

# **REAL ESTATE MARKET ANALYSIS & INVESTMENT STRATEGY**

Section A Group 8

Sector: **Residential Real Estate**

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# SECTOR CONTEXT

- Residential property pricing depends on size, location, renovation, condition, and neighborhood
  - Investors often overpay due to lack of structured analysis
  - Decision-maker: Real Estate Investment Firm

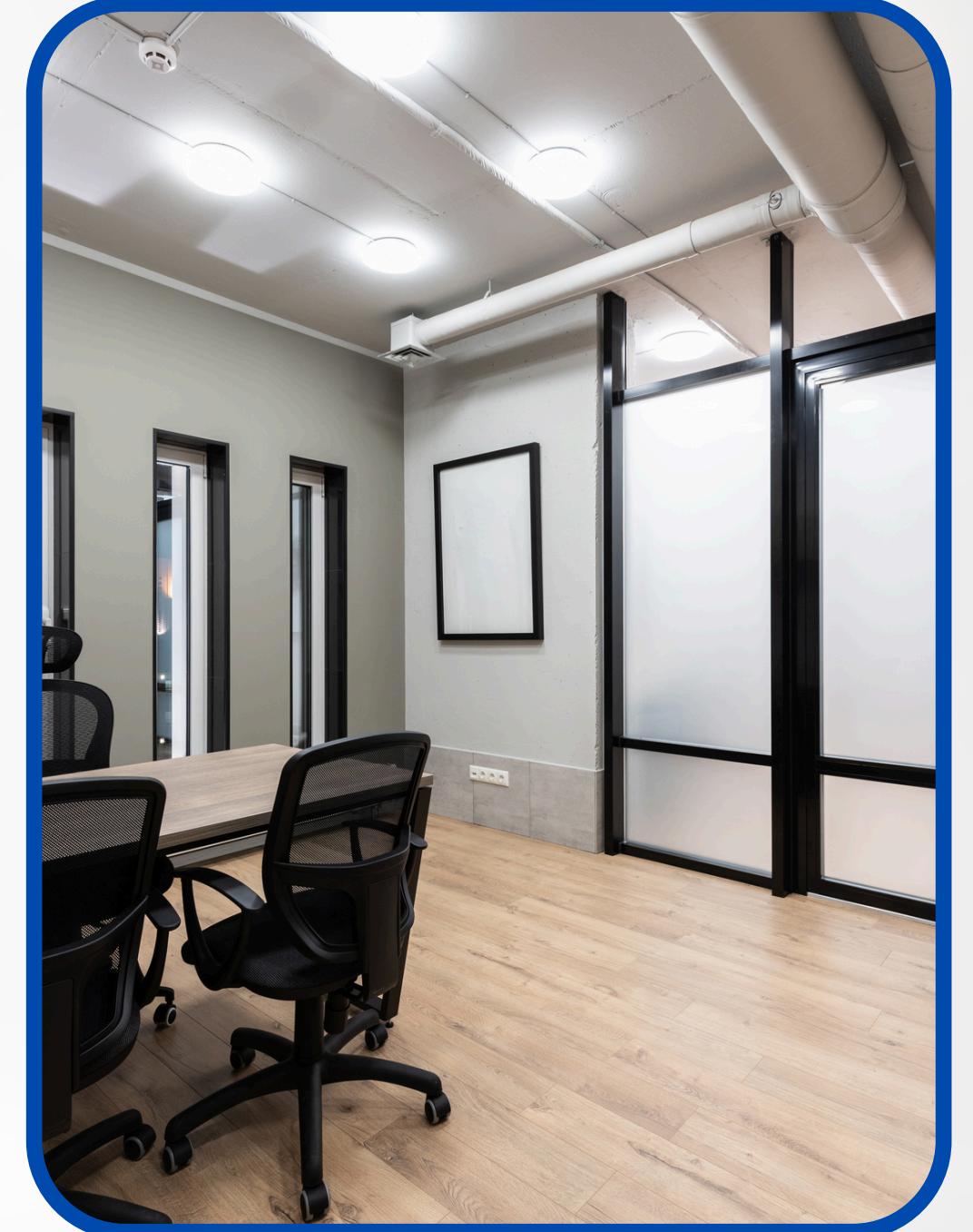
# PROBLEM STATEMENT

Which house features increase price the most, and how should investors buy properties to maximize profit?

