King County Housing Analysis

Peder Norr
April 19, 2021

Outline

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- Findings
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Business Problem

- Home owners in King County want to renovate and sell home
- Home owners don't know what factors are important for determining a home's value
- Need to determine what type of renovations to complete in order to maximize home sale price

Data & Methods

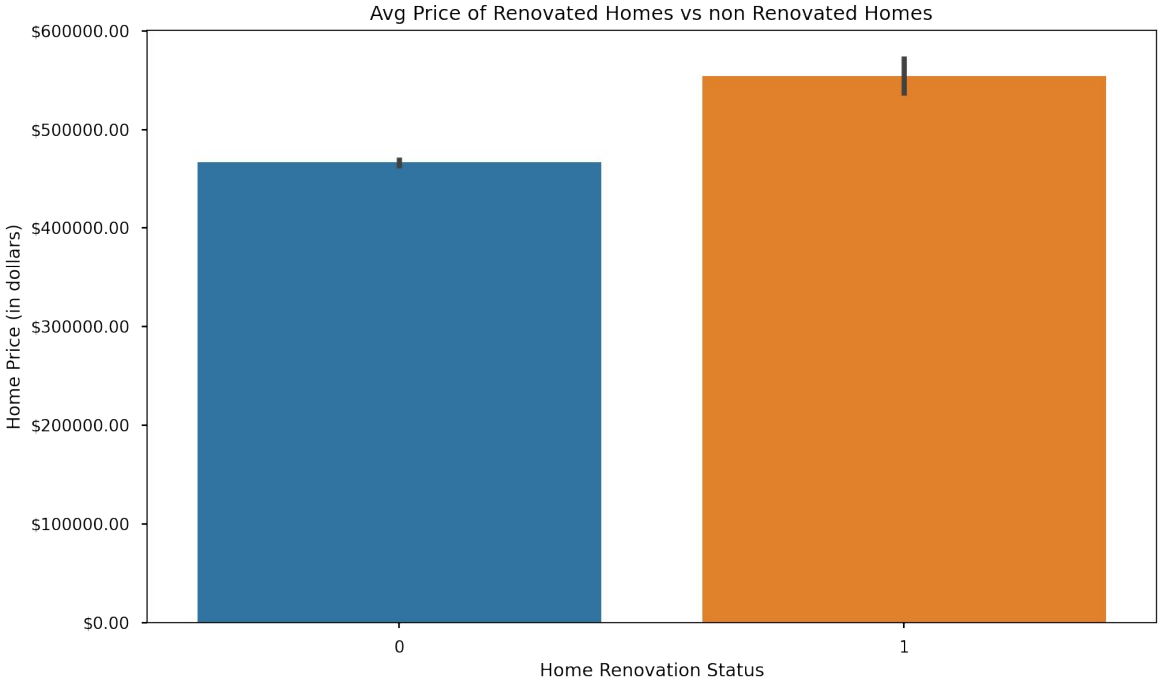
- Data sourced from King County Housing dataset
- Data included information on home price, date built, square footage, grade, condition, renovation date, zip code, number of bed/bathrooms, and various other features
- Dataset encompassed 20180 homes from 2014-2015
- Conducted multiple linear regression analysis leveraging these data
- Resulting model had an adjusted R squared value of .839, meaning model explains almost 84% of home price

Findings

Multiple linear regression analysis of King County home sale data identifies actions homeowners can take to renovate their homes to ensure highest home price:

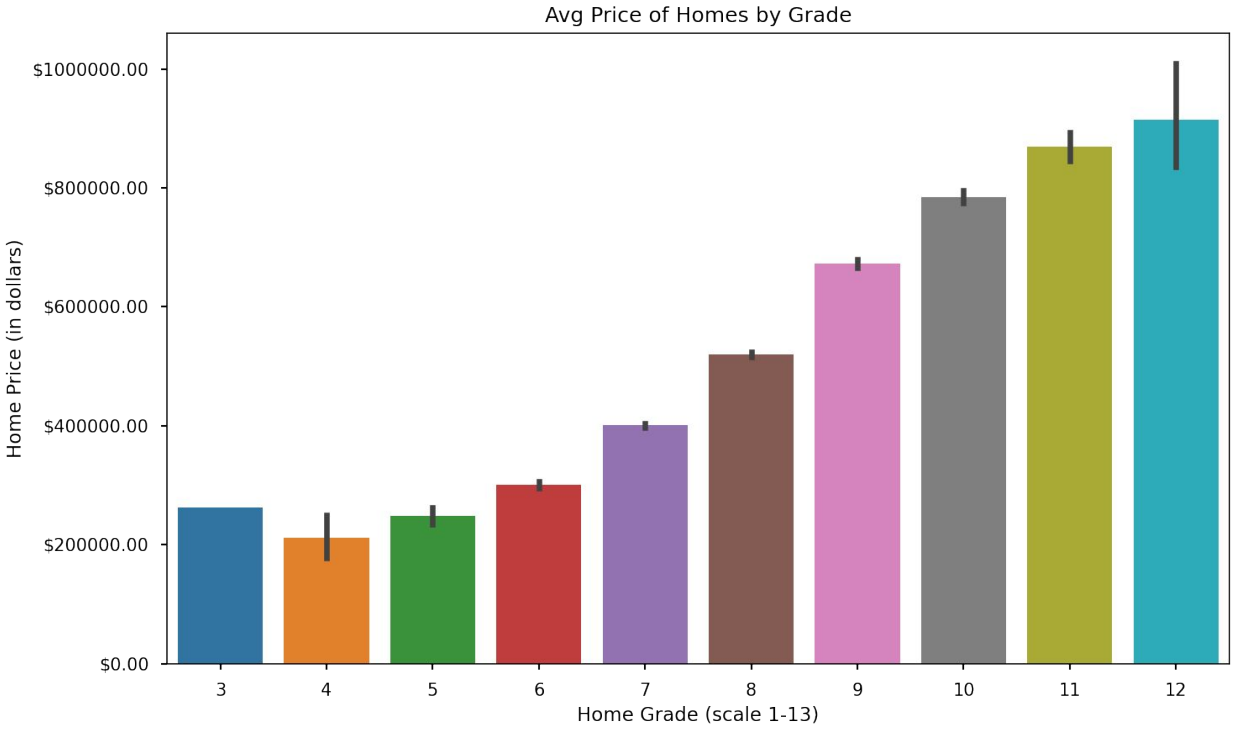
- Conduct a renovation, no matter how small
- Improving grade of the home is the biggest factor
- Increasing the condition of the home can make a difference
- Add bathrooms
- Generally avoid adding floors

Results



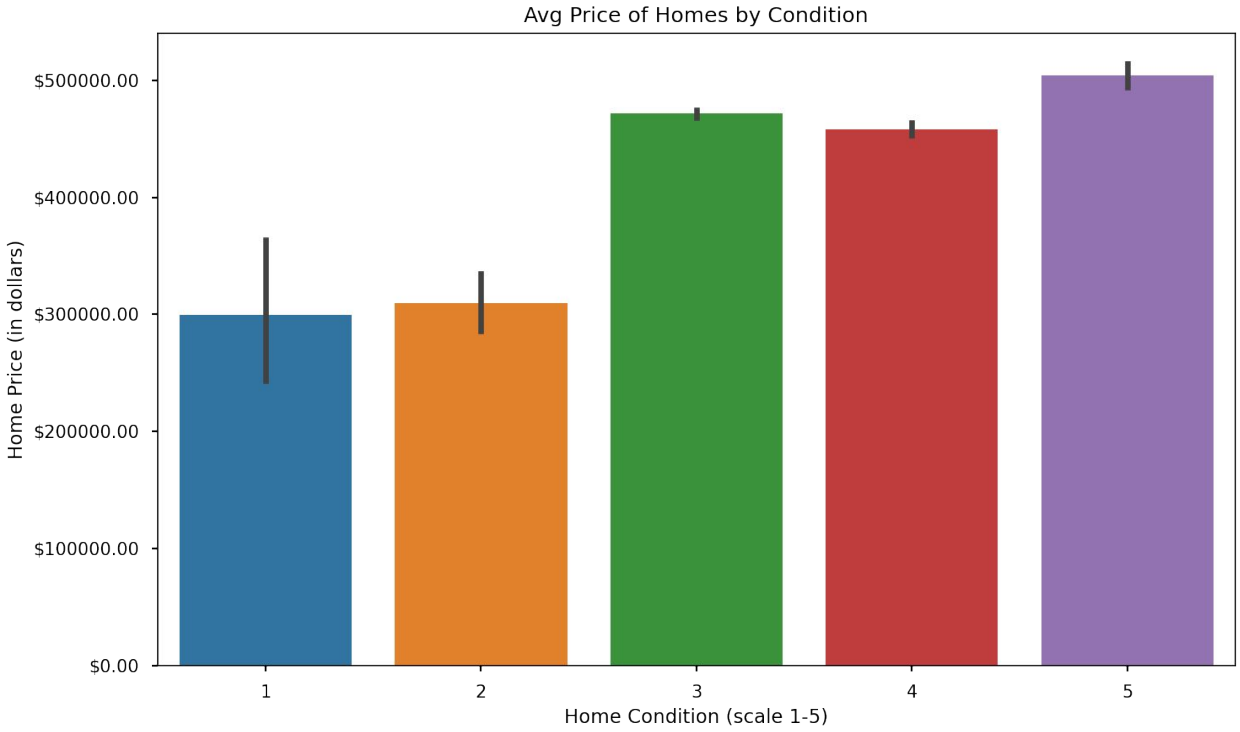
- Homes that underwent renovation of any kind were significantly higher priced
- Renovation could potentially increase price by $30,000

