Harnessing the Power of Social Media to Enhance Immunization Knowledge, Attitudes, and Practices

Summary Evaluation Report

Global Health Strategies

October 2026

VaxSocial

The report provides a summary evaluation of the Global Health Strategies project in Indonesia, funded by the VaxSocial initiative.

About VaxSocial

The VaxSocial Initiative is a $12 million initiative focused on demonstrating how social media can help build vaccine confidence funded by Gavi the Vaccine Alliance and Advancing Health Online (AHO) – a fiscally sponsored project of Global Impact.

The program supports country-driven projects that leverage social media and behavioral science to build confidence around routine immunizations and drive scale and replicability in approach across geographies. It has been implemented across India, Indonesia and Nigeria.

More information and further reading can be found at:

https://www.vaxsocial.com/

About the Global Health Strategies Project

This project sought to increase Routine Immunization coverage across North Sumatra, Riau, West Kalimantran and North Sulawesi provinces in Indonesia.

The project ran from mid-2024 – June 2025 and combined:

- Target social media campaigns
- *Ibu Pandai* (Smart Mother) WhatsApp support groups
- Journalist capacity-building fellowships
- Health care worker digital skills training

This Summary Evaluation Report has been written by the GHS and prepared by Ipsos UK and M&C Saatchi World Services as part of the global evaluation of the VaxSocial initiative.

Guidance

Global Health Strategies and the Ministry of Health of the Republic of Indonesia have jointly prepared this Report.

The full list of authors and reviewers can be found in the 'References' section.

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Introduction

Background

Indonesia's efforts to recover and expand immunization coverage following the COVID-19 pandemic have made progress, reflecting the government's strong commitment to protecting children from vaccine-preventable diseases (VPDs). However, some inequalities remain – particularly in urban and semi-urban areas – where lack of credible information and misinformation, coupled with varying levels of trust in health services, continue to affect caregiver willingness to vaccinate. The country's national immunization coverage declined from 94% in 2019 to 84.5% in 2021, representing a 10-percentage-point drop and prompting concern among public health authorities about a resurgence of VPDs. To address these immunization gaps, Global Health Strategies (GHS), with support from GAVI and Advancing Health Online (AHO), has been partnering with the Indonesian Ministry of Health (MoH) since 2024 to implement the VaxSocial Program.

The program was implemented across four provinces: North Sumatra, Riau, West Kalimantan, and North Sulawesi. These provinces were selected for several reasons. First, they were recommended by the Directorate of Immunization at the Ministry of Health Indonesia's priority areas where targeted demand-generation efforts could support national immunization and where measurable room for improvement in coverage remained. Second, all four provinces have high internet penetration, exceeding 80% at the village and sub-district levels. This was a critical prerequisite, as VaxSocial is fundamentally anchored in digital engagement, particularly through social media-based interventions. The implementation of VaxSocial in these four provinces – North Sumatra, North Sulawesi, West Kalimantan, and Riau – included digital media strategies specifically designed to address widespread misinformation, low health literacy, and limited grassroots communications capacity.

The program primarily focused on parents and caregivers of children under 12 and supported school-based immunization programs to improve completion rates in the four targeted provinces.

Since its inception, the program has been anchored in a strong collaboration with the MoH to ensure alignment with policy priorities and operational structures. The initiative began in mid-2024 and led to the signing of a Memorandum of Understanding (MoU) on July 9 of the same year. The MoUestablished a formal framework for cooperation to support health transformation programs, particularly by strengthening health promotion, health policy, and related areas. Furthermore, under the MoU, the MoH formally endorsed VaxSocial activities in North Sumatra, Riau, West Kalimantan, and North Sulawesi by issuing an official directive on August 16, 2024, to implement VaxSocial in coordination with provincial and district health offices.

