
REACHING UNVACCINATED CHILDREN

Lessons Learned from JSI's Technical Assistance to
the Government of the DRC for Improving Access and
Utilization of Routine Immunization Services



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Many infants and families in urban areas do not receive vital health services such as immunization. To address these inequities in the megacity of Kinshasa, Democratic Republic of the Congo (DRC), JSI Research and Training Institute, Inc. (JSI) worked with the Ministry of Health and urban municipalities to strengthen routine immunization (RI) service delivery through locally tailored solutions. This involved the adaptation of the [Reaching Every District \(RED\) approach](#) and identification of steps to ensure quality of care and reduce dropouts in the urban environments, notably with provision of services to urban poor communities.

With support from Gavi, the Vaccine Alliance (Gavi), JSI worked with the Government of the DRC in Kinshasa in two phases from January 2018 to January 2020. Through these efforts, new strategies reduced missed opportunities for vaccination and vaccinated zero-dose children through the DRC's RI system in Kinshasa.

To shed light on reasons for unvaccinated children, a [rapid assessment](#) of barriers to access and utilization of routine immunization among urban poor living in Kinshasa was conducted in phase one (May-June 2018). Based on these findings, JSI (in collaboration with multiple levels of the Expanded Programme on Immunization (EPI) and partners) supported Health Zones to develop an action plan with targeted [short and long-term strategies](#), drawing from a menu of options. In conjunction with supervision and monitoring visits to facilitate capacity building and iterative learning, JSI supported the pilot of some of these key strategies in phase two (August 2018-November 2019), specifically:

- Adapted micro-planning,
- Vaccination in public places,
- Integration of private sector health facilities into the EPI system.

This technical support led to the following crosscutting outcomes:

- Critical monitoring meetings convened to review EPI data on a more regular basis, which helped facilities to request the correct quantity of vaccines;
- Increased frequency of vaccination sessions in facilities already vaccinating, based on a better understanding of demand and catchment population;
- Improved planning and quality assurance during vaccination sessions in public places (an innovative intervention piloted during this activity);
- Advocacy for private facilities to start providing routine immunization;
- Strengthened capacity for implementation of RED principles overall.

This initial learning suggests that simple, targeted interventions implemented by the EPI reached large numbers of unvaccinated children in hard-to-reach areas that may otherwise have been missed.

These strategies were developed in collaboration with a broad range of stakeholders and will benefit from scale up throughout Kinshasa, in conjunction with core health system strengthening efforts, such as supervision and micro-planning.

BACKGROUND

IMMUNIZATION CHALLENGES WITH A GROWING URBAN POPULATION

Delivery of routine immunization in an urban environment faces many challenges: population denominators are often based on outdated census data, unsanitary living conditions, unreliable access to clean drinking water, malnutrition, weak infrastructure, and lack of social services. Gaps in immunization coverage can be difficult to measure in these areas

Kinshasa is Central Africa's largest and fastest growing metropolitan area, with an estimated 12 million people, an estimated 17.8% of which - 2,136,000 children - are under the age of five¹. Since 1997, internal conflict and rural-urban migration for employment opportunities have contributed significantly to accelerated urbanization. By 2020, the country's population living in an urban or peri-urban area exceeded 50%.

¹ Based on urban/ rural population estimates from the 2013-2014 DRC Demographic and Health Survey.

and populations are under-served, resulting in the potential for regular [outbreaks](#) of vaccine-preventable diseases (VPDs). With these challenges, immunization programs struggle to meet the needs of the population, resulting in significant equity² gaps.

JSI'S ADAPTIVE APPROACH

In response to the mounting threat of VPDs, JSI worked with the Government of the DRC to evaluate and adapt urban routine immunization service delivery to improve coverage and equity in Kinshasa, which is home to an estimated **324,000 unvaccinated children**³.

A rapid situational analysis in Limete and Kimbanseke Health Zones⁴ (May-June 2018) diagnosed barriers to immunization access and utilization faced by the urban poor in Kinshasa. The Urban Technical Committee (UTC), a group of stakeholders formed by JSI, used the findings to build an action plan of recommended strategies. JSI provided technical support



and advocacy for implementing these action plans, including piloting several new innovative strategies. From January to December 2019, JSI conducted supervision, mentoring and routine data collection in six Aires de Santé within the two Health Zones (Figure 1).

Moving into 2020, results from this pilot will be used to advise the scale-up and planning for these (or similar) urban immunization strategies through the Mashako Plan and the 2020 Annual Operational Plan. The pilot will also inform regional and global dialogue and decisions around programming to address urban poor immunization inequity (Figure 2).

PILOTED INTERVENTIONS

Though there are promising interventions used around the world for reaching unvaccinated children in urban poor communities with routine immunization, there is no one-size-fits-all approach. Each urban context is complex, characterized by high levels of heterogeneity, mobility, diversity, a frequently changing environment, and high risk of outbreaks.

Through the Global Urban Working Group, Unicef, WHO, USAID, London School of Hygiene and Tropical Medicine (LSHTM), JSI and other partners have developed a [toolkit](#) to help stakeholders adapt the RED approach to an urban context. These adaptations can be used in conjunction with innovative approaches for reaching unvaccinated children, such as those included in the [menu](#) of tailored strategies proposed by JSI.

During the pilot phase, a number of facility-level data were collected on a weekly and monthly basis (February- November 2019). JSI also collaborated with researchers from the University of Kinshasa to interview a range of stakeholders including Zonal Director of Medicine, Head Nurse/ Nurse Supervisor, Vaccinators, Community Organizers and caregivers at the end of the intervention in January 2020. In collaboration with LSHTM, these data were analyzed to help inform the extent to which piloted interventions can reach unvaccinated children and strengthen routine immunization service delivery. LSHTM's research expertise and knowledge of emerging promising

