

KING COUNTY, WA HOUSING MARKET PRICE MODELING

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"THE ACHE FOR HOME
LIVES IN ALL OF US, THE
SAFE PLACE WHERE WE
CAN GO AS WE ARE AND
NOT BE QUESTIONED."

MAYA ANGELOU



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INTRODUCTION

2

RESEARCH

3

FINALIZE

- Business Problem
- Data Sources & Methods
- Market Research
- Models
- Regression Results
- Business recommendations
- Next Steps



INTRODUCTION



- Business problem
- Data sources & Methods



BUSINESS PROBLEM

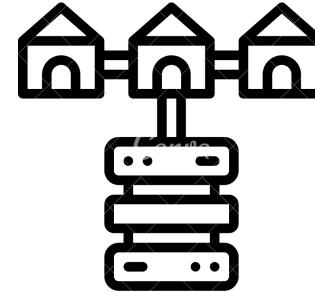
- Our team was hired by a major Seattle-based real estate agency **to create a model which predicts the prices of houses** in the King County, WA area based on certain property features.
- This model should provide customers with a predicted **house price using easy-fill questionnaires**



DATA UNDERSTANDING

Sources

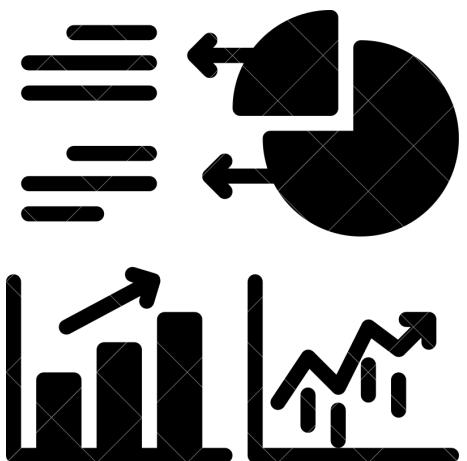
- King County, WA housing sales data
(2014-2015)
- Open Street Maps (www.openstreetmap.org)
Geographical maps and geolocation coding
- Washington Geospatial Open Data (<https://geo.wa.gov/>)
Washington State geospatial information



Methods

- Exploratory data analysis (EDA)
- Geoinformation scraping
- Determine statistically significant features
- Regression models - OLS, K-Fold, Train-Test Split