Results



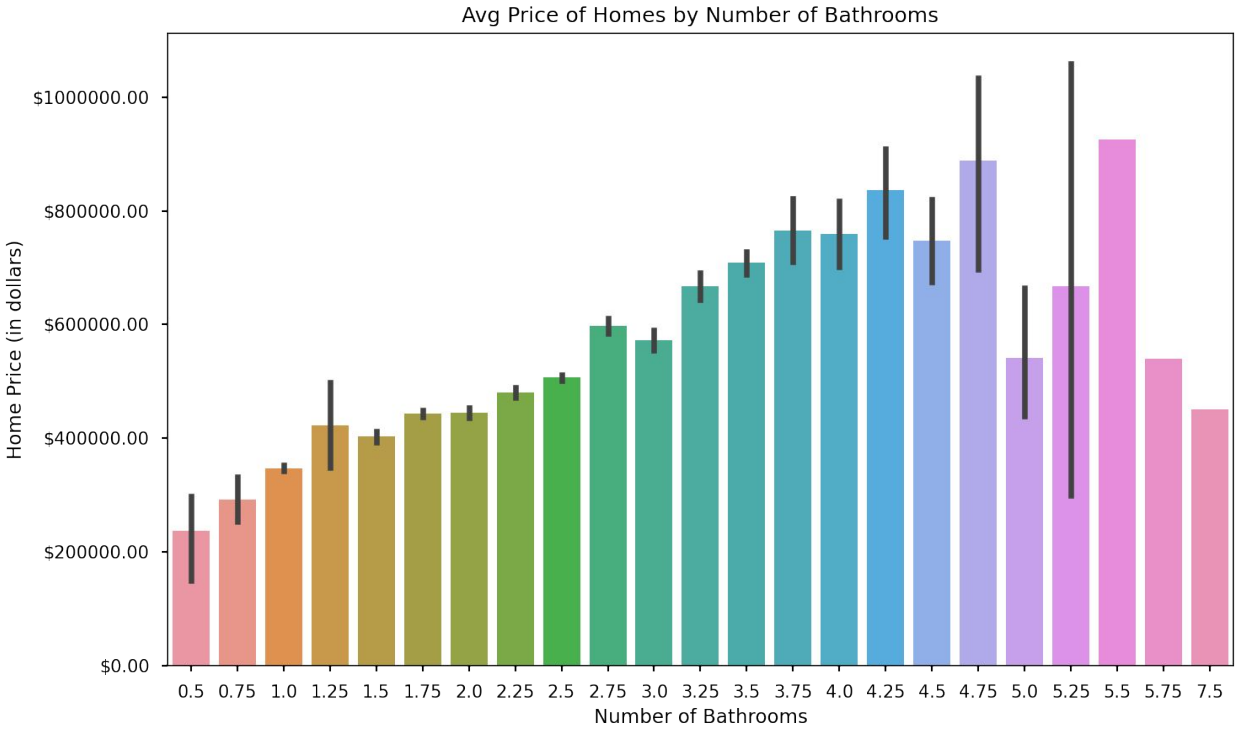
- Homes with a higher grade sold for a higher price
- An increase in grade of one level could increase price by $40,000

