessment, complemented by a real-time dashboard, were utilized by the Ministry of Health for continuous programme improvement, with the final analysis informing routine immunization efforts in 2022. These results serve as a vital tool for implementing interventions to protect children from vaccine-preventable diseases.

Introduction

Background

The National Immunization Program in Indonesia has been severely affected by the COVID-19 pandemic. The coverage of routine immunization to prevent childhood diseases such as measles, rubella and diphtheria has been declining. For example, complete vaccination coverage rates were reduced by 11 per cent in 2020 compared to 2019.[1]

In April 2020, UNICEF with Indonesia's Ministry of Health (MOH) conducted an online assessment of immunization services in 5,329 Community Health Centers (pusat kesehatan masyarakat/puskesmas) in 388 of 540 districts across 34 provinces.[2] It found that 84 per cent of health facilities reported immunization service interruption at both fixed and outreach sites. Disruptions in immunization services were substantial and immediate, with bottlenecks observed at multiple levels.

Further assessments in 2021 to determine scale of disruption and inform interventions were necessary for continuity of services. MOH and UNICEF worked with Viamo to develop an assessment using interactive voice response (IVR) mobile technology. The assessment targeted 10,000 health workers and was rolled out in four rounds in 2021. This report contains the summary of the assessment across all rounds.

Goals and objectives

The assessment aimed to determine continuation of the National Immunization Programme amid the COVID-19 pandemic and impacts of the pandemic on routine immunization services into 2021. The assessment was conducted in four rounds from April to November 2021, to identify any improvement or deterioration in the situation. The assessment was rolled out using IVR mobile technology to overcome distance barriers and for insightful communication.

1 Ministry of Health Indonesia. (2021). Indonesia's Health Profile Year 2020 Report. https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-Indonesia-Tahun-2020.pdf

2 Ministry of Health Indonesia and UNICEF Indonesia. (2020). Rapid Assessment: Impact of COVID-19 Pandemic on Immunization Services in Indonesia. https://www.unicef.org/indonesia/reports/rapid-assessment-immunization-services-indonesia

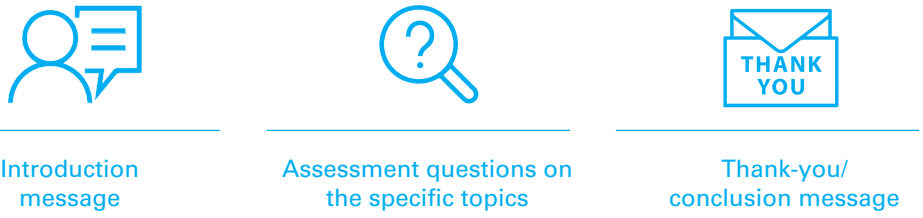
Methodology

The assessment on continuation of immunization surveys used a quantitative approach by administering a questionnaire to one vaccinator per puskesmas across all 34 provinces by phone call in April, July, September and November of 2021. UNICEF worked with Viamo and MOH to develop the questionnaire and mobile assessment instrument, conduct field tests and modify questions according to generated insights and determine the roll-out strategy.

Figure 1. Steps of implementation of assessment on continuation of immunization services in Indonesia in 2021

Design and implementation of assessment instrument

UNICEF in collaboration with Viamo developed the assessment questionnaire, which contained the following key components:



The assessment tool consisted of eight questions along with the introduction and thank-you message.

All the finalized questions were translated into Bahasa Indonesia and then recorded using a local voice artist. Mobilization of the respondents was done before launching the assessment to ensure the maximum number of users answered the call and responded to the assessment. MOH and UNICEF sent a letter to puskesmas to inform them about the campaign dates during which time they would receive the call. Before making the first call, an SMS was sent to all phone numbers to inform them about the purpose and time of the call.

Launch

Sampling. Working with Provincial Health Offices and District Health Offices, UNICEF provided Viamo with a total of 18,600 phone numbers, all of which were contacted so the number's owner could take part in the assessment. To remove bias across different regions, it was decided that only one respondent from each puskesmas as a representative sample was to be considered.

All the phone numbers were divided into groups based on provinces and time zones. These groups were further arranged into batches and called both during weekdays and weekends.

Calling methodology. Each batch was called once on a weekday between 6:30 pm and 8:30 pm. All users who did not answer the phone call or complete this first call were retried at the weekend between 11:30 am and 5:30 pm to ensure that the maximum number of respondents had a chance to take part in the assessment. Each time the call was sent out, three back-to-back retries at a gap of one minute each were sent. Each phone number, therefore, had a minimum of six retries to answer the IVR call and take part in the assessment.

In addition to the outbound call, users were also provided the opportunity to call in and listen to the assessment. The service was kept free of cost for the users, so that they had to give a missed call to the same caller ID from which they received calls and then receive a call-back with the assessment. This was done to allow users to answer the assessment at their convenience and without any charge.

Reporting

In addition to a word-based narrative report, a dashboard hosted on Google Data Studio® was built to track all four rounds of the assessment.[3] The dashboard consists of tabs providing information with a holistic overview of each round, question-wise engagement, and maps highlighting the distribution of respondents in each round. For each tab, filters such as the district, province or puskemas were provided. Filters were also provided for the maps to enable the user to view the distribution of a particular response to a question.

3 https://datastudio.google.com/reporting/d551c4d2-8728-47f1-9d49-ef6b85cb8d16/page/clIKC

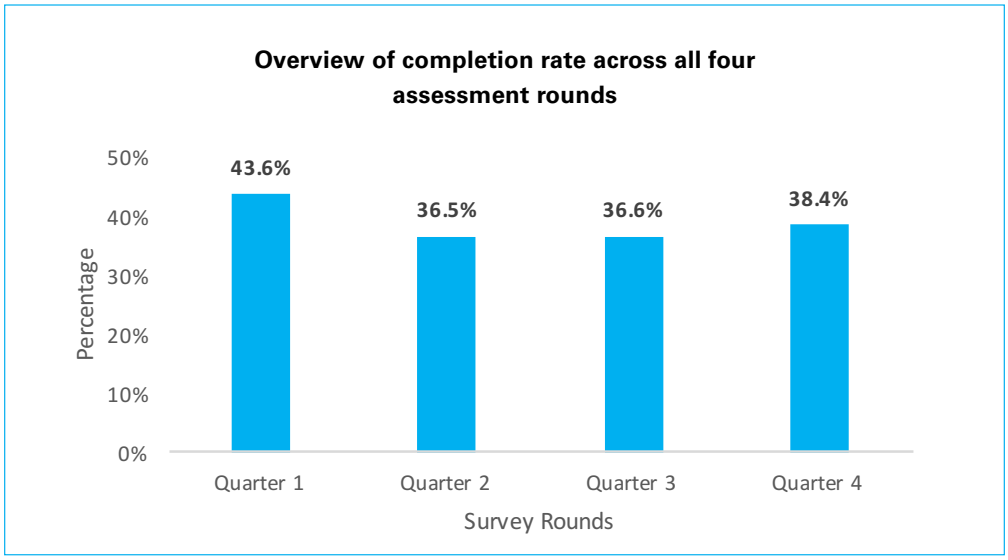
Assessment Findings

This section of the report includes the overall health workers' engagement details for each question across all four rounds conducted in April, July, September and November 2021.

