

# Pump it Up: Data Mining the Water Table

Driven Data Competition  
for the Tanzanian Ministry of Water



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# Dar es Salaam

*Largest city in Tanzania*

6.7 million people

*9<sup>th</sup> fastest growing city in the world*

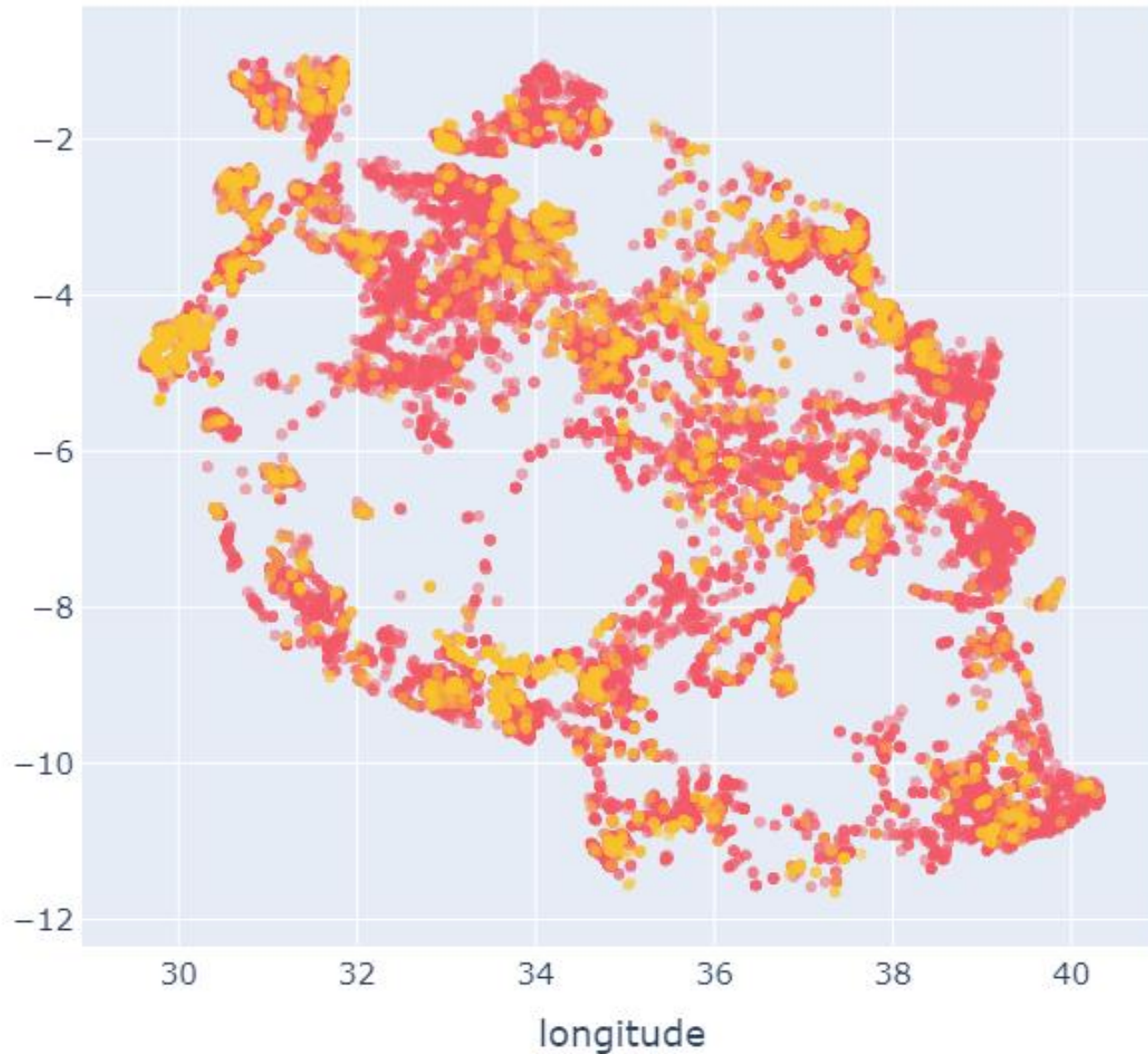






*68% of Tanzania's  
citizens live below  
