

TANZANIA WATER PUMP ANALYSIS

RESEARCH PRESENTED AND CONDUCTED BY ANGELA LOYOLA

CONTENT

- 
- 01** BUSINESS PROBLEM
 - 02** THE DATA
 - 03** METHODS
 - 04** RESULTS
 - 05** KEY FINDINGS
 - 06** RECOMMENDATIONS
 - 07** LIMITATIONS
 - 08** POTENTIAL SOLUTIONS

BUSINESS PROBLEM



Tanzania is a developing country that struggles with providing **clean water** to its population of over **57 million**.



We leveraged **predictive analysis** to identify wells requiring repairs to accurately predict the locations in need of attention. This can help **optimize resource allocation** and develop more effective, **long-term strategies**.



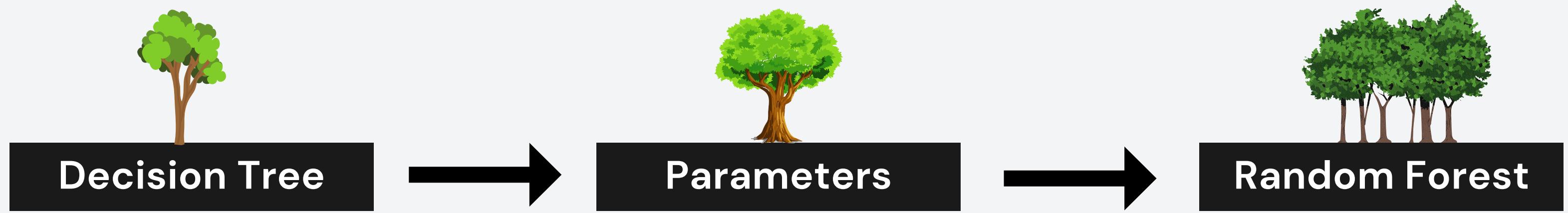
THE DATA



Using data from the **Tanzanian Water Ministry** about the status of almost **60 thousand** water pumps, information was extracted on:

- Construction year
- Water quality
- Extraction Type
- Waterpoint Type

METHODS: CLASSIFICATION ANALYSIS

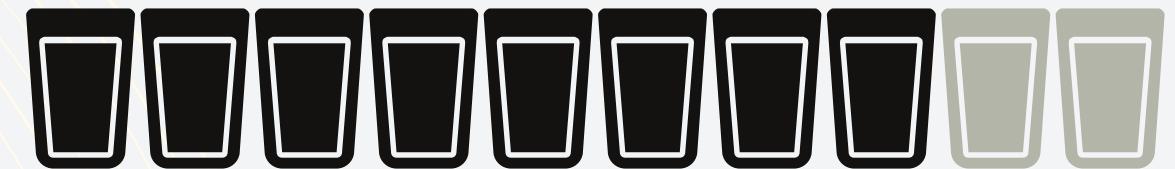


1. Start with a Baseline Model
2. Find the best parameters
3. Apply Random Forest
4. Compare Results
5. Select Final Model

RESULTS

Our Final Model correctly identified the condition of the water pump 70% of the time.

70%





KEY FINDINGS

- **Water Point Types:** Other and Communal Standpipe
- **Water Quality:** Unknown and Soft
- **Extraction type:** Handpump
- Construction Year

01

02

03

04

WATERPOINT
TYPES DEMAND
ATTENTION

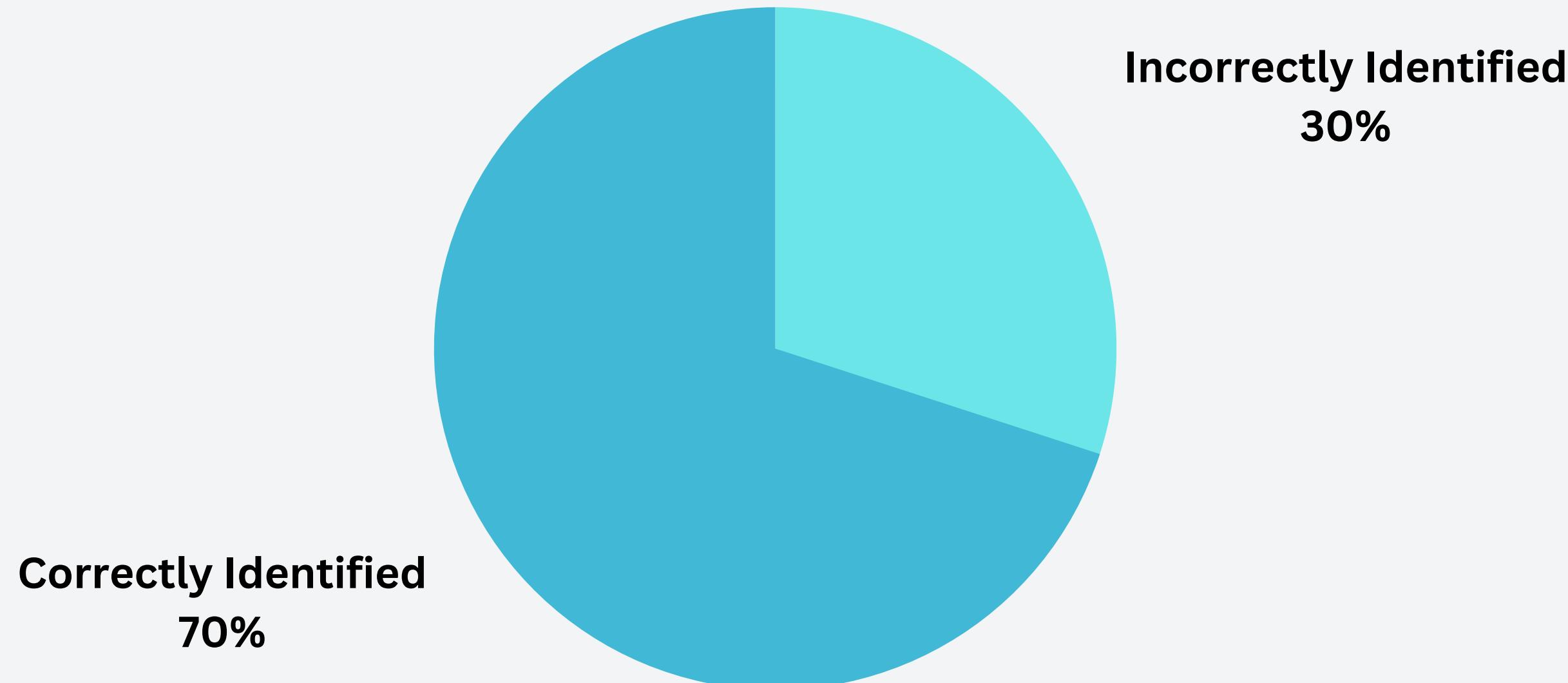
RENEW
FOCUS ON
OLDER
PUMPS

QUALITY
ASSURANCE
FOR SAFE
WATER

OPTIMIZE KEY
EXTRACTION
TECHNIQUES

LIMITATIONS

- Class Imbalance
- Categorical Variables
- **Concern:** Incorrectly identified waterpumps could harm a communities access to water



POTENTIAL SOLUTIONS

OVERSAMPLING
TECHNIQUES

ADVANCED
ENCODING

COLLECT
MORE DATA

THANK YOU

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