



Success In Seattle

Indications of Value in King County

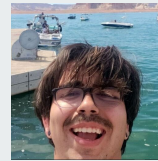
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Agenda:



Overview



Methods



Findings



Proposals



Future Insights



Overview





Make smart decisions by identifying significant factors

Overview

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Stakeholder:



Seattle's Best Realty

- Interested in housing prices in King County, WA

Business Understanding

- Identify most important housing features
- Provide a reliable housing price model

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The Data:

Our data set contains **21.6k** homes

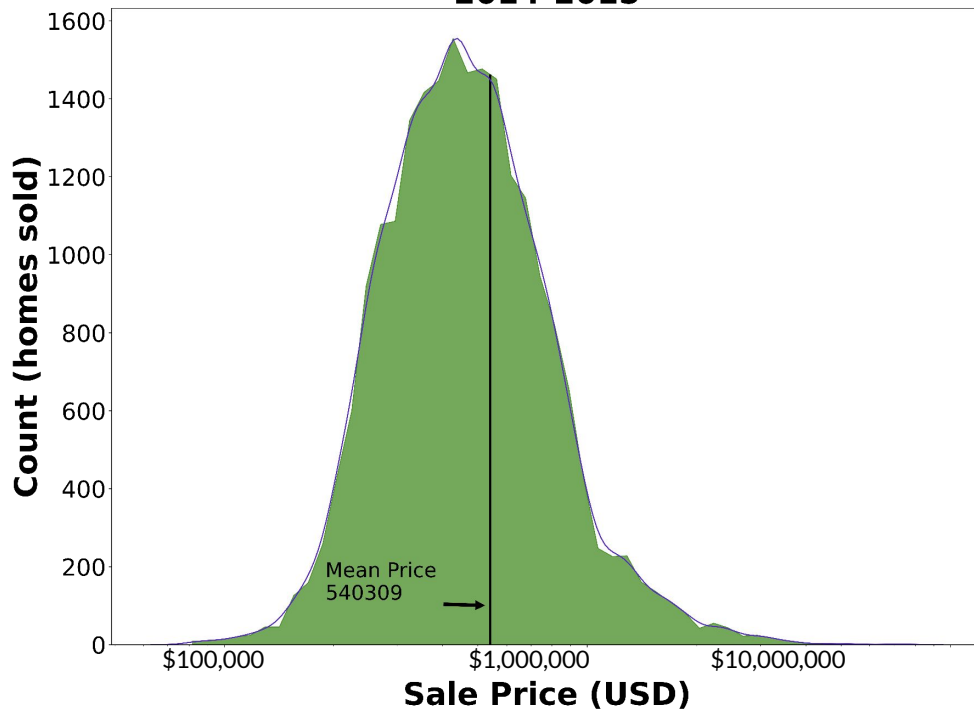
Average home price:

- \$540,309

Contains data on:

- Square Footage
- Property Grade
- Latitude
- And much more!