\$1.25 a day.*

Map of Tanzania's Waterpoints



Large areas of Tanzania  
are without safe,  
drinkable water

Waterpoint Status

- Non-Functional
- Functional, Needs Repair

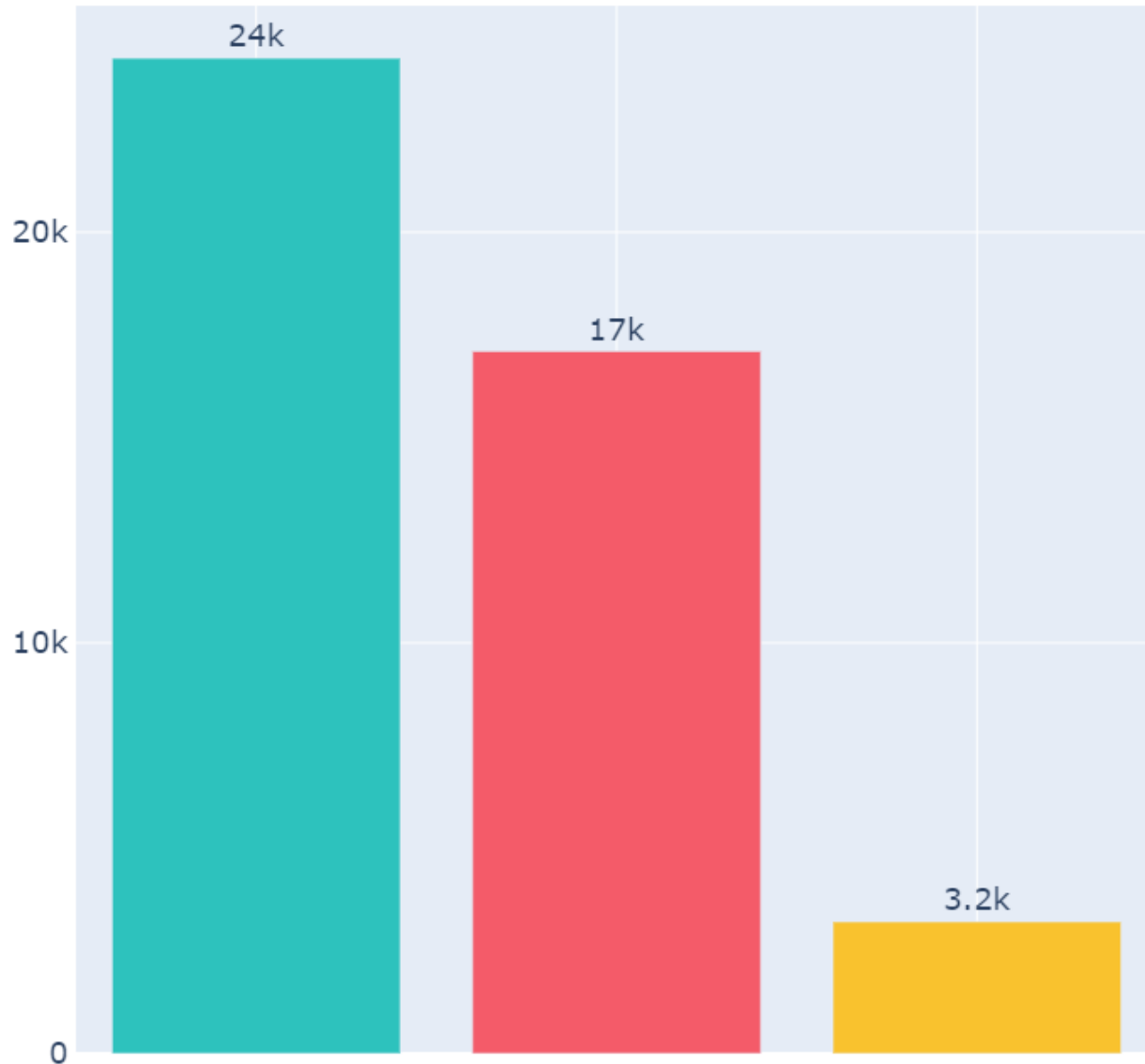


Our Goal:

Predict the condition of a waterpoint  
for Water Management companies

*The why:* prevent pumps from  
becoming non-functional.