1. Overall response rates

Out of the more than 10,000 users whose phone numbers were provided to Viamo, a maximum 43.6 per cent completion rate was observed in Round 1. The lowest engagement was observed in Round 2 with 36.5 per cent completion rate. Engagement continued to see an increase, at 36.6 per cent in Round 3 and 38.4 per cent in Round 4.[41]

Figure 2. Overview of completion rate across all four assessment rounds

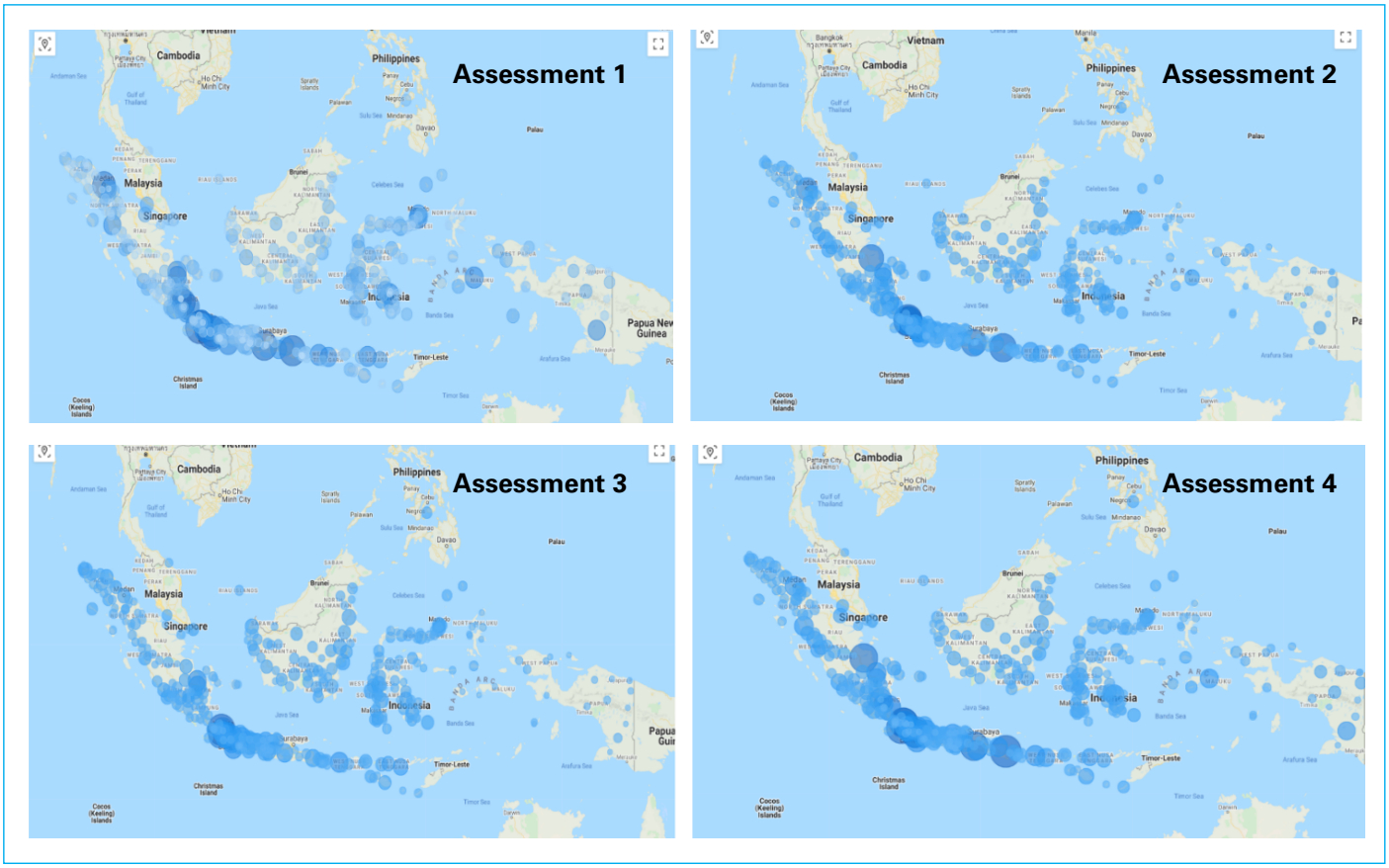


2. Demographic analysis – response rates across all four assessment rounds

Most provinces saw slight fluctuations of response rates throughout all four rounds of assessment (see Annex 1). In each round, responses were most concentrated in the island-group of Java and Sumatra, followed by Sulawesi and Maluku, and West and East Nusa Tenggara and Kalimantan.

4 In general for IVR surveys, the overall completion rate for assessments deployed through IVR has been observed to be 12–15 per cent. In the case of this assessment with MOH and UNICEF, the engagement was higher, with a minimum 36 per cent completion rate. In addition, for IVR assessments that are repeated over a period of time, it has been observed that the completion rates successively drop due to user fatigue, which can also be seen in this assessment.

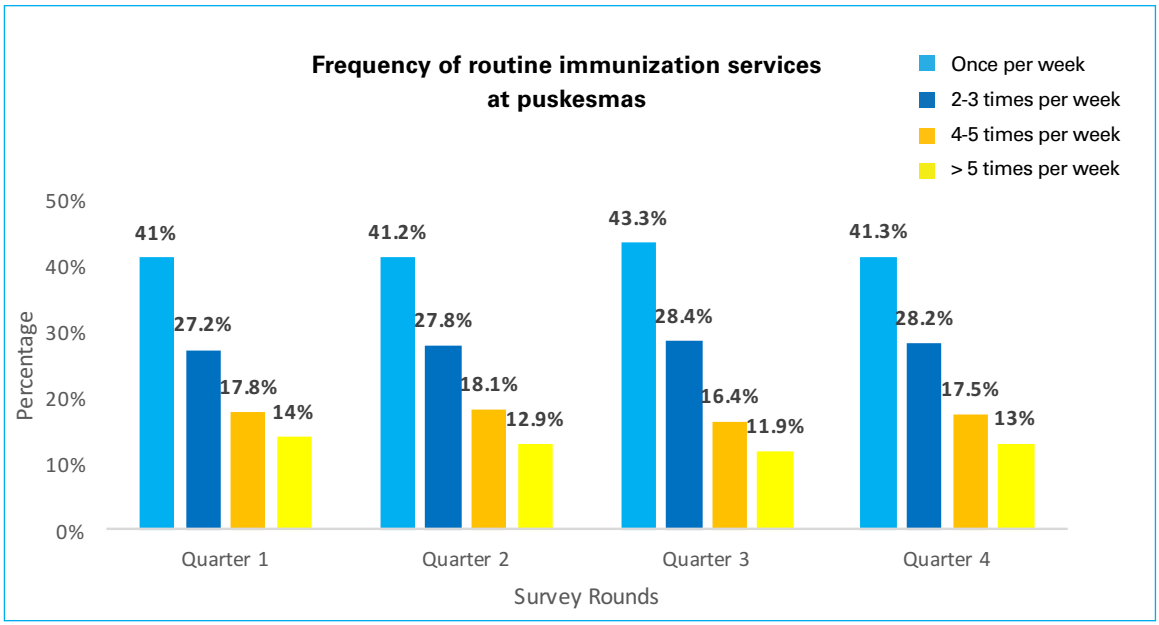
Figure 3. Distribution of respondents across Indonesia in four rounds of assessment



3. Availability of routine immunization services

In each round of the assessment, approximately 40 per cent of respondents indicated that immunization services were provided at their puskesmas only once per week (Figure 4). Only about 13 per cent of respondents in each round reported that the frequency of immunization service provided at their puskesmas was more than five times per week.

