Africa Financial Inclusion

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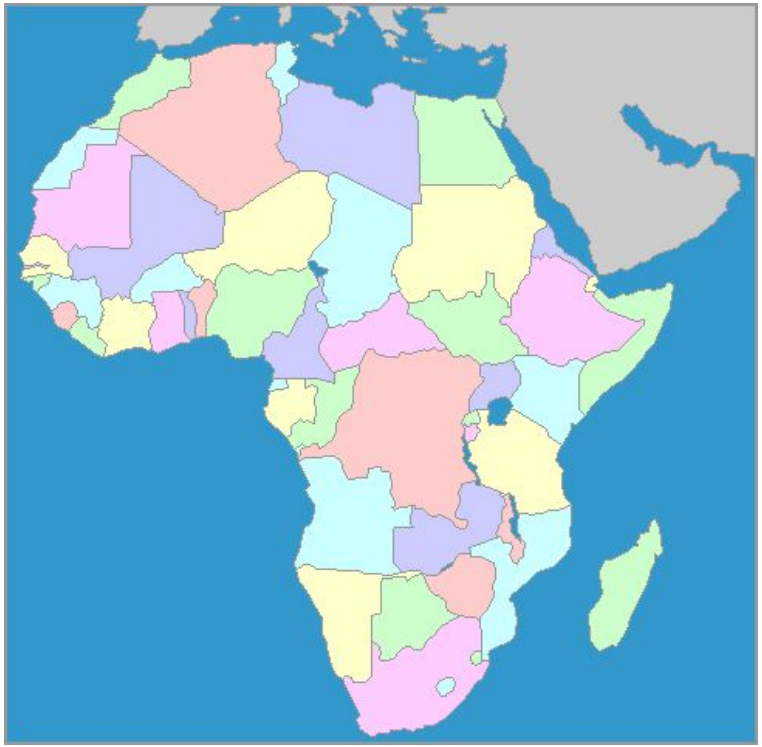
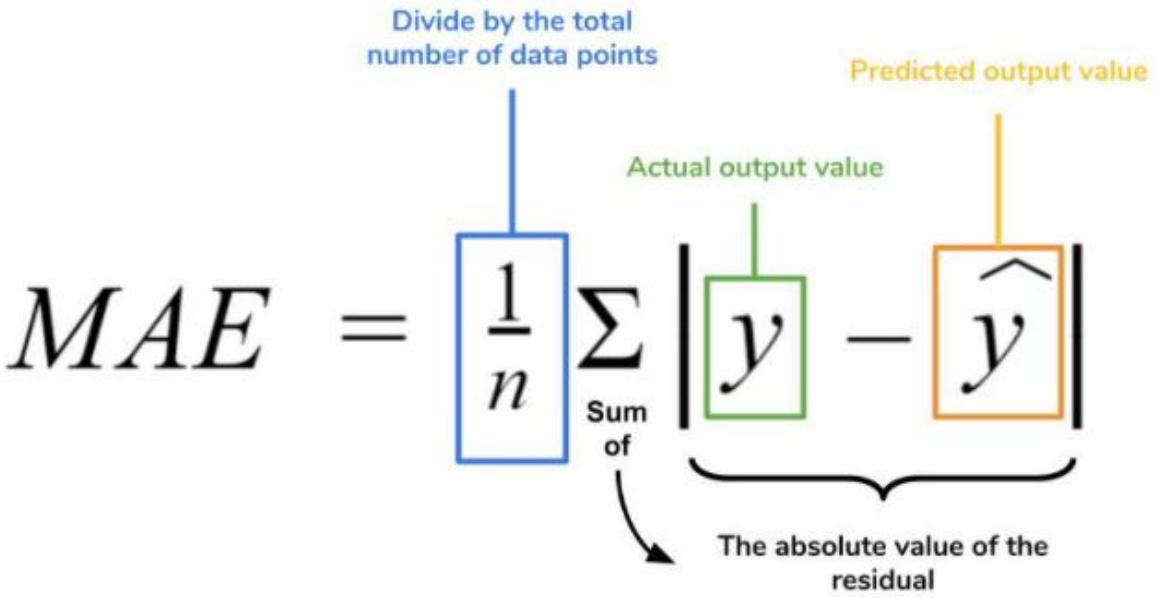
Business goal and Motivation