Results



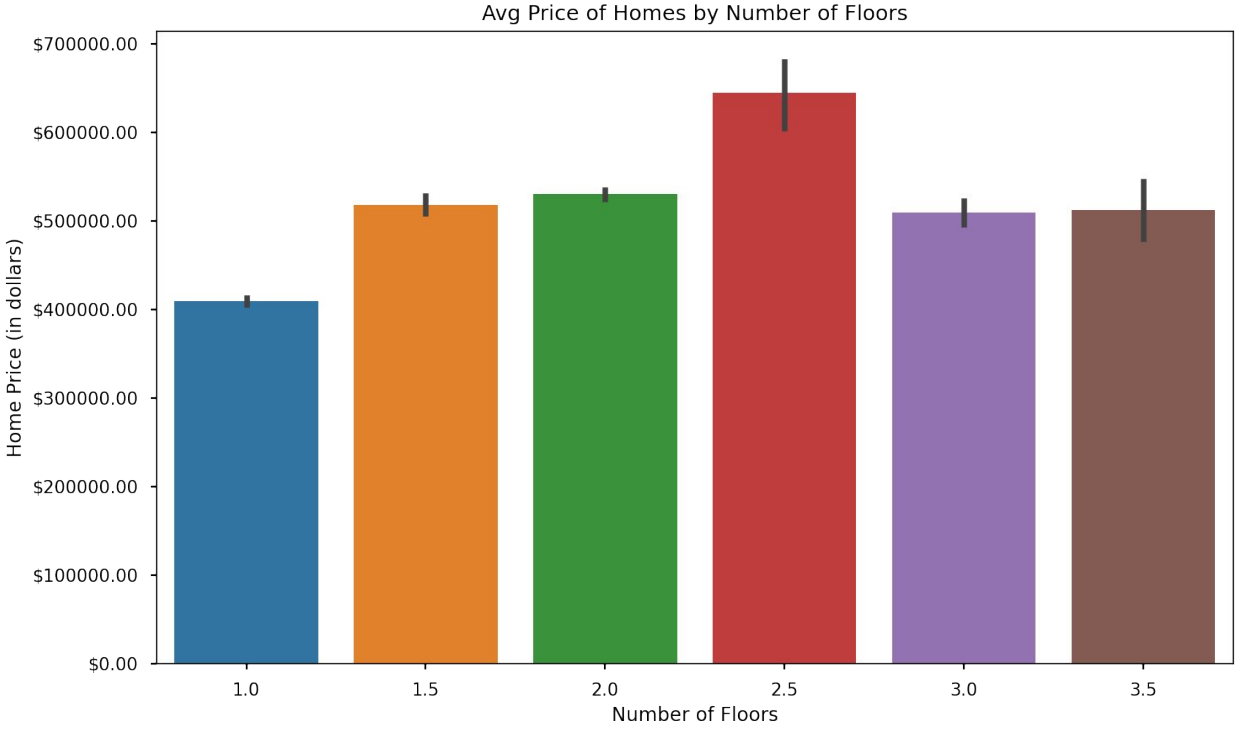
- Homes in better condition sold for higher price
- An increase in condition of one level could result in increase in price of $20,000

Results



- Homes with more bathrooms sold for higher price
- An additional bathroom could increase home price by $12,000

Results



- Homes with more floors did not necessarily sell for higher price

Conclusions

- **Any renovation is better than none**. As evidenced by a positive coefficient of 32,199.82, simply the fact that a home was renovated at all, in any capacity, could result in an increase in home price of over $30,000. Based on those results, I would recommend that homeowners conduct some kind of renovation, no matter how small.
- **Grade is king**. With a positive coefficient of 42,070.53, increasing the grade of a home by one level on a scale from 1-13 could result in an increase in home price of over $40,000. Grade is defined by King County as an overall grade given to the housing unit based on King County grading system from 1 to 13, where 1-3 falls short of building construction and design, 7 has an average level of construction and design, and 11-13 have a high quality level of construction and design. If a homeowner can improve the grade level of their home, whether by improving the construction or design of the home, it could pay large dividends.
- **Condition is last, but not least**. Represented by a positive coefficient of 22,825.45, increasing the condition of a home by one level on a scale from 1-5, could result in an increase in home price of over $20,000. Condition is defined by King County as an index from 1 to 5 based on the overall condition of the home. Homeowners should focus on improving the condition of the home, potentially by replacing appliances or other run down features of the home.
- **Everyone loves bathrooms.** Represented by a positive coefficient of 12,716.6, increasing the number of bathrooms in a home by one could result in an increase in home price of over $12,000. Homeowners should consider adding bathrooms as a tangible way of increasing their homes sale price.
- **Floors aren't everything.** Represented by a coefficient of -11,872.06, according to the model, adding floors to a home could potentially have a negative impact on sale price. Home owners should avoid adding floors, as it might not actually lead to higher home value.

Next Steps

- The model and analysis are not complete solutions, nor are they perfect.
- The final model still struggles with multicollinearity issues, as all multiple linear regression models do, and does not perfectly meet the assumptions of normality and homoskedasticity.
- I believe that the model is accurate to a degree that makes it useful for homeowners in renovation decision making, and is easily interpretable.
- I could improve this analysis in the future by further transforming and scrubbing the data to better meet the assumptions of linear regression, and by acquiring more data on other features related to housing that could help better predict home prices

Thank You!

Email: norr.peder@gmail.com
GitHub: @pederknorr
LinkedIn: linkedin.com/in/pedernorr/