

Property Price Analysis Report

Introduction

This report presents an exploratory data analysis (EDA) of property prices, focusing on identifying key features that influence sale prices. The dataset includes various attributes related to property characteristics such as material quality, living area, garage size, and construction year.

Data Cleaning

The data cleaning process involved:

1. Handling missing values by imputing them with the mean of respective columns.
2. Standardizing column names by stripping leading/trailing whitespace.

Data Overview

The dataset consists of multiple features including `Sale_Price`, `Overall_Material`, `Grade_Living_Area`, `Garage_Size`, and several others that potentially impact property prices.

Key Findings

1. Correlation Analysis

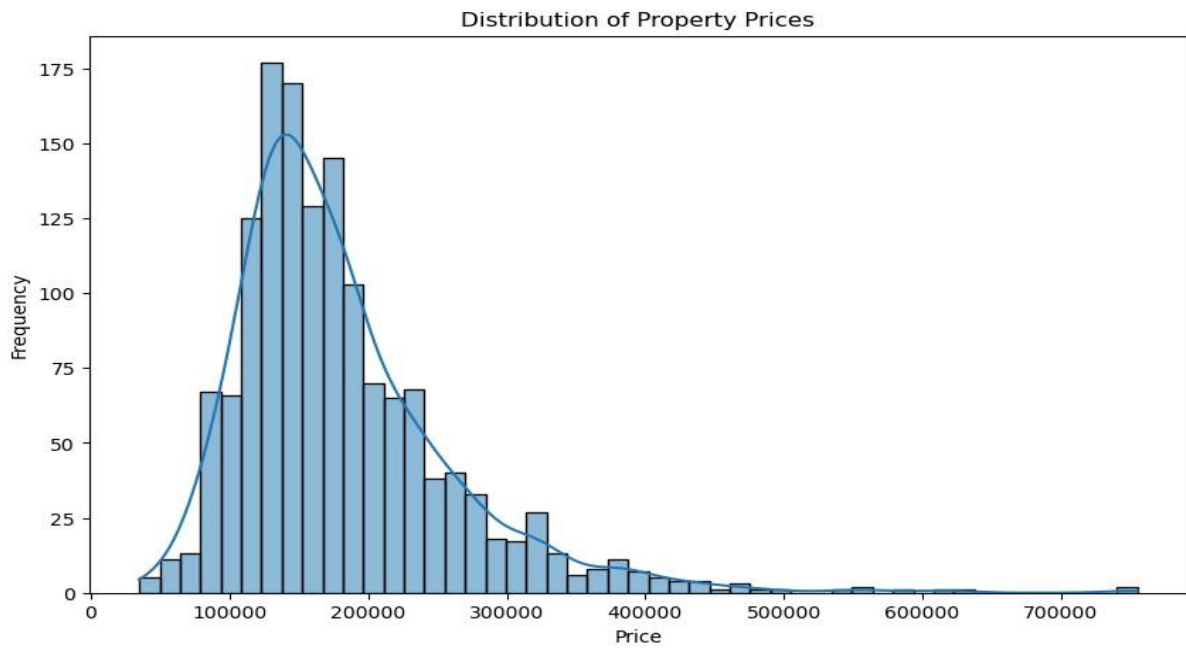
A correlation analysis was performed to identify relationships between `Sale_Price` and other features. Below are the top features with the highest correlations with `Sale_Price`:

- **Overall_Material (0.790972)**
- **Grade_Living_Area (0.708584)** □ **Garage_Size (0.640383)**
- **Total_Basement_Area (0.613792)**
- **First_Floor_Area (0.605971)**

