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# PROFITABLE HOUSES IN KING COUNTY

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# BUSINESS PROBLEM

- **Stakeholder:** Home buyer, family person.
- **Problem:** The stakeholder previously bought a house that was overvalued and far from his son's school. His family was unimpressed.
- **Model purpose:** Select houses based on specific features to ensure the stakeholder will be close to a middle school & won't lose money later on.

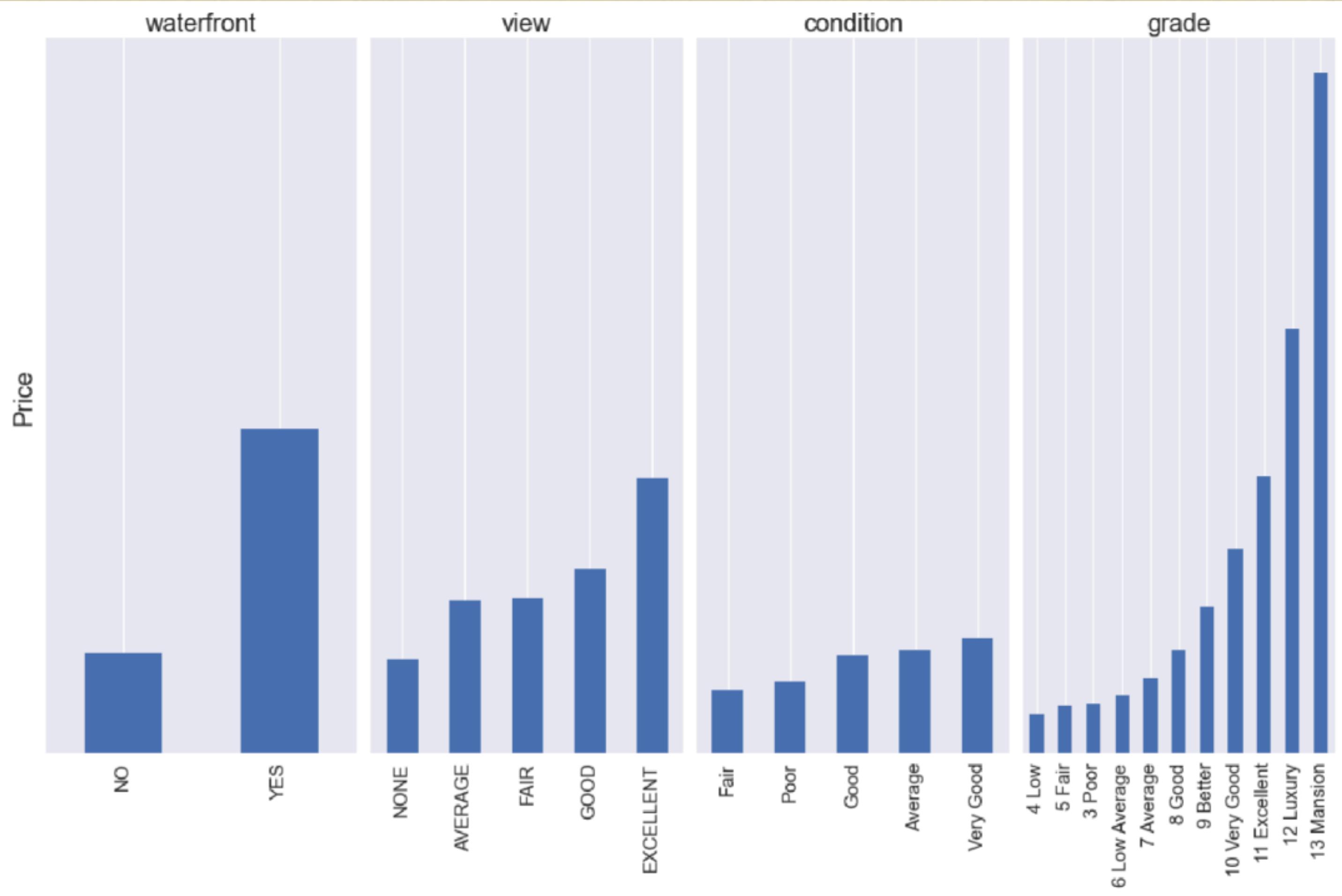


# DATA



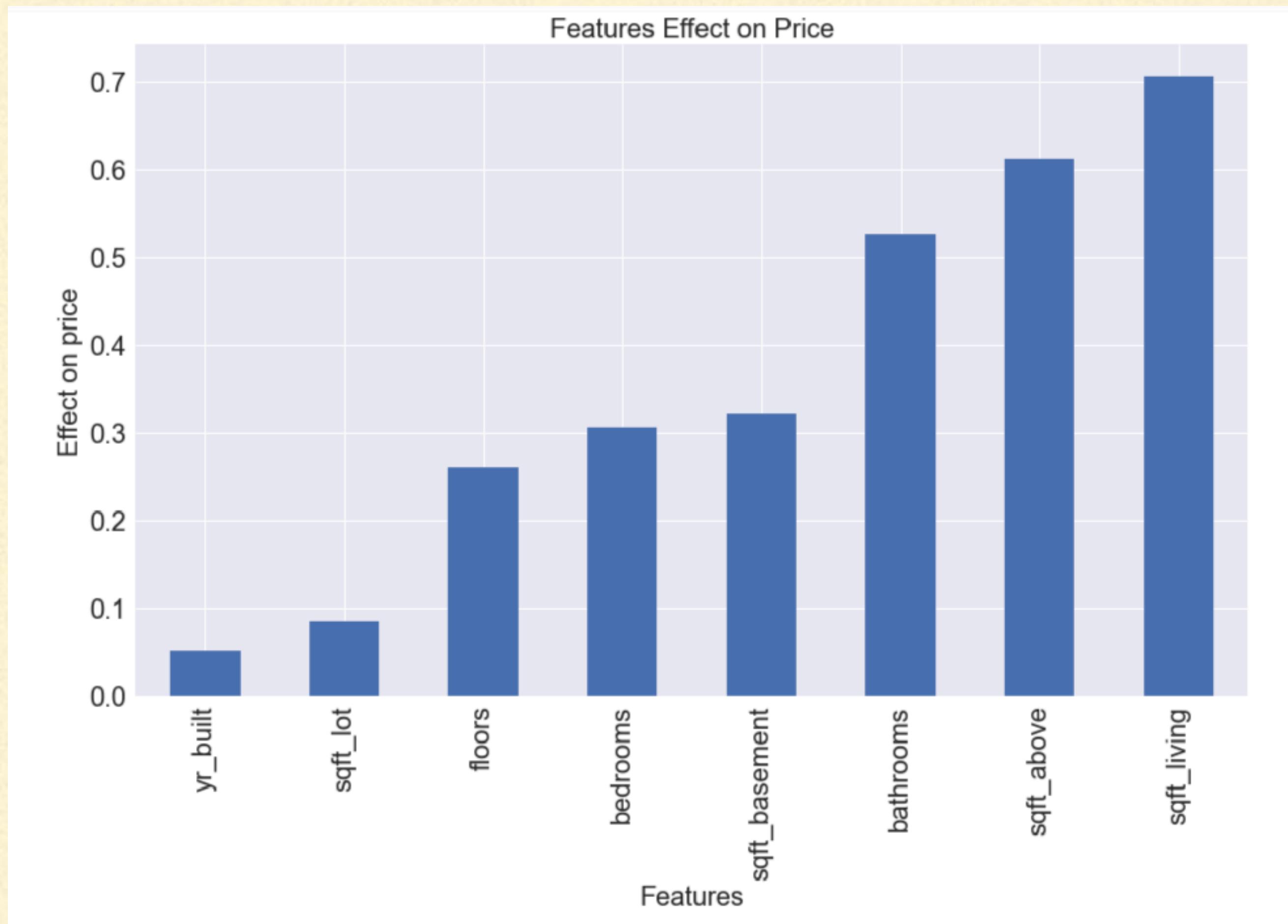
- King County real estate data for homes sold in and around King County, Washington.
- Middle school locations in King County. We are able to calculate the distances from the houses in King County real estate data.

