



House Sales in King County, Seattle, USA

Predicting house prices,
using sales data from May
2014 to May 2015

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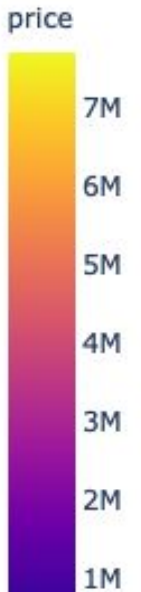
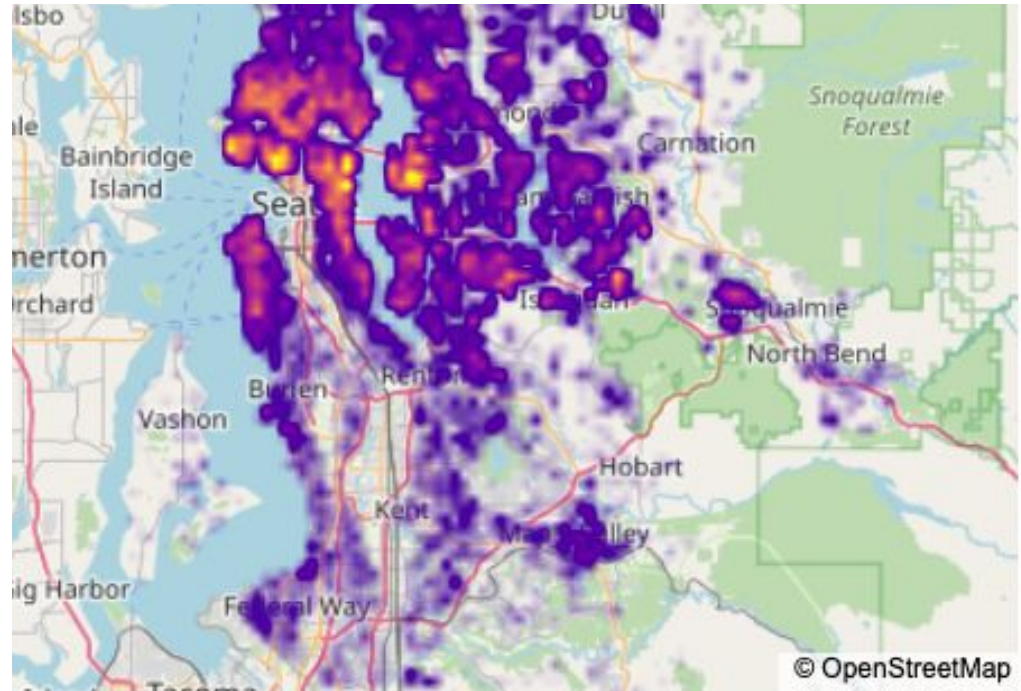
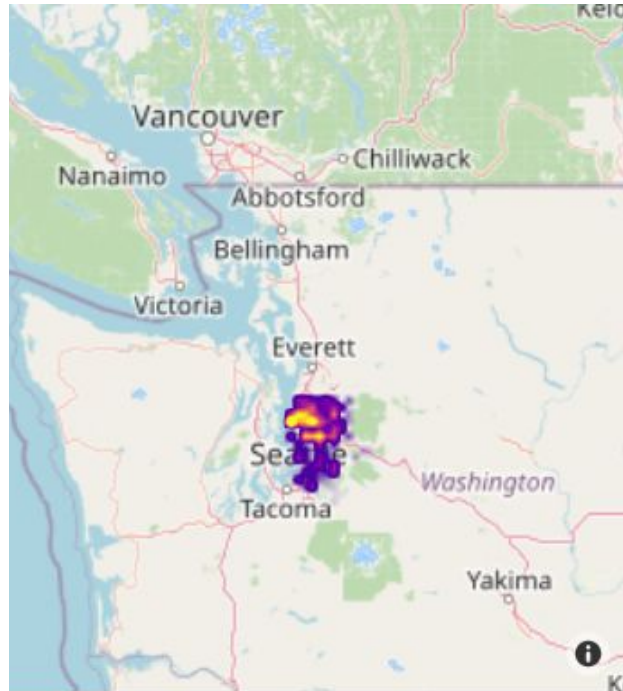
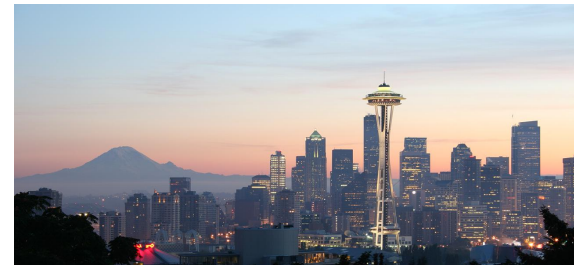
01 × **King's County**
A quick look at the dataset

02 × **Bens's Old House**
Selling a house in King County

03 × **Karl's New House**
Waterfront, cheap, and available.