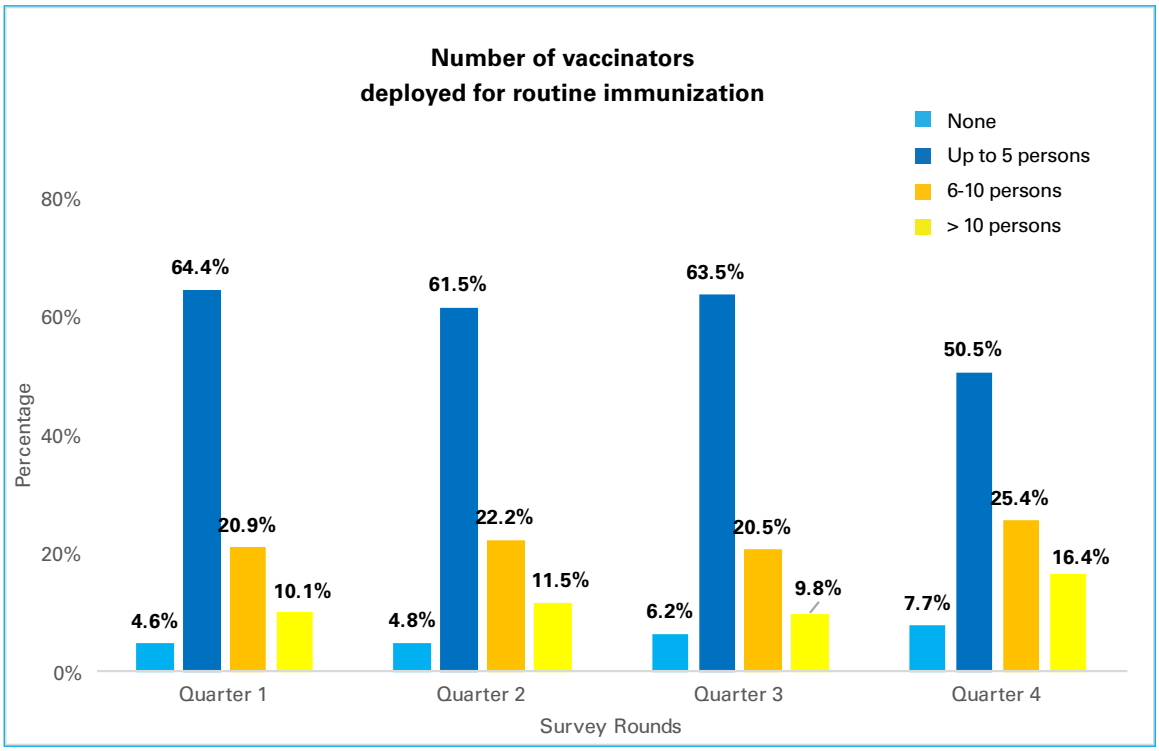
Figure 4. Frequency of routine immunization services at puskesmas



4. Staff working as vaccinators

Across all four rounds, according to the respondents, most frequently five or fewer persons worked as vaccinators at their puskesmas (Figure 5). In Round 4, the situation improved slightly with more respondents reporting 6–19 people working as vaccinators (the maximum across all four rounds). It is also noteworthy that about 4–7 per cent of respondents in each round reported that not even one person worked as a vaccinator at their puskesmas.

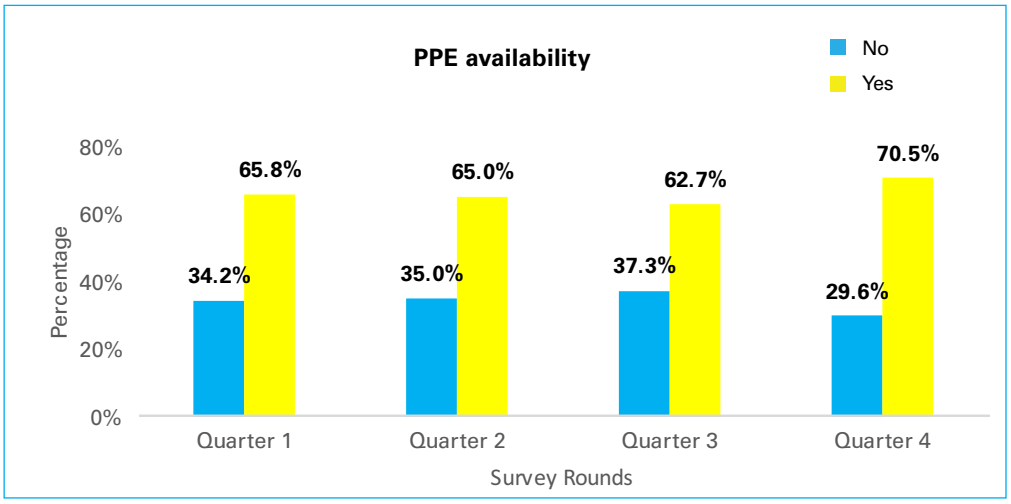
Figure 5. Number of vaccinators deployed for routine immunization



5. Availability of standard personal protective equipment (PPE) for health workers

Across all four rounds, while two-thirds of the respondents reported no shortage of MOH-recommended personal protective equipment (PPE) in their respective puskesmas (Figure 6), the maximum frequency of shortages reported was in Round 3 at 37.3 per cent, whereas the minimum was reported in Round 4 at 29.6 per cent, marking a 8 per cent decline from the previous round.

Figure 6. Availability of standard PPE in puskesmas

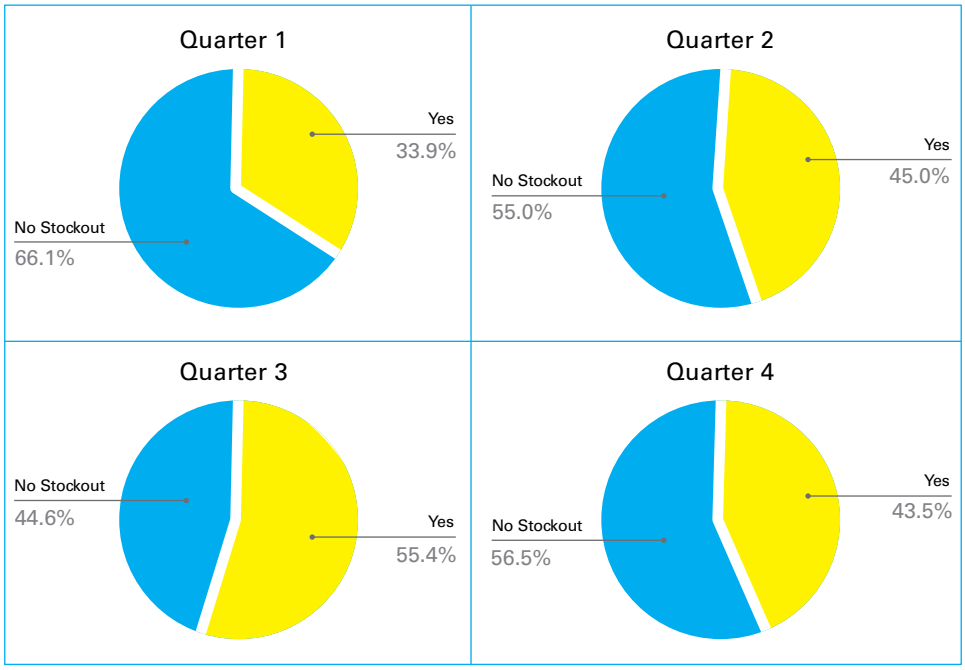


For most provinces, the situation improved (see Annex 2). The highest improvement in availability of PPE was observed for Bali, Gorontalo, North Sulawesi, Central Sulawesi, Maluku, Lampung and Riau Islands.
The situation worsened for North Kalimantan, Jambi, South Sumatra and West Nusa Tenggara.

6. Vaccine stockout

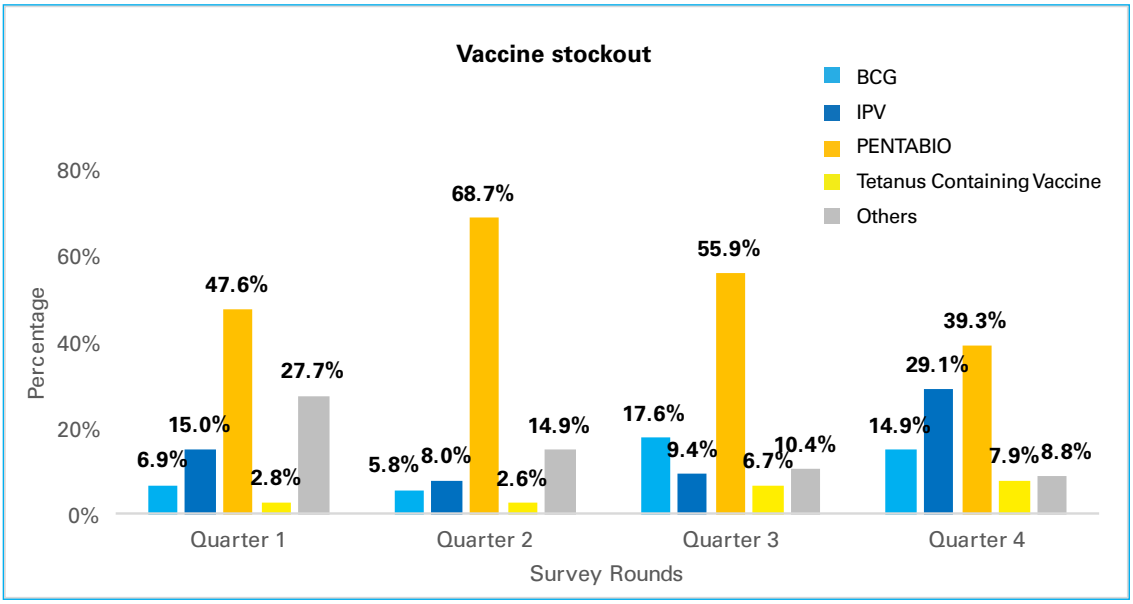
Asked about the situation of vaccine stock-out in their respective puskesmas, more than 44 per cent of respondents across all four rounds reported no stock-out. Figure 7 shows that vaccine stock-out was highest in Round 3, when 55.4 per cent of respondents reported stock-out, and lowest in Round 1, when 33.9 per cent of respondents reported stock-out.

