



School and Pool for Digital Talent

King County House Sales

- Presentation -



Sven Rutsch

Stakeholder



For people who are **interested in real estate** in order to make profits from it. For example real estate agents, real estate companies or private persons **who deal with real estate or houses.**



Goal



1. Recommendations for action for the King County property or housing market
2. Model to predict the house prices



Variable	Description
Id	Unique ID for each home sold
Date	Date of the home sale
Price	Price of each home sold
Bedrooms	Number of bedrooms
Bathrooms	Number of bathrooms, where .5 accounts for a room with a toilet but no shower
Sqft_living	Square footage of the apartments interior living space
Sqft_lot	Square footage of the land space
Floors	Number of floors
Waterfront	A dummy variable for whether the apartment was overlooking the waterfront or not
View	An index from 0 to 4 of how good the view of the property was
Condition	An index from 1 to 5 on the condition of the apartment,
Grade	An index from 1 to 13, where 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
Sqft_above	The square footage of the interior housing space that is above ground level
Sqft_basement	The square footage of the interior housing space that is below ground level
Yr_built	The year the house was initially built
Yr_renovated	The year of the house's last renovation
Zipcode	What zipcode area the house is in
Lat	Latitude
Long	Longitude
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

Data Overview



**21600 house sales between
September 2014 and October 2015**

Business questions

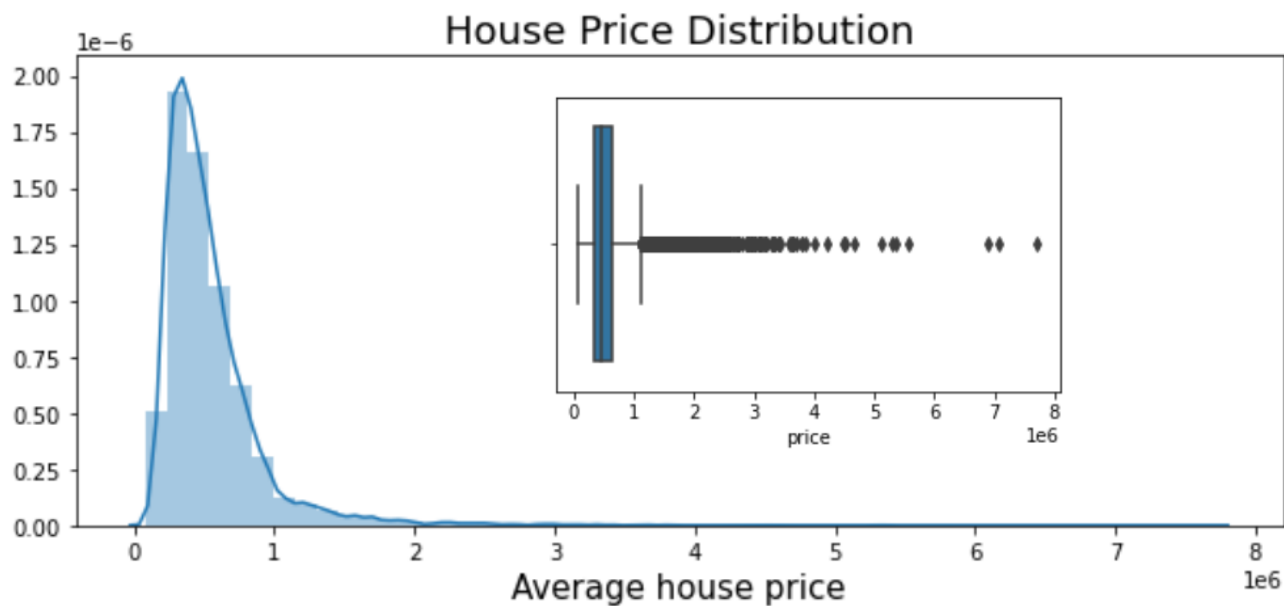


- Which factors influence the price?
- Can specific patterns and characteristics be identified?
- How well can the price be predicted?
- Which measures and insights can be used to give advantages to home sellers, such as real estate agents?

