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# Pump it Up: Tanzania Water Pump

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# Overview

Potable water access is important to Tanzanians. Many areas use different types of water pump.

Can data help us to understand what's behind the operation?



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# Problems to solve

1

Would water characteristics affect the operation of the pump?

2

Would human associated features affect the operation of the pump?

3

Are there any geographical distribution of pumps in different functionality status?

4

Are there any particular characteristics standing out that can affect the functional status of the pump?



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# Graphs & Finding

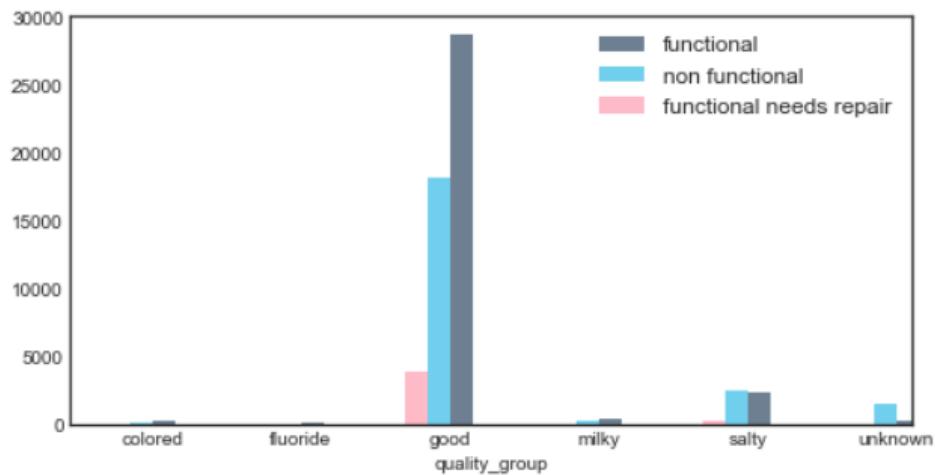
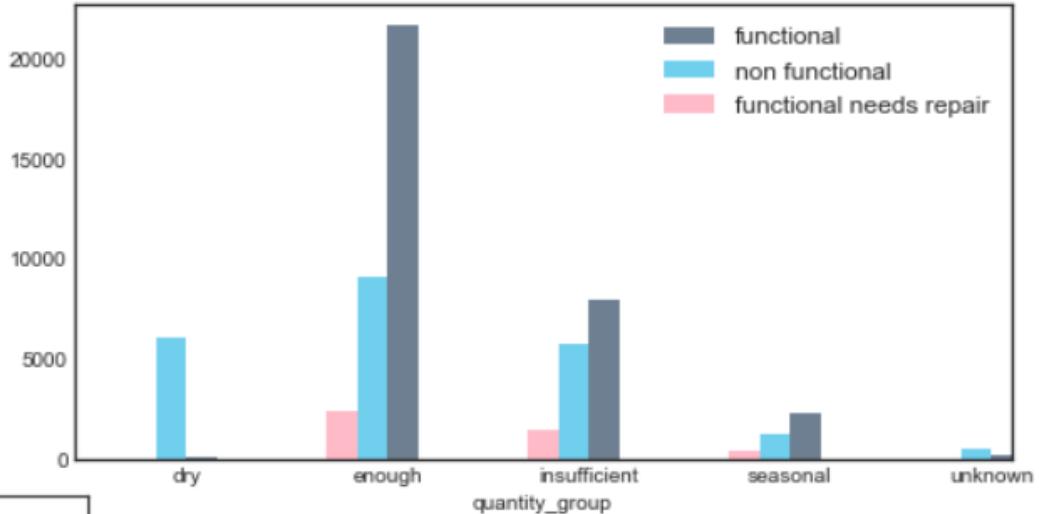
What have been spotted from the data analysis?





