

Artificial Intelligence to Connect Private Sector Malaria Diagnosis and Case Reporting in Kisumu County, Kenya

Naomy Onyuka, Lisette Schutte, Nathalie Houben, Alloys K’oloo, Felix Bahati, Lilyana Dayo, Tobias F. Rinke de Wit

BACKGROUND

Infectious diseases remain Africa’s leading cause of mortality, though largely preventable and treatable. Malaria causes ~600,000 deaths annually, 95%-Africa. In Kenya, 70% of the population is at risk, with 6.7 million cases/year. Nearly 40% of patients first seek care in the private sector, yet this data is rarely captured in national systems, leaving critical blind spots. Malaria treatment is often dispensed without confirmatory testing, driving inappropriate care and drug resistance. This study explored an AI-powered App to support frontline private sector malaria testing, treatment, complement public sector efforts, and provide data for planning, resource allocation, and outbreak preparedness in Kisumu, Kenya.

OBJECTIVES

We evaluate the application of a digital mobile AI-supported tool to connect private sector malaria data, decentralize care and improve quality of testing.

METHODS

From July 2024–June 2025, 5 private health facilities, 25 chemists, and 50 community health promoters (CHPs) used an AI powered App to record patient data and upload images of the results of malaria rapid diagnostics tests (mRDT), The results were displayed on a real-time geo-mapped dashboard. The AI was trained on 8 WHO pre-qualified mRDTs brands. Providers received automated mobile payments for each correctly uploaded mRDT to encourage testing before treatment.

