


# Phase 2 Project

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# Outline

- **Business Problem**
  - **Data**
  - **Methods**
  - **Findings**
  - **Conclusions + Future Work**
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# Business Case

The budding Zillow-type company, J. Hughes Inc., is buying and flipping houses in the Seattle area. They would like to know the types of housing features to prioritize to make the most profit. Knowing which features have the biggest impact on housing prices, J. Hughes Inc. could then make data-driven decisions on which houses to purchase to optimize making a profit on.

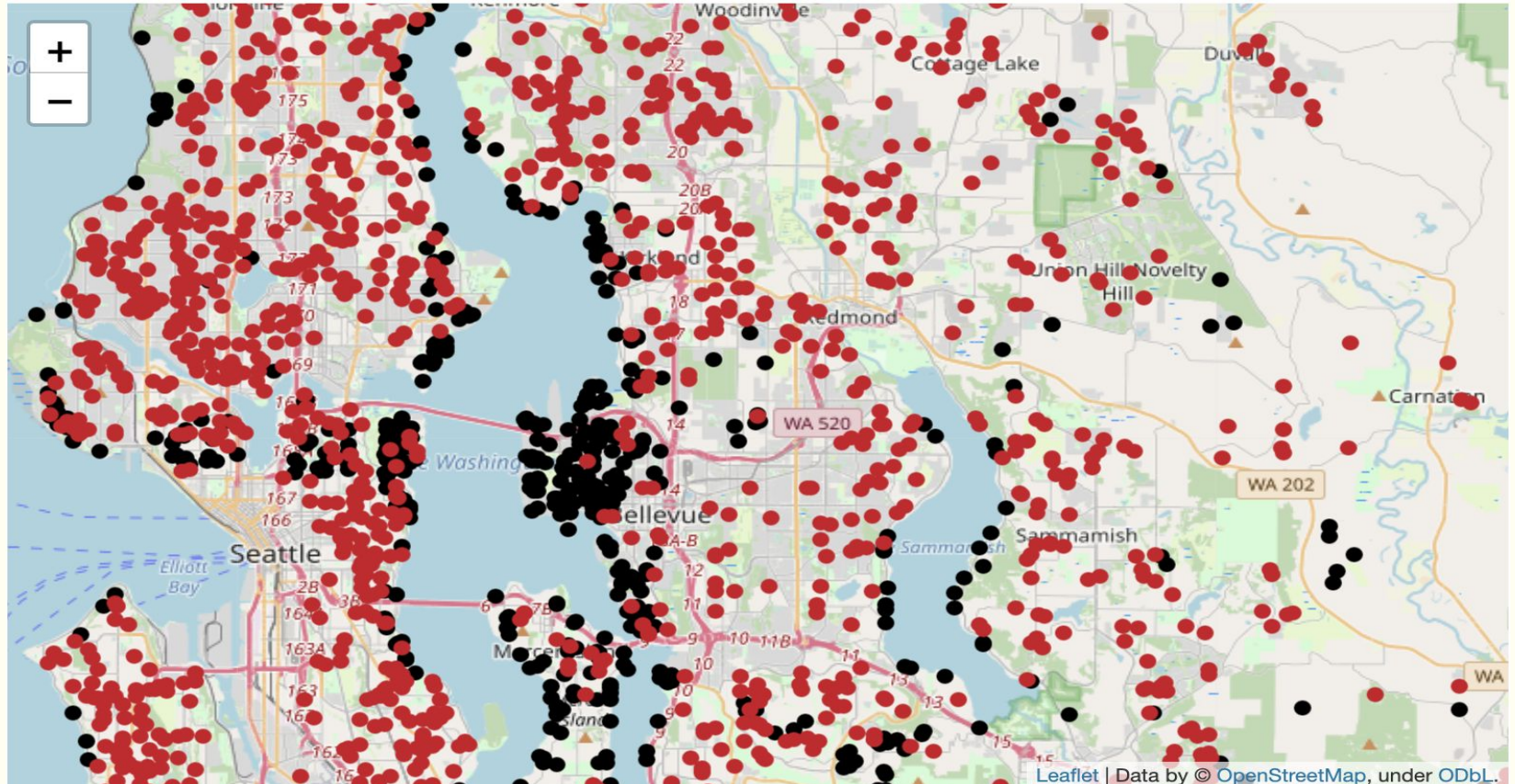


# Data

## Kings County Data Set - Features included:

- + id
- + date - house was sold
- + price
- + bedrooms
- + bathrooms
- + sqft\_living
- + sqft\_lot
- + floors
- + waterfront
- + condition - How good the condition is ( overall )
- + grade - overall grade given to the housing unit, based on King County grading system
- + yr\_built
- + zip code
- + lat
- + long

**Red: Houses under 1.5 million**  
**Black: Houses above 1.5 million.**



# OSEMN Method for Data Analysis

## Obtain

Data collected from King  
County Housing.