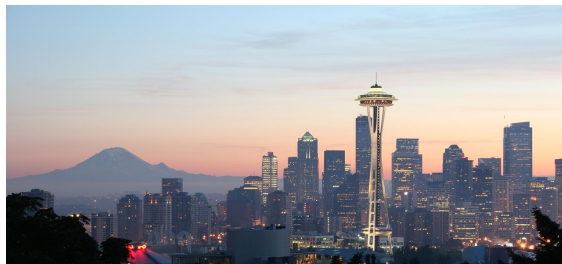
04 × **Model Validation**
Test-train-split-validation and the RMSE

King County, USA



© OpenStreetMap

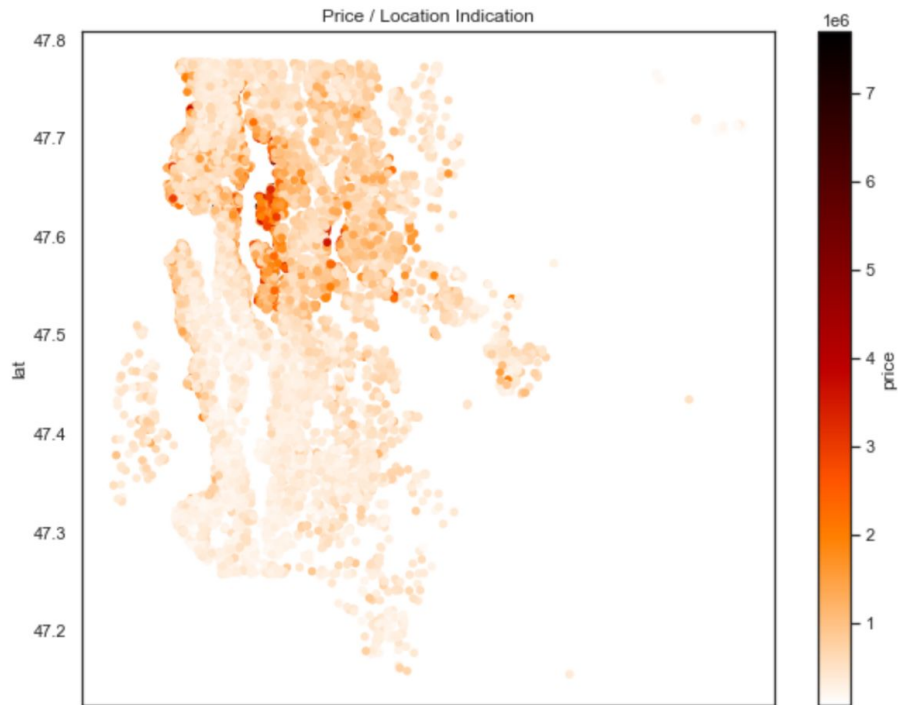
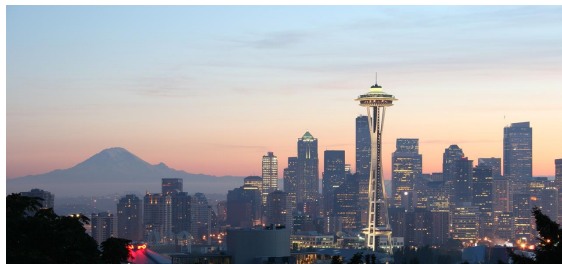
King County, USA



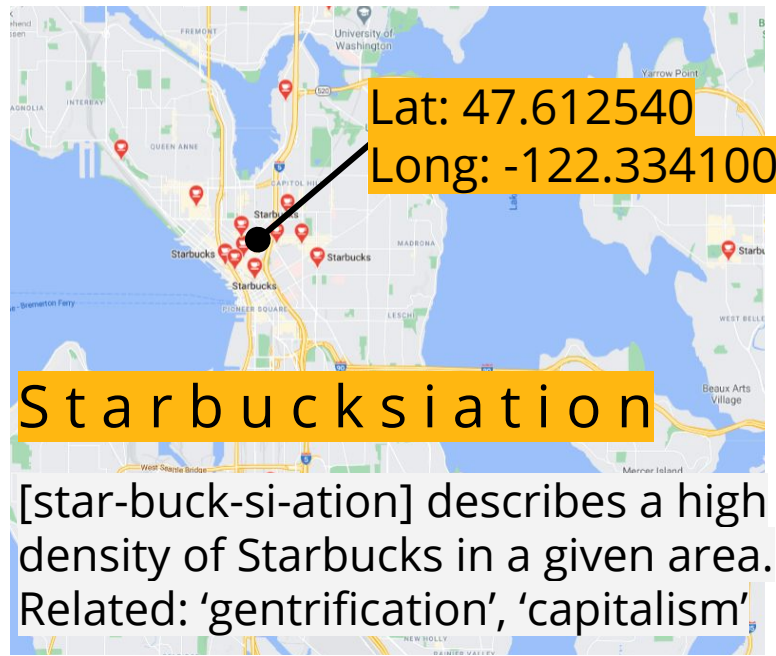
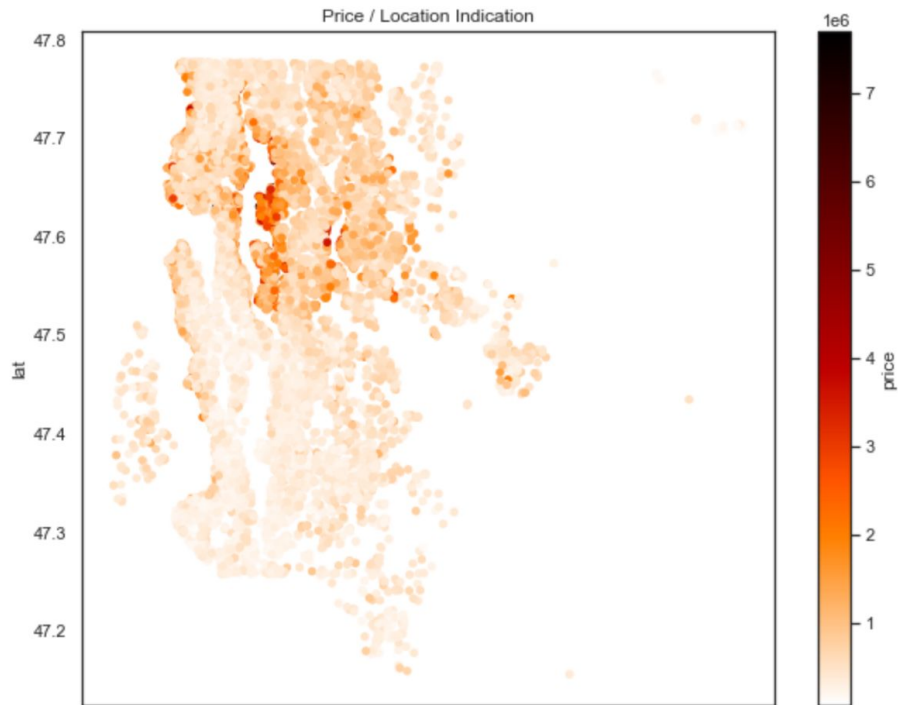
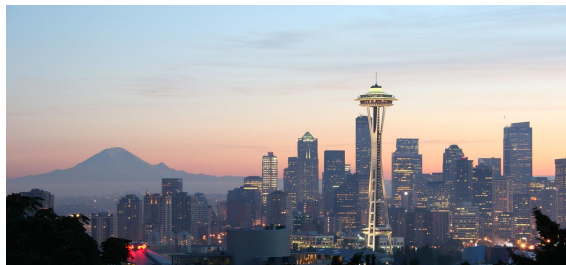
Is this the
middle of
Seattle?

