

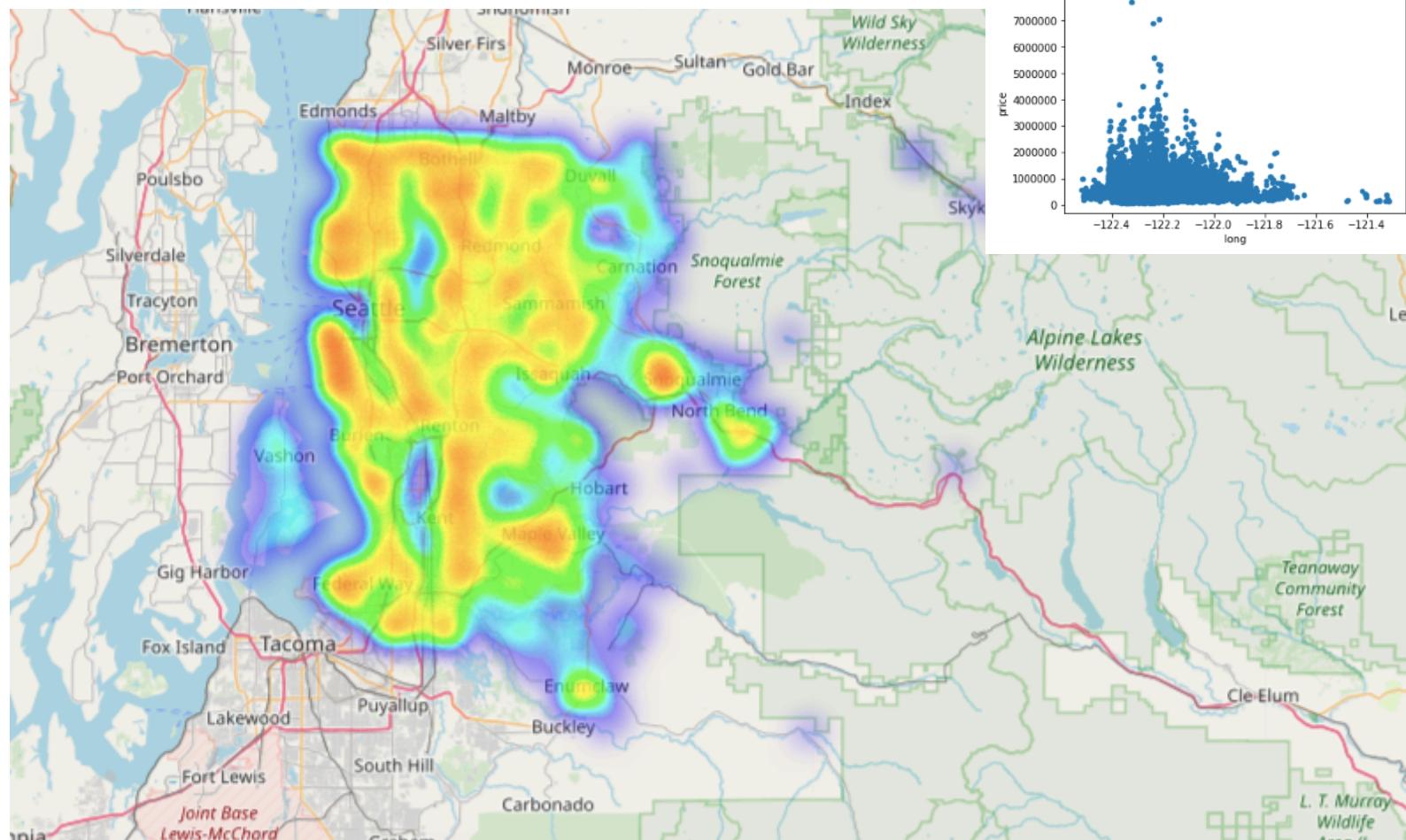
King County Housing Prices



Credit: <https://www.nytimes.com/real-estate/usa/wa/seattle/loyal-heights/homes-for-sale/7555-jones-ave-nw/2836-KKDVPJ#>

