Real Estate Revelations

The Power of Predictive Modeling

GROUP 10 DATA NERDS

1. David Gathimba
2. Juliet Mwaura
3. Branley Ope
4. Hannah Nduta
5. Joan Owuor
6. Linda Ng'eno

Introduction

In real estate, smart upgrades can make or break a sale. Imagine a tool that tells you which renovations boost property values the most.

Picture a real estate agent using advanced data analytics to effortlessly identify the best home improvements, ensuring every dollar spent significantly increases value.

Welcome to our real estate valuation project. We combine modern statistics with practical renovation needs. Our state-of-the-art linear regression models uncover hidden data gems, guiding you to the most profitable property enhancements.

Join us to turn guesswork into strategy, making homes beautiful and smart investments for the future.
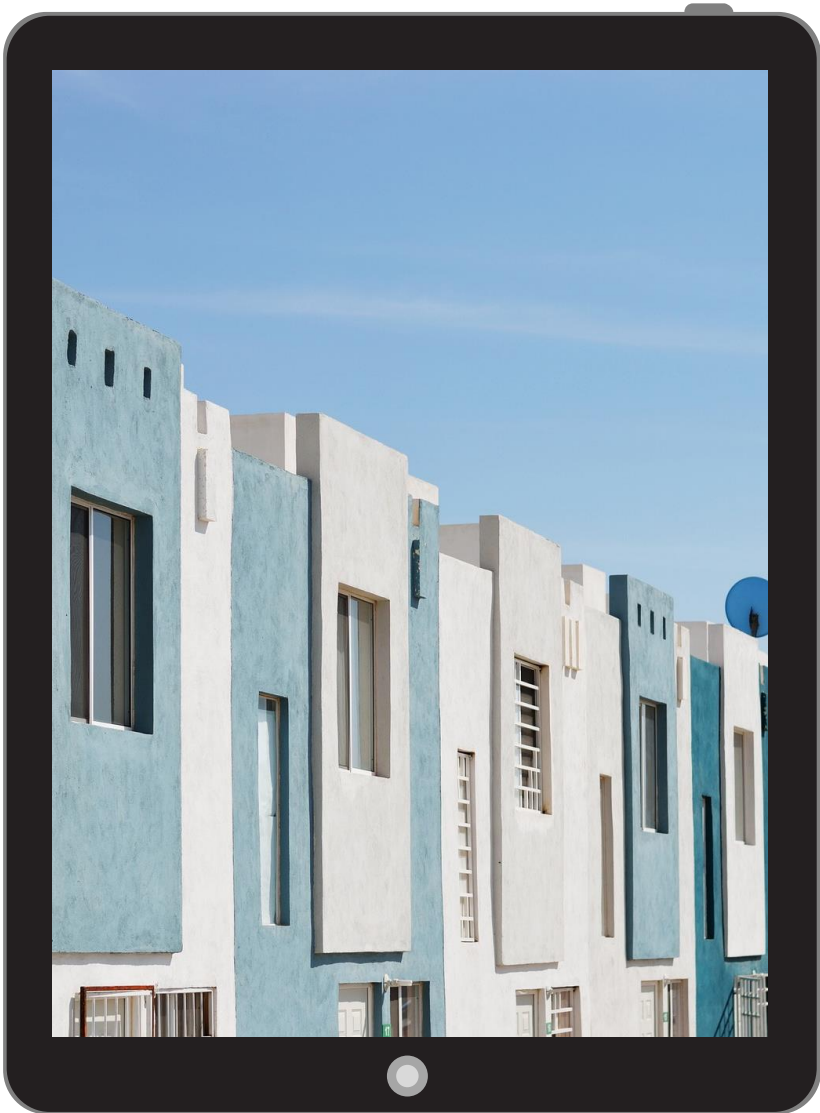
Problem Statement

Determining which home renovations most effectively increase property values is a challenge for real estate agencies, homeowners, and investors. Without data-driven guidance, resources may be allocated to improvements yielding suboptimal returns, leading to inefficiencies and missed opportunities.

This project leverages advanced linear regression models to identify key features and renovations that significantly impact home values. By providing clear, actionable insights, it empowers stakeholders to make informed decisions, optimize resources, and enhance property values.

