Final Project

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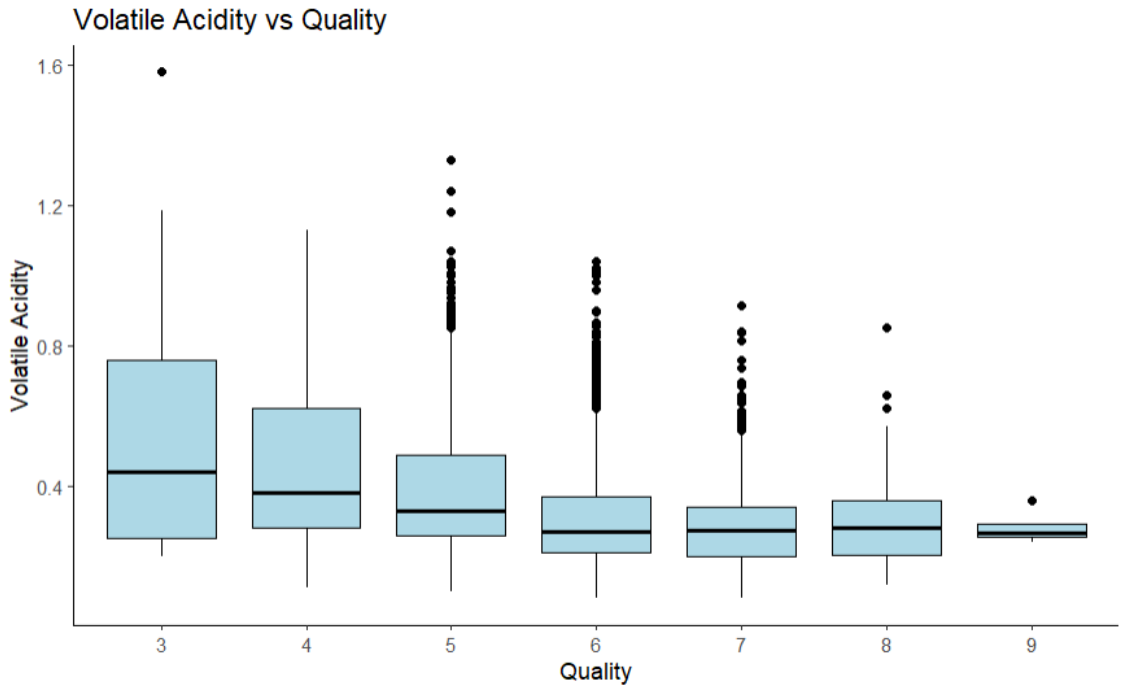
Data Cleaning

Fixing Typos	Replacing instances of “Californnia” being replaced with “California” in the location field
Imputing Missing Values	Missing values of type are mode imputed • We felt this was appropriate as the missing values followed a similar distribution to that of the white wine

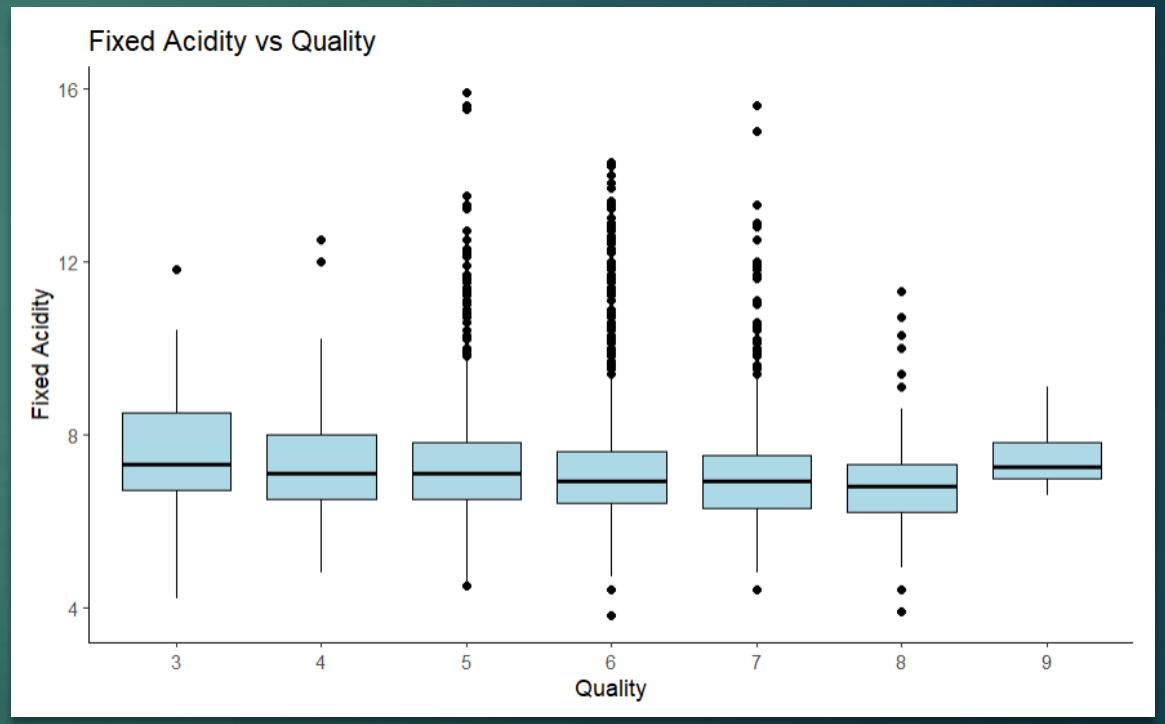
Volatile Acidity vs. Quality

- For the most part, a lower volatile acidity is associated with an average quality
- Higher volatile acidity is associated with both low and high quality wines
  - Highest average values as well as outliers are associated with lowest quality ratings