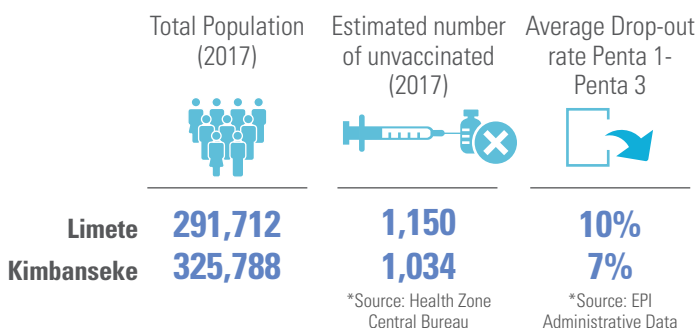
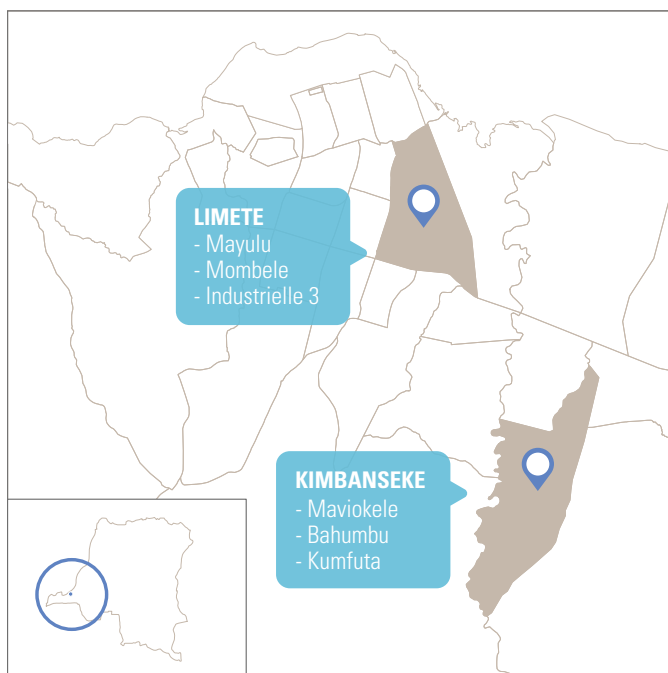


FIGURE 1: MAP OF KINSHASA, DEMOCRATIC REPUBLIC OF THE CONGO, HIGHLIGHTING TWO HEALTH ZONES WHICH WERE THE FOCUS OF JSI'S TECHNICAL SUPPORT

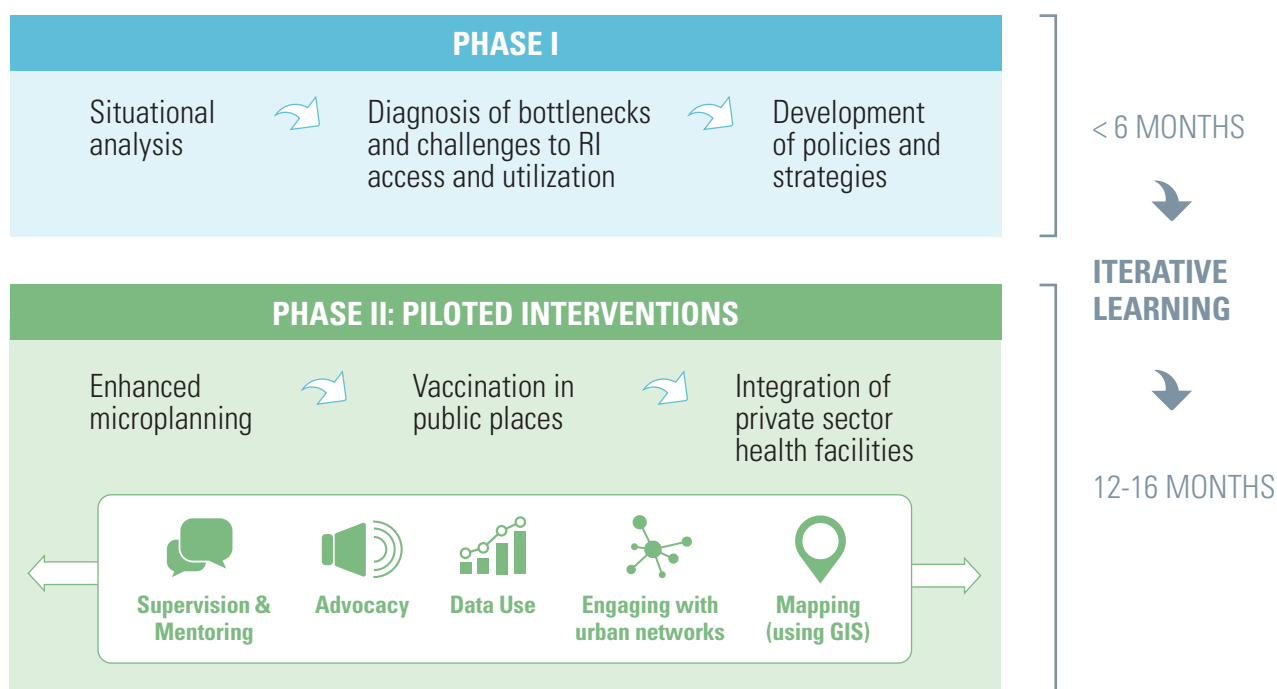


² Inequalities in full immunization coverage: trends in low- and middle income countries. <https://www.who.int/bulletin/volumes/94/11/15-162172.pdf>

³ Extrapolated based on eighty 85% (CI 80-88%) MCV coverage for of the children 10-11 months old, ranging from 76%-97% by Health Zone. Source: Mwamba GN, Yoloyolo N, Masembe Y, Nsambu MN, Nzuzi C, Tshékoya P, et al. Vaccination coverage and factors influencing routine vaccination status in 12 high risk health zones in the province of Kinshasa City, Democratic Republic of Congo (DRC), 2015. *Pan Afr Med J.* 2017;27(Suppl 3):7.

⁴ Limete and Kimbanseke were selected in collaboration with the EPI because both are Health Zones with high population density and are home to large numbers of urban poor, though the types of settlements in each are slightly different. Limete represents a weaker health system relative to Kimbanseke.

FIGURE 2: JSI'S APPROACH TO STRENGTHENING ROUTINE IMMUNIZATION IN KINSHASA



practices in global immunization facilitated evidence-based recommendations and considerations for scale up. There are also a number of important lessons to apply when considering how to adopt strategic interventions for strengthening routine immunization in urban areas.

MARKETPLACE VACCINATION

Vaccination in densely populated areas within large metropolitan areas, such as markets, has proven to be an effective strategy for reaching a large number of children and pregnant women unreached by vaccination sessions at health facilities or missed by community members. This is a promising strategy for reaching children who otherwise have access to vaccination services but have not yet completed the vaccination schedule for various reasons, including those who have missed critical birth dose vaccinations such as OPV and BCG. For this reason, this approach was included in Zonal action plans during phase one and incorporated into Aire de Santé micro-plans (more on micro-planning on page 7).