Campaign Design and Delivery

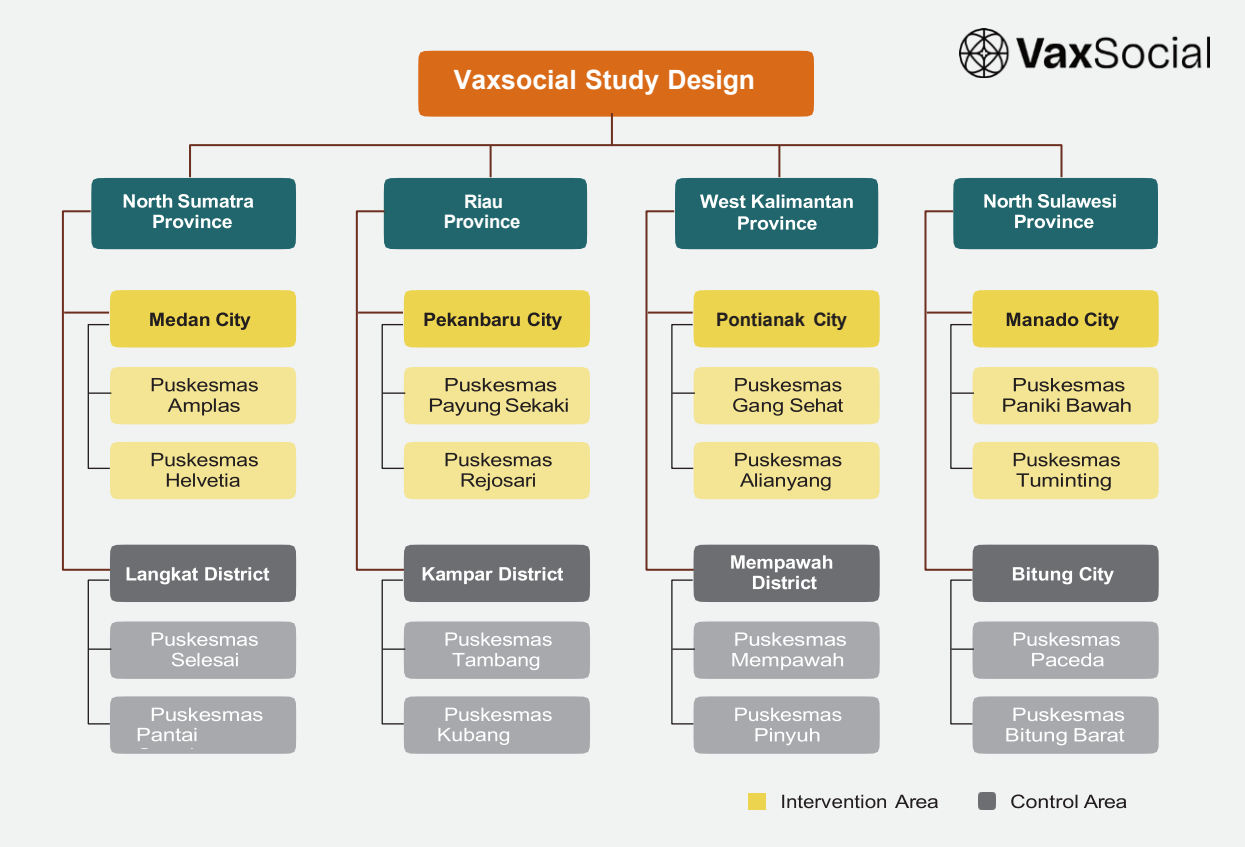
Design

Within the four intervention provinces, eight (8) districts and cities were selected, for a total of four (4) intervention cities and four (4) matched control districts. These areas were selected based on the comparability of their infant populations and their demographic and sociocultural profiles. Geographic proximity was carefully balanced to ensure contextual similarity while minimizing the risk

of intervention spillover into control locations. All selected districts and cities also demonstrated internet penetration rates above 90% and comparable baseline immunization coverage, as reported by BPS-Statistics Indonesia, enabling more robust comparative analysis.

At the operational level, the GHS VaxSocial program partnered with two (2) puskesmas in each district or city, for a total of 16 facilities, which served as the sampling and implementation points. At each location, one puskesmas was located in an urban or central area and one in a peripheral or semi-urban area to capture a more representative cross-section of community characteristics. In intervention sites, the program worked in close coordination with these puskesmas to design, align, and implement tailored activities, ensuring that digital interventions were closely integrated with local service contexts and responsive to facility-level realities.

Figure 1. VaxSocial Study Design Stratification



Insights from formative research

The baseline survey established a critical foundation for understanding immunization knowledge, attitudes, and practices (KAP) and social media use in the target areas. It identified key gaps, challenges, and opportunities in how social media influences immunization decisions, ensuring that interventions were evidence-based, targeted, and measurable. The baseline survey focused on parents and caregivers of children aged 0 to 12 years and applied stratification by urban and semi-urban areas and by intervention and control districts to ensure representativeness.

Baseline findings showed that:

- Gaps in basic immunization completion remained, particularly for advanced immunization (IBL, 'Imunisasi Bayi Lanjutan' / Advanced Infant Immunization), where non-completion in intervention areas remained high (35.07%). These patterns highlighted the need for consistent reminders and follow-up strategies that social media platforms are well-suited to support.
- School-based immunization (BIAS) completion was similar in intervention and control areas, at approximately 34%, according to the baseline survey, indicating that social media alone is insufficient to change behavior and underscoring the importance of multistakeholder engagement.
- Baseline KAP results further indicated a moderate understanding of immunization benefits and schedules, generally positive attitudes, and acceptable but not optimal immunization practices. While awareness and willingness to immunize were evident, gaps remained in translating knowledge into consistent practice, including concerns about vaccine safety and challenges with adherence to immunization schedules.

This indicates a clear opportunity for improvement. Moderate agreement indicates a baseline on which interventions can build and strengthen attitudes toward more consistent, sustained practices. While the target population is generally receptive to behavior change, additional support is needed, including clear, accessible information, trust-building efforts and practical facilitation. Addressing these gaps is critical to moving caregivers from moderate to high agreement, reinforcing commitment to completing immunization schedules and reducing hesitancy. The findings from the formative research also underscores the importance of targeted, localized interventions to address persistent barriers, including misinformation, cultural beliefs, and logistical constraints.

Interventions

The GHS VaxSocial project composed of four interventions.; combining promotion on social media, moderated WhatsApp support groups, healthcare worker capacity building, and training for journalists.

1. **The GHS VaxSocial intervention positioned social media as a primary channel to reach parents and caregivers of children aged 0-12 years.** Baseline survey data identified WhatsApp (80.82%), Facebook (37.76%), and Instagram (13.89%) as the most frequently used platforms used by caregivers for accessing immunization information among parents and caregivers. These channels were prioritized to align with existing user behavior and maximize reach, in direct response to baseline findings showing that caregivers already rely heavily on social media for immunization information.
2. **In addition, the project focused on peer-based engagement through moderated WhatsApp support groups called *Ibu Pandai* (Smart Mothers),** adapted from an initiative by the MOH's Directorate of Health Promotion and Community Health. Given that WhatsApp is the most widely used social media platform across the program's target provinces, the baseline findings indicated that this intervention strategically leveraged the platform as a primary channel to reach, engage, and support caregivers and parents of young children. In addition to baseline respondents, group admins extended invitations to other parents and caregivers in the puskesmas catchment area during community immunization activities or at health posts (posyandu), often by distributing QR codes or group join links. Moreover, each WhatsApp

support group was managed by an administrative team comprising healthcare staff from the affiliated puskesmas, health promotion officers, representatives from the district health office, and VaxSocial Indonesia. These facilitators were responsible for monitoring group activities, disseminating verified content, responding to members' questions and grievances within reasonable time frames and maintaining a positive and inclusive environment.