## Scrub/Explore

Clean data and feature  
selection

## Model

Three Linear Regression  
models

## Interpret

Getting recommendation  
from model



# Findings



## **+ Bathrooms**


**For every increase in number of bathrooms,  
\$20,940 added value to the home in question.**





**+ Sqft. Living**

For every increase in unit of sqft. Living, \$137 will be added to the value of the home in question.





**- Sqft. Lot**

For every increase in sqft. lot, the value of the home decreases by \$3.



**- Sqft. Lot**

For every increase in sqft. lot, the value of the home decreases by \$3.



# **+ Condition**

**For a house to be given a condition 5 - the house  
price increases by \$ 41,240**





## **- Bedrooms**

3 bedroom house price decreases by \$ 29,170.

4 bedroom house price decreases by \$ 49,600.

5 bedroom house price decreases by \$ 60,100.

6 bedroom house price decreases by \$ 77,250.





## **+ Waterfront**


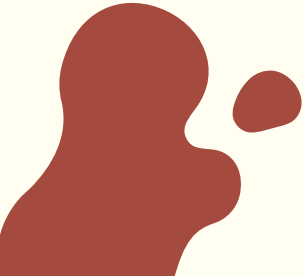
**A waterfront home will add \$ 387,500 to the value.**





**+ Grade**

A higher “graded” home will add \$ 112,200 to the value.



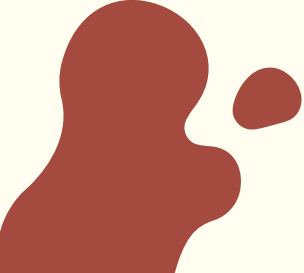


## **+ Zip Code**

**Zip code with the first four digits 9811 will add  
\$80,720.**

**Zip code with the first four digits 9810 will add  
\$62,300**

**Zip code with the first four digits 9819 will add  
\$34,850.**



**Zip code with the first four digits 9812 will add \$15,110.**





## - Zip Code

Zip code with the first four digits 9809 will decrease price by \$180,100.

Zip code with the first four digits 9818 will decrease price by \$108,900.

Zip code with the first four digits 9802 will decrease price by \$64,420.

Zip code with the first four digits 9817, will decrease price by \$58,930.



# Conclusion and Future Work

Which housing features should be prioritized in order to buy and flip homes for the highest profit?

The following three features/ aspects are recommended:

- **Adding a bathroom to a home increases the value by \$20,940.** In contrast, adding a third, fourth, or fifth bedroom decreases the value of a home starting at **\$29,170**. Recommendation would be to add bathrooms to a home rather than 3 or more bedrooms.
- Second recommendation would be to buy and flip homes that have a waterfront. **This would add \$ 387,500 to the value of the home.**
- Third recommendation would be to buy homes beginning with the first four numbers of the zipcodes of **9811(\$80, 720)**, **9810(\$62,300)**, and **9819(\$34,850)**. Also, to avoid buy homes beginning with the first four numbers of the zipcodes **9809(-\$180,100)**, **9818(-\$108,900)**, and **9816(-\$80,500)**.
- Future work:

# Thank you!

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Credits: [credit](#) [Slidesgo](#)

# Appendix

Model	R <sup>2</sup>	RMSE	Number of Features	Best Model
Model 1	0.64	135,717	38	✗
Model 2	0.64	135,922	28	✓
Model 3	0.65	134,932	44	✗
Model 4	0.65	135,442	31	✗

# Appendix

Features	Coefficients
bathrooms	\$20,940
sqft_living	\$137
sqft_lot	-\$3
grade	\$112,200
age_at_sold	\$2253
bedrooms_3	-\$29,170
bedrooms_4	-\$49,600
bedrooms_5	-\$60,100
bedrooms_6	-\$77,250
floors_2_5	\$66,090
floors_3_0	\$23,010
waterfront_1_0	\$387,500 🤖
condition_5	\$41,240
zip4_9801	-\$35,510

zip4_9802	-\$64,420
zip4_9803	-\$34,220
zip4_9804	-\$51,480
zip4_9805	-\$33,280
zip4_9806	-\$24,870
zip4_9809	-\$180,100 😞
zip4_9810	\$62,300
zip4_9811	\$80,720
zip4_9812	\$15,110
zip4_9815	-\$21,830
zip4_9816	-\$80,500
zip4_9817	-\$58,930
zip4_9818	-\$108,900
zip4_9819	\$34,850