

OVERVIEW

- Tanzania is a developing country that struggles to provide access to safe drinking water for its 60 million residents
- Build a predictive model and provide insight on water pump failure
 - 60,000 waterpoints in Tanzania
 - Status of the waterpoints
 - 36 independent variables

BACKGROUND



According to WHO, 1 in 6 people in Tanzania lack access to safe drinking water



29 million don't have access to improved sanitation



Women walk 2 to 3 km per day carrying 20-25 liters on their head and sometimes wait hours at the water source

BUSINESS PROBLEM



PREDICTIVE
MAINTENANCE



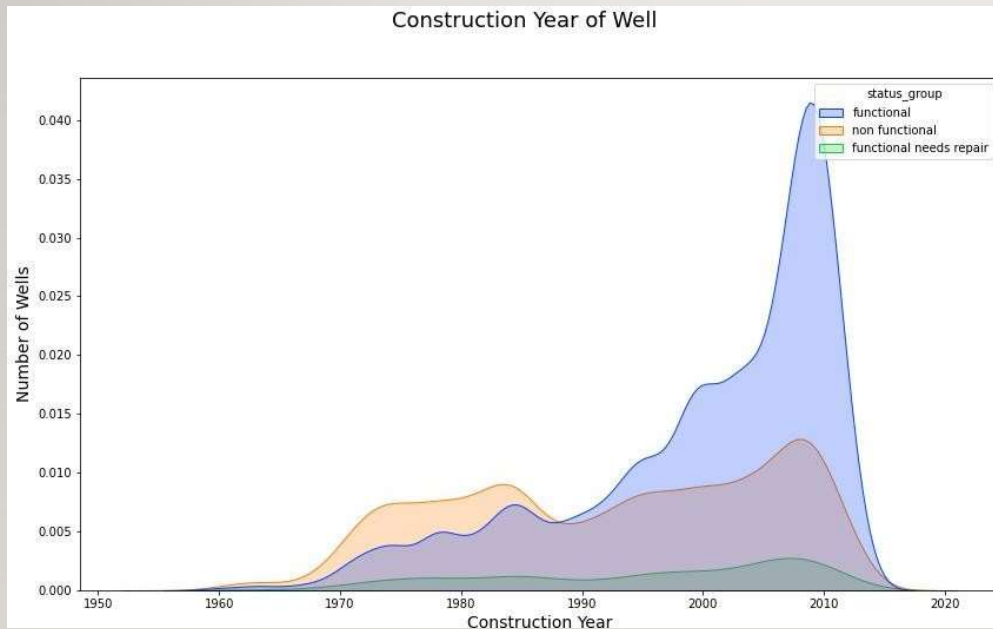
IMPROVED
WATER ACCESS



DATA-DRIVEN
DECISION-MAKING

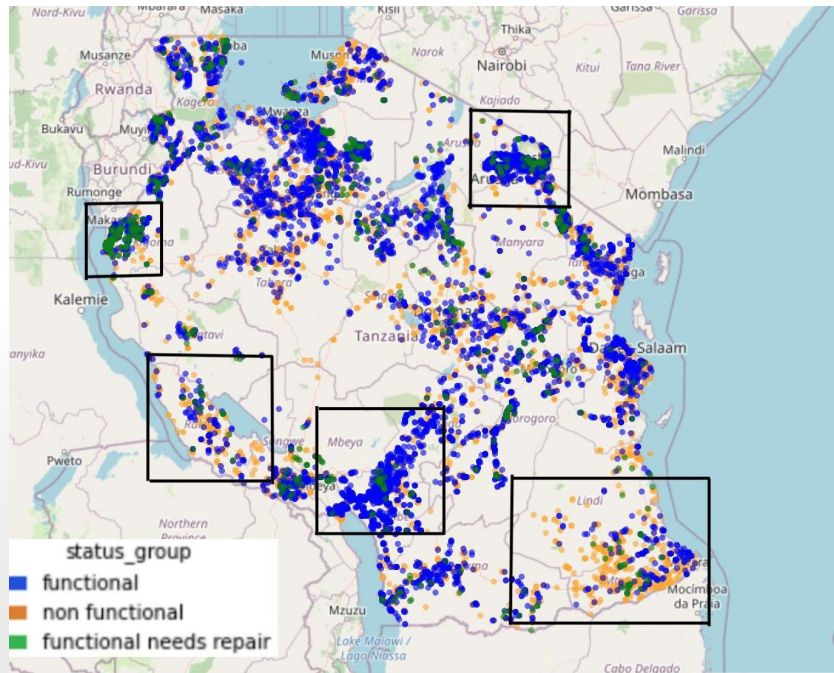


ENHANCED
INFRASTRUCTURE
PLANNING



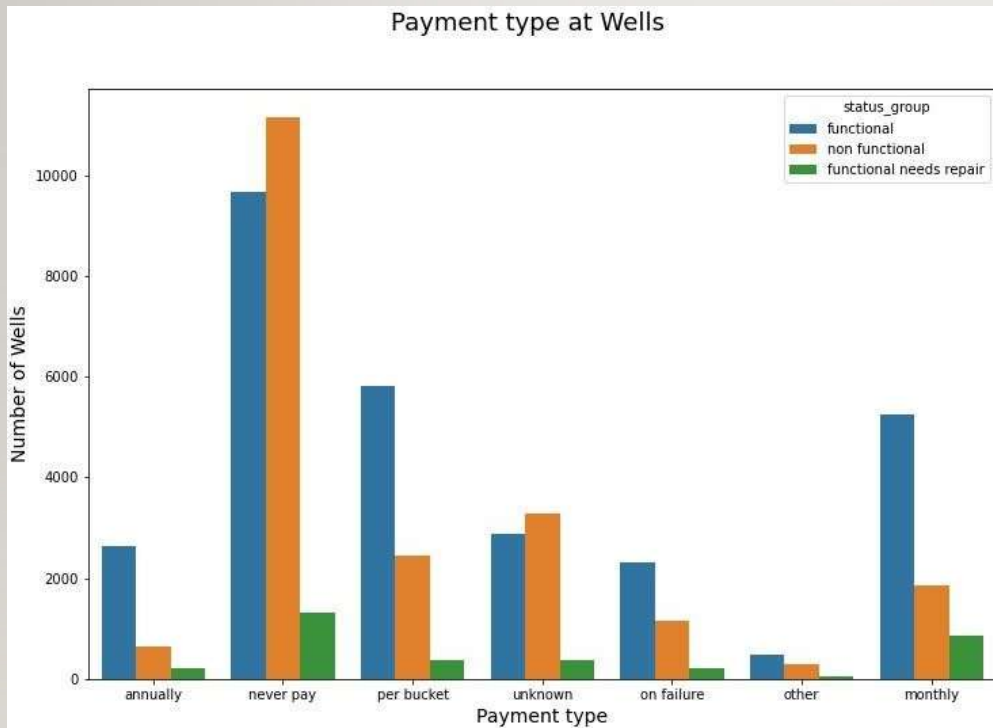
CONSTRUCTION YEAR OF WATERPOINT

- The older the pump installation year, the more non functional the wells are.
- High rate of functioning were those done from year 2000s