Overview

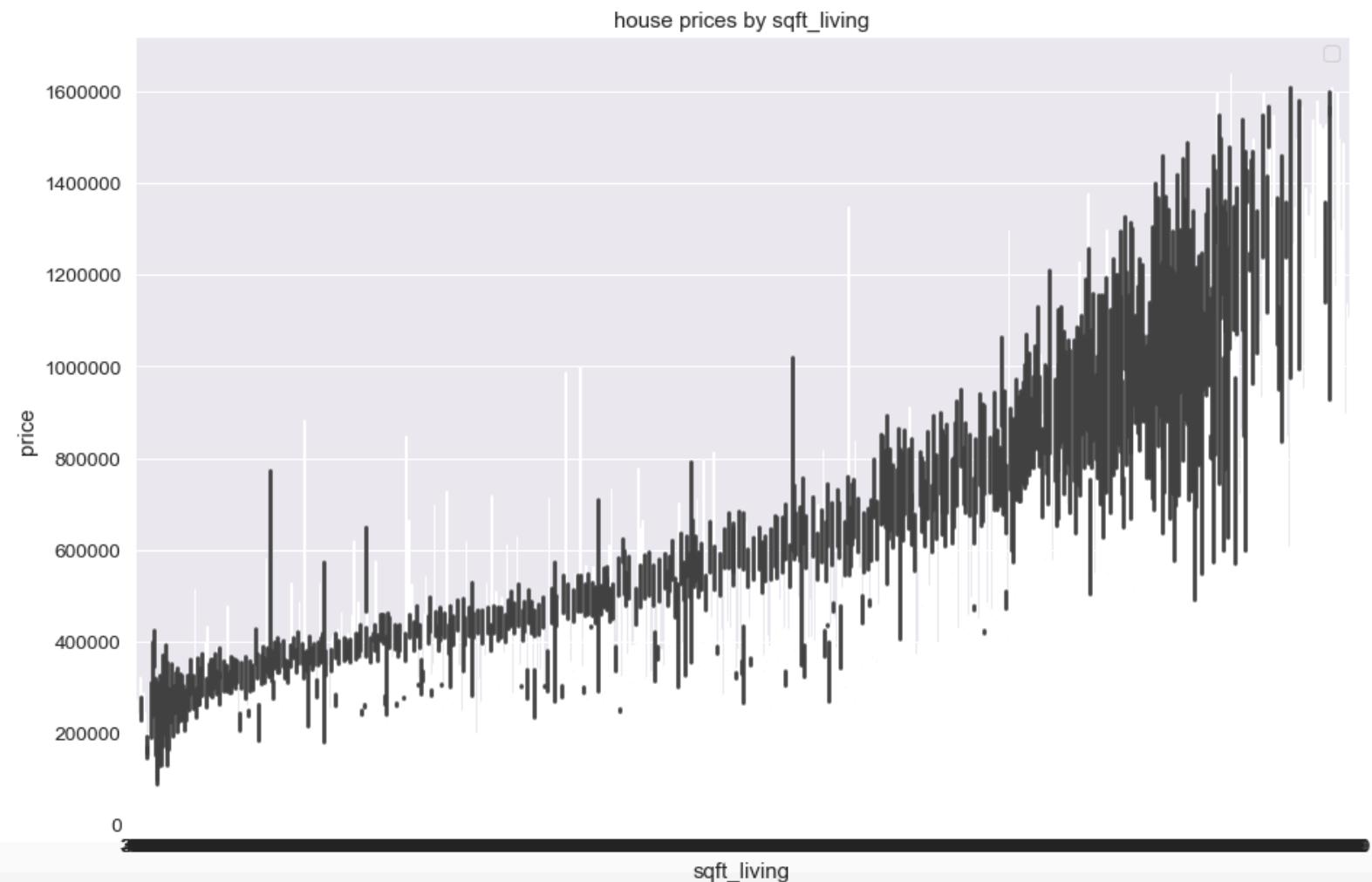
Dataset used for prediction: 21.597 Houses sold between May 2014 and May 2015 in King County, Washington.



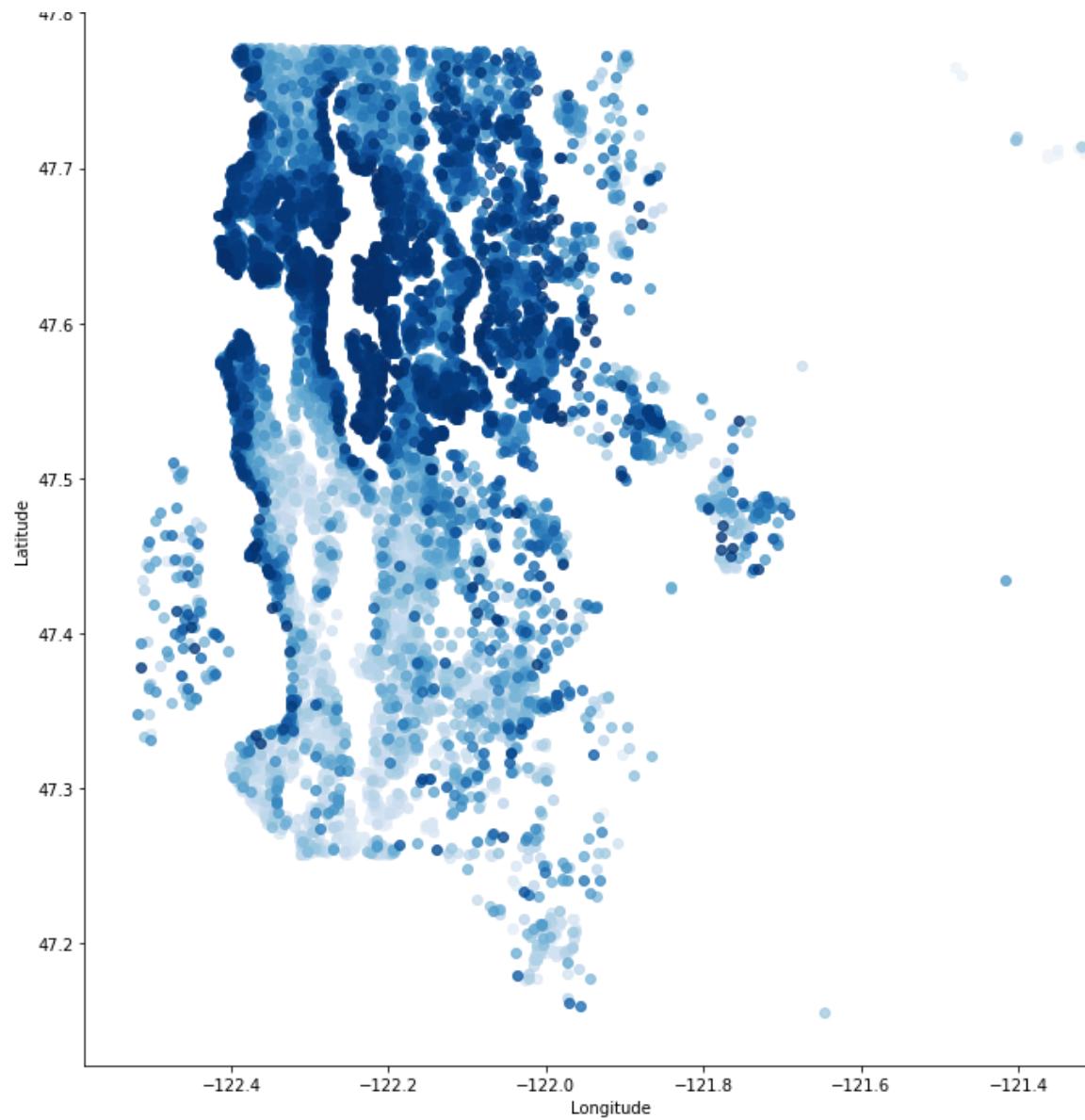
**Latitude
Longitude
as heatmap
of all sold
houses**

