

KING COUNTY HOUSE SALES ANALYSIS REPORT

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"I used to sell mud pies, but I can charge more if I call it real estate."

The background of the slide is a miniature construction site. It features a small wooden house under construction with a gabled roof. Several tiny figures of construction workers are visible: one on the roof, one on a ladder, and others on the ground. There are also miniature construction tools and materials, including a cement mixer, a wheelbarrow, and stacks of bricks. The entire scene is set against a background of architectural blueprints with various lines and measurements. In the top left corner, there is a small orange rectangular graphic element.

BUSINESS PROBLEM

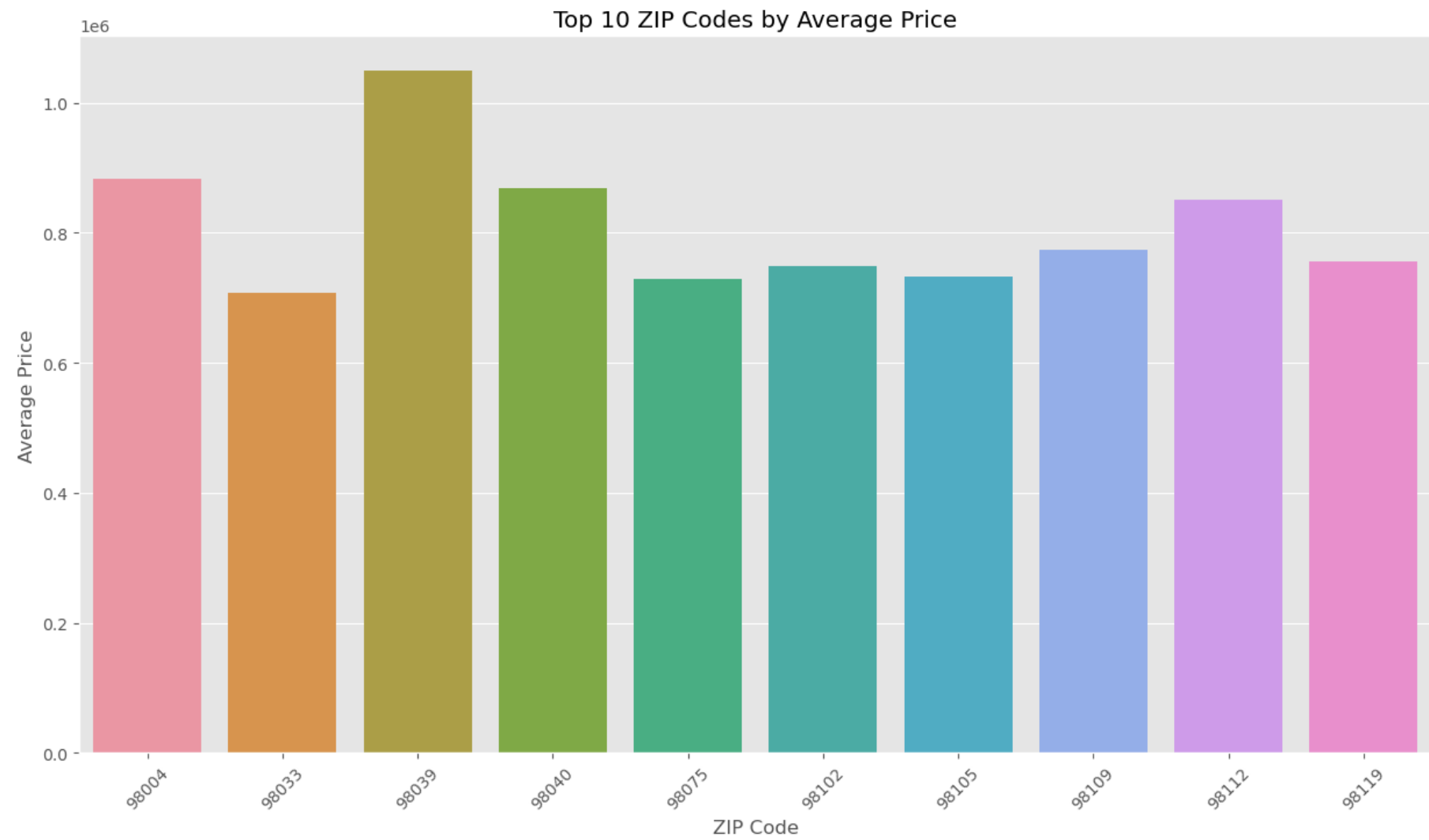
The Pro Home Builder Company aims to construct residences in King County Washington and wants to identify which housing features to focus on for maximum profitability. By understanding which amenities significantly influence home prices, the company can make data-driven choices on the types of houses to build in order to optimize profits