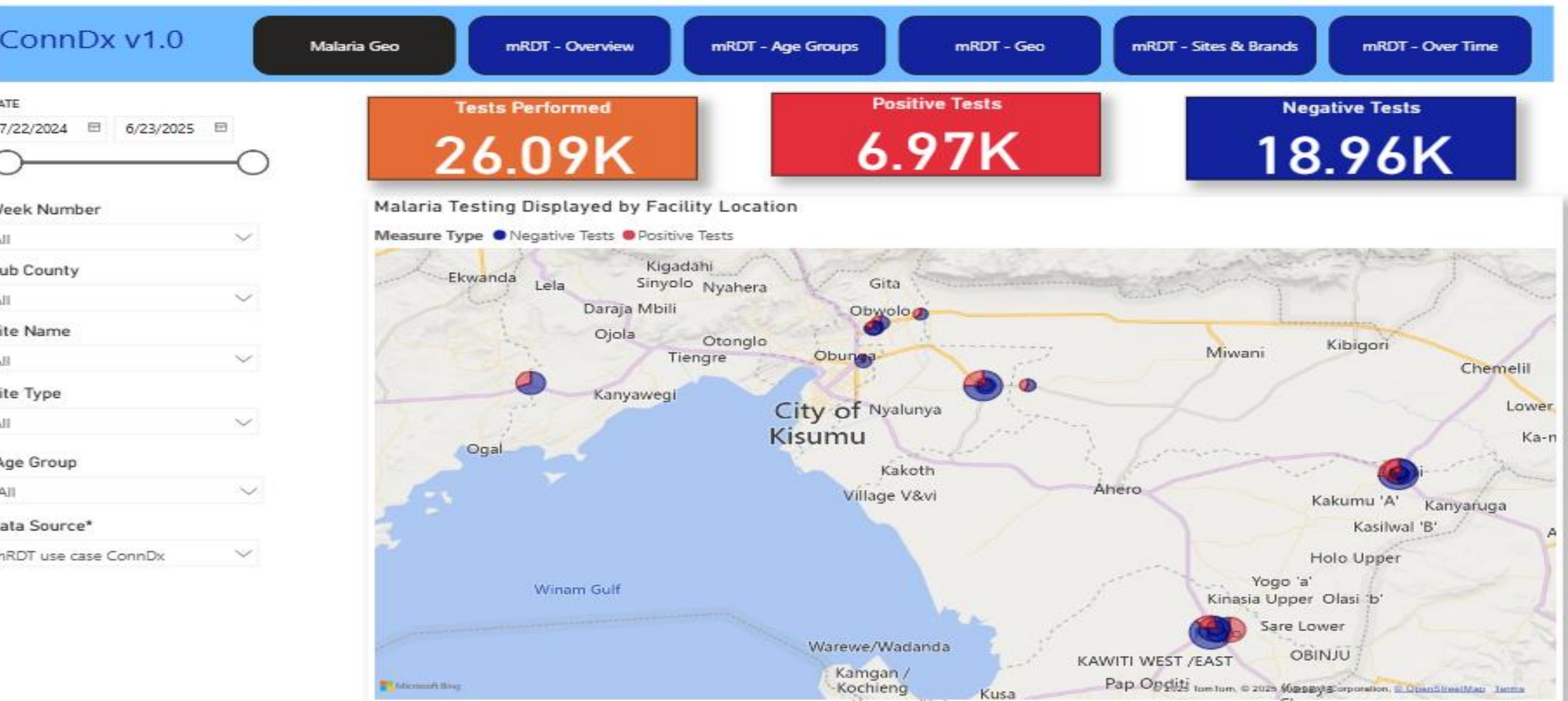


Figure 1a: No. of tests conducted and provider’s Geo-locations

RESULTS

A total of 26,090 malaria tests were conducted (52.6% female). Of these tests used, 84.3% were AI-trained mRDTs. Human interpretation agreed with AI in 94.3% of cases (Cohen’s kappa = 0.90). Non-concordant users received training. Overall positivity was 27.0%, higher among ages 5–17 (29.3%). Chemists (34.8%) and CHPs (38.5%) detected nearly twice as many positives as facilities (17.7%).

