Product Demonstration: A Tool for Predicting Housing Prices in King's County, WA

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Objectives

- Summarize requirements

- Describe source data

- Discuss model development

- Demonstrate product capabilities

Tool Requirements

- Lighten Abhineet's growing workload and reduce manual effort overall

- Identify home listings worth personal investigation

- Estimate price for home resale

Source Data

- All homes sold in King's County, WA during the 2014 fiscal year

- Includes information such as lot and livable space square footage, number of beds and bathrooms, King's County grade appraisal

- Data scrubbed of imperfections prior to model construction

Model Development

- Construct baseline linear model from scrubbed dataset

- Iterate over model versions to improve accuracy

- Steps taken to improve this model: Categories, Interactions, and Log Transformation

- The final model considers 117 factors in estimating price. The model can describe 88% of the variation in housing prices from our collection and, in the majority of our housing price distribution, will predict a sales price within $75,000 of it's true selling price 95% of the time

Housing Price Estimation: An Example

- A fictitious home with all the median values from our dataset has:

Bedrooms : 3	Floors: 1
Bathrooms: 2.25	Year Built: 1975
Lot Size: 7627.5 sqft	Lot Area, 15 Neighbor Avg: 7628
Aboveground Living Area: 1560 sqft	Living Area, 15 Neighbor Avg: 1840
Basement Area: 0 (No Basement)	Waterfront: No
King's County Grade: 7	View: None
Zip Code: 98103 (North Seattle, Green Lake)	Lat, Long: (47.5714, -122.29)

- For this home, the price predicted by the model is $559,299

- The average price of other three-bedroom homes (N=124) with a grade of seven in the same zip code is $588,888

Renovation Sales Estimates

From our estimated price of $559,299, with all else the same:

- Adding a bedroom: $554,796

- Adding a half bath: $570,099

- Increasing in grade from 7 to 8: $607,850

In varying the values, we can see how they impact the estimated housing price to get an idea of how individual parameters affect the estimate. The three above are factors we can reasonably change in renovation, so we can takeaway:

- Adding bathrooms is a good way to increase price

- Adding bedrooms is not a good idea, unless the number of bedrooms is already low or there is a specific justification

- Quality renovations increasing grade will hugely increase resale price

General Trends in Housing Price

While we may not be able to change them in renovation:

- Waterfront and Views drastically increase price

- Zip code can greatly affect price predictions in either direction

- Homes further North and further West sell for more

- More living area means higher price

- Basement area will increase price, but not as much as aboveground area

- Newer homes tend to sell for less

Future Tasks

- Automatically sift realty sites hosting listings daily, emailing links of listings for review to Abodes by Abhineet employees

- Investigate adding other defining parameters to the model, such as distance from certain amenities, workplaces

- Acquire data from other fiscal years

Thank You!

- Github Repo: https://github.com/mattlegro/dsc-phase-2-project

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