

UBS WM Branch Prediction

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Business Intelligence & Analytics

Keywords:

- Python, Tableau
- Supervised Learning
- Hybrid Data Science Modeling



Business Questions:

Identify 3 new locations in US as UBS' wealth management branches

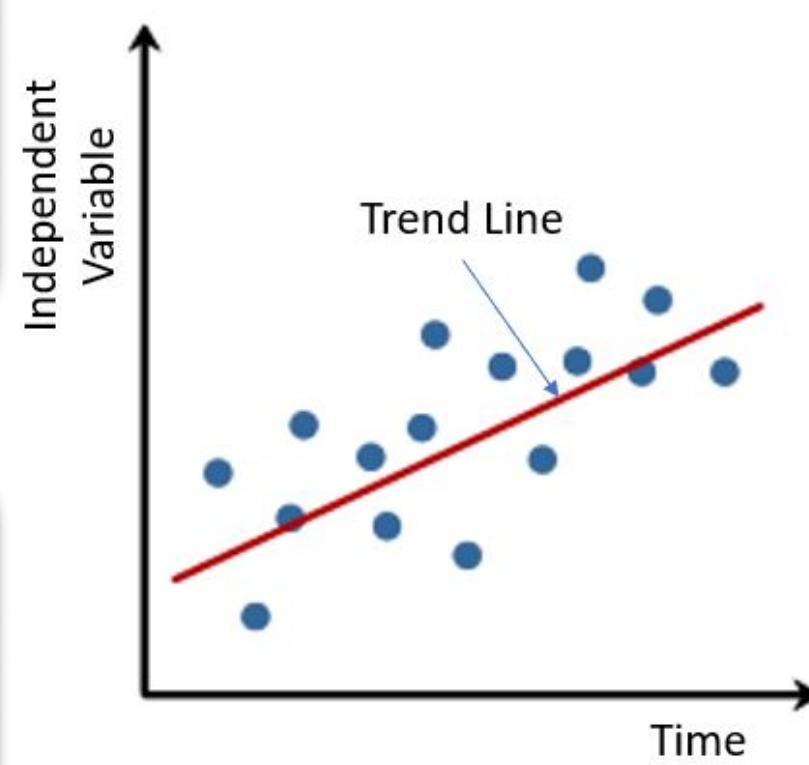
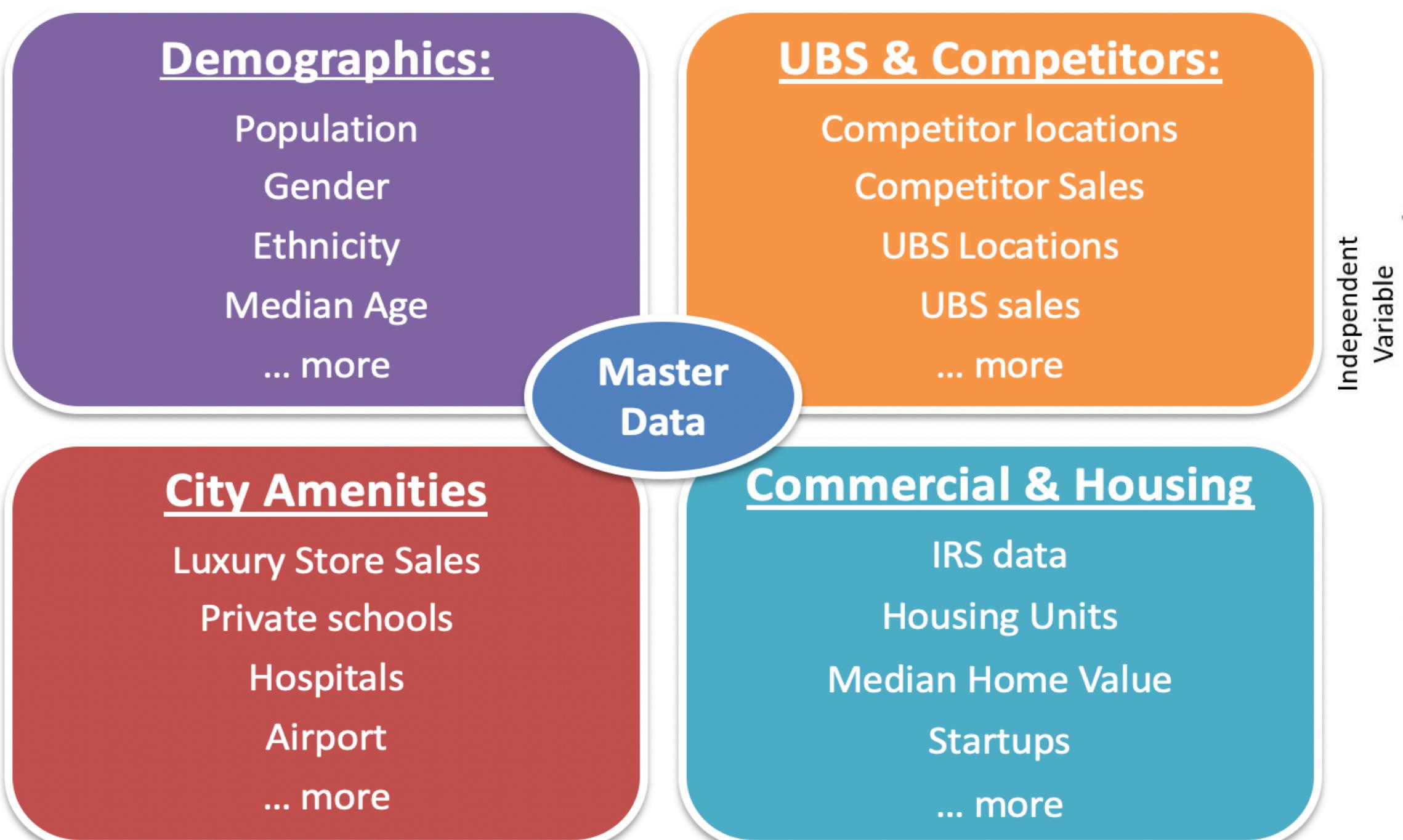
Objectives:

1. Who & where are target WM customers
2. How to use machine learning to predict new branches?

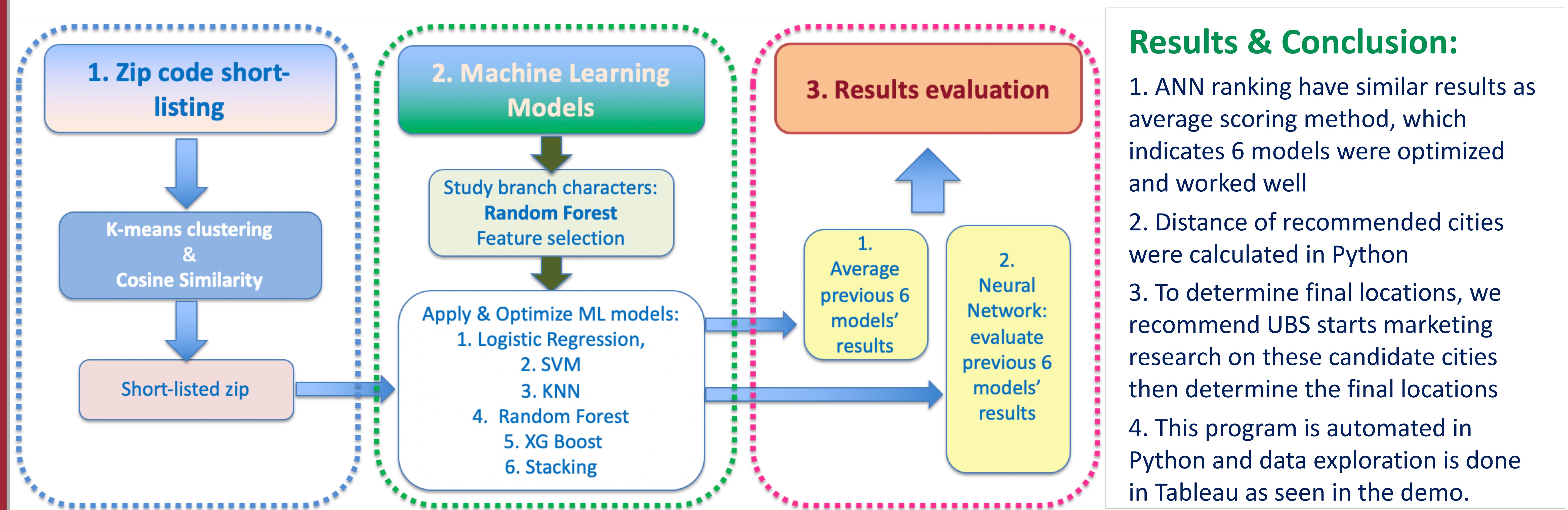
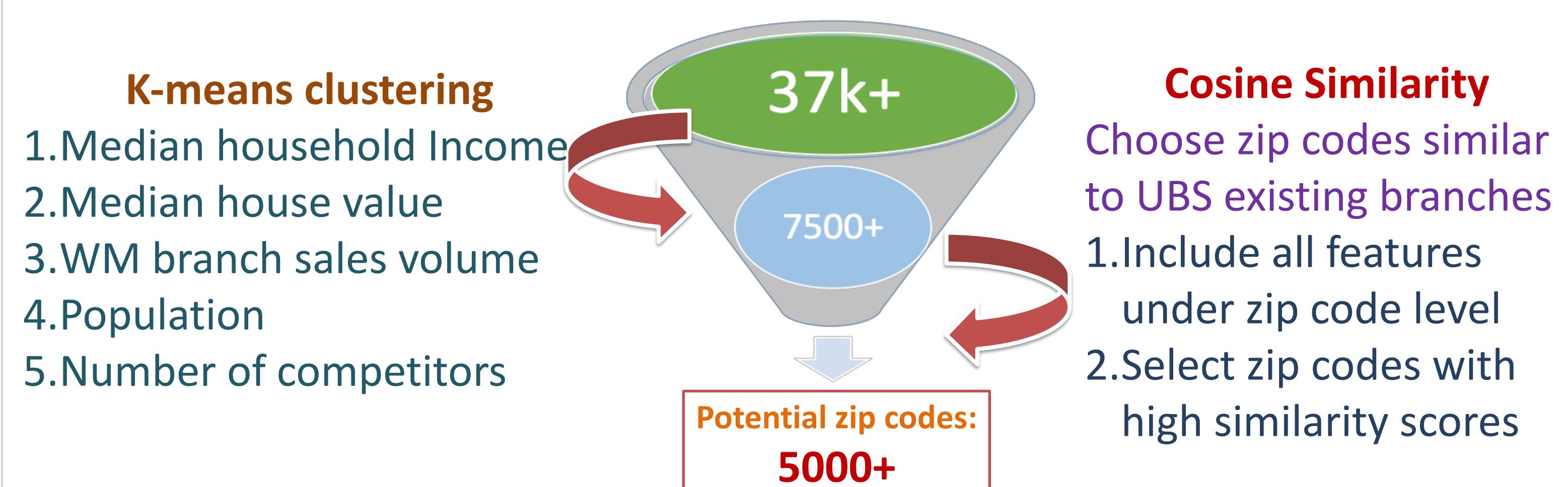
Data & Machine Learning Challenges:

1. No Ready-to-use dataset
2. Data under different level: zip/city/county/state level
3. Missing data
4. No pre-labelled data for machine learning models

Data Sources & Feature Engineering:



Machine Learning Approaches:

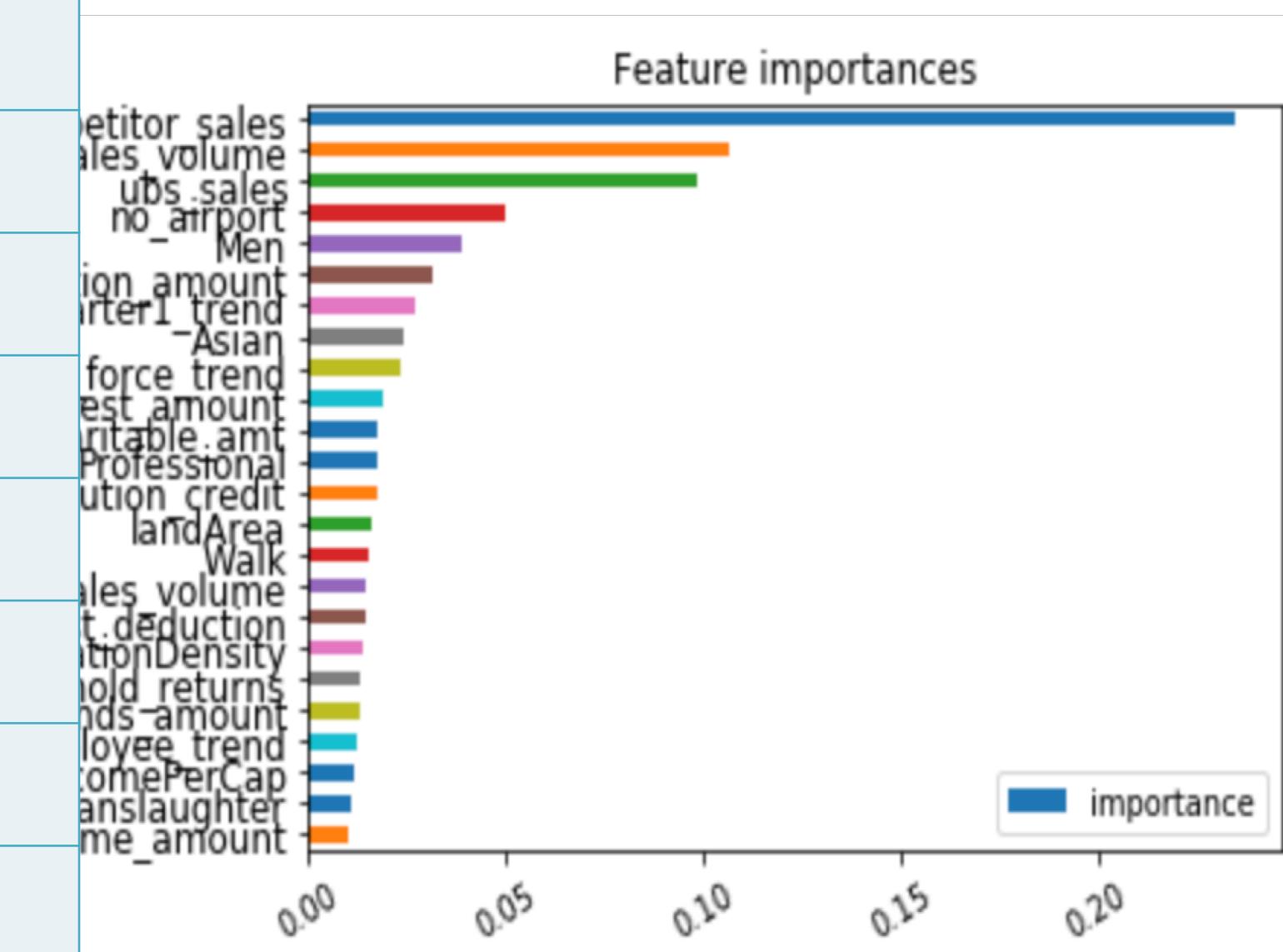


Feature Selection:

Step 1: Eliminate highly correlated features $152 \rightarrow 106$

Step 2: Machine learning algorithm pick the important features. Random Forest, $106 \rightarrow 24$ columns

TOP sample features



Modeling



Top 20% of existing zip code with high sales volume: most qualified locations (label=1)

- ❖ 6 Different Machine Learning Algorithms
- ❖ Cross Validations (5 folds) + Grid Search

Machine Learning Models	Test Accuracy Rate
Logistic Regression	0.96
SVM	0.96
KNN	0.90
Random Forest	0.98
XG Boost	0.98
Stacking	0.98

Result Validation:

Averaging score vs ANN scores

zip	City	State	Ann Rank	Score Rank	UBS city	Competitor city
80111	Englewood	CO	1	1	No	No
91367	Woodland Hills	CA	2	2	No	Yes
63017	Chesterfield	MO	3	3	Yes	Yes
60523	Oak Brook	IL	4	4	No	Yes

Results & Conclusion:

1. ANN ranking have similar results as average scoring method, which indicates 6 models were optimized and worked well
2. Distance of recommended cities were calculated in Python
3. To determine final locations, we recommend UBS starts marketing research on these candidate cities then determine the final locations
4. This program is automated in Python and data exploration is done in Tableau as seen in the demo.