Figure 7. Vaccine stockout reported by round



From the list of vaccines, the most frequently reported stockout was of pentavalent consistently at above 39 per cent, while Tetanus Containing Vaccine stockout was the least frequent at 2-7 per cent. Respondents reporting IPV stockout saw a sharp increase by 14 per cent in Round 4 from Round 1 (Figure 8).

Figure 8. Availability of routine vaccines in puskesmas



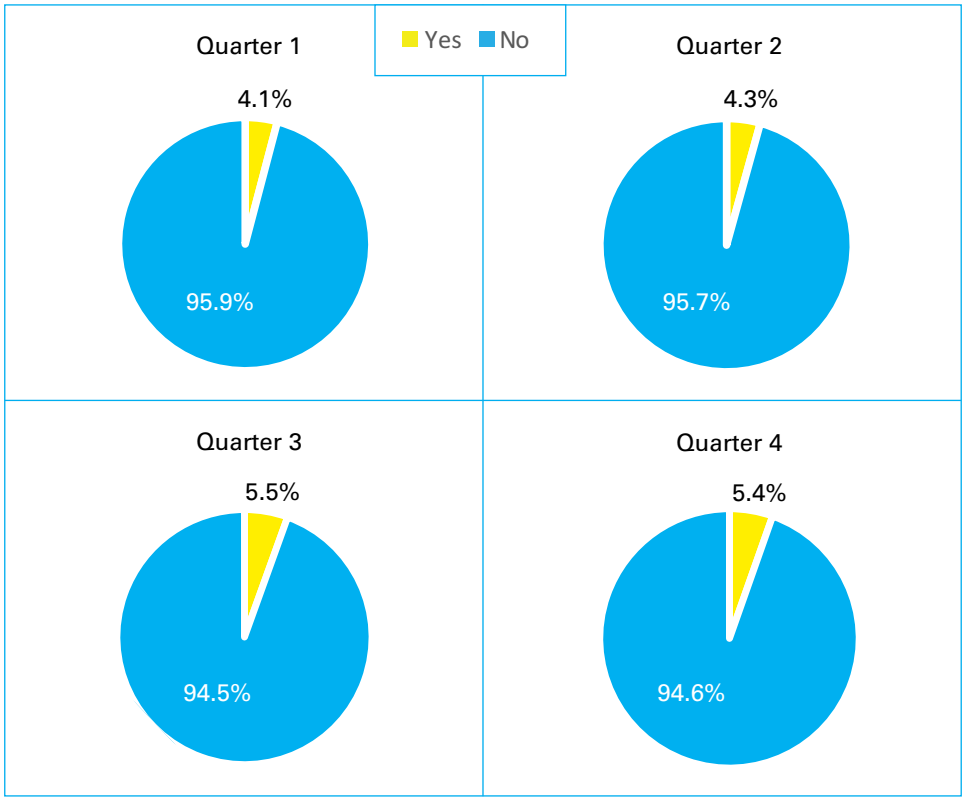
Most provinces saw fluctuating numbers of respondents reporting vaccine stock-out between each round of assessments. Among all 34 provinces, 19 of them saw a worsening vaccine stock-out situation, marked by an increase in the number of respondents reporting vaccine stock-out from Round 1 to Round 4 (see Annex 3.1). The remaining 14 provinces saw improvement, marked by a drop in instances of vaccine stock-out in Round 4 compared to Round 1, whereas one province, Riau Islands, saw no change between the two rounds.

In Round 1 and Round 2, Central Java accounted for the biggest share of respondents reporting vaccine stock-out at 15.7 per cent and 14.3 per cent respectively (see Annex 3.2). In the subsequent two rounds, West Java reported the highest share at 17 per cent and 15.4 per cent respectively.

7. Incidence of measles, diphtheria and AFP cases

Across all four rounds of the assessment, most respondents – i.e., more than 94 per cent in each round – reported that there had been no vaccine-preventable diseases (VPD) in their area (Figure 9).

Figure 9. Proportion of respondents that reported a vaccine-preventable disease



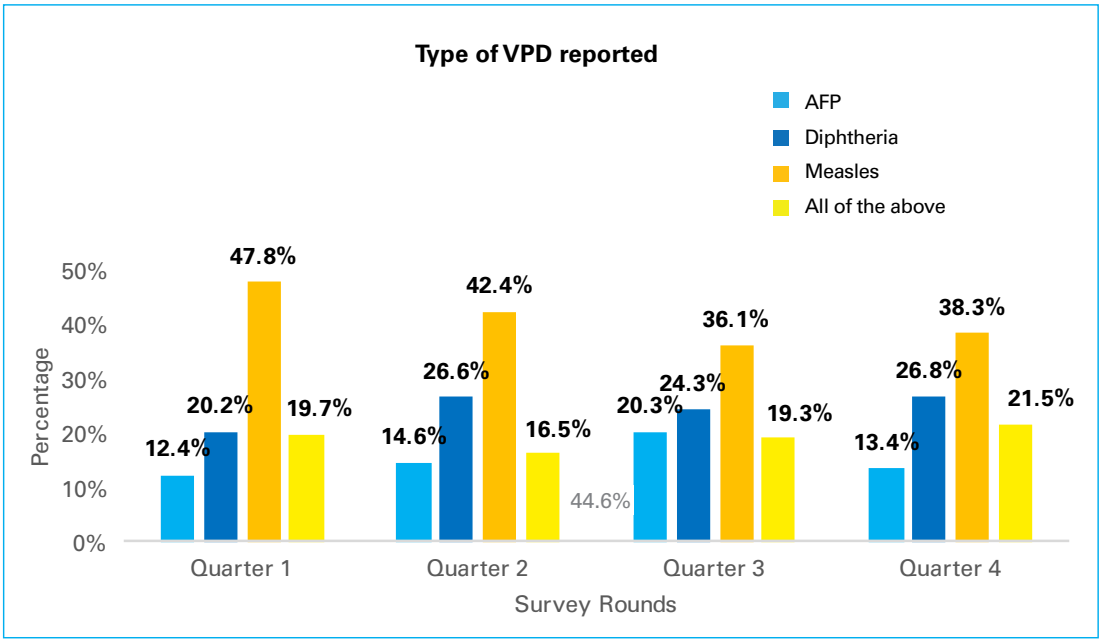
Out of the respondents who replied yes to having experienced a VPD in their respective area, the majority said there had been an outbreak of measles—the highest percentage of VPD reported across all four rounds (Figure 10).[5]

5 For most diseases, an outbreak is defined as an increase in the number of cases over the normally expected number; for some diseases like polio and measles, an outbreak investigation is often initiated upon detection of a single case (WHO, 2018).

A *confirmed measles outbreak* is defined as the occurrence of three or more confirmed measles cases (at least two of which should be laboratory-confirmed; IgM positive) in a health facility/district/block (approximate catchment population of 100 000) in a month.

A substantial proportion – i.e., at least 16 per cent in each round – reported cases of all three diseases: measles, acute flaccid paralysis (AFP) and diphtheria.

