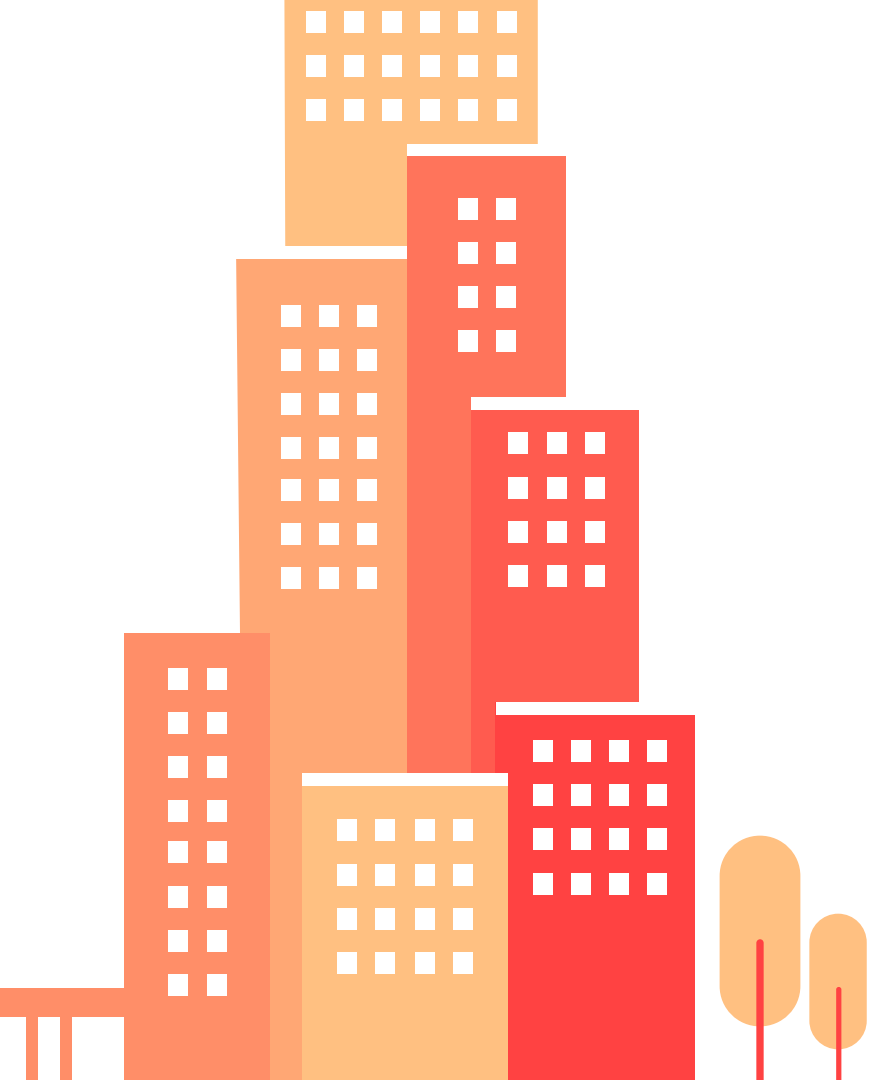
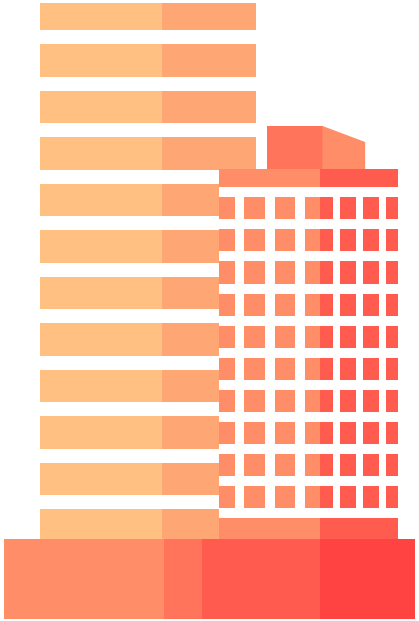


Predicting Structural Damage from an Earthquake

-Lhamu Tsering

Business Context



- “Earthquakes don’t kill people, buildings do.”
- 2015 Nepal Earthquake
- Model purpose

