

King County Housing Prices



A Multiple Linear Regression Model
By: Jack Locke

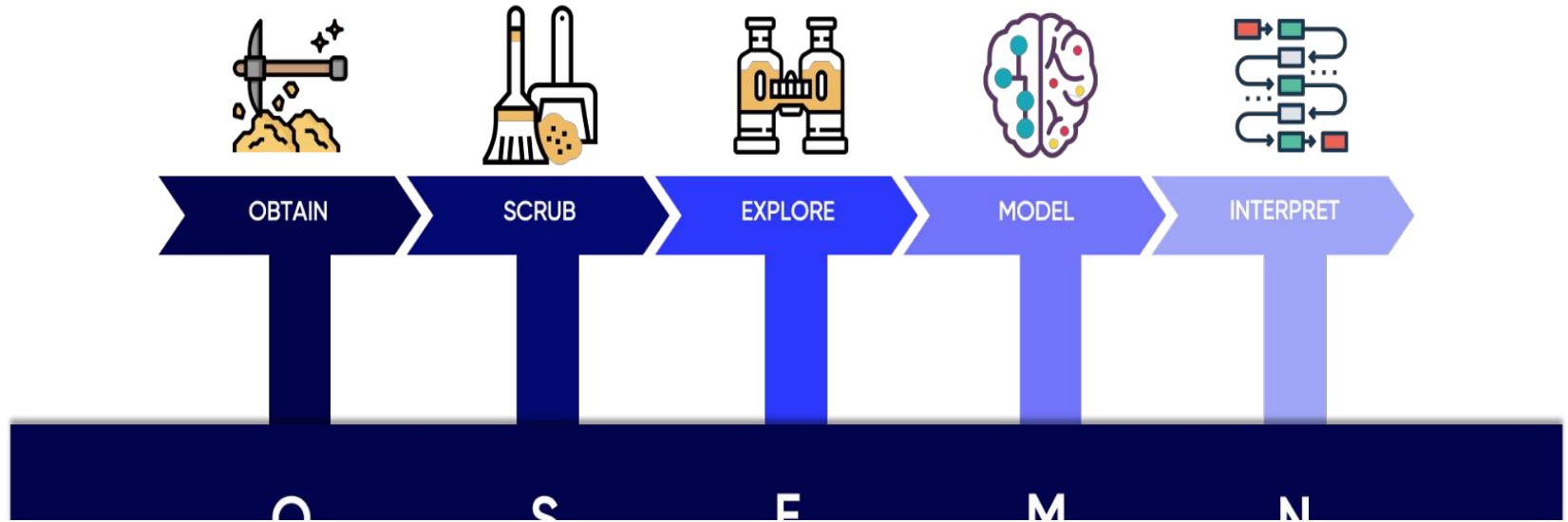
Objective:

To use the dataset to predict the price of a house.

Dataset:

- **Id** - unique identifier for a house
- **Date** - house was sold
- **Price** - is prediction target
- **Bedrooms** - number of Bedrooms/House
- **Bathrooms** - number of bathrooms/bedrooms
- **Sqft_living** - footage of the home
- **Sqft_lot** - footage of the lot
- **Floors** - floors (levels) in house
- **Waterfront** - House which has a view to a waterfront
- **View** - Has been viewed
- **Condition** - How good the condition is
- **Grade** - overall grade given to the housing unit
- **Sqft_above** - square footage of house apart from basement
- **Sqft_basement** - square footage of the basement
- **Yr_built** - Built Year
- **Yr_renovated** - Year when house was renovated
- **Zipcode** - zip
- **Lat** - Latitude coordinate
- **Long** - Longitude coordinate
- **Sqft_living15** - The square footage of interior housing living space for the nearest 15 neighbors
- **Sqft_lot15** - The square footage of the land lots of the nearest 15 neighbors

OSEMN - workflow



Overview

King County, Washington:

- Estimated population of 2,233,163 people
- 952,569 houses
- Median Value of \$446,600
- <https://www.census.gov/quickfacts/fact/table/kingcountywashington.US/PST045218>