Average House

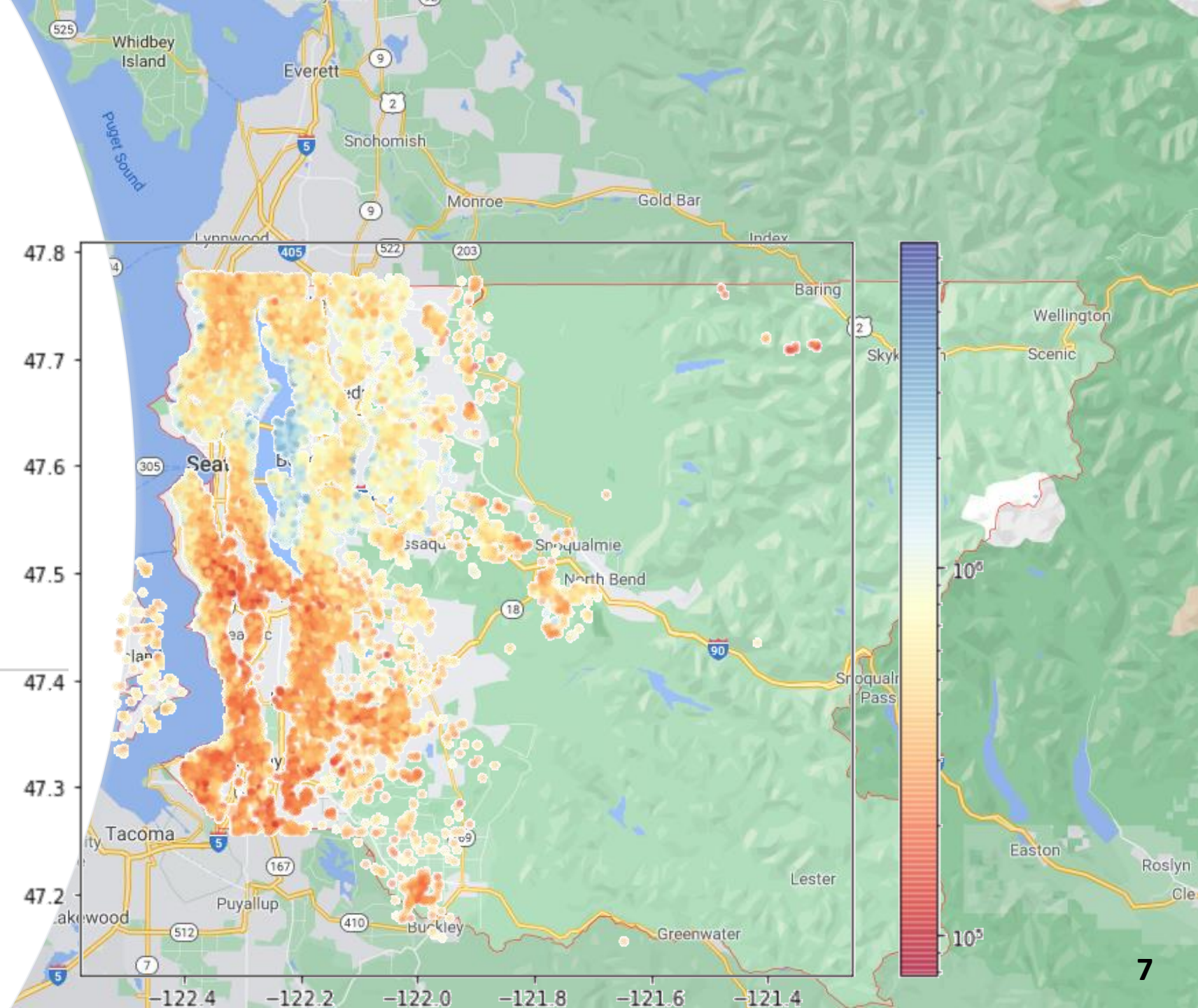


- **Price:** \$540.296
- **Sqft_Living:** 2080sqft
- **Bedrooms:** 3.37
- **Bathrooms:** 2.1
- **Floors:** 1.49
- **Condition:** 3.41
- **Grade:** 7.66



