Modeling Earthquake Damage

Based on Nepal earthquake of 2015, by Luluva Lakdawala

Project Overview

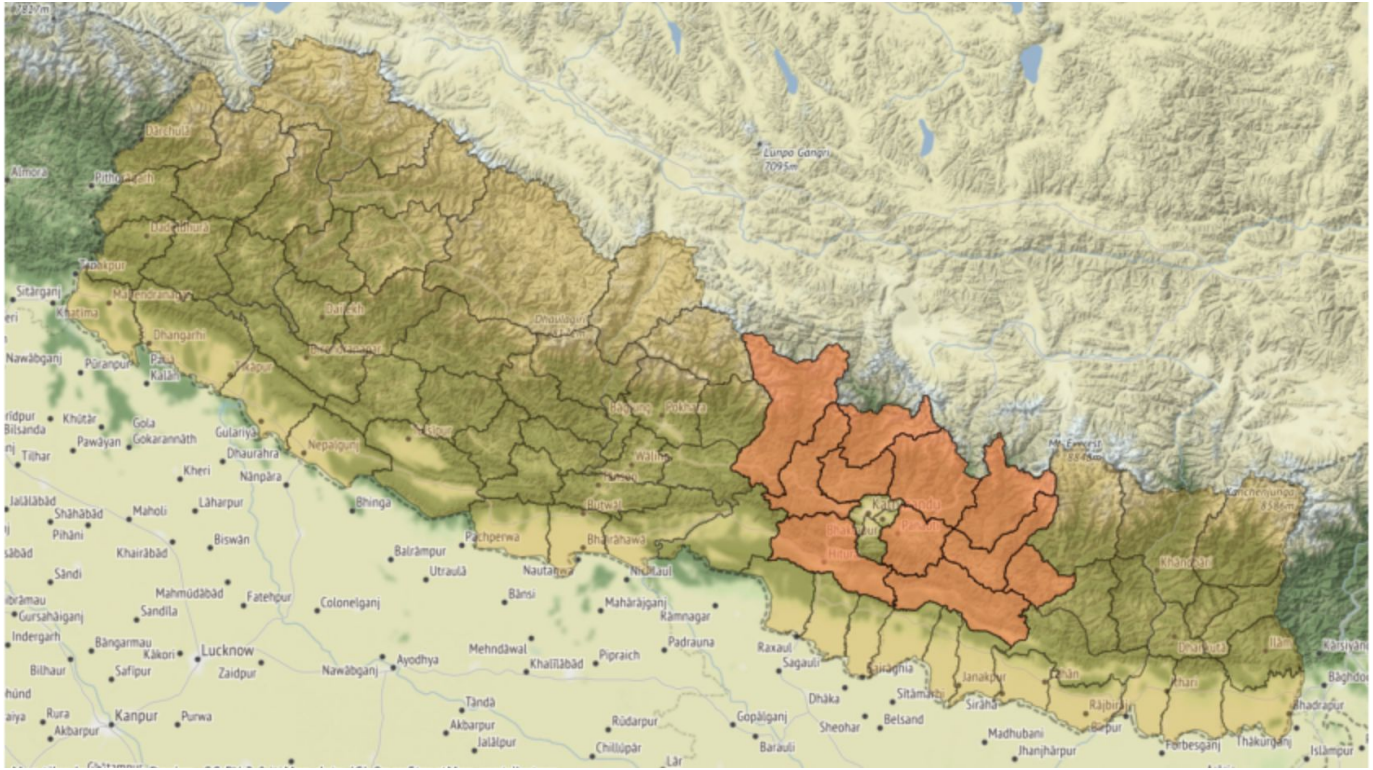
- **Business Question**:
  - Predict building reactions to earthquakes based on past performance