Figure 10. Type of VPD reported by respondents

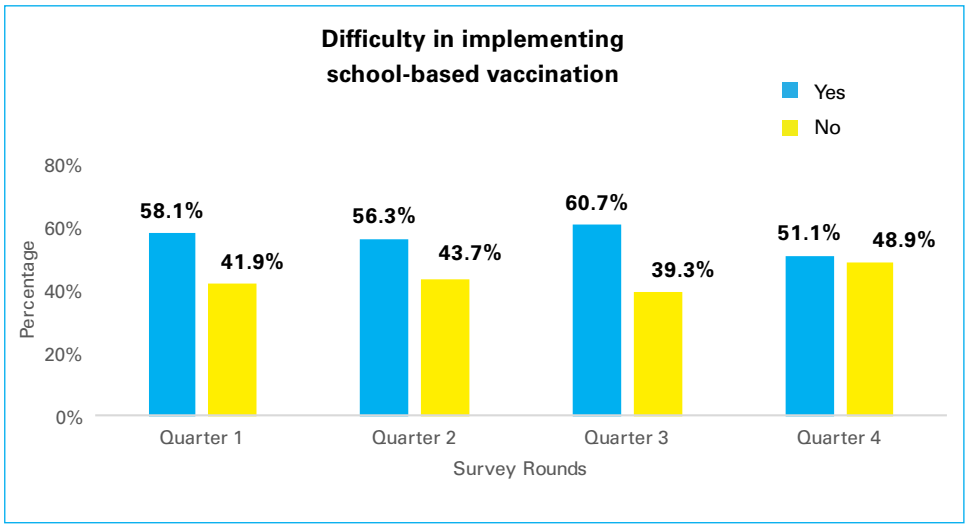


As observed in Annex 4, the percentage of respondents saying there was a VPD outbreak in their province decreased from Quarter 1 to Quarter 4 for the majority of provinces.

8. Difficulties in school-based vaccination (BIAS)

More than 50 per cent of respondents replied in each round that there were difficulties in implementing school-based vaccination (BIAS) (Figure 11). The highest proportion of respondents reporting difficulty was in Round 3, at 60 per cent of respondents, while the lowest proportion was in Round 4, at 51 per cent.

Figure 11. Difficulty in implementing school-based vaccination

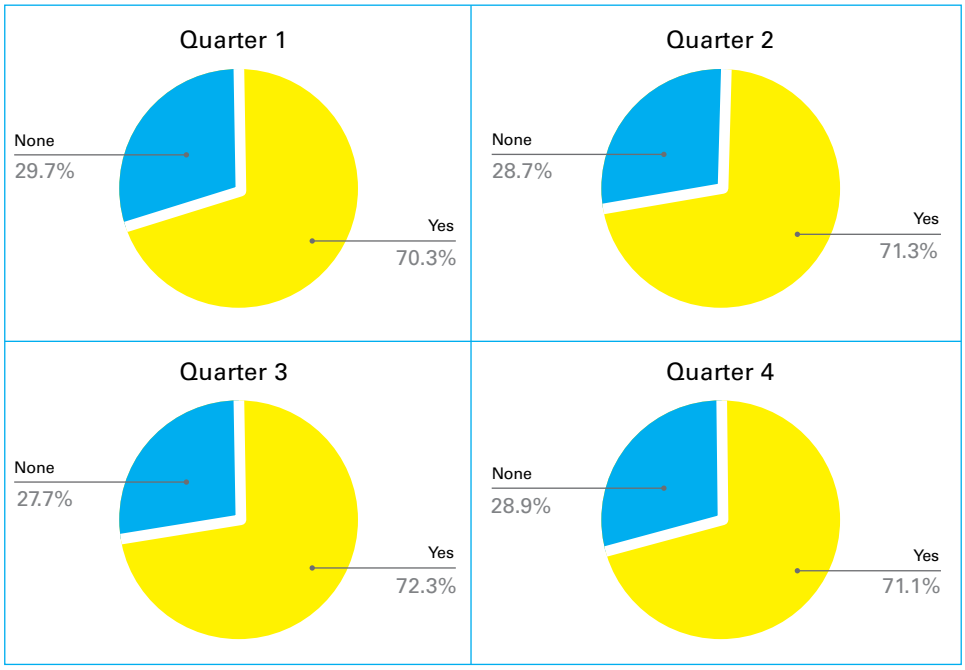


Overall, the responses suggest there was an improvement in implementation of school-based vaccination in the Round 4 of the assessment compared with the Round 1, except in five provinces – West Sumatra, Jambi, Aceh, Central Java and Riau Islands (see Annex 5). The highest improvement in Round 4 compared to Round 1 was seen in North Sulawesi, Bali, Gorontalo, Lampung, Central Sulawesi and South Sulawesi.

9. *Perceived* reluctance among parents and caregivers to get their children vaccinated

Across all rounds, over 70 per cent of respondents from health facilities reported *perceiving* reluctance among parents and caregivers to get their children vaccinated (Figure 12).[6]

Figure 12. Respondents reporting perceived reluctance of parents to get their children vaccinated



10. Changes of key aspects from Round 1 to Round 4 by province

Provinces experienced changes in five key aspects of immunization programme: school-based immunization (BIAS), VPDs, *perceived* reluctancy among caregivers, vaccine and PPE stock-out.

In Table 1, provinces that have a negative trend are shaded in red – i.e., those provinces in which there was an increase from Round 1 to Round 4 in the percentage of respondents that reported difficulty in at least three out of five key aspects of the immunization programme. Provinces where the situation for all five aspects has either improved or not changed are shaded in green. Most provinces observed improvement from Round 1 to Round 4 in at least three key aspects of the immunization programme. Nine provinces, on the other hand, reported deterioration or no change in more than two indicators.

6 Note: This is *perception* of health workers on reluctance among partners and caregivers to get their children vaccinated, not reluctancy reports from parents and caregivers directly

Table 1. Summary table of changes from Round 1 to Round 4 for school-based vaccination, vaccine-preventable disease outbreak, reluctance of parents/caregivers, vaccine stockout, and PPE stockout, for all provinces

Province	Change from Q1 to Q4				
	BIAS	VPDs	Perceived reluctance from parents/ caregivers	Vaccine stock-out	PPE stock-out
Aceh	5.5%	3.2%	5.8%	1.7%	0.0%
Bali	–24.2%	–4.2%	–13.3%	–31.7%	–15.8%
Bangka Belitung	–12.3%	7.7%	–16.9%	18.5%	–1.5%
Banten	–9.5%	0.0%	–2.5%	3.7%	–5.8%
Bengkulu	–5.0%	0.6%	0.0%	0.6%	1.1%
DI Yogyakarta	–6.6%	–1.6%	–13.2%	2.5%	0.8%
DKI Jakarta	–3.4%	0.3%	8.1%	–2.2%	–2.1%
Gorontalo	–18.0%	–1.00%	–20.0%	5.0%	–18.0%
Jambi	6.7%	1.0%	9.7%	4.1%	11.3%
West Java	–10.8%	0.8%	–4.0%	12.0%	–5.8%
Central Java	3.1%	0.8%	0.0%	–0.5%	–1.5%
East Java	–1.2%	0.9%	1.7%	3.4%	0.2%
West Kalimantan	–2.9%	1.2%	–3.3%	2.9%	–1.2%
South Kalimantan	–3.4%	0.0%	–3.4%	–9.0%	–0.9%
Central Kalimantan	–5.5%	–1.0%	–1.5%	15.0%	–0.50%
East Kalimantan	–5.5%	2.7%	1.6%	7.1%	–6.0%
North Kalimantan	–8.9%	–3.5%	7.1%	12.5%	8.9%
Riau Islands	0.0%	1.2%	1.2%	0.0%	–12.0%
Lampung	–16.2%	0.0%	–19.2%	3.3%	–13.2%
Maluku	–9.6%	–1.0%	–2.4%	–5.3%	–14.4%
North Maluku	–1.5%	0.0%	–5.2%	–4.5%	–4.5%
West Nusa Tenggara	–1.2%	3.0%	–0.6%	–0.6%	3.6%
East Nusa Tenggara	–7.9%	0.3%	–8.4%	–3.4%	–8.9%
Papua	–3.4%	–1.7%	–3.9%	–3.7%	–2.9%
West Papua	–5.7%	0.0%	–6.9%	1.9%	–8.8%
Riau	–1.4%	0.0%	0.5%	0.9%	–0.9%
West Sulawesi	–2.9%	–1.1%	–2.2%	–3.3%	–7.3%
South Sulawesi	–13.4%	0.9%	–5.1%	12.2%	–4.5%
Central Sulawesi	–14.8%	–3.5%	–12.4%	–5.4%	–14.8%
Southeast Sulawesi	–11.6%	–1.1%	–14.1%	–7.4%	–6.3%
North Sulawesi	–31.1%	–2.6%	–27.5%	–4.7%	–15.0%
West Sumatra	10.9%	1.5%	14.9%	2.9%	0.0%
South Sumatra	–7.5%	1.2%	–0.6%	11.1%	6.3%
North Sumatra	–9.5%	–0.2%	–10.7%	–0.7%	–1.03%

