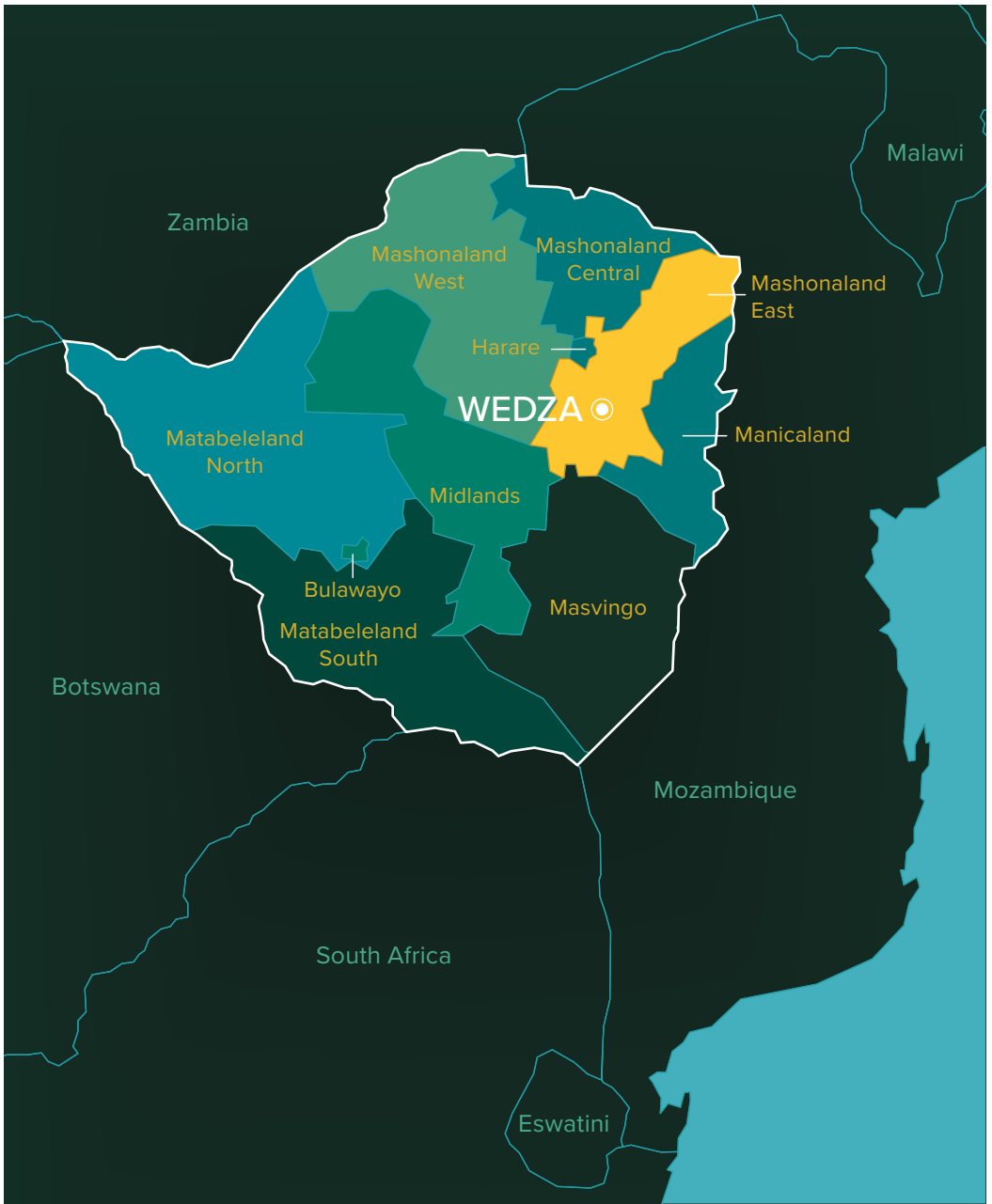


# HAMBAS FOR HEALTH

Summary findings from a trial of **Mobility for Africa's** electric tricycles ('Hambas') in the health sector in Wedza and Igava







## Why the Trial was Implemented

To test an innovative solution to address the lack of accessible, appropriate, and affordable transport in rural settings for both service providers and users of health services. The purpose is to increase access to timely and quality health services in Zimbabwe. Specifically, the innovation seeks to address issues associated with:

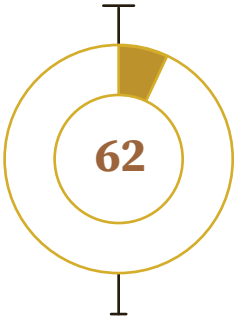
- Rural health centres' inability to carry out integrated outreach activities
- Transport challenges leading to pregnant women delivering at home (health strategy shows that up to 25% of deliveries are home deliveries)
- Unavailability of emergency transport, including for infectious diseases
- Reduced access to ante-natal and post-natal care resulting from high transport cost
- Delays in accessing delivery services resulting in higher maternal and child mortality

At the primary care level, a number of different transport approaches are currently used, including bicycles, motorbikes, cars and public transport such as buses. These existing options are inadequate, and often attract an unaffordable cost component. In rural areas, distances can be huge, and public transport unreliable. This limits rural health service delivery significantly. Where available, many health workers are not comfortable or experienced with riding bicycles and motorbikes. Vehicles are often dedicated to specific facilities and programs, attract high fuel and running costs, and are often not available for services below district level. Some rural terrains are not suitable for bicycles or cars; and bicycles and motorbikes have a limited carrying capacity.

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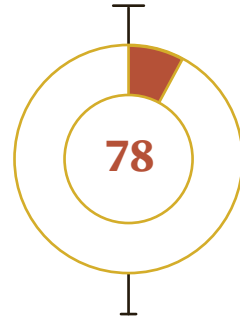
Urban



UNDER 5 MORTALITY  
*Deaths per 1,000 live births*



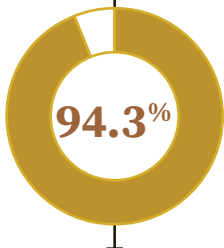
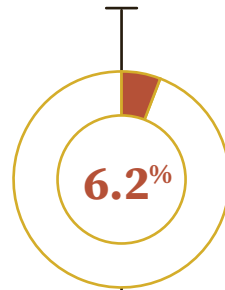
Rural



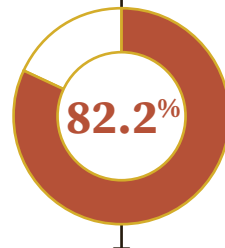
**Despite substantial efforts to strengthen healthcare access in rural settings in Zimbabwe, significant disparities remain.**



UNVACCINATED CHILDREN  
*Children 12-23 months receiving no vaccinations*



DELIVERY BY SKILLED BIRTH ATTENDANT



Source: 2019 Multiple Indicator Cluster Survey (MICS)

# Lack of effective transport **for service providers and users** is a key driver of **poorer health outcomes in rural areas.**



**IMMUNIZATION:** lack of reliable access to vehicles and fuel limits community outreach activities of rural health centres



**MATERNAL HEALTH:** absence of transport options and high cost lead many pregnant women in rural areas to deliver outside health facilities

**COMMUNICABLE DISEASES:** inefficient sample transport systems between district laboratories and rural health centres reduce timely access to CD4 testing and viral load monitoring for rural HIV patients



**SUPERVISION:** lack of transport a main reason for missed supervision visits to rural health centres

# Overview of the Health Sector Trial

Four of Mobility for Africa’s electric tricycles have been tested across three levels of the health sector:



**1. District hospital at Wedza growth point**



**2. Igava rural health centre**



**3. Village health workers**  
*(affiliated with Igava health centre)*

It should be noted that while the Igava health centre is in geographic proximity to the Wedza district hospital, Igava is situated in the neighbouring Marondera operational district within the health system. The use of the electric tricycles in the health system began in October 2019.

One electric tricycle was allocated to the Wedza district hospital. This tricycle was shared across the Environmental Health and Nursing Departments. In 2022, the tricycle needed to be returned to Mobility for Africa for other uses.

The other three electric tricycles were allocated to the Igava health centre. One is shared amongst five staff members at the health centre who were all trained to drive the tricycle. This includes nurses, environmental health technicians and general hands. The other two tricycles were provided to two village health workers who provide services to large scale commercial farms in the Igava health centre catchment area. All three tricycles at Igava are still being used today. The charging of the batteries for the electric tricycles is done at the Igava health centre, drawing from the solar energy collected through the solar panel system installed there as part of Zimbabwe’s Solar for Health initiative.