- **Methodology:**
  - CRISP-DM

Image credits: Niranjan Shrestha/AP Images

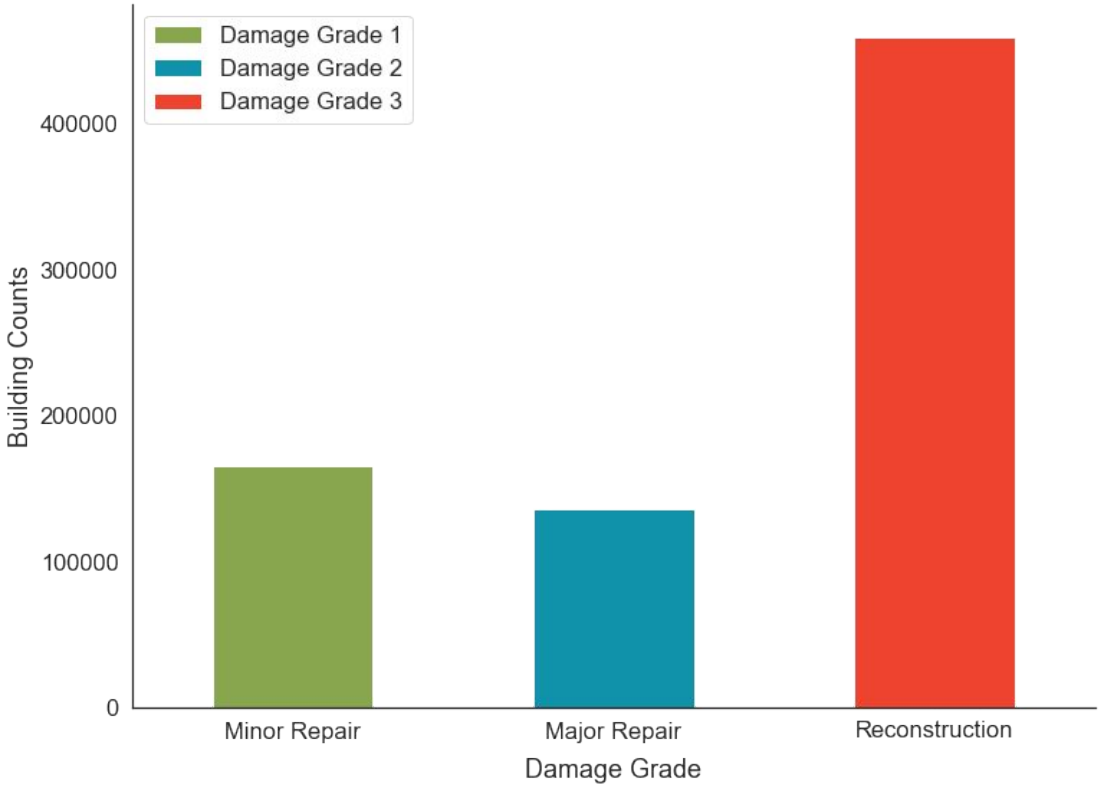
Data Exploration

11 Districts



Coral highlighted regions are the 11 most affected areas from the earthquake of 2015. Data is collected from a survey conducted in these regions by the Nepal government agencies.

