predicting the price of a house at sale

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Agenda

1. Define the problem

2. Explore the data

3. Model & Evaluate

5. Answer the problem

Problem Statement

As current or potential homeowners, leasing agents and developers, we are interested in knowing **where to best invest our money and resources**, whether it is for buying, building, or remodeling

As investors, realtors, and banks, we are interested in knowing which areas and houses would be most financially profitable, especially if we can gain an early market advantage
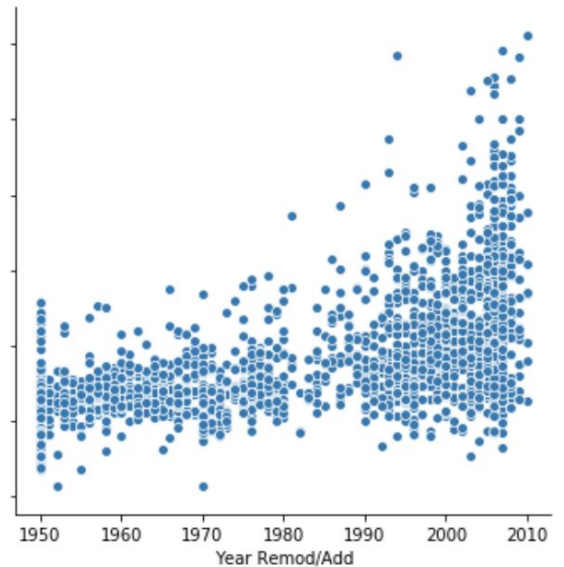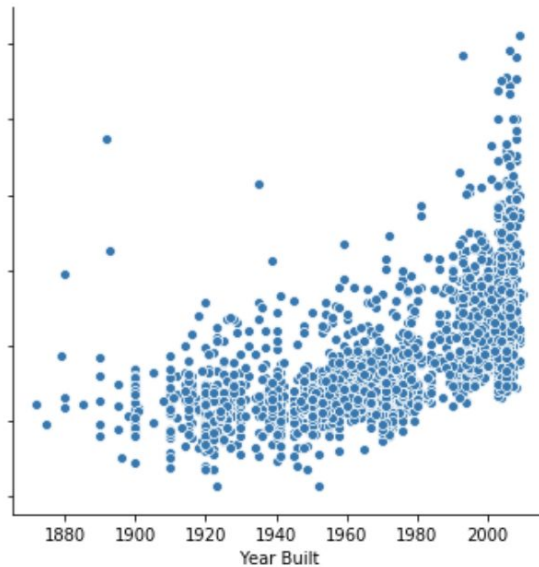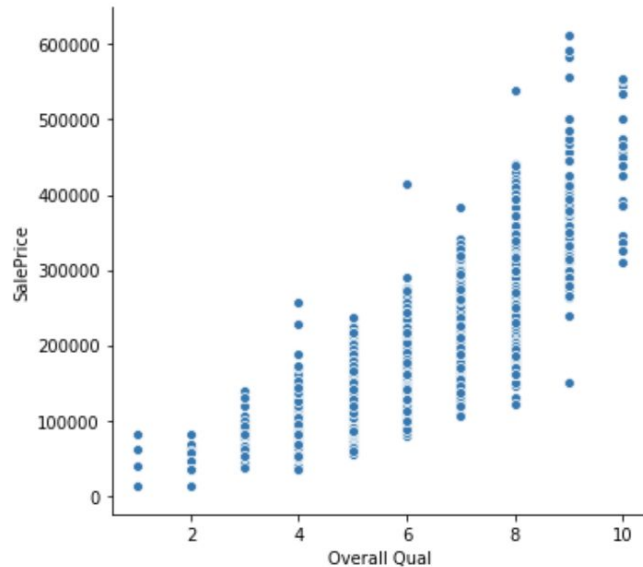
Exploratory Analysis

