

# Boston Housing Exploratory Data Analysis

A concise overview of key drivers, market segments, and data quality insights in Boston housing



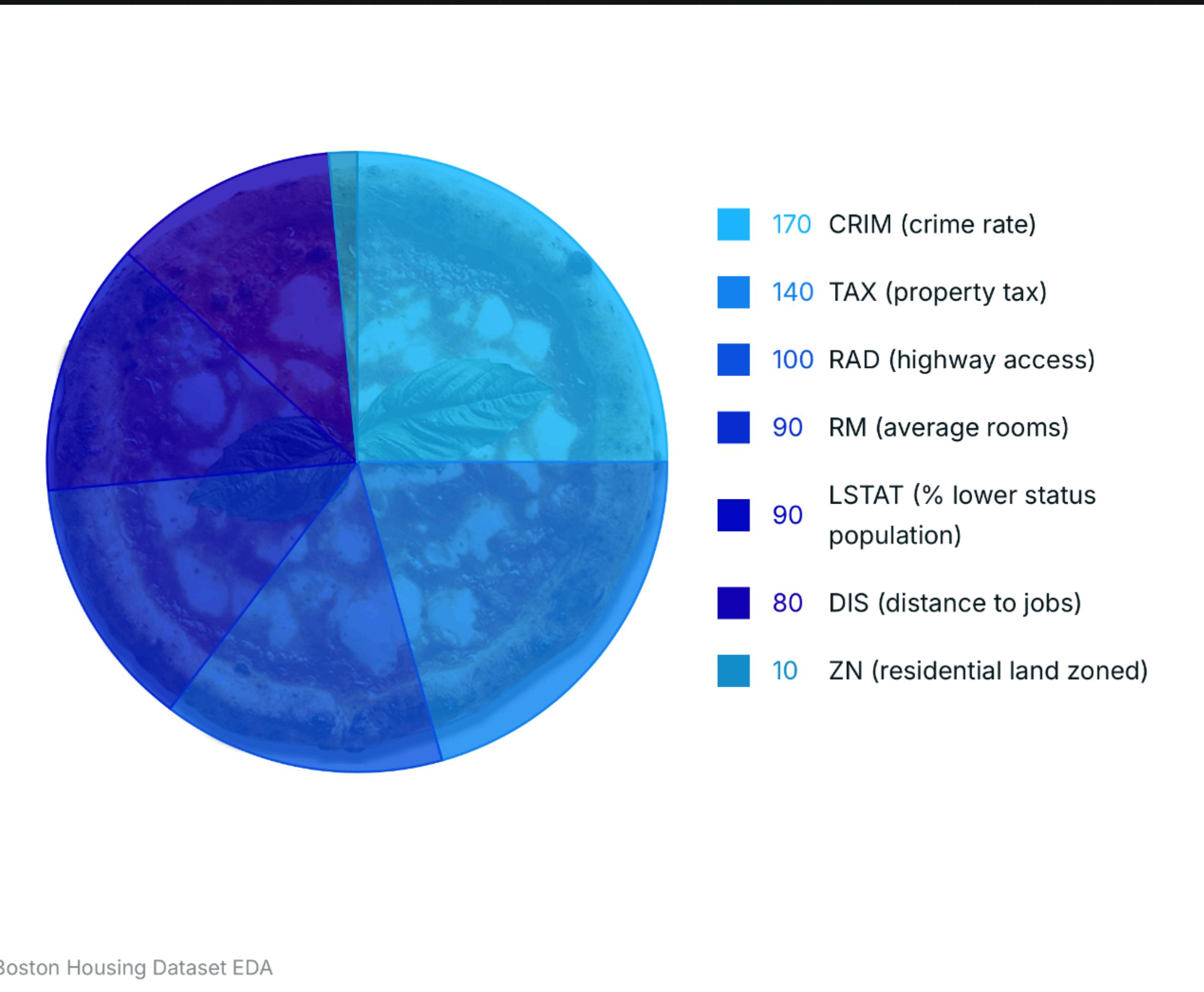
**Jones Yaw Kwamehene**  
Presenter



# Dataset Overview & Key Metrics

# Feature Distributions - Understanding Data Shape

Feature Distribution Types In Boston Housing Data



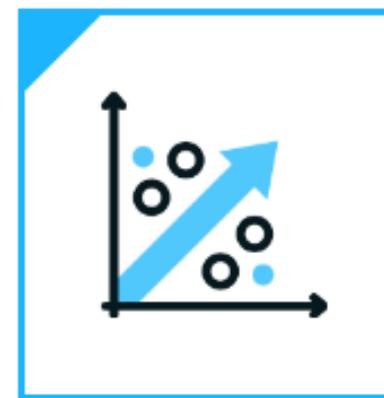


# Correlation Analysis - Key Relationships

# Unlock Key Housing Feature Relationships with Scatter Plots

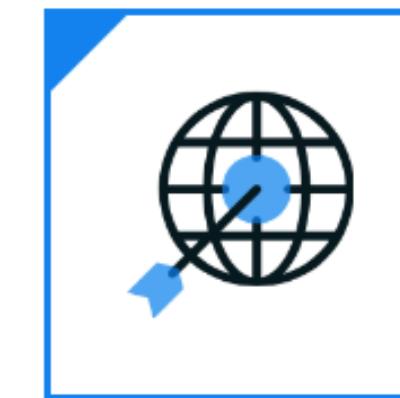
Explore how room count, socio-economic factors, and school ratios impact Boston home prices