# Water

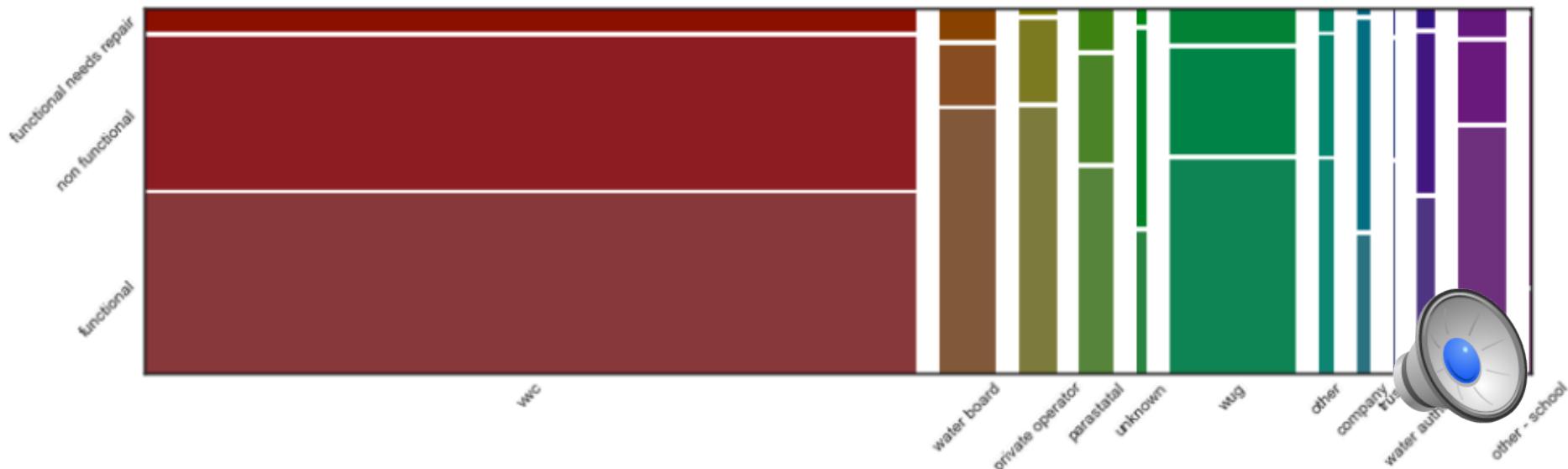
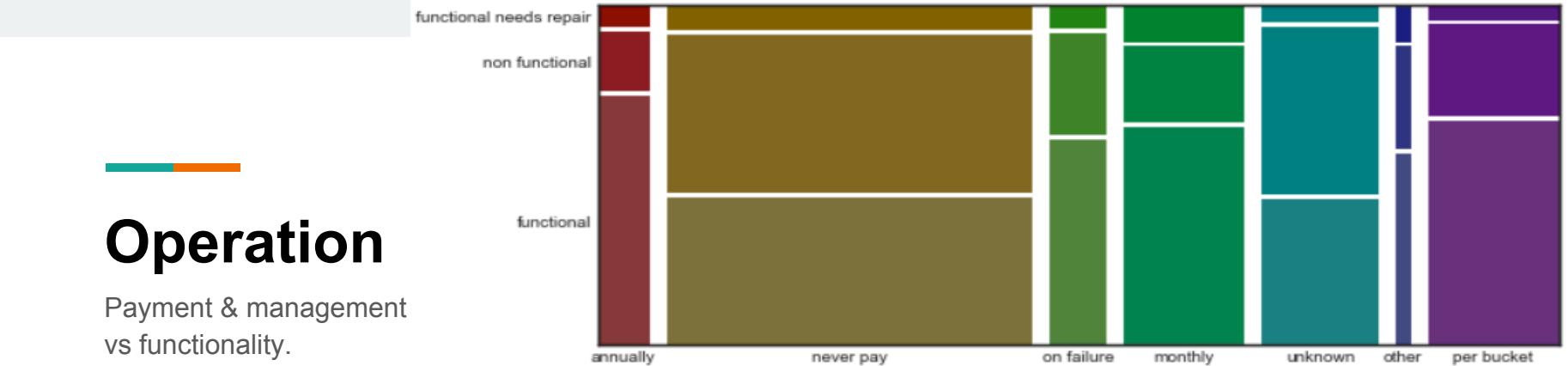
Does quality and quantity affect pump operation?