JSI coordinated with Zonal Coordinators and Aire de Santé health representatives, provided technical support to management teams and vaccinators, and engaged local political/ administrative authorities (i.e. district chiefs, market administrators) and representatives of the community. These advocacy efforts also facilitated collaboration with radio stations for local broadcasting in marketplaces to announce the activity. These sessions were an opportunity for the provision of other integrated health services apart from vaccination, such as vitamin A supplementation and deworming for children aged 6-59 months.

JSI supported the Zonal EPI to conduct 42 vaccination sessions in seven sites from August to October 2019 across the two Health Zones; approximately two sessions per month. Zonal health teams, with support from JSI, made data-driven decisions to prioritize these sites.

A total of 2,139 children and 75 pregnant women were reached with all vaccinations⁵ during this period. This pilot activity helped to demonstrate the feasibility of this approach within existing budgets, as part of regular service delivery activities.



⁵ OPV, PCV, Penta 1, 2, 3 and MCV

Because of supervision visits and meetings with the Urban Technical Committee, JSI helped draw attention to the importance of vaccination cards being given to caregivers free of charge. It is difficult, however, to enforce such a change in two Health Zones when other zones across Kinshasa still charge. One of the ways that JSI popularized free vaccination cards was by demonstrating the impact of vaccination in public places, where this barrier is removed.

Awareness of the event, free services and heightened concern around the [measles epidemic](#) in Kinshasa contributed to the high levels of participation in this activity. Women reported motivation to take part in these vaccination sessions due to the convenience (many women sell goods in the market) and because services were free (including [vaccination cards](#), for which private facilities often charge). **This highlights the positive effect of removing small but significant obstacles to access and utilization.**

This approach reaches large numbers of unvaccinated children and pregnant women, and is cost effective, with an investment of approximately **\$1.30 per person vaccinated**, which included a 20% co-financing by the Government for routine vaccines and syringes. This activity was funded by the EPI through Gavi Health System Strengthening-2 (HSS-2/RSS-2) resources as a key intervention linked with the Mashako Plan, for which JSI played an active role in providing technical support to strategic development and identification of strategies to improve equity in routine immunization (more on the Mashako Plan on page 10).

Marketplace vaccinations conducted by EPI health staff had a greater impact in Kimbanseke compared to Limete. In Kimbanseke, from August to October 2019, vaccinations delivered in marketplaces through the Yenge Health Centre accounted for 34.2% of all vaccinations delivered

in the Aire de Sante of Maviokéle during the pilot period, and 8.0% of all vaccinations in Kimbanseke. (Figure 3).

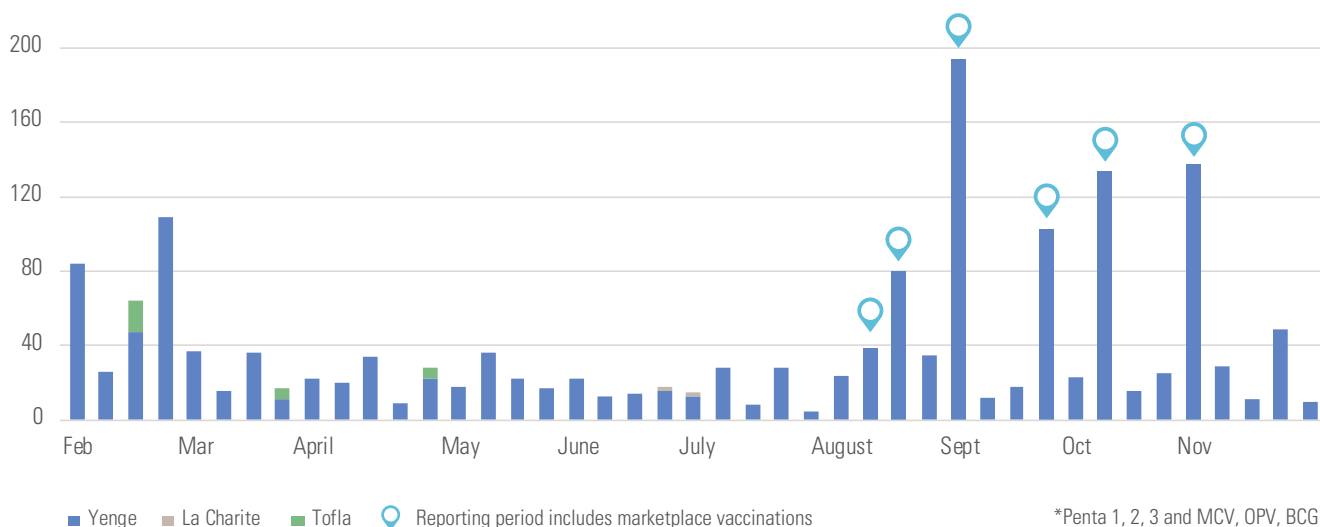
In Limete HZ, during the same period, marketplace vaccination contributed to 1.9% of all vaccinations in that Zone. This is equivalent to an additional 289 vaccinations. This may be due to Limete's relatively higher performance in general and Kimbanseke having considerably fewer static vaccination points, especially in the south of the zone.

During the pilot period, JSI observed that the majority (>69%) of caregivers seeking services at static facilities in both Health Zones had come on foot. The rest came by public transportation (i.e. motorcycle/taxi/bus). In Limete,

"I am very happy to have brought my child to be vaccinated and above all, without paying anything. With that, I encourage other mothers to bring their children because here we don't pay anything."

- Maman Mireille, a mother of children at the LUZA site in Limete.

FIGURE 3. NUMBER OF VACCINES* DELIVERED BY FACILITIES IN MAVIOKELE, KIMBANSEKE (FEBRUARY 2019-NOVEMBER 2019)



Source: Facility registers, through JSI monitoring.

