
Tanzanian Water Well Data

— Andrew Yeh —
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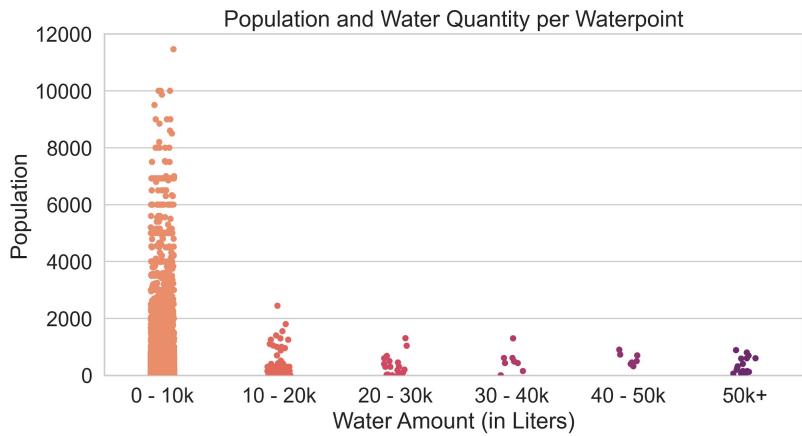
Tanzania

Tan-zu-KNEE-uh



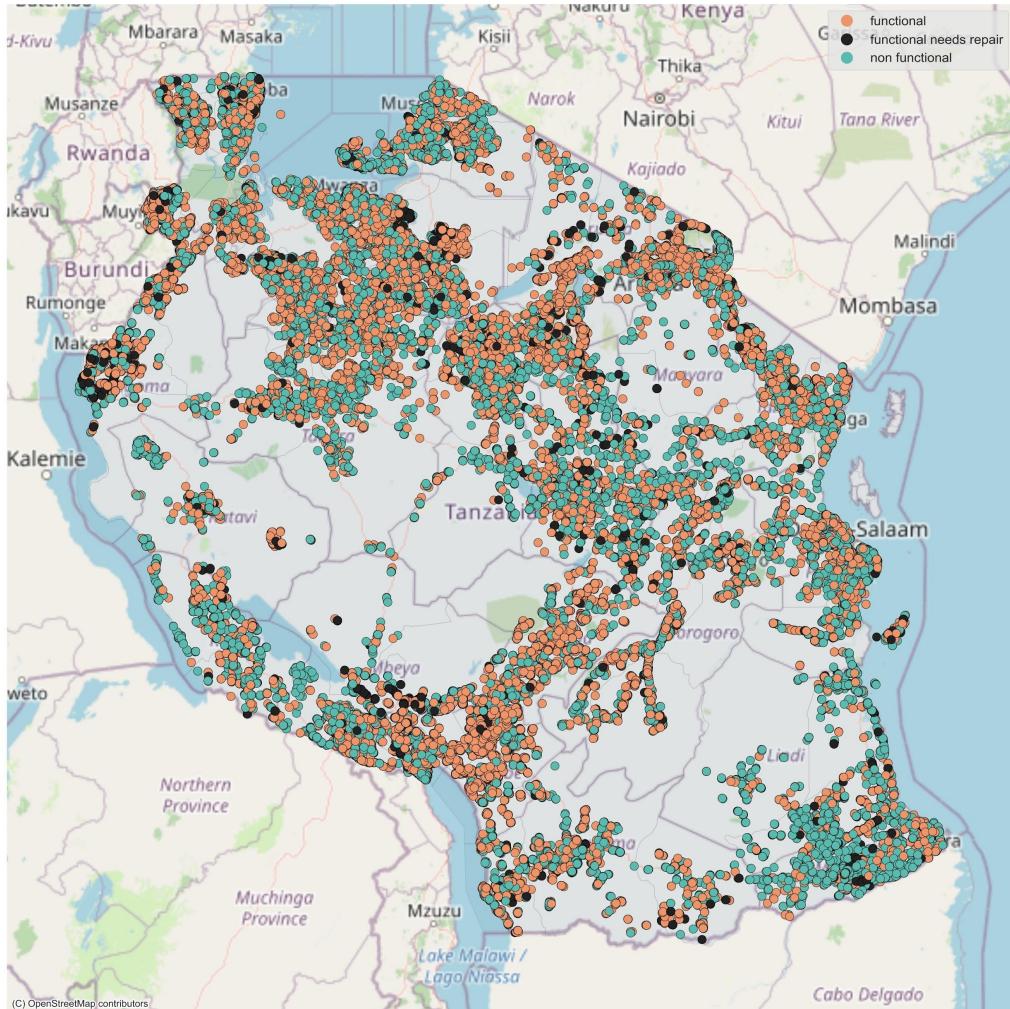
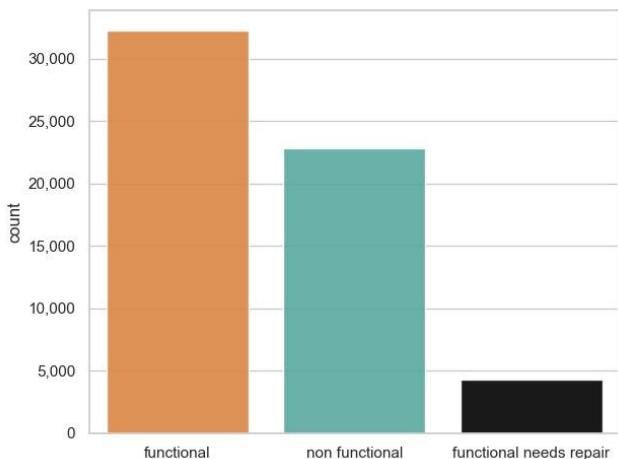
Tanzania

Tanzania, as a developing country, struggles with providing clean water to its population of over 57,000,000.