Cheap
waterfront?
Sadly not.

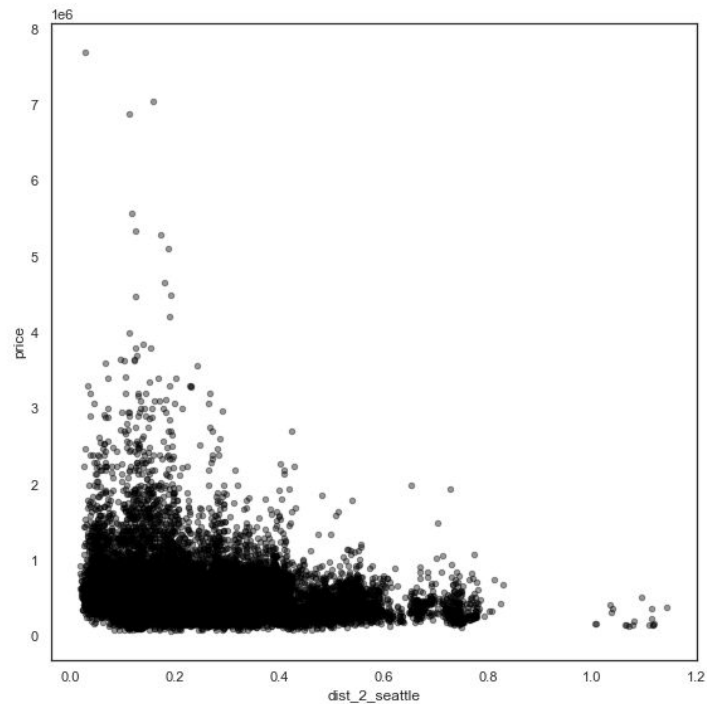
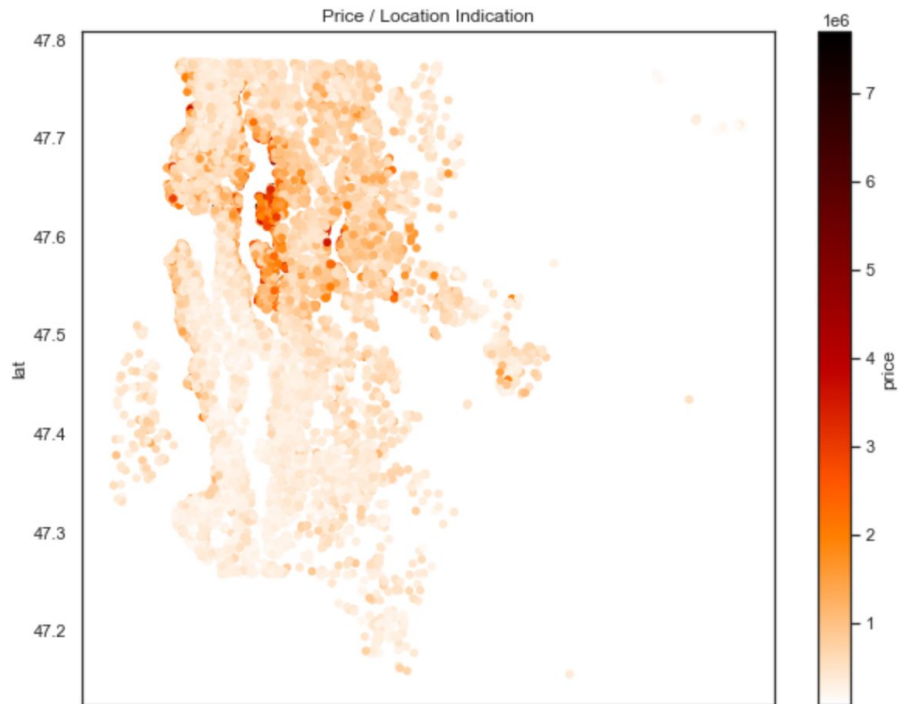
King County, USA