FIGURE 4: FACTORS AFFECTING ACCESS FOR THOSE SEEKING VACCINATION SERVICES AT STATIC HEALTH FACILITIES IN LIMETE AND KIMBANSEKE HEALTH ZONES⁶

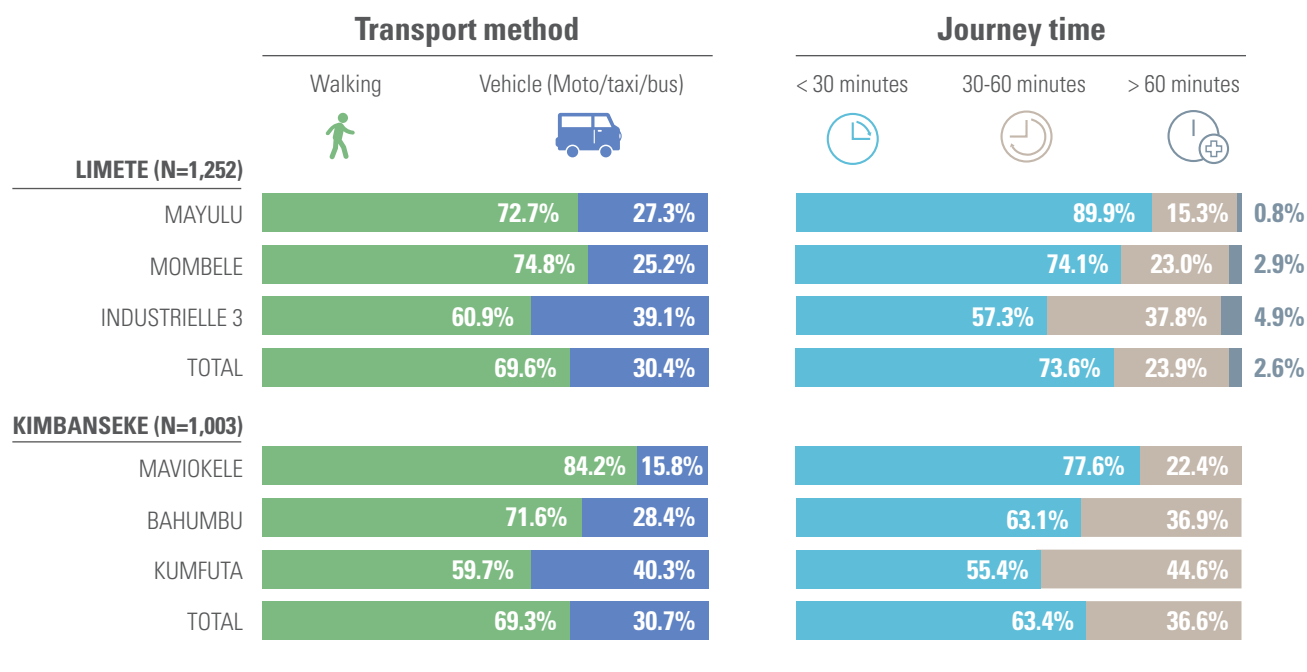
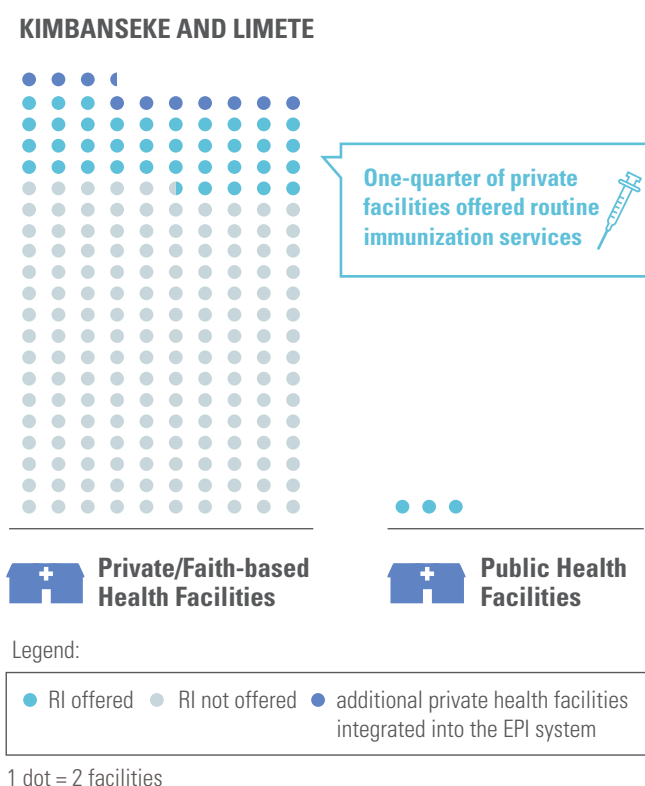


FIGURE 5: PRIVATE/ PUBLIC FACILITY BREAKDOWN IN LIMETE AND KIMBANSEKE HEALTH ZONES



where services are more accessible, distance to the facility were on the whole slightly shorter compared to Kimbanseke, to which many traveled for more than 60 minutes (Figure 4). The longest journey times are reported in Industrielle 3, home to the large slum area in Limete, suggesting that transport means and time is more important in areas of greater deprivation. These observations help make the case for improved accessibility of services in public places. Market vaccination sessions are not intended to replace planned outreach or static service delivery. To be sustainable, this modality should be part of regular RI micro-planning to ensure accountability and consistency.