**Greater
Seattle
area, no sell
east**

Each sold house had 21 attributes describing it, of which the `sqft_living` area correlated the most with the house price ($r= 0.70$)

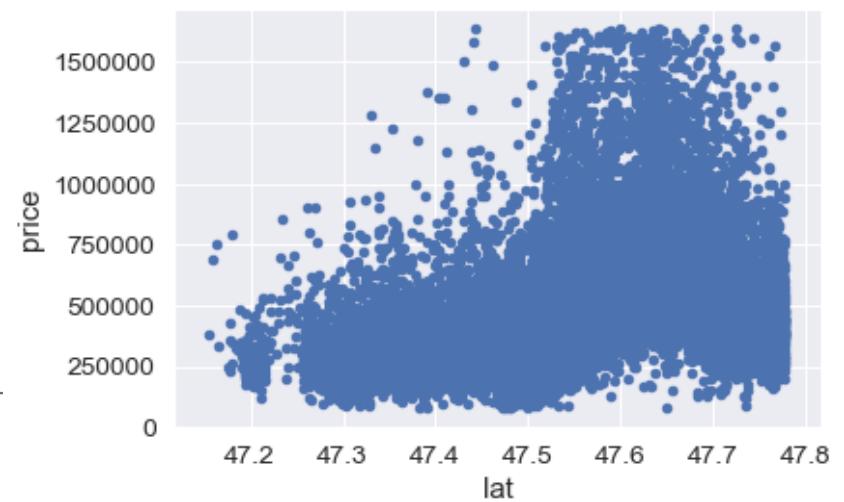


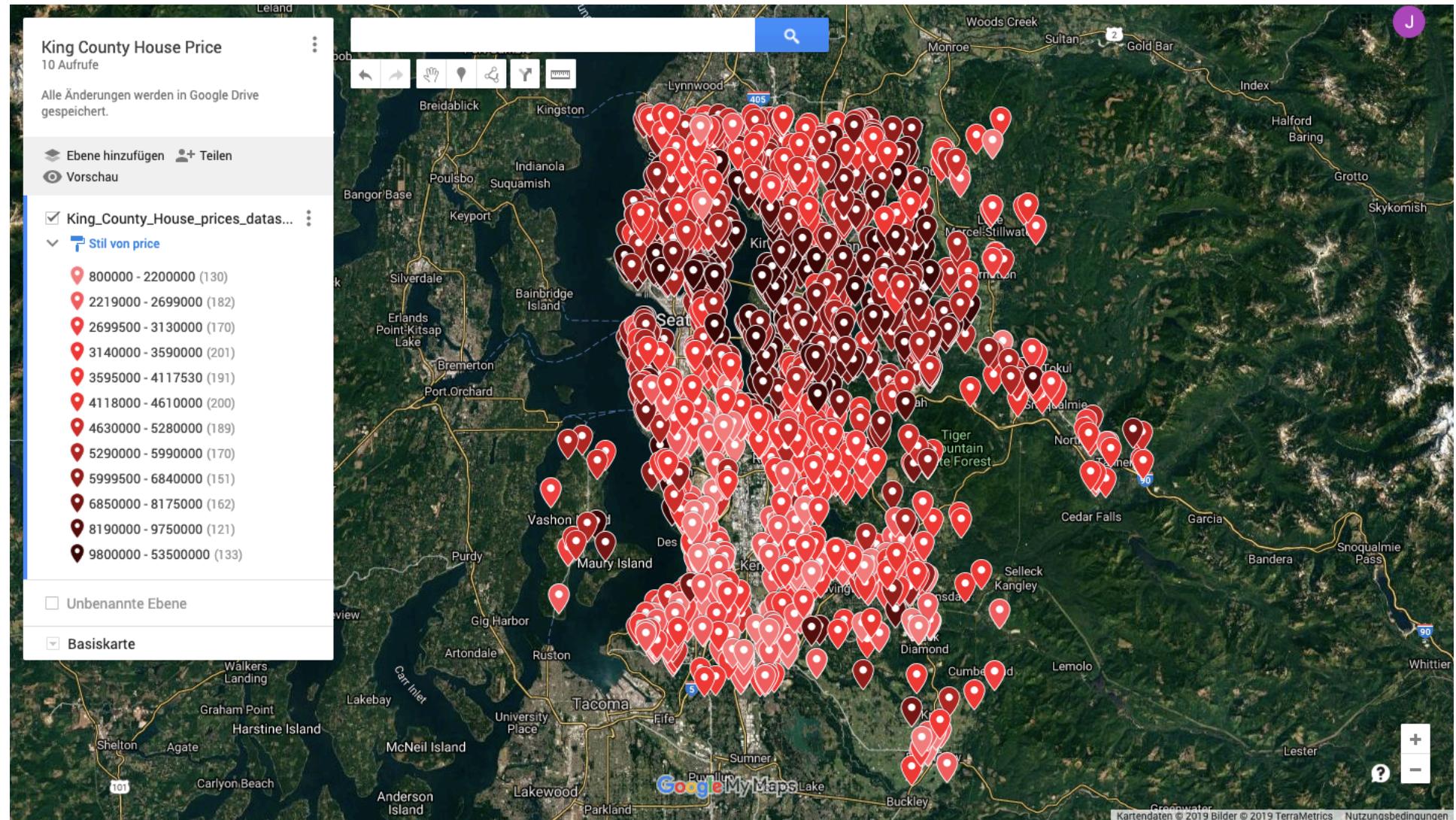
**The bigger
the living
area, the
more
expensive**