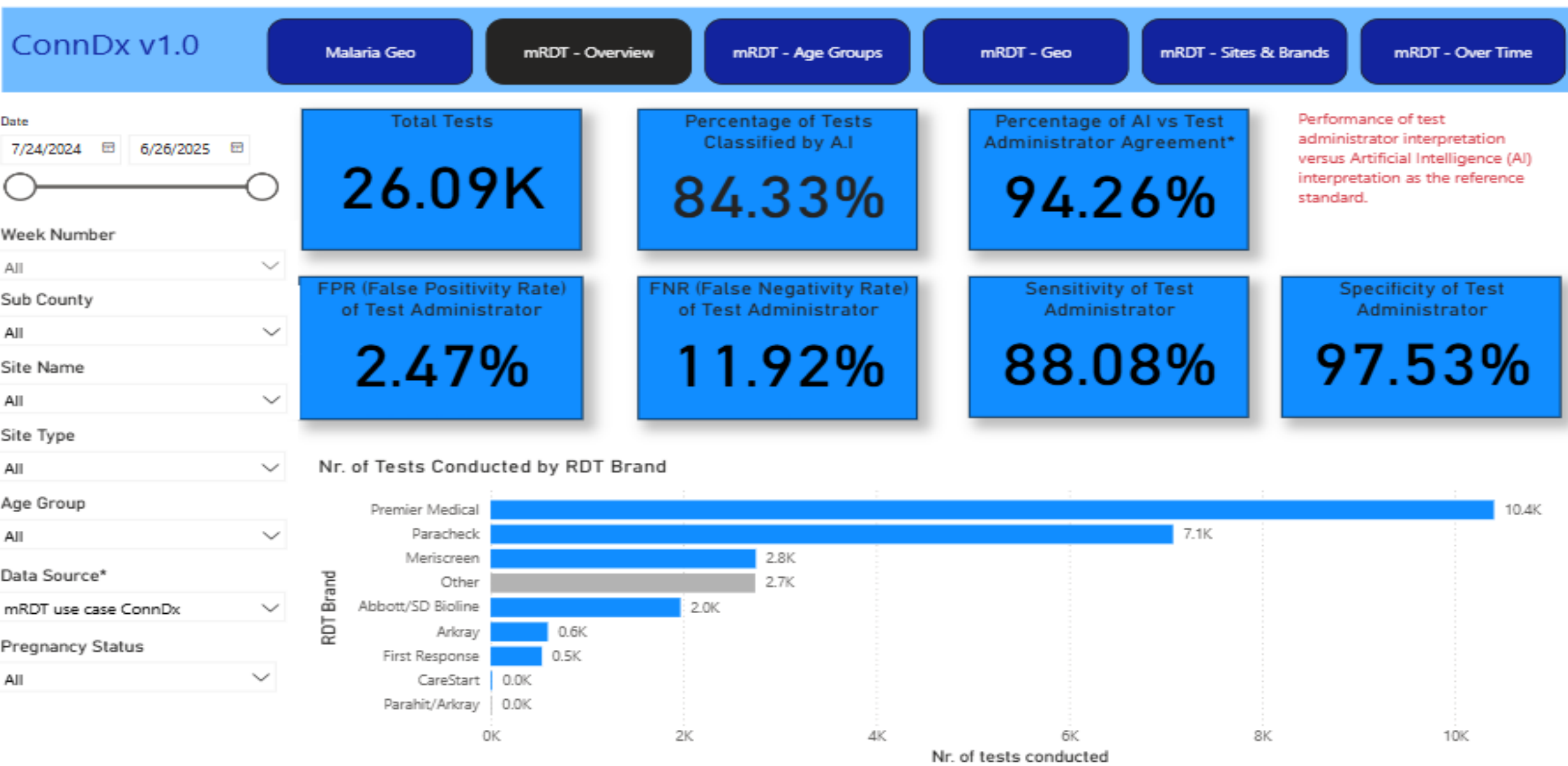


Figure 2: Real time dashboard showing AI vs Human classification, AI sensitivity & MRDT brand usage

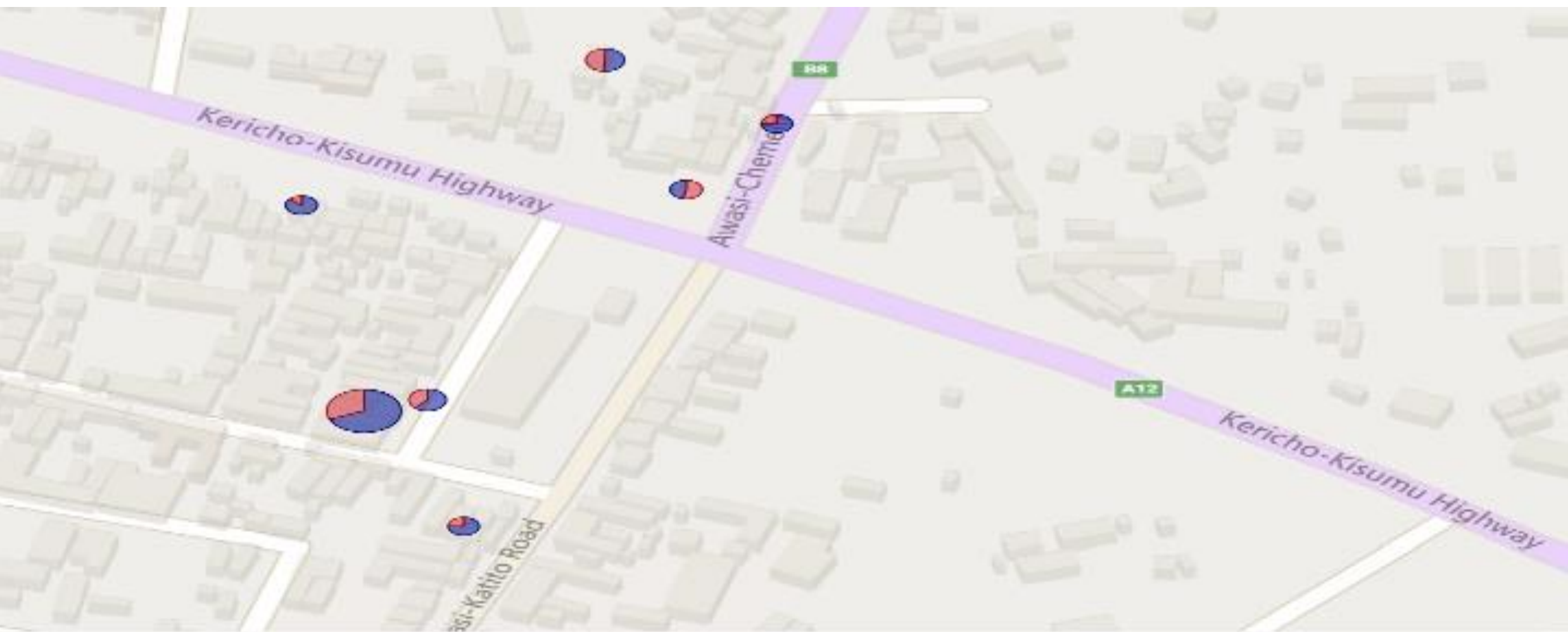


Figure 1b Zoom in

CONCLUSION

AI-supported users’ instructions, interpretation and mRDT decision support allows relative lay healthcare workers in the private sector to provide quality malaria care.. This approach offers a scalable solution for strengthening malaria surveillance, closing private sector data gaps, and supporting patient-centered care using a unique bottom-up financing approach. In a separate study we calculated a more than 25% price reduction of malaria service delivery using this model.

ACKNOWLEDGEMENTS



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