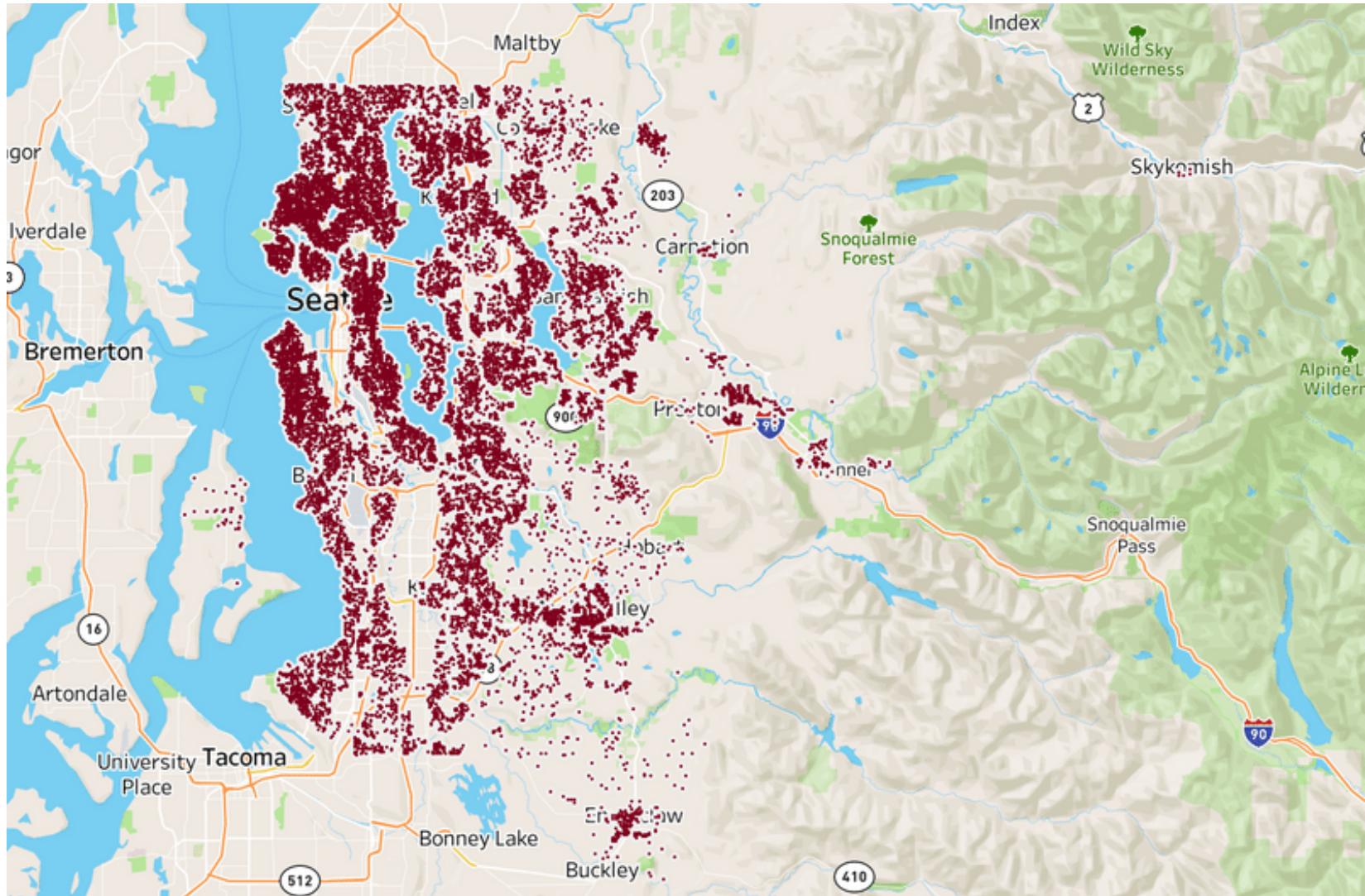
RESEARCH



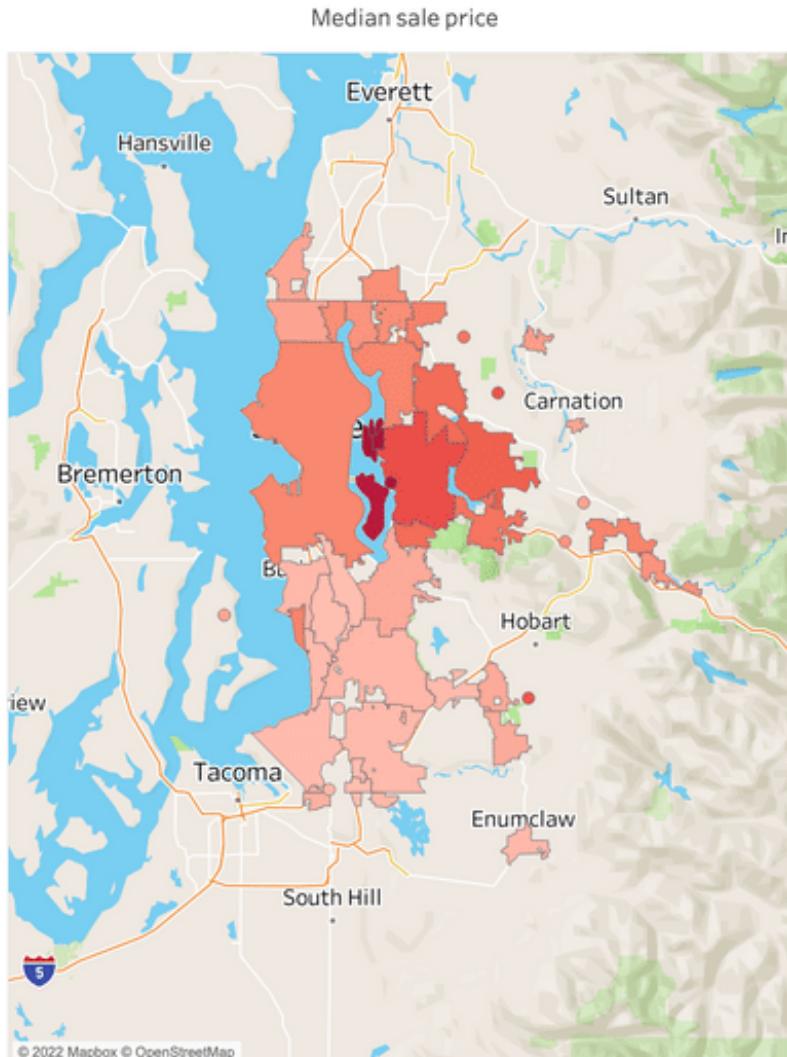
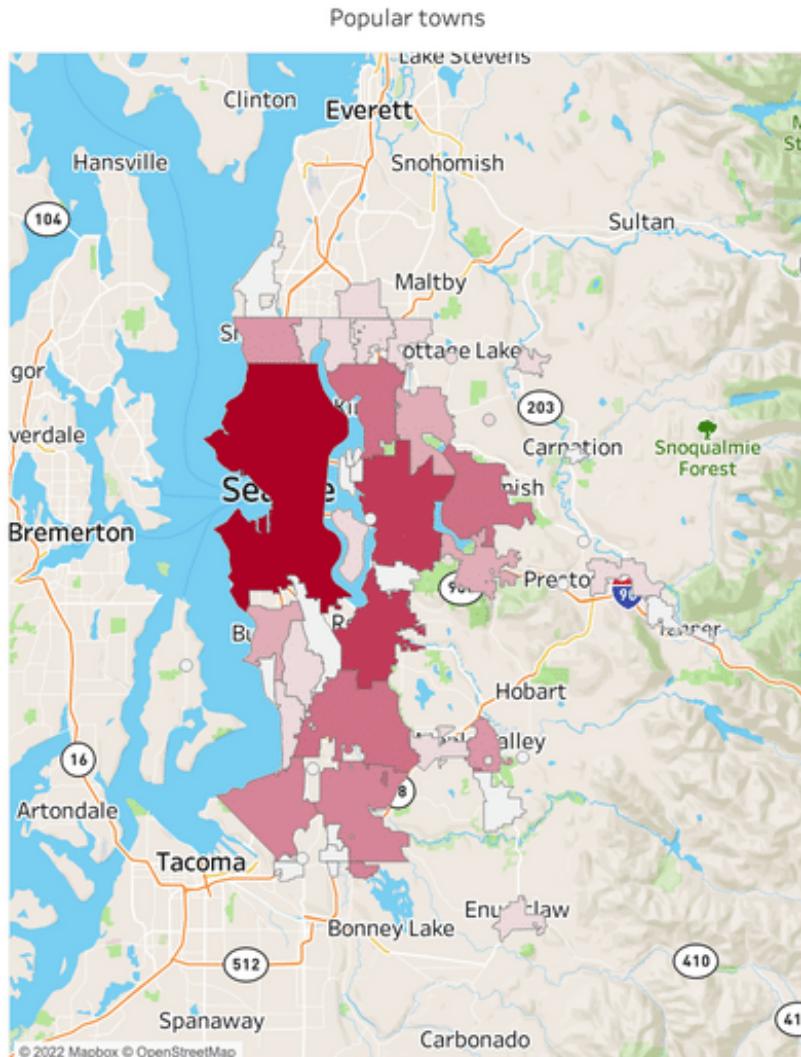
- Market Research
- Preliminary Models
- Final Model



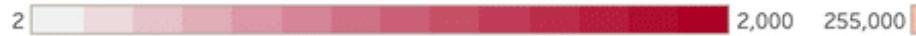
SALES TRANSACTIONS THROUGHOUT KING COUNTY. (2014 / 2015)



LOCATION HAS SIGNIFICANT IMPACT ON PRICE.

