How Much is Your Home Worth?

July 10, 2020

Project objective: Accurately predict consumer home price.

The Data

Sources:

- King County Government - House Data
- King County GIS Open Data Platform - Location Data

Details:

- 21k houses sold between May 2014 and May 2015.
- Houses valued between $100k and $1m.

Limitations

- Sales data has not been adjusted for inflation.
- Model does not explain all variation in price.
- We assume our product has access to user location data.
- Assume home renovations in data are significant.

Understanding the Pricing Problem

Does Location Matter?

Is a house inside the city of Seattle worth more than one in the suburbs?

Are homes in top school districts valued more highly?

Does Size Matter?

Are larger homes worth more?

- Square footage, number of rooms, floors, etc.

Does Quality Matter?

Is the architecture of high quality?

Are the construction materials high quality?

When was the house built (or last renovated)?

How Much is My House Worth?

Properties:
- 2 bedrooms
- 1.5 floors
- 1.5 bathrooms
- 2,250 square feet
- Grade 8
- Condition 2

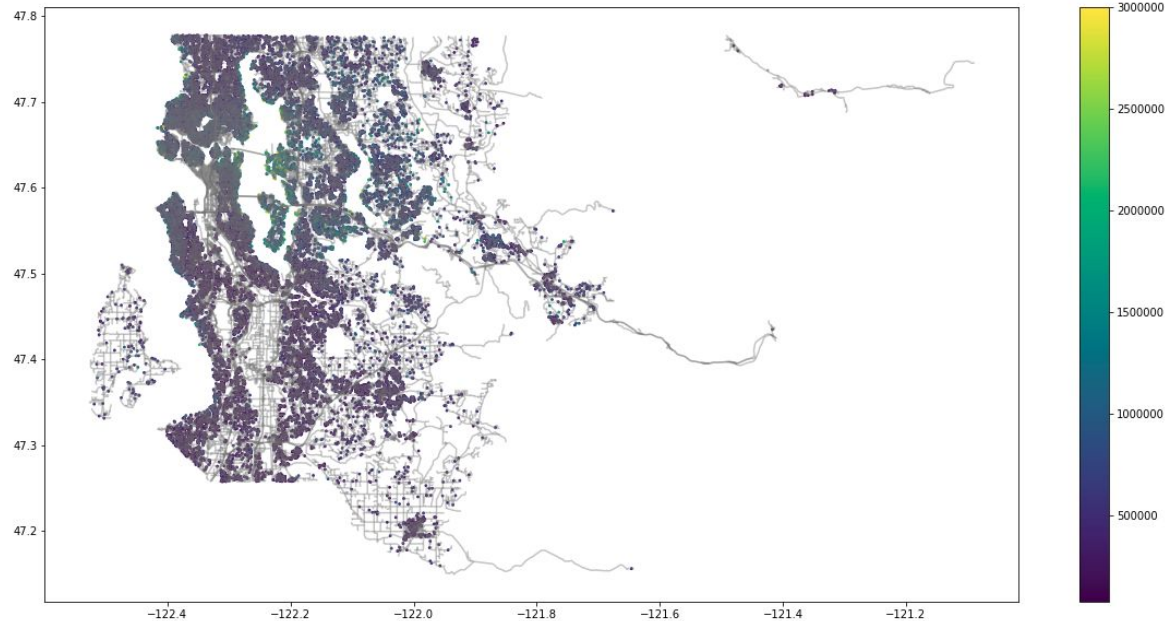How to these factors influence house price in general?

Grade 8/ Year Built 1905/ Total Living Area 2250 SF

Location

Homes with high values are clustered in certain areas.

Possible Factors:
- City
- School District
- Waterfront

Location

School District

Top public school districts are Mercer Island, Lake Washington, Snoqualmie, Bellevue, and Issaquah.

Implications:
- A home in a top district is worth ~$180k more than one in a lower-ranked district, all else equal.