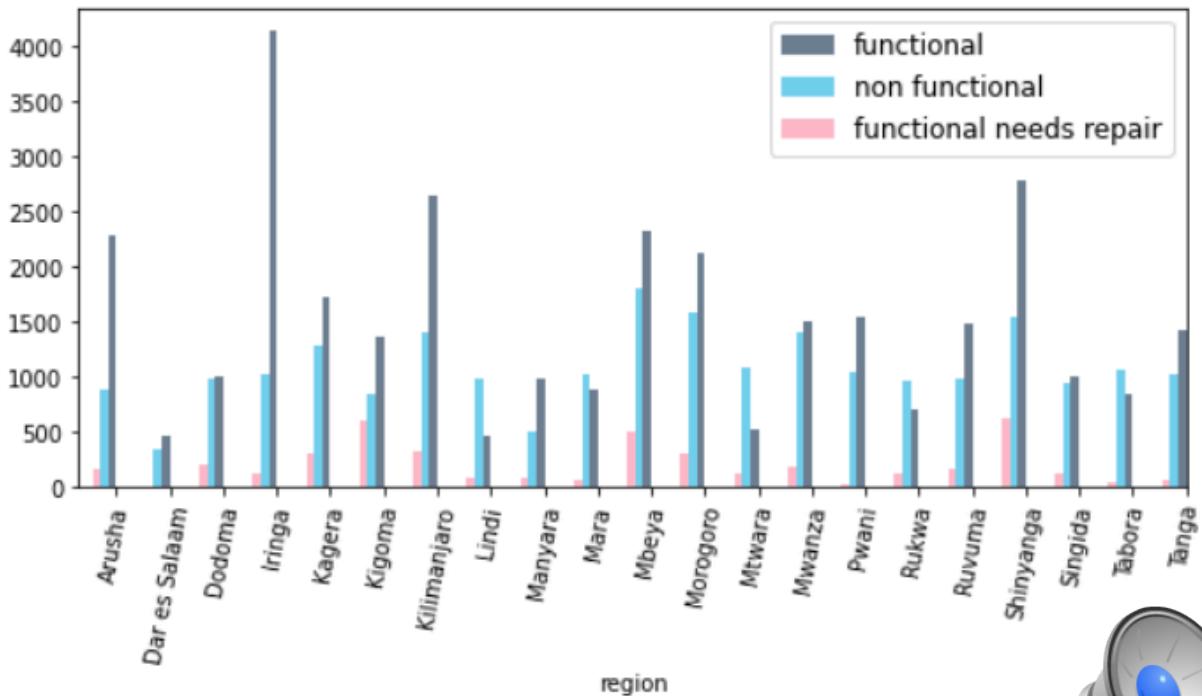
# Operation

Payment & management  
vs functionality.



# Geospatial

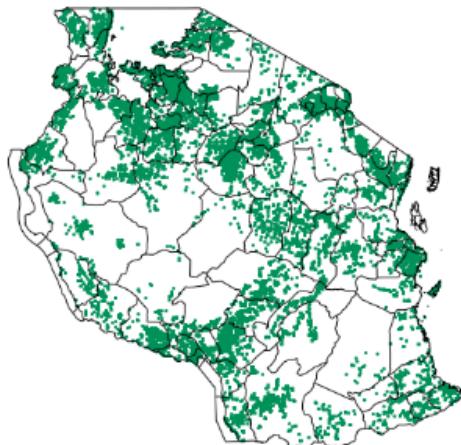
Three map plots showing geographical distribution of functional groups.



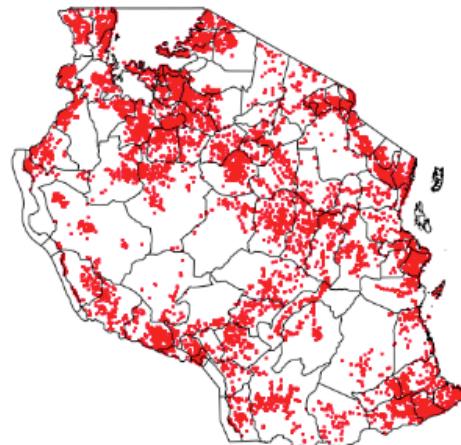
# Geospatial

Three map plots showing geographical distribution of functional groups.