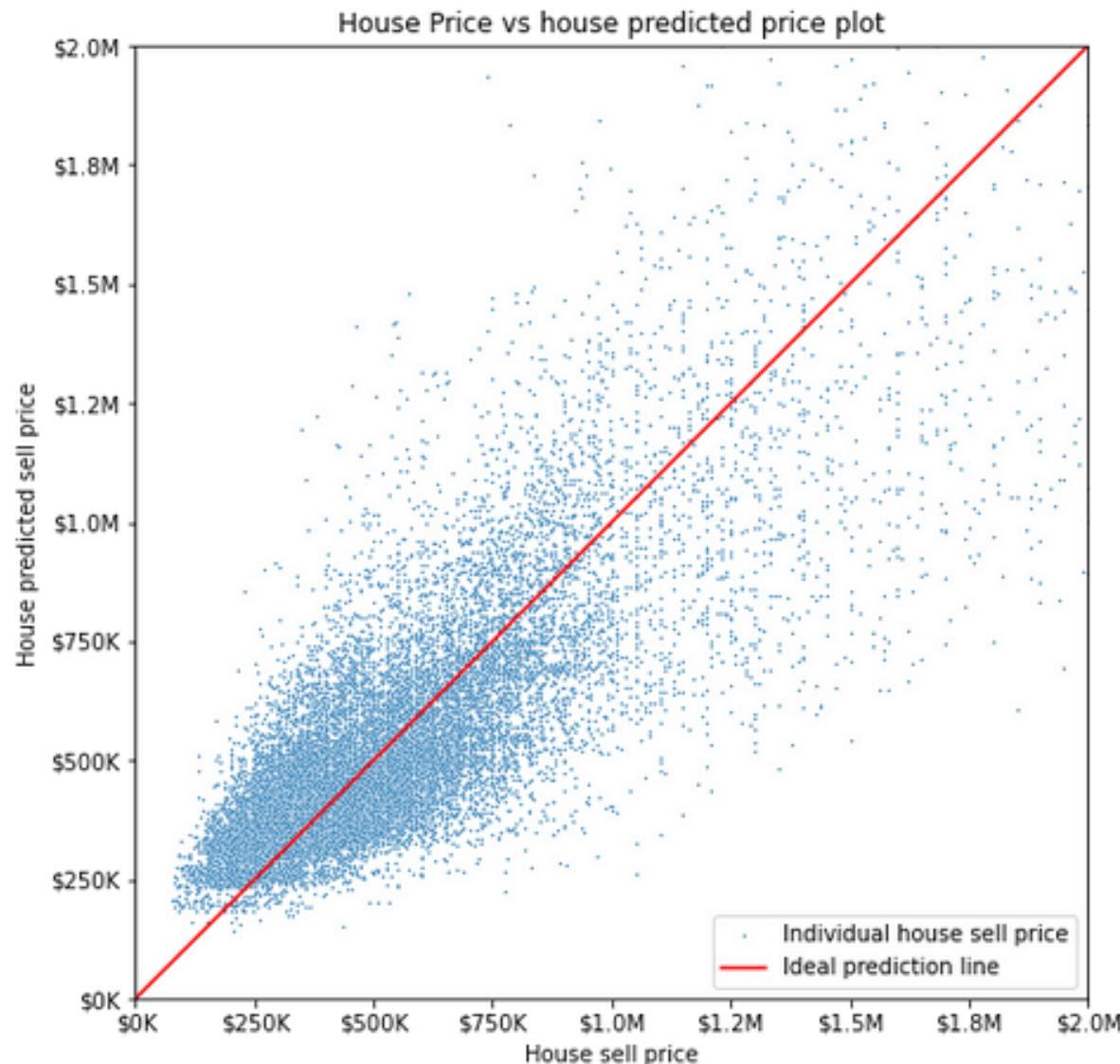


The number of transaction



Median Price





EXPLAINED VARIANCE = 69.2%
(R² SCORE)

USED FEATURES:



FOOTAGE



BEDROOMS



WATERFRONT



VIEW

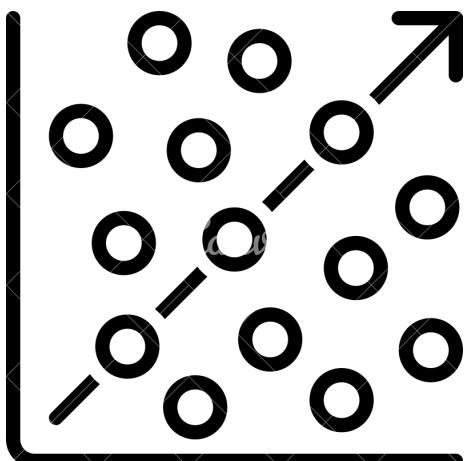


AGE

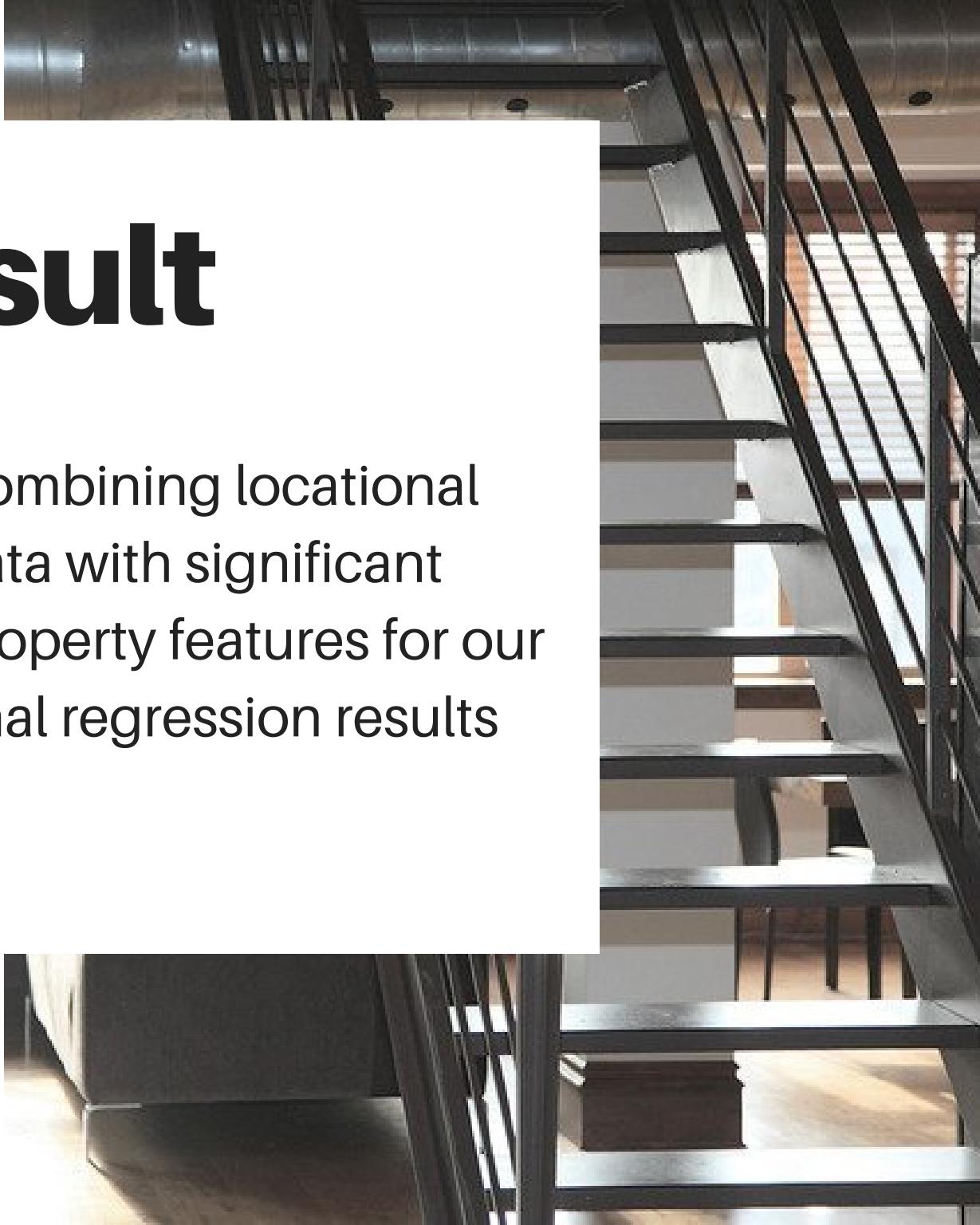


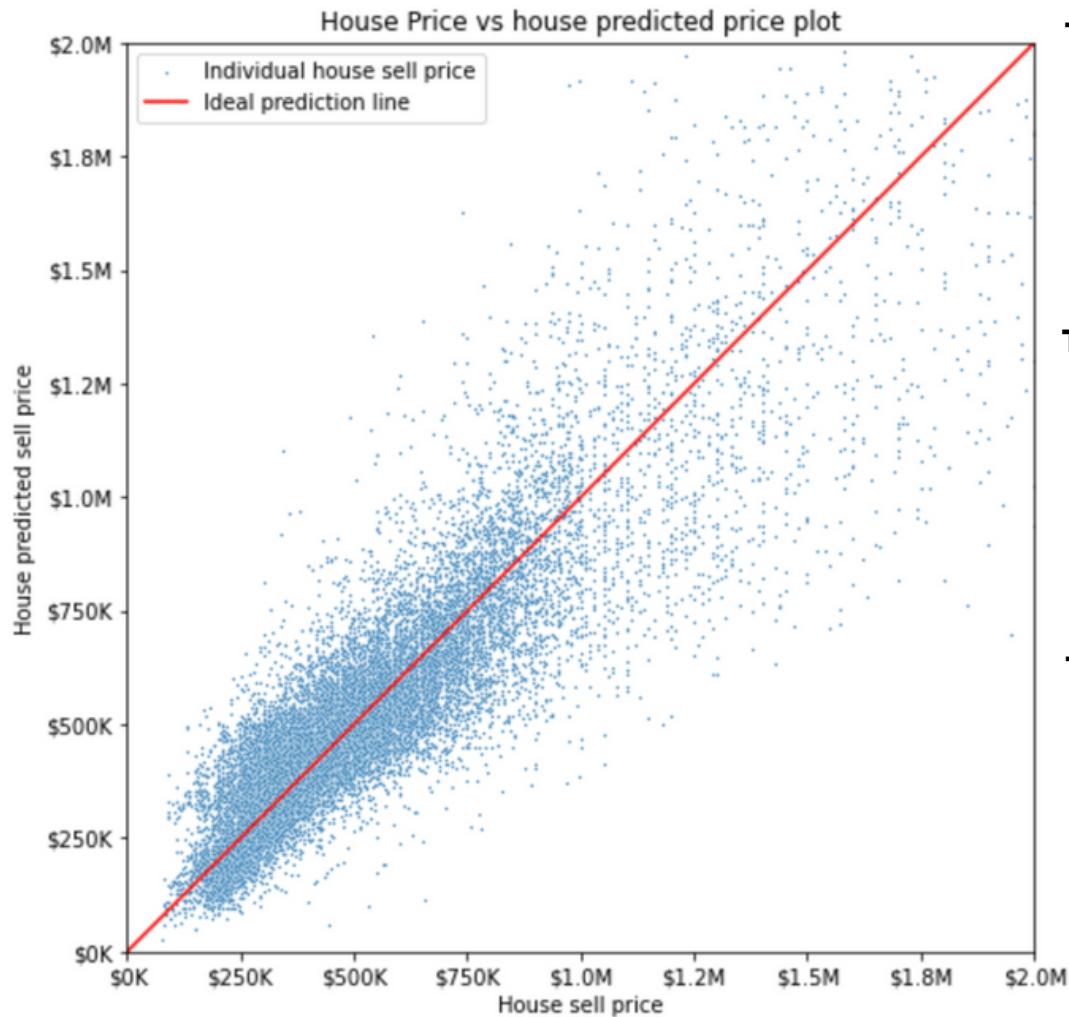
GRADE

Final Result



- Combining locational data with significant property features for our final regression results





TEST 1

R² Score: 80.1% +-3.9%
Root Mean Squared Error: 164282.0
Random house price: 858000.0
Predicted price: 922740.0
Difference: 7.55 %

TEST 2

R² Score: 80.1% +-3.9%
Root Mean Squared Error: 164282.0
Random house price: 225000.0
Predicted price: 214094.0
Difference: -4.85 %

TEST 3

R² Score: 80.1% +-3.9%
Root Mean Squared Error: 164282.0
Random house price: 420000.0
Predicted price: 429121.0
Difference: 2.17 %

EXPLAINED VARIANCE = 80.1%
(R2 SCORE)

Business Recommendations



01

PROPERTY GRADE & SQUARE FOOTAGE