3. **The project focused on strengthening the long-term local capacity of healthcare workers in digital health communication.** This component addressed baseline findings and stakeholder feedback that indicated limited digital skills and confidence among health workers to independently run social media campaigns. Healthcare workers are the backbone of successful immunization; however, social media communication remains unfamiliar to some of them. Before the intervention, social media training was conducted for healthcare workers to equip them with knowledge and skills to create a Facebook page for advertising and to manage content and social media platforms consistently. As healthcare workers often have limited time and capacity to create content, the training focused on building their capacity to produce creative content quickly by utilizing AI, from content planning through production. The program aimed to improve both the supply of accurate information and the demand for immunization services through trusted local voices by equipping 236 health workers, community leaders, and civil society actors with practical skills.
4. **Finally, a two-day intensive journalism training** was held in Jakarta from May 31 to June 1, 2025, attended by 16 journalists from Medan, Manado, Pekanbaru, and Pontianak. Following the in-person session, journalists participated in a one-month remote mentorship and reporting phase to further develop their reporting capabilities on immunization. The training curriculum was designed to bridge knowledge gaps and equip journalists with both technical accuracy and engaging storytelling tools.

Evaluation Methodology

The methodology of the VaxSocial study was designed to assess the effectiveness of social media-based communication interventions in influencing parental KAP related to childhood immunization.

Difference-in-difference: To capture both measurable impact and contextual dynamics, the study employed a quasi-experimental approach, utilizing the Difference-in-Differences (DiD) analytical method to compare changes between the intervention and control groups. This approach allows for the estimation of intervention effects while accounting for underlying trends that may affect both groups similarly over time

Data were collected at two time points: before (baseline) and after (endline) the interventions period. Baseline data were collected in December 2024, and endline data in June 2025. To enrich the analysis, the study adopted a mixed-methods framework, integrating quantitative surveys with qualitative data from focus group discussions (FGDs) and digital conversation analysis from community WhatsApp support groups (WAGs). This combination of methods enabled a deeper understanding of the behavioral, social, and cultural factors shaping immunization decisions, as well as how digital communication efforts may influence them.

Qualitative: Sixteen focus group discussions GDs with parents, community leaders, influencers, and health workers explored message interpretation, barriers, and content preferences.

Digital: Analysis of active *Ibu Pandai* WhatsApp Support Groups examined message frequency and message recall. Moreover, social media and website engagement were analyzed using the Meta Ads Manager dashboard, Google Looker Studio, and Google Analytics. These analyses provided real-time insights into how peer dialogue and digital conversations influenced perceptions, addressed concerns, and reinforced campaign messages within community networks.

By combining these three approaches, the study conducted a robust Difference-in-Differences (DiD) analysis4 to quantify statistical effects while also capturing the lived realities that shape parents' and caregivers' decision-making in dynamic and social contexts.

Limitations: The study's findings should be interpreted with several limitations in mind. The quasi-experimental design cannot fully eliminate unobserved differences between intervention and control groups, and modest attrition, particularly in urban areas, may have affected attitudinal measures. Face-to-face interviews carried a risk of social desirability bias, while the purposive selection of four provinces limits generalizability to similar urban and digitally connected settings. The six-month intervention period may also have been insufficient to influence longer-term behavioral change. Finally, analyses relying on WhatsApp support group activity and self-reported recall were constrained by variable engagement and potential memory bias, despite mitigation measures.

Key delivery achievements

Through collective efforts at the national and sub-national levels, the GHS program reached an estimated 6.76 million unique accounts on social media, generating over 92 million impressions, and driving more than 577,000 clicks to the AyoSehat website.

Social media content was delivered at both a national level (in partnership with the national government), and at a provincial level.

- At the national level, the program supported the immunization program by producing content across 8 official Ministry of Health social media accounts and collaborating with more than 10 social media influencers. This national campaign has reached more than 20 million people, generated over 40.6 million impressions, and driven more than 553,000 engagements.
- At the provincial level, VaxSocial translated national priorities into locally resonant action. Strategies were tailored to each city based on baseline research findings and were implemented through 24 official social media accounts from 4 cities. Each city had its own figures and messages that resonated with it, such as highlighting the role of fathers in Medan, grandparents in Manado, using more direct, illustrative visuals in Pontianak, and incorporating faith-aligned language in Pekanbaru. More than 160 social media content pieces were published, supported by more than 500 user-generated contributions, ensuring that the messages reflected local voices and concerns.
- Based on Meta's Account Center data, the campaign reached an estimated 6,763,818 unique accounts on Facebook and Instagram, which reduces duplication across accounts and users.
- In addition, the program collaborated with more than 40 local influencers, achieving more than 701,663 in reach, and with community-based digital outlets, which led to more than 448,383 reached on Instagram.
- The campaign also used Search Engine Marketing (SEM) and Google Display Network (GDN) advertising, generating more than 9.98 million impressions and over 347,154 clicks to AyoSehat website.

Figure 2. Social Media Content Insights in 4 Cities



Medan	Manado	Pekanbaru	Pontianak
Content featuring fathers shows higher levels of audience engagement.	The depiction of grandma and grandpa as respected family figures in Manado strengthens emotional closeness with the audience and encourages a more positive response to the message immunization.	The use of an integrated religious approach in immunization messaging is highly relevant to the local context of Pekanbaru, which may explain the relatively strong performance of the content.	Educational content with a simple visual approach and the use of illustrations tends to be easier for the audience to understand and attract attention.

