



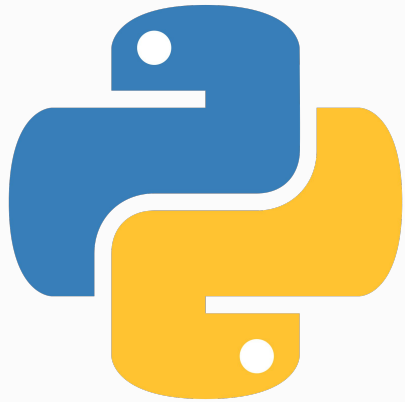
# Predicting Housing Prices

Joshua Ko

# Housing Market of King County, Seattle

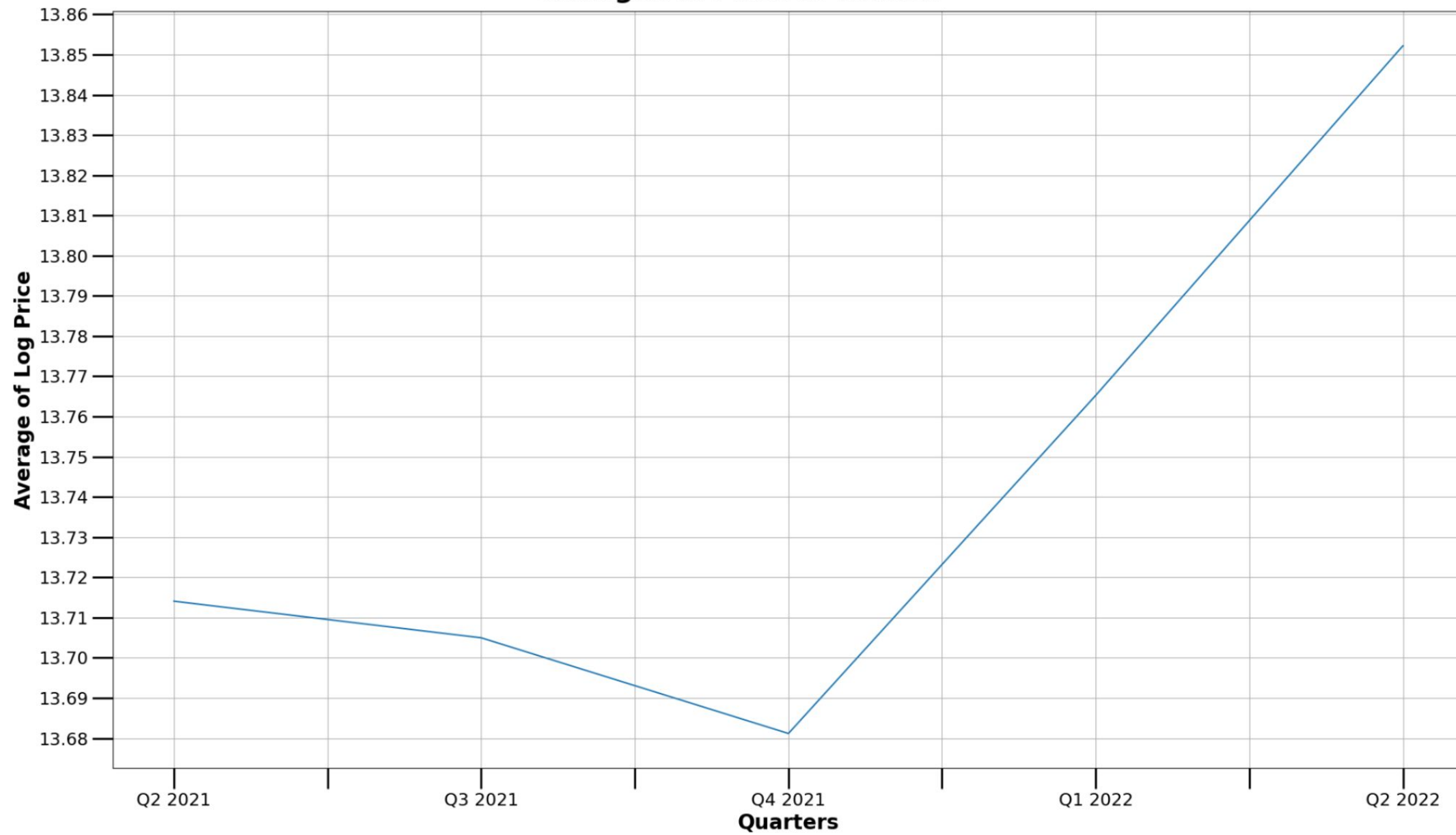
- Housing prices undergo constant changes
- Many variables affect the prices of homes
- Isolate these variables to see how prices are affected.