King County, Washington

Map with price values



Insights

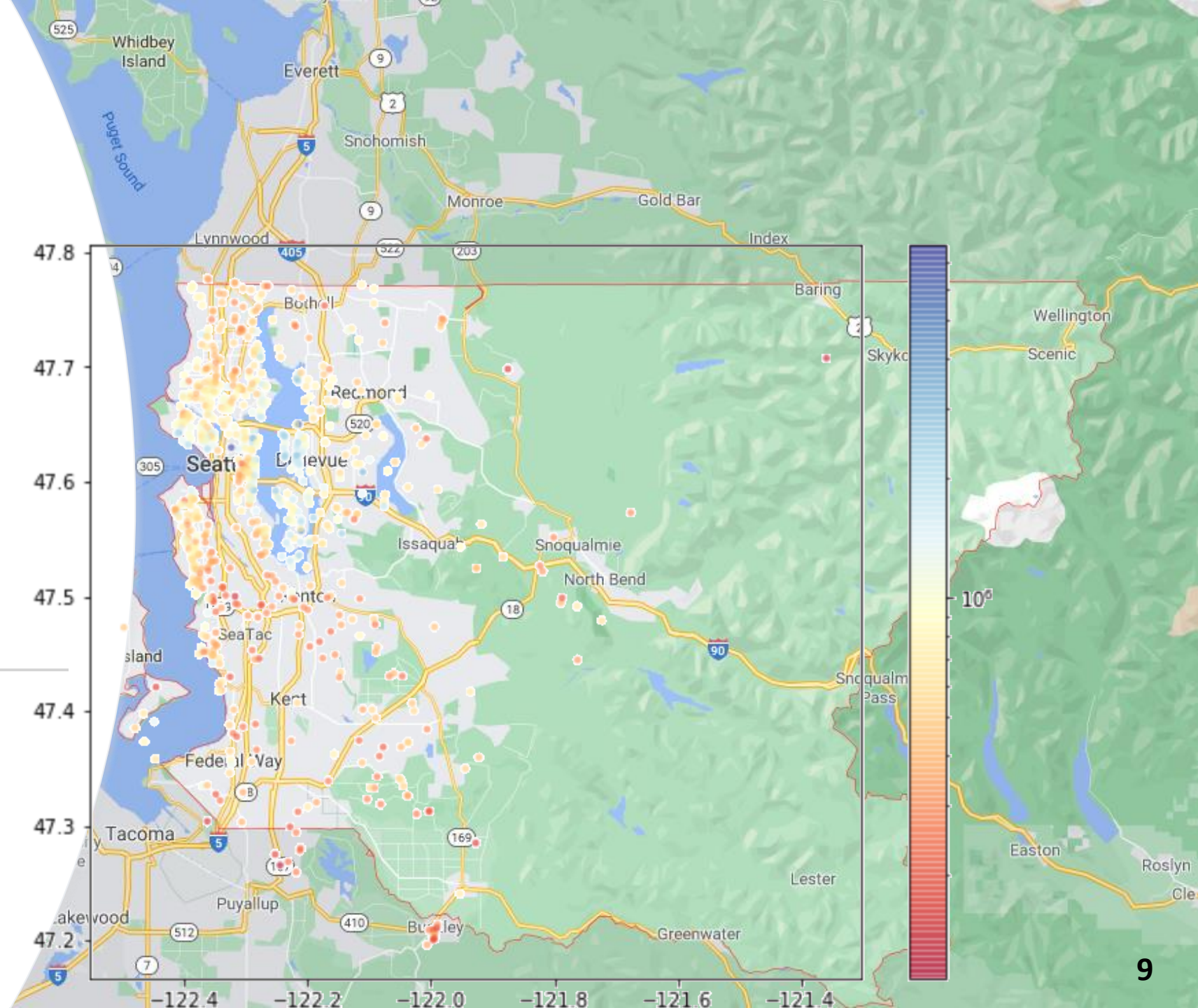


- only 3.5% of the houses were renovated
- average sales value for these houses at almost \$770,000