In total, the GHS program generated more than 90 immunization-related articles across national and subnational outlets, including social media articles from each news outlet. In collaboration with the Alliance of Independent Journalists (AJI), the program offered a fellowship to support in-depth reporting and regular mentoring for journalists to consult on the progress of their news stories covering the immunization topic. The program has trained 16 local journalists from 4 cities and resulted in a significant improvement in journalists' understanding of immunization, with a 20% increase from the pre-test (49.4%) to the post-test (69.4%). It suggests these journalists are now

better positioned to critically evaluate immunization-related information, resist misinformation, and produce more accurate, nuanced reporting well beyond this program cycle.[1]

The GHS program has established 8 new *Ibu Pandai* (Smart Mother) WhatsApp support groups in 4 Cities that connect community health centers (Puskesmas) with mothers and caregivers in the area,[2] within 5 months, the groups grew to 1,080 members. The group admins helped answer more than 355 immunization-related questions and driven more than 2,500 conversations. A total of 238 pieces of content have been shared across 8 WhatsApp support groups, with an average of 83% of members seeing the content, and total views are increasing over the month. The WhatsApp support group administrator played a key role in the success of the intervention, particularly by providing prompt responses to each question and actively engaging with the mothers. On average, the response rate was 92%, indicating that each admin responds to mothers' questions to ensure no message goes unanswered, with an average response time of 33 minutes. Through the *Ibu Pandai* WhatsApp support group, 113 expressions of intent to immunize children were recorded, as the group serves as a reminder for mothers to immunize their children. The conversation dynamics varied from immunization schedule, service hours, maternal and child health, and general health. WhatsApp support groups enable mothers to receive information early, particularly regarding vaccine stock availability, thereby reducing unnecessary travel and costs.

Over two days of hands-on intensive training, more than 236 health workers, community and religious leaders, and civil society actors from across the province learned how to communicate, create, and promote the content to wider communities through social media. The workshop is designed to cover 4 modules: Understanding Immunization, Effective Communication, Content Creation (ChatGPT, Canva, CapCut), and Advertising on Social Media.

[1] Furthermore, one book has been published and registered under an ISBN (International Standard Book Number), compiling in-depth reporting from 16 journalists in 4 cities and accessible to a broader audience. The book has been downloaded more than 2,800 times for the Indonesian version and over 1,600 times for the English version.

[2] The WhatsApp support group are managed by a dedicated Puskesmas team consisting of doctors, health promotion, and immunization staff, to ensure group members receive accurate and quick responses

Key Findings

Reach and engagement

The recall rate analysis indicates that exposure to VaxSocial content was broadly distributed across demographic groups, with consistently high mean recall rates across most segments. Across gender and age groups, mean recall remained relatively consistent, with women at 67.5% and the highest levels observed among respondents aged 18–25 (77.6%), suggesting strong engagement among younger caregivers. Differences by education and income were more pronounced, with higher recall among those with secondary and tertiary education (71.4% and 64.5%, respectively) and among middle- to higher-income groups, while respondents with primary education (58.3%) and those in the lowest income bracket (< IDR 1.5M, 68.4%) reported lower recall. From a cost-effectiveness perspective, these patterns suggest that the intervention achieved substantial reach across diverse population segments, with some variability, but overall demonstrating that program investments translated into broad audience exposure rather than being narrowly concentrated.

Across all four cities, the minimum recall rate was high at 92.5%, indicating that nearly all WhatsApp support group participants remembered at least one campaign message. Medan recorded the highest minimum recall (99.3%), followed by Pontianak (96.7%) and Manado (95.7%), while Pekanbaru showed a lower, though still substantial, recall rate (78.3%).

Behavioral Outcomes

Evaluation findings indicate that VaxSocial was effective in improving knowledge and attitudes towards immunizartion, and in shaping early practice or behavioral tendencies, but these shifts did not consistently translate into measurable increases in immunization uptake within the study timeframe at the individual- and facility-levels. This in part reflects supply-side barriers, including intermittent vaccine availability, limited puskesmas outreach capacity, and irregular service schedules that fall outside the scope of a demand-generation intervention.

Intermediary Outcomes (knowledge and attitudes)

The GHS program generated clear improvements in parents' and caregivers' knowledge, attitudes, and early immunization practices. In intervention sites, knowledge (of the immunization programme) rose from 91.1% to 96.4%, attitudes (towards vaccination) from 71.5% to 79.2%, and practices (in preparation towards immunization), from 93.1% to 96.7%. DiD analysis showed net gains of +7.8 percentage points in knowledge, +13.8 points in attitudes and +6.3 points in practices with the strongest effects in attitudes, reflecting the program's role in strengthening confidence and trust.

Figure 3. Difference in Difference results for Knowledge, Attitude and Practice

Knowledge	Attitude	Practice
+7.8 pp	+13.8 pp	+6.3 pp

Immunization Coverage Outcomes

Improvements in knowledge, attitudes, and early practices did not translate uniformly into greater levels of immunization coverage across several data-source levels. Coverage outcomes varied by province, vaccine type, and data source. Across settings, basic infant immunization (IDL)[3] consistently outperformed advanced immunization (IBL)[4], reflecting the relative ease of completing shorter schedules. When aggregated across the four provinces based on self-report, overall coverage trends declined, driven largely by reductions in advanced immunization completion.

Immunization outcomes were mixed, whilst the program recorded no change in self-reported vaccination status, administrative data points to a modest change in routine immunization rates. Despite a marked national decline in routine immunization coverage between 2024 and 2025 – IDL falling from 87.3% to 79.4% (-7.9 percentage points) and IBL decreasing from 87.1% to 76.7% (-10.4 percentage points) – the study identified measurable positive differentials within the VaxSocial implementation areas.

An estimate of additional immunizations was calculated by applying the DiD effects observed at the puskesmas level in the targeted cities or districts (+8.0% for IDL and +1.0% for IBL) to the respective target child populations: 66,296 children eligible for IDL and 72,239 children eligible for IBL across the four cities. Citywide coverage figures were derived from routine administrative data aggregated across all puskesmas in both intervention and control areas, rather than being limited to selected facilities This produced an indicative estimate of 6,025 additional immunizations – attributable to VaxSocial interventions, representing the aggregated effect of small percentage-point changes applied to large exposed populations. This modelling approach enables the analysis to translate behavioral and early-practice signals into an approximate population-level magnitude, while recognizing that it does not constitute a direct count of administered doses.

[3] 'IDL': Imunisasi Dasar Lengkap (Basic Infant Immunization); vaccines given within the first year of life, including BCG, Polio, Hepatitis B, and the first DPT/MR doses.