Process Outline

Data Collection

2015 Nepal
Earthquake Portal

Cleaning and EDA

Data cleaning,
Exploration and
visuals

Preprocessing

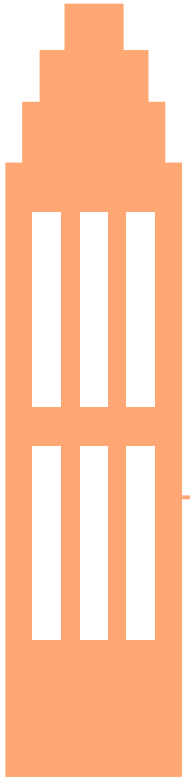
Dummy Variables,
Class Imbalance,
standardizing

Multiclass Classification Models

Model Evaluation/ Model Selection

Evaluation Metrics
Confusion Matrix

Data Introduction

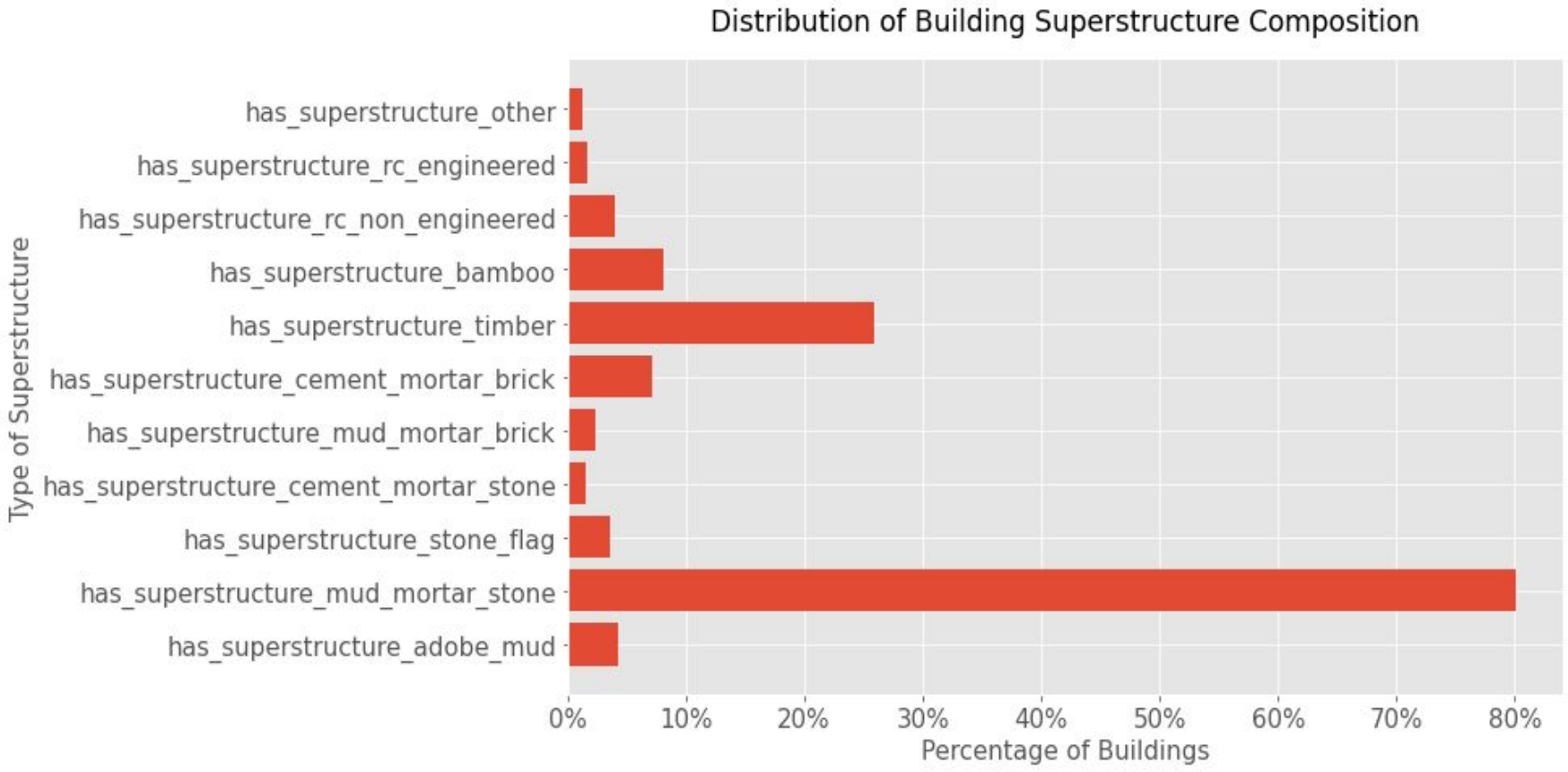


2015 Earthquake Nepal Data Portal

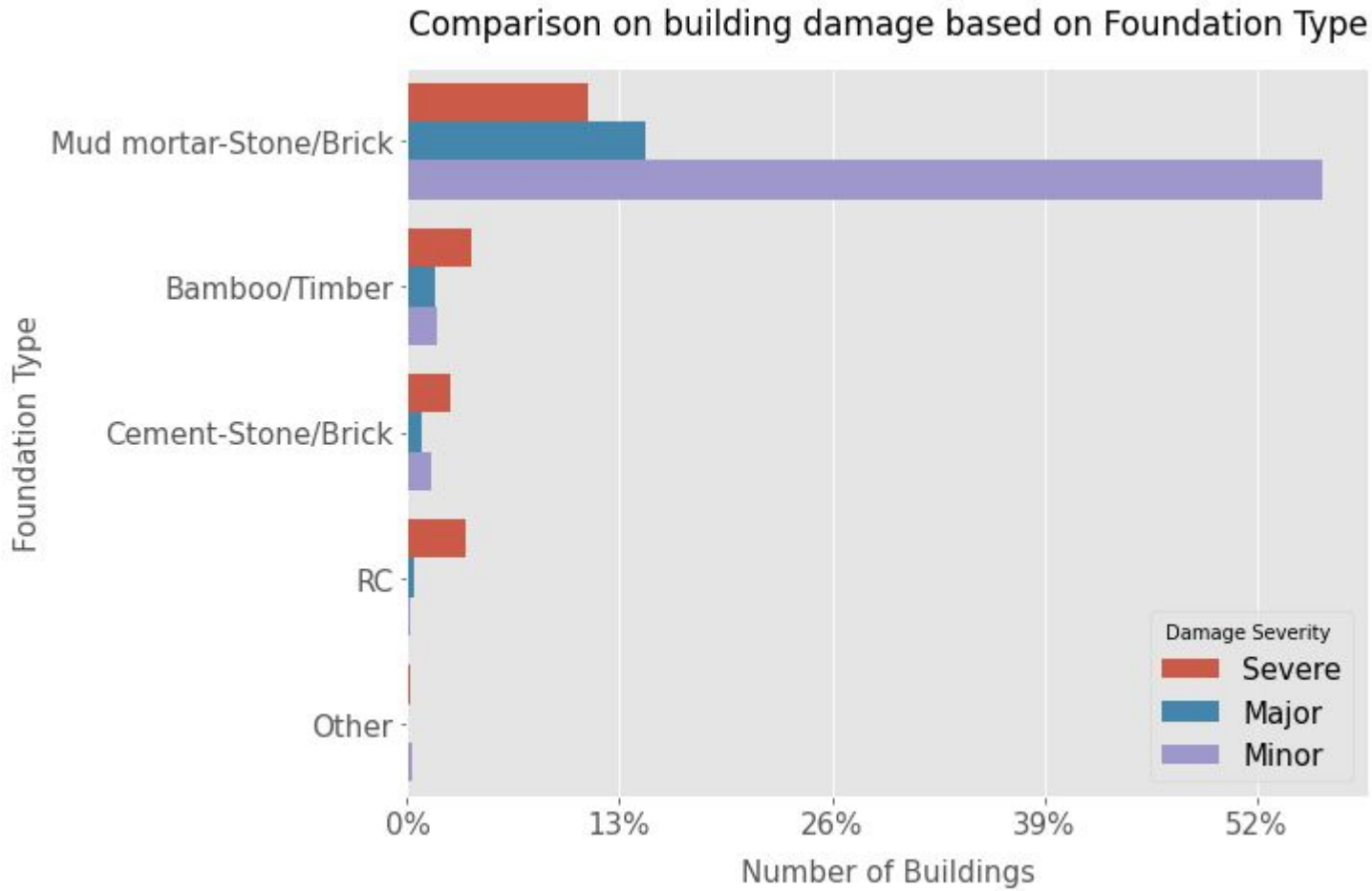
- Raw survey data (post 2015 eq)
- 11 worst hit districts
- 762106 buildings