# Programs Used

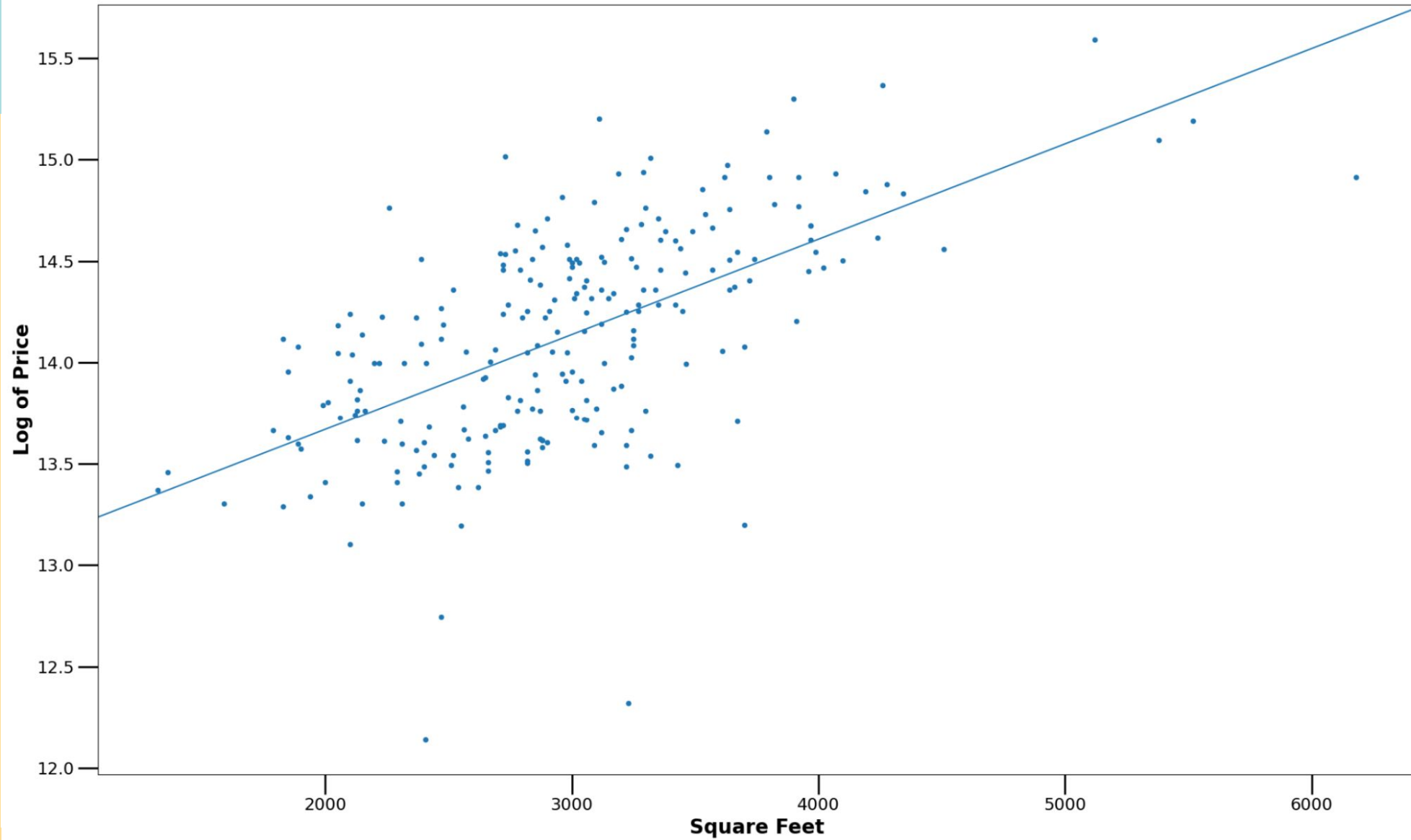


seaborn

## Changes in Price of Homes



## Prices of Homes with 8 Rooms



# OLS Regression Results

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Dep. Variable:          log_price    R-squared:                0.510
Model:                  OLS          Adj. R-squared:           0.485
Method:                 Least Squares  F-statistic:              20.81
Date:                   Fri, 24 Mar 2023  Prob (F-statistic):      3.37e-14
Time:                   20:25:25      Log-Likelihood:           -45.222
No. Observations:       106          AIC:                     102.4
Df Residuals:           100          BIC:                     118.4
Df Model:                5
Covariance Type:        nonrobust
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	coef	std err	t	P> t	[0.025	0.975]
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const	10.9764	0.235	46.695	0.000*	10.510	11.443
sqft_living	0.0004	8.77e-05	4.138	0.000	0.000	0.001
grade_10 Very Good	2.4966	0.164	15.219	0.000	2.171	2.822
grade_11 Excellent	2.5941	0.220	11.773	0.000	2.157	3.031
grade_7 Average	1.7681	0.084	21.002	0.000	1.601	1.935
grade_8 Good	1.9212	0.071	26.876	0.000	1.779	2.063
grade_9 Better	2.1963	0.091	24.012	0.000	2.015	2.378

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Omnibus:                19.928      Durbin-Watson:           2.015
Prob(Omnibus):           0.000      Jarque-Bera (JB):        36.511
Skew:                    -0.772     Prob(JB):                1.18e-08
Kurtosis:                 5.426     Cond. No.                4.57e+19
=====

```



$$price = 10^{10.9764 + 0.0004x_1 + 2.4966x_2 + 2.5941x_3 + 1.7681x_4 + 1.9212x_5 + 2.1963x_6}$$

Variable	Meaning in This Context
$x_1$	square feet of living space
$x_2$	grade of home is very good
$x_3$	grade of home is excellent
$x_4$	grade of home is average
$x_5$	grade of home is good
$x_6$	grade of home is better
Mean-squared error: 0.3707	

# Improvements and Further Development

- A bigger dataset
  - Allows us to study the market's history
  - Better prediction
- More variables for testing
  - Mortgage rates
  - Bond market



# Thank You!

GitHub Link:

<https://github.com/Jko0425>

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