[4] 'IBL': Imunisasi Bayi Lanjutan (Advanced Infant Immunization); vaccines given after the first year of life, such as DPT booster, MR2, and JE.

Figure 4. Immunization Coverage Outcomes

Immunization	Intervention Change	Control Change	DiD Effect	Additional Immunizations
IDL (Basic)	+7.2 pp	-0.8 pp	+8.0 pp	5,303 children
IBL (Advanced)	+2.3 pp	+1.3 pp	+1.0 pp	722 children
Total				**6,025 children**

Provincial Comparisons

Provincial-level DiD analysis, based on immunization data aggregated across all puskesmas in the intervention cities and their respective control districts, reveals substantial variation across provinces. At the provincial level, the total additional immunizations amounted to 14,131, comprising 9,126 IDL and 5,005 IBL. These figures reflect overall provincial immunization dynamics during the study period and are not directly attributable to the VaxSocial intervention; they represent broader system-level performance relative to matched control areas. North Sumatra demonstrated the strongest positive differential, with 10,512 additional IDL immunizations (+32.4%) and 4,576 additional IBL immunizations (+13.6%) relative to its control counterpart. In contrast, Riau recorded a net decline of 1,750 IDL immunizations (-6.9%), while IBL showed a mixed pattern with an absolute increase of 424 vaccinated children but a relative decline of -9.4%. West Kalimantan experienced negative differentials for both IDL (-306; -1.2%) and IBL (-466; -5.4%). Meanwhile, North Sulawesi showed modest positive differentials, with 670 additional IDL immunizations (+7.7%) and 471 additional IBL immunizations (+4.9%) relative to its control district.

Figure 5. Total Number and Percentage of Additional Immunization at Provincial-Level

Province	DiD IDL		DiD IBL	
	Abs	%	Abs	%
North Sumatra	10,512	32.4%	4,576	13.6%
Riau	-1,750	-6.9%	424	-9.4%
West Kalimantan	-306	-1.2%	-466	-5.4%
North Sulawesi	670	7.7%	471	4.9%
Total	**9,126**	**32.0%**	**5,005**	**3.7%**
Aggregate IDL and IBL	**14,131**			

Extrapolated estimates should be interpreted as indicative, not confirmatory, reinforcing the conclusion that digital demand-generation efforts must be paired with strong, accessible, and reliable service delivery systems to achieve sustained gains in coverage.

Key Learnings

Overall, this intervention has made important progress in strengthening parents and caregivers' knowledge, attitude, and early immunization-related practices. At the same time, the variability in immunization coverage outcomes highlights that these gains are only part of the pathway to sustained impact. Continued efforts are needed to build on this foundation by aligning communication, community engagement, and service delivery, so that improvements in understanding and trust are more consistently translated into completed immunization.

Strengthened KAP is a necessary foundation, but it is not sufficient on its own to ensure immunization completion. Persistently lower IBL coverage points to structural and system-level constraints associated with longer, multi-visit schedules, including service availability, caregiver time constraints, and follow-up mechanisms. Meanwhile, variation in IDL and school-based immunization month (Bulan Imunisasi Anak Sekolah, BIAS) outcomes highlights the continued influence of local service delivery conditions and institutional coordination, underscoring that behavioral gains must be accompanied by enabling service environments to translate into sustained coverage improvements.

Local context is key. Beyond the headline KAP gains, the findings reveal several important dynamics in the relationships between knowledge, attitudes, and practices. For instance, urban intervention areas exhibited more fragmented relationships between KAP domains. This indicates that in urban settings, gains in awareness and confidence can be offset by service-side and time-related constraints, producing mixed outcomes across KAP and coverage indicators. Semi-urban control areas, by comparison, showed more consistent directional trends. In semi-urban contexts, KAP domains tend to move together, shaped more strongly by the presence or absence of trusted communication and community reinforcement than by fragmented service or scheduling constraints.

Knowledge alone was insufficient to ensure behavioral follow-through. From a behavior change perspective, the transition from awareness and positive attitudes to sustained practice typically requires a longer time horizon, repeated reinforcement, and supportive conditions. While knowledge and attitudes can improve relatively quickly through exposure to information, consistent practices often depend on habit formation, social reinforcement, and the removal of practical barriers, particularly for behaviors that require repeated action over time.

This interpretation is further shaped by the study's definition of practice. Practices were assessed through caregivers' reported actions related to immunization, including whether they brought, postponed, or refused to take their children for vaccination for health-related or non-health-related reasons, as well as adherence to recommended immunization schedules. Within this framework, the observed association between knowledge and practice was modest ($r = 0.15$), underscoring that immunization behavior is influenced not only by awareness but also by enabling conditions.

Cost-Effectiveness

Whilst the program was highly cost-effective at reaching and engaging caregivers, high cost per additional immunization reflects the increased resource in delivering integrated digital tools and limited behavior change observed so far.

The analysis estimates population-level attributable outcomes using a projected impact approach that extrapolates recall among WAG sample members to the broader city population. The total population across the four intervention cities is estimated at 4,624,580, based on Statistics Indonesia

(BPS) in 2023. Under this method, impacts are calculated by multiplying the total city population by the observed recall rate among WhatsApp participants and the corresponding DiD estimate. In some cases, DiD estimates are negative, indicating that outcomes in intervention areas improved less or declined more than in control areas. These estimates are retained to capture the full spectrum of observed effects and to ensure a transparent and balanced assessment of intervention performance.[5]

The cost per person reached was $0.29, indicating the program delivered campaign exposure at scale at a relatively low cost. Furthermore, analysis of cost-effectiveness across outcome areas shows differences in the level of investment required to achieve measurable change:

- $1.58 per attributable knowledge outcome – For every $1.58 spent, one additional person improved their understanding of immunization. Gains were significant in two provinces and positive across all three included provinces, even though baseline knowledge was already high (88.1%–99.3%), indicating the campaign was effective even in near-ceiling conditions.
- $1.51 per attributable attitude outcome – For every $1.51 spent, one additional person shifted toward a more positive attitude toward immunization. Gains were significant in three of four provinces, with the strongest returns in Riau (+56.5 pp), where baseline attitudes were lowest (62.5%). This confirms that campaigns yield the greatest attitudinal returns where there is the most room to improve.
- $1.51 per attributable practice outcome – For every $1.51 spent, one additional person showed early signs of improved immunization-related behavior. However, only North Sumatra recorded a statistically significant result (+19.6 pp), while other provinces showed minimal change despite already-high baseline practice levels (94.6%-100.0%). Where behavioral intent is already strong, the remaining barrier is service access, which communication campaigns alone cannot address.
- $83.23 per additional immunization (CpAI), based on city-wide aggregation, highlighting that translating awareness and attitudinal gains into actual immunization uptake requires

[5] The cost-effectiveness analysis included all program investments across three main components — social media campaigns, WAG interventions, and monitoring and evaluation — covering expenses such as personnel, content production, advertising, social listening and other tools, advertising agency operations, and implementation costs. These costs were linked to key outcomes measured through the mixed-methods evaluation, namely: improved knowledge (addressed parents' and caregivers' misconceptions), enhanced attitudes (increased interest, intention to act, and trust in the healthcare system), and strengthened practices (earlier identification of behavior signs to bring children for immunization). By dividing the total investment by the estimated number of additional positive outcomes in each domain, cost-per-outcome figures were calculated, providing a standardized measure for comparing efficiency across result areas.

substantially greater investment and depends heavily on service delivery conditions beyond communication interventions alone.[6]

Cost-Effectiveness Analysis Reflections

The elevated CpAI values observed across provinces are largely explained by supply-side factors that operate beyond the scope of a digital demand-generation intervention. These include: (a) intermittent vaccine stockouts and cold chain disruptions that periodically limited service availability even when caregiver demand was present; (b) insufficient puskesmas outreach capacity and irregular vaccination schedules, meaning that caregivers who intended to immunize their children faced practical barriers to follow through; and (c) structural access barriers, including transportation constraints, inflexible service hours. These factors are outside the program's sphere of control, and their presence means that demand generated through communication cannot independently convert into immunization uptake without a functioning and accessible service delivery system.

Furthermore, the program's CpAI therefore reflects a more comprehensive intervention package than most program comparators, supporting its interpretation as cost-acceptable relative to the breadth of activities delivered.

The social media cost-effectiveness analysis shows that each platform offered distinct advantages.

- Google was the most effective in driving traffic, delivering the highest Click Through Rate (CTR) at 3.48% and the lowest Cost per Click (CPC) at $0.015, which is well below the global benchmark of $0.64, compared to $0.05 for Facebook and $0.07 for Instagram.
- Facebook excelled in broad reach, generating 38.5 million impressions at a Cost per 1,000 Impressions (CPM) of $0.30 and 2,422 direct messages to Puskesmas and district health offices at a Cost per Lead (CPL) of $2.32.
- Instagram recorded 56,159 clicks and 948 messages at a CPL of $2.79, making it less cost-efficient but still valuable for engagement.

[6] The CpAI of $83.23 per additional immunization was calculated by dividing the social media campaign cost component by city-wide reach multiplied by the DiD effect on immunization coverage. Cost components included in this calculation are paid digital advertising expenditures (Facebook, Instagram, and Google campaigns), WhatsApp support group facilitation, content production, advertising agency operations, and a proportional share of monitoring and evaluation costs. Several limitations apply to this metric: city-wide reach figures are based on self-report recall test; the DiD effects are derived from a limited number of selected puskesmas rather than all facilities in each city; and city-wide extrapolation assumes uniform effect across the entire intervention population, which may not hold in practice. , population-level extrapolation relies on the assumption that the endline sample of 1,099 respondents is broadly representative of the wider city populations, an assumption supported by the use of stratified random sampling to reflect key demographic characteristics and mitigate potential unbalanced confounding factors

These results highlight that Facebook is best suited for awareness campaigns, while Google is more effective for click generation, and Instagram offers niche engagement opportunities, albeit at higher costs.

Legacy and sustainability

Health care worker capacity building significantly improved their digital skills and ability to connect with caregivers online. The results of training activity showed significant increases in understanding across key training topics, particularly in content creation (+19.37%) and social media promotion (+29.09%). These improvements suggest that equipping participants with practical digital skills can strengthen their capacity to communicate about immunization more effectively within their own networks and communities. Within days, participants were able to plan posts, design content visuals, produce short videos, and publish digital content on WhatsApp and other social media platforms. Therefore, when the program has ended, healthcare workers and community leaders can continue this effort and build a positive social media narrative around immunization. To extend the program's reach to broader audiences, these learning materials are also available as four video modules on the Ministry of Health's AyoSehat YouTube channel.

Figure 6. Improvements in capacity building

All competency areas showed measurable improvement following the training. **Social Media Promotion** recorded the highest gain of **+29.09%**, reflecting significant knowledge growth from pre- to post-test.

Competency Area	Pre-Test	Post-Test	Improve-ment	Progress (0–100%)
Social Media Promotion	56.91%	**85.98%**	**+29.07%**	
Content Creation	73.94%	**93.31%**	**+19.37%**	
Effective Communication	88.08%	**93.93%**	**+5.85%**	
Understanding Immunization	95.65%	**97.07%**	**+1.42%**	

VaxSocial strengthened multi-stakeholder collaboration to advance Indonesia's immunization demand agenda. The program brought together more than 30 representatives from MoH units, WHO, UNICEF, UNDP, development partners, and civil society organizations to support the MoH in convening the country's first national coordination meeting on immunization demand generation. The meeting served as a launchpad for an ongoing national platform to align communications strategies and integrate digital channels into broader outreach.