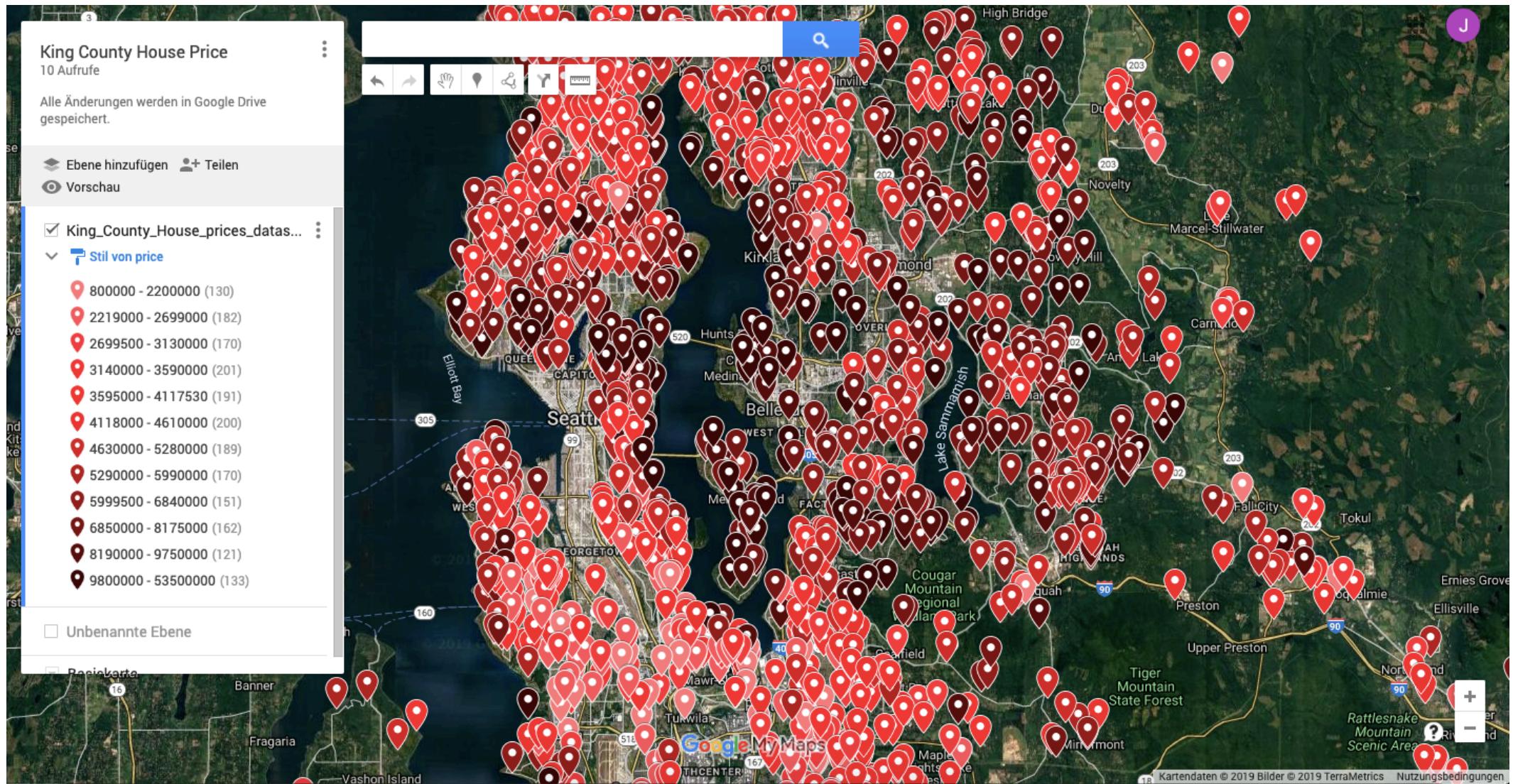
**Latitude/
Longitude
vs. Price**

**Waterfront
North vs. South**





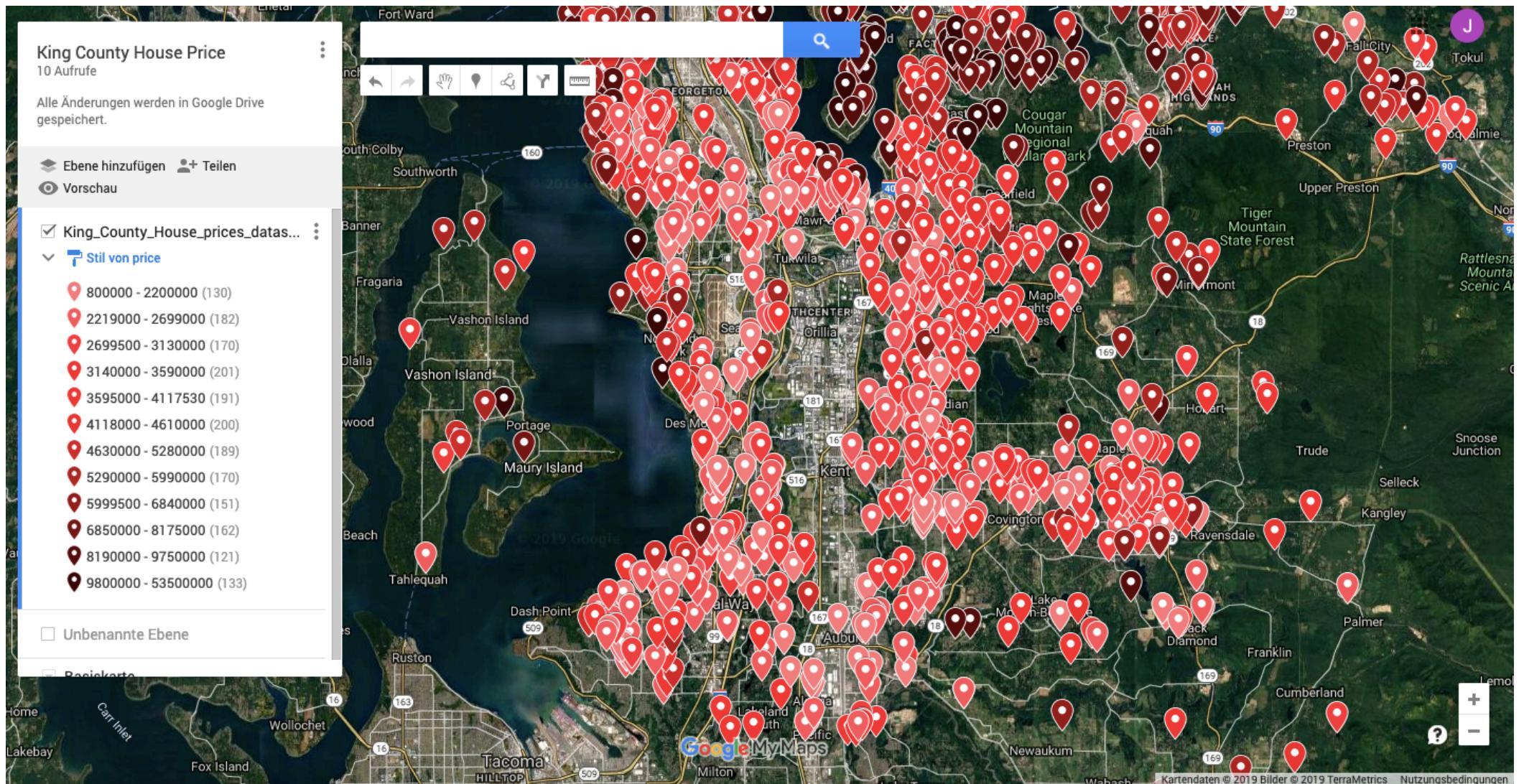
Lat + Longitude vs. Price in Googlemaps
Expensive Corridor in the north