# CATEGORICAL FEATURES



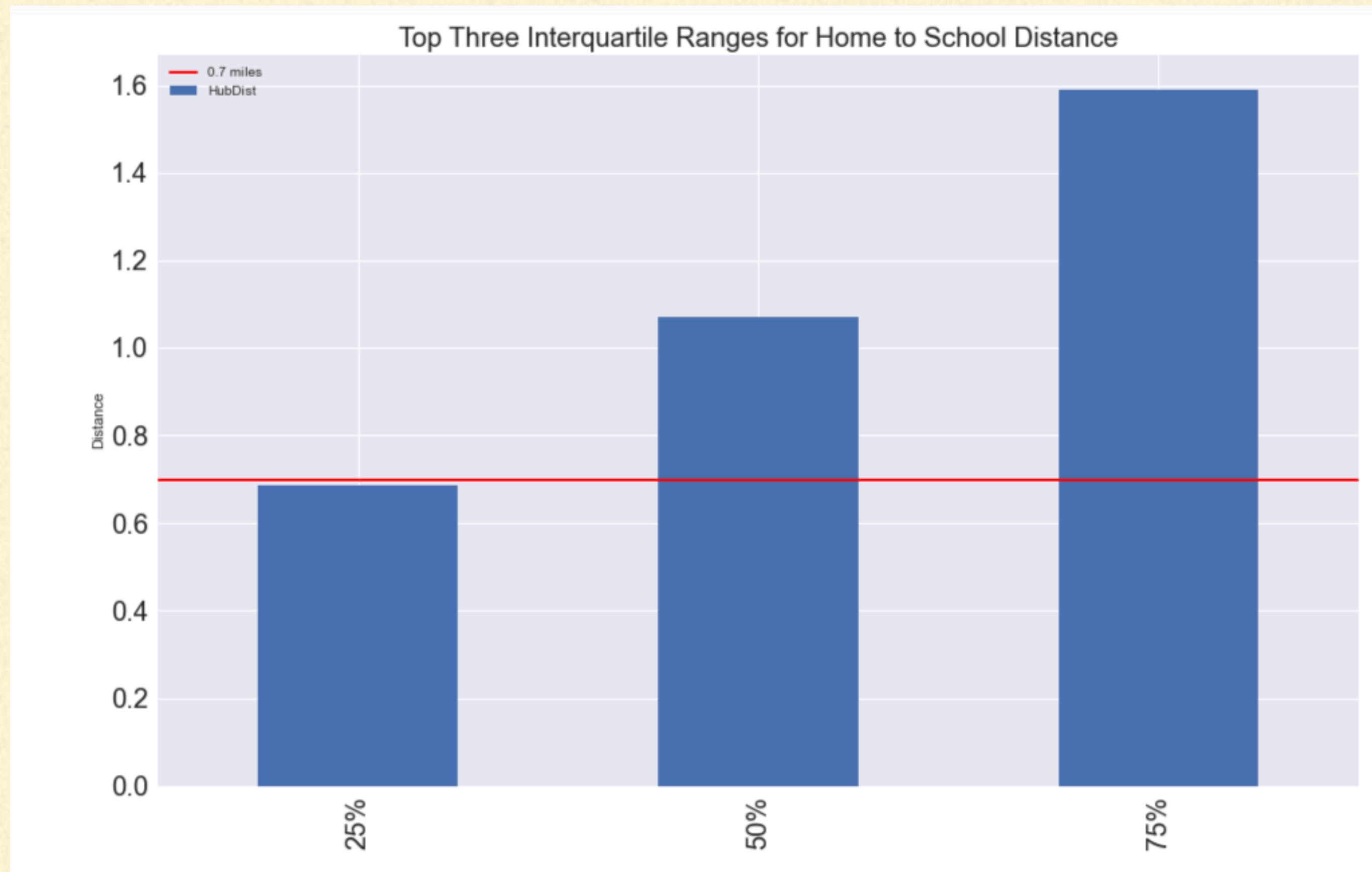
- The data contains four features of categorical variables.
- We decided all four features; Waterfront, View, Condition, and Grade to be relevant in our model.

# NUMERIC FEATURES



- The data contains 16 features of continuous (numeric) variables.
- The figure to the left shows some of the 16 features and their effect on price.
- Along with a few others, we included these features to be relevant in our model.

# MIDDLE SCHOOL DISTANCE



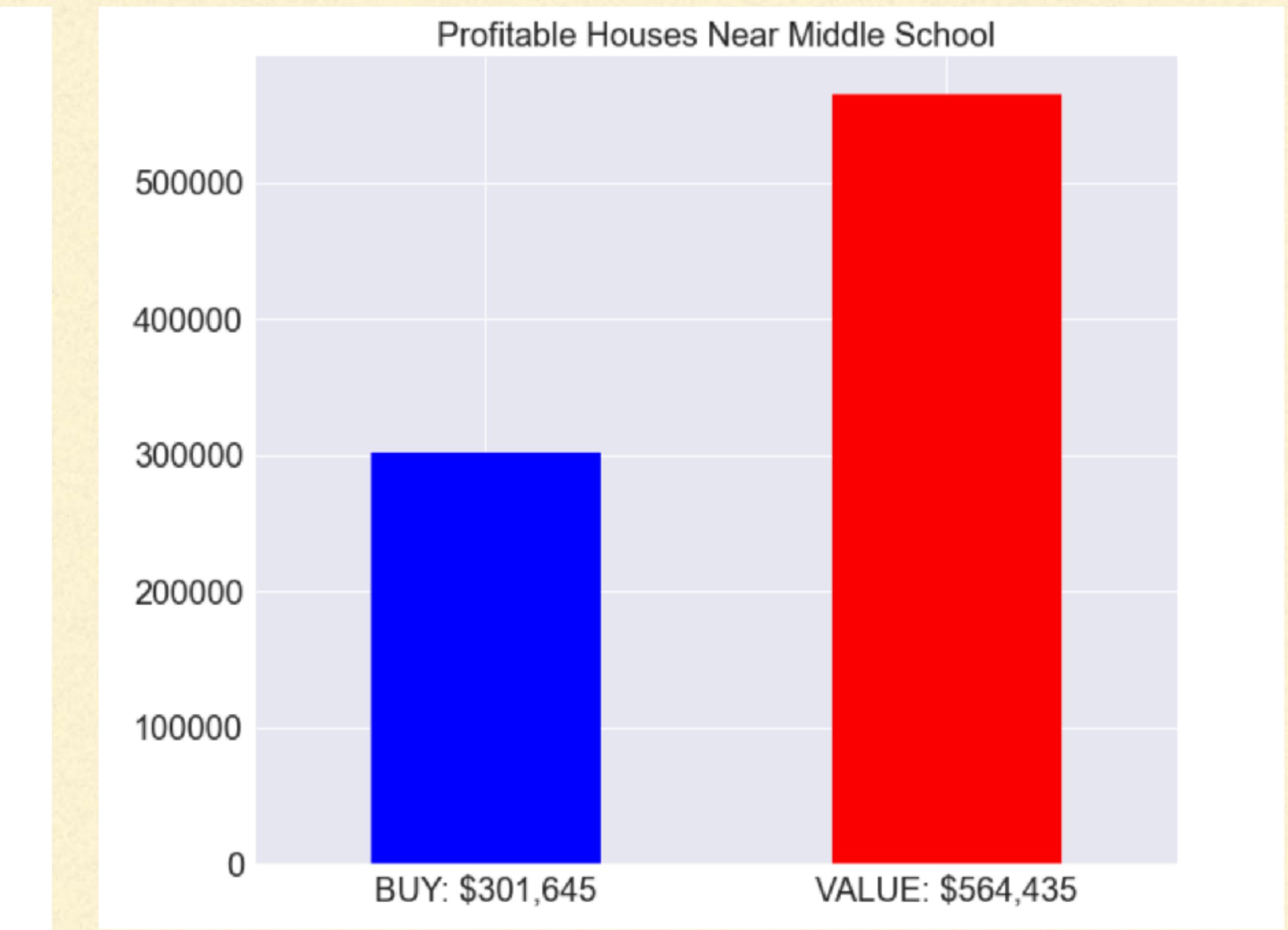
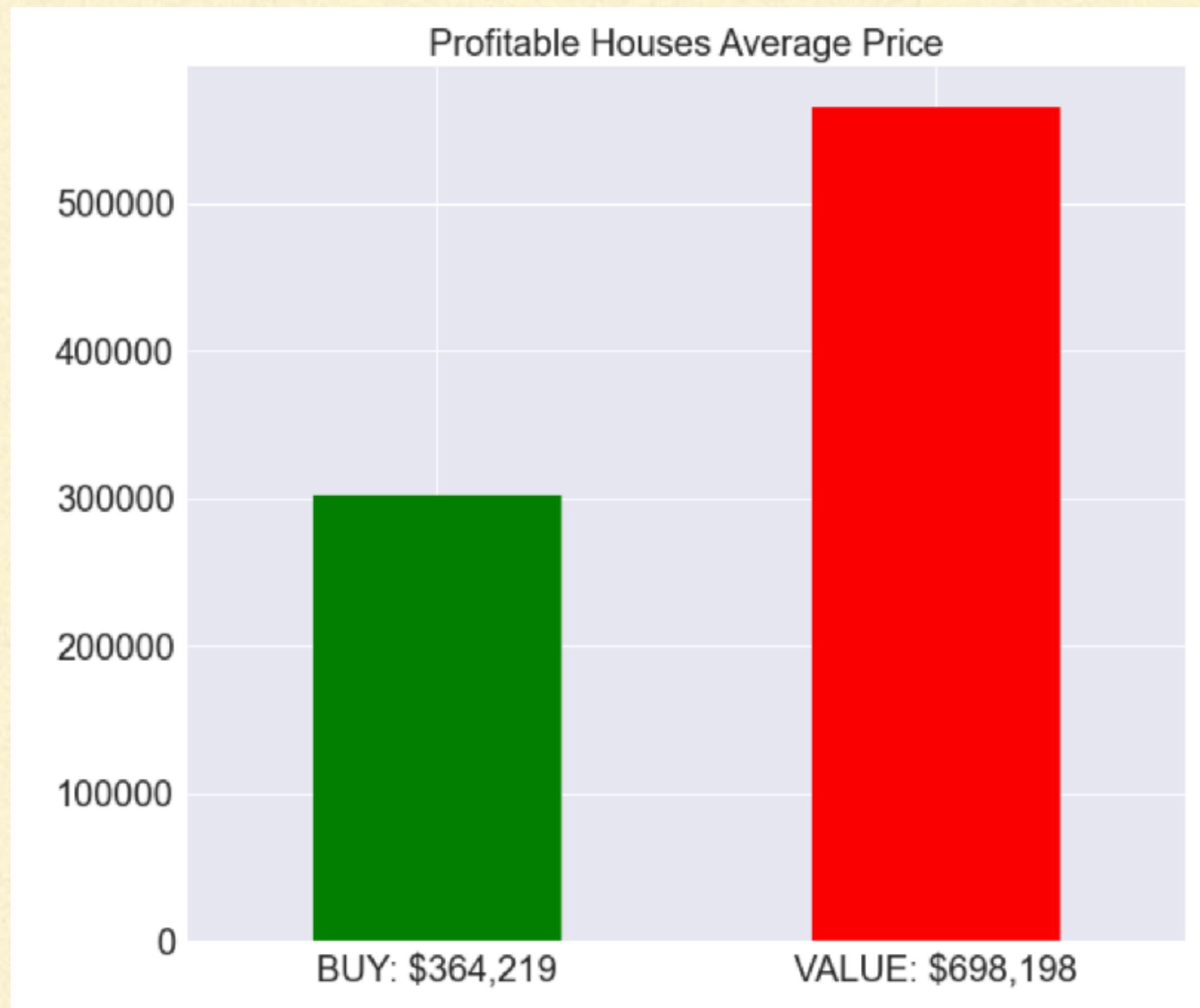
- Our investor is looking for a property close to a middle school.
- This figure shows the houses split into quarters based on the distance a house is to nearest middle school.
- The closest 25% of houses sold in King County are 0.7 miles away or less from their nearest middle school.
- To guarantee a quick commute time to school, the homebuyer should buy a house that is 0.7 miles away or less from a middle school.

# EVALUATION



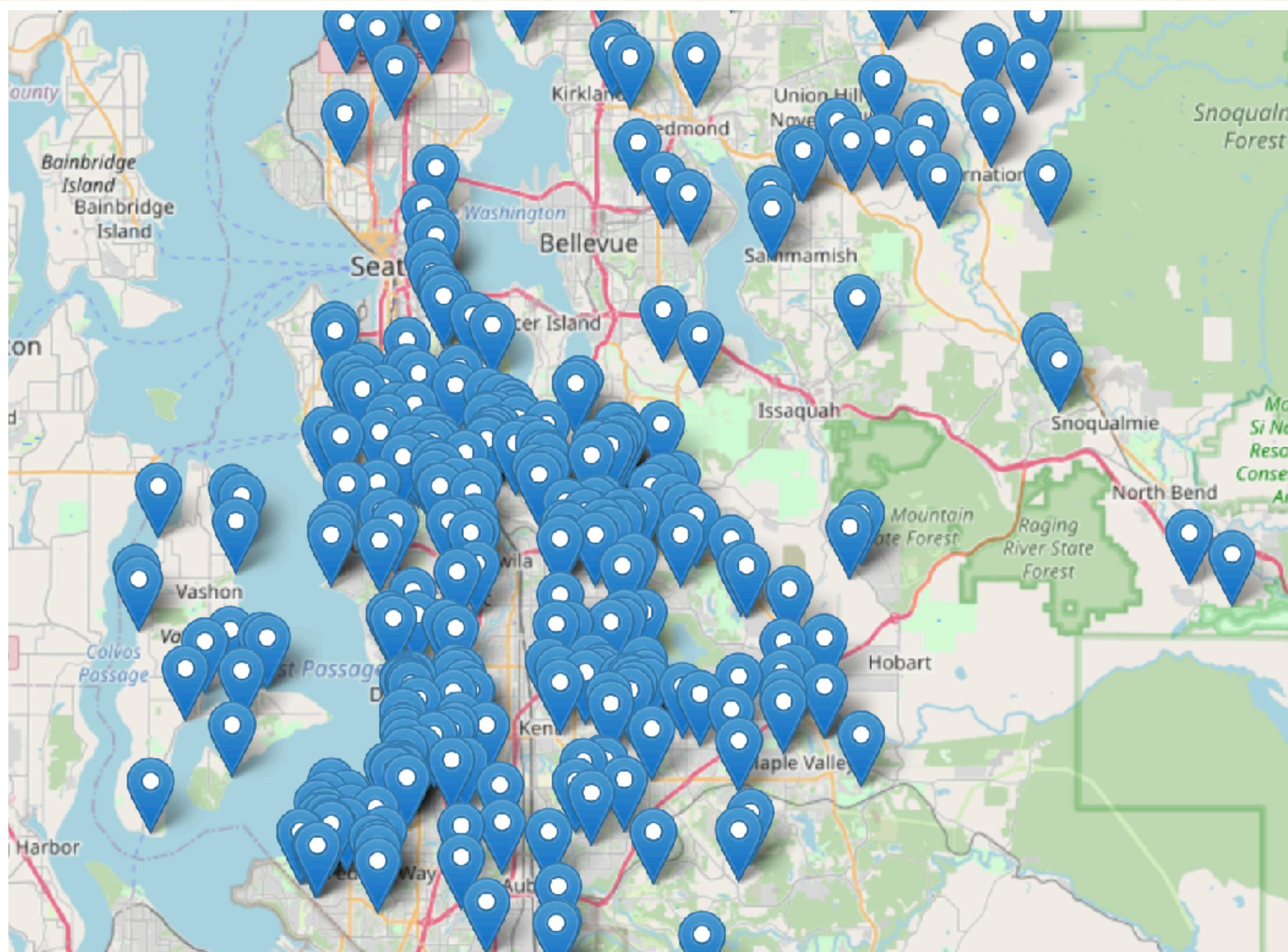
- The bar graph represents the models accuracy.
- Real Price: represents the average home price of all homes in our data.
- Predicted Price: the average home price predicted by our model.
- 71.5% of the data fit our house price prediction model.

# PRESENT VALUE VS PREDICTED VALUE



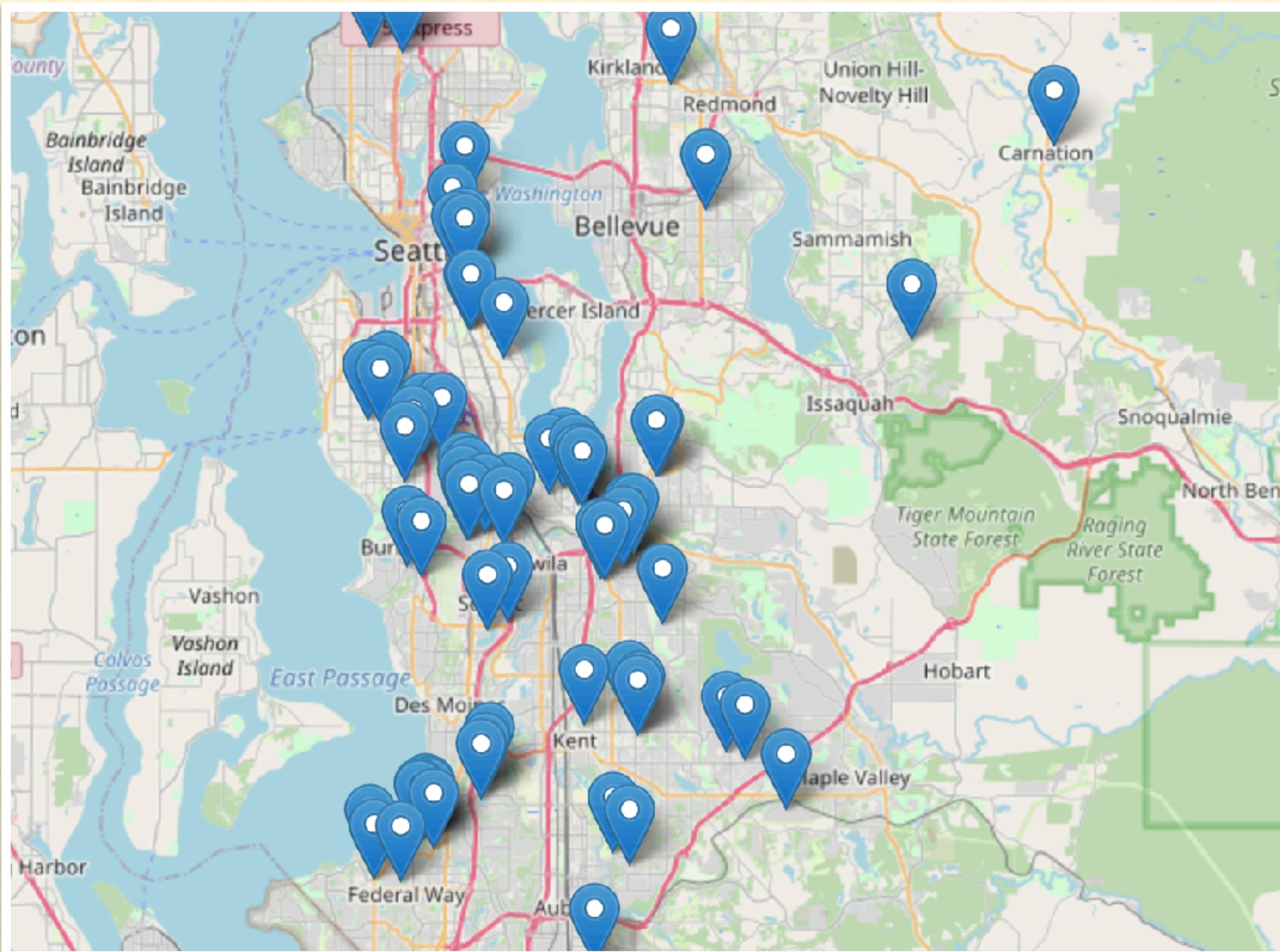
- Justified buying: Our model shows the homebuyer that the predicted future value makes the present value a legitimate home option.

# APPLY TO BUSINESS PROBLEM



- This map shows the houses that have actual prices 40% less than the predicted price of our model.
- The model recommends to consider buying these 507 houses from the original list of 21597 houses.

# APPLY TO BUSINESS PROBLEM



- This map shows houses priced less than the predicted value and also fall 0.7 miles or less from the nearest middle school.
- These 100 houses are our final recommendation for the stakeholder.
  - Fit model
  - Quick middle school commute

# CONCLUSION

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- 71.5% of the data fit our house price prediction model.
- The model was able to recommend 507 houses to purchase after finding homes where the actual price was 40% lower than the predicted price.
- To mitigate the commute time for the middle school child we found how many of the 507 houses fall within 0.7 miles from the closest middle school. We found a final list of 100 houses that lie within 0.7 miles from a middle school!