The program demonstrated that digital engagement can meaningfully strengthen caregivers' confidence in immunization. Localized digital campaigns combined with interactive WhatsApp support groups increased knowledge, built trust in vaccines and services, and reinforced positive vaccination behaviors across targeted provinces. While challenges persist with service reliability and

completion of longer immunization schedules, findings underscore the effectiveness of digital platforms as a powerful complementary tool to traditional in-person outreach. The approach generated actionable, scalable lessons to support sustained vaccine demand and inform future immunization strategies in Indonesia.

Conclusion and Discussion

VaxSocial delivered an integrated set of achievements that connected national visibility, local system strengthening, and direct caregiver engagement into a coherent pathway for strengthening immunization demand. At scale, the campaign significantly expanded access to credible immunization information through coordinated national and subnational digital dissemination. At the city level, it operationalized localized government health accounts, built a steady pipeline of tailored content, and generated high volumes of public interaction and user-generated participation. At the community level, it introduced structured WhatsApp support groups that created safe spaces for mothers to ask questions, receive practical guidance, and navigate services.

Beyond campaign delivery, VaxSocial strengthened the enabling ecosystem for sustained impact in immunization. By training health workers, community leaders, and journalists, and transferring tools and learning resources to government partners, the program reinforced local capacity and improved the quality and consistency of immunization narratives within the broader information environment. Together, these achievements demonstrate a full pathway from ecosystem strengthening and narrative amplification to interpersonal engagement mechanisms that support behavior change.

The strongest drivers of positive outcomes were credibility, relevance, and interactivity. Caregiver response was highest when information was delivered by trusted local health actors, reflected lived concerns, and enabled dialogue rather than one-way messaging. The WhatsApp support groups were particularly effective because they reduced uncertainty, addressed misinformation in real time, and linked digital engagement to concrete actions, such as checking vaccination schedules and availability. Improvements were most evident in knowledge and attitudes, indicating that the intervention was particularly effective in strengthening understanding, confidence, and trust in immunization. Urban intervention areas outperformed controls on KAP indicators, underscoring that outcomes improved when digital exposure was combined with accessible services and active facilitation rather than passive content alone.

However, several factors constrained the consistent translation of improved knowledge and attitudes into higher coverage. First, awareness alone proved insufficient; behavioral follow-through depended heavily on enabling conditions such as reliable services, social support, and practical reminders. Completion of longer immunization schedules remained particularly challenging, contributing to uneven results across provinces and between basic and advanced immunization. Second, external shocks disrupted attention or trust during the intervention period, including online controversy, public holidays, and local emergencies. Third, operational constraints at the local level, such as vaccine stockouts, limited technical capacity, staff turnover, and gaps in standardized social media account management, delayed or weakened campaign execution. These factors highlight that digital demand generation is highly sensitive to service readiness, timing, and local implementation capacity.

Going forward, the evidence points to clear priorities for strengthening and sustaining impact.

- Facilitated WhatsApp support groups show strong potential as a longer-term complement to routine puskesmas and community outreach, particularly as a trusted platform for continuous, two-way engagement.
- Continued investment in localization through co-created content, local storytelling, and responsive moderation will be essential to maintaining relevance and credibility.
- Stronger alignment between digital engagement and service delivery may further support follow-through, for example, by linking communication more closely with vaccine availability, outreach schedules, and offline touchpoints.
- Finally, sustained investment in local implementation foundations, including digital capacity, standardized account management, and adaptive monitoring systems, will enable districts to focus resources on the highest-impact components and respond more effectively to evolving contexts.

Key Factors Influencing Immunization

While social media was an effective platform for building immunization confidence and increasing immunization intent, this research identified several key factors that influenced how far digital interventions could translate into real outcomes:

External Factors

- The disaster in Manado, the capital of North Sulawesi, diverted the attention of both health teams and communities, reducing focus on immunization campaign messages.[7]
- During 6 months of the intervention period, program implementation coincided in part with Ramadan, when most health care workers, particularly in the intervention area, had fewer working hours. As the majority of the population is Muslim, public attention to immunization-related content and messaging was lower during this period, temporarily reducing engagement.
- Baseline research identified some barriers that affect immunization decisions, including limited information, concerns shaped by past negative experiences, distance and transportation costs, family or spousal disapproval, and religious influence.
- The capacity of health care workers, particularly in technical social media skills, and the absence of standardized documentation for social media account handovers between staff, caused delays in campaign advertising.

[7] Extreme weather and heavy rain caused extensive flooding in Manado City, the capital of North Sulawesi in March 2025. This took place whilst VaxSocial was in the field, and demonstrates how events can restrict online and offline efforts to boost vaccination.

Internal Factors

- Given the diversity and complexity of Indonesia's regions, it was challenging to increase immunization coverage within the short duration of the intervention.
- Tracking the audience journey, whether people are going to the immunization centers after seeing the campaign, was challenging.

Further research is needed to better understand how knowledge, attitudes, and practices lead to immunization uptake, including the drivers of service accessibility, information ecosystems, and social norms in urban and semi-urban settings.

Recommendations

Future digital immunization programs in Indonesia should focus on institutionalizing their most effective components, with the *Ibu Pandai* WhatsApp support groups (WAGs) as a central example. These moderated, two-way platforms have proven invaluable for peer learning, trust-building, and addressing caregivers' doubts in real-time. To maximize their impact, WAGs should be further embedded within local leadership structures — engaging village heads, health workers, and community cadres — and managed by trained facilitators skilled in empathetic dialogue and misinformation mitigation. Establishing WAGs as a permanent feature of the health communication ecosystem will help sustain engagement beyond campaign lifecycles.

Institutionalize Proven Platforms

- Further scale *Ibu Pandai* WhatsApp support groups (WAGs) among village heads, health workers, and cadres.
- Build facilitators' capacity for empathy and misinformation management.