Key Learnings

Ensuring safe resumption of essential routine immunization services amid the COVID-19 pandemic requires thorough understanding of disruptions on the ground to allow prompt, necessary actions aimed at cushioning further impacts. Conducting assessments, however, has become challenging with imposed mobility restrictions to curb COVID-19 transmission. Overcoming these limitations, MOH and UNICEF opted for phone call assessments to identify immunization issues in all Indonesian provinces. From the implementation of this assessment, it can be concluded that better representation of respondents across Indonesia, with a more structured sampling methodology reduces bias and eliminates the need for mid-course corrections.

While some constraints were inevitable, free-of-charge phone call assessments allowed for data collection in otherwise inaccessible regions and served its purpose in providing timely insights into the pandemic's impacts on immunization services in all parts of the country.

Recommendations

These findings suggest that in designing future immunization interventions, the following issues need to be considered:

- Vaccine stockout remains an issue that needs to be immediately addressed to prevent further impacts on routine immunization services.
- Coverage of immunization needs to be improved to prevent VPD cases, including through catch-up immunization and various activities aiming to improve vaccine demand.
- Support should be provided to improve immunization services that are based at health facilities and schools.
- Additional targeted focus might be required in certain provinces to strengthen routine immunization services.

The Ministry of Health is working closely with UNICEF and partners to continue improvements in routine immunization and ensure strong child well-being outcomes across Indonesia.

ANNEX

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Aceh	42.2%	42.0%	57.8%	48.6%
Bali	80.8%	57.5%	72.5%	57.5%
Bangka Belitung	100.0%	90.8%	52.3%	80.0%
Banten	34.7%	39.3%	30.2%	31.0%
Bengkulu	48.3%	48.9%	53.3%	46.7%
Central Java	36.3%	32.1%	40.9%	34.8%
Central Kalimantan	57.0%	60.0%	70.0%	52.5%
Central Sulawesi	69.3%	37.6%	50.5%	51.0%
DI Yogyakarta	55.4%	45.5%	38.8%	39.7%
DKI Jakarta	30.2%	51.4%	45.2%	45.2%
East Java	19.0%	16.1%	8.6%	18.3%
East Kalimantan	56.3%	55.7%	71.0%	56.3%
East Nusa Tenggara	46.2%	36.7%	39.6%	33.3%
Gorontalo	70.0%	51.0%	60.0%	52.0%
Jambi	8.7%	31.8%	17.4%	25.6%
Lampung	80.5%	52.3%	23.5%	58.6%
Maluku	49.0%	26.0%	6.7%	34.1%
North Kalimantan	58.9%	58.9%	55.4%	60.7%
North Maluku	31.3%	16.4%	25.4%	26.9%
North Sulawesi	94.3%	66.3%	73.1%	60.6%
North Sumatra	38.4%	26.9%	18.4%	25.5%
Papua	26.7%	14.7%	8.3%	21.6%
Riau	7.4%	5.6%	1.4%	6.9%
Riau Islands	60.2%	56.6%	50.6%	56.6%
South Kalimantan	37.8%	39.1%	42.5%	36.5%
South Sulawesi	61.8%	49.6%	60.3%	55.2%
South Sumatra	56.0%	56.9%	66.6%	55.4%
Southeast Sulawesi	73.6%	48.6%	51.1%	58.8%
West Java	48.6%	33.0%	40.2%	42.8%
West Kalimantan	48.0%	49.2%	57.4%	41.8%
West Nusa Tenggara	50.0%	45.8%	43.4%	45.2%
West Papua	37.1%	20.1%	12.6%	20.8%
West Sulawesi	25.5%	17.8%	23.3%	19.6%
West Sumatra	27.3%	42.5%	24.0%	42.5%
TOTAL	**43.5%**	**36.4%**	**36.5%**	**38.3%**

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Change from Q1 to Q4
Aceh	13.5%	12.1%	19.3%	13.5%	0.0%
Bali	24.2%	14.2%	29.2%	8.3%	-15.9%
Bangka Belitung	18.5%	21.5%	10.8%	16.9%	-1.6%
Banten	14.1%	15.7%	9.9%	8.3%	-5.8%
Bengkulu	21.7%	22.2%	27.2%	22.8%	1.1%
Central Java	7.0%	7.7%	11.2%	5.5%	-1.5%
Central Kalimantan	15.5%	17.5%	23.5%	15.0%	-0.5%
Central Sulawesi	27.7%	18.3%	26.2%	12.9%	-14.8%
DI Yogyakarta	3.3%	4.1%	5.0%	4.1%	0.8%
DKI Jakarta	5.9%	8.1%	3.4%	3.7%	-2.2%
East Java	4.2%	3.9%	2.7%	4.5%	0.3%
East Kalimantan	13.1%	10.9%	11.5%	7.1%	-6.0%
East Nusa Tenggara	23.4%	20.7%	21.0%	14.4%	-9.0%
Gorontalo	35.0%	27.0%	25.0%	17.0%	-18.0%
Jambi	4.1%	15.9%	10.3%	15.4%	11.3%
Lampung	34.8%	27.5%	11.6%	21.5%	-13.3%
Maluku	23.6%	11.5%	3.9%	9.1%	-14.5%
North Kalimantan	14.3%	12.5%	23.2%	23.2%	8.9%
North Maluku	11.9%	6.7%	10.5%	7.5%	-4.4%
North Sulawesi	35.2%	23.3%	32.1%	20.2%	-15.0%
North Sumatra	11.7%	9.6%	8.3%	10.7%	-1.0%
Papua	10.5%	5.4%	2.2%	7.6%	-2.9%
Riau	2.8%	2.3%	0.9%	1.9%	-0.9%
Riau Islands	25.3%	16.9%	18.1%	13.3%	-12.0%
South Kalimantan	9.4%	11.6%	10.7%	8.6%	-0.8%
South Sulawesi	23.6%	19.4%	26.9%	19.1%	-4.5%
South Sumatra	17.2%	21.1%	30.1%	23.5%	6.3%
Southeast Sulawesi	28.9%	18.7%	21.5%	22.5%	-6.4%
West Java	17.7%	11.8%	16.2%	11.9%	-5.8%
West Kalimantan	13.5%	18.0%	19.7%	12.3%	-1.2%
West Nusa Tenggara	17.5%	17.5%	17.5%	21.1%	3.6%
West Papua	18.9%	8.8%	6.3%	10.1%	-8.8%
West Sulawesi	14.9%	9.8%	13.1%	7.6%	-7.3%
West Sumatra	8.0%	16.4%	8.4%	8.0%	0.0%

Notes:
The percentages are based on the total number of unique puskesmas in each province.
Comparing Round 4 and Round 1, the figures in red font signify an increase in percentage of respondents reporting PPE shortage (that the situation with respect to PPE shortage in the respective provinces worsened), whereas green signifies a decrease.
Provinces are listed in alphabetical order.