Medina, Bellevue, Mercer Island (median income_year 85.000 \$, 85% white)

Medina is home to Bill Gates (Microsoft) and Jeff Bezos (Amazon)

Their houses cost 150 Million \$ each (not in this dataset), would have been an amazing outlier
(reminds me of the story of Bill gates coming to a pub vs. median income in „naked statistics“)



**Cheapest prices in the south
Near airport, harbor and a big recreational area**



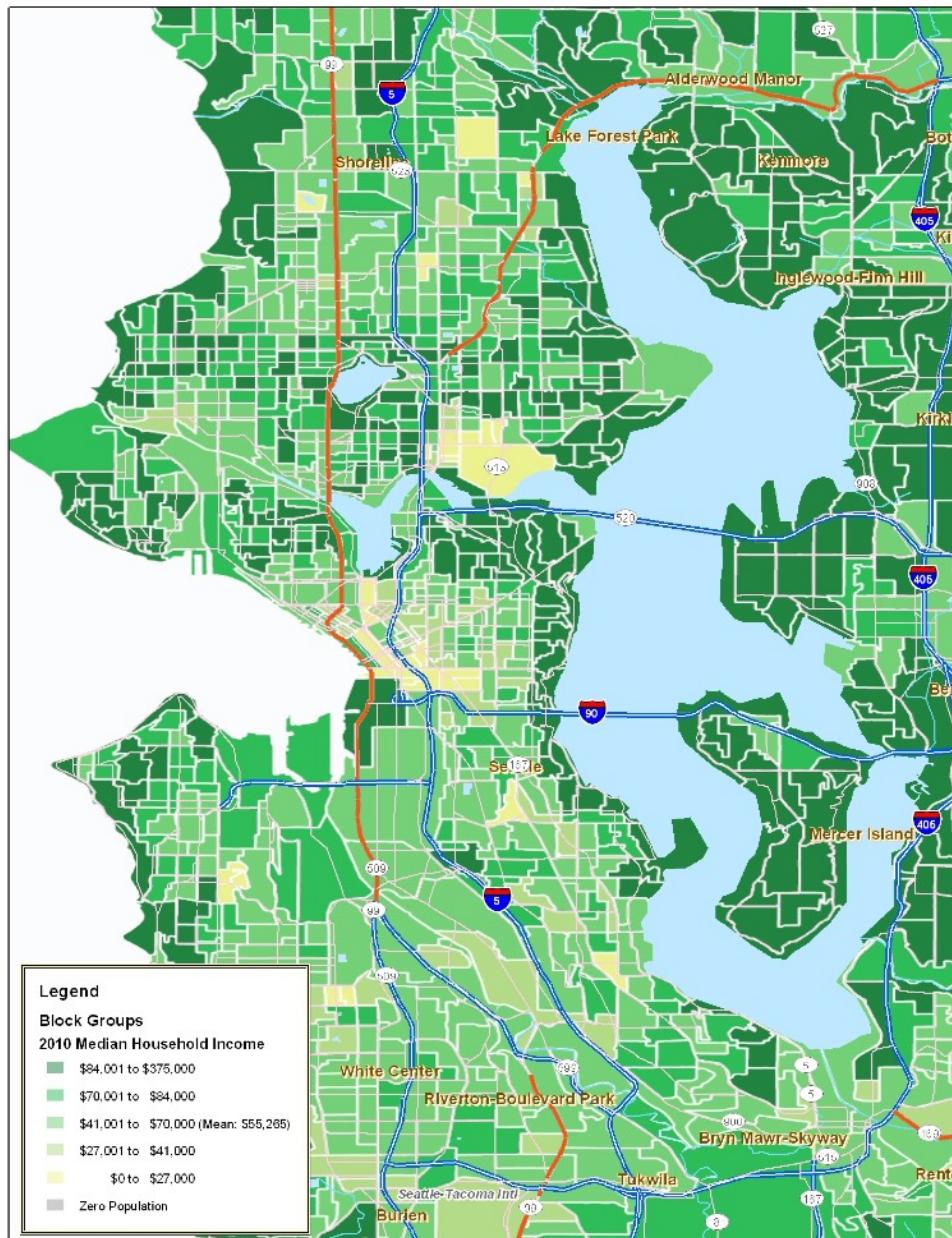
Ethnicity

red: white
blue: black
green: asian
orange: hispanic
yellow: other

North predominately white
Mercer island 85% white
Medina
Bellevue

South separated
**East: mostly black, asian,
whites to the waterfront**
**West: mostly white, black and
asian pockets**