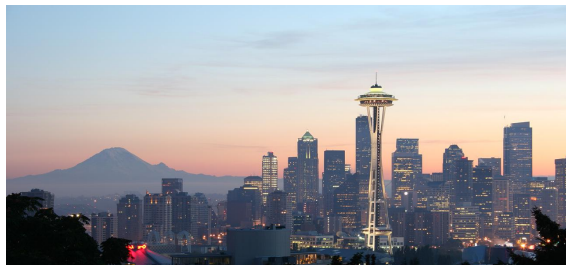
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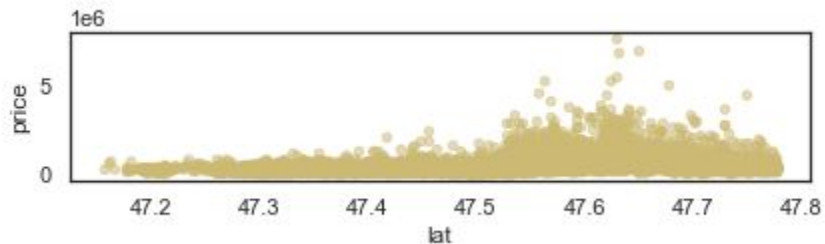
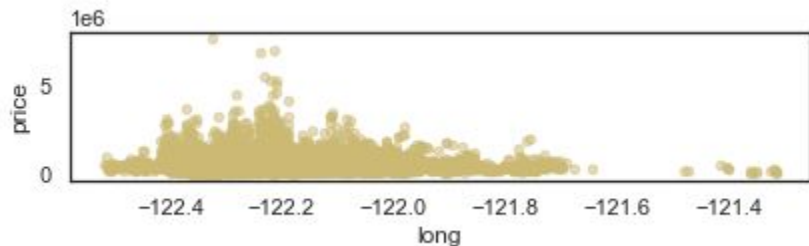
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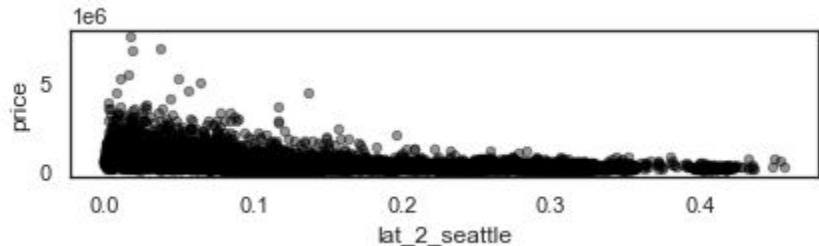
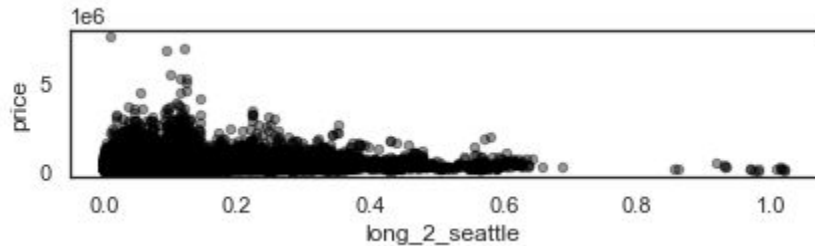
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Absolut Geolocation on price



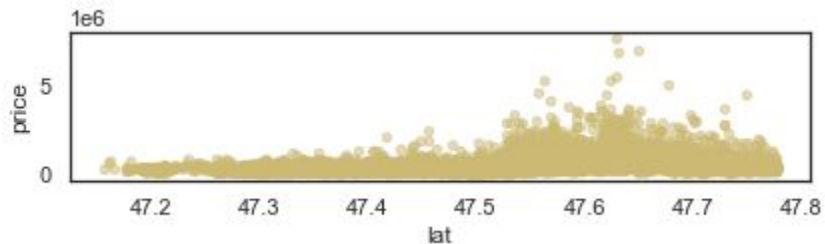
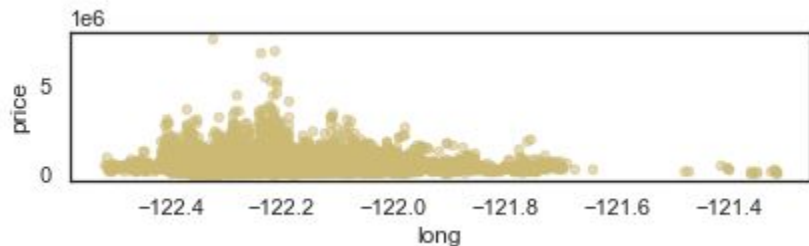
Geolocation relative to Seattle City Center on price



