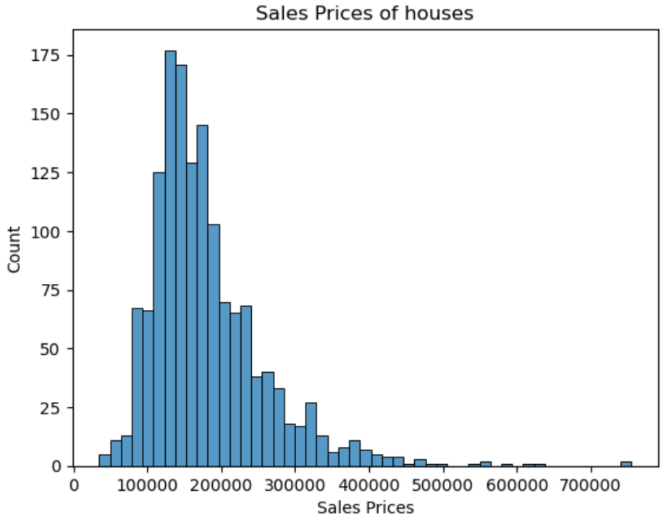
Phan Hoang An Nguyen
PDD Data Analytics
Langara College

Assignment 3 - part 3

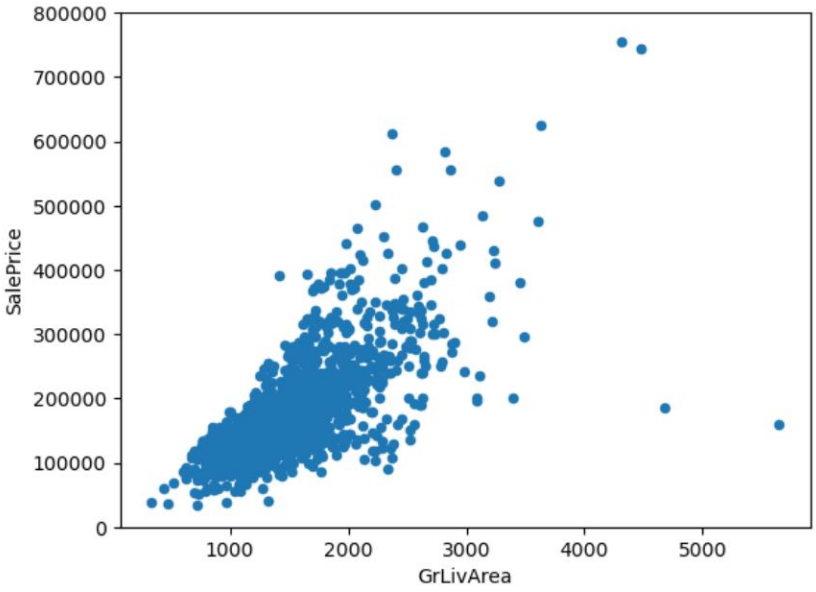
Name of dataset: House Price Data Set Source of dataset: Kaggle

Summary of dataset: total 81 columns x 1460 rows

The main variable of this dataset is the sales price (SalePrice) so below is the correlation between this variable with 3 numerical variables including Ground Living Area (GrLivArea), Total area in square feet of basement (TotalBsmtSF) and Overall quality (OverallQual).



1. **Determine if the sales price is associated to the Ground Living Area.**



⇨ Strong positive, linear relationship between Ground Living Area and Sales price. The larger ground living area will result in higher sales price.

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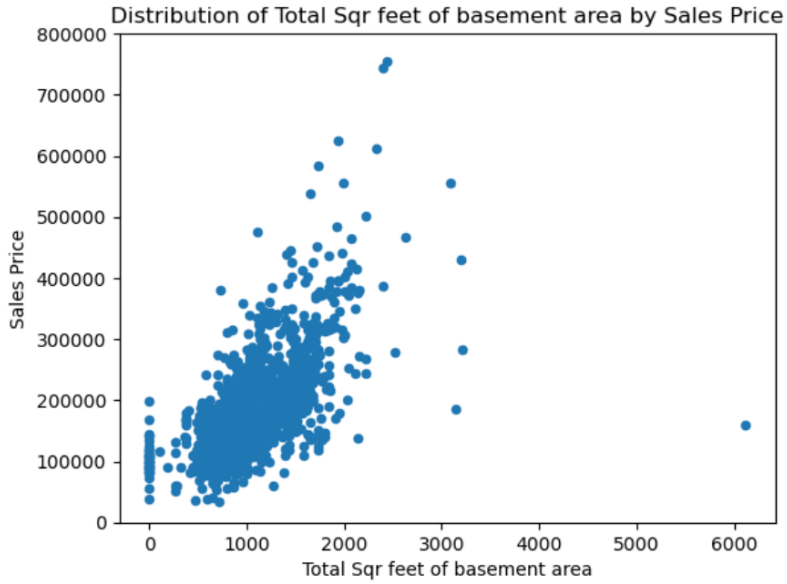
Chi-square test