The health workers decided how they want to utilize the tricycles to support their work. While no formal quantitative data collection or evaluation has been conducted, the Mobility for Africa team has been regularly conducting interviews with the health workers utilizing the tricycles to learn how the tricycles are being used and the impact on the health workers’ activities and health outcomes.

# Uses of the Tricycles

Across the three levels, interviews with health workers showed that the tricycles were used to support a wide range of primary health care and public health activities. A summary of the types of activities supported at each level is provided below.

Example activities supported by the tricycles



## WEDZA DISTRICT HOSPITAL

- Health education and awareness campaigns (e.g., COVID-19) and outreach activities (e.g., bed net distribution) in the community
- On call visits and ambulance services
- COVID-19: investigation of returnees and contact tracing of suspected cases; follow-up and monitoring of confirmed cases in their homes; disinfection of schools and other facilities
- Malaria: case investigation and contact tracing; transport of medication and ferrying of patients from homes to facility during outbreak
- Tuberculosis: provision of screening services in the community; sputum sample collection and delivery to laboratory; contact tracing
- Water and sanitation: education and training in the community; sample collection; distribution of water purification tablets
- Transport of medical and cleaning supplies from point of delivery to stores
- HIV testing and counselling in the community and home visits for patients defaulting on ART
- Home visits for bed-ridden and terminally ill patients to deliver care and medicine
- On call visits (e.g., dog bites)
- Transport of patients from homes to the clinic
- Supplying food to malnourished children in the community
- Fetching firewood and water for use at the clinic



## VILLAGE HEALTH WORKERS

- Home visits to attend to community members and provide PHC services
- Social mobilization activities (e.g., in advance of integrated outreach sessions)
- Transporting sick individuals to the health centre
- Transporting pregnant women to the health facility for ANC visits and delivery
- Follow-up with HIV patients, reporting defaulters and delivery of medication from health centres to patients in their homes
- Delivering food to farm workers during working time



## IGAVA HEALTH CENTRE

- Health education and awareness building in the community (e.g., COVID-19)
- Integrated outreach activities, including immunization, family planning, antenatal care, growth monitoring, chronic conditions (e.g., hypertension)

# Impact of the Tricycles

In interviews, the health workers reported on the impact of using the tricycles and compared it to the situation before having the tricycles. The impact of introducing the tricycles is summarized across four themes, with supporting examples and evidence from the health worker interviews:

## 1 Use of the tricycles **increased the productivity of health workers** and allowed them to have more time to provide direct health services

- At Wedza hospital, the Environmental Health Department often struggled to keep up with their activities and meet their targets as they had to either travel by foot or rely on vehicles that were prioritized for other activities and only sporadically available (e.g., ambulances, motorcycles for sample transport, SUV specifically for HIV program). Having a dedicated tricycle helped them improve their performance. For example, for the water and sanitation program, officers were able to collect water samples for chemical and bacterial analysis on a monthly basis, well below the once per three month target. They were also able to distribute tablets for purifying water and conduct education with builders on time, whereas before this was often delayed.
- At Igava clinic, the tricycles have had a positive impact on the immunization program. Prior to using the tricycles, Igava clinic would regularly miss their immunization targets. Now with the tricycles, they have immunized nearly the full target population for each of their vaccination campaigns since 2021, including measles and polio. Use of the tricycles has also improved the efficiency of immunization activities. Vaccination campaigns used to take 8 days to cover all villages in the catchment area, but now take only about 2 days.
- At Igava clinic, staff regularly need to fetch firewood (e.g., to cook for patients at the clinic) and water (e.g., to fill their tanks when ZESA is not operating). The tricycles allow them to more quickly and easily carry out these activities compared to doing it by foot or relying on a wheelbarrow.
- Each of the village health workers using the tricycles in Igava are responsible for 3 compounds on a large commercial farm. Using the tricycle, each village health worker can visit all three compounds in a day and attend to all community members that need their support. Prior to having the tricycle, these village health workers were not able to visit all compounds in a day by foot and thus would need to provide selective care.
- As part of their responsibilities on the commercial farms, these village health workers also deliver food to farmworkers in the fields. While they previously did this on foot, they are now able to perform this task more efficiently with the tricycles.