INTEGRATION OF PRIVATE SECTOR HEALTH FACILITIES

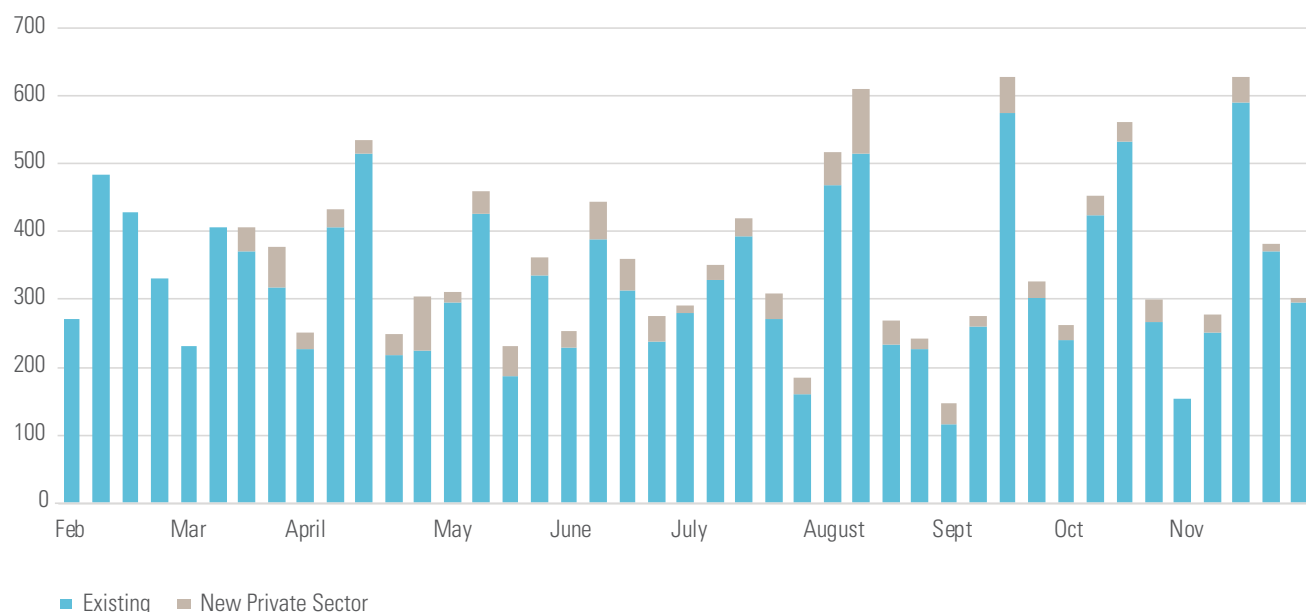
Of the roughly 353 health facilities in the two supported health zones, 347 (98%) are not government-owned. Of these, only 73 (21%) were providing routine immunization services (Figure 5). As a result, caregivers may have to travel significant distances to access health services. In dense urban settings like Kinshasa, even short distances can take a long time to travel on foot or in heavy traffic. Using geographic information system (GIS) mapping, JSI was able to identify gaps in location of health facilities and availability of routine immunization services to inform the EPI's service delivery planning.

Once a private health facility is integrated into the EPI, this means they are operating according to the EPI norms, they submit RI reports, and health workers are adequately trained and supervised per EPI standards.

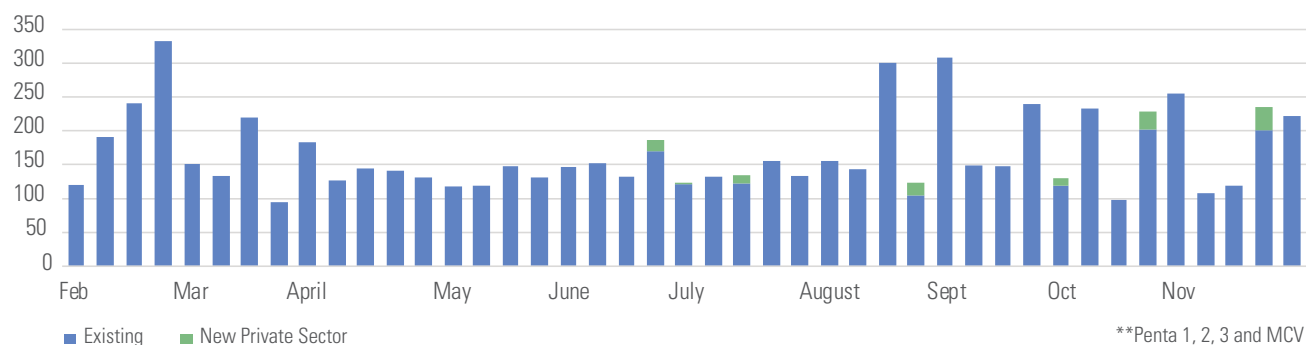
⁶ Source: Routine monitoring data collected by JSI

FIGURE 6: NUMBER OF VACCINES DELIVERED AT EXISTING HEALTH FACILITIES (PUBLIC AND PRIVATE) AND NEWLY INTEGRATED PRIVATE FACILITIES, LIMETE (MAYULU, MOMBELE AND INDUSTRIELLE 3) AND KIMBANSEKE (MAVIOKELE, BAHUMBU AND KUMFUTA)**

LIMETE



KIMBANSEKE



**Penta 1, 2, 3 and MCV

The number of vaccines delivered for all routine EPI antigens was monitored and increased during the reporting period. Penta 1, 2, 3 and MCV are given during RI sessions, compared to PCV and OPV which are often given as part of maternity services. As such we have selected these vaccines as representational of regular RI sessions.

Infant vaccinations are in high demand in Kinshasa. To ensure that infants are protected, some mothers will refuse visitors into their homes and will not take their newborns out until the infants have had their life-saving birth dose vaccinations. However, in a city where the majority of health facilities are not owned, run or monitored by the public health system, routine immunization services may not be offered in private facilities most convenient to caregivers. JSI and the Central Bureau team visited some of these private facilities in the two HZs to discuss whether they may be interested in routine immunization services. Our team shared findings from the situational analysis with privately owned facility managers to demonstrate the high demand for vaccinations right at their doorstep. While immunization services may be offered free or at low cost⁷, families who regularly visit a given facility for their children's routine immuni-

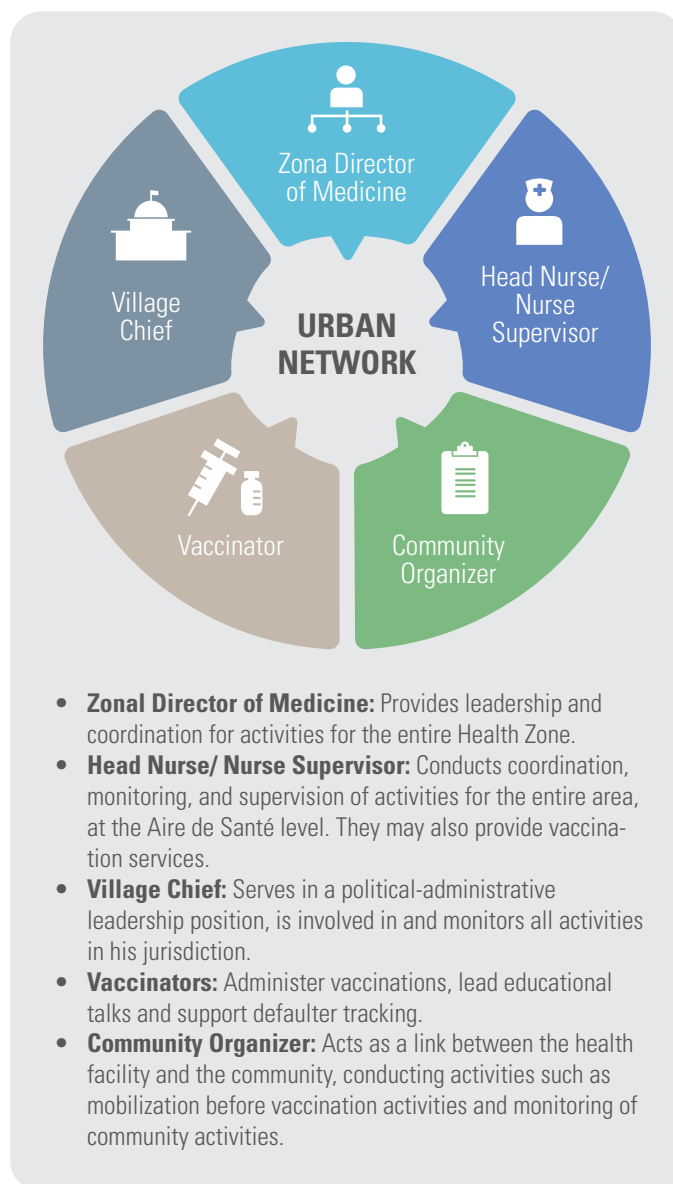
zations will also bring in business for other health services. Because of these discussions, a number of new private health facilities were integrated into the EPI as a RI service provider. They will also be incorporated into the EPI's administrative monitoring and reporting processes.