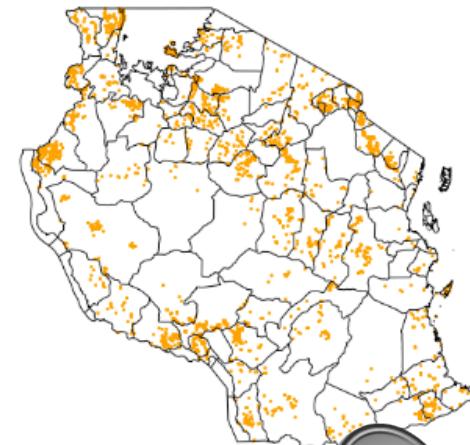
Functional Pumps



Non Functional Pumps



Functional Pumps Need Repairs



# Models



**Random Forest  
Classifier**

**K-Nearest  
Neighbour**



**XGBoost**



# Model's Accuracy



RFC:  
73%

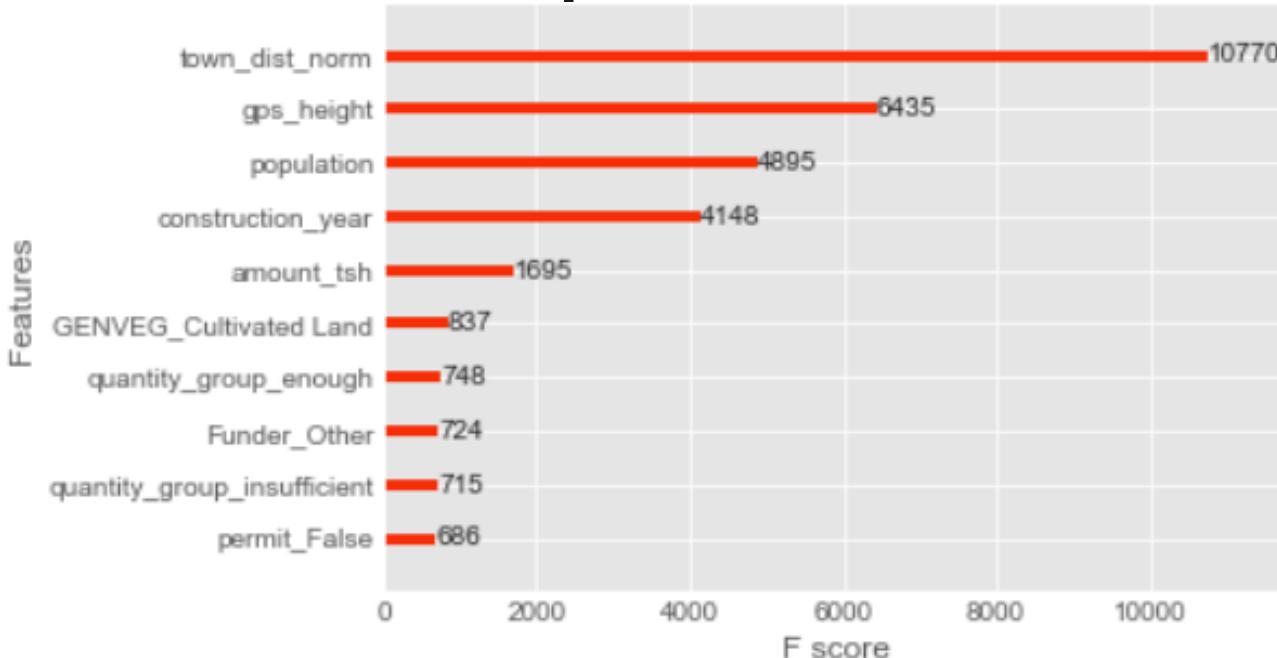
KNN: 68%



XGBoost:  
79%



# What variables are important?



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## Further Improvement Area

1

Deeper dive into the management, funding, and installing agencies

2

Other economic factors to add into the study

3

Predict the unknown value in quality and quantity.

4

User group for the pumps





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# Thank you.

## Q&A?