- Other parts of the health system have also indirectly benefited from the tricycles. For example, with the two village health workers using the tricycles being able to provide better coverage of services in the commercial farm, Igava clinic staff reported that they only needed to visit that commercial farm in select instances (e.g., for outreach immunization) and could instead focus on visiting other communities in their catchment area. Likewise, Igava clinic staff used to rely on the district office (and their vehicles) to conduct outreach activities, but they are now able to conduct outreach on their own with the tricycle. The district office now focuses on supporting other rural health centres on their outreach and is only rarely involved in the outreach activities in Igava.

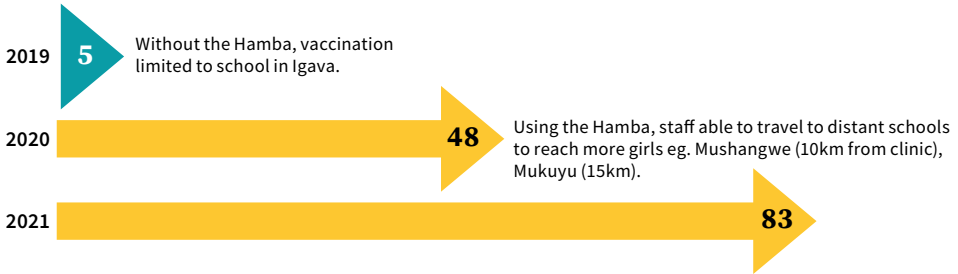
## 2 There was **increased equity in access to health services** with the tricycles as it allowed health workers to reach distant communities and less mobile populations

- The tricycles have had an important impact on maternal health in Igava. With the tricycles, village health workers are able to transport pregnant women to the health facility for ANC visits and for delivery, as well as transport the mothers back home after delivery when walking long distances is not safe. Igava clinic staff can also use their tricycle to transport pregnant women. Approximately 4-5 women are transported via the tricycle to Igava clinic for delivery each month and the number of home births is now a negligible amount.

*‘Before using the Hamba, Igava clinic health workers travelled by foot and thus were mainly able to attend to only nearby villages.’*

### HPV vaccinations

#### **Number of girls immunized per year**



- At Igava clinic, staff are better able to support bed-ridden and terminally ill patients. On foot, they were only able to make an initial visit and then handed over these patients to village health workers. With the tricycles they are now able to make home visits to visit these patients when they are needed.
- Likewise, village health workers are able to provide better support to sick patients. Prior to having the tricycles, they relied on providing what medication they have to care for patients in the home. For some patients that were able to walk, the village health workers would accompany them on foot to the clinic (usually 1-2 per day). With the tricycles, the village health workers can now transport up to 4 or 5 patients per day to Igava clinic for consultation.
- Before using the Hamba, Igava clinic health workers travelled by foot and thus were mainly able to attend to only nearby villages, delegating the furthest communities to village health workers. With the tricycles, they have been able to expand the range of their activities. For example, Igava clinic staff were able to conduct COVID-19 sensitization meetings and health education in communities as far as 23 km from the clinic, not just within walking distance. Regarding HPV vaccination, in 2019 prior to having the tricycle, clinic staff only targeted the primary school at Igava given the inability to walk with the heavy cooler box for long distances, and vaccinated just 5 girls. With the tricycle, they were able to target schools further away and in 2021 they vaccinated 83 girls, including at the primary schools at Mushangwe (10 km away) and Mukuyu (15 km away).