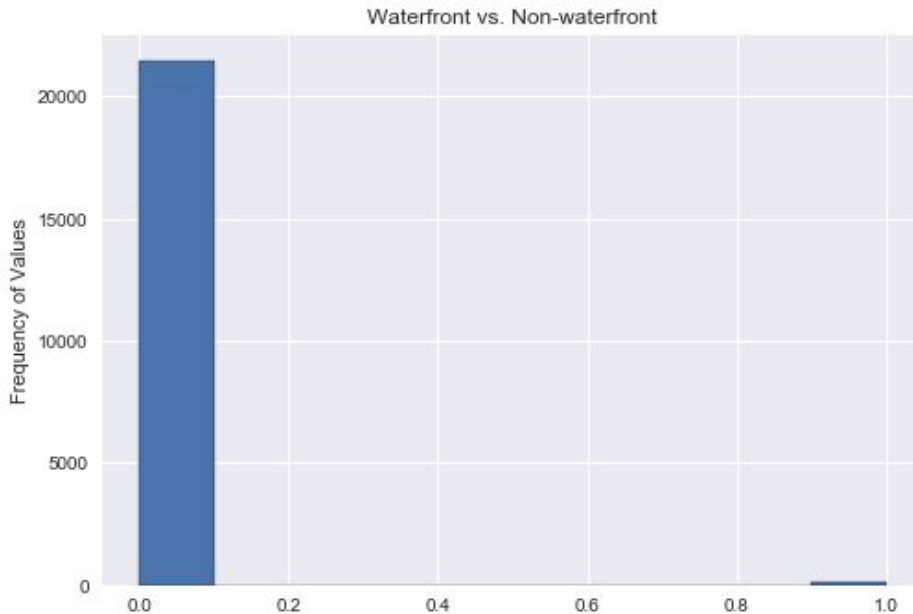
Our Dataset:

- 21,597 houses
- Median Value of \$450,000

Question 1

How does the location affect the price of a house in King County?

- Waterfront (mean):
\$1,717,215
- Non-waterfront (mean):
\$532,286
- \$1,184,929 difference



Q 1 continued...

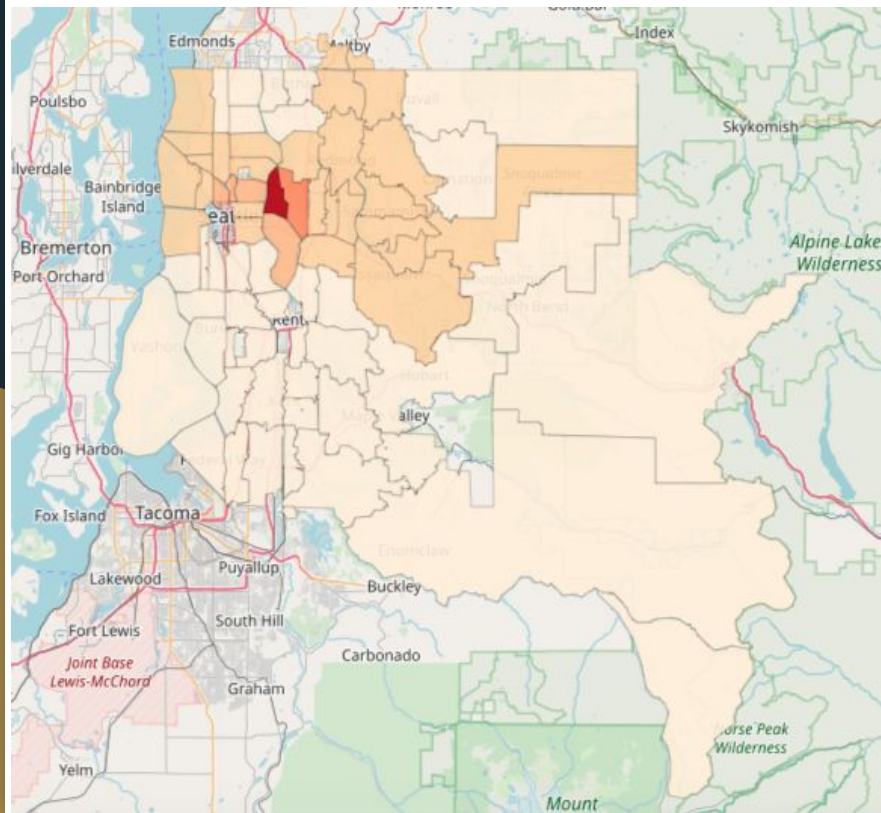
Zip Code:

- 98039
- Mean Price \$2,161,300

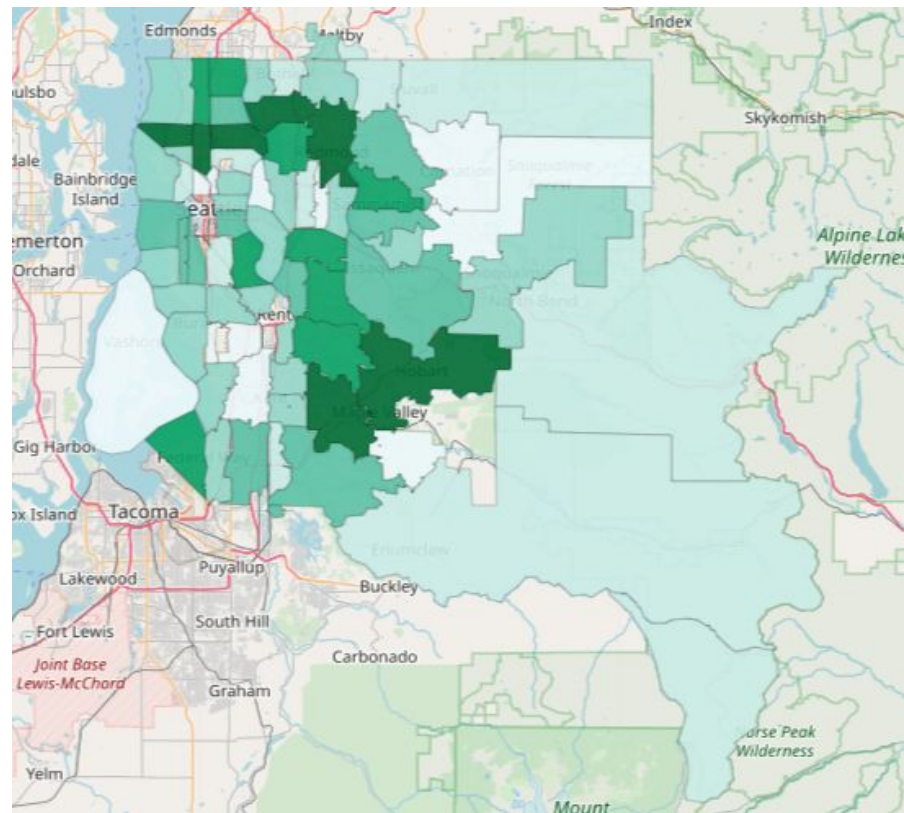
Rural/Urban:

- Count of Houses

Zip Code vs. Price



Zip Code vs. Count



Question 2

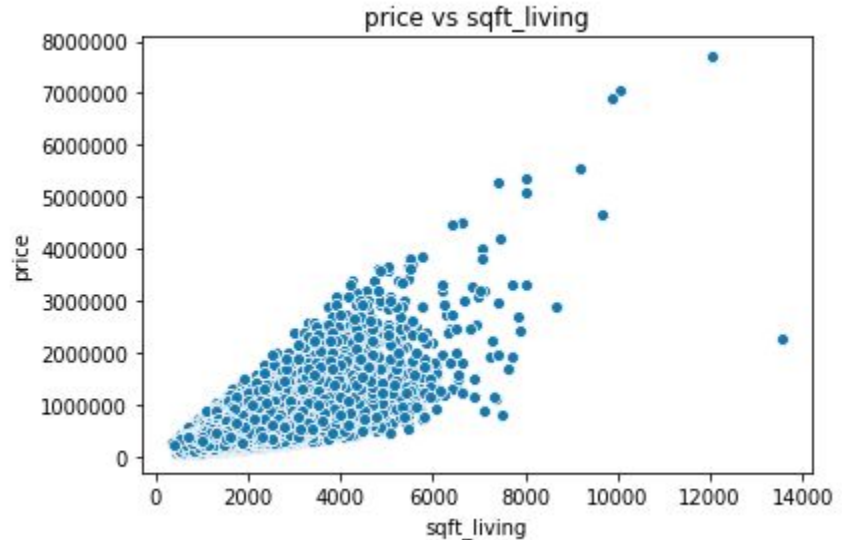
What is the relationship between the size of a home and the price?