Annex 3.1. Distribution of respondents reporting vaccine stock out in all provinces

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Change from Q1 to Q4
Aceh	7.2%	9.2%	10.9%	8.9%	1.7%
Bali	51.7%	40.8%	55.0%	20.0%	-31.7%
Bangka Belitung	20.0%	20.0%	13.9%	38.5%	18.5%
Banten	8.3%	8.3%	8.3%	12.0%	3.7%
Bengkulu	15.6%	27.2%	38.9%	16.1%	0.5%
Central Java	27.1%	27.3%	35.5%	26.6%	-0.5%
Central Kalimantan	8.5%	10.0%	22.5%	23.5%	15.0%
Central Sulawesi	18.3%	12.4%	17.3%	12.9%	-5.4%
DI Yogyakarta	6.6%	6.6%	7.4%	9.1%	2.5%
DKI Jakarta	6.9%	8.4%	6.2%	4.7%	-2.2%
East Java	8.6%	12.5%	6.0%	12.0%	3.4%
East Kalimantan	16.9%	9.3%	31.7%	24.0%	7.1%
East Nusa Tenggara	15.2%	12.1%	17.6%	11.8%	-3.4%
Gorontalo	20.0%	27.0%	27.0%	25.0%	5.0%
Jambi	2.1%	12.8%	12.8%	6.2%	4.1%
Lampung	25.2%	30.5%	11.3%	28.5%	3.3%
Maluku	14.4%	7.2%	0.5%	9.1%	-5.3%
North Kalimantan	14.3%	30.4%	41.1%	26.8%	12.5%
North Maluku	12.7%	5.2%	14.9%	8.2%	-4.5%
North Sulawesi	25.9%	45.6%	48.7%	21.2%	-4.7%
North Sumatra	10.5%	7.1%	6.9%	9.8%	-0.7%
Papua	7.6%	3.2%	2.2%	3.9%	-3.7%
Riau	0.9%	1.4%	0.9%	1.9%	1.0%
Riau Islands	15.7%	14.5%	15.7%	15.7%	0.0%
South Kalimantan	22.8%	16.3%	19.7%	13.7%	-9.1%
South Sulawesi	14.3%	27.8%	30.8%	26.6%	12.3%
South Sumatra	19.3%	29.5%	48.8%	30.4%	11.1%
Southeast Sulawesi	26.1%	14.1%	27.8%	18.7%	-7.4%
West Java	12.3%	21.3%	32.3%	24.2%	11.9%
West Kalimantan	16.0%	11.9%	38.9%	18.9%	2.9%
West Nusa Tenggara	28.3%	36.1%	30.7%	27.7%	-0.6%
West Papua	9.4%	3.8%	5.0%	11.3%	1.9%
West Sulawesi	13.1%	8.4%	13.1%	9.8%	-3.3%
West Sumatra	9.8%	10.6%	7.3%	12.7%	2.9%

Notes:
The percentages are based on the total number of unique puskesmas in each province.
Comparing Round 4 and Round 1, the figures in red font signify an increase in percentage of respondents reporting vaccine stock-out (that the situation with respect to vaccine stock-out in the respective provinces worsened), whereas green signifies a decrease.
Provinces are listed in alphabetical order.

Annex 3.2 Distribution of respondents reporting vaccine stock out in comparison with other provinces

Province	R1	R2	R3	R4	Change from Q1 to Q4
Aceh	1.7%	1.9%	1.9%	1.9%	0.2%
Bali	4.2%	3.0%	3.3%	1.4%	-2.8%
Bangka Belitung	0.9%	0.8%	0.4%	1.5%	0.6%
Banten	1.4%	1.2%	1.0%	1.7%	0.3%
Bengkulu	1.9%	3.0%	3.4%	1.7%	-0.2%
Central Java	15.7%	14.3%	15.0%	13.7%	-2.0%
Central Kalimantan	1.2%	1.2%	2.2%	2.8%	1.6%
Central Sulawesi	2.5%	1.5%	1.7%	1.6%	-0.9%
DI Yogyakarta	0.5%	0.5%	0.4%	0.7%	0.2%
DKI Jakarta	1.5%	1.6%	1.0%	0.9%	-0.6%
East Java	5.6%	7.4%	2.9%	6.9%	1.3%
East Kalimantan	2.1%	1.0%	2.9%	2.6%	0.5%
East Nusa Tenggara	3.9%	2.8%	3.3%	2.7%	-1.2%
Gorontalo	1.4%	1.6%	1.3%	1.5%	0.1%
Jambi	0.3%	1.5%	1.2%	0.7%	0.4%
Lampung	5.1%	5.6%	1.7%	5.1%	0.0%
Maluku	2.0%	0.9%	0.1%	1.1%	-0.9%
North Kalimantan	0.5%	1.0%	1.1%	0.9%	0.4%
North Maluku	1.2%	0.4%	1.0%	0.7%	-0.5%
North Sulawesi	3.4%	5.4%	4.6%	2.5%	-0.9%
North Sumatra	4.1%	2.5%	2.0%	3.4%	-0.7%
Papua	2.1%	0.8%	0.4%	1.0%	-1.1%
Riau	0.1%	0.2%	0.1%	0.2%	0.1%
Riau Islands	0.9%	0.7%	0.6%	0.8%	-0.1%
South Kalimantan	3.6%	2.3%	2.3%	1.9%	-1.7%
South Sulawesi	3.2%	5.7%	5.1%	5.3%	2.1%
South Sumatra	4.3%	6.0%	8.0%	6.0%	1.7%
Southeast Sulawesi	5.0%	2.4%	3.9%	3.2%	-1.8%
West Java	8.8%	13.9%	17.0%	15.5%	6.7%
West Kalimantan	2.6%	1.8%	4.7%	2.7%	0.1%
West Nusa Tenggara	3.2%	3.7%	2.5%	2.7%	-0.5%
West Papua	1.0%	0.4%	0.4%	1.1%	0.1%
West Sulawesi	2.4%	1.4%	1.8%	1.6%	-0.8%
West Sumatra	1.8%	1.8%	1.0%	2.1%	0.3%

Notes:
The percentages are based on the total number of respondents who reported vaccine stock-out in each quarter. Comparing Round 4 and Round 1, the figures in red font signify an increase in percentage of respondents reporting vaccine stock-out (that the situation with respect to vaccine stock-out in the respective provinces worsened), whereas green signifies a decrease.
Provinces are listed in alphabetical order.

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Change from Q1 to Q4
Aceh	1.44%	2.87%	4.02%	4.60%	3.16%
Bali	5.83%	2.50%	0.83%	1.67%	–4.17%
Bangka Belitung	1.54%	3.08%	3.08%	9.23%	7.69%
Banten	1.65%	1.24%	1.24%	1.65%	0.00%
Bengkulu	0.56%	1.11%	1.11%	1.11%	0.56%
DI Yogyakarta	2.48%	0.83%	0.00%	0.83%	–1.65%
DKI Jakarta	2.18%	2.80%	0.93%	2.49%	0.31%
Gorontalo	5.00%	7.00%	7.00%	4.00%	–1.00%
Jambi	0.00%	1.03%	0.51%	1.03%	1.03%
Jawa Barat	1.31%	0.84%	2.53%	2.15%	0.84%
Jawa Tengah	1.16%	2.44%	3.95%	1.98%	0.81%
Jawa Timur	0.72%	0.52%	0.83%	1.65%	0.93%
Kalimantan Barat	1.23%	2.46%	2.05%	2.46%	1.23%
Kalimantan Selatan	0.86%	0.00%	0.86%	0.86%	0.00%
Kalimantan Tengah	2.00%	1.50%	3.50%	1.00%	–1.00%
Kalimantan Timur	1.09%	1.64%	3.28%	3.83%	2.73%
Kalimantan Utara	5.36%	8.93%	1.79%	1.79%	–3.57%
Kepulauan Riau	1.20%	1.20%	3.61%	2.41%	1.20%
Lampung	3.31%	2.98%	1.99%	3.31%	0.00%
Maluku	2.40%	0.48%	0.00%	1.44%	–0.96%
Maluku Utara	0.75%	0.00%	0.75%	0.75%	0.00%
Nusa Tenggara Barat	0.00%	1.20%	2.41%	3.01%	3.01%
Nusa Tenggara Timur	1.84%	0.79%	1.05%	2.10%	0.26%
Papua	2.94%	0.98%	0.25%	1.23%	–1.72%
Papua Barat	1.26%	0.00%	0.00%	1.26%	0.00%
Riau	0.46%	0.46%	0.00%	0.46%	0.00%
Sulawesi Barat	2.18%	0.73%	2.18%	1.09%	–1.09%
Sulawesi Selatan	1.79%	4.18%	2.39%	2.69%	0.90%
Sulawesi Tengah	4.95%	1.49%	1.49%	1.49%	–3.47%
Sulawesi Tenggara	3.52%	3.17%	2.11%	2.46%	–1.06%
Sulawesi Utara	3.63%	1.55%	3.63%	1.04%	–2.59%
Sumatera Barat	1.82%	2.55%	2.91%	3.27%	1.45%
Sumatera Selatan	1.81%	1.20%	3.92%	3.01%	1.20%
Sumatera Utara	1.89%	0.69%	1.55%	1.72%	–0.17%

