**House Price Analysis Report**

**1. Introduction**: This report presents an analysis of house prices using a dataset containing various features like house size, number of bedrooms, and location. The objective is to understand factors influencing house prices and build a predictive model for price estimation.

**2. Data Overview**

* The dataset consists of multiple variables such as House Size (sqft), Bedrooms, Location, and Price.
* Data exploration included checking for missing values, data types, and distribution.

**3. Exploratory Data Analysis (EDA)**

* Correlation Analysis: Identified relationships between features, house size showed a strong correlation with price.
* Feature Importance: Location and the number of bedrooms also influenced house prices but with lower impact.
* Distribution Analysis: Price data was right-skewed, indicating the presence of high-value properties.

**4. Model Implementation & Evaluation**

* A Linear Regression Model was applied to predict house prices.
* Evaluation Metrics:
  + Mean Absolute Error (MAE): High, indicating large deviations from actual prices.
  + Mean Squared Error (MSE) and Root Mean Squared Error (RMSE): Suggested room for improvement.
  + R² Score: ~0.35, meaning the model explains only 35% of variance in house prices.
* Hyperparameter Tuning: Applied Ridge Regression with different alpha values to optimize performance.

**5. Insights & Recommendations**

* House size is the most influential factor in price determination.
* The dataset may need more relevant features like proximity to amenities, age of the house, etc.
* The model’s predictive power can be improved using advanced models like Random Forest or XGBoost but we may face the challenge of Overfitting due to lack of data points.

**6. Conclusion:** While the model provides a basic understanding of house pricing, improvements in feature selection and model choice can significantly enhance accuracy. Future work should focus on feature engineering and advanced regression techniques.