2. Visualizations

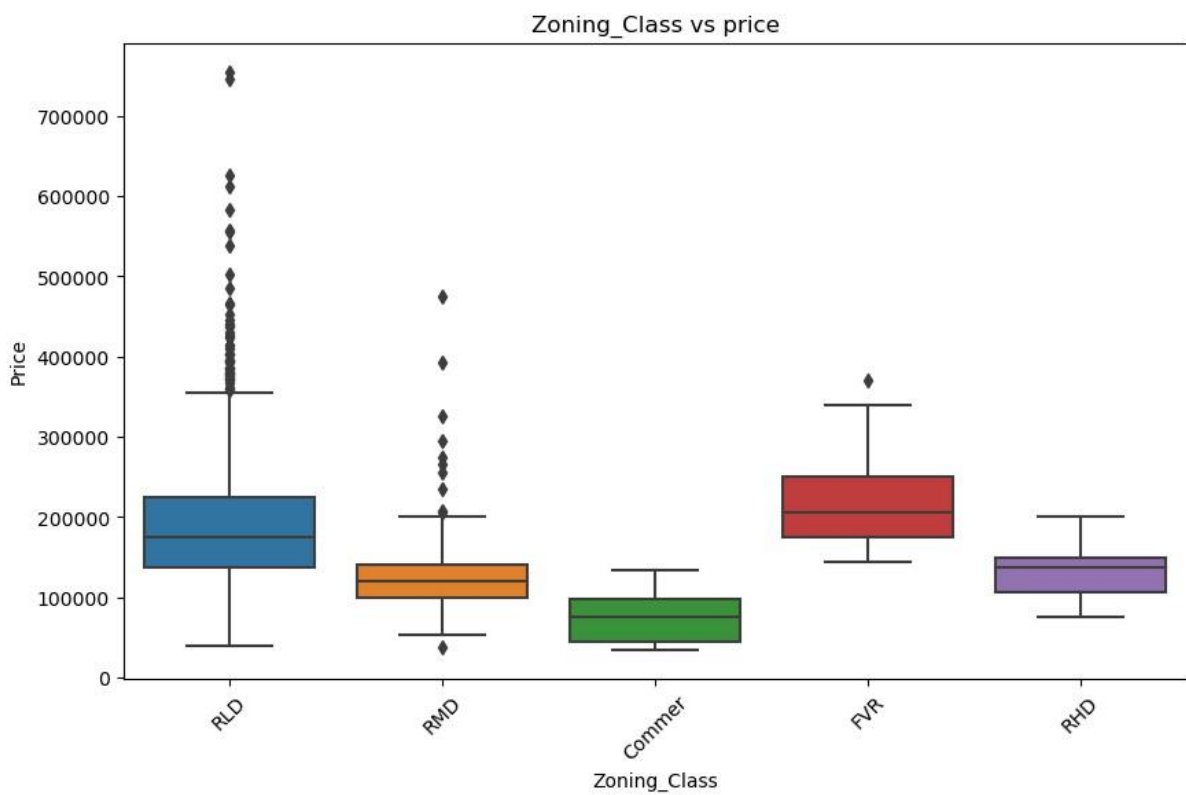
Distribution of Property Prices :

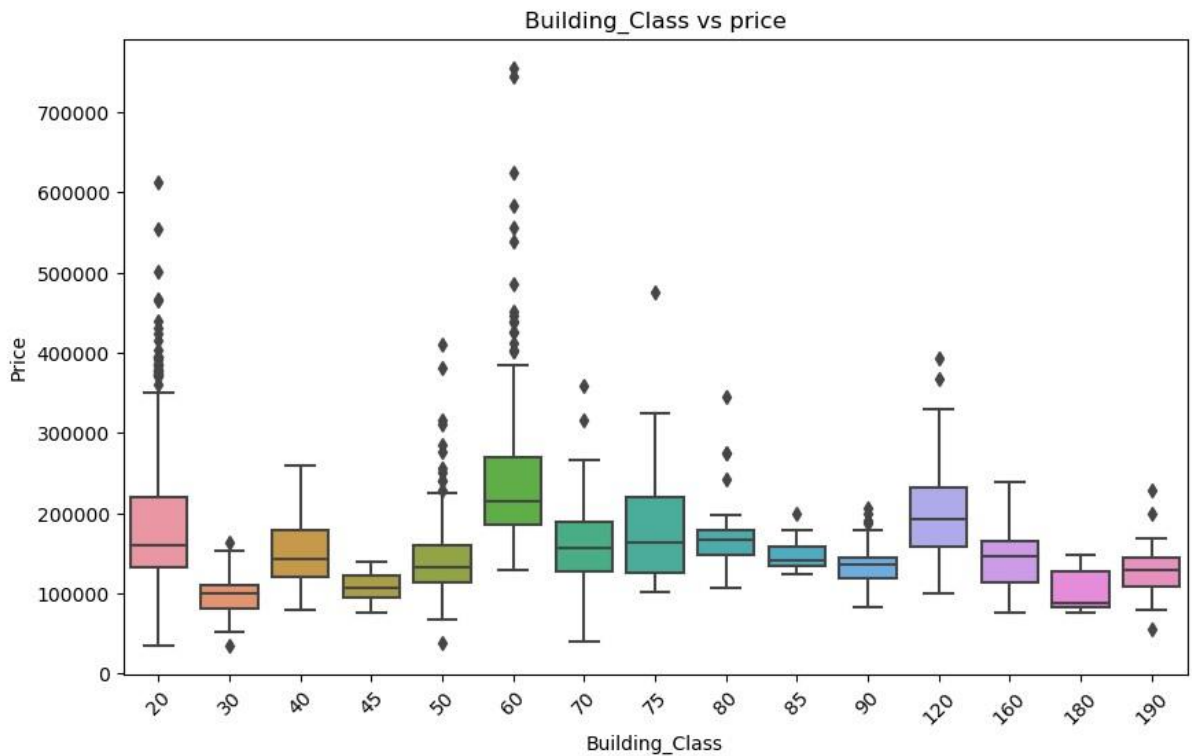
A histogram showing the distribution of property prices.