- Financial inclusion remains one of the main obstacles in Africa
- Kenya, Rwanda, Tanzania, and Uganda: Only 14% adults have access to bank accounts
- Access to bank accounts has been regarded as an indicator of financial inclusion



Evaluation Metric

unique_id	bank_account
uniqueid_1	1
uniqueid_2	0
uniqueid_3	1



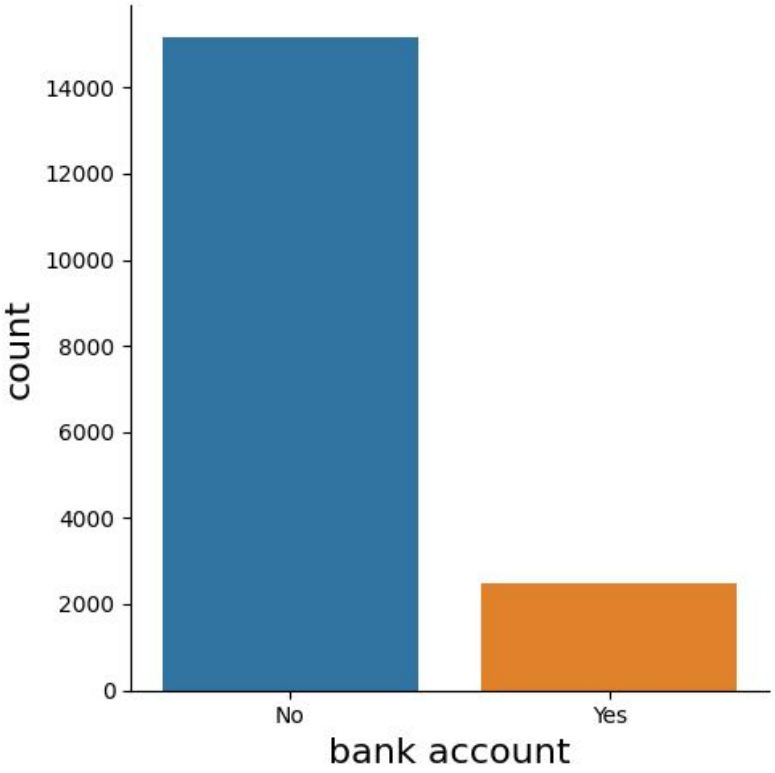
Data Source and Description

- Data was extracted from various **Finscope surveys** ranging from 2016 to 2018

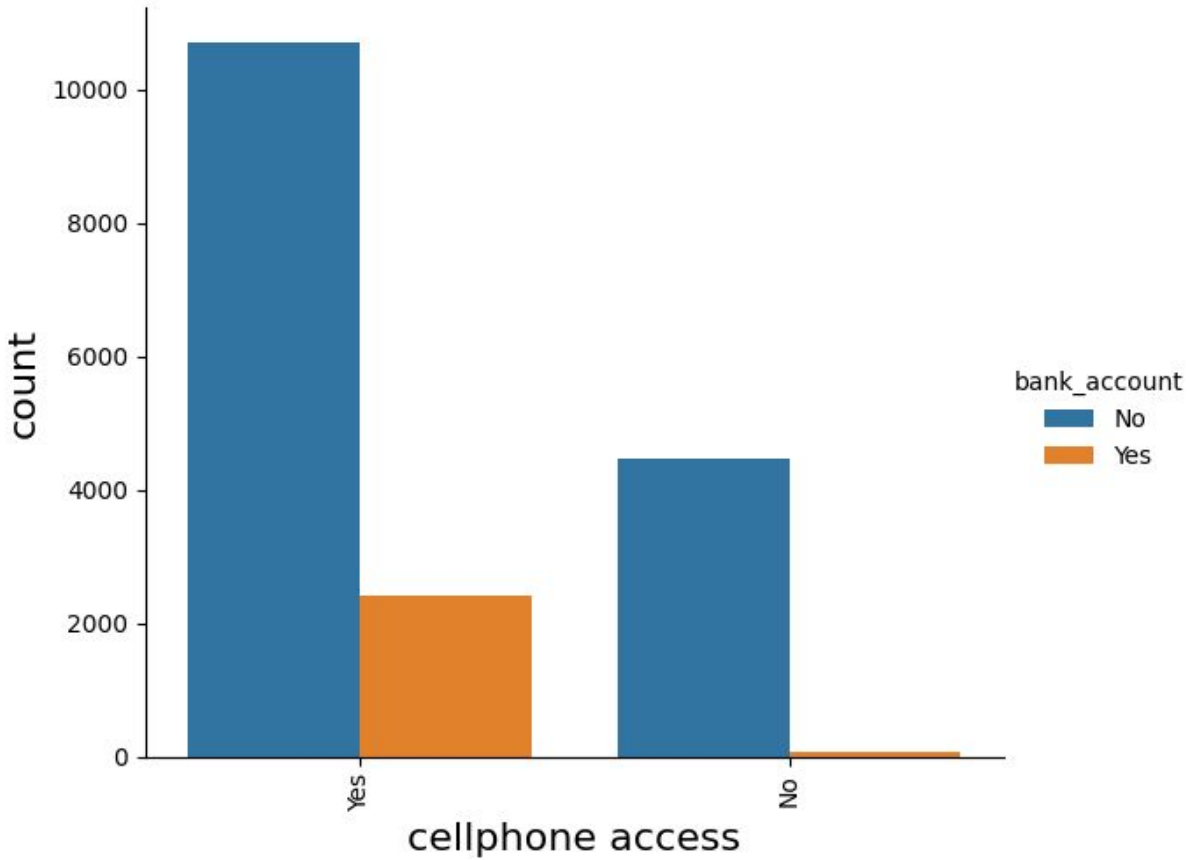
- **23524 Rows and 13 Columns**

- Columns: **unique id, country, year, location type, cellphone access, gender, relationship with head, marital status, education level, job type, age, household size, bank account status**

