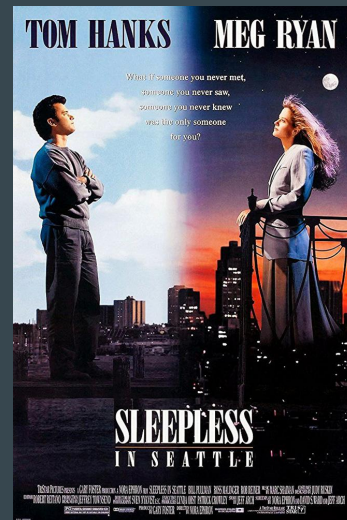


Investing in Real Estate in Greater Seattle

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By Tom & Gracey



2014 - 2015 Housing Data

- 21,597 real estate properties sold
- Includes information on:
 - Floor and lot areas
 - No. of bedrooms and bathrooms
 - Neighbourhood
 - Condition and age
- Goal:
 - Find the best predictor of property prices
 - Show if renovating the property increases the value
 - Find out the year the houses lasted the best
 - Uncover factors that agents don't consider in pricing properties
 - Bypass the biases agents might have

Data Cleaning Process

By looking at the raw data impartially, we can see past what we **assume** to be fundamental in pricing a property, and find out what is **actually** important in buying a property:

- We made graphs for each predictor
 - Spread of data was as expected (normally distributed)
 - Spotted exceptional houses (outliers)
- We looked at the ranges and checked for typo errors and invalid values
- We checked whether the related predictors were matching/had been correctly entered
- **We made the following assumptions:**
 - Where date sold comes before year built, properties were sold during the pre-selling period
 - Properties near the city and the water are more desirable hence more expensive
 - Properties with no info on waterfront view has no waterfront view
 - Properties with no info on no. of views were not viewed prior to being sold
 - Properties with no info on year renovated were not renovated prior to being sold (proxy = year built)
 - Total and upper floor areas are correct therefore $\text{basement} = \text{total floor area} - \text{upper floor area}$

Interesting Price Predictors

Grade

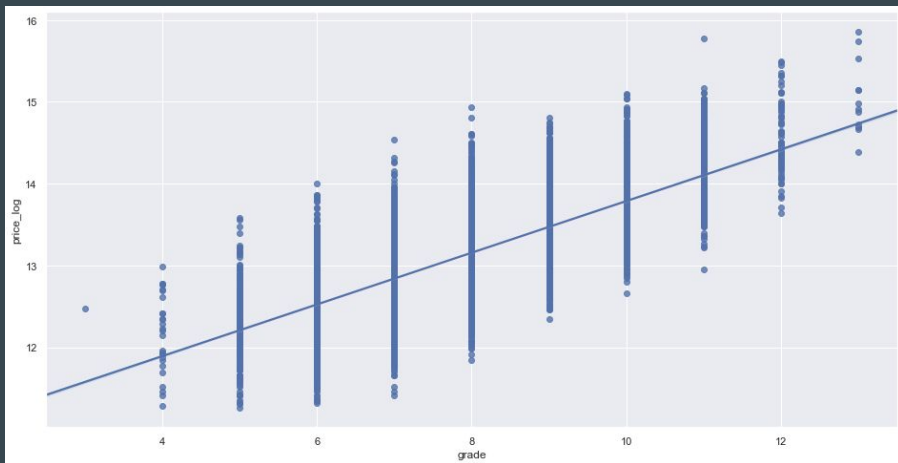
King County grading system: 1-3 falls short of building construction and design, 7 has an average level of construction and design, and 11-13 have a high quality level of construction and design