Sqft_living

- 25% 1,430 \$322,000
- 50% 1,910 \$450,000
- 75% 2,550 \$645,000
- Mean 2,080 \$540,296

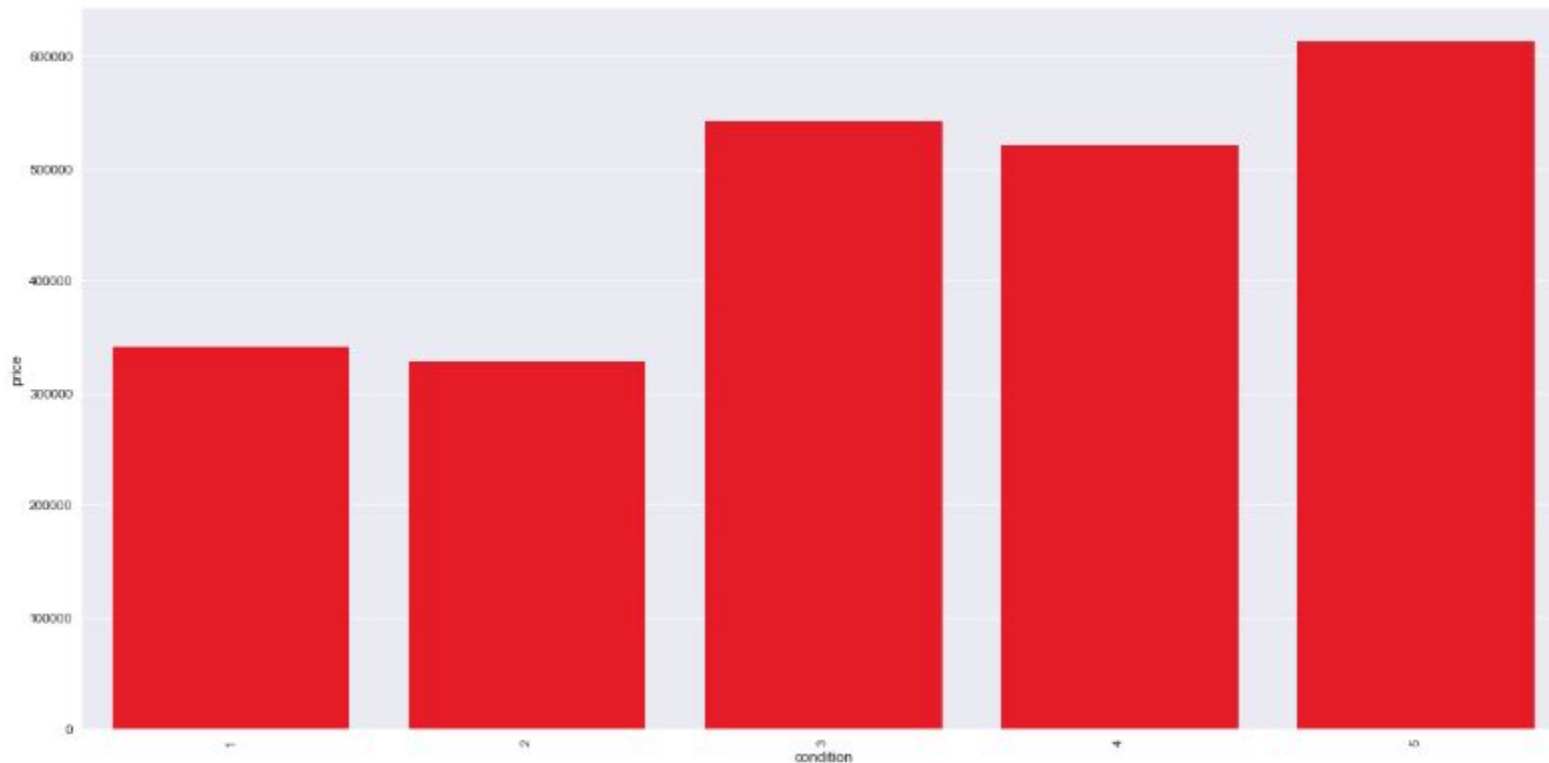
- $\$450,000 / 1,910 =$

\$235.60 per square foot



Question 3

How does the condition of the house affect price?



Model

- **Best Features:**
 - Sqft_living - 0.4919
 - Zipcode - 0.3499
 - Sqft_lot - 0.181
- **Adjusted R-Squared: 0.862**
- **86.2% predictive power**
- **Train Mean Squared Error: 0.0022**
- **Test Mean Squared Error: 0.0023**
- **Train RMSE: 0.047**
- **Test RMSE: 0.048**

Questions and Answers