Total Number of Waterpoints by Status



## Data

- Tanzanian Ministry of Water
- Waterpoint Mapping System
- 44,550 water pumps
- 9 geographic drainage basins (watershed)

### Waterpoint Status

- Functional
- Non-Functional
- Functional, Needs Repair



# Research

- Quality, Access, and Upkeep, and Management Vary
- Maintenance Cost & Affordability Varies
- Efficiency, Age, and Maintenance History Unknown

## Water Resources Management in Tanzania: Identifying Research Gaps and Needs and Recommendations for a Research Agenda

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### Abstract

*This paper addresses the gaps and suggests resources as*

 International Journal of  
*Geo-Information*



### Article

## Wicked Water Points: The Quest for an Error Free National Water Point Database

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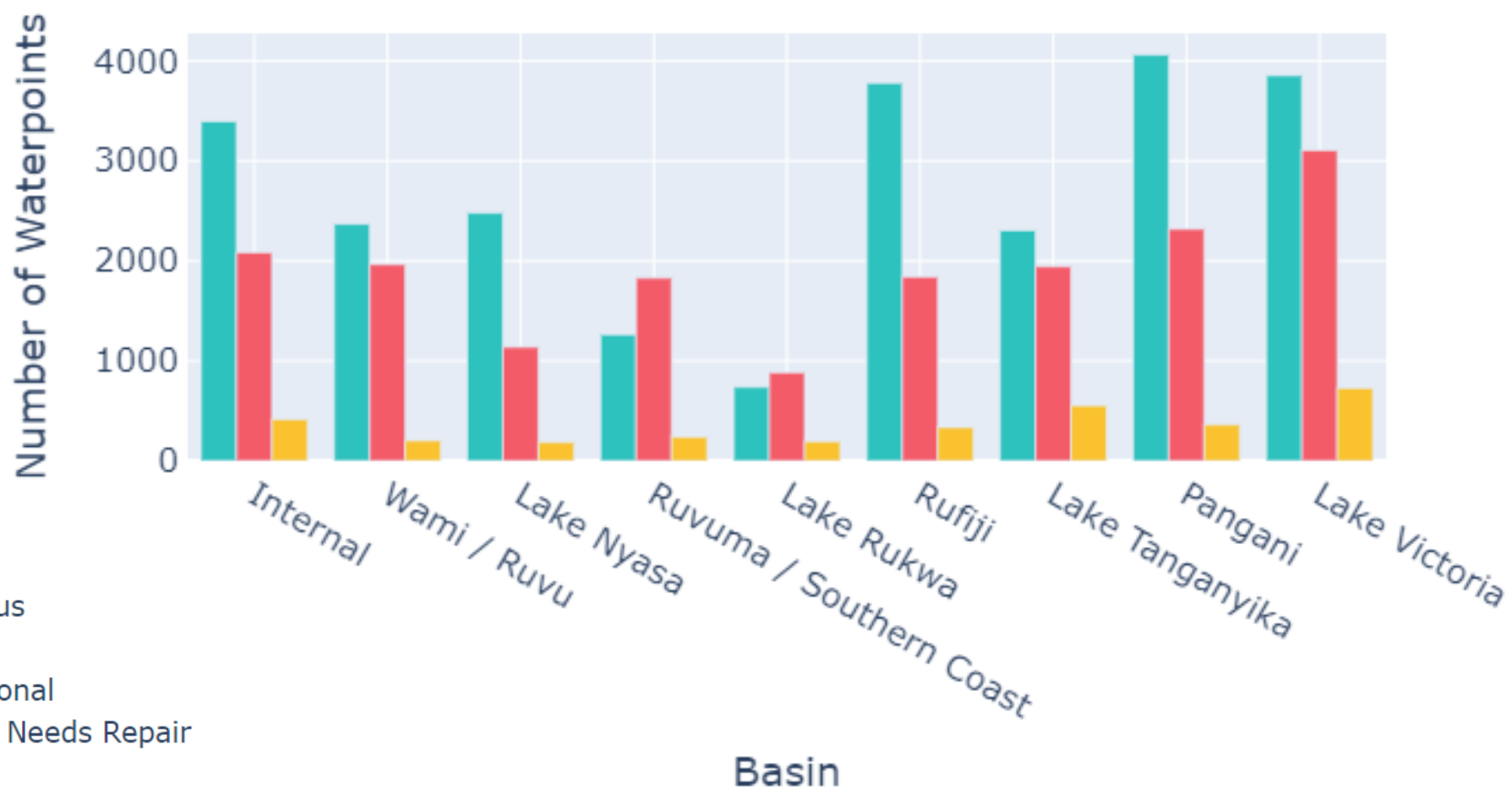
Received: 5 June 2017; Accepted: 3 August 2017; Published: 8 August 2017

