Investing in Real Estate in King County

By Grace and Tom
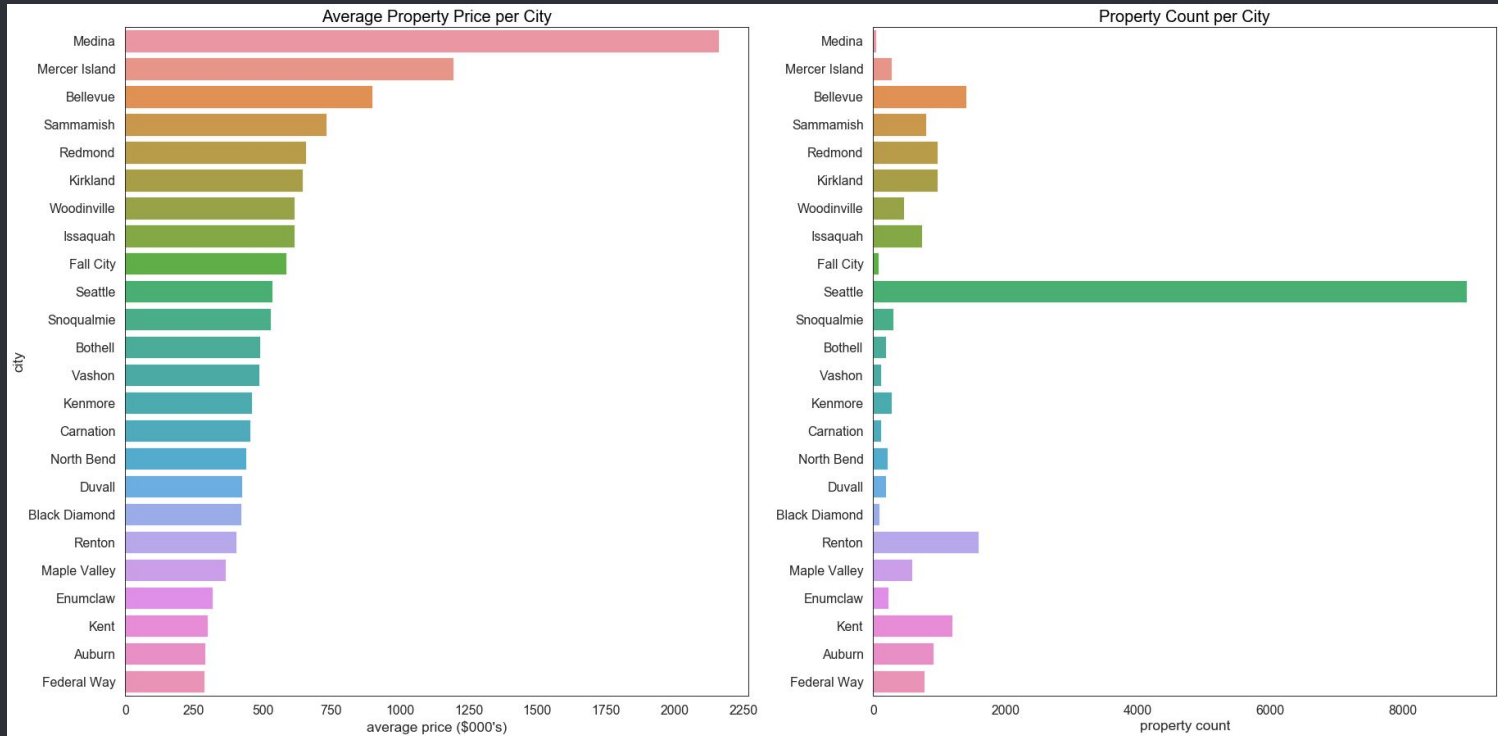
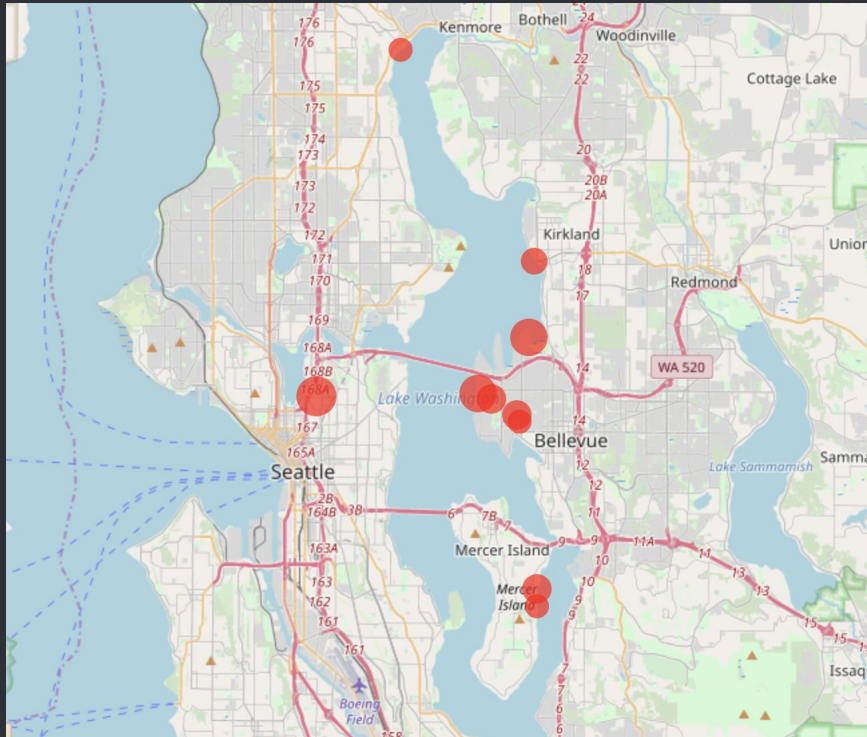# 21,597 properties