# OBJECTIVE

Build a data-driven investment strategy to:

- Identify key price drivers
- Improve ROI
- Reduce investment risk



# SOURCE TO **SINK**

## SOURCE

- 21,607 residential house sales
- ~20 columns
- Time Period: 2016–2017

## DATA CLEANING

- Renamed columns to ML-friendly format
- Removed irrelevant column
- Handled missing values & corrected formats

## KEY COLUMNS USED

- Sale Price
- Living Area (sqft)
- Waterfront
- Renovation Year
- Condition
- Zipcode
- Sale Date

This project follows a structured data pipeline from raw residential sales data to investment-ready insights. The dataset was cleaned, standardized, and transformed into key analytical features such as price per square foot, renovation status, and size segments.

The refined data was then used to identify major price drivers, segment properties by investment potential, and build dashboards that support data-driven real estate acquisition decisions.

# KPI & METRICS **FRAMEWORK**

## WHAT WE MEASURED

- Average Sale Price – Overall market level
- Median Sale Price – Removes luxury distortion
- Price per Sqft – Standard comparison metric
- Waterfront Premium – Location value impact
- Renovation Premium – Value addition potential
- Condition Impact – Quality-based pricing

## WHY THESE KPIS?

They directly measure:

- Revenue drivers
- Investment profitability
- Property value segmentation

# EXPLORATORY DATA ANALYSIS

Key Pricing Drivers in Residential Real Estate Market

**511K**

## Average Market Price

The overall average selling price is \$511,627, higher than the median, indicating the presence of high-value luxury properties influencing the market.

**88%**

## Waterfront Premium

Waterfront homes sell for nearly 88% more than non-waterfront properties, making it the strongest single price driver.

**151K**

## Renovation Impact

Renovated houses sell for approximately \$151,000 more than non-renovated homes, showing clear value addition through upgrades.

# ADVANCED ANALYSIS

## Premium Houses

### Premium Houses

- Waterfront
- Prime zipcode
- High quality

**High cost but stable returns.**

## Renovation Strategy (Best Profit)

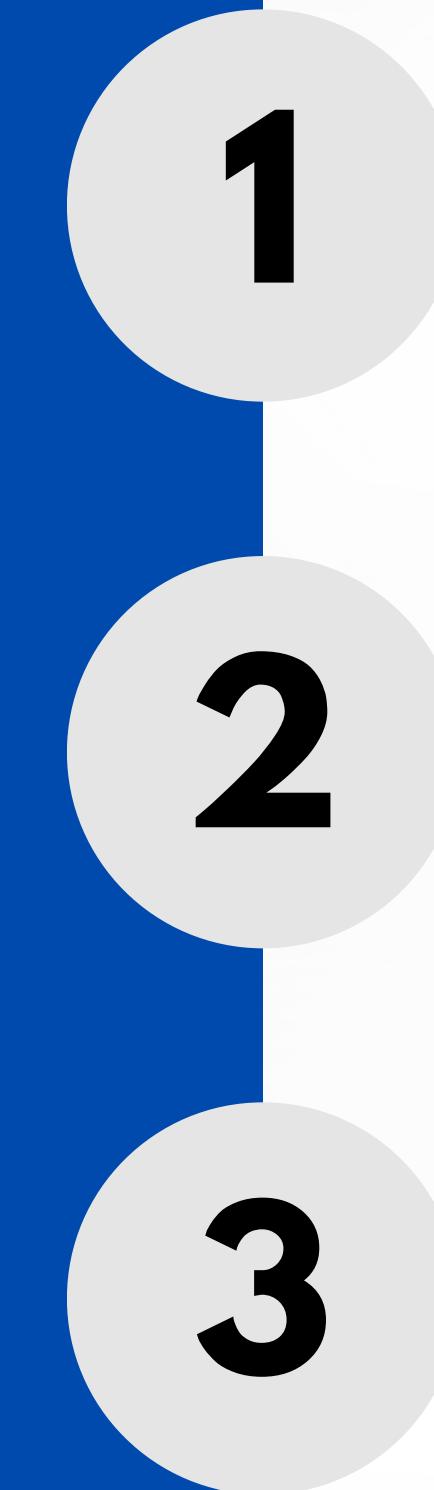
- Not renovated
- Good location
- Medium size (2000–4000 sqft)