OBJECTIVES

01

To analyze the relationship between various features and housing prices, as well as the interrelationships among these features.

Findings

❑ Features that had a Strong Positive Correlations included grade **(0.668376),** sqft_above (0.605623), sqft_living (0.701542), multicollinearity issues, particularly between sqft_living, sqft_above, and grade.

❑ Features that had a weak correlation included floors(0.256534), waterfront(0.25908), condition(0.034103) and zip code at (-0.052583).

OBJECTIVES

02

To develop a predictive model to estimate house prices based on various features.

Findings

❑ The linear regression model combined grade, combined_sqft, yr_built, sqft_living15, bathrooms, view, sqft_lot15, bedrooms, sqft_basement and floors which attained a r2 of 0.65. This indicates that 65% variance of this indicators can be used to predict housing prices.

OBJECTIVES

03

To visualize data distributions and relationships between features using correlation matrices and pair plots with a focus on the following variables:

❑Bedrooms

❑Sqft_living

❑Waterfront

Price against number of Bedrooms

❑ Houses with more bedrooms tend to have higher average prices, peaking at 8 bedrooms, after which the average price decreases. The significant deviation at 33 bedrooms suggests a different market segment for extremely large houses.

Average Price of Houses with Different Number of Bedrooms
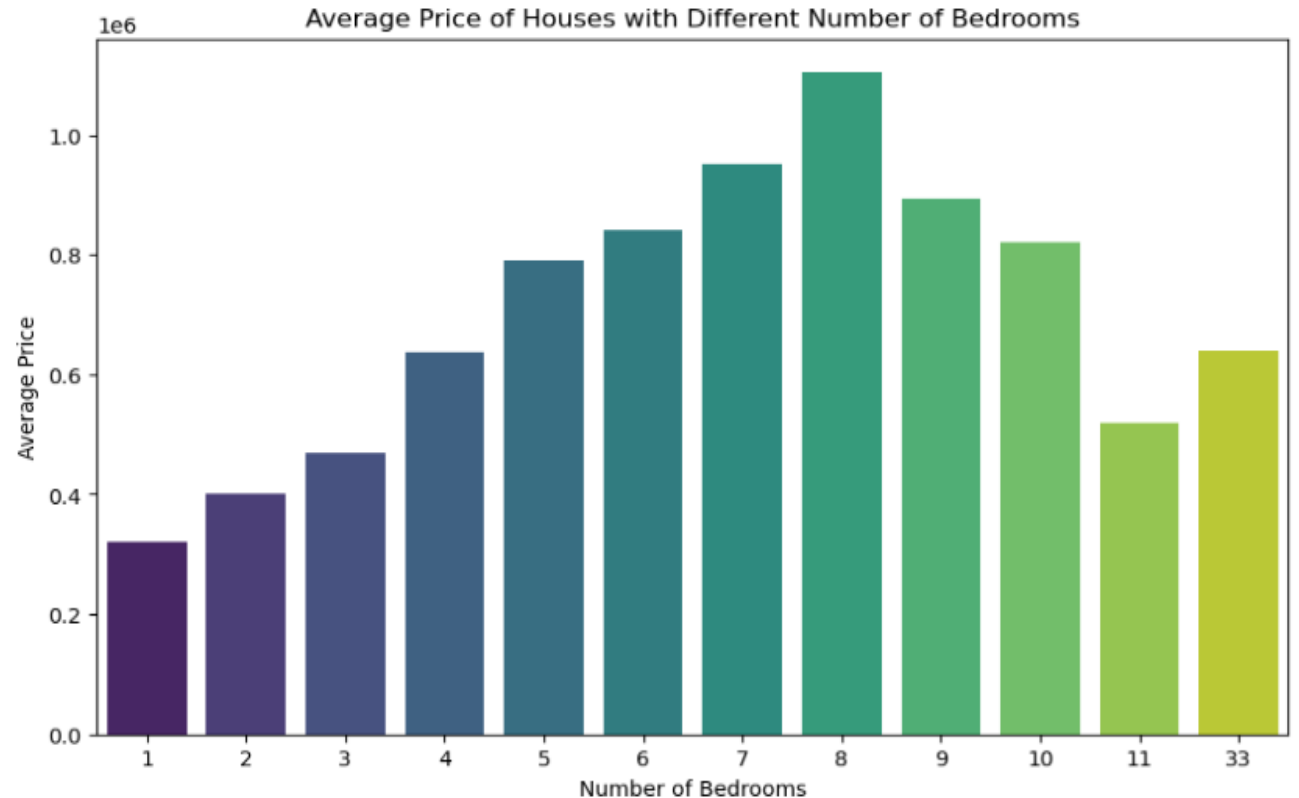
Price against size of Living space