Well Status

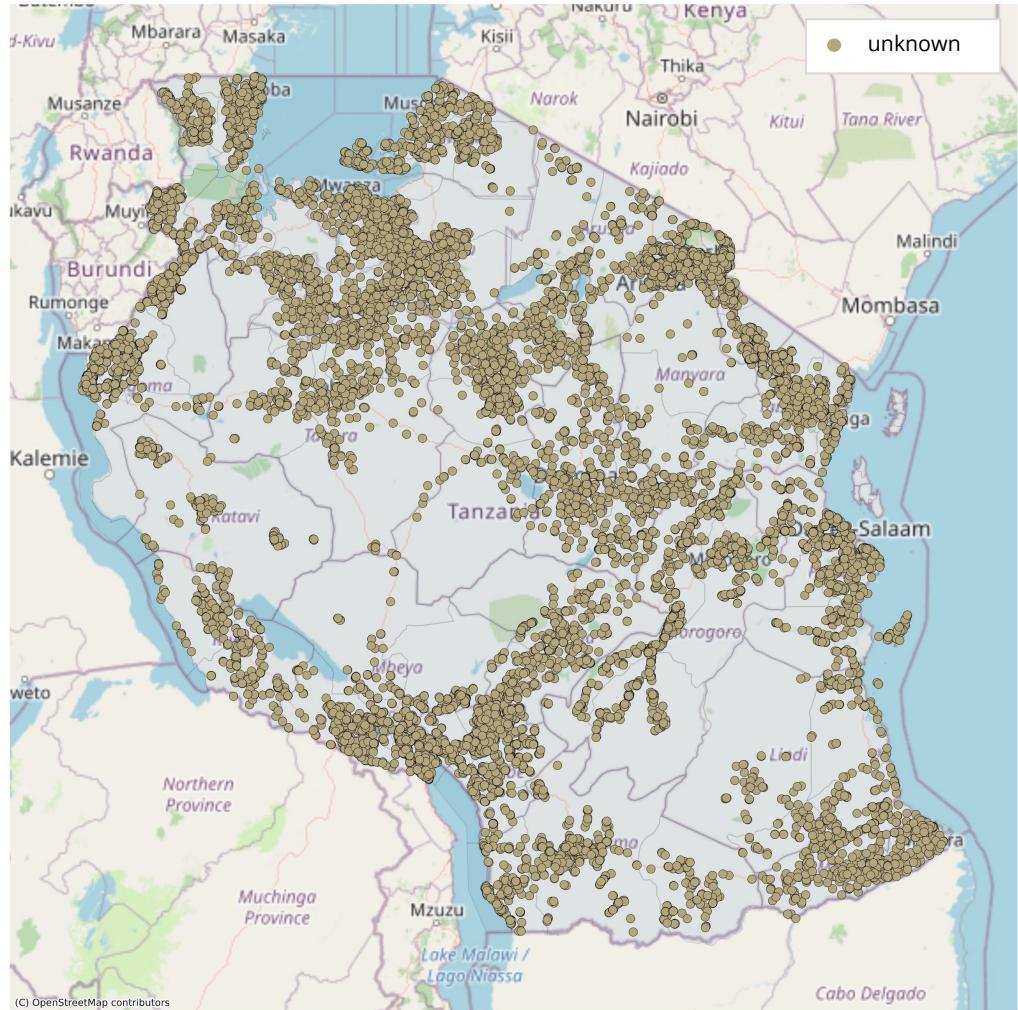
There are many waterpoints already established in the country, but some are in need of repair while others have failed altogether.



Predict Well Status

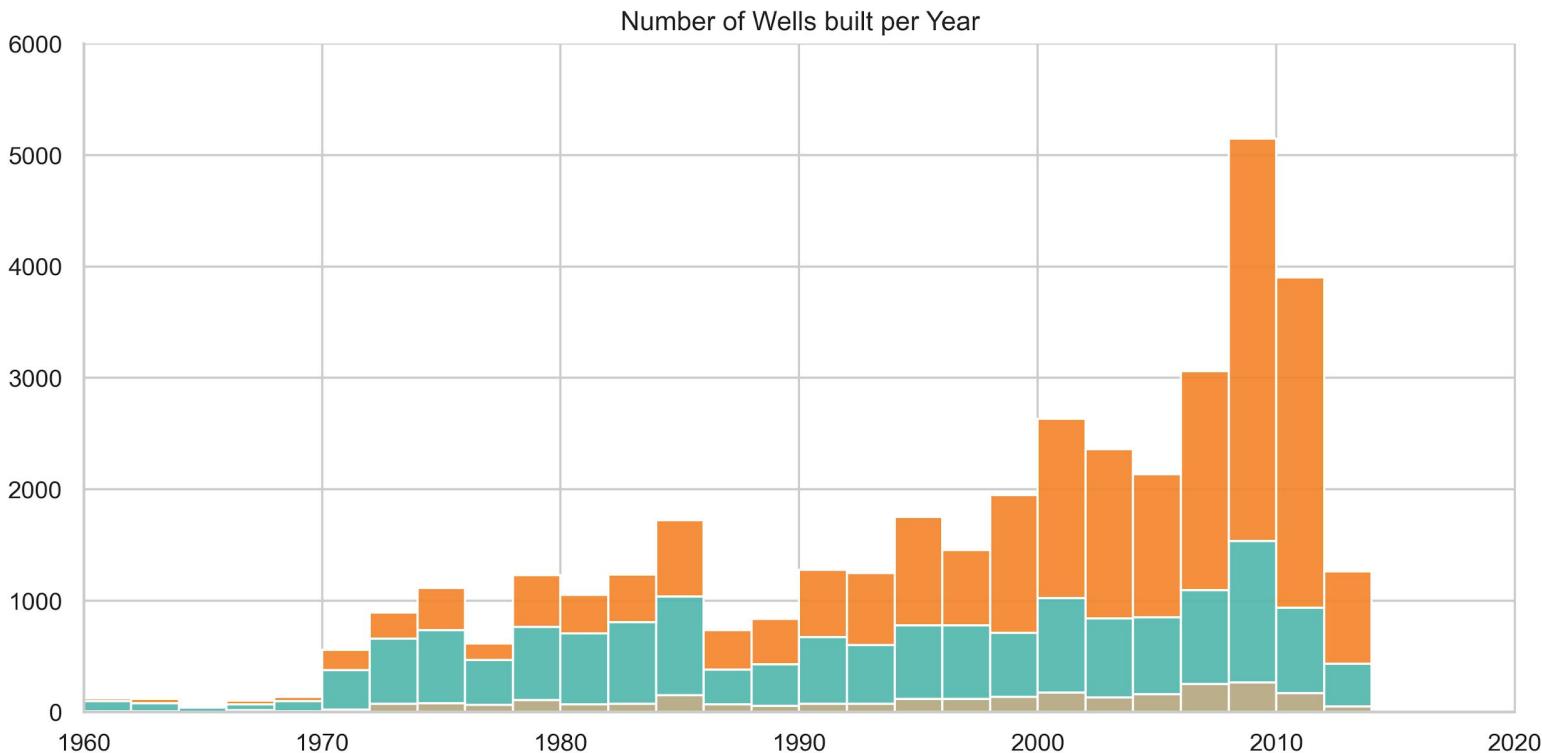
There are many wells for which we do not know if they are working or not.