- Building Use (762106, 17)
- Building Structure (762106, 31)
- Building Damage(762106, 12)

Building Superstructure

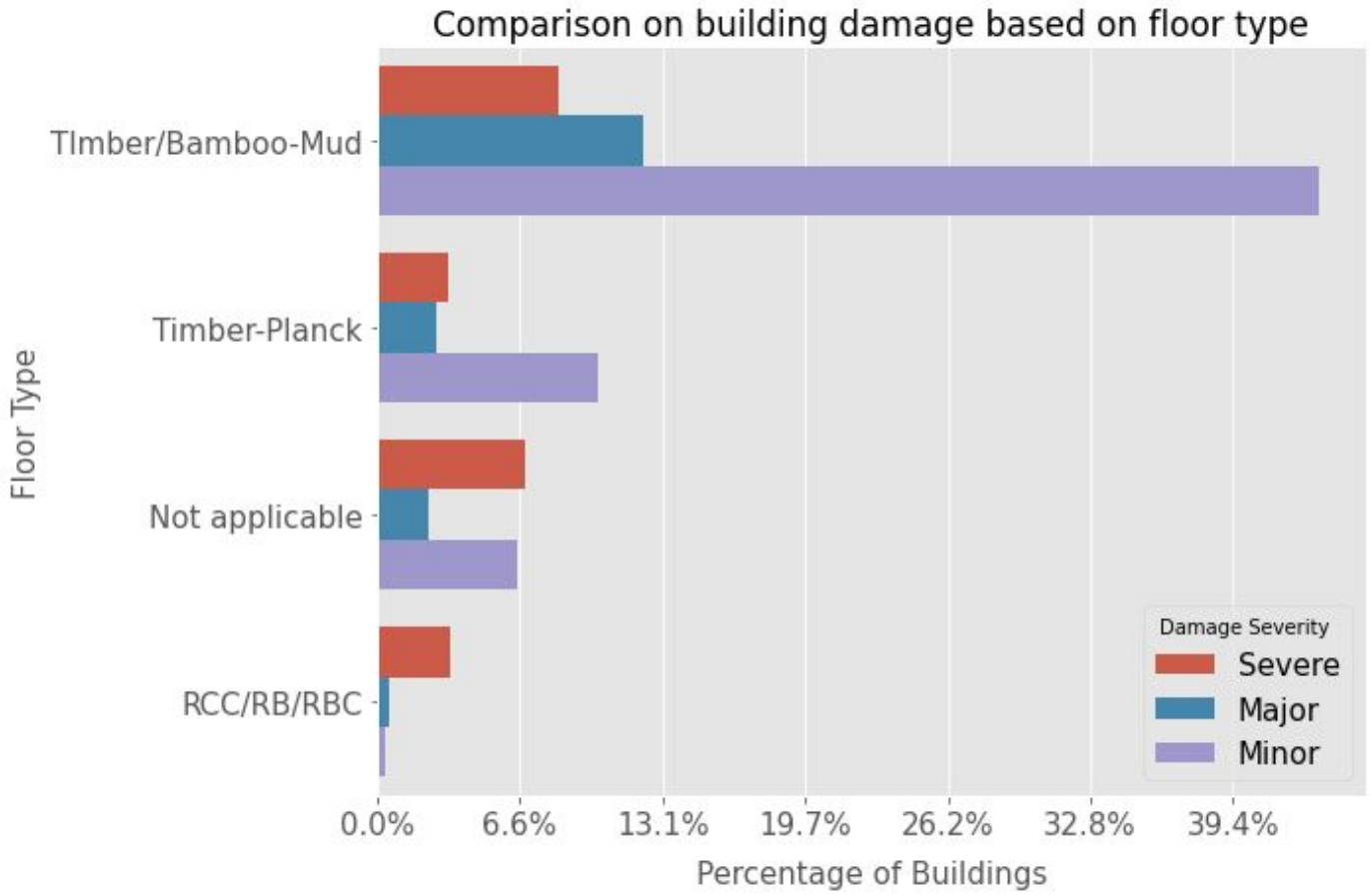


Foundation Type



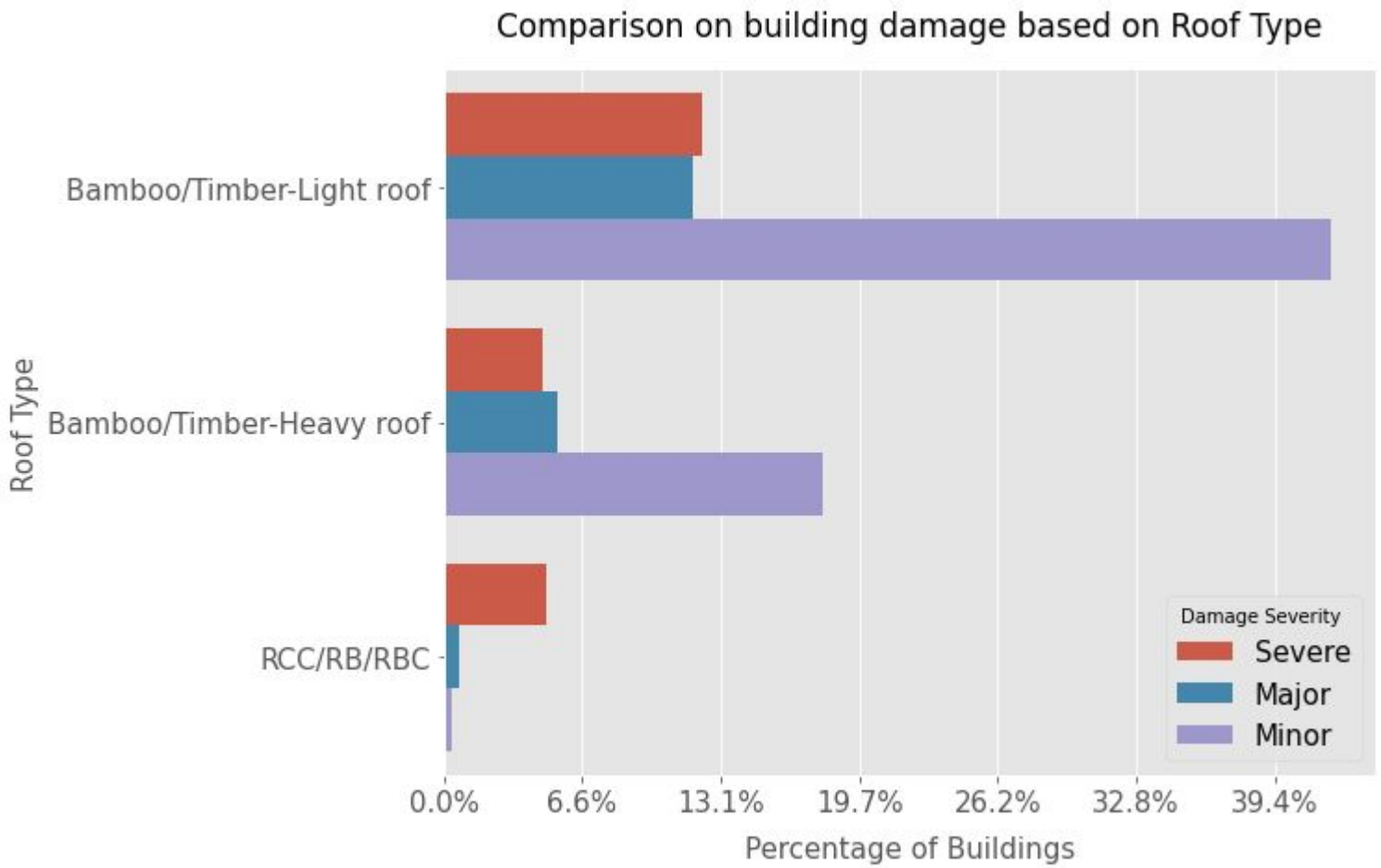
RC foundation type buildings faced least damages