Sold between 2014 and 2015

- Lot and floor areas
- Bedroom, bathroom and floor counts
- Location
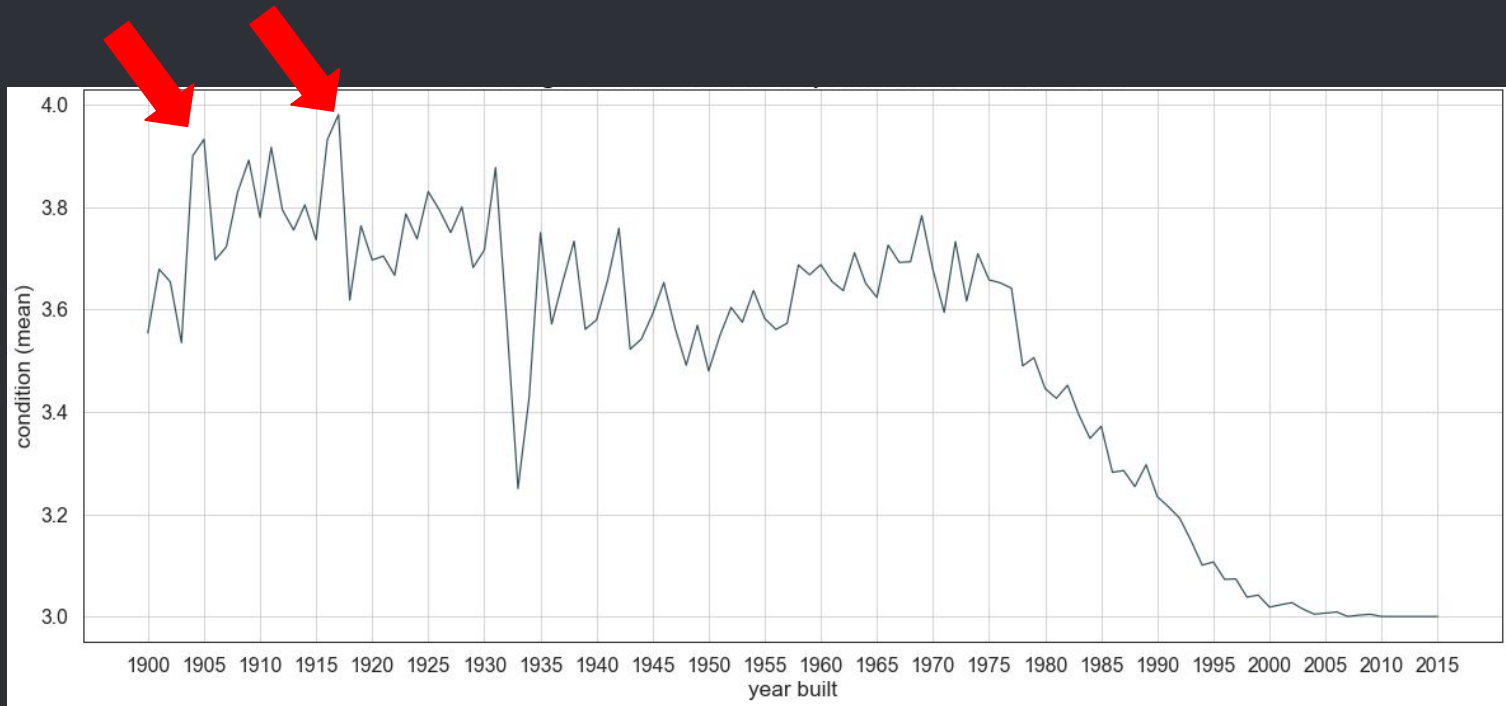- Condition and grade

Across 24 cities in King County

Where are the expensive properties located?