❑ Mid-sized houses (2000-2999 sq. ft.) have the highest prices, while larger houses are more common but have stabilized prices.

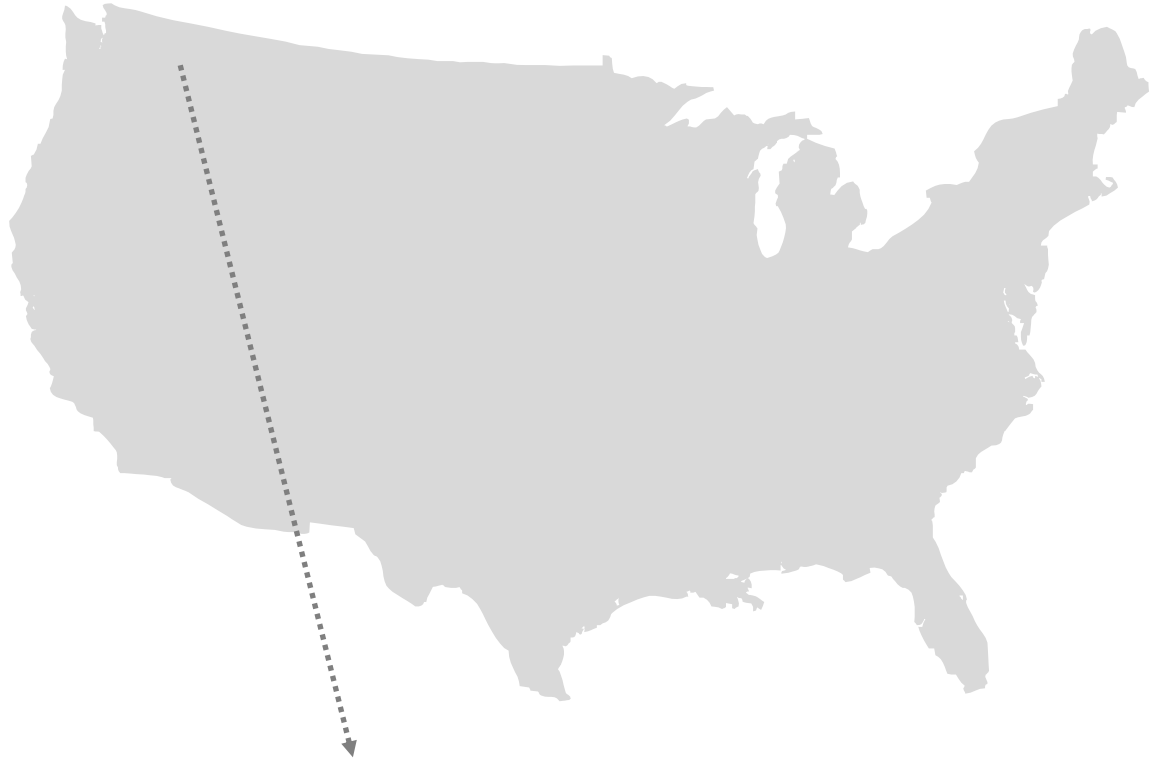Average Price of Houses with Different Square Footage of Living Space