Further south: all mixed



Median household income

Dark green: 84.000-340.000

Green: 70.000-84.000

Light green: 41.000-

Bright green: 27.000-

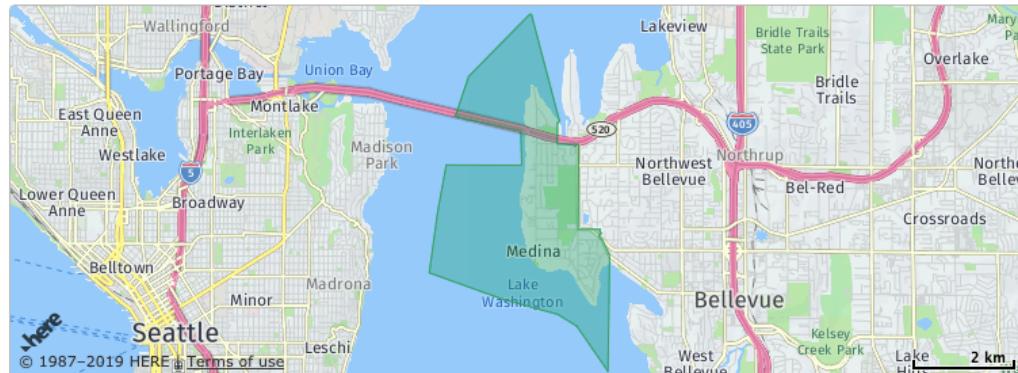
Credit: <http://www.city-data.com/forum/attachments/seattle-area/68512d1284998127-there-map-seattle-price-seattle-median.jpg>

Median values in King County (2014-15)

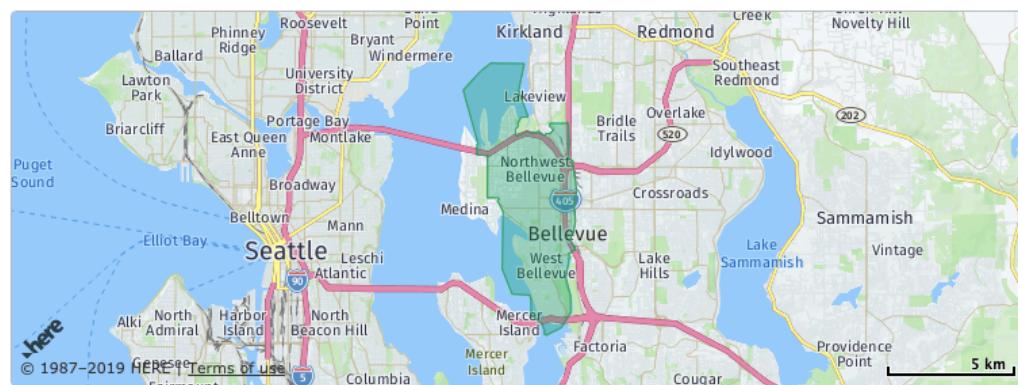
	Median all	Median Waterfront
Houseprice	450.000 \$	908.250 \$
Sqft living area	1890 = 576 m2	2145 = 653 m2
Sqft total	7560 = 2300 m2	18.213 = 5550 m2
Bedrooms	3	3
Bathrooms	2.25	2.25
Condition	3	3
Grade	7	8

There is no difference in Number of Bedrooms, Bathrooms, Condition and Grade between overall Median Houseprice and the Median price at the waterfront. Even the Sqft_living area differs only with 100 m2. The only big difference is the total area of the plot and the waterfr.

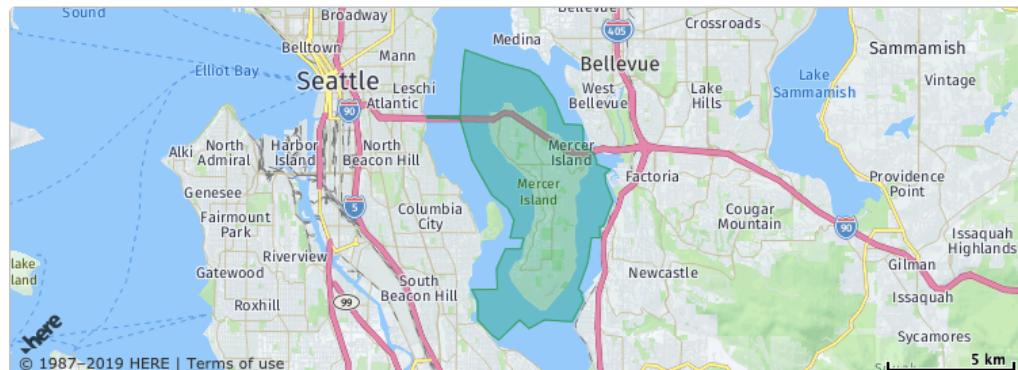
Median Houseprices in the most expensive Zipcode areas are