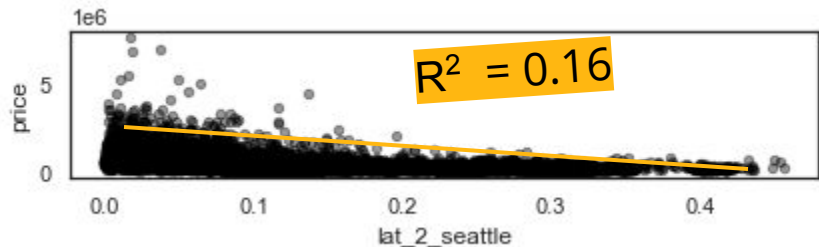
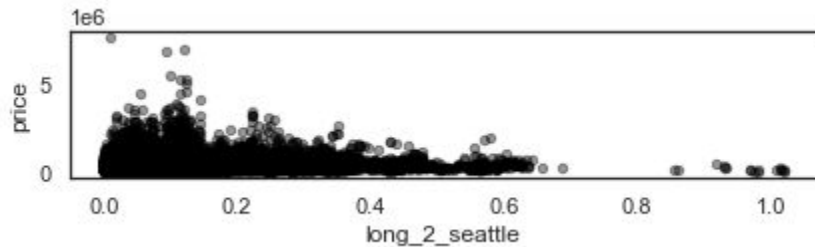
King County, USA



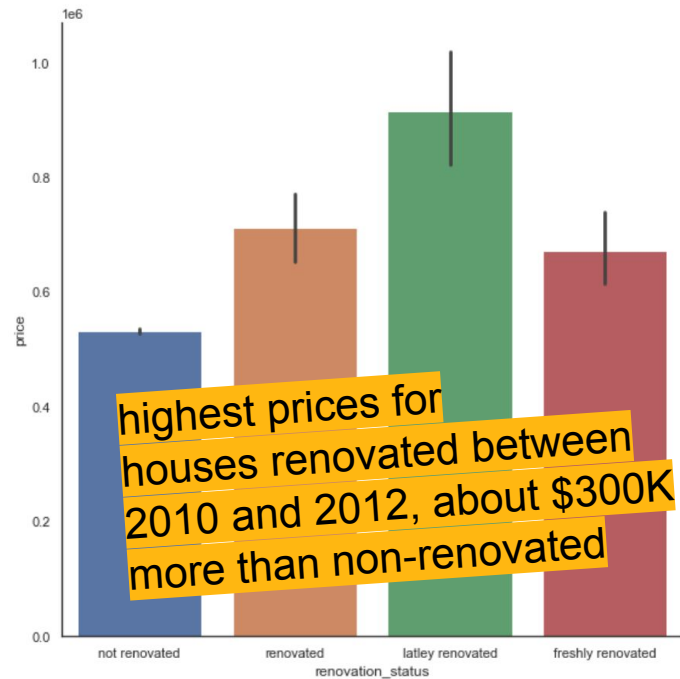
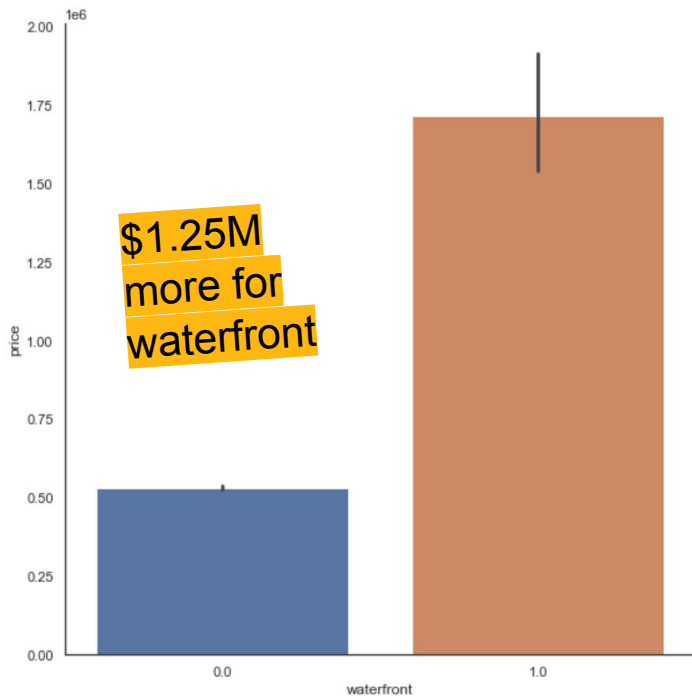
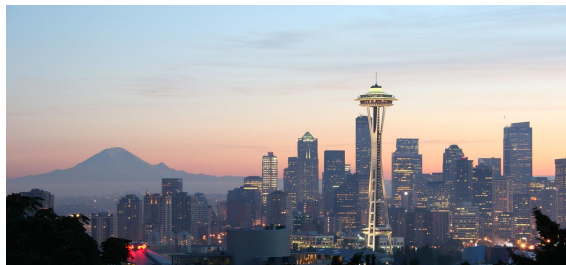
Absolut Geolocation on price



