

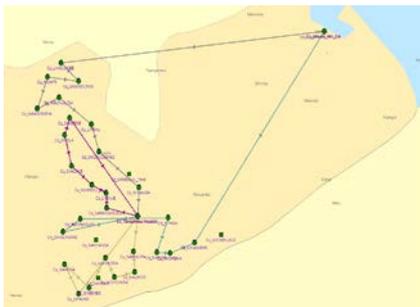


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Case Study

Tanzania: Using a Hands-on Approach for Direct Delivery



With input from zonal managers in Tanzania, the USAID | DELIVER PROJECT can use innovative technologies, such as LLamasoft's transport optimization software, to optimize direct delivery to health care facilities. The above photo shows the delivery routes generated using LLamasoft's Transportation Guru software.

With hands-on, active management, deliveries can be made more efficiently by reducing days on the road—also reducing per diem costs—reducing fuel costs, and increasing stock availability at the last mile.

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Transportation is a key link in Tanzania's public health supply chain; the country depends on it to ensure the distribution and full supply of medicines and other public health commodities to hospitals, health centers, and dispensaries across the country.

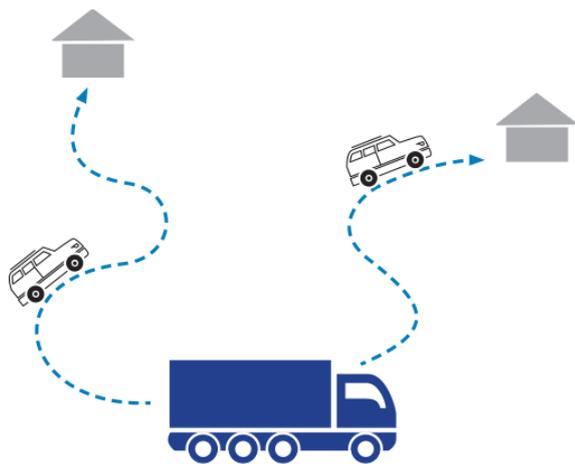
The shift to a direct delivery model—from zonal warehouses to health facilities—has greatly increased the importance of last mile distribution. Using practical distribution analysis and design, the Medical Stores Department (MSD) in Mtwara zone has increased efficiency in this important leg of the supply chain. By taking a *hands-on* approach to transportation and distribution design, Mtwara zone has substantially reduced their quarterly expenses for fuel and per diem. Not content with the benefits already realized, MSD, with the USAID | DELIVER PROJECT, has linked technical innovations—route optimization and a mobile application (app) for delivery trucks—to provide a roadmap for continuous improvement.

A Hands-on Approach

With the *direct delivery* model, deliveries are made quarterly. Vehicles have multi-stop routes; after departing from the zonal warehouses, they travel to hospitals, health centers, and dispensaries. In Mtwara, the previous delivery routes were made one district at a time until the zonal manager, Herman Mng'ong'o, identified and implemented opportunities for improvement including:

Zonal manager ride-alongs: Soon after assuming the role of zonal manager, Mr. Mng'ong'o accompanied vehicles on delivery routes to every facility in the zone's service area. These ride-alongs gave him a valuable perspective on the conditions in the zone's service area; they also created the opportunity for him to meet and talk to his customers. Equally important, the ride-alongs fostered collaboration with MSD drivers, which led to identifying opportunities to reduce delivery time and making more efficient drop sequences.

Figure 1. Mobile Warehousing Model



In a mobile warehousing model, one large truck accompanies one or two additional vehicles, such as Land Cruisers, which typically have less capacity but are better suited to maneuver along tough terrain.

The large truck remains stationary at a distribution center while the smaller vehicles make deliveries to more remote health facilities. The Land Cruisers then reload from the larger truck and prepare for the next day's deliveries.

Adapting to a changing volume of deliveries: Mr. Mng'ong'o also observed that, in recent quarters, there were fewer integrated logistics system (ILS) cartons being delivered to facilities; in part, this was due to funding restrictions at the facility level. Noticing that the decrease in box quantities meant lower delivery volume and emptier trucks, Mr. Mng'ong'o quickly adjusted and created a mobile warehousing model to consolidate routes across multiple districts. Mobile warehousing saves time and fuel because it uses the entire capacity of trucks and eliminates avoidable back and forth trips from the zonal warehouse to each district. However, Mr. Mng'ong'o noted that the consolidation of districts—the key feature of the mobile warehousing model—will only work with low carton volumes. With high volume conditions, each district would fill an entire truck.