**98039 Medina 1.245.000 \$
(Gates + Bezos 150 mill.)**



98004 Bellevue 950.000 \$



98040 Mercer Island 950.000 \$

If you are looking for a nice house with

price = 450.000 \$

3 bedrooms

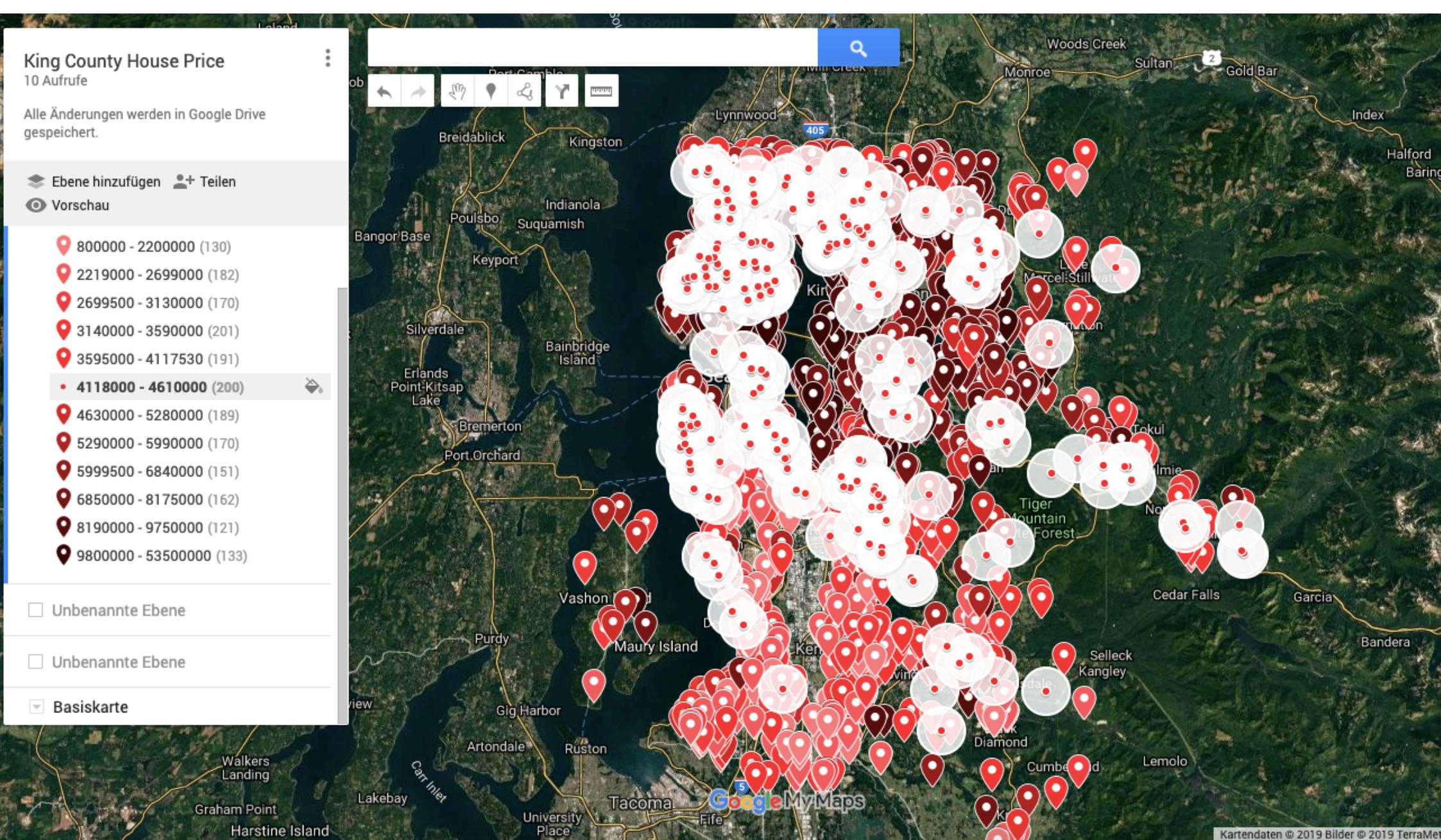
2.25 bathrooms

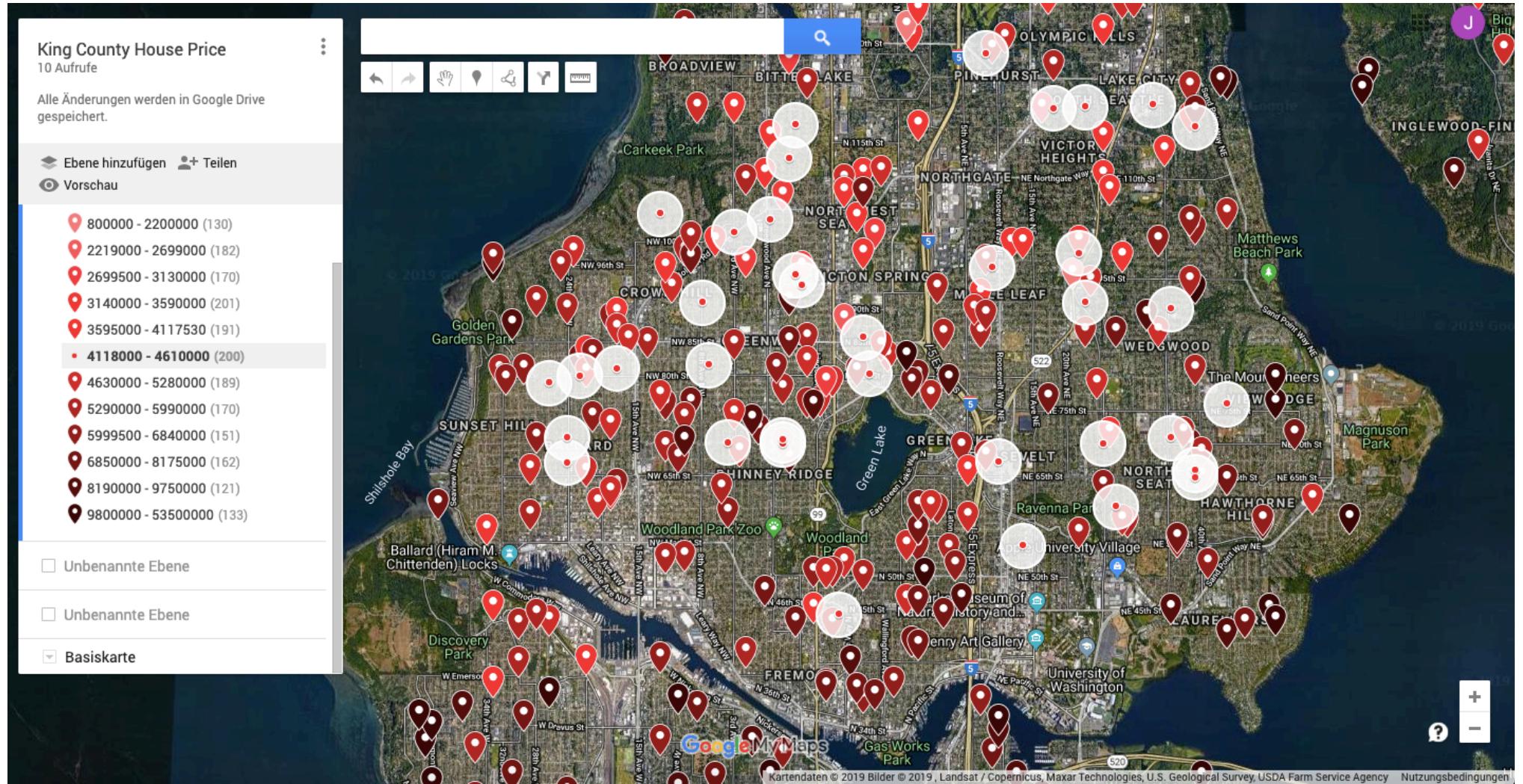
Good condition (3)

and good grade (7)