## 01 Positive correlation: MEDV vs. RM



More rooms in a home strongly correlate with higher median home values, showing a clear positive linear trend in the data.

## 02 Inverse relationship: MEDV vs. LSTAT



Higher percentage of lower-status population leads to significantly lower home prices, indicating socio-economic impact on housing value.

## 03 Moderate negative trend: MEDV vs. PTRATIO



Higher pupil-teacher ratios hint at lower home values, reflecting possible effects of school quality on housing prices.

## 04 Negative correlation: MEDV vs. INDUS

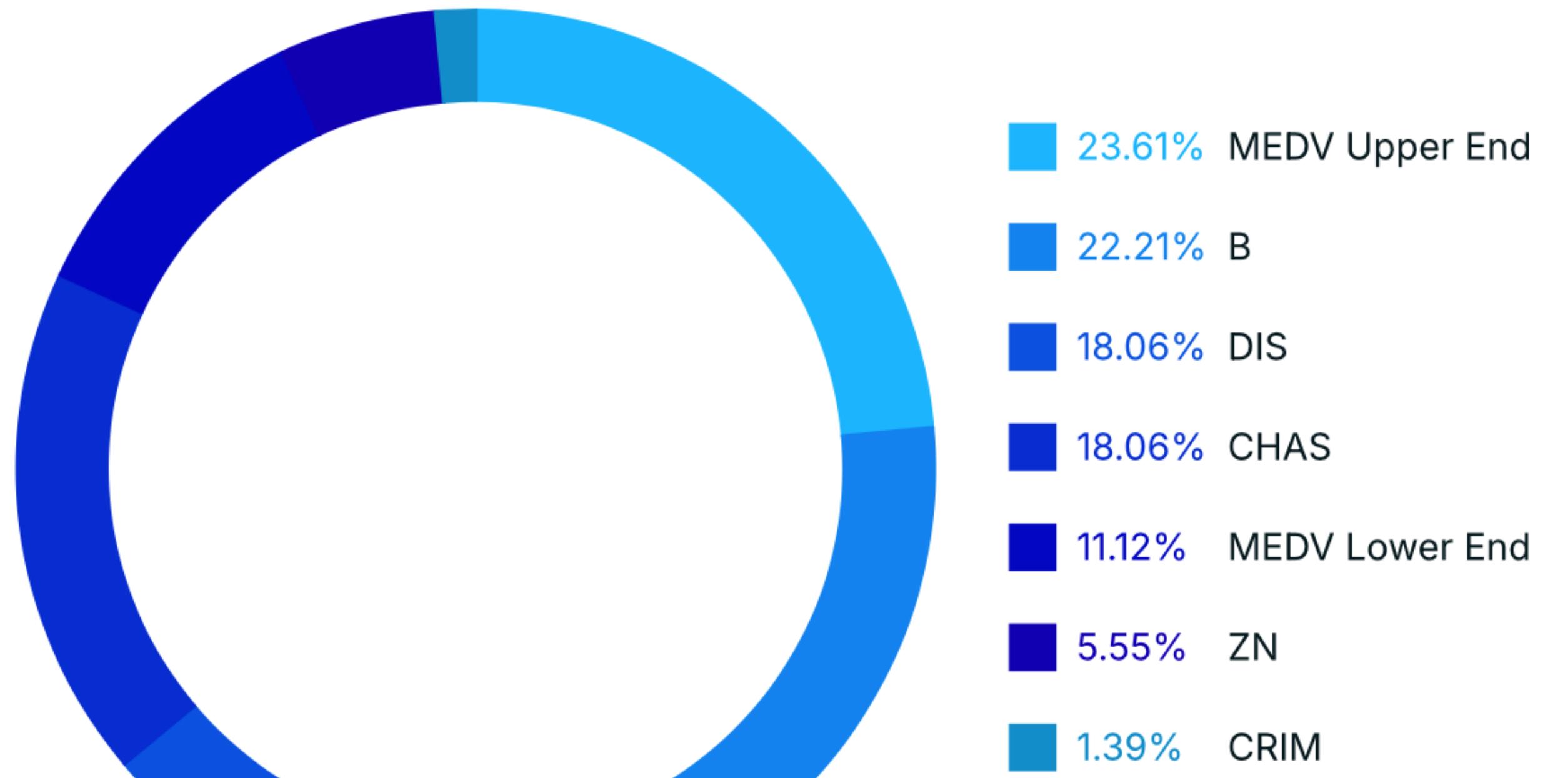


Areas with more industrial land use tend to have lower median home values, highlighting the influence of environment on pricing.