Our aim is to create a model to accurately predict the status of these wells.



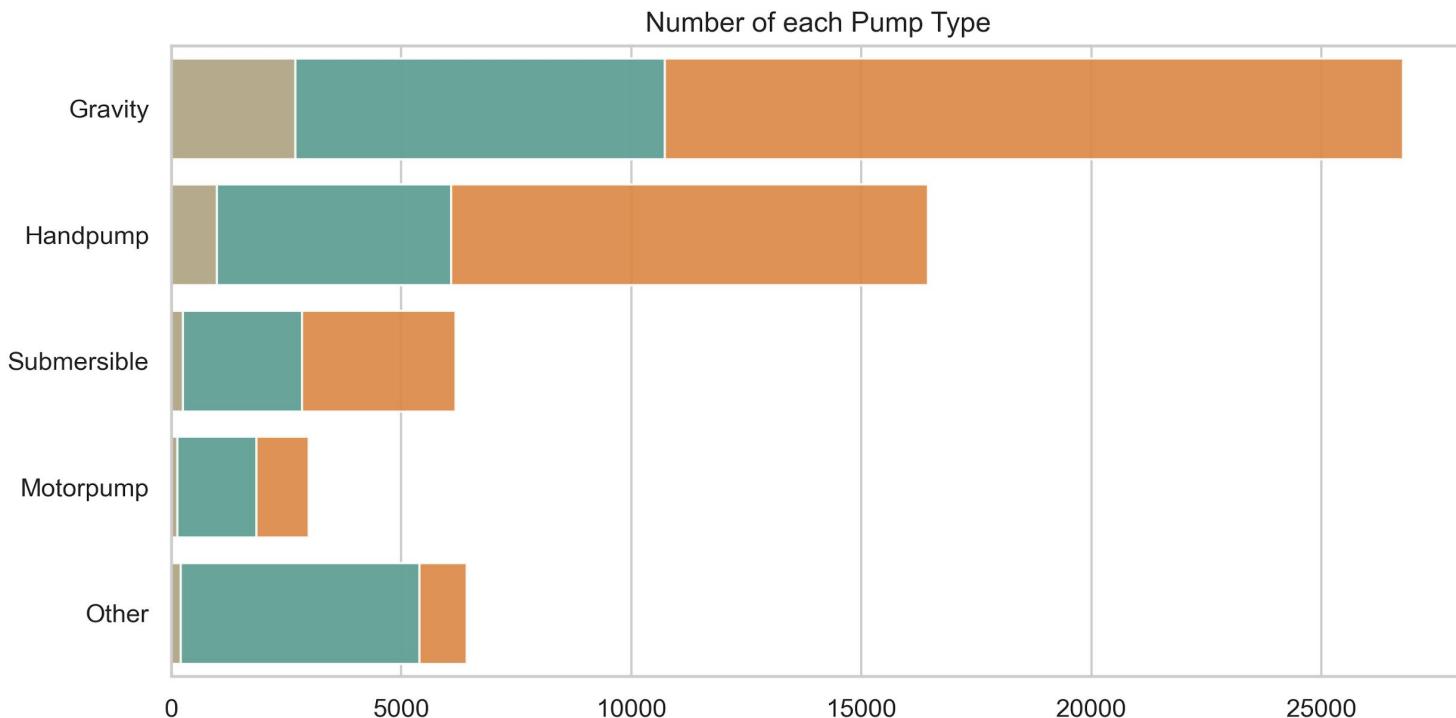
Waterpoint Features of Interest

- Functional (Orange)
- Non Functional (Teal)
- Functional but Needs Repair (Brown)