Property Grade and Square Footage have the strongest correlation with price

02

RENOVATIONS



Renovations did not significantly add to sales price. Consider minimally when pricing a property.

03

NEIGHBORHOOD



Prices vary widely based on neighborhood. Location is a major predictor of price.

Next steps

- Pinpoint Seattle district information
- Explore other statistical model types
- Expand to other regions and cities

"HOME ISN'T WHERE
YOU'RE FROM, IT'S
WHERE YOU FIND LIGHT
WHEN ALL GROWS
DARK"

PIERCE BROWN





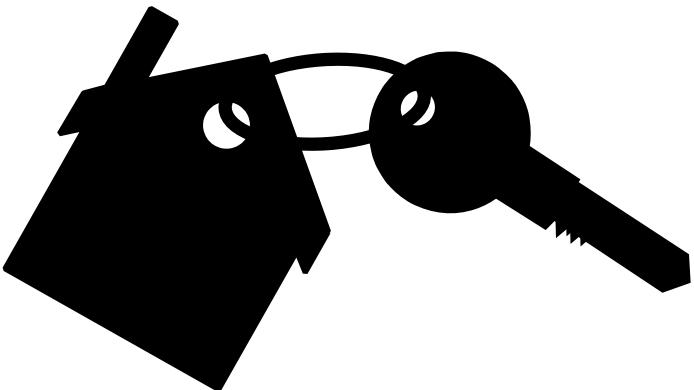
Q & A:



**Thank you for joining
today's presentation.**

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USED FEATURES:



FOOTAGE



BEDROOMS



WATERFRONT



VIEW

EXPLAINED VARIANCE = **55.5%**
(R² SCORE)



USED FEATURES:



AGE



GRADE