Cleaning

1. Eliminate **null values** (convert to NA or 0 or drop the rows or columns)
2. Check **data types** (eliminate obs identifiers, convert nominal to objects & ordinal to numbers)
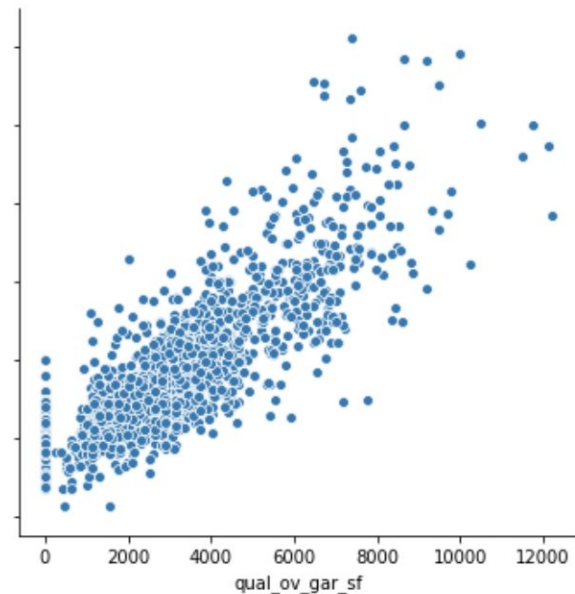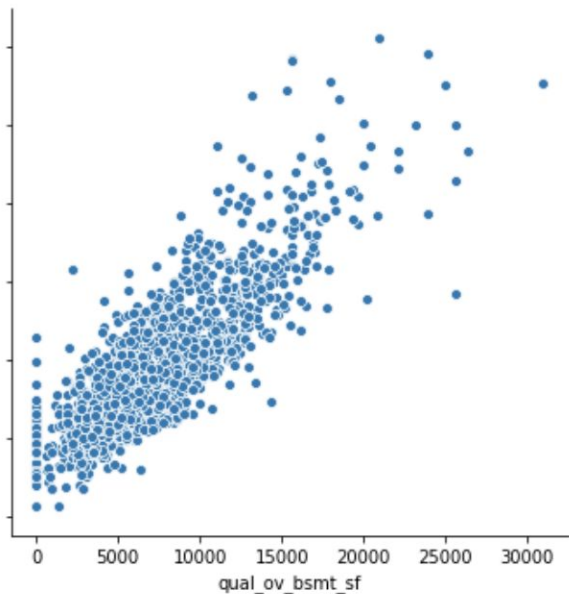3. Eliminate **extreme** outliers
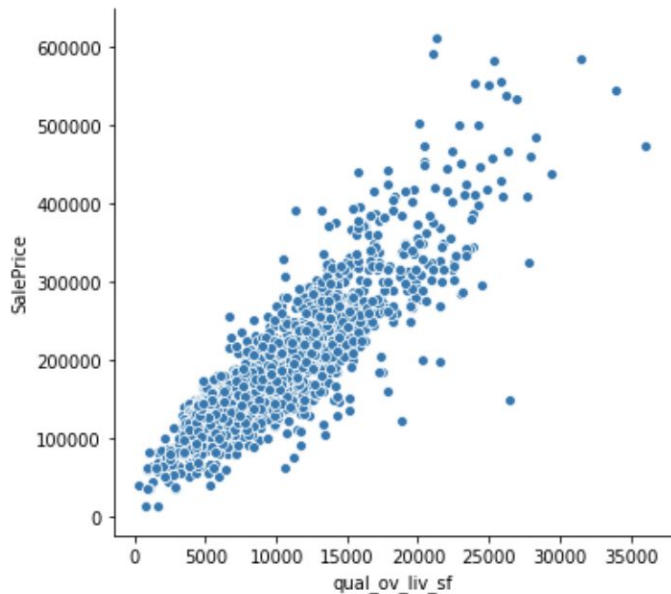4. Address **multicollinearity** with interaction terms