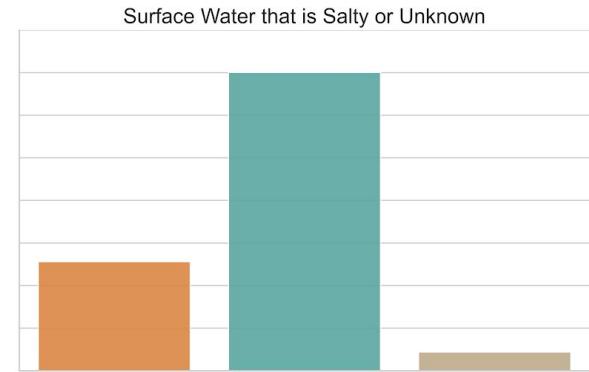
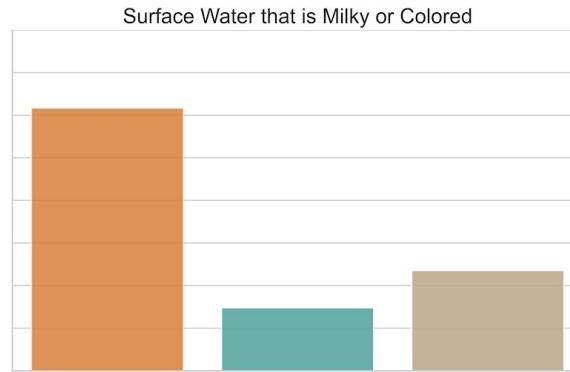
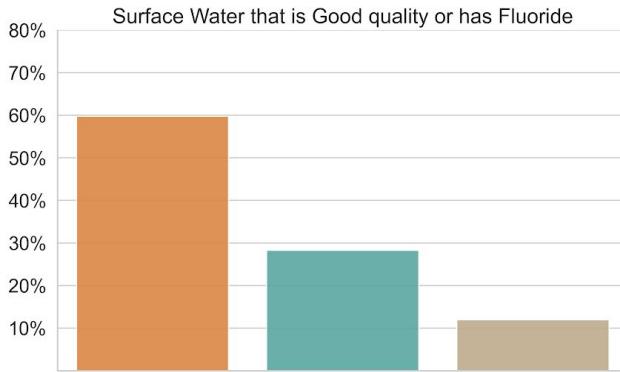
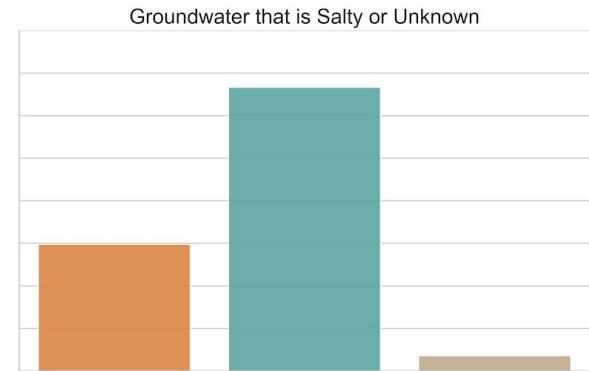
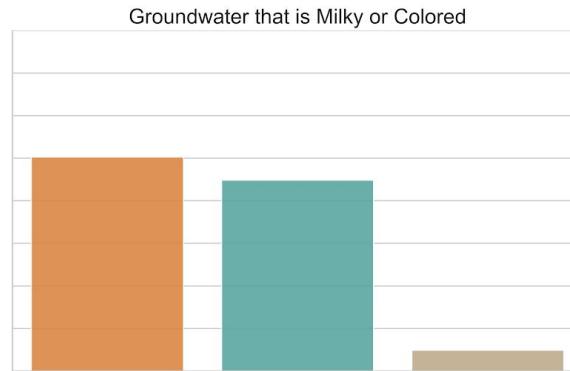
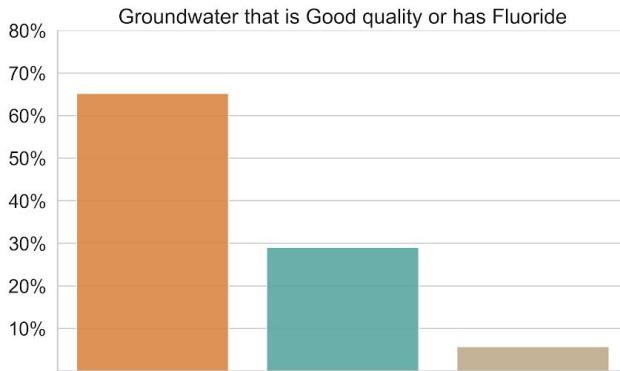
Waterpoint Features of Interest

Functional
Non Functional
Functional but Needs Repair



Waterpoint Features of Interest

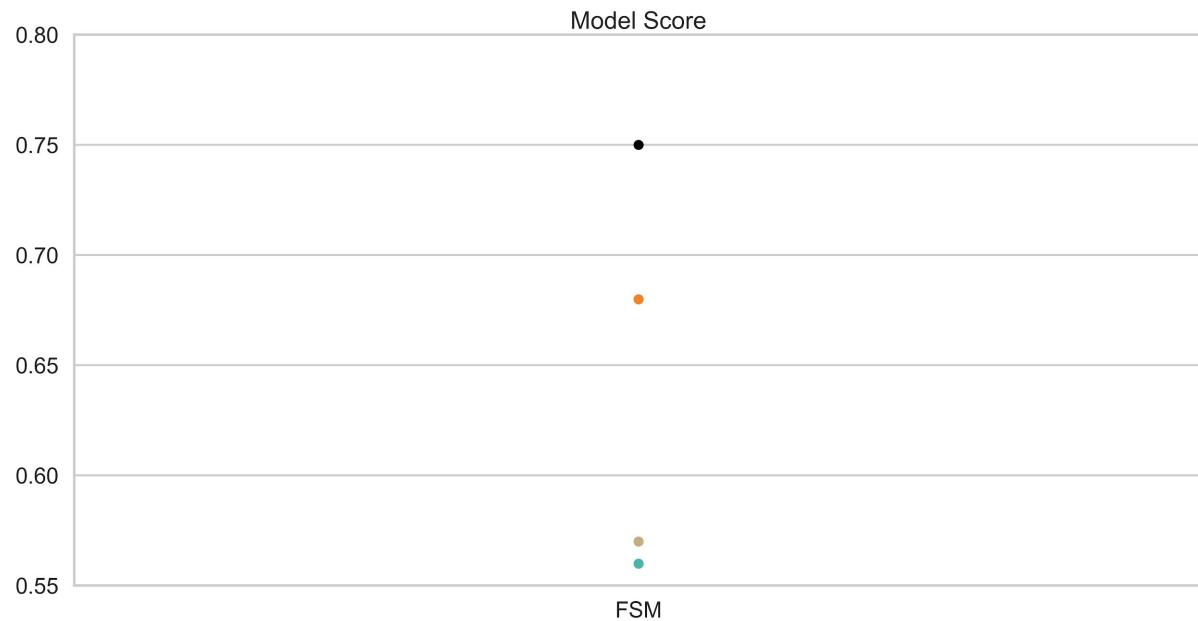
Functional
Non Functional
Functional but Needs Repair



