

This prediction focuses on improving property tax estimation for real estate professionals by using data-driven techniques to handle the complexities introduced by geographic diversity, property features, and tax regulations. By analyzing a dataset of home sales and engineering features like `taxes_sqft` and `price_zone`, the study applied KNN and Multiple Variable Linear Regression models to predict taxes more accurately. The models achieved strong performance, offering valuable insights for smarter decision-making in property valuation and investment.

Dataset: Cleaned house data with variables like sold price, square footage, beds, baths, lot size, zip code, latitude, and longitude.

Feature Engineering: Created `taxes_sqft` and categorized `taxes_sqft` into 5 bands using `pd.qcut`, `pd.cut`, and `pd.cut` with `linspace`.

Models Used:

KNN Regression: Accuracy ~80.6% across different methods (`qcut`, `cut`, `cut` with `linspace`).

MV Linear Regression: Included features like bedrooms, bathrooms, lot acres, year built; tuned with `eta=1e-8` and `1e3` epochs.

Results: Predicted tax values closely aligned with actual values, confirming model reliability.

Property tax is significantly influenced by property value and location. The approach provides real estate professionals with accurate, actionable tax estimates.