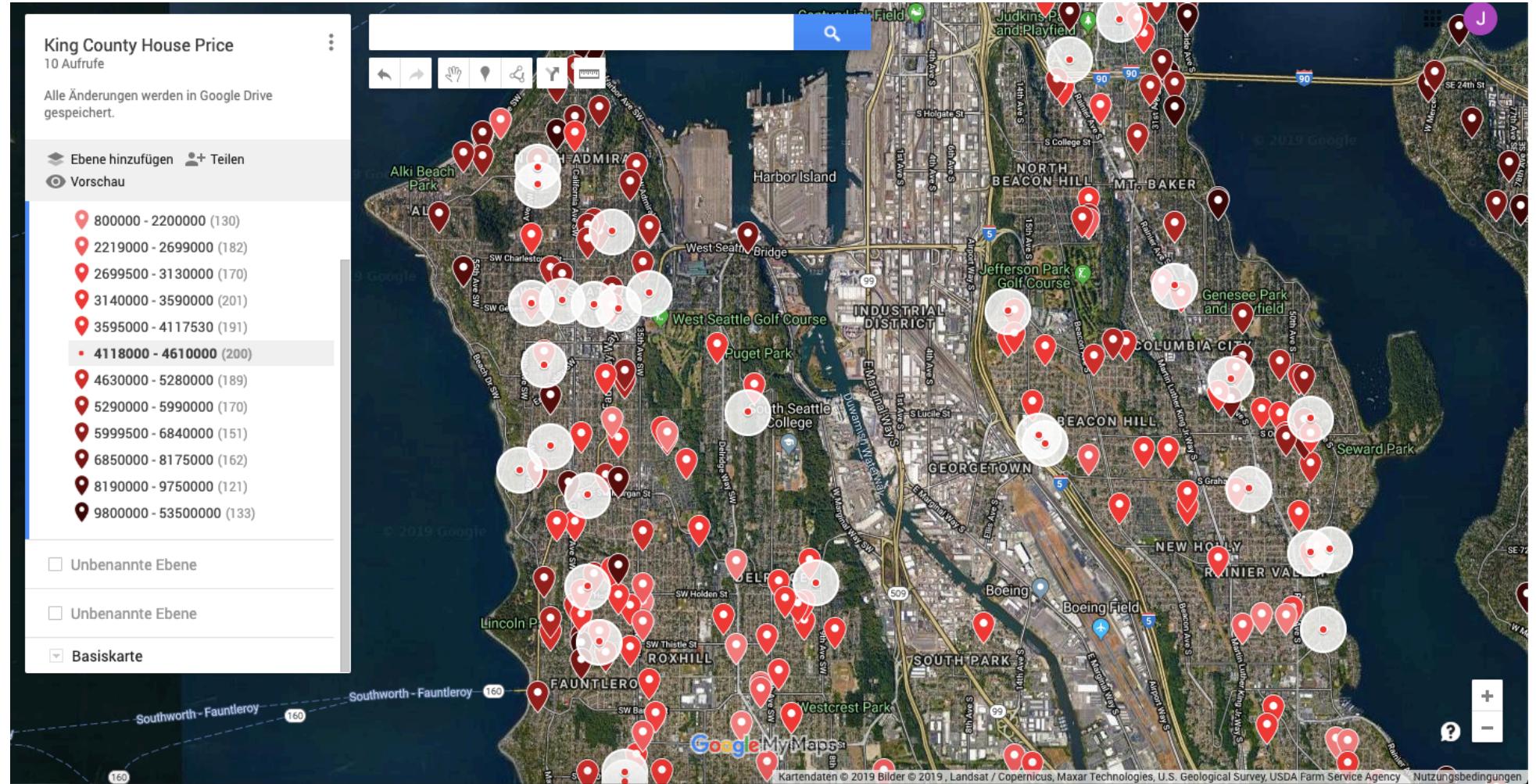
But no waterfront

**There are possibilities all over the city
(excluding the expensive belt)**





The area directly north of the expensive belt



The areas south, left and right to the harbour
West: if you prefer a mostly white neighbourhood
East: if you prefer a diverse neighbourhood

Our prediction model based on Linear Regression uses the most correlated features like sqft_living, sqft_living15, grade, condition, view, waterfront, latitude and zipcode.

If a customer gives us these variables for a house he wants to sell, this model is able to predict with 83.2% accuracy the expected house price!

If a customer wants to buy in a certain price-range the model can suggest fitting zipcodes/locations.

OLS Regression Results

Dep. Variable:	price	R-squared:	0.832
Model:	OLS	Adj. R-squared:	0.831
Method:	Least Squares	F-statistic:	1213.
Date:	Sun, 03 Nov 2019	Prob (F-statistic):	0.00

Summary of Recommendations:

- 1. Houses between Latitude 47.5 and 47.7 are the most expensive in Seattle**
- 2. Waterfront houses double the median price**
- 3. Besides total area and waterfront view, there is fundamentally no big difference between a 450.000 \$ and a 1.000.000 \$ house**
- 4. If you look for a decent house with all median values, you should look north and south of the expensive belt**

Future work

**Get a new dataset for house prices in King County 2019,
because prices almost doubled since then**

**Get a look if the overall picture is still the same or what
changed**

Get datasets for the last 20 years to analyze changes

Look for cheap waterfront houses

**Try other algorithms to get more Accuracy in predicting the
house prices (Gradient Boosting Regression)**

Thank you for your Attention!