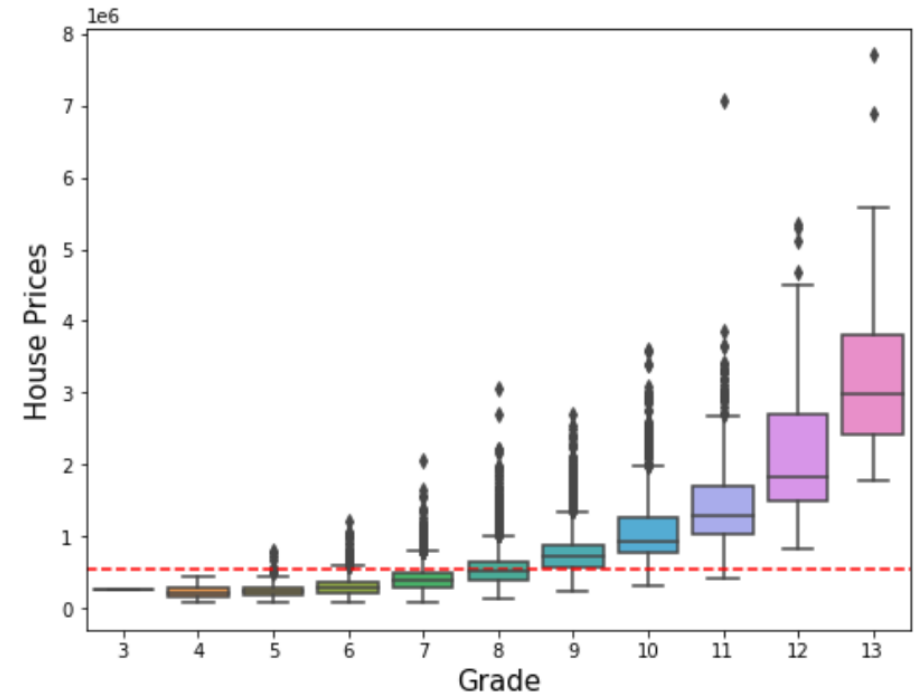
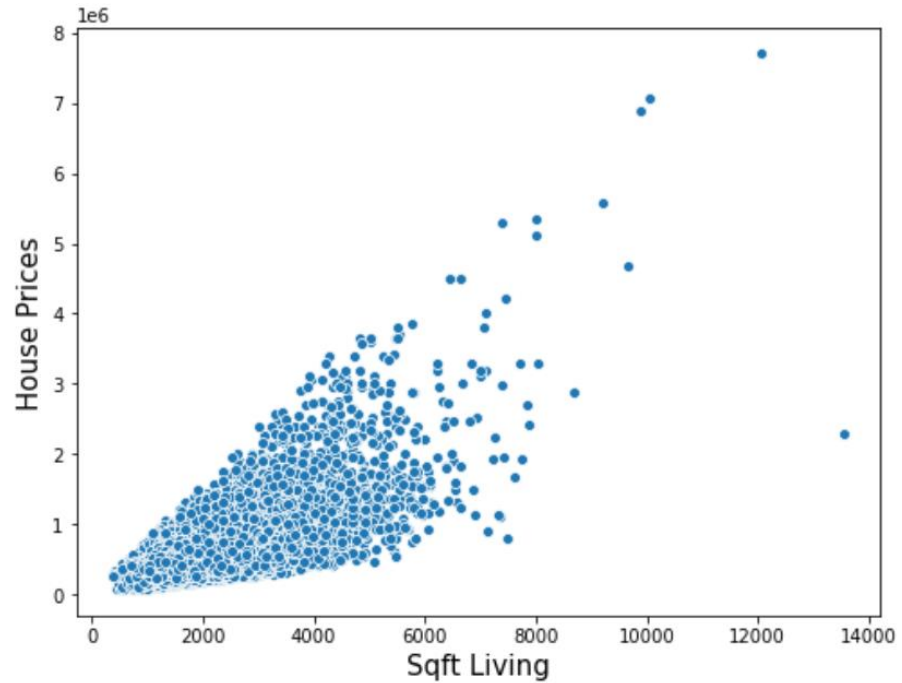