**Buy cheap → Renovate → Sell higher.**

## Undervalued Areas

- Low price per sqft
- Stable sales volume

**Buy and hold for future growth.**



We divided properties into three strategic investment categories based on pricing patterns, location, and property characteristics.

Each category represents a different risk-return profile and investment approach.

# MARKET INSIGHTS SUMMARY

1

## Strong Location Impact

Zipcode plays a major role in pricing. Some areas exceed \$1M average prices, while others remain below \$300K. Location is the primary value driver.

2

## Property Features Matter

Waterfront status, renovation, size, and condition significantly influence selling price. Waterfront homes show the highest premium.

3

## Strategic Investment Opportunities

Premium properties offer stability, renovation projects provide high profit margins, and undervalued areas present long-term growth potential.

# DASHBOARD DESIGN

### Housing Market Intelligence Dashboard

Analyzing Property Prices, Market Trends, and Buyer Behavior to Identify Key Investment Insights.



# STRATEGIC RECOMMENDATIONS

Insight	Recommendation	Impact
Waterfront premium	Buy selective waterfront houses	Stable returns
Renovation impact	Buy non-renovated homes in good areas	Higher profit
Size trend	Focus on 2000–4000 sqft homes	Better ROI
Zipcode variation	Study neighborhood before buying	Smarter investment



# IMPACT & VALUE ESTIMATION

This section quantifies the financial impact of applying data-driven investment strategies in the real estate market.

Strategic selection and renovation planning significantly improve profitability, capital efficiency, and risk management.

1.8M  
POTENTIAL  
GAIN

400K–500K  
CAPITAL  
SAVINGS PER  
PROPERTY

If 20 houses are purchased at \$450K and improved by 20%,  
New value  $\approx$  \$540K  
Profit per house  $\approx$  \$90K  
Total gain  $\approx$  \$1.8M (before renovation cost)

**Impact: Renovation strategy increases resale value and strengthens overall portfolio returns.**

2000–3999 sqft homes sell  $\approx$  \$627K  
6000+ sqft homes sell  $\approx$  \$1.12M  
The price increase is not proportional to size (diminishing returns).

**Impact: Focusing on 2000–4000 sqft homes can save \$400K–\$500K per property while maintaining strong resale potential, improving ROI and enabling purchase of more units.**

# LIMITATIONS

Model Constraints and Areas for Further Improvement

## NO RENOVATION COST DATA

The dataset shows renovated homes sell for about \$151K more, but renovation costs are unknown. Without cost data, exact profit and true ROI cannot be calculated.

## NO ECONOMIC DATA

Interest rates, inflation, and job market conditions are missing. Without macroeconomic data, price movements during certain months cannot be fully explained.

## LIMITED TIME PERIOD (2016–2017)

The dataset covers only about two years. This is insufficient to analyze long-term market cycles or recession impacts.

## NO RENTAL INCOME ANALYSIS

The dataset focuses only on selling prices. Rental yield and cash flow performance cannot be evaluated.

# FUTURE SCOPE

Model Constraints and Areas for Further Improvement

## ADD REGRESSION ANALYSIS

Statistical models can measure how size, location, and renovation affect price, improving prediction accuracy.

## INCLUDE ECONOMIC INDICATORS

Adding interest rates and macroeconomic data will improve trend explanation and forecasting.

## STUDY RENTAL INCOME

Including rental data allows comparison between buy-to-sell and buy-to-rent strategies.

## PREDICT FUTURE PRICES

Using machine learning or forecasting models can estimate future values and support long-term planning.

# FINAL TAKEAWAY

Smart investment is not about buying expensive properties -it is about buying the right properties using data.

Thank You