KEY FINDINGS



ZIP Codes Vs Price



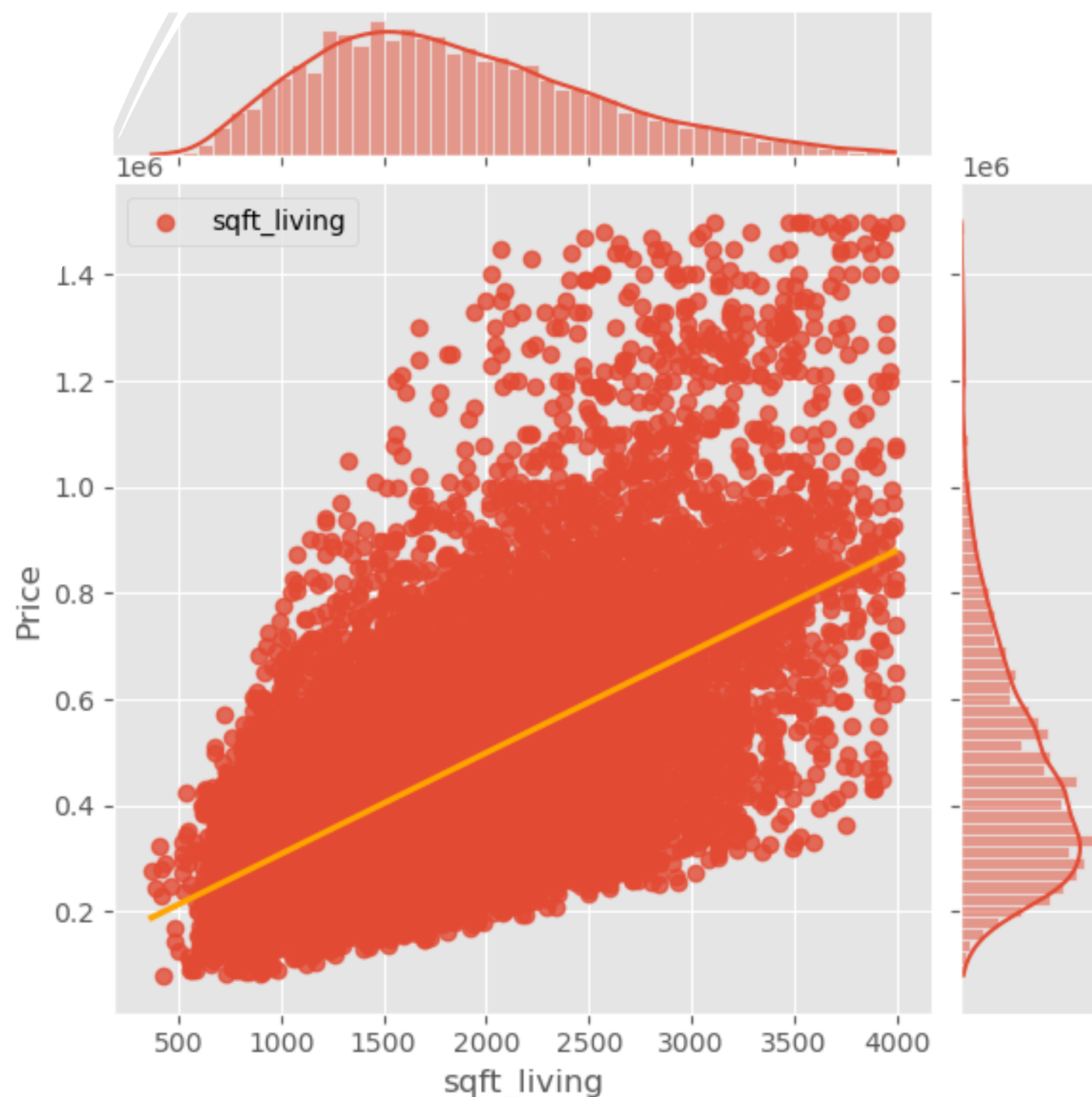
TOP SUBURBS IN KING COUNTY

- West Bellevue
- Kirkland
- Medina
- Mercer Island
- Sammamish
- Seattle
- Overlake
- Education Hill