Notes:
The percentages are based on the total number of unique puskesmas in each province.
Comparing Round 4 and Round 1, the figures in red font signify an increase in percentage of respondents reporting a VPD outbreak (that the situation with respect to VPD outbreak in the respective provinces worsened) whereas green signifies a decrease.
Provinces are listed in alphabetical order.

ANNEX 5. Distribution of respondents reporting that they had faced difficulty in implementing school-based vaccination, by province

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Change from Q1 to Q4
Aceh	32.5%	30.5%	41.1%	37.9%	5.4%
Bali	41.7%	21.7%	34.2%	17.5%	-24.2%
Bangka Belitung	50.8%	35.4%	30.8%	38.5%	-12.3%
Banten	24.8%	24.8%	20.3%	15.3%	-9.5%
Bengkulu	25.6%	22.8%	30.0%	20.6%	-5.0%
Central Java	16.6%	13.1%	22.0%	19.8%	3.2%
Central Kalimantan	34.0%	32.5%	41.0%	28.5%	-5.5%
Central Sulawesi	48.0%	25.3%	37.1%	33.2%	-14.8%
DI Yogyakarta	19.0%	12.4%	14.9%	12.4%	-6.6%
DKI Jakarta	20.3%	32.4%	26.5%	16.8%	-3.5%
East Java	6.2%	5.9%	3.8%	5.0%	-1.2%
East Kalimantan	43.7%	39.3%	53.0%	38.3%	-5.4%
East Nusa Tenggara	22.6%	16.3%	22.3%	14.7%	-7.9%
Gorontalo	57.0%	39.0%	52.0%	39.0%	-18.0%
Jambi	3.1%	11.8%	6.7%	9.7%	6.6%
Lampung	35.8%	21.2%	13.6%	19.5%	-16.3%
Maluku	25.5%	12.5%	2.9%	15.9%	-9.6%
North Kalimantan	39.3%	33.9%	39.3%	30.4%	-8.9%
North Maluku	13.4%	6.7%	11.9%	11.9%	-1.5%
North Sulawesi	56.5%	37.8%	44.6%	25.4%	-31.1%
North Sumatra	21.7%	15.2%	9.1%	12.2%	-9.5%
Papua	14.0%	7.8%	4.4%	10.5%	-3.5%
Riau	5.1%	2.3%	1.4%	3.7%	-1.4%
Riau Islands	39.8%	38.6%	28.9%	39.8%	0.0%
South Kalimantan	27.0%	24.0%	29.6%	23.6%	-3.4%
South Sulawesi	46.6%	35.5%	43.6%	33.1%	-13.5%
South Sumatra	26.2%	22.9%	31.0%	18.7%	-7.5%
Southeast Sulawesi	38.0%	24.7%	22.5%	26.4%	-11.6%
West Java	32.9%	25.2%	27.6%	22.1%	-10.8%
West Kalimantan	28.7%	31.2%	38.9%	25.8%	-2.9%
West Nusa Tenggara	27.7%	27.7%	25.3%	26.5%	-1.2%
West Papua	18.2%	12.0%	8.2%	12.6%	-5.6%
West Sulawesi	20.0%	16.4%	19.3%	17.1%	-2.9%
West Sumatra	18.2%	29.5%	14.6%	29.1%	10.9%

Notes:
The percentages are based on the total number of unique puskesmas in each province.
Comparing Round 4 and Round 1, the figures in red font signify an increase in the percentage of respondents reporting difficulty performing school-based vaccination (that the situation with respect to school-based vaccination in the respective provinces worsened) whereas green signifies a decrease.
Provinces are listed in alphabetical order.

ANNEX 6. Distribution of respondents who perceived that parents and caregivers were reluctant to get their children vaccinated, by province

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Change from Q1 to Q4
Aceh	37.1%	37.1%	49.4%	42.8%	5.7%
Bali	41.7%	35.0%	40.0%	28.3%	-13.4%
Bangka Belitung	69.2%	69.2%	30.8%	52.3%	-16.9%
Banten	26.9%	28.5%	20.7%	24.4%	-2.5%
Bengkulu	33.3%	33.3%	42.8%	33.3%	0.0%
Central Java	23.8%	22.1%	27.9%	23.8%	0.0%
Central Kalimantan	43.5%	48.0%	52.5%	42.0%	-1.5%
Central Sulawesi	51.0%	26.2%	39.1%	38.6%	-12.4%
DI Yogyakarta	36.4%	23.1%	22.3%	23.1%	-13.3%
DKI Jakarta	25.6%	38.6%	33.0%	33.6%	8.0%
East Java	11.1%	10.1%	5.5%	12.7%	1.6%
East Kalimantan	47.0%	42.6%	57.4%	48.6%	1.6%
East Nusa Tenggara	28.4%	20.2%	25.7%	20.0%	-8.4%
Gorontalo	61.0%	40.0%	48.0%	41.0%	-20.0%
Jambi	5.1%	23.6%	13.3%	14.9%	9.8%
Lampung	52.7%	31.8%	14.2%	33.4%	-19.3%
Maluku	26.0%	15.9%	2.9%	23.6%	-2.4%
North Kalimantan	39.3%	48.2%	39.3%	46.4%	7.1%
North Maluku	23.9%	11.9%	19.4%	18.7%	-5.2%
North Sulawesi	61.1%	44.0%	47.7%	33.7%	-27.4%
North Sumatra	28.1%	18.9%	13.9%	17.4%	-10.7%
Papua	19.6%	10.8%	6.1%	15.7%	-3.9%
Riau	5.6%	4.2%	1.4%	6.0%	0.4%
Riau Islands	38.6%	41.0%	34.9%	39.8%	1.2%
South Kalimantan	31.3%	31.8%	34.3%	27.9%	-3.4%
South Sulawesi	42.7%	34.6%	41.5%	37.6%	-5.1%
South Sumatra	34.9%	36.5%	43.4%	34.3%	-0.6%
Southeast Sulawesi	53.9%	33.1%	35.9%	39.8%	-14.1%
West Java	34.7%	25.1%	29.8%	30.7%	-4.0%
West Kalimantan	36.9%	38.1%	44.7%	33.6%	-3.3%
West Nusa Tenggara	33.7%	30.7%	31.9%	33.1%	-0.6%
West Papua	23.3%	13.2%	10.7%	16.4%	-6.9%
West Sulawesi	19.3%	13.1%	18.9%	17.1%	-2.2%
West Sumatra	24.4%	39.6%	20.7%	39.3%	14.9%

Notes:
The percentages are based on the total number of unique puskesmas in each province.
Comparing Round 4 and Round 1, the figures in red font signify an increase in percentage of respondents reporting a reluctance on the part of parents to get their children vaccinated (that the situation with respect to parental reluctance in the respective provinces worsened) whereas green signifies a decrease.
Provinces are listed in alphabetical order.

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Disclaimer

This report was prepared based on the information provided by the respondents who voluntarily took part in the IVR phone-call assessment. This assessment was conducted in four quarters. A respondent's opinion may be influenced by individual knowledge and interest.

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