## Outlier Distribution Across Key Boston Housing Features

# 🔍 Outlier Analysis - Boxplots & Data Quality

Key insights on outliers in Boston Housing features  
and their impact on modeling



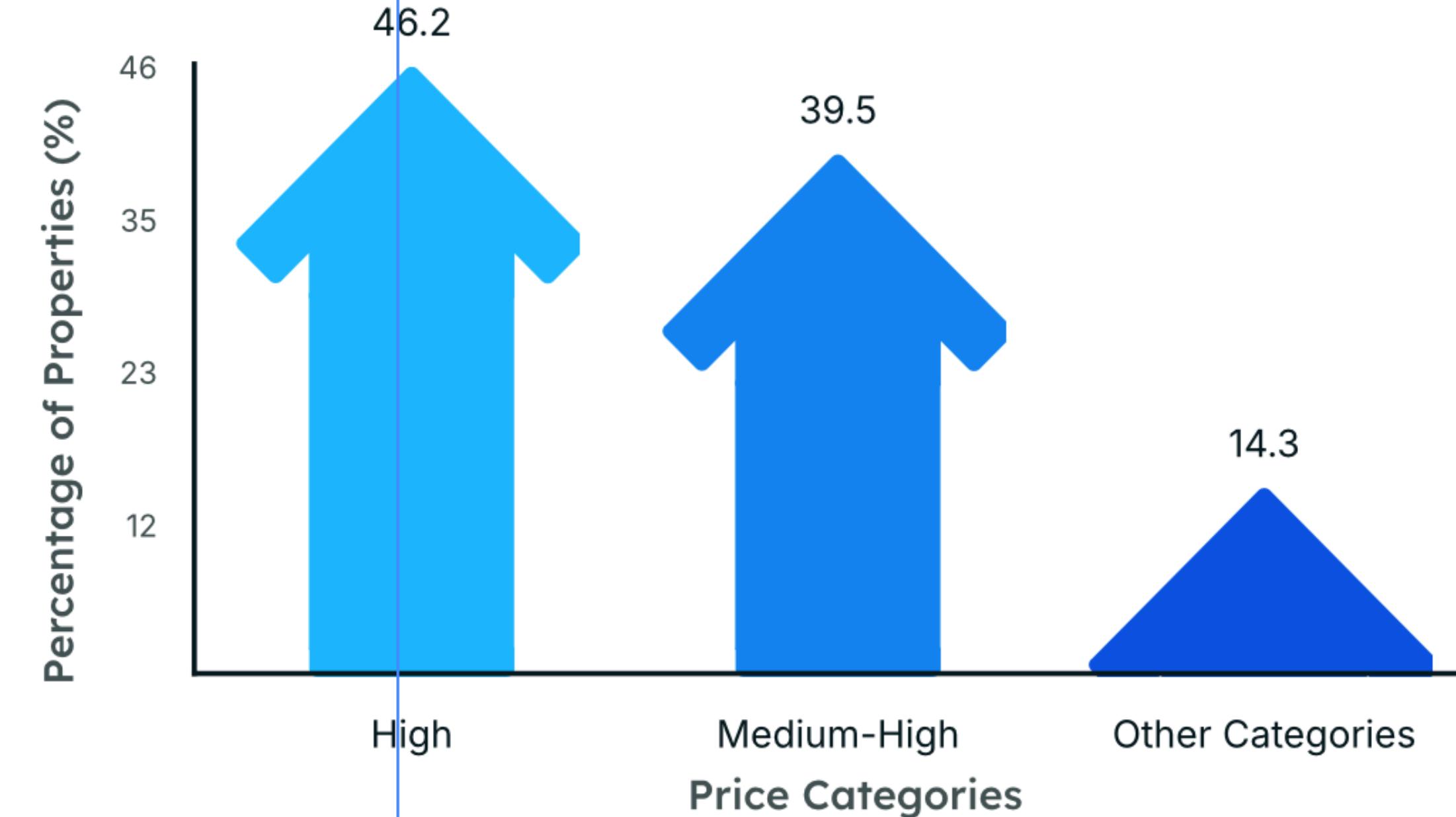
Boston Housing Dataset - Exploratory Data Analysis