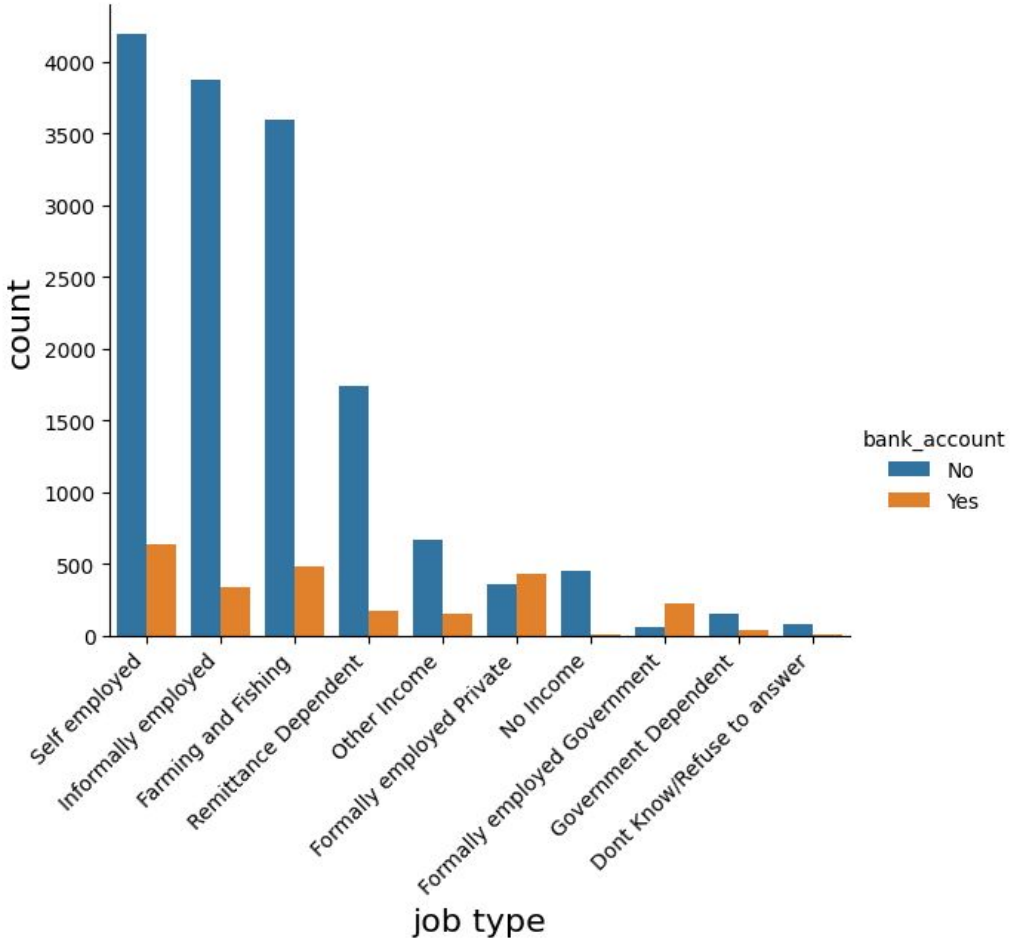
Number of people with bank accounts