King County, Washington

*Map with price values -
only from renovated
houses*

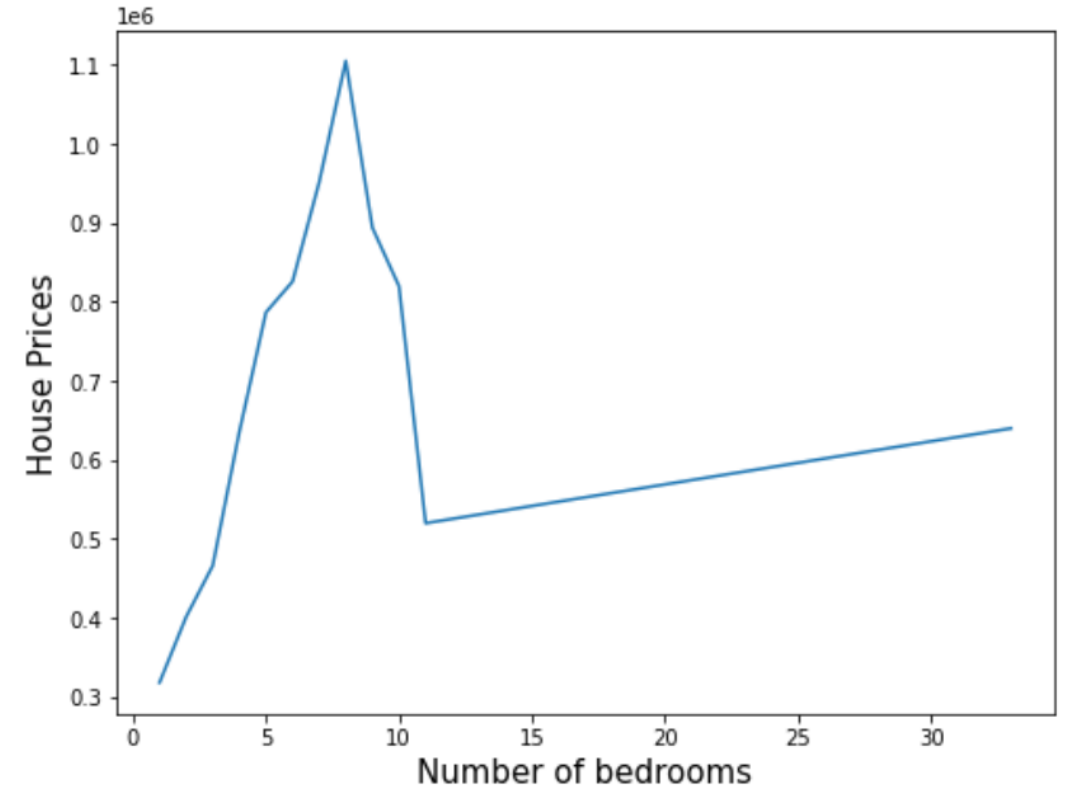
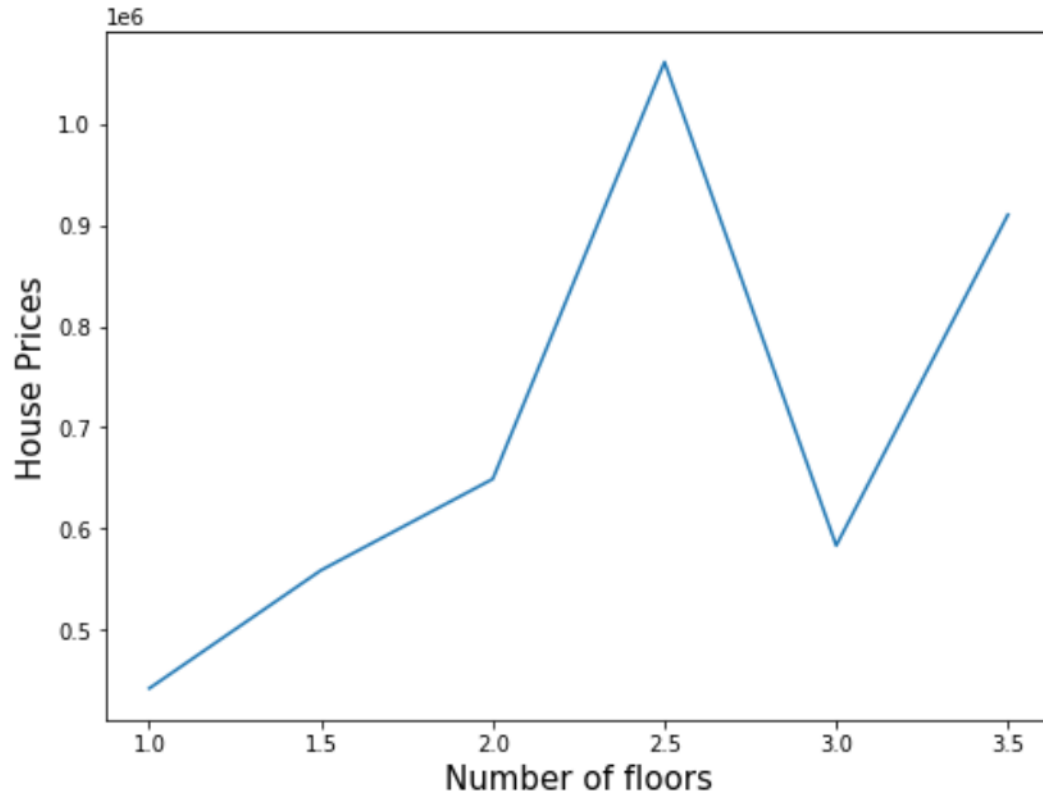