- **Null hypothesis:** Ground Living Area is independent with Sales Price. In other words, there is no association between Ground Living Area and Sales Price
- **Alternative hypothesis:** Ground Living Area is not independent with Sales Price. In other words, there is an association between Ground Living Area and Sales Price

⇨ P-value = 0 < α (=0.05) → Reject H0 → There is an association between Ground Living Area and Sales Price

2. Determine if the Total square feet of basement area is associated to sales price.



⇨ Strong positive, linear relationship between Total square feet of basement area and Sales price. The larger Total square feet of basement area will result in higher sales price.

Chi-square test

⇨ **Null hypothesis:** Total square feet of basement area is independent of Sales Price. In other words, there is no association between Total square feet of basement area and Sales Price

⇨ **Alternative hypothesis:** Total square feet of basement area is not independent with Sales Price. In other words, there is an association between Total square feet of basement area and Sales Price

⇨ P-value = 0 < α (=0.05) → Reject H0 → There is an association between Total square feet of basement area and Sales Price

3. Determine the Sales price is associated to the Overall Quality.

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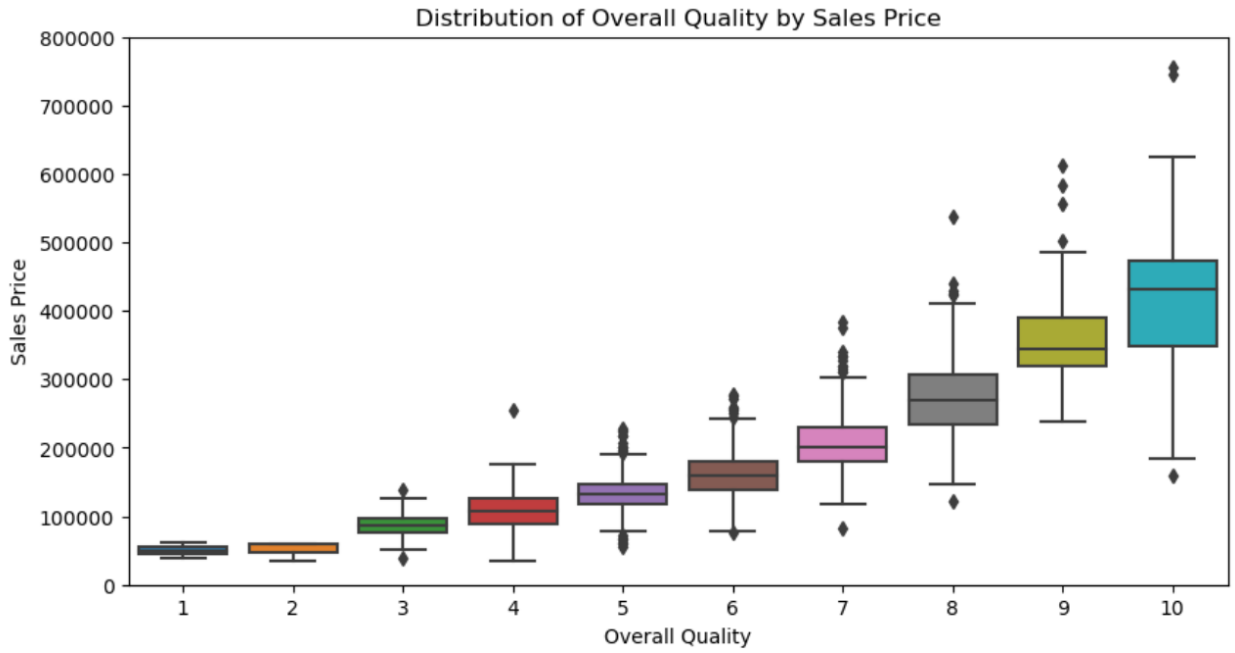

⇨ Higher Overall Quality might result in high sales price with plenty outliers.

Chi-square test

- **Null hypothesis:** Overall Quality is independent of Sales Price. In other words, there is no association between Overall Quality and Sales Price
- **Alternative hypothesis:** Overall Quality is not independent of Sales Price. In other words, there is an association between Overall Quality and Sales Price

⇨ P-value = 1.0 > α (=0.05) → Accept H0 → There is no association between Overall Quality and Sales Price