Floor Type



RCC/RB/RBC roof type buildings faced least damages

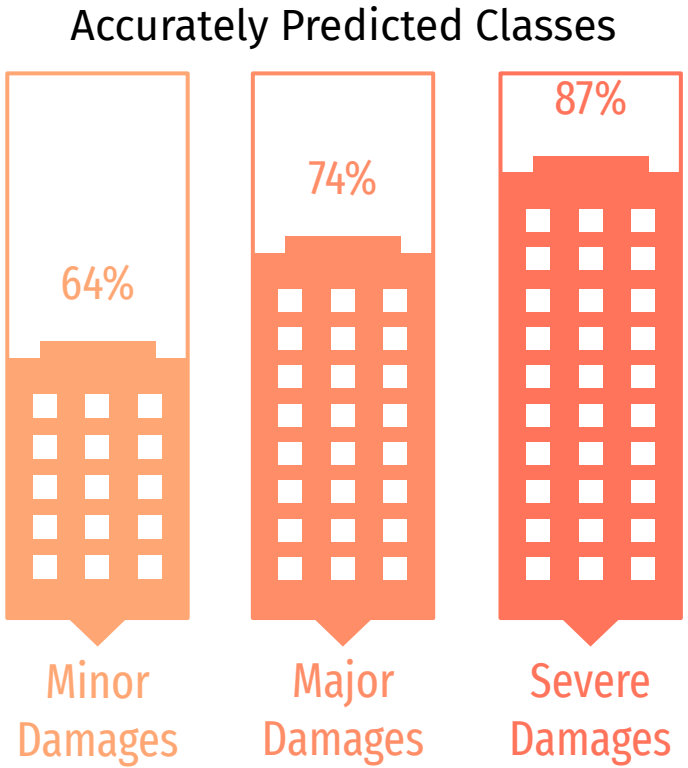
Roof Type



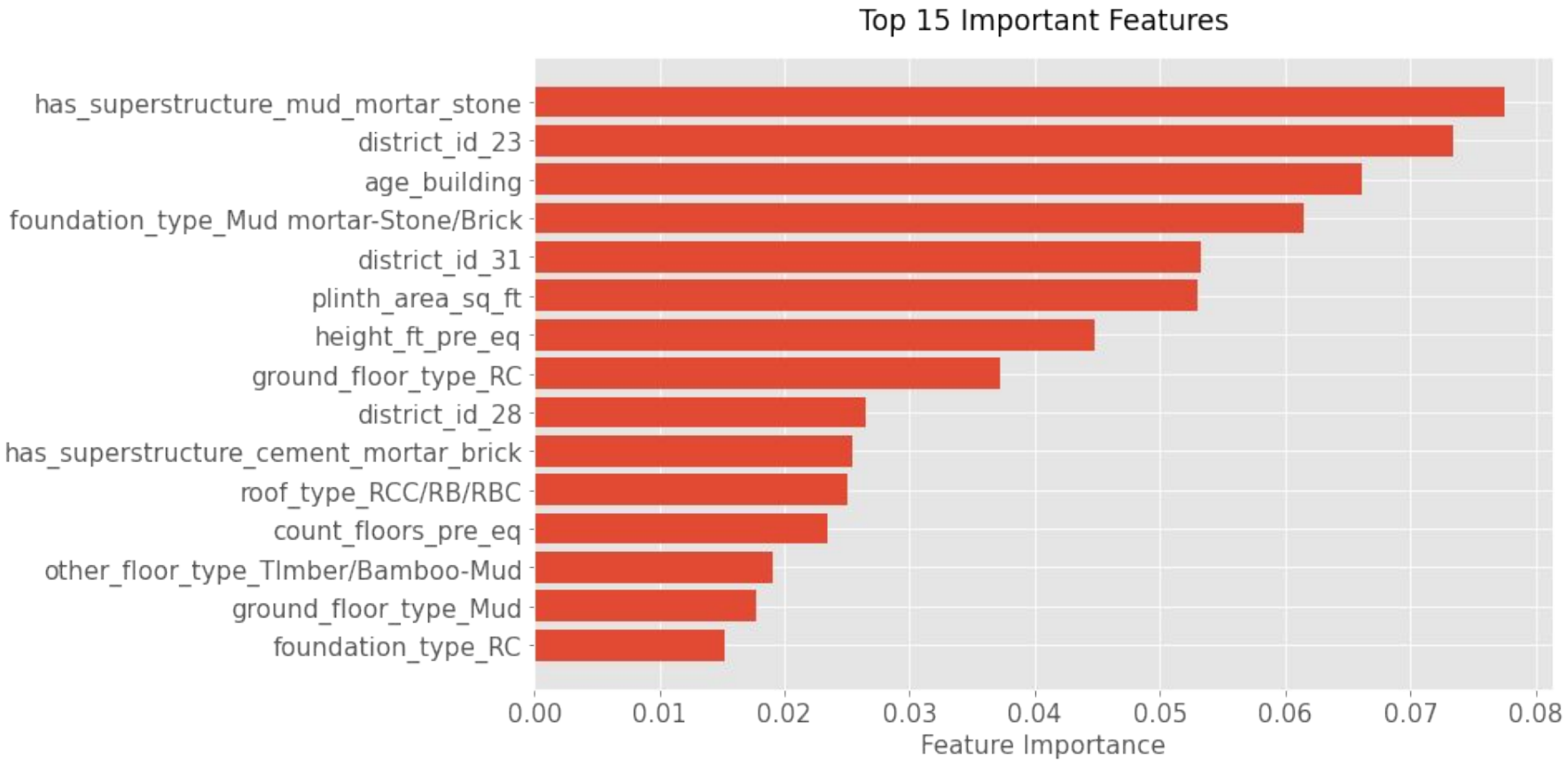
RCC/RB/RBC roof type buildings faced least damages

Model Results

Model	Recall Score	F1 Score
Baseline Logistic Regression	0.6732	0.594
Random Forest Classifier	**0.724**	**0.7263**



Feature importance