Our First Simple Model

We started out with a basic logistic regression model

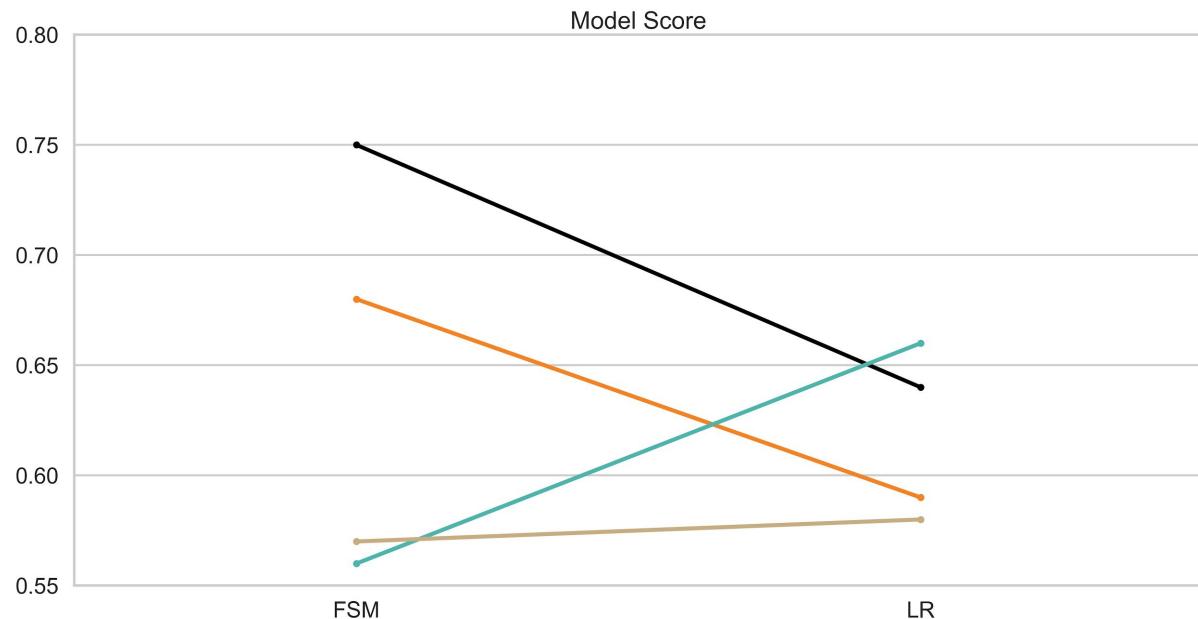
- Accuracy
- Precision
- Recall
- F1-Score



Steps We Took to Improve

Logistic regression
model with
hyperparameter tuning
and data processing

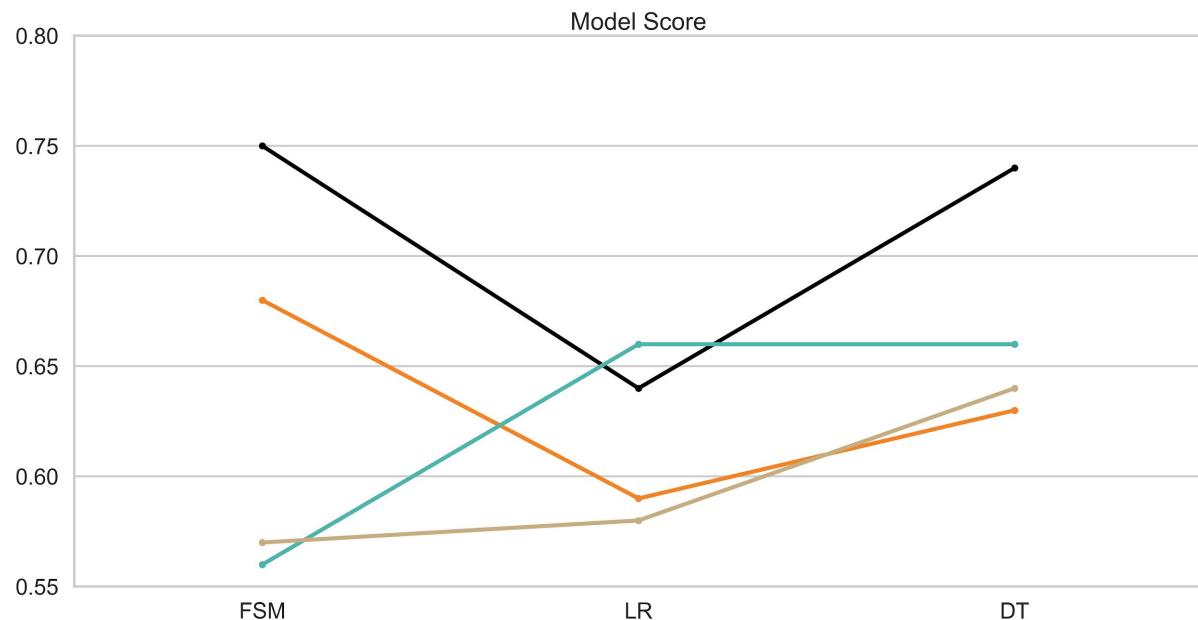
- Accuracy
- Precision
- Recall
- F1-Score



