

A WEB-BASED DECISION SUPPORT INTERFACE FOR THE ASSESSMENT OF PHYSICAL ACCESS TO HUMANITARIAN SITE LOCATIONS

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Abstract

Humanitarian interventions often occur in environments with limited transport infrastructure and challenging terrain. In these contexts — where people may travel hours or days to reach services — evaluating access to services in terms of travel time is crucial. This helps identify service gaps and can aid in the identification of future site locations. Example services include health clinics, vaccination points, shelters, water and sanitation points, and distribution centres.

In this talk, we present a web-based decision support interface that MSF UK/Ireland is developing for these purposes, leveraging an advanced accessibility model. The interface automates data collection and processing, providing realistic travel time estimates that almost anyone can use. Alternative tools for such analyses require specialised expertise and data, making them inaccessible to many humanitarian decision-makers.

The platform can simulate service accessibility “shocks” from natural disasters or political events that impact travel behaviour, by assessing pre- and post-event accessibility. This also provides the opportunity to assess and plan for travel disruptions caused by potential future climate change scenarios. We discuss how gravitational factors such as site popularity and capacity can be incorporated in future for more nuanced analyses.

Speaker Biography

Andries Heyns holds a Bachelor’s Degree in Electrical and Electronic Engineering with Computer Science, a Master’s Degree in Applied Mathematics, and a Doctorate in Operations Research with a focus on multi-objective geospatial facility location - all obtained from the University of Stellenbosch, South Africa. Currently, he is a geospatial consultant for Doctors Without Borders and the World Bank, with a focus on rural accessibility modelling. He has worked as a field GIS specialist for Doctors Without Borders in numerous emergencies, responding to areas suffering from conflict, natural disasters, and disease outbreaks. In his previous endeavours, he worked as a radar software engineer in South Africa, English teacher in South Korea and Reunion Island, and completed three postdoctoral research positions in South Africa, the United States, and Finland. In his free time he volunteers as a wildland firefighter and goes on regular adventures out in nature with his two dogs.