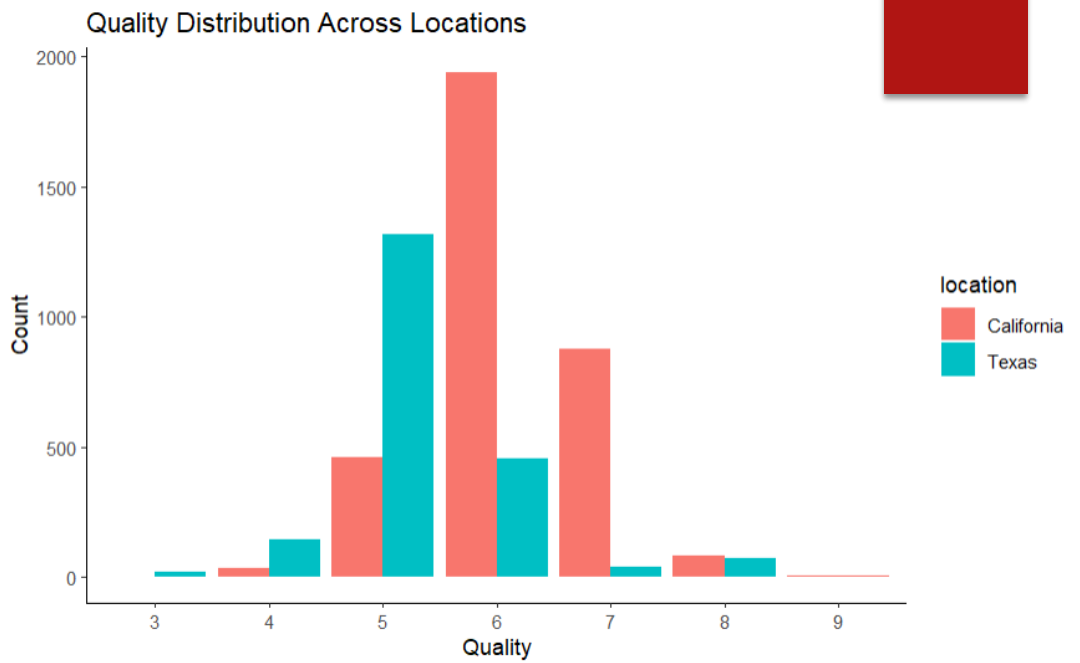
Fixed Acidity vs. Quality

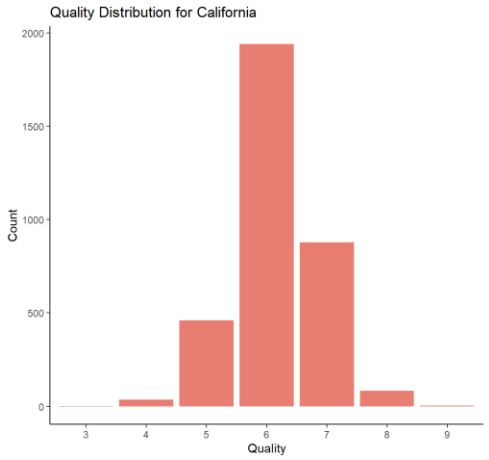
- For the most part, a lower fixed acidity is associated with a higher quality
- However, from 8 to 9, there is a jump in fixed acidity

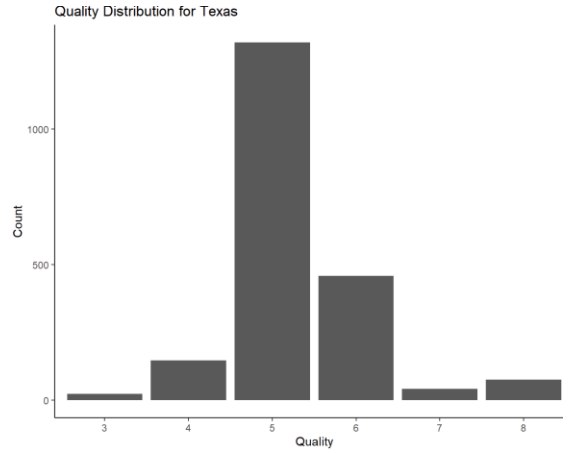


Location vs. Quality

- Californian wines seem to have a higher quality than Texas wines on average
- Both locations have a normal distribution of quality, with California's peak being 1 point higher than that of Texas.