JSI also provided supportive supervision to private health facilities newly integrated into the EPI system to ensure vaccinators were receiving on-the-job mentorship and training. Such training included how to avoid adverse events, provide the correct information about possible side effects, and accurately complete the necessary EPI reporting forms. One challenge faced in urban settings, similar to government owned facilities, is high turnover of staff. Thus, as supervision is extended to include private facilities, this is an opportunity to conduct on the job training.

⁷ Despite the fact that the Government provides vaccines to private health facilities free of charge, it is still common for these facilities to impose a fee for child vaccination cards.



FIGURE 7: AN EXAMPLE OF THE TYPES OF STAKEHOLDERS CENTRAL TO URBAN IMMUNIZATION IN KINSHASA



Through this support, 21 additional private health facilities (16 in Kimbanseke, 5 in Limete⁸) were integrated into the EPI system as a service provider of routine immunization. As new facilities begin providing services, close monitoring and supervision by EPI staff is needed to ensure that the frequency and consistency of vaccination sessions is maintained.

Increasing the number of facilities that provide routine immunization services contributed to an overall increase in the number of vaccinations administered (Penta 1, 2, 3 and MCV) in the intervention areas of Limete and Kimbanseke (Figure 6), though there were fluctuations from week to week and between facilities. This strategy made the largest difference in Limete, where three health centres were added to the three pilot Aires de Santé: Mayulu, Mombele and Industrielle 3. Integrating these new facilities into the EPI system increased the total number vaccinations delivered in those health areas by **9.5%**⁹. Vaccinations administered by these three facilities accounted for 8.6% of all vaccinations during the study period. In Kimbanseke, the impact was less profound. The addition of three private facilities increased the number of vaccinations delivered by 1.7% and accounted for 1.68% of the total vaccinations provided during the intervention period.

ENGAGING WITH THE URBAN NETWORK

In an urban setting, there is a complex network of stakeholders, each playing a critical role in supporting the delivery of health services. It is important to understand the complementarity and inter-connectivity within this network, as there may be gatekeepers and enablers who influence the success of planning and implementation of urban strategies. JSI worked closely with each member of this dynamic network (Figure 7), through the UTC and regular monitoring visits. This process leverages their insights and ensures their involvement to maintain a bottom-up approach. While the National EPI chairs the UTC, with coordination and co-facilitation support from JSI, each member contributes to planning and discussions.

This process also engages community leaders, such as the Chef de Quartier and mobilizers (Relais Communautaires), to participate in planning and monitoring. This has a two-fold benefit of helping bring to light important nuances, and allows the community to understand how activities are planned so that they may support them. This also helped the team to understand areas that were potentially dangerous and thus not suitable for introducing routine immunization services.

RETHINKING MICRO-PLANNING

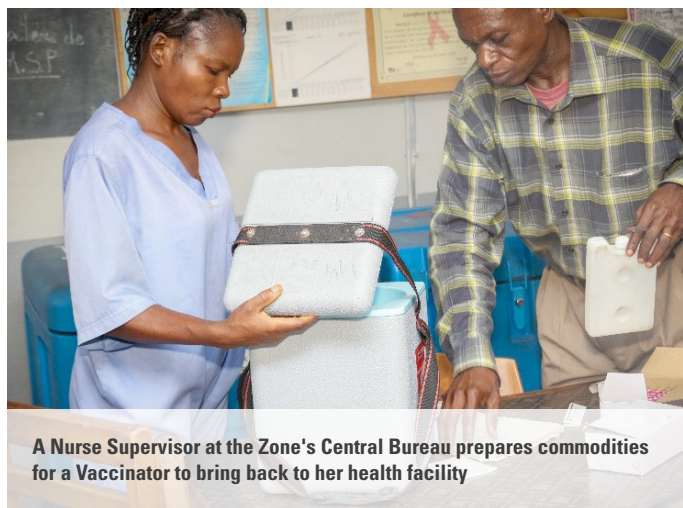
Micro-planning is a key principle in the RED approach, which is used in countries throughout the world, including DRC, for health system strengthening. Because of the unique challenges and nuances of an urban environment, JSI supported the EPI to adapt the current approach of Reaching Every Zone (DRC's urban version of RED) to Reaching Every Aire de Santé - a smaller area within a Zone, which allows for better understanding of the target population. In a sprawling megacity like Kinshasa, foot traffic and proximity to transit points or workplace weighs heavily in caregivers' decisions about where to seek vaccination services. JSI helped facilities (especially those new to providing routine immunization) to consider these factors (not just population density or catchment area) when planning sessions.

⁸ Some of these were located outside of the specific Aire de Santé chosen for the pilot activity; monitoring data is only available for the six intervention areas.

⁹ In the same three Aire de Santé, as compared to the pre-intervention period average (January 2017 to January 2019).