Steps We Took to Improve

Decision Tree

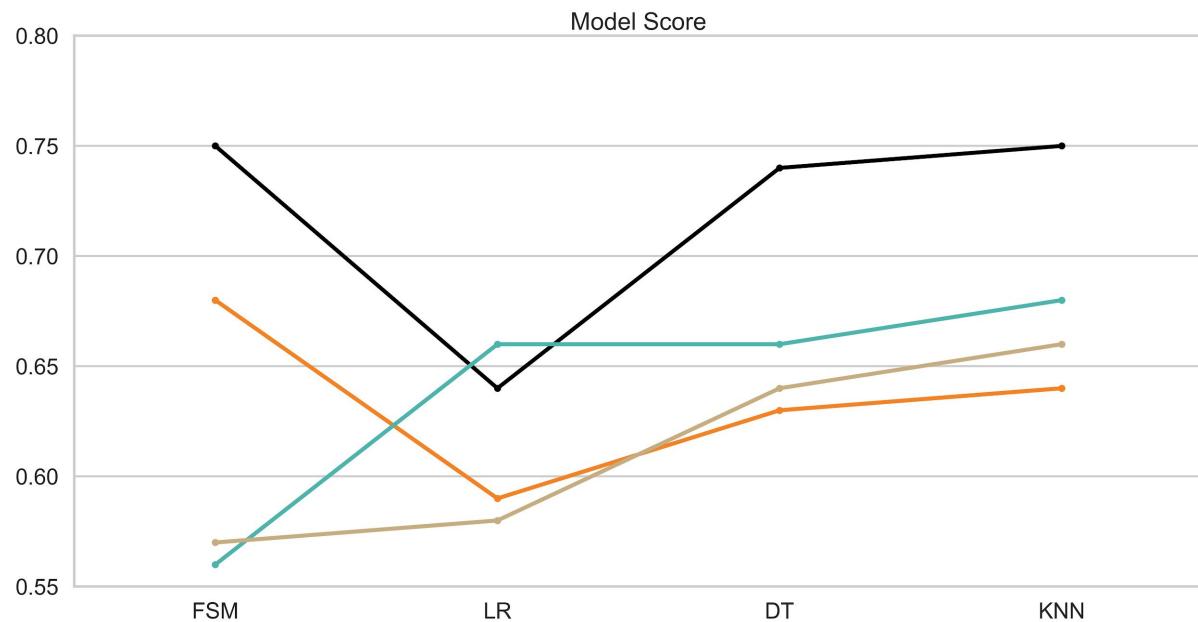
- Accuracy
- Precision
- Recall
- F1-Score



Steps We Took to Improve

K Nearest Neighbors

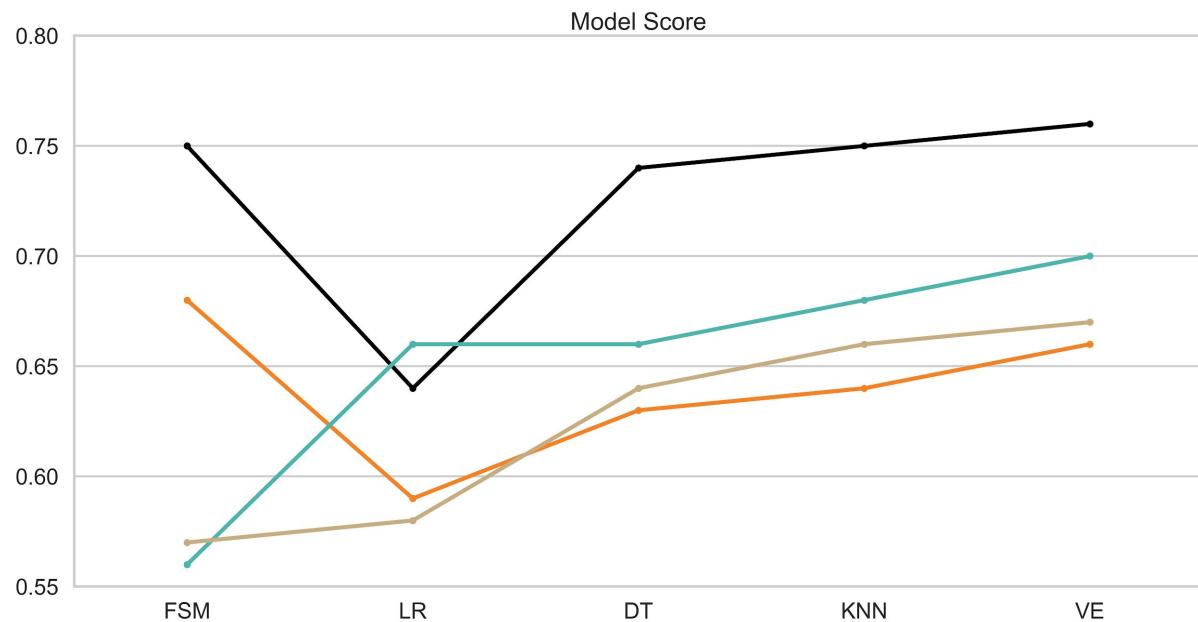
- Accuracy
- Precision
- Recall
- F1-Score



