SWT Clean Water Foundation

Predictive Analysis of Water Points in Tanzania

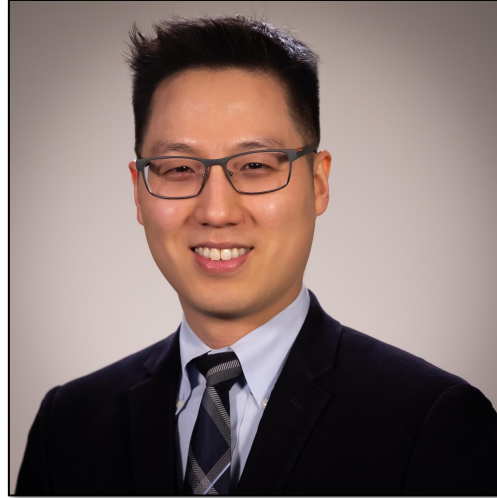By: Travis Clark, Sam Choe, and William Howard
April 19, 2024

SWT TANZANIA WATER POINT ANALYSIS

Travis Clark
Role: Presentation Lead
Contact: TravisClark1432

Sam Choe
Role: GitHub Lead
Contact: schoe4208

William Howard
Role: Tech Lead
Contact: WilliamHowardGit

Tanzania Water Crisis

➔ 24 Million people are affected which is half they population
➔ "WASH" = Issues with water access, sanitation, and hygiene
➔ Impacts health, economic status, education access, overall well-being

AGENDA

Business Problem

Data Overview

Analysis

Recommendations

Future Steps

Business Problem

➔ Can SWT leverage predictive modeling to identify dysfunctional water points, thereby enhancing access to clean, potable water throughout Tanzania?

Data Overview

➔ **Source:** Taarifa Waterpoints dashboard sourced from the Tanzania Ministry of Water from 1960 to 2013.

➔ **EDA:** Functional/Needs Repairs, Regions, Source, Management, Construction Year

➔ **Limitation:** Type of repairs needed

Analysis

➔ **Functional/Needs Repair**
➔ **Features:** Source, Region, Management, Construction Year
➔ **Modeling:** Logistic Regression
➔ **Metrics:** Accuracy and Recall Scores
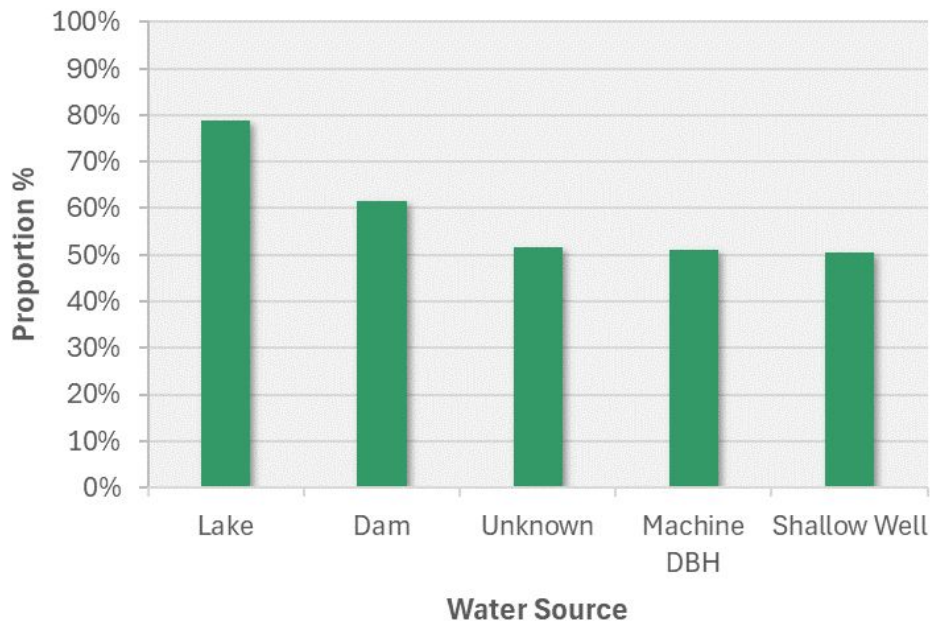
Suspect Water Sources

Water point sourced from lakes:

- "Needs Repair" Proportion at 78%

Modeling results:

- **89%** more odds of needing repair than water points that are not sourced from lakes.