Adoption of CarTrack: Implementing CarTrack, which has been rolled out to all MSD vehicles across the country, has allowed managers to track various important vehicle parameters—including the actual locations of vehicles, fuel consumption, drive times, and travel speeds. It is now possible to track the fleet throughout the entire distribution route; drivers need to explain any irregularities—changes to the approved route, long stop times at facilities, and unknown stop locations. Drivers are aware of this level of visibility and monitoring and are

incentivized to drive efficient routes, avoiding detours and unnecessary delays. The data from CarTrack has also been leveraged to identify facility geocodes and to assist in developing an improved digital road network for Tanzania.

Results

By implementing the changes above, the MSD zonal warehouse in Mtwara has uncovered substantial benefits—reduced cost and time savings—while maintaining a high level of customer service:

- Fuel costs are lower—down from approximately 20M Tsh/quarter to 7.8M Tsh/quarter.
- After ride-alongs, deliveries completed to all facilities in Masasi district decreased from six–seven days to a maximum of four days.
- Achieved a net decrease of 36 percent distribution costs against the total annual budget estimates for fiscal year 2013/2014.
- The district medical officers (DMOs) and facility heads have greater visibility when timing the order submissions, helping to consolidate the order process, and consolidating distribution.

Figure 2. Delivery Time



After ride-alongs, deliveries completed to all facilities in Masasi district decreased from six–seven days to a maximum of four days.

Roadmap for Future Interventions

The MSD zonal warehouse in Mtwara continues to pioneer innovative approaches to optimize their distribution network and ensure consistent stock availability at every health facility. By leveraging the success of Mtwara's practical solutions and implementing technical innovations—in partnership with the USAID | DELIVER PROJECT—MSD can validate and enhance their direct delivery strategy; it can be

replicated and can be a roadmap for improvement across the country. Two key initiatives in the roadmap are—

- **Route optimization using LLamasoft's Transportation Guru software:** Using Transportation Guru, mathematical models of Mtwara's delivery routes can be developed within the software, which will enable MSD to optimize routes and find additional savings in time and cost. Equally important, optimization efforts will allow MSD to ask the *what if* questions; for example, what if carton volumes increase, or what if facilities are inaccessible in the rainy season. This what if analysis offers visibility into the limits of current route plans while also creating a set of robust plans for various circumstances. After a successful pilot of Transportation Guru for optimized routes in Tandahimba district of Mtwara, the scale up to all of Mtwara zone is planned in early 2015, followed by a scale up in two additional zones in Tanzania by June 2015. The national scale up will follow.
- **Truck Driver Mobile Application:** After rolling out the new Truck Driver app, drivers will be able to receive assistance in planning optimized routes. Delays in the delivery of commodities will be reduced along delivery routes, thanks to the feature that notifies the next facility that the truck is on the way with their order. Managers will be able to monitor the execution of route plans, identifying exceptions and deviations from the plan and the reason for those exceptions. The app will also eventually replace paper-based records and logs—increasing data visibility because digital information will be easier to access and analyze.

The MSD Mtwara zone provides insight into pragmatic approaches to transportation and distribution improvements that can be adopted across all MSD zones—saving time and money and introducing efficiencies into the distribution system. The success of Mtwara can be attributed to a mentality of continuous improvement and the agility of the zonal manager, executing the most efficient distribution plan by adapting to changing volumes. Mtwara zone, as a case study, shows that with hands-on, active management, deliveries can be made more efficiently by reducing days on the road—also reducing per diem costs—reducing fuel costs, and increasing stock availability at the last mile. Going forward, Mtwara continues to position itself as a leader in innovation—using selective technology, such as LLamasoft Transportation Guru. If the same approaches are adopted in other zones, it is possible that MSD and the Ministry of Health will be able to show significant progress in the Big Results Now initiative.

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The authors' views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the United States Government.

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