Steps We Took to Improve

Voting Ensemble

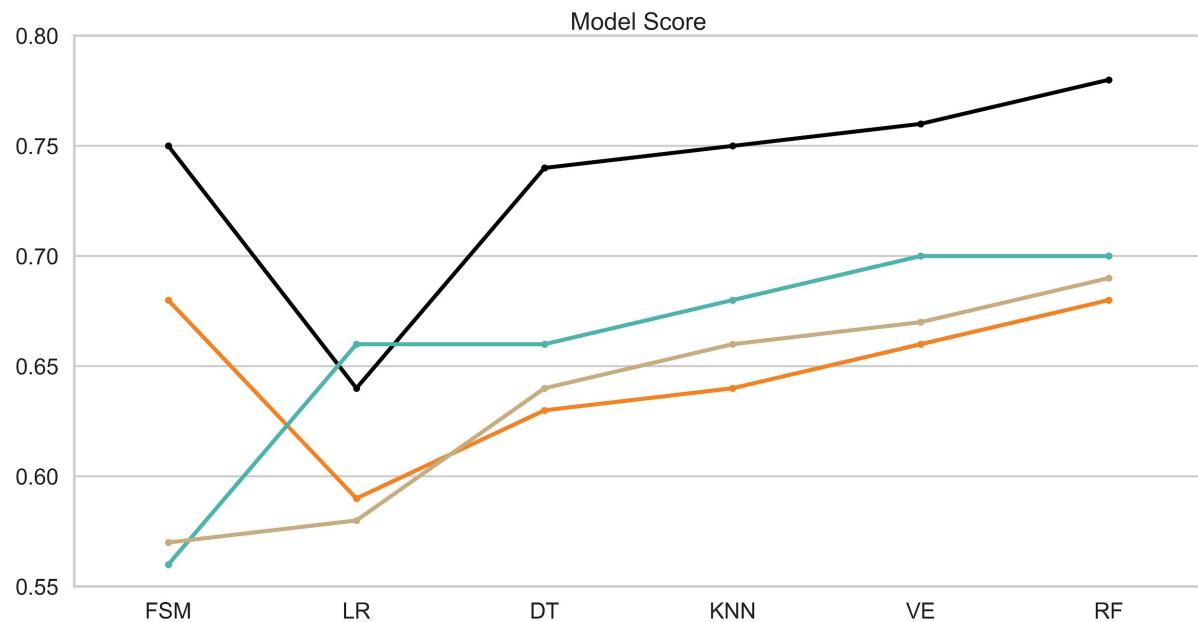
- Accuracy
- Precision
- Recall
- F1-Score



Steps We Took to Improve

Random Forest

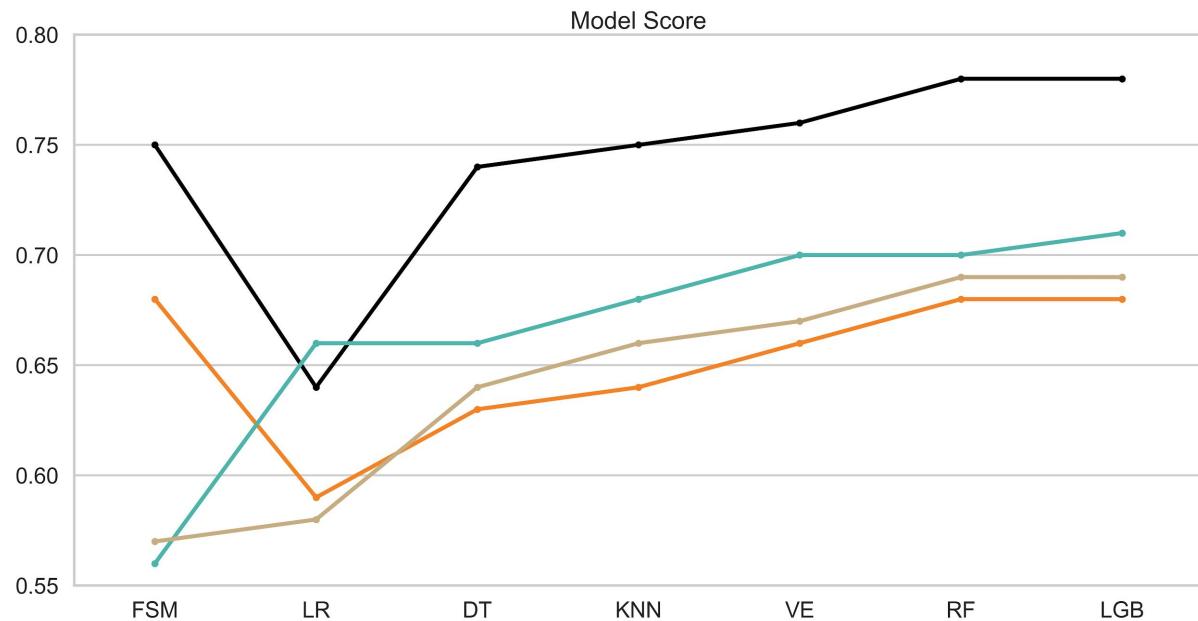
- Accuracy
- Precision
- Recall
- F1-Score