Geolocation relative to Seattle City Center on price



King County, USA



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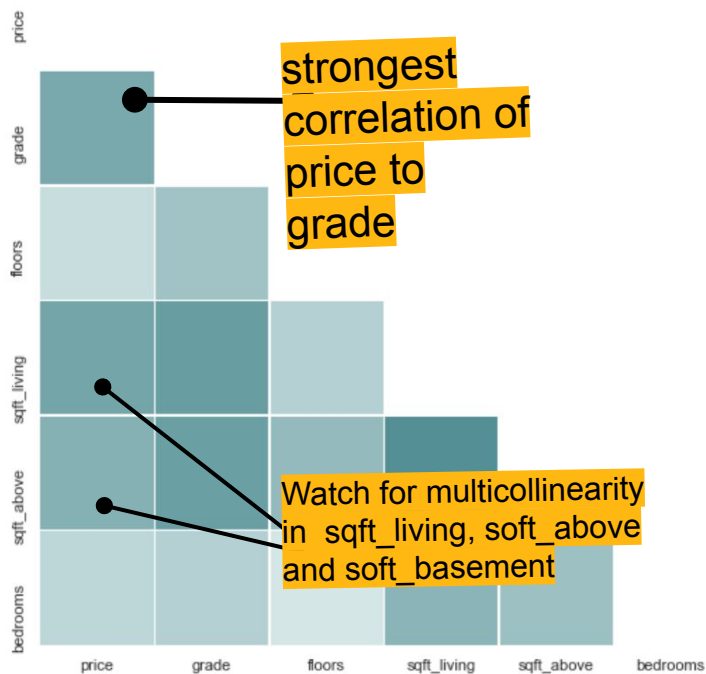
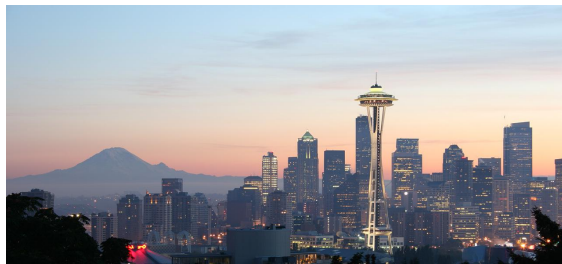


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Quick look at the dataset

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Ben's Old House

Selling a house in King County

03



Karl's New House

Waterfront, cheap, and available.

04



Model Validation

Test-train-split-validation and the RMSE



Macklemore

Old friend, I need a new place. This whole home office thing makes me crazy. I live in Seattle, but I don't see the water. I live at 98004 right now, you know the place. It's run-down at the moment.

Make it cheap, but I want to move in ASAP.

Get back to me soon. B.

Old friend, I need a new place. This whole

{BS_indicator=True} {\$\$\$\$}

home office thing makes me crazy. I live in Seattle, but I

{hyper sensitive customer}

don't see the water. I live at 98004 right now,

{need: view = 1} {selling price?!}

you know the place. It's run-down at the moment.

{df[Bill's place']}

{optional: renovation}

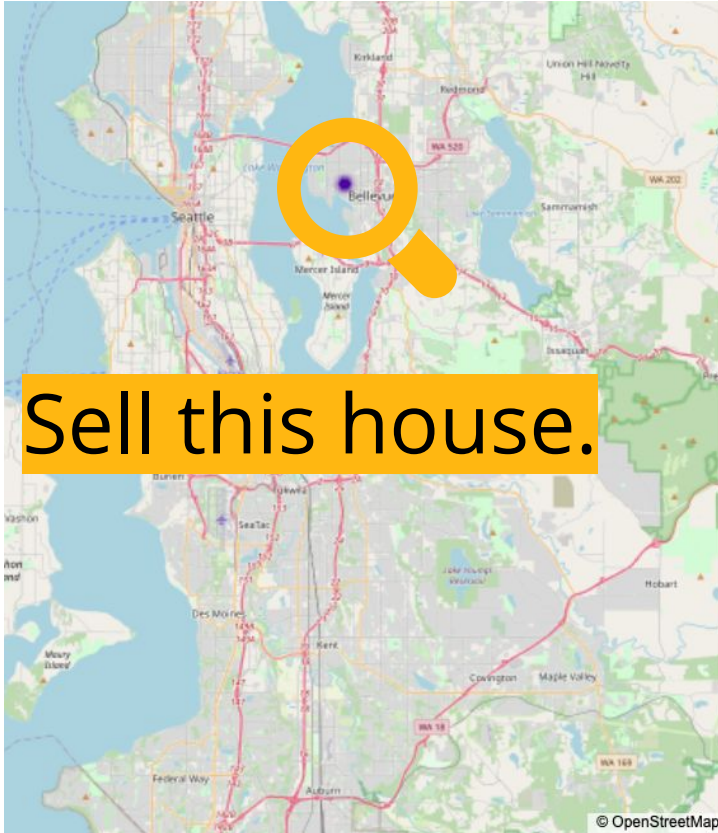
Make it cheap, but I want to move in ASAP.

\$\$\$\$: no}

{need: high turnover rate}

Get back to me soon. B.

{deadline: 40h}





Macklemore

Ben's Place:



| | |
|-------------|-------|
| Bedrooms | 3 |
| bathrooms | 3 |
| sqft_living | 4560 |
| sqft_above | 2760 |
| sqft_lot15 | 13362 |
| waterfront | 0 |
| grade | 11 |

Renovation_status: not renovated

→ USD 2,909,336.00

Renovation_status: renovated

→ USD 3,129,036.00

\$200,000.00

more for a freshly
renovated house.