Box Plots

Box Plots of Property Prices by Building Class and Zoning Class





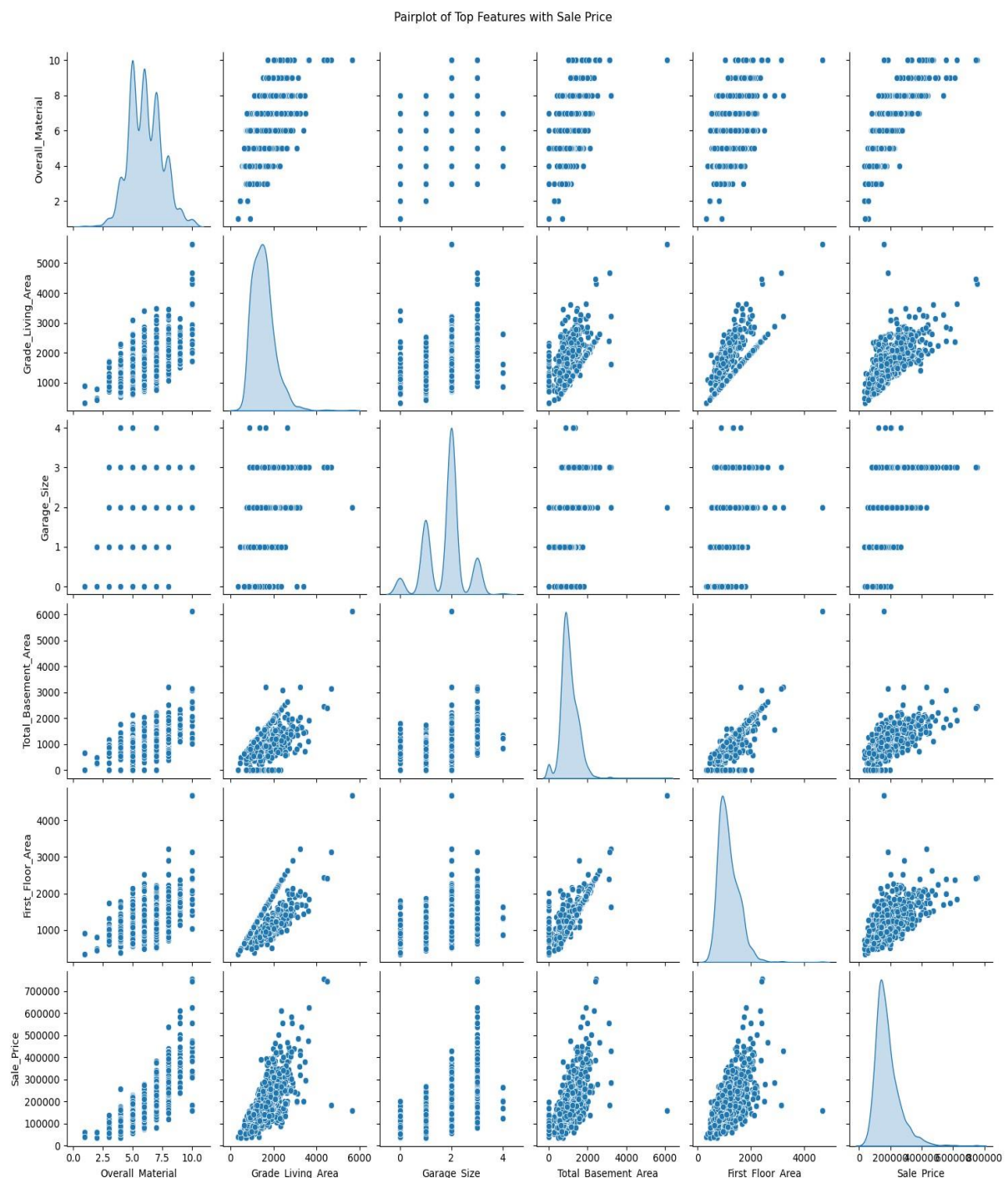
Scatter Plots

Scatter plots show the relationship between `Sale_Price` and each of the top correlated features.



Pairplot

A pairplot visualizes pairwise relationships and distributions of the top correlated features with `Sale_Price`



Insights

1. **Overall Material Quality:** The quality of materials used in construction has the highest correlation with sale price, indicating that better quality materials significantly increase property values.

2. **Living Area:** Larger living areas (both above and below grade) strongly correlate with higher sale prices. This includes the first-floor area and total basement area.
3. **Garage Size:** Properties with larger garages tend to have higher sale prices, emphasizing the importance of ample parking space in property valuation.
4. **Construction and Remodel Years:** Newer properties and those that have been recently remodeled tend to have higher sale prices, suggesting that modern features and updates are valued by buyers.
5. **Bathrooms and Rooms:** More bathrooms (both full and half) and rooms above grade level are associated with higher sale prices, reflecting the demand for spacious and well-equipped homes.