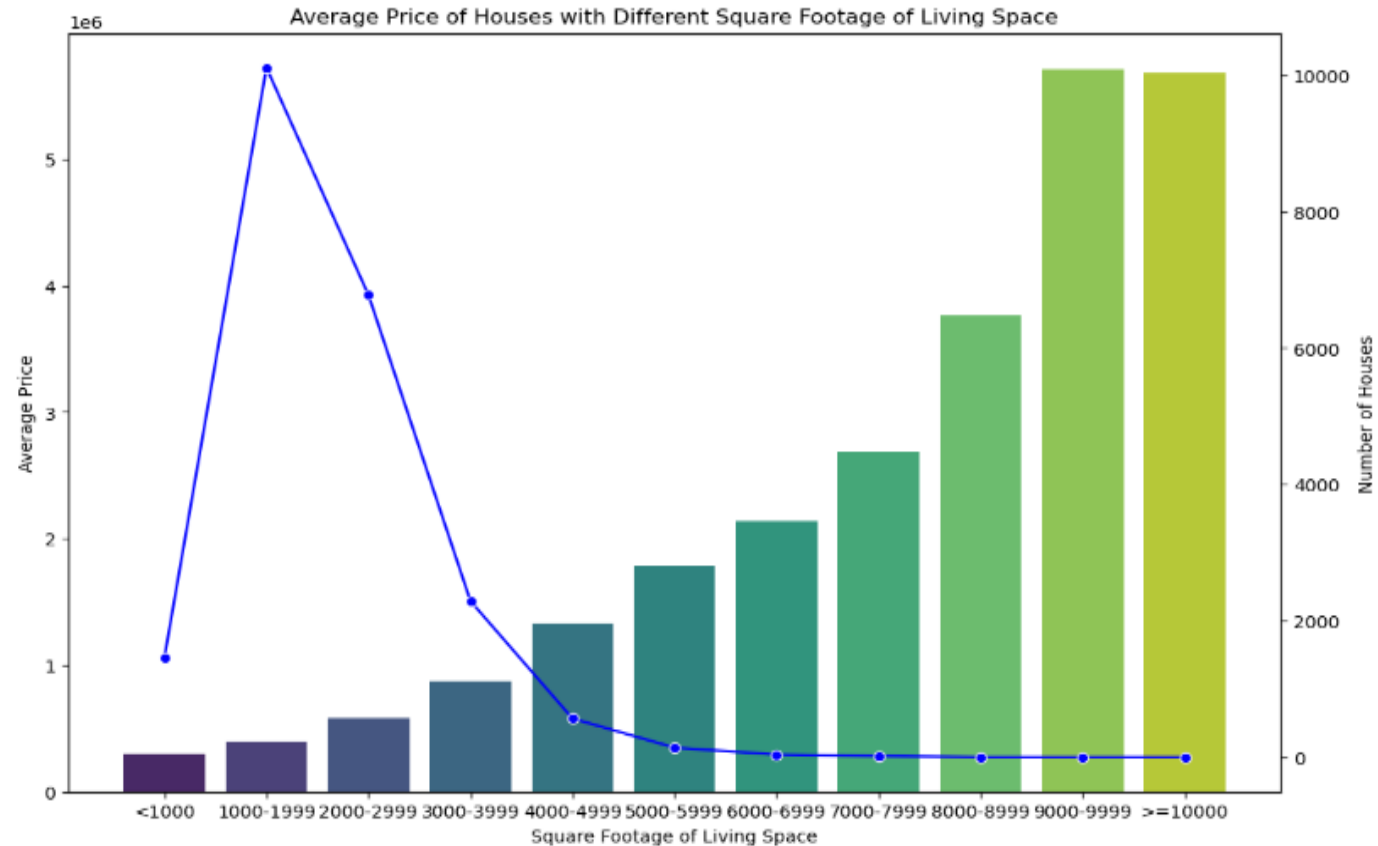
Price against Waterfront features

❑ Waterfront houses command a significantly higher average price, but there are far fewer of them compared to houses without waterfront features.