City

Homes in Seattle are worth ~$210k more than homes outside of the city, all else equal.
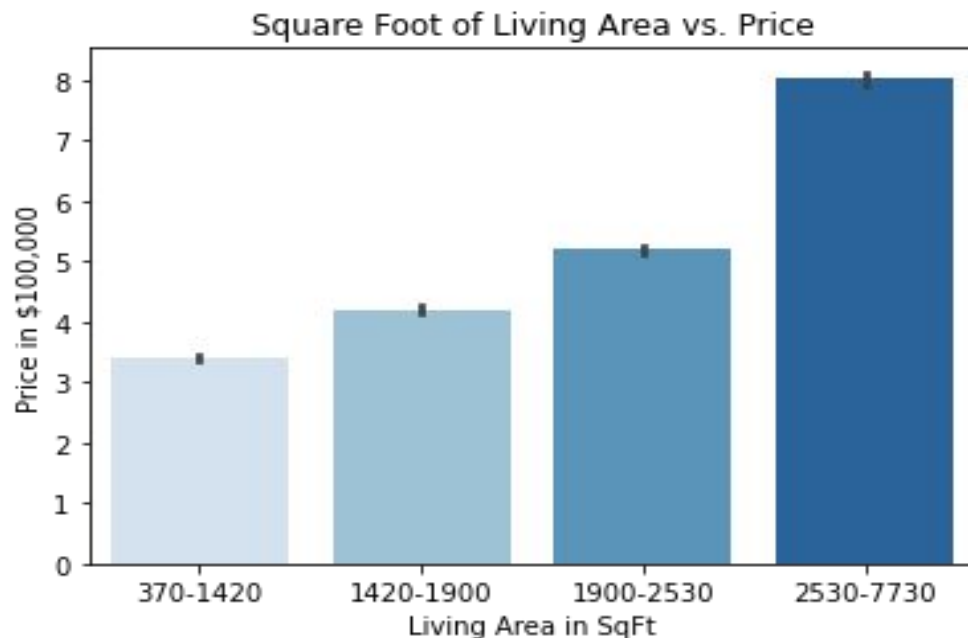
Waterfront

Waterfront homes are worth ~$480k more than inland homes, all else equal.

Home Size

There is a wide range of home types in King County.

Factors:
- Square Foot Total
- Number of Bedrooms
- Number of Bathrooms
- Number of Floors

Square Foot of Living Area vs. Price

Home Size

Square Footage

Each square foot of space increases a home's value by about $140, all else equal. However, it matters where the space increase is in the home.

Client Implications:
- Basement space is worth less than above ground space.

Rooms & Floors

Not all spaces are equally valued.

Client Implications:
- Having more bedrooms can mean a lower home value.
- A 2 floor home is worth less than other layouts.

Quality

Grade:

- 1-13 scale. 'Average' house is rated 7.
- Factors
  - Architectural design quality
  - Construction quality.
  - Compliance with KC building codes.
  - Building materials.

Condition:

- 1-5 scale. 'Average' house is rated 3.
- Factors include quality of maintenance, amount of repairs needed, and age of the home.

Housing Grade vs. Price

Quality & Condition

Grade

A highly rated house has greatly increased value when compared to an average house. Architecture and build quality matter!

Grade 6/ Year Built 1951/ Total Living Area 830 SF

Grade 12/ Year Built 2009/ Total Living Area 3630 SF

Condition

Above average condition ratings increase the value of a home. Lower condition ratings have a smaller effect.

Client Implications:
- Investing in maintenance can pay off when selling a home.

How Much is My House Worth?

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Number of floors ('1' for one floor, '1h' for 1.5 floors):  1h
Number of bedrooms (whole number):  2
Number of bathrooms:  1.5
Is your house on the waterfront? (1 for yes, 0 for no):  0
Total square feet:  2250
House grade(whole number 3-13):  8
House condition (whole number 1-5):  2
Your house is worth between $472,675 and $533,479!
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Grade 8/ Year Built 1905/ Total Living Area 2250 SF

Takeaways

Location
- City of Seattle
- Top School District
- Waterfront

Season
- Homes sell for more in the spring.

Quality & Condition
- Invest in high quality maintenance of the home.
- Quality of design & architecture are important.

Rooms & Floors
- Bedrooms are less valuable.
- Different floor plans have different values.

Square Footage
- Above ground space is more important than basement size
- Large increases in square feet lead to increased valuations

Further Research

Our model does not explain all variance in price for King County homes. With more data, more accurate predictions would be possible.

Improve Predictions

- Are different factors valuable in Seattle vs the suburbs?
- Trends in housing prices over time - dataset is outdated
- Test potential additional models / cross-validate
- Additional Factors

Create User Interface

- Deploy tool to consumers.

Questions?