In many instances, micro-planning tools were filled and sent to the Zone's Central Bureau without deeper scrutiny or problem solving, and without the involvement of a broader network of stakeholders, such as local authorities. **To address the issue of poor data quality, JSI conducted data review meetings to help strengthen recording and reporting practices, as well as data use at the facility and Aire de Santé level so that micro-plans are more accurate and up-to-date.**

Through a collaborative workshop, JSI supported each Aire de Santé to develop a unique micro-plan in order to correct shortcomings noted in the delivery of routine vaccination activities (Figure 7). Following the micro-planning workshop in each Aire de Santé, a consolidation workshop was held at each Zone's Central Bureau to provide a platform for further dialogue. The workshop ensured that problems identified during the situational analysis were taken into account and matched with effective solutions, available resources and placed ownership within each Aire de Santé. Local authorities and community representatives deeply appreciated being actively engaged in the workshops, as it allowed them to contribute to and fully understand the planning of vaccination activities. Traditionally, they had only been involved in conducting vaccination sessions.



Consideration for urban micro-planning

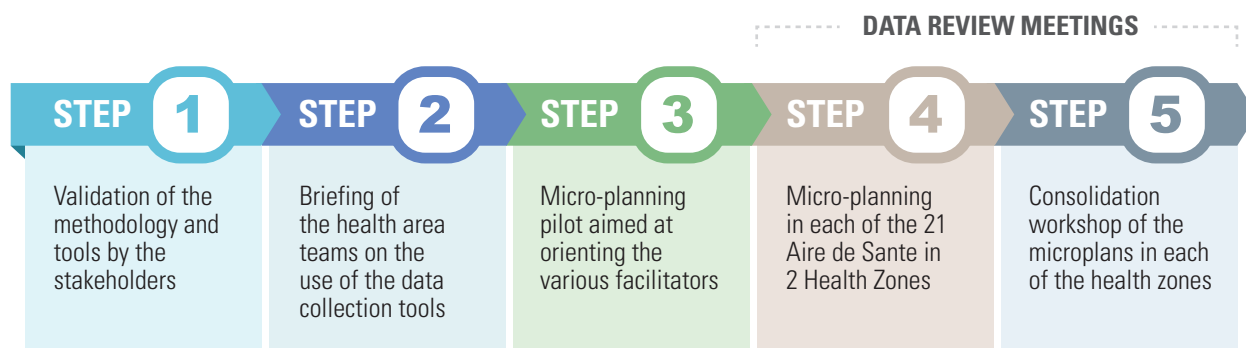
- **Engage a broad range of stakeholders, including community leaders and private health facility managers;**
- **Set service delivery targets specific to slum dwellers;**
- **Consider alternative data sources such as Lot Quality Assurance Sampling surveys¹⁰ as administrative population data may not be accurate;**
- **Conduct regular mapping exercises to capture rapidly changing infrastructure, housing and health facilities;**
- **Ensure mapping of high-risk areas that may be unsafe for seeking vaccination services or conducting outreach;**
- **Review, adapt and update micro-plans frequently, given how quickly urban environments tend to shift.**

READING BETWEEN – AND CONNECTING – DATA POINTS

In Kinshasa, as is the case in many urban environments, there is a severe lack of reliable data for session planning, logistics, and resource allocation. In Kimbanseke, large variances were observed between the facility-level data collected during monitoring visits and administrative data, highlighting issues with bottom-up data sharing. Greater investments are needed moving forward for increasing reporting and record-keeping capacity at all levels; and for systematizing electronic databases for improved accuracy and transparency.

JSI's technical support during supervision and micro-planning helped teams to look at critical data, such as the estimated birth cohort in their catchment area, to determine how many vaccination sessions to conduct on a monthly or weekly basis; and how to best plan these sessions to reach as many unvaccinated children as possible and minimize possible wastage of vaccines. This included support for Aire de Santé teams to better plan and organize fixed outreach vaccination sessions by making a link between vaccine supply, the current needs of the population and the accessibility of certain facilities, while also applying knowledge of local community dynamics (i.e. daily population movement patterns). JSI also helped teams to identify private facilities that could have the potential to reach large numbers of children.

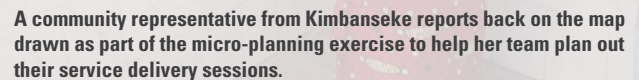
FIGURE 7: JSI'S INTENSIVE MICRO-PLANNING TECHNICAL SUPPORT CONSISTED OF THE FOLLOWING STEPS:



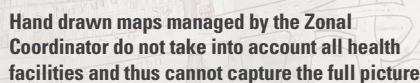
¹⁰ In the absence of robust data on immunization coverage, either due to poor reporting mechanisms or lack of resources for conducting regular city-wide coverage surveys, lot quality assurance sampling is a scaled-back technique which can provide a snapshot of vaccination trends.

Using GIS technology, JSI mapped all health facilities in the two Health Zones with information about facility type (Figure 8), provision of RI services (Figure 9), outreach type, frequency of vaccination sessions, etc. These maps were used during the micro-planning process to identify patterns and potential gaps in service delivery accessibility. These simple maps allowed the team to see geospatial patterns, including correlation and possible causation for immunization gaps, which might have taken longer to emerge through other methods such as review of administrative data or outdated hand-drawn maps.

- Identifying disproportional routine immunization service delivery between and across the two Zones. This suggested the potential impact of increasing vaccination sessions, especially in parts of Kimbanseke, either through static/ outreach or other means, such as vaccination in public places.
- Reevaluating the catchment area served, thus finding a better estimate of the true denominator population. These are critical elements for planning vaccination sessions and managing vaccine stock. This also highlights an opportunity for collaboration with urban planning stakeholders to improve infrastructure to increase accessibility to nearby health facilities. Many residents of Kimbanseke use a number of facilities in neighboring Health Zones rather than within their own Zone of residence. JSI discovered this was because of a fundamental

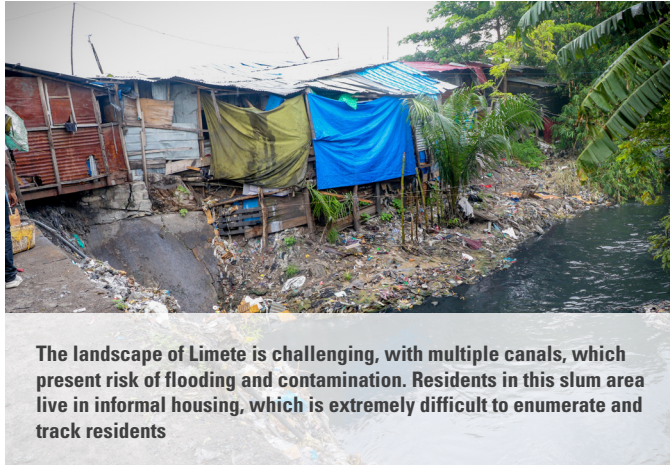


- Delineating land use as commercial or residential so that services can cater to the fact that urban caregivers are more likely to seek primary health care services near their place of work. Limite has a fair amount commercial and industrial land in which there are few health facilities offering routine immunization, highlighting a missed opportunity.