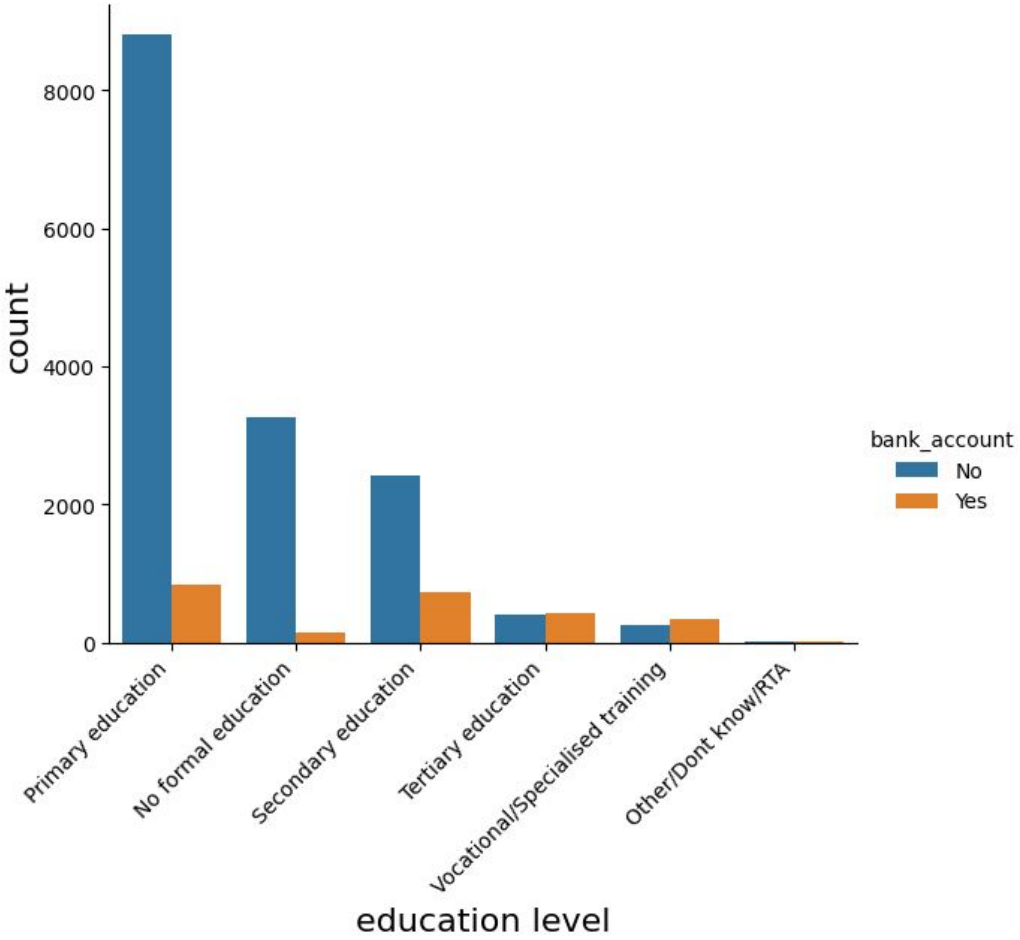
Cellphone access and bank account access