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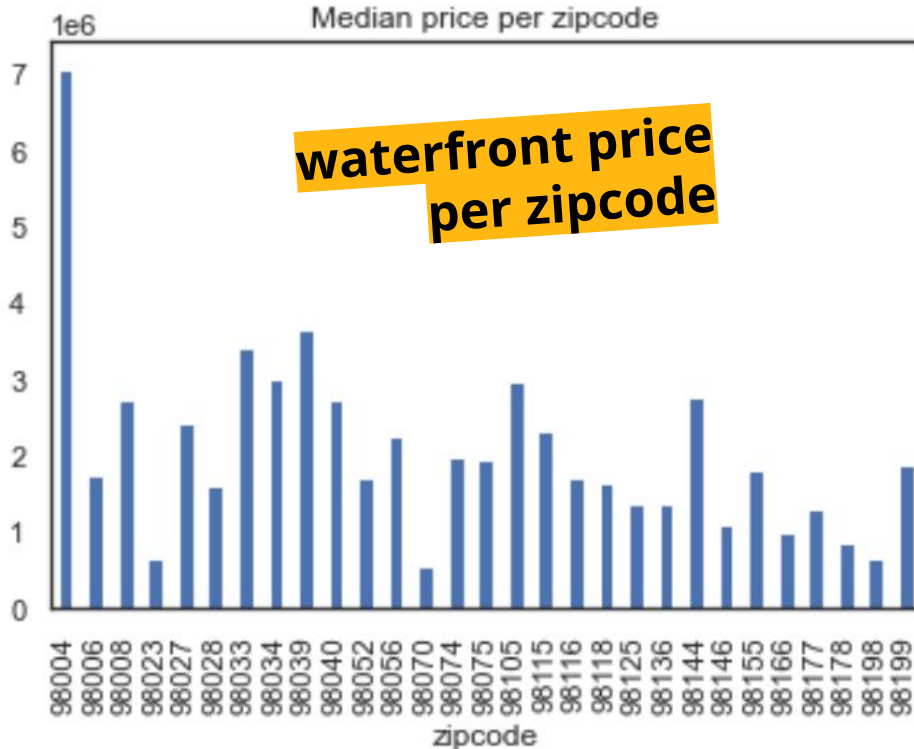
Test-train-split-validation and the RMSE



146 houses ×

At waterfront have been sold last year.
That's less than 1% of all sales in the region.

Where to buy Waterfront ✕



\$ 1,500,000.00

costs the median house with waterfront. Prices range mostly between \$850K and \$2,300K.

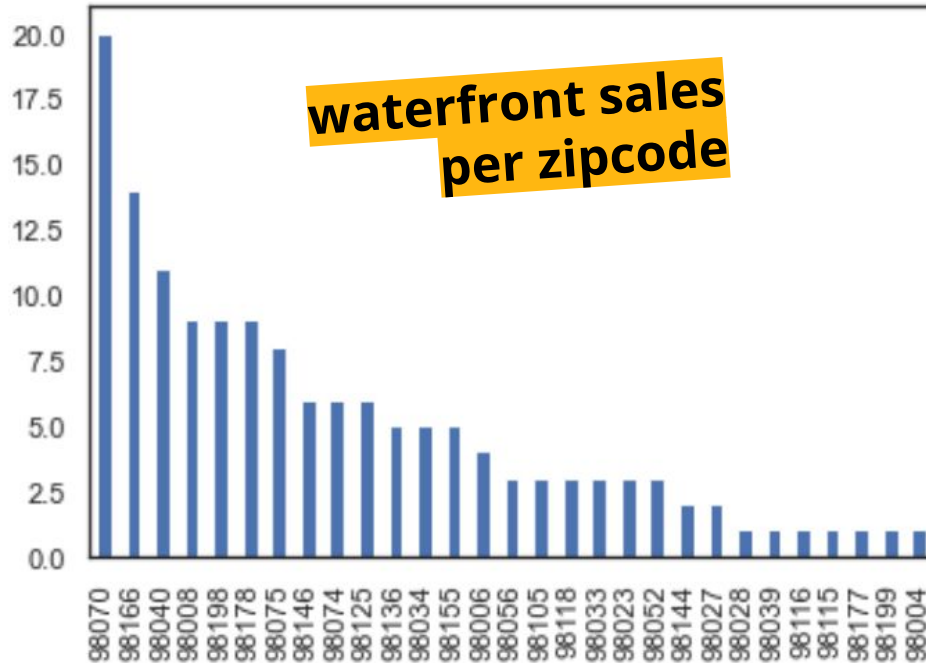
98070, 98166, 98040

30% of all houses with waterfront are sold in these zipcode areas. With an median price of only \$1,500K.

98070, 96023

zipcode areas with rather cheap waterfront houses.

Where to buy Waterfront ✕



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98070, 98166, 98040

30% of all houses with waterfront are sold in these zipcode areas. With an median price of only \$1,500K.

98070, 96023

zipcode areas with rather cheap waterfront houses.

Ben! Good to hear from you. Renovate your place for no more than \$200K. Not worth it. Look for a new place with waterfront in 98070, 98166, and 98040. Will cost you about \$1,500K. Or cheaper in 98200, 98075.

Btw, this analysis is $48h * \$95 \text{ USD/h} \approx \$5K$ - whenever it suits you. Good talking to you. Hope your family is doing fine.