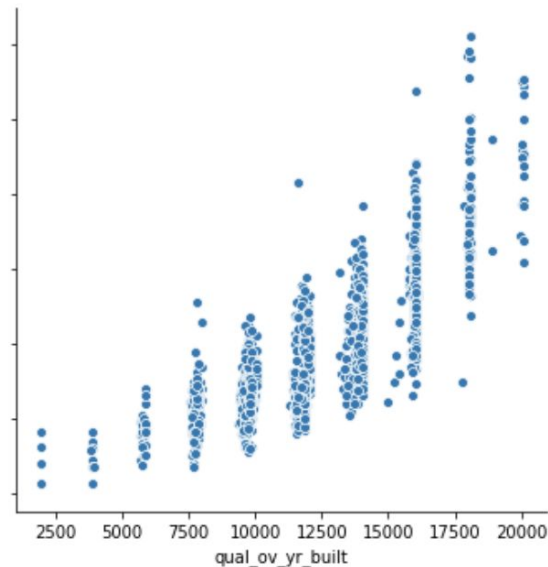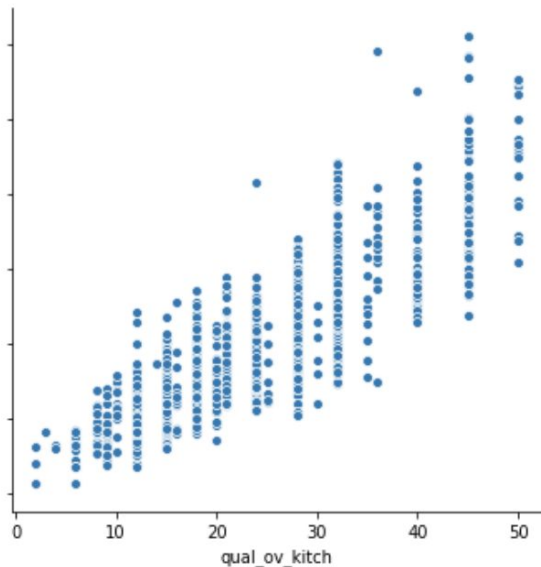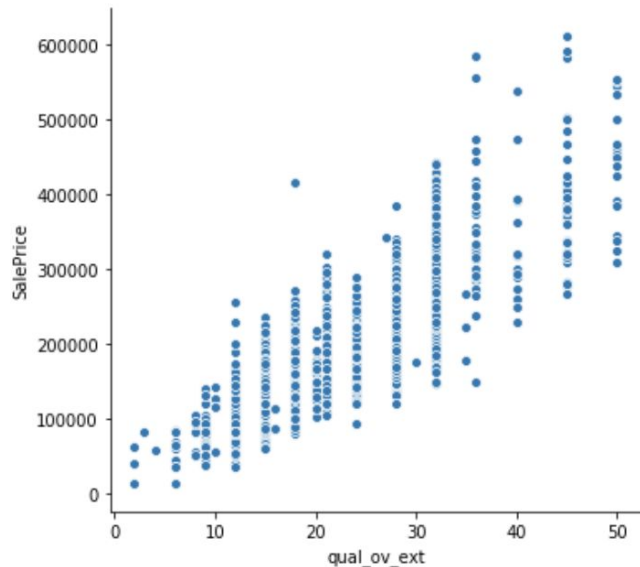# Highest Feature Correlation to Sales Price