### 3

## Health workers were able to provide **more responsive and people-centred services** to the community

- At Wedza hospital, the use of the tricycle allowed environmental health officers to rapidly respond to suspected cases of COVID-19 and malaria in the community. They were able to perform diagnostic testing, case investigation, contact tracing and follow-ups with patients and prevent broader outbreaks because they were no longer delayed in making visits.
- In Wedza, ambulances were often not functional due to shortages of fuel or long and bureaucratic processes to request maintenance. Thus only ~20% of calls from health workers in the community were attended to and in many instances no action could be taken. With the tricycles more than 50% of calls were attended to.
- The Igava health centre previously relied on the district office staff and vehicles to perform outreach immunization. Because the district vehicles were not always available as planned or had to be prioritized for other uses, outreach sessions were often delayed and the Igava clinic staff also did not have sufficient time to perform all the other activities in the community that they wanted. With the tricycle, the health workers at Igava now conduct their own integrated outreach in the community. With more time and the ability to bring multiple staff members, they can now perform a range of activities in the community (e.g., HIV testing, pregnancy testing and family planning, medication delivery for chronic conditions, growth monitoring and screening for malnutrition, treating minor ailments, etc.).
- The nurse in charge at Igava estimated that in 2022, clinic staff were able to directly visit over 5,800 individuals in an area containing 7,500 through integrated outreach activities enabled by the tricycle. This has reduced waiting times at the clinic (where there were previously long lines), allowing clinic staff to improve the quality of service to community members and limit the risk of COVID-19 spread.
- In Igava, lack of adherence for HIV patients to ART is a challenge. In some cases HIV patients want to avoid going to the clinic for fear of stigma. In other cases, farm workers are not given permission by farm owners to leave work or fear losing their daily wages to take time off to visit the clinic for check-ups and to pick up medication. Prior to using the tricycles, village health workers focused on reporting on defaulters to clinic staff and encouraging defaulters to visit the clinic to pick up their medication. For the two village health workers that have access to tricycles, they can now pick up ARVs at the clinic and deliver them directly to patients in their homes. In other communities, Igava clinic staff can now use their tricycle to follow-up with defaulters directly along with the local village health worker. As a result, the number of defaulters has dropped by ~50%.



*'Before we had the tricycles, we couldn't manage to reach our targets. We failed to immunize children on due dates for each month.'*



## 4

### Health workers enjoyed being able to use the tricycles and were **more satisfied with their work**

- The Environmental Health team at Wedza hospital were very pleased that they could now rapidly respond to cases of infectious diseases and were no longer hindered in carrying out their scope of work. The department manager conveyed that he “wished he still had access to the tricycle.”
- A nurse at Igava health centre reported that staff are “very happy with the tricycles.” “It is painful to attend to patients on foot. We were just doing the minimum we could, in order to write reports as expected. Without the Hambas, personal resources were used to follow up on cases.” Previously, the health centre regularly failed to meet their performance targets. Now there is a sense of pride that they are a high performing clinic within their district and don’t need to rely on the district office for support. “Before we had the tricycles, we couldn’t manage to reach our targets. We failed to immunize children on due dates for each month. The district office now sees our improved immunization coverage statistics and knows that we can stand on our own without their help like before. They focus on other clinics and only come to support outreach on rare occasions.”
- Village health workers noted that prior to the tricycles it was “very tiring to walk from home to home all day.” After being allocated a tricycle, one village health worker noted that she is “very happy, my physical well-being is better and I can move around and do things that I couldn’t do before.” Village health workers showed enhanced motivation and were pleased that they could do more activities each day for community members. While not directly related to the tricycle, an Igava clinic nurse reported that the village health workers have now been trained on additional activities that they previously did not perform, such as providing basic services for mothers after delivery and screening for trachoma.
- A nurse at Igava clinic also highlighted the benefits to the community: “Not only has the tricycle made my nursing work easier, it has improved the well-being of the community by providing them transport to the clinic and helping deliver firewood for cooking purposes for patients.”



## Case studies

Below are a selection of case studies and videos highlighting the impact of the tricycles for specific health workers and programs.

### PERSPECTIVE FROM WEDZA HEALTH CLINIC OFFICER

*“Ambulances are not moving on time due to shortages of fuel. Before the Hamba only 20% of calls from health workers were attended to, and no action was taken. With Hamba now 50% of calls from Village Health Workers are dealt with.”*

*“With Hamba we do not worry about fuels and servicing of Hamba and moreover, requests for maintenance do not have to go through the government bureaucratic channels.”*

*“In addressing issues of communicable diseases, Hamba enabled us to follow up on contacts, and to get firsthand information. Previously one would report inaccurate data due to limited resources for following up, especially that ambulance services give first preference to delivering mothers at the expense of other activities, and this gap was covered by Hamba.”*