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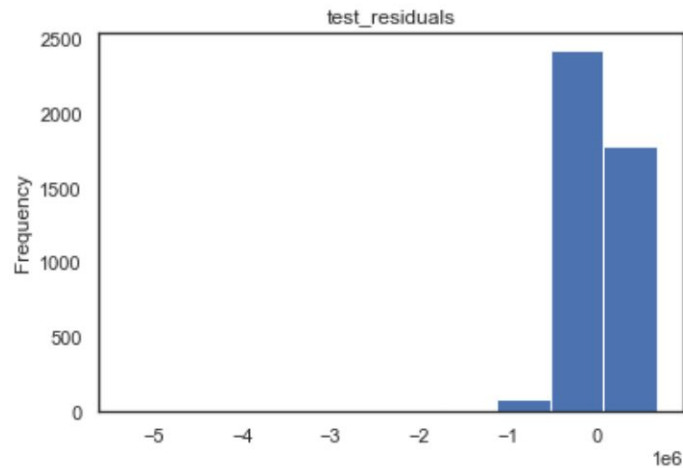
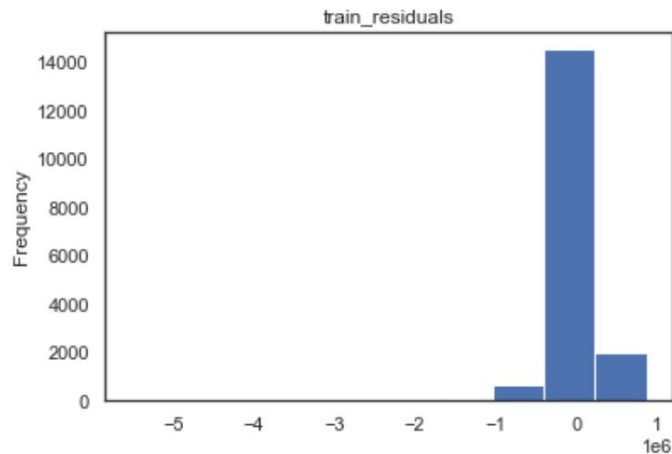
X_train: 17277

X_test: 4320 ✖

```
sklearn.model_selection.train_test_split(test_size=0.2, random_state=42)
```


Train RMSE: 239,942
Test RMSE: 236,065 

RMSE is an absolute measure of fit, we hence talk \$\$\$.



Train RMSE: 239,942

Test RMSE: 236,065 ✖

RMSE is an absolute measure of fit, we hence talk \$\$\$.

| | | | |
|--------------------------|------------------|----------------------------|-------------|
| Dep. Variable: | price | R-squared: | 0.699 |
| Model: | OLS | Adj. R-squared: | 0.699 |
| Method: | Least Squares | F-statistic: | 3134. |
| Date: | Thu, 17 Sep 2020 | Prob (F-statistic): | 0.00 |
| Time: | 09:55:15 | Log-Likelihood: | -2.9442e+05 |
| No. Observations: | 21597 | AIC: | 5.889e+05 |
| Df Residuals: | 21580 | BIC: | 5.890e+05 |
| Df Model: | 16 | | |
| Covariance Type: | nonrobust | | |

| | | | |
|-----------------------|-----------|--------------------------|-------------|
| Omnibus: | 18683.039 | Durbin-Watson: | 1.982 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 2003719.883 |
| Skew: | 3.651 | Prob(JB): | 0.00 |
| Kurtosis: | 49.619 | Cond. No. | 3.03e+05 |

Give me the
stats



| | coef | std err | t | P> t | [0.025 | 0.975] |
|--|------------|----------|---------|-------|-----------|-----------|
| Intercept | 4.359e+06 | 1.15e+05 | 37.808 | 0.000 | 4.13e+06 | 4.59e+06 |
| has_basement[T.1] | -1.091e+04 | 3215.445 | -3.394 | 0.001 | -1.72e+04 | -4612.008 |
| waterfront[T.1.0] | 5.437e+05 | 2.04e+04 | 26.601 | 0.000 | 5.04e+05 | 5.84e+05 |
| view[T.1.0] | 9.548e+04 | 1.13e+04 | 8.436 | 0.000 | 7.33e+04 | 1.18e+05 |
| view[T.2.0] | 5.384e+04 | 6856.354 | 7.852 | 0.000 | 4.04e+04 | 6.73e+04 |
| view[T.3.0] | 1.264e+05 | 9346.662 | 13.522 | 0.000 | 1.08e+05 | 1.45e+05 |
| view[T.4.0] | 2.954e+05 | 1.42e+04 | 20.857 | 0.000 | 2.68e+05 | 3.23e+05 |
| renovation_status[T.latley renovated] | 9.92e+04 | 2.28e+04 | 4.346 | 0.000 | 5.45e+04 | 1.44e+05 |
| renovation_status[T.not renovated] | -2.471e+04 | 1.87e+04 | -1.320 | 0.187 | -6.14e+04 | 1.2e+04 |
| renovation_status[T.renovated] | -3.044e+04 | 2.12e+04 | -1.435 | 0.151 | -7.2e+04 | 1.11e+04 |
| bedrooms | -2.721e+04 | 1854.485 | -14.670 | 0.000 | -3.08e+04 | -2.36e+04 |
| lat_2_seattle | -1.048e+06 | 1.8e+04 | -58.301 | 0.000 | -1.08e+06 | -1.01e+06 |
| yr_built | -2432.4269 | 61.366 | -39.638 | 0.000 | -2552.708 | -2312.146 |
| floors | 6371.2361 | 3290.127 | 1.936 | 0.053 | -77.657 | 1.28e+04 |
| sqft_living | 186.9392 | 3.106 | 60.188 | 0.000 | 180.851 | 193.027 |
| grade | 1.018e+05 | 2121.741 | 47.987 | 0.000 | 9.77e+04 | 1.06e+05 |
| sqft_living15 | 11.3588 | 3.332 | 3.409 | 0.001 | 4.828 | 17.889 |

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×

End. Thanks.

×