Job type and bank account access



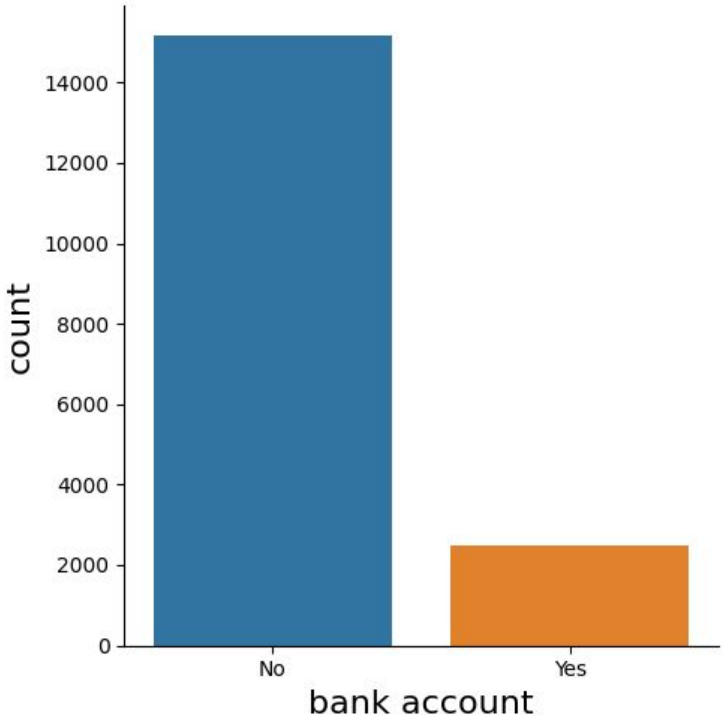
Education level and bank account access



Challenges

- Imbalanced data
- No straightforward way to predict bank account access
- Partial information present in each of the features

Baseline Model: Dummy Classifier - All rows classified to '0'

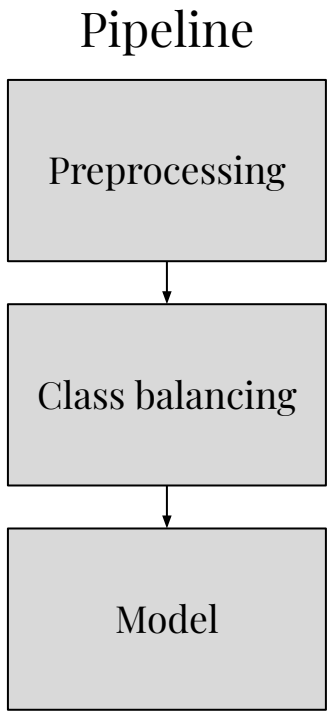


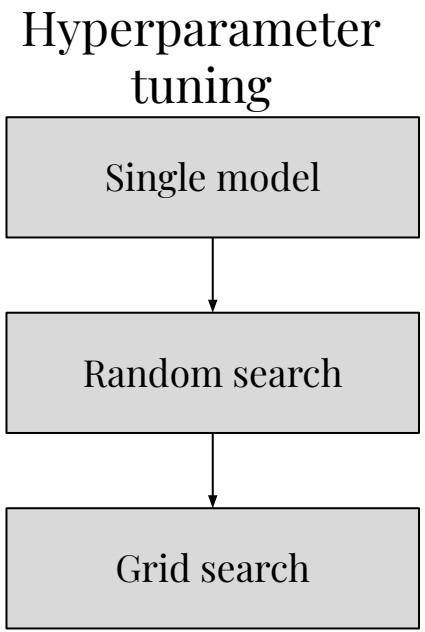
Baseline MAE: 0.140
ROC AUC : 0.5

Cleaning and Feature Engineering - Preprocessing

- No missing values
- Categorical variables: One hot encoding
- Numerical variables: Scaling