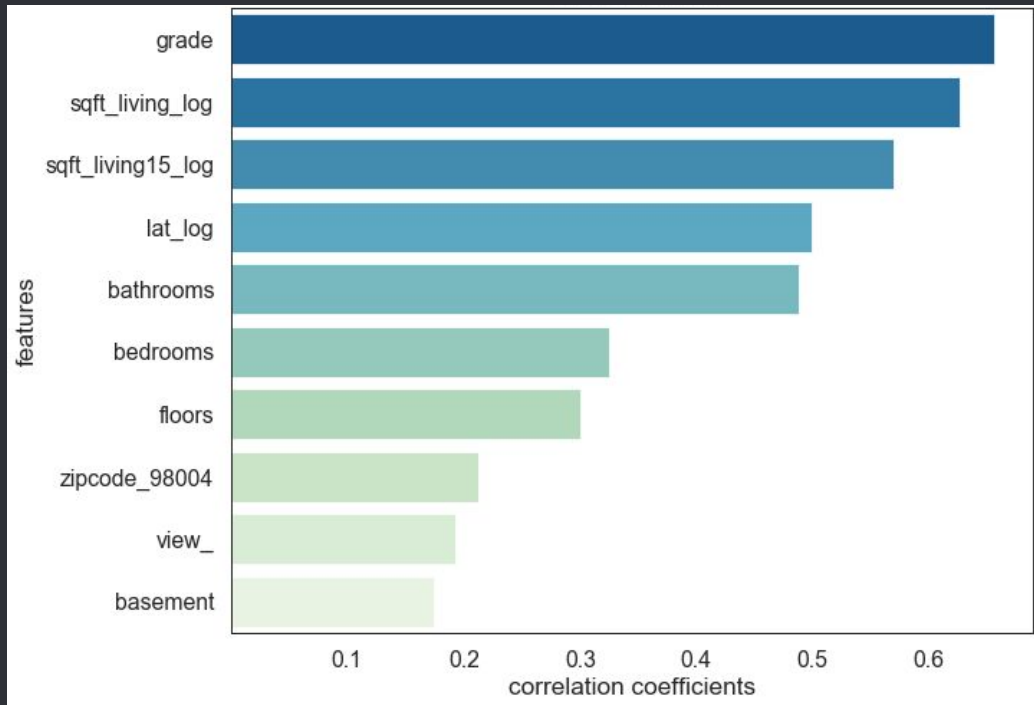| $M	City	Zip Code
7.70	Seattle	98102
7.06	Bellevue	98004
6.89	Medina	98039
5.57	Medina	98039
5.35	Bellevue	98004
5.30	Mercer Island	98040
5.11	Kirkland	98033
4.67	Mercer Island	98040
4.50	Seattle	98155
4.49	Bellevue	98004

What properties have lasted the test of time?

Is it worth upgrading to make a profit?

No renovation done on all of these properties!

What features affect the price the most?

Model Comparison

Features	R^2	MSE
sqft_living_log * grade lat_log * yr_sold_log floors * condition	**0.661**	**0.0144**
grade lat_log bedrooms	**0.6218**	**0.0160**
grade^2 lat_log^2 bedrooms^2	**0.6204**	**0.0161**

What's next?

Further improve the pricing model through:

- Other regression techniques
- Feature Engineering
  - External data (market value, lot type, restrictions & encumbrances, unemployment rate, household income, air quality, crime rate, etc.)

Thanks!
ANY QUESTIONS?