Average Price of Houses with and without Waterfront
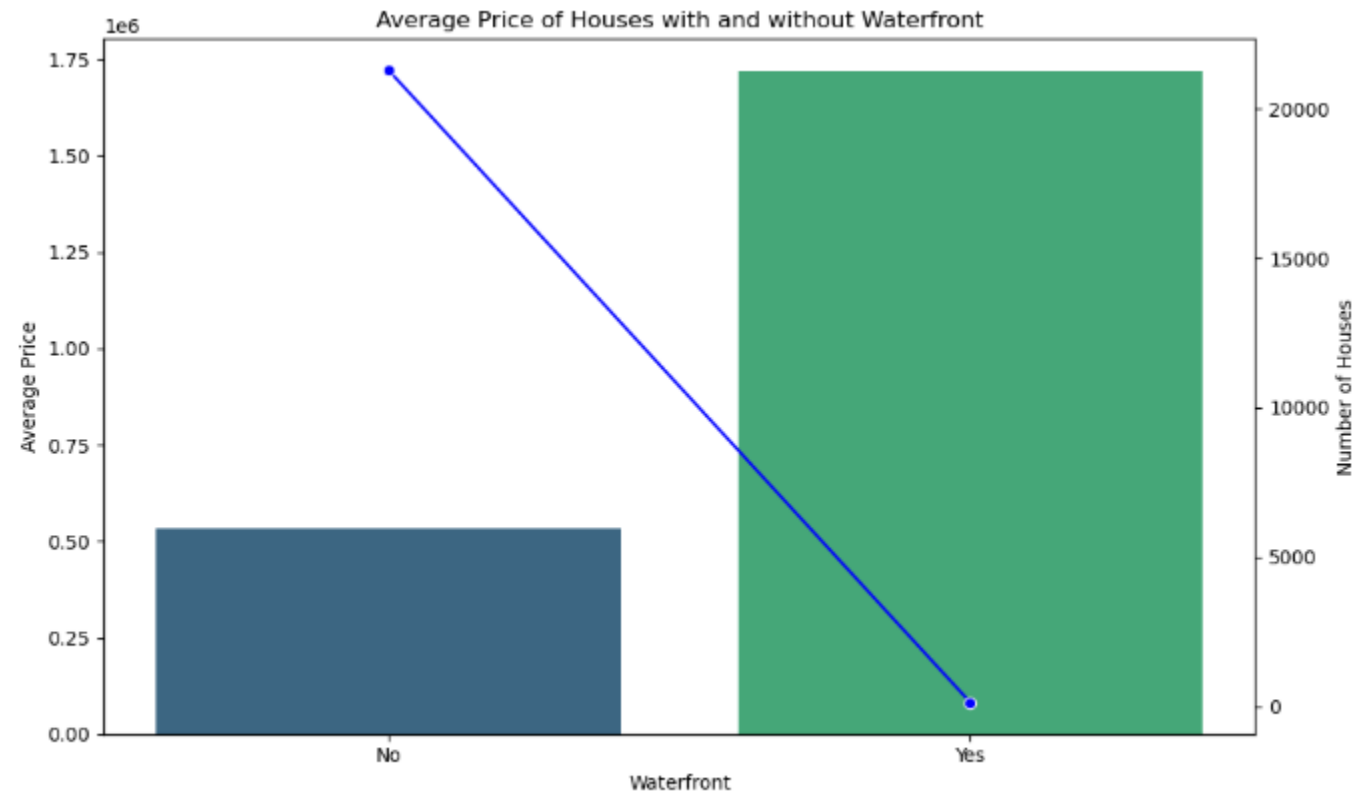
RECOMMENDATIONS FROM THE REGRESSION MODEL

01. Grade of the House (grade_numeric)

Improving the overall grade of the house, which represents the construction quality and design, can significantly increase the home's value. Grade of the house has the highest positive impact on the estimated value. This can be achieved through high-quality renovations, modern designs, and premium materials.

Dollar Impact: $127,174.88, indicating that improving the grade of the house by one unit can increase its value by approximately $128,963.02, with a 95% $123,002.54 to $131,672.33.

KING COUNTY DATA

Recommendations

Year Built (yr_built)

02

While the year built cannot be changed, focusing on modernizing older homes through renovations can mitigate the negative impact of an older construction date.
Emphasize updating essential systems like plumbing, electrical, and HVAC to meet current standards.

Increase Living Space:

03

Expanding the living area (sqft_living) or basement space (sqft_basement) can increase the home value.

THANK YOU

Unlock the true potential of your properties with data-driven renovations.