Localize & Co-Create Content

- Engage caregivers, youth, and leaders in the design of content.
- Use stories and testimonials in local languages.
- Address vaccine origin & safety transparently.

Integrate with Service Delivery

- Sync messages with vaccine schedules & stock.
- Pair digital prompts with CHWs, outreach, and schools.
- Ensure smooth path: "message → service."

Prioritize Cost-Effectiveness & Monitoring

- Invest in high-impact tools (which are targeted, interactive, and moderated, such as the WhatsApp Support Groups) that complement service delivery.
- Use dashboards, polls, & real-time feedback to track performance, monitor misinformation and adapt digital content accordingly.

Build Capacity & Embed in SBC Ecosystem

- Train a decentralized digital health workforce on digital communications – including content creation, moderation, ethical practices and analytics.
- Integrate training on digital tools into national/regional healthcare worker training programs.
- Link digital campaigns with schools, faith organizations, youth groups and community events.

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Example social media content

Picture 14. Example of Contents Created by Participants



Picture 15. Most Recalled Visual and Message



North Sumatra | Riau | West Kalimantan | North Sulawesi

Glossary

Attitude (KAP) – The perceptions, beliefs, and feelings toward childhood immunization, measured through survey questions using Likert scales.

Ayo Sehat Website – An official website from the Ministry of Health Indonesia that provides general health information, focusing on education and information for pregnant women, babies, toddlers, teenagers, adults, and the elderly.

BIAS – Bulan Imunisasi Anak Sekolah; Indonesia's school-based immunization program that delivers vaccines such as Measles-Rubella (MR), Tetanus-Diphtheria (TD), Diphtheria-Tetanus (DT), and HPV to school-aged children.

CpAO (Cost per Attributional Outcome) – The average cost required to achieve one additional outcome that can be directly attributed to the intervention, typically calculated by dividing total program costs by the number of attributable outcomes.

CpAI (Cost per Additional Immunization) – The average cost required to generate one additional immunization attributable to the intervention, calculated by dividing total program costs by the number of attributable immunizations.

CPC (Cost per Click) – A digital advertising metric in which advertisers pay only when a user clicks on the ad. It is commonly applied in platforms such as Google Ads or Meta Ads.

CTR (Click Through Rate) – The percentage of users who clicked on an advertisement compared to the total number of impressions (views).

CPL (Cost per Lead) – The cost incurred to acquire one lead (a potential customer or participant) through a campaign. In public health contexts, a lead may refer to an individual who registers or expresses interest in a program or service.

CPM (Cost per Mille) – the cost paid for every 1,000 impressions of an advertisement. This metric primarily measures the reach of a campaign rather than direct engagement.

Difference-in-Differences (DiD) – A statistical method comparing changes in outcomes between intervention and control groups over time to estimate the intervention's effect. This helps isolate the impact of a program by accounting for underlying trends that affect both groups.

Full Immunization – Completion of all basic and advanced vaccines appropriate for a child's age according to Indonesia's immunization schedule.

Google Display Network (GDN) – One of the advertising options provided by Google that allows ads to be displayed across many websites, videos, and mobile applications that have integrated Google's ad code.

IBL – Imunisasi Bayi Lanjutan (Advanced Infant Immunization); vaccines

given after the first year of life, such as DPT booster, MR2, and JE.

IDL – Imunisasi Dasar Lengkap (Basic Infant Immunization); vaccines given within the first year of life, including BCG, Polio, Hepatitis B, and the first DPT/MR doses.

Impression – The number of times content is displayed on an audience's screen.

Intervention Area – Locations where the VaxSocial digital campaign and engagement activities (e.g., WhatsApp support groups) were implemented

KAP – Knowledge, Attitude, Practice; a survey framework assessing awareness, perceptions, and behaviors toward immunization.

Knowledge (KAP) – Knowledge was assessed through measuring misconceptions about vaccines among parents and caregivers and exposure to or belief in online vaccine misinformation.

Likert Scale – A rating scale (often 1–5) used to measure the strength of agreement or disagreement with a statement.

MR – Measles-Rubella vaccine, often part of BIAS.

Pathway Analysis – An approach examining how changes in knowledge, attitudes, and practices are connected to changes in immunization outcomes.

PIN Polio (Pekan Imunisasi Nasional/National Immunization Week) Polio – An Indonesian government program that provides additional polio vaccination to prevent the spread of the polio virus. This program acts as a rapid response to polio outbreaks.

Practice (KAP) – The actual immunization-related behaviors reported by respondents, such as bringing a child to receive a vaccine.

Puskesmas (Pusat Kesehatan Masyarakat) – community or primary health center

PWS (Pemantauan Wilayah Setempat) – local routine reporting system

Reach – The total number of people who see a piece of content over a given period of time.

Search Engine Marketing (SEM) – A digital marketing strategy to increase website traffic in search engine results through paid advertising, such as Google.

Self-Report Data – Information provided directly by respondents, which may be subject to recall bias or social desirability bias.

User Generated Content (UGC) – Any form of content, such as text, images, videos, or reviews, that is created and shared by the audience rather than brands or organizations.

VaxSocial – A $12 million initiative focused on demonstrating how social media can help build vaccine confidence funded by Gavi the Vaccine Alliance and Advancing Health Online (AHO) – a fiscally sponsored project of Global Impact.

WhatsApp support group (WAG) – Digital chat groups used in the intervention to share information, answer questions and encourage immunization.

For more information

More information and further reading can be found at:

https://www.vaxsocial.com/

GHS is a global consultancy working at the intersection of health, development, and climate. We help organizations turn complex issues into clear messages that drive action. Founded in human rights advocacy during the AIDS crisis, GHS continues to support efforts that expand access to medicines and vaccines, advance equity, strengthen vulnerable systems, and elevate innovative approaches to financing and digital transformation, especially in low- and middle-income countries. Our work blends creative communications—messaging, media, digital content, and leadership voice—with strategic advocacy, policy insight, and stakeholder engagement to influence change.

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