Conclusion & Next Steps

Eq safe buildings are built for strength and ductility

Enforcement of seismic design construction

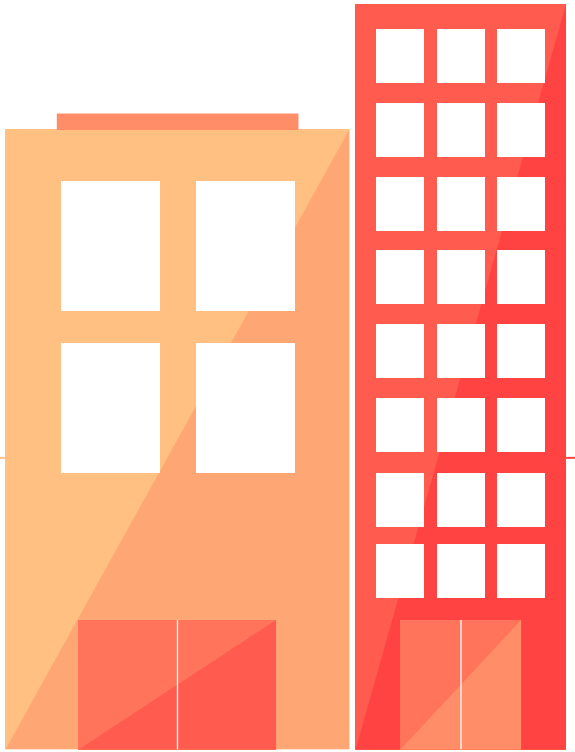
Other data on building structure and earthquake

Other studies related to topic

Thank You!

GitHub Repo

https://github.com/Yeshi341/structural_damage_from_earthquake



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