# Target Variable Analysis - Market Distribution

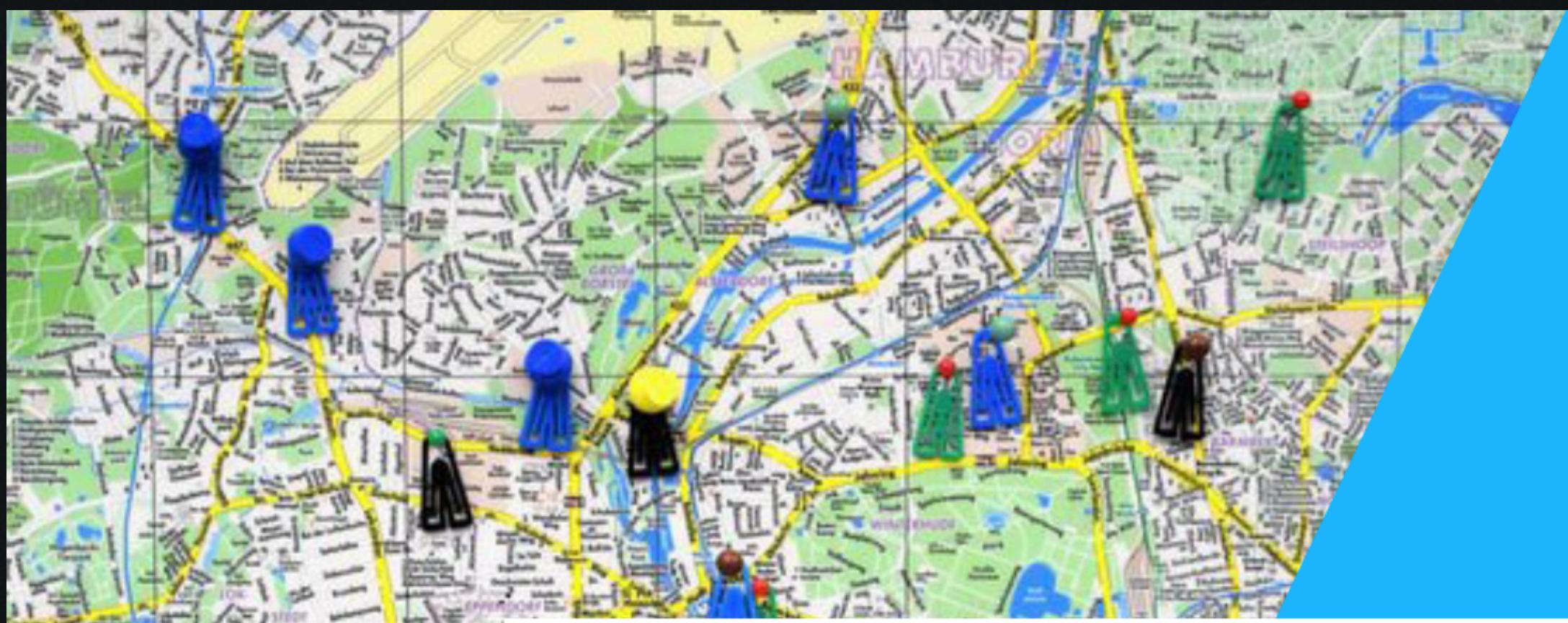
Target Variable (MEDV) distribution insights for forecasting and risk assessment

**MEDV Price Category Distribution**



Boston Housing Dataset





# Market Segmentation & Risk Factors

Market segments defined by tax and accessibility influence housing risks and strategies



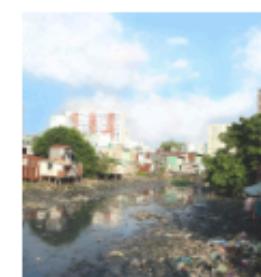
## 01 Identify bimodal market groups by tax and accessibility

Two distinct market segments emerge based on TAX and RAD values, highlighting diverse buyer profiles and investment areas.



## 03 Apply tailored acquisition strategies per segment

Customized approaches for each market group enhance portfolio performance by addressing unique risk and opportunity profiles.



## 02 Recognize risk indicators harming home values

High crime rates (CRIM), pollution levels (NOX), and tax rates significantly reduce property values, affecting market stability.



## 04 Monitor risks to preserve long-term property value

Continuous oversight of crime, pollution, and tax factors is essential for sustaining investment value over time.

# Strategic Recommendations for Stakeholders

Key insights to guide portfolio management and investment decisions



## Prioritize Properties

Focus on homes with higher RM (rooms) and lower LSTAT (% lower status) for better investment potential.



## Segmented Approach

Differentiate investments based on tax rates and highway accessibility to optimize returns.



## Data Quality Improvement

Address data capping and outliers in future analyses for enhanced predictive accuracy.



## Risk Mitigation

Avoid high crime and pollution areas to maintain and protect asset value over time.

# Leverage insights to drive targeted investment and development strategies.

Summary of key findings and recommended actions for Boston  
housing market analysis

By Jones Kwamehene\$