King County Home Sale Prices:
2014-2015



Overview

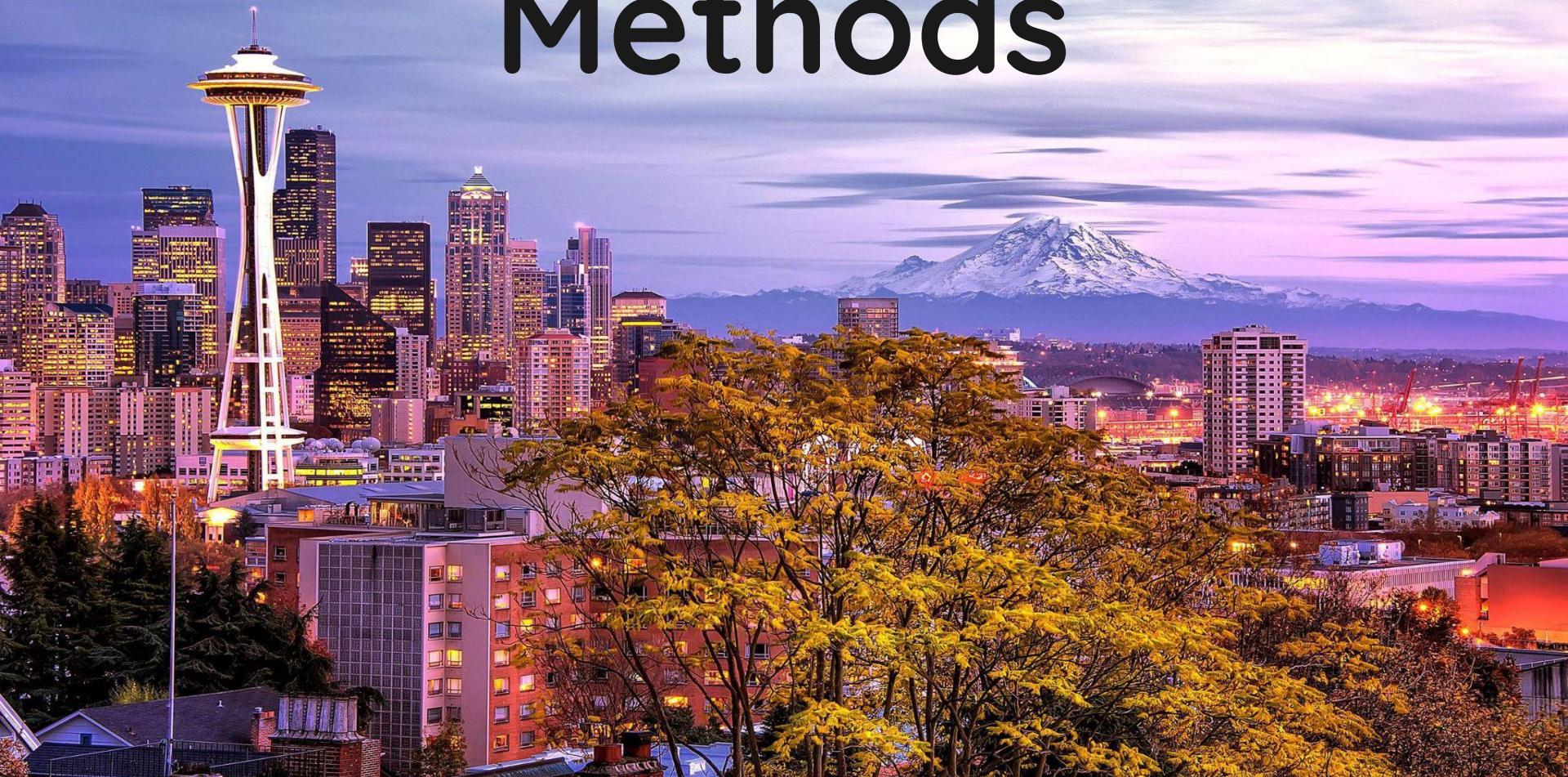
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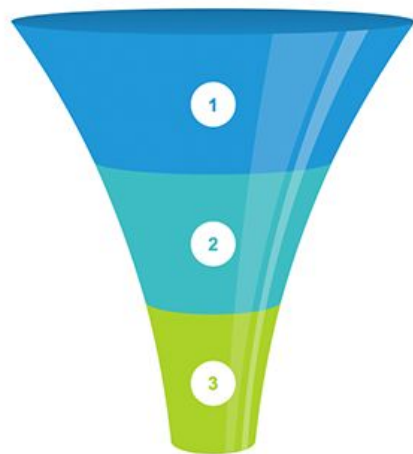
Future Insight

Methods



The Method:

1. Locate factors that **strongly associate** with sale price
2. Find the effect each factor has
3. Use the results to generate a reliable model



Findings



Top Five Factors:

| Factor | Change in Price per Unit Factor |
|--------------------------|------------------------------------|
| Living Space Square Foot | \$166 |
| Grade: “Better” | \$121,000 |
| Grade: “Very good” | \$244,000 |
| No view | -\$206,000 |
| Latitude | \$ 97,000 |

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What's It All Mean?



- Positive variables are qualities we want to look for in a property
- Negative variables are qualities we want to avoid in a property

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Recommendations:

Qualities to Look For

- Large square footage of living space
- King County grades of “Better” or “Very Good”
- Properties with a good view of bodies of water or mountains



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The Future:



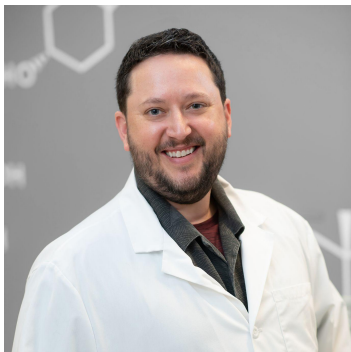
- Shift focus to a more detailed modeling
- Explore more housing features
- Gather more housing data in King County, Seattle.

Thank You!





Questions?