Our Final Model

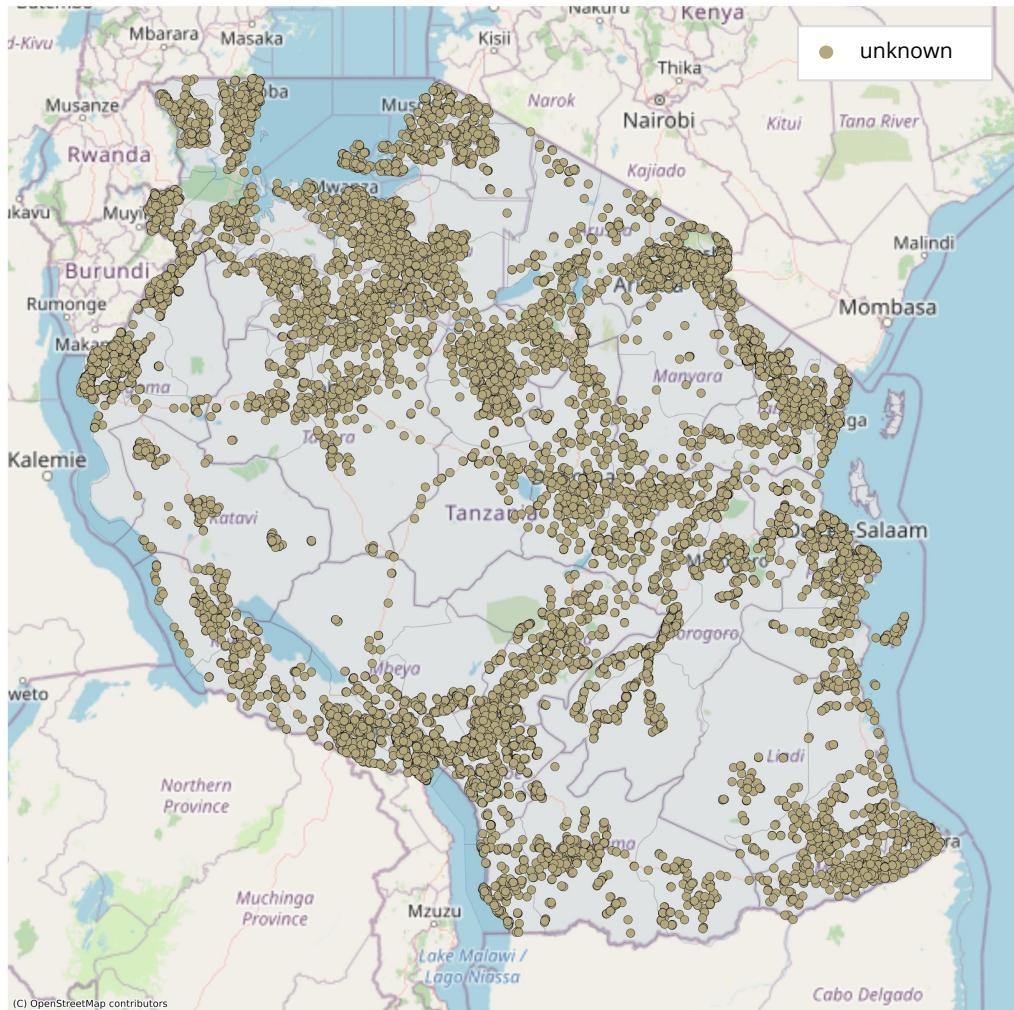
Light Gradient Boosting

- Accuracy
- Precision
- Recall
- F1-Score



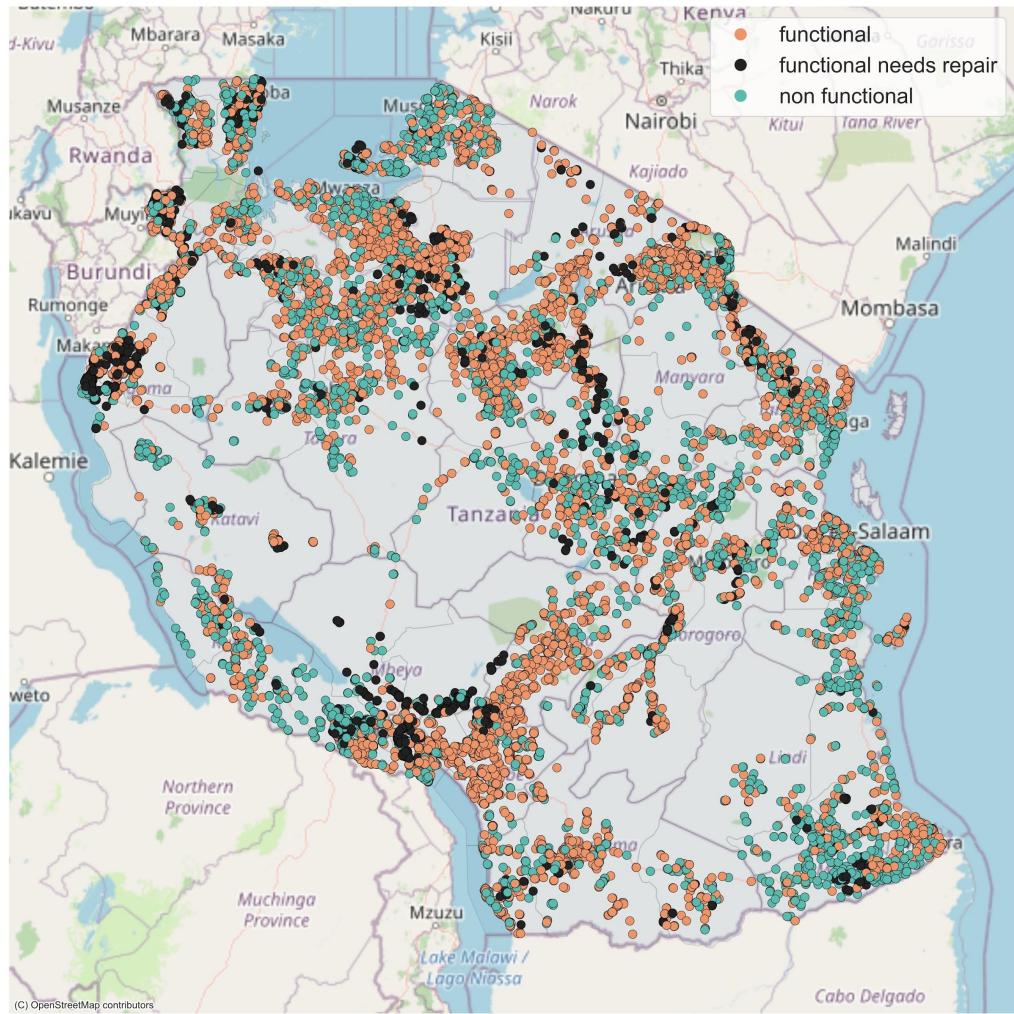
Predict Well Status

Using our best model (light gradient boost) we can predict the status of these wells with an estimated 78% accuracy



Predictions

These are our results!
Let's get water to Tanzania



What can you do to help?

The water poverty situation is dire. An initiative is in place for providing clean water to those in serious need in Tanzania. Visit this website for more information to see what you can do to help.

<https://www.tanzaniawaterproject.org/>

Contacts

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- <https://github.com/awyeh64/>

Sindhu Ravikumar

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Project Repository

- https://github.com/awyeh64/Tanzanian_Water_Well_Predictor