Recommendation 1: Target water points that are sourced from lakes first

Top 5 Sources With Highest "Needs Repair" Proportions

Suspect Regions

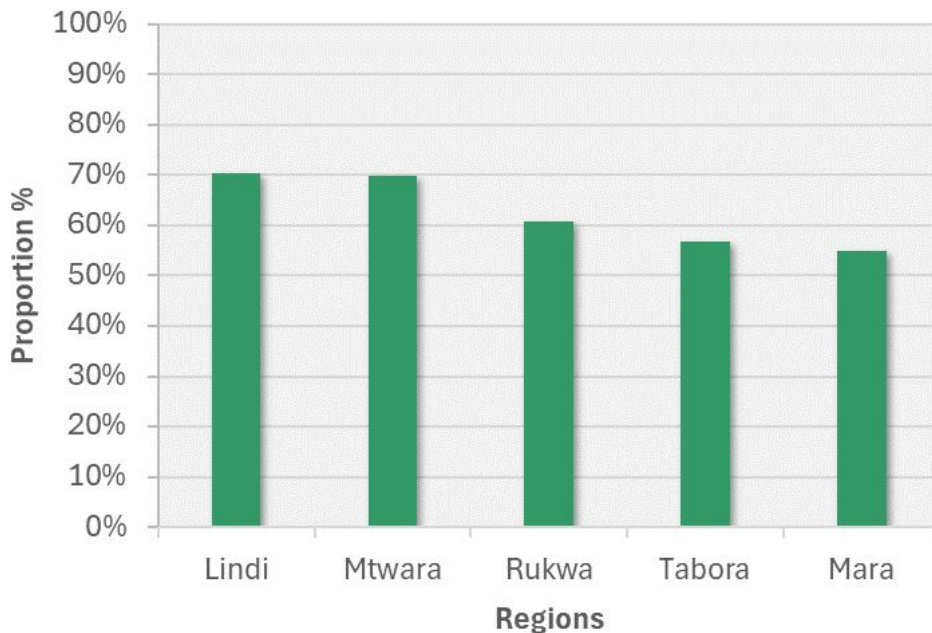**Water points located in the Lindi and Mtwara regions:**

- "Needs Repair" Proportions at 70% for both regions

Modeling results:

- **112%** and **125%** more odds of needing repairs than other regions, respectively.

Recommendation 2: Target water points located in Lindi and Mtwara regions

Top 5 Regions With Highest "Needs Repair" Proportions
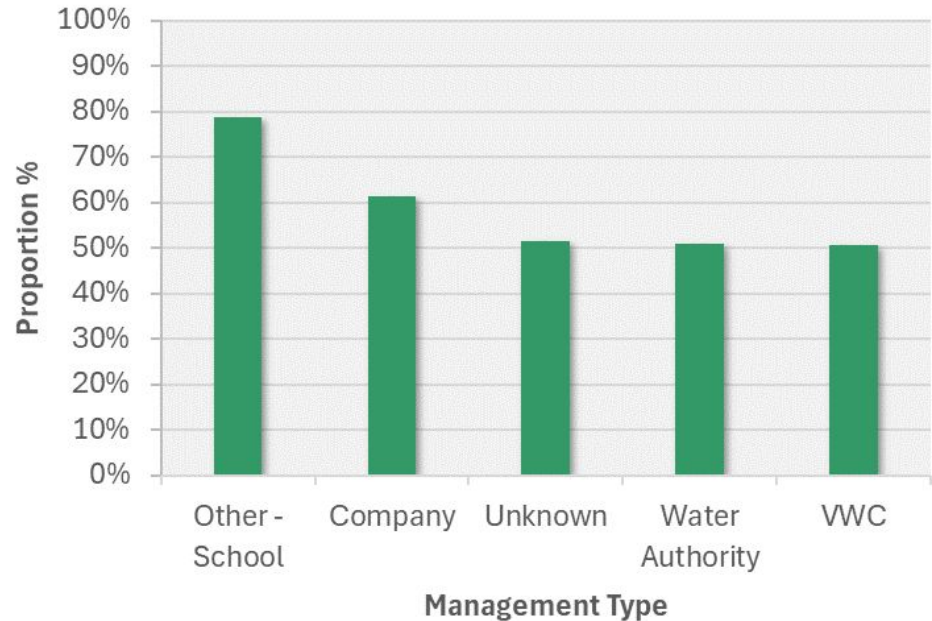
Suspect Management

Water points managed by schools:

- "Needs Repair" Proportion at 77%

Modeling results:

- **14%** more odds of needing repair than other management groups

Recommendation 3: Focusing on management is not a top priority but focus on ones managed by schools first.

Top 5 Managements With Highest "Needs Repair" Proportions

Recommendations

1. Target Water points that are sourced from Lakes first.
2. Target Water points located in Lindi and Mtwara.
3. Not A Priority But If Needed Focus on Managements by schools.

Future Steps

➔ Complete secondary analysis by types of repairs
➔ Complement dataset with information about construction materials
➔ Go more granular with geographic pinpointing of water points needing repairs

Questions