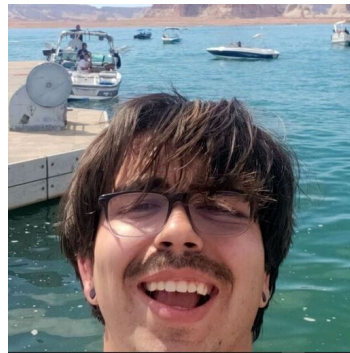
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Appendix

Grade link: <https://info.kingcounty.gov/assessor/esales/Glossary.aspx?type=r>

Baseline Model Regression Result

OLS Regression Results

| | | | |
|-------------------|------------------|---------------------|-------------|
| Dep. Variable: | price | R-squared: | 0.000 |
| Model: | OLS | Adj. R-squared: | 0.000 |
| Method: | Least Squares | F-statistic: | nan |
| Date: | Wed, 06 Oct 2021 | Prob (F-statistic): | nan |
| Time: | 23:19:00 | Log-Likelihood: | -2.0933e+05 |
| No. Observations: | 15010 | AIC: | 4.187e+05 |
| Df Residuals: | 15009 | BIC: | 4.187e+05 |
| Df Model: | 0 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P> t | [0.025 | 0.975] |
|----|--------|---------|---------|-------|--------|--------|
| x1 | 1.0000 | 0.004 | 222.956 | 0.000 | 0.991 | 1.009 |

| | | | |
|----------------|----------|-------------------|-----------|
| Omnibus: | 7638.266 | Durbin-Watson: | 2.011 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 70072.566 |
| Skew: | 2.267 | Prob(JB): | 0.00 |
| Kurtosis: | 12.565 | Cond. No. | 1.00 |

First LinReg Model Regression Result

OLS Regression Results

| | | | | | | |
|-------------------|------------------|---------------------|-------------|-------|----------|----------|
| Dep. Variable: | price | R-squared: | 0.384 | | | |
| Model: | OLS | Adj. R-squared: | 0.384 | | | |
| Method: | Least Squares | F-statistic: | 9367. | | | |
| Date: | Wed, 06 Oct 2021 | Prob (F-statistic): | 0.00 | | | |
| Time: | 23:19:16 | Log-Likelihood: | -2.0569e+05 | | | |
| No. Observations: | 15010 | AIC: | 4.114e+05 | | | |
| Df Residuals: | 15008 | BIC: | 4.114e+05 | | | |
| Df Model: | 1 | | | | | |
| Covariance Type: | nonrobust | | | | | |
| | coef | std err | t | P> t | [0.025 | 0.975] |
| const | 4.951e+04 | 4995.430 | 9.912 | 0.000 | 3.97e+04 | 5.93e+04 |
| sqft_living | 230.5006 | 2.382 | 96.782 | 0.000 | 225.832 | 235.169 |
| Omnibus: | 6580.613 | Durbin-Watson: | 2.001 | | | |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 58868.945 | | | |
| Skew: | 1.882 | Prob(JB): | 0.00 | | | |
| Kurtosis: | 11.942 | Cond. No. | 5.93e+03 | | | |

Final LinReg Model Regression Result

OLS Regression Results

| | | | |
|-------------------|------------------|---------------------|-------------|
| Dep. Variable: | price | R-squared: | 0.586 |
| Model: | OLS | Adj. R-squared: | 0.586 |
| Method: | Least Squares | F-statistic: | 4249. |
| Date: | Wed, 06 Oct 2021 | Prob (F-statistic): | 0.00 |
| Time: | 23:41:42 | Log-Likelihood: | -2.0271e+05 |
| No. Observations: | 15010 | AIC: | 4.054e+05 |
| Df Residuals: | 15004 | BIC: | 4.055e+05 |
| Df Model: | 5 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P> t | [0.025 | 0.975] |
|--------------|------------|----------|---------|-------|-----------|-----------|
| const | -3.185e+07 | 4.97e+05 | -64.066 | 0.000 | -3.28e+07 | -3.09e+07 |
| sqft_living | 165.5888 | 2.385 | 69.439 | 0.000 | 160.915 | 170.263 |
| lat | 6.768e+05 | 1.04e+04 | 64.764 | 0.000 | 6.56e+05 | 6.97e+05 |
| Grade_Better | 1.207e+05 | 5098.229 | 23.669 | 0.000 | 1.11e+05 | 1.31e+05 |
| Grade_VGood | 2.437e+05 | 8014.289 | 30.412 | 0.000 | 2.28e+05 | 2.59e+05 |
| View_NONE | -2.059e+05 | 5379.200 | -38.280 | 0.000 | -2.16e+05 | -1.95e+05 |

| | | | |
|----------------|----------|-------------------|------------|
| Omnibus: | 8275.683 | Durbin-Watson: | 2.005 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 136407.068 |
| Skew: | 2.293 | Prob(JB): | 0.00 |
| Kurtosis: | 17.038 | Cond. No. | 7.20e+05 |

The Baseline:

-Our baseline is the average home sale price
\$540,309

-Using the baseline for making business decisions is ***NOT*** recommended!