Condition

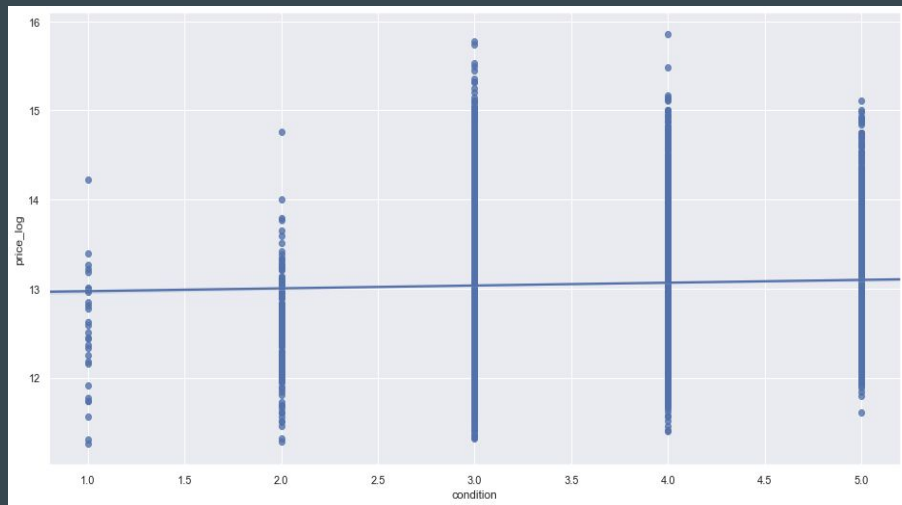
An index from 1 to 5 on the overall condition of the property

Interesting Price Predictors

Grade vs Log Price:



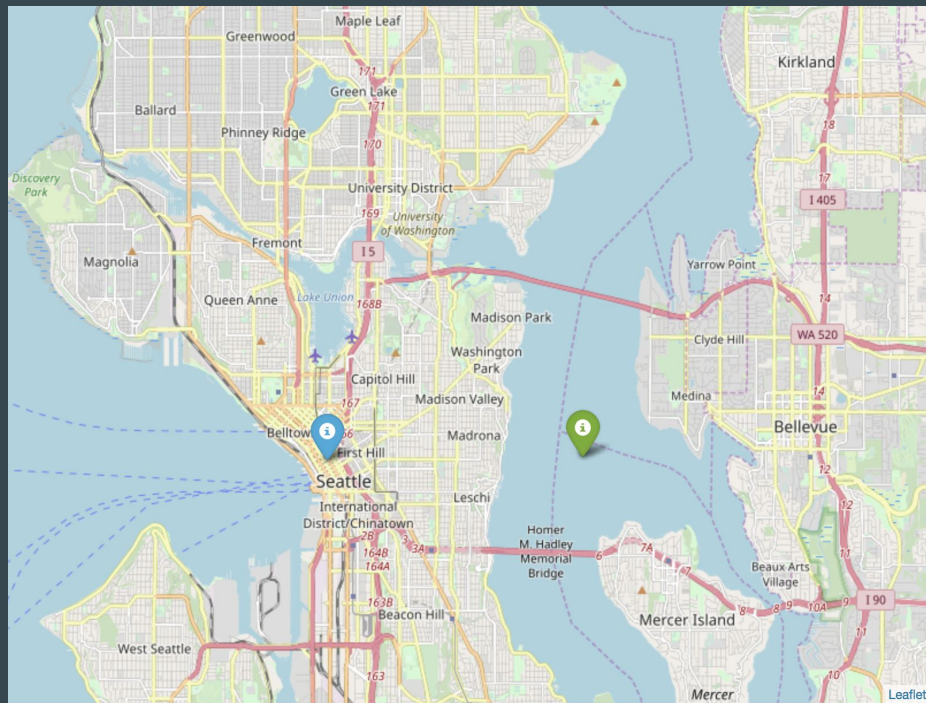
Condition vs Log Price:



Pricing Model

73% of the variation in price of the properties close to Seattle and the marina are explained by the following:

- Total floor area
 - +0.8849
- Neighbourhood grade
 - +0.3263
- Property condition
 - +0.0161



It is worth upgrading* the Grade and Condition?

Based on the model:

- Condition does not significantly affect the price (positive but low correlation)
- Grade increases the price (highly positive correlation)

Based on the housing data

- 176 properties resold within a year
- Resale properties increased as much as 76% (mean per zipcode), and 30% mean
- Properties were not renovated
- Grade and condition were unchanged

Conclusion: Yes and No

* other predictors held constant

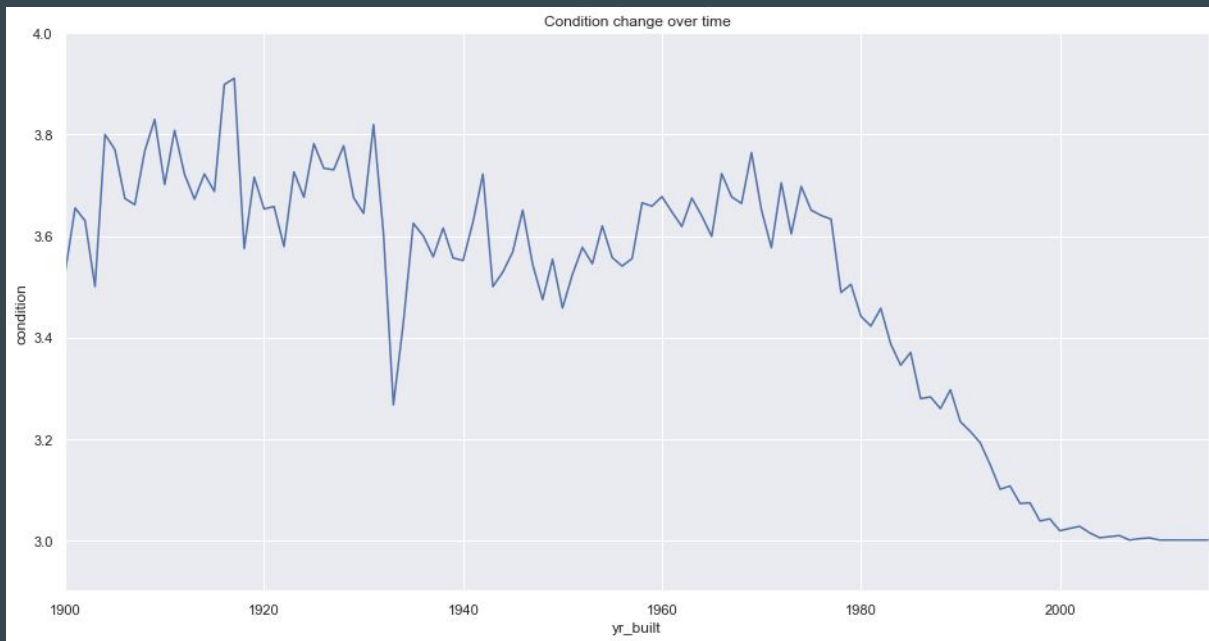
It is worth upgrading* the Grade and Condition?

	price_percent_change	mean_days	change_grade	change_condition	renovated
zipcode					
98148	0.762921	243.000000	0.0	0.0	0.0
98116	0.561002	258.000000	0.0	0.0	0.0
98032	0.517309	119.000000	0.0	0.0	0.0
98126	0.496990	146.500000	0.0	0.0	0.0
98118	0.460201	184.555556	0.0	0.0	0.0
98178	0.449338	216.000000	0.0	0.0	0.0
98011	0.446809	136.000000	0.0	0.0	0.0
98117	0.436667	206.800000	0.0	0.0	0.0
98034	0.436024	147.000000	0.0	0.0	0.0
98106	0.424898	205.600000	0.0	0.0	0.0

* other predictors held constant

What houses lasted the test of time?

Properties built in 1917 lasted the best with average condition of 3.92.



What other factors we need to consider?

- Zoning value (\$ per sqft of nearest neighbors)
- Lot type (corner, T-lot, perimeter, cul-de-sac, inner)
- Restriction and encumbrances
- More information regarding the neighbourhood (proximity to schools, church, cemetery and shopping malls, air quality, crime rate)

Conclusions

Housing Data and Price Model

- Condition and grade are positively correlated to the price, but condition has surprisingly little effect
- We found that 73% of variation in price was represented by changes in floor area, neighbourhood grade and condition of the property

Grade and Condition

While condition can be improved, when choosing between 2 properties at the same price level it is worth looking at the official grade. Presented with two houses of similar price and that you like equally, consider that one house might be hiding a poorer condition rating, and therefore it might be comparatively overpriced.

The condition of a house doesn't impact the price greatly, so we would not encourage people who want to buy a property to 'do it up' as in this market, we don't expect it to be worth the added cost and time.