*“Hamba assisted in contact tracing and conducting health education especially in the COVID era. Hamba enabled us to carry out specific health education programmes per every visit. Previously health education events were mixed due to lack of transport for each event officer, which is not proper. Hamba enabled prevention of malaria outbreaks, as visits and campaigns were made in time.”*

*“Although Hamba does not have comfort, we are able to help communities and meet set objectives. Hamba has improved water and sanitation programs. Distribution of tablets for cleansing water if available is done on time. Collection of water samples should be done every 3 months for chemical and bacterial analysis. With Hamba samples are being collected on a monthly basis, but challenges are in getting feedback from the laboratories.”*

*“During COVID era Hamba was used in disinfecting schools and rooms for quarantine in cases of COVID patient. Council sometimes assists with vehicles In addition Hamba was also used to conduct administrative work e.g. banking.”*

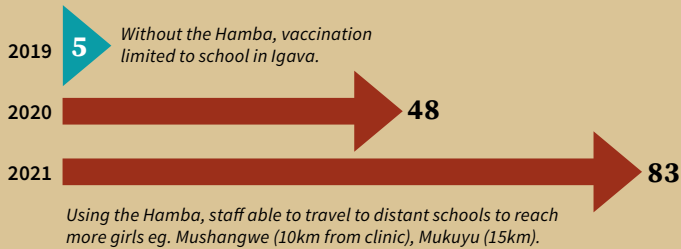
## IGAVA CLINIC IMMUNIZATION

Hambas have enabled significant improvement in coverage.

*“Without the Hamba, we failed to immunize children on due dates for each month. The district office now sees our improved immunization coverage statistics and knows that we can stand on our own without their help like before. They focus on other clinics and only come to support outreach on rare occasions.”*

### HPV vaccinations

#### Number of girls immunized per year



Using the Hamba, Igava clinic also met or exceeded its targets for other campaigns:

- Measles 2022
- Polio 2022





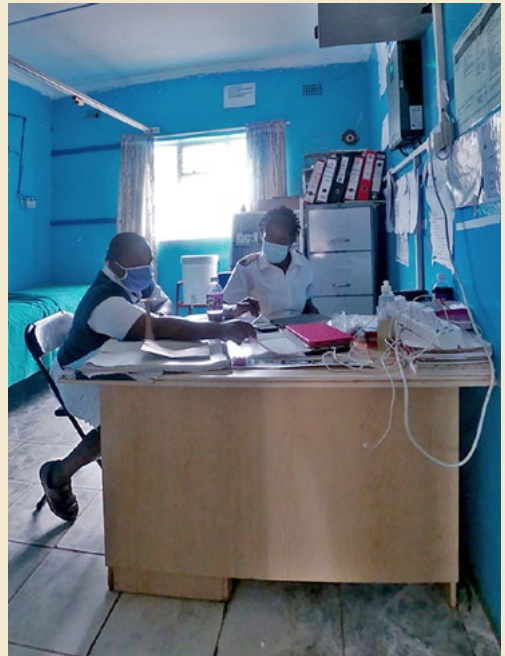
## IGAVA CLINIC NURSES

*“Not only has the Hamba made my nursing work easier,” says Gladys, “it has improved the well-being of the community by providing them transport to the clinic and helping deliver firewood for cooking purposes for patients.”*

**Cladys Mhlanga**, the nurse-in-charge at the Igave health centre for the past decade, added to her usual overwhelming array of duties of delivering babies, immunizing children and providing HIV testing and counselling, these days of COVID-19 pandemic, she is also keeping her eye on household hygiene practices.

**Before the Hamba:** Relied on farmer’s car or government vehicle for emergencies, which was challenging to secure.

**With the Hamba:** Immediate response to emergencies; able to make follow-up visits and supply nourishing supplements to malnourished children; removed burden of walking long distance, especially pregnant women and elderly people.







## VILLAGE HEALTH WORKER (VHW)

Hambas have helped increase productivity and expand scope of work.

### Prior to having Hambas

- VHWs visit commercial farm workers at their homes by foot, but **not able to reach every compound in a day.**
- For **sick patients** needing to see a nurse, VHWs walk with them to the clinic; **accompany only 1-2 per day** given distance.
- Some **HIV patients do not pick up medication at clinic and default**, either due to stigma or inability to leave work.
- **Many births delivered at home.**
- VHWs say it is **'tiring' to attend to patients by foot** each day.