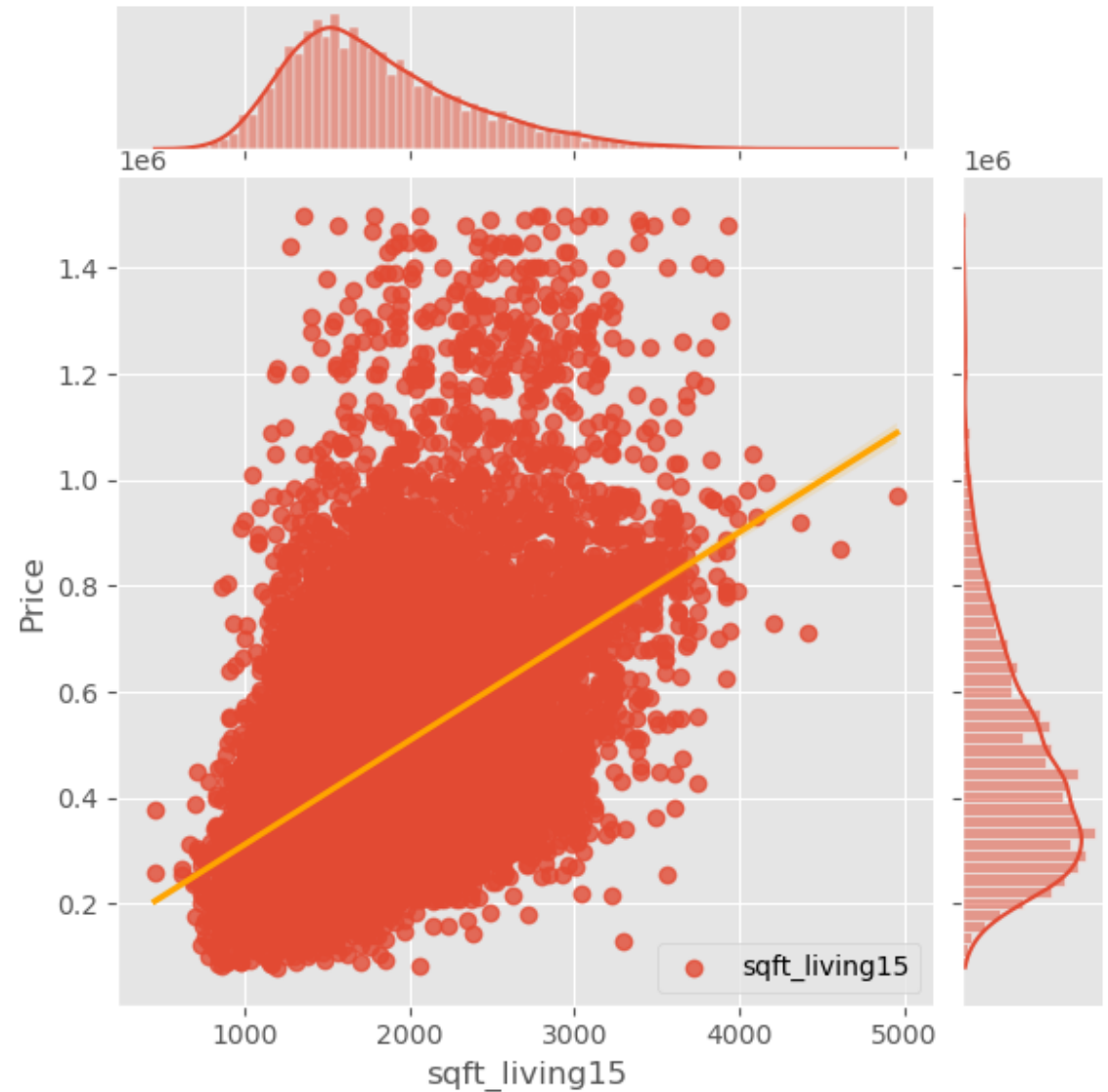


Square Foot Living Vs Price

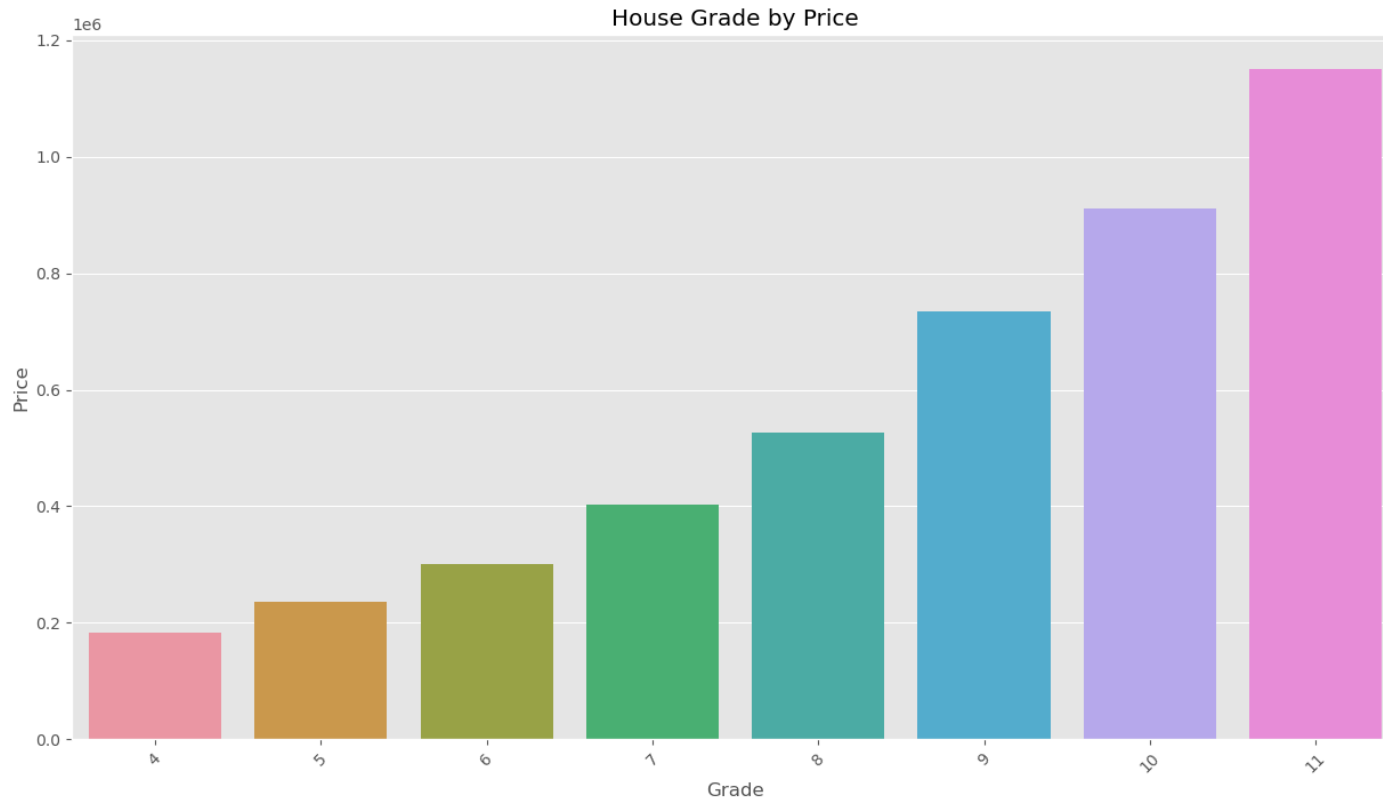
- This visualization shows there seems to be a relatively strong linear relationship between square feet of living space and the price of a house.
- 1500 - 2500 sqft_living is the most observed footage of the house in this dataset