**Abstract:** The Water Sector Development Programme (WSDP) of Tanzania aims to improve the performance of the water sector in general and rural water supply (RWS) in particular. During the first phase of the WSDP (2007 to 2014), implementing agencies developed information systems for attaining management efficiencies. One of these systems, the Water Point Mapping System

*33% of Waterpoints are  
non-functional in 2 years*

# Pump Condition Varies Widely

Count of Functional Waterpoints per Basin





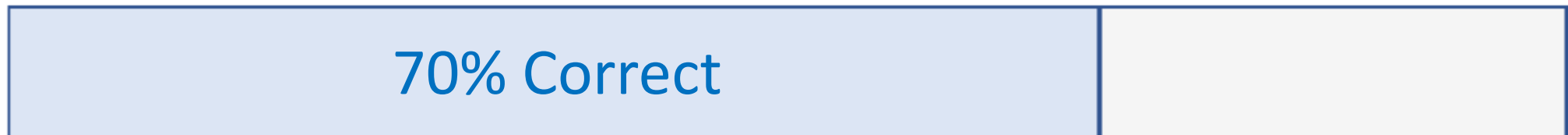
## Model Summary

The model correctly predicted the status of a waterpoint 73.2% of the time

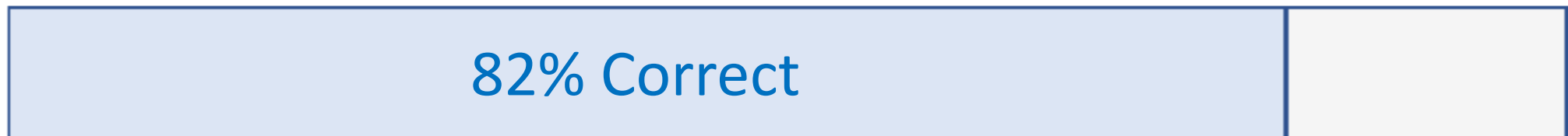
Functional, Needs Repairs



Functional



Non-Functional



# Recommendations

- Concentrate on improving features related to pump and water quality
- Streamline future data collection
- Collect more data on functional waterpoints needing repair



## Next Steps

- Determine Steps to Prevent Waterpoint Breakage
- Determine Features that Affect Function Status
- Reduce Number of Features Used



# Thank you for listening

*Questions and comments are welcome*



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*Data provided by <https://www.drivendata.org/competitions/7/pump-it-up-data-mining-the-water-table/page/23/>, sourced from Taarifa and the Tanzanian Ministry of Water*