[illegible][illegible]

Supportive Supervision in the Urban Context

While the tools used for supportive supervision may not differ between an urban and rural program, there may be differences in the ways that supervision is carried out. Because urban communities are rapidly changing, an emphasis on regular planning and data use must be at the center of supervision. Proximity of facilities or EPI offices and more reliable mobile connectivity means that supervision can take place more frequently (and in some cases over the phone). Due to the sheer number of facilities, this can still be a challenge, especially because supervision must include private facilities, of which there are many in urban areas.



The landscape of Limete is challenging, with multiple canals, which present risk of flooding and contamination. Residents in this slum area live in informal housing, which is extremely difficult to enumerate and track residents

SUPPORTING HEALTHCARE PROVIDERS AND FACILITY MANAGERS

Supportive supervision is an essential component of the RED approach, which is often difficult to maintain due to poor planning, lack of human resources, or means of transportation. As an immunization partner embedded within the central EPI, JSI has been closely involved in the review of EPI standards and norms, which are regularly reinforced through supervision. The team conducted monthly supervision visits in the two Health Zones from health facility level up to the health central office of the Health Zone, linking RED with this urban implementation research. Because of this technical support, JSI was able to:

- Provide capacity transfer for critical RED functions, including management/governance/planning; strengthening human resources; monitoring for action; the provision/organization of vaccination services; vaccine supply and logistics as well as community engagement. For example, JSI supported a facility team to identify a gap in their cold chain capacity, and allocated existing resources to purchase a fridge on-site – enabling them to increase the number of weekly vaccination sessions.
- Recognize the unique needs of urban poor communities and ensure they are taken into account in key national policy documents, such as the Mashako Plan and the Ministry of Health's Annual Operational Plan.

POLICY CHANGE TO MEET THE NEEDS OF URBAN POOR

To address urban issues and low immunization performance in certain provinces, the EPI, in collaboration with health stakeholder and partners, has developed The Emergency Plan for the Revitalization of Routine Immunisation, also known as the [Mashako Plan](#), which lays out a strategic plan for strengthening RI in high-risk provinces, including Kinshasa. In addition to being a partner in the conceptualization and development of the Mashako Plan, JSI provided technical assistance for identify priority interventions that will directly contribute to increasing immunization coverage and reducing drop-out rates among urban poor. In 2019, vaccination in public places was included in the Mashako Plan, with benchmarks for scaling up this approach for vaccinating hard-to-reach populations through the upcoming HSS-3/ RSS-3 funding mechanism.

The Mashako Plan is a national plan developed by the Minister of Health to engage all partners to target and reinforce RI services in nine priority provinces with poor immunization outcomes. Partners worked in collaboration to develop strategies, establish milestones, and set targets. JSI provided technical contributions as part of the Service Delivery working group and continues to conduct advocacy to ensure financing and management of urban activities under the Mashako Plan.

LESSONS LEARNED AND CONSIDERATIONS FOR SCALE UP

Our experience suggests that in **the face of these extremely complex challenges, simple, targeted interventions developed in collaboration with a broad range of stakeholders and implemented in conjunction with other health system strengthening efforts can reach large numbers of unvaccinated children in hard-to-reach areas.**

- Establishing a Technical Committee with a set of Terms of Reference dedicated to problem solving and developing strategies that address specific issues in the areas for which they oversee has been a powerful catalyst for innovation, ownership and financial commitment.
- Cold chain must be in place and functional when considering increasing the number of service delivery points in any area. Even in urban communities, facilities without adequate refrigeration will have to go to the Zone's central cold store, which may be far away.
- Coverage estimates are not an appropriate indicator of equity or utilization of RI services in many urban contexts. This is because children may be vaccinated outside of the catchment area within which they are counted as part of the population denominator. Moreover, denominators are based on outdated population estimates, which, in the DRC, are derived from a population census from more than 30 years ago.
- Certain interventions may be successful and thus scalable only in the context of other health system functions, which rely on regular supervision, on-the-job mentoring and capacity building. Although there may be quick wins for reaching zero-dose children, these other time consuming and relatively resource-intensive activities still must be maintained.
- Integrating maps into programming can very quickly indicate pattern differences that may take longer to find through cross-sectional reporting. Maps also lend themselves to examining potential relationships between unrelated data sets and identifying relationships that may

potentially impact program and intervention effectiveness. It is important to think of maps on a more macro scale than is typically done as part of micro-planning in order to help visualize various environmental factors influencing RI programming.

There are a number of external factors such as various data improvement efforts, campaigns, and early adaptation of the Mashako Plan, which make it difficult to isolate the impact of JSI's support alone. Urban routine immunization programs are characterized by fragmented interventions, policies, programming, erratic levels of funding, etc. This presented a challenge to JSI's technical assistance, when the government and local resources upon which the proposed strategies relied are not allocated as planned. This required JSI to pursue ongoing advocacy with immunization partners and MoH management structures, including non-immunization departments, to push for allocation of adequate resources. Some interventions could not be piloted, such as the use of mobile phones, to reduce dropout. This highlights the importance of continued "learning by doing" as implementation of innovative strategies continues.

Efforts to reach unvaccinated children in dense urban poor communities, such as the ones piloted during this technical assistance activity, have the potential to contribute to improved coverage and reduction in outbreaks of vaccine-preventable diseases if scaled up systematically. Particularly in urban areas, where borders are porous and communities interact on a daily basis, it is especially important to consider all pockets of unimmunized so that herd immunity is not compromised. JSI's approach leverages existing resources, stakeholders and processes to adopt strategies for strengthening routine immunization service delivery in these demanding contexts. Given the limited scale of this pilot, additional documentation and evaluation of implementation or scale up is critical to further validate and build on these initial findings. In particular, in order to make more sweeping assertions about the investment case and effectiveness for reducing the number of unimmunized, ongoing operations research is needed