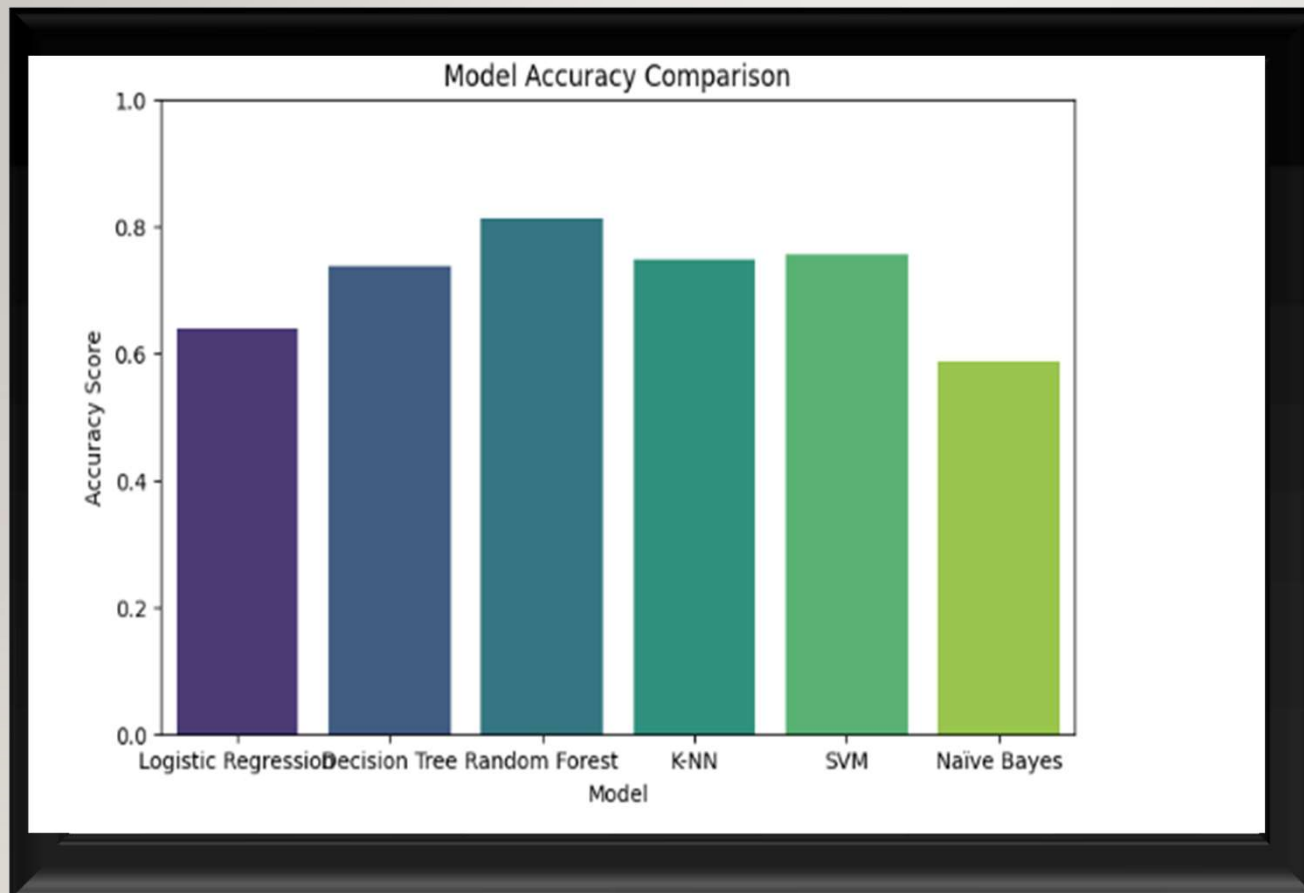
INSIGHTS

- High rate of nonfunctional wells in southeast corner of Tanzania
- There is cluster of functional but needs repair wells mostly in Kigoma



PAYMENT

- Wells with no fee are more likely to be non functional
- Some form of payment increases functionality



PREDICTION

RANDOM FOREST MODEL
HAS AN ACCURACY **80%**
PREDICTION ON
FUNCTIONALITY

RECOMMENDATIONS

1. Use Insights for Proactive Decision-Making – Prioritize maintenance and interventions based on model predictions to prevent failures.
2. Optimize Resource Allocation – Focus efforts on high-risk areas, ensuring efficient use of manpower and budget.
3. Regular Data Updates – Continuously update and refine the dataset to improve prediction accuracy over time.
4. Combine AI with Human Expertise – Use model results alongside expert knowledge for well-rounded decision-making.
5. Monitor Model Performance – Evaluate and adjust the model periodically to adapt to changes in data patterns

Tanzania Waterwells Modelling.

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