### While using Hambas

- VHWs **reach all compounds each day**, able to identify and **attend to all urgent issues.**
- **Transport up to 5 patients back to clinic each day** for consultation.
- Pick up HIV medication and deliver to patients in their homes, **reducing defaulters by ~50%.**
- Transport 4-5 expectant mothers to facility for delivery each month; **home births now negligible.**
- **"Better physical well being"** and **"happy because I can do a lot of things each day for community"**.
- **VHWs even expand basic skills**, for example recently trained by clinic to provide care to mothers after delivery and screen for trachoma.

# Lessons and Future Directions

The trial of the tricycles in Wedza and Igava reinforced that lack of access to suitable transport for health workers at all three levels is a significant constraint for their daily work. Equipped with tricycles, health workers were able to immediately increase their productivity, perform their work more efficiently and effectively and better meet their performance targets. While health workers try to find creative ways to address their transport needs (e.g., borrowing from farm owners, requesting vehicles from higher level facilities, using wheelbarrows, etc.), there was significant value in the reliability of a dedicated tricycle for planning and implementing work and for providing more consistent services to the community.

The trial also highlighted a number of previously unmet needs in terms of health services for community members. For example, communities far from the rural health centre were often not regularly reached by health centre staff (e.g., for education campaigns) and many less mobile community members (e.g., pregnant women, very sick, elderly) did not have the opportunity to receive care directly from health centre staff either at the facility or in their homes. Thus, the tricycles contributed to providing more effective and people-centred care, as well as improving the reach and equity of health services.

The enhanced satisfaction and motivation of health workers utilizing the tricycles also suggests that introduction of the tricycles could indirectly contribute to addressing some of the persistent human resource challenges in the health system including over-work and retention. The perspectives of community members in terms of impact of the tricycles on their convenient access to and satisfaction with health services was not directly explored, but could be part of a future study. One suggestion to further enhance the overall health impact of using the tricycles in the future is to combine with other complementary interventions. For example, this could include refresher training for health centre staff on microplanning, community engagement and delivery of specific health services or training of village health workers on the provision of the basic package of PHC services.

While the qualitative findings from this trial are compelling, a pilot study with formal quantitative and qualitative data collection at both baseline and following introduction of the tricycles would provide important additional evidence. In the trial, the tricycles were used to support a wide range of primary health care and public health activities, which differed at each level of the health system. A pilot intervention study could help identify the most impactful use cases for the tricycles (e.g., which level of the health system and type of health worker, which programs and specific activities). The optimal use of the tricycles will likely vary by setting and baseline mapping of the existing workflow and needs in each health facility as part of the pilot study could help address this. In addition, the qualitative evidence collected from the initial trial showed how interconnected each



level of the health system is; for example, the use of the tricycle in one health centre can free resources at the district level to support activities in other health centres. A formal pilot study could also tease out the linkages between different components of the health system and the overall direct and indirect benefits of the tricycles.

The initial trial provided proof of concept that power from solarized health facilities can be used to charge the tricycle batteries and continuously operate the tricycles. This is an important achievement to reduce the reliance on fuel – which can be costly and subject to shortages – and take advantage of the significant investment being made through Zimbabwe’s Solar for Health initiative. A future pilot study could further explore how to optimize the integration of the electric tricycles in rural health centres’ solar infrastructure. For example, with a suitable inverter, the tricycle batteries could also serve to store energy that could be used to power other equipment in the facility, including when ZESA is not operating or solar energy is not being collected.

The health workers were asked for their feedback on the tricycles throughout the trial. A major point of early feedback was to extend the range of the electric tricycle and Mobility for Africa responded with an improved version of the battery that allows the tricycles to cover 100 km on a single charge. This version, still in use today in Igava, better fits the daily requirements of health workers. Mobility for Africa is continuing to perform research and testing to further enhance the batteries for the tricycles. The other health worker suggestions to improve the tricycle are to provide sun and rain protection and to include a cushion in the cargo area for passengers. These are being explored for future versions of the tricycle.



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