Damage Grades

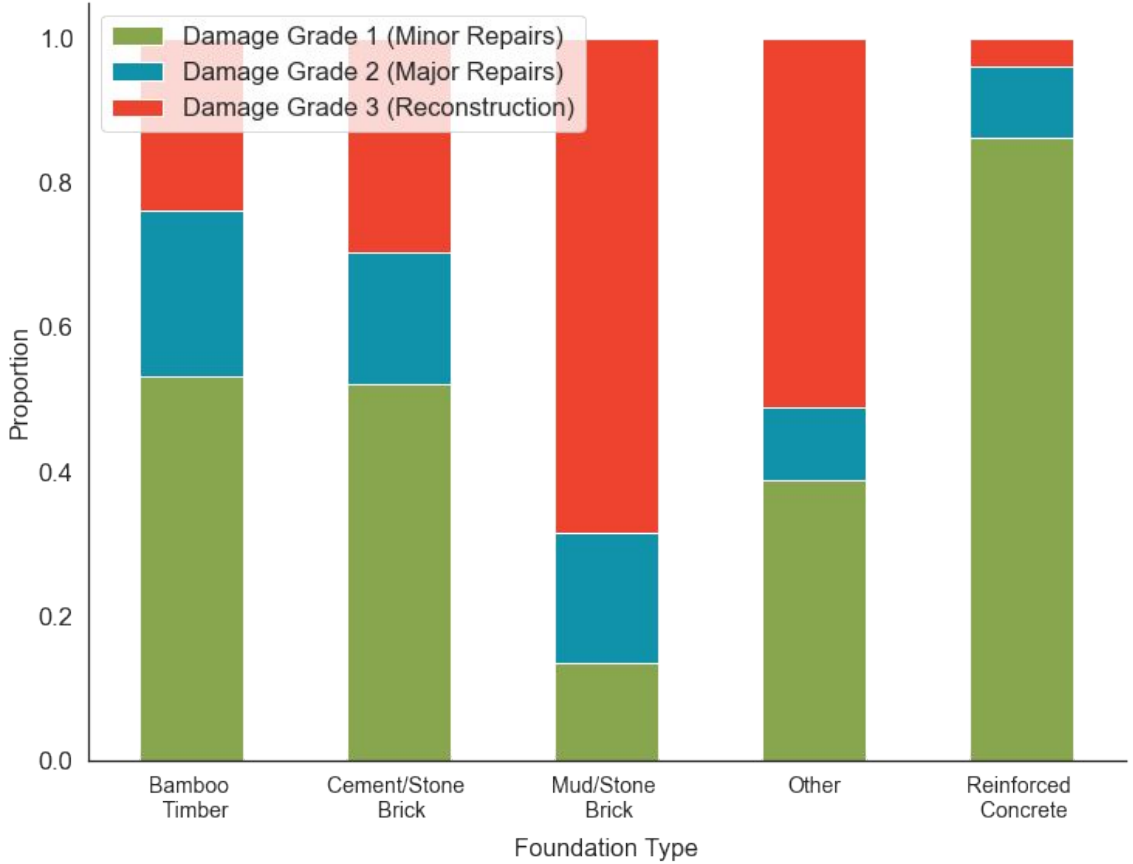


Superficial repair

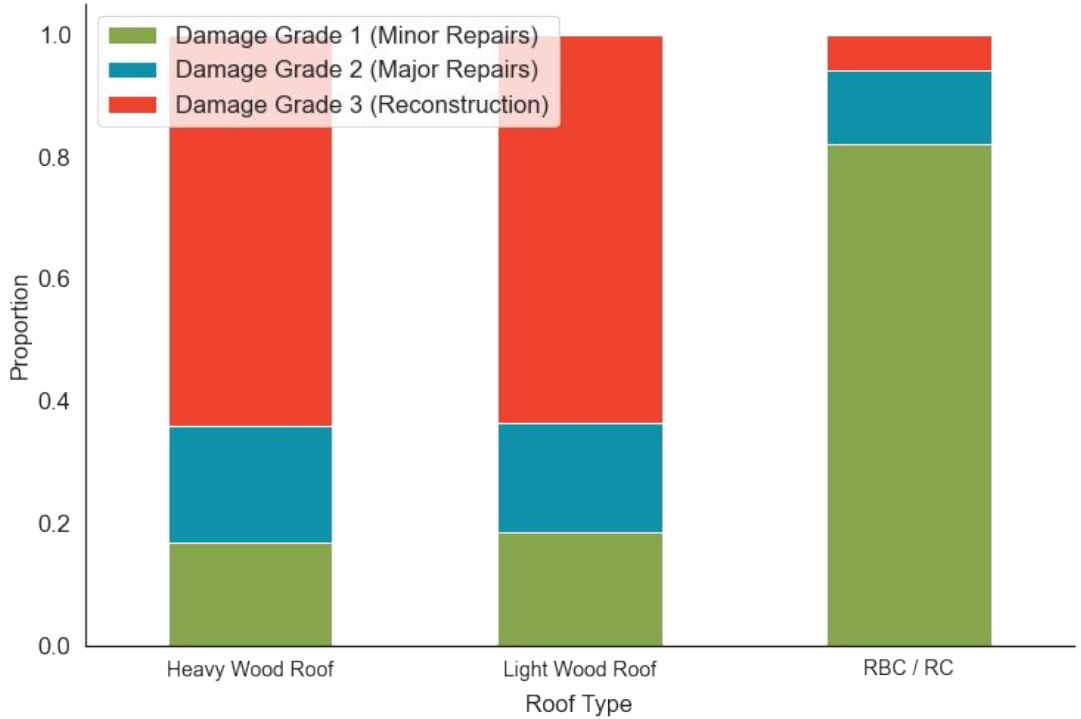
Structural repair

Reconstruction

Foundation vs. Damage grade



Roof Type vs. Damage grade



Modeling

Model Performance

Model	Recall Score for Damage Grade 3
Random Predictor	33%
Logistic Regression Model	64%
Random Forest Classifier	67%
XGBoost Model	66%

Metric

Recall score for class 3

Recommendations

- Future construction projects or Reinforcement of existing structures

Next Steps

- Formulate a risk score for features based on the features identified by the best model
- Build black box models

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Image credits:

Image 1: The Kathmandu Post

Image 2: Wikipedia

Image 3: Structural Magazine