1145-00-2569   **Jordan Marie Spencer***, Department of Mathematics, Brigham Young University, Provo, UT 84602, and **Konnor J Petersen**, **Jane Cox** and **Tyler Jarvis**. *Using Survey Data and Mathematical Modeling to Prioritize Water Interventions in Developing Countries.*

We describe a method for combining the World Health Organization's cost-effectiveness analysis with country wide survey data in order to construct an ordered ranking of the areas within a given country which have the highest need for a more reliable water source, it also includes the optimal method of water intervention. We also address a key problem in the charitable water sector: while survey data is available, due to privacy issues, much of the geographical and spatial data is lost or confounded. This disconnects the information from the locations in which they were found, making the data largely unusable. To overcome this, we propose using a combination of Voronoi modelling and gamma distributions to estimate an accurate representation of the data, allowing charities to overcome the lost information and increase their ability to use the available data. This method has been tested on the countries of Namibia and Madagascar and should be applicable to many more. (Received September 25, 2018)