Appendix

Dataset

The dataset consists of 21597 property listings in King County sold between 2014 and 2015. Each listing has the following information:

- **id** - unique identifier for the property
- **date** - date property was sold
- **price** - property selling price
- **bedrooms** - no. of bedrooms
- **bathrooms** - no of bathrooms
- **sqft_living** - square footage of the improvement
- **sqft_lot** - lot area in sqft.
- **floors** - no. of floor levels
- **waterfront** - 1 has waterfront view, 0 none
- **view** - grade corresponding to the view the property has (Mt.Rainier, Olympic, Puget Sound, lake, river, creek, skyline), coded 0-4
- **condition** - building condition relative to age and grade, coded 1-5 (source)
- **grade** - construction quality of improvements, coded 1-13 (source)
- **sqft_above** - square footage of the improvement apart from basement
- **sqft_basement** - square footage of the basement
- **yr_built** - year built
- **yr_renovated** - year renovated
- **zipcode** - zipcode
- **lat** - latitude coordinate
- **long** - longitude coordinate
- **sqft_living15** - square footage of interior housing living space for the nearest 15 neighbors
- **sqft_lot15** - square footage of the land lots of the nearest 15 neighbors

Dataset

	count	mean	std	min	25%	50%	75%	max
price	21597.0	5.402966e+05	3.673681e+05	78000.000000	3.220000e+05	4.500000e+05	6.450000e+05	7.700000e+06
yr_sold	21597.0	2.014323e+03	4.676190e-01	2014.000000	2.014000e+03	2.014000e+03	2.015000e+03	2.015000e+03
yr_built	21597.0	1.971000e+03	2.937523e+01	1900.000000	1.951000e+03	1.975000e+03	1.997000e+03	2.015000e+03
yr_renovated_	21597.0	1.972945e+03	2.894539e+01	1900.000000	1.954000e+03	1.977000e+03	1.999000e+03	2.015000e+03
age_sold	21597.0	4.332329e+01	2.937728e+01	-1.000000	1.800000e+01	4.000000e+01	6.300000e+01	1.150000e+02
age_renovated	21597.0	1.945455e+00	1.119530e+01	0.000000	0.000000e+00	0.000000e+00	0.000000e+00	1.140000e+02
renovated	21597.0	3.444923e-02	1.823843e-01	0.000000	0.000000e+00	0.000000e+00	0.000000e+00	1.000000e+00
bedrooms	21597.0	3.373200e+00	9.262989e-01	1.000000	3.000000e+00	3.000000e+00	4.000000e+00	3.300000e+01
bathrooms	21597.0	2.115826e+00	7.689843e-01	0.500000	1.750000e+00	2.250000e+00	2.500000e+00	8.000000e+00
sqft_living	21597.0	2.080322e+03	9.181061e+02	370.000000	1.430000e+03	1.910000e+03	2.550000e+03	1.354000e+04
sqft_lot	21597.0	1.509941e+04	4.141264e+04	520.000000	5.040000e+03	7.618000e+03	1.068500e+04	1.651359e+06
sqft_above	21597.0	1.788597e+03	8.277598e+02	370.000000	1.190000e+03	1.560000e+03	2.210000e+03	9.410000e+03
sqft_basement_	21597.0	2.917250e+02	4.426678e+02	0.000000	0.000000e+00	0.000000e+00	5.600000e+02	4.820000e+03
basement	21597.0	3.929712e-01	4.884218e-01	0.000000	0.000000e+00	0.000000e+00	1.000000e+00	1.000000e+00
floors	21597.0	1.494096e+00	5.396828e-01	1.000000	1.000000e+00	1.500000e+00	2.000000e+00	3.500000e+00
waterfront_	21597.0	6.760198e-03	8.194394e-02	0.000000	0.000000e+00	0.000000e+00	0.000000e+00	1.000000e+00
view_	21597.0	2.331805e-01	7.646726e-01	0.000000	0.000000e+00	0.000000e+00	0.000000e+00	4.000000e+00
condition	21597.0	3.409825e+00	6.505456e-01	1.000000	3.000000e+00	3.000000e+00	4.000000e+00	5.000000e+00
grade	21597.0	7.657915e+00	1.173200e+00	3.000000	7.000000e+00	7.000000e+00	8.000000e+00	1.300000e+01
sqft_living15	21597.0	1.986620e+03	6.852305e+02	399.000000	1.490000e+03	1.840000e+03	2.360000e+03	6.210000e+03
sqft_lot15	21597.0	1.275828e+04	2.727444e+04	651.000000	5.100000e+03	7.620000e+03	1.008300e+04	8.712000e+05
lat	21597.0	4.756009e+01	1.385518e-01	47.155900	4.747110e+01	4.757180e+01	4.767800e+01	4.777760e+01
long	21597.0	-1.222140e+02	1.407235e-01	-122.519000	-1.223280e+02	-1.222310e+02	-1.221250e+02	-1.213150e+02

- ◦ Presentation template by <u>SlidesCarnival</u>
- ◦ Photographs by <u>Unsplash</u>