Machine learning workflow

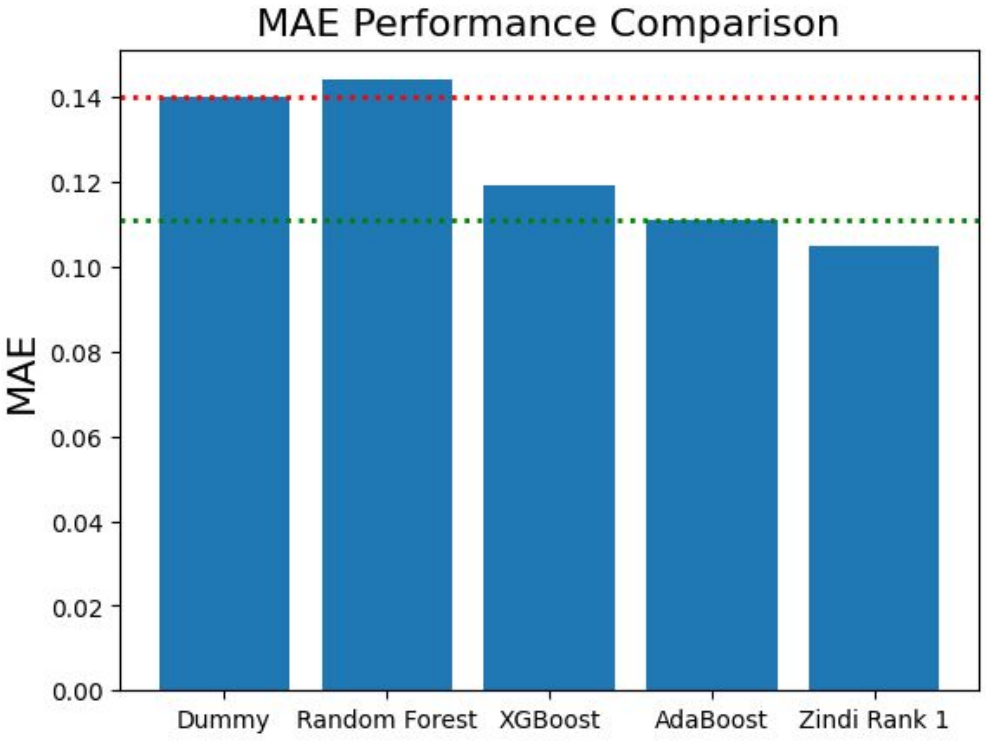




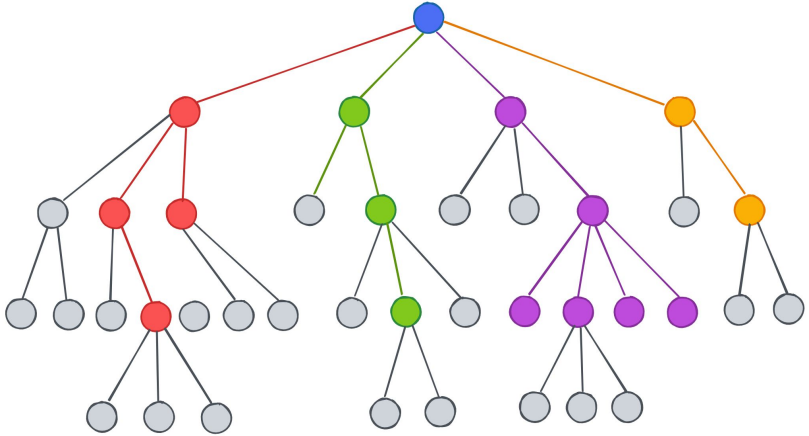
Feature importance

- Cell-phone access
- Job type Formally employed Private
- Education level Primary education
- Education level Tertiary education
- Job type Formally employed Government

Comparing model performances



Our models based on ensemble decision trees



Future scope

- Try different models: Deep neural networks?
- Choose better hyperparameters
- Bayes search for hyperparameters
- Include more features while collecting data

Thank you