Increased Correlation with Interaction Terms

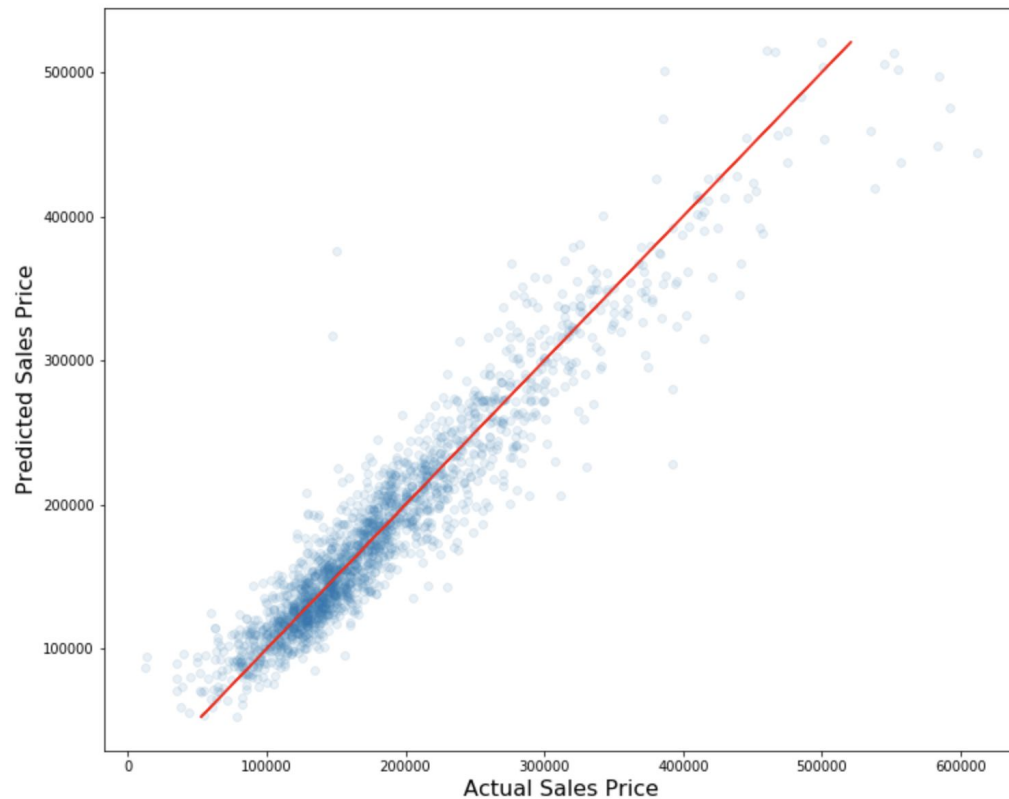# Interaction Terms (cont.)

Modeling the Data

Using a list of highly correlated terms,

90%

of the variance in the Sales Prices were explained by the model

All else held equal, the Sales Price of a house on average increases by

- $176,860 for each incremental rating in the overall quality of a home
- $20,587 for each additional car that can fit in the garage of a home

	Linear Regression Coefficient
Overall Qual	176860.790907
Garage Cars	20587.049468
Fireplace Qu	3099.344557
qual_ov_ext	2349.323959
qual_ov_kitch	1589.073601
bsmt_qual_cond	1581.148907
Garage Finish	1061.379383
qual_ov_gar_fin	440.513429
Year Remod/Add	305.245419
Year Built	223.701769

Conclusion

The best investment to increase the value of a home may be to **increase the size of the garage to include another car**.

Appendix

- Overall Qual
- Year Built
- Year Remod/Add
- Mas Vnr Area
- Exter Qual
- Bsmt Qual
- Total Bsmt SF
- 1st Flr SF
- Gr Liv Area
- Full Bath
- Kitchen Qual
- TotRms AbvGrd
- Fireplace Qu
- Garage Finish

- Garage Finish
- Garage Cars
- Garage Area
- Foundation_PConc
- Garage_cars_area
- Bsmt_qual_co
- Qual_ov_ext
- Qual_ov_kitch
- Qual_ov_yr_built
- Qual_ov_yr_remod
- Qual_ov_liv_sf
- Qual_ov_bsmt_sf

- Qual_ov_gar_sf
- Qual_ov_num_car
- Qual_ov_gar_car
- Qual_ov_gar_fin
- Sf_liv_1
- Sf_liv_gar_car
- Sf_liv_gar
- Sf_1_bsmt
- Sf_1_gar
- Sf_1_gar_car
- Sf_bsmt_gar_car
- Sf_bsmt_gar
- Age_house
- yr_since_remod