The square footage of interior housing living space for the nearest 15 neighbors Vs Price



House Grade by Price



The visualization above shows that when the building grade improves, the house price rises as well. We can see in the bar plot that the mean house price for a home with a grade of 11 is far above other grades. While the building grade of 4 falls short of minimum building standards based on the King County grading system.

Regression analysis

•The results of the analysis were as follows:

•The model above with an R-squared value of 0.775, telling us that the model fits the data with an accuracy of 78%, We can confidently say that zip code is one of the strongest influencers on the value of homes in King County.

Other features that were positively correlated with price included:

- Square footage of living space, which was positively correlated with house prices.
- Building grade, which was positively correlated with house prices
- The square footage of interior housing living space for the nearest 15 neighbors which was also positively correlated with house price.

```
In [107]: #include the zipcode column to the model
#zipcodes have no numerical significance in our data, this variable is treated as categorical
f = 'price~grade_sc+sqft_living_sc+sqft_living15_sc+C(zipcode)'
model = ols(formula=f, data=df).fit()
model.summary()
```

Out[107]: OLS Regression Results

Dep. Variable:	price	R-squared:	0.775			
Model:	OLS	Adj. R-squared:	0.774			
Method:	Least Squares	F-statistic:	730.7			
Date:	Wed, 20 Sep 2023	Prob (F-statistic):	0.00			
Time:	19:54:32	Log-Likelihood:	-1.9922e+05			
No. Observations:	15334	AIC:	3.986e+05			
Df Residuals:	15261	BIC:	3.991e+05			
Df Model:	72					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
Intercept	2.625e+05	7103.962	36.951	0.000	2.49e+05	2.76e+05
C(zipcode)[T.98002]	5.112e+04	1.09e+04	4.684	0.000	2.97e+04	7.25e+04
C(zipcode)[T.98003]	1.568e+04	1.05e+04	1.496	0.135	-4859.404	3.62e+04
C(zipcode)[T.98004]	5.824e+05	1.3e+04	44.957	0.000	5.57e+05	6.08e+05
C(zipcode)[T.98005]	3.531e+05	1.68e+04	21.022	0.000	3.2e+05	3.86e+05
C(zipcode)[T.98006]	3.047e+05	1.01e+04	30.143	0.000	2.85e+05	3.25e+05
C(zipcode)[T.98007]	2.585e+05	1.31e+04	19.750	0.000	2.33e+05	2.84e+05
C(zipcode)[T.98008]	2.603e+05	1.03e+04	25.320	0.000	2.4e+05	2.8e+05
C(zipcode)[T.98010]	1.201e+05	2.1e+04	5.713	0.000	7.89e+04	1.61e+05
C(zipcode)[T.98011]	1.485e+05	1.16e+04	12.824	0.000	1.26e+05	1.71e+05
C(zipcode)[T.98014]	1.754e+05	2.61e+04	6.716	0.000	1.24e+05	2.27e+05
C(zipcode)[T.98019]	8.871e+04	1.32e+04	6.704	0.000	6.28e+04	1.15e+05

Strategic Recommendations for a Pro Home Builder Company

- Strategic Location Selection
- Optimize Living Space
- Quality of Construction
- Neighborhood Composition