Insights



- Price & Grades have an exponential relationship and have a strong correlation like sqft_living to price

Insights



- More floors and more bedrooms does not directly mean a higher price

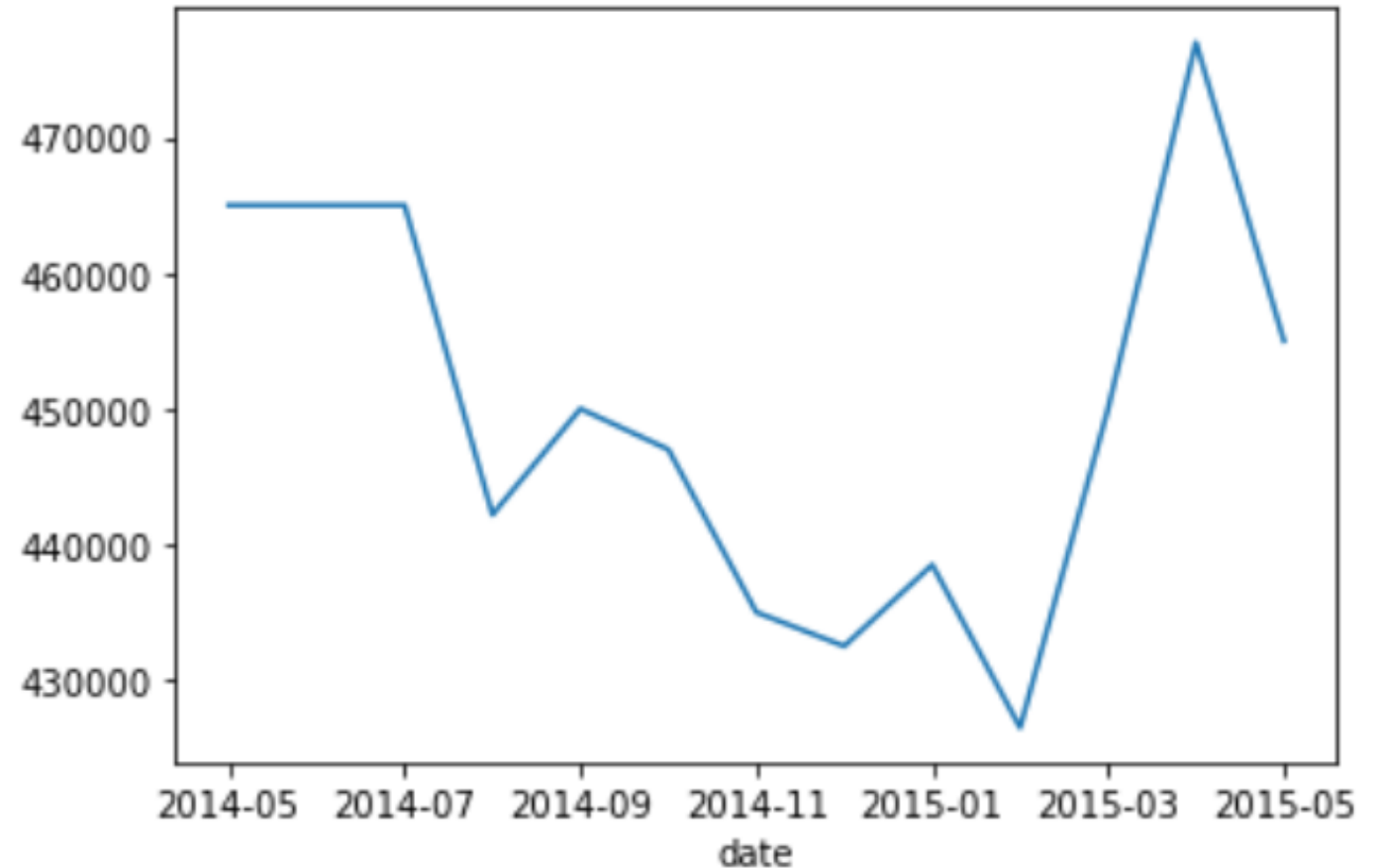
Insights



- Conspicuousness in the price development, since the median prices are lower in winter

✓ **Sell** in summer

✓ **Buy** in winter





7 Reasons to Buy a House in the Winter

Written by [Diane Schmidt](#) | Updated 02/04/20

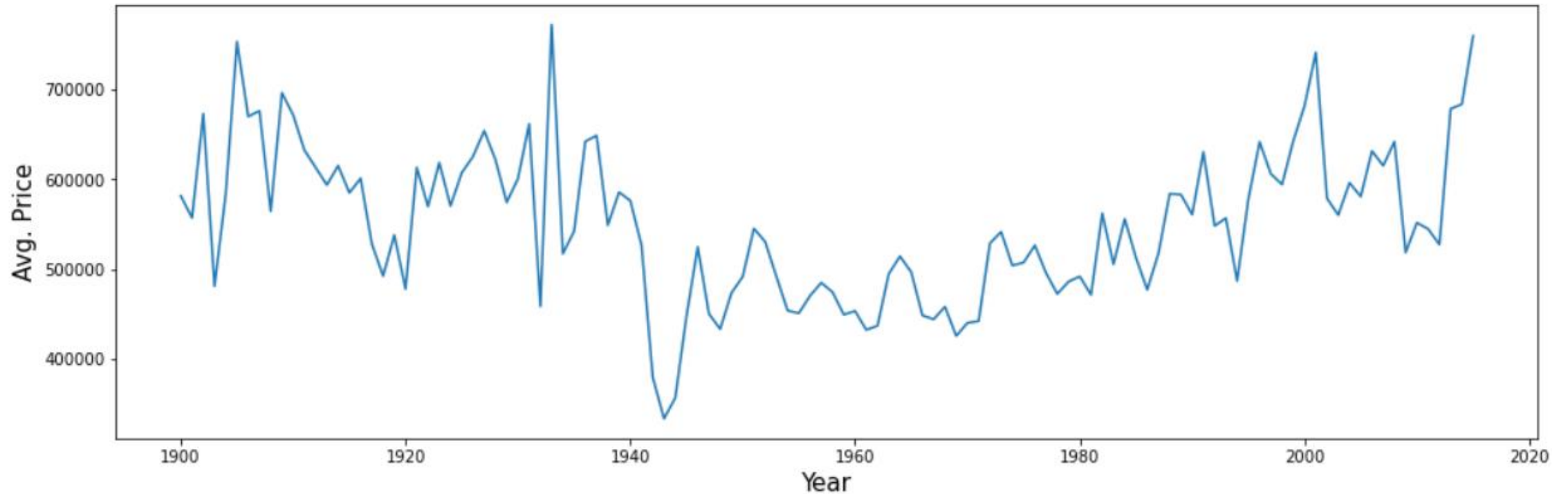
Buying or Selling a Home in Winter: What You Need to Know

How much will I save if I buy a house in the winter?

Seasonality affects when to sell a house

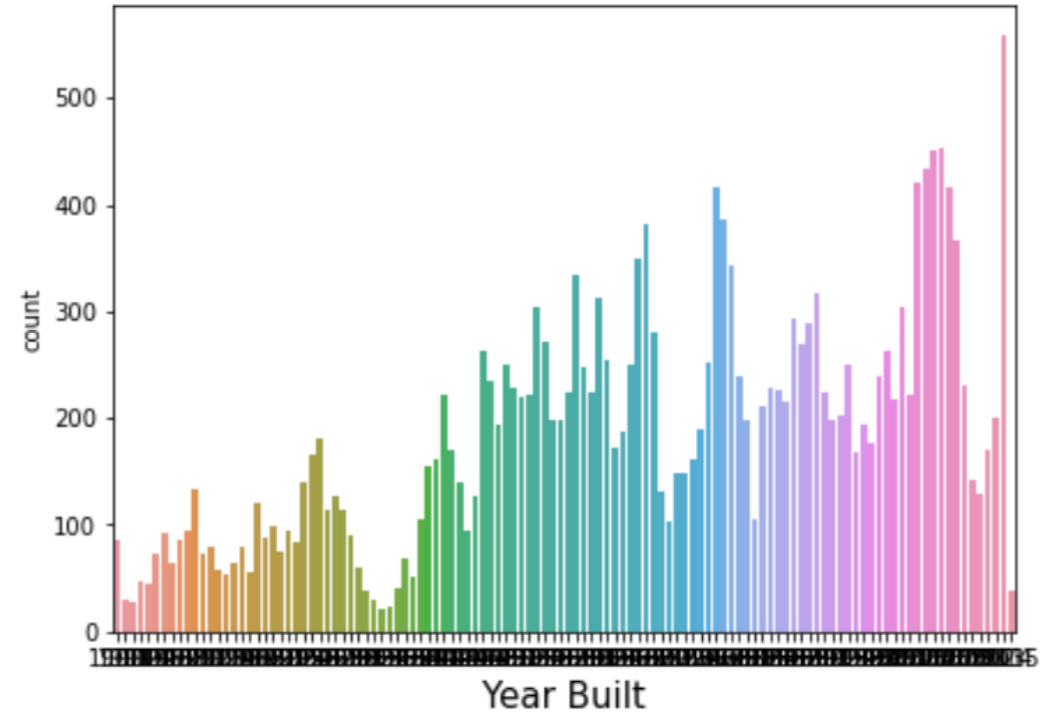
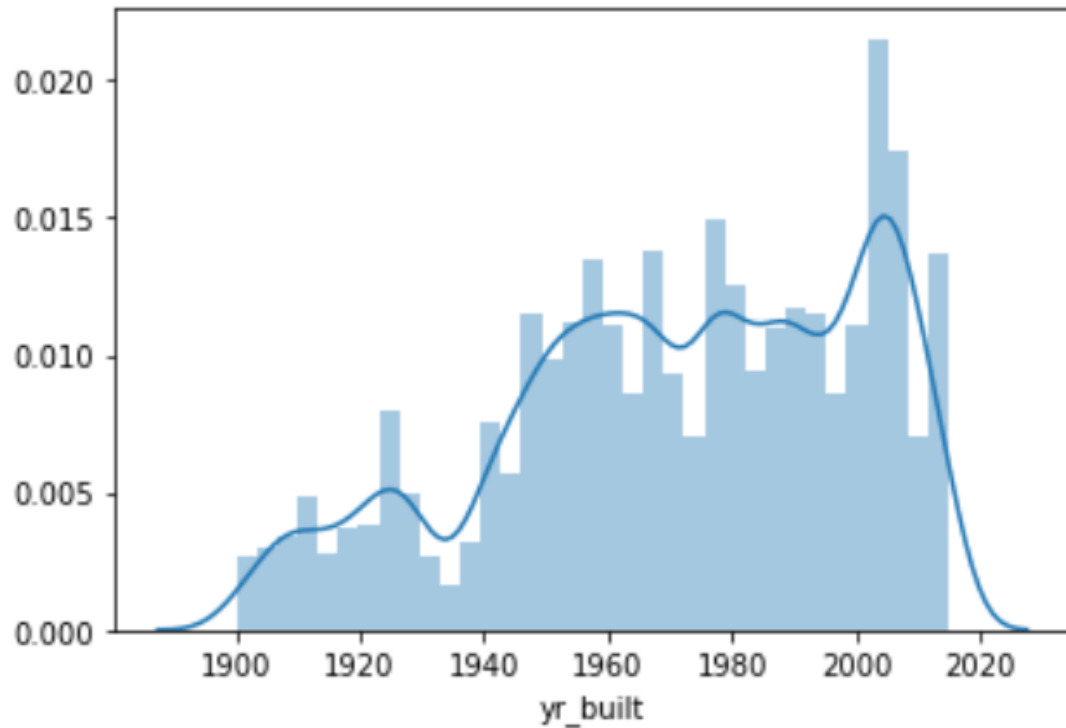
Selling a house in the spring

Insights



- old houses do not directly mean that they are worth less

Insights



- Slight increase in the number of houses built per year

Linear Regression



KPI	Value
R-squared	0.77
MAPE	18%



grade, condition, zipcode & sqft_living as predictors

Linear Regression



... Without Outliers (2.5%)

KPI	Value
R-squared	0.75
MAPE	14%



grade, condition, zipcode & sqft_living as predictors

Recommendations



- Sell in summer, buy in winter
- Concentrate on houses from 1980-2020 and 1900-1940
- Renovate houses and sell more expensive
- Do not concentrate on as many floors and bedrooms as possible
- Pay more attention to the location, living space and grades



Recommendations

Pricing Indicator

Map of all Listings

Grade

0.5 1 2 3 4 5 6 7

Zipcode

83753

Sqft Living

2000

Condition

Select...

Price Prediction

Recommended price: \$540.000

Sensible range: \$440.000 - \$640.000

Prediction model could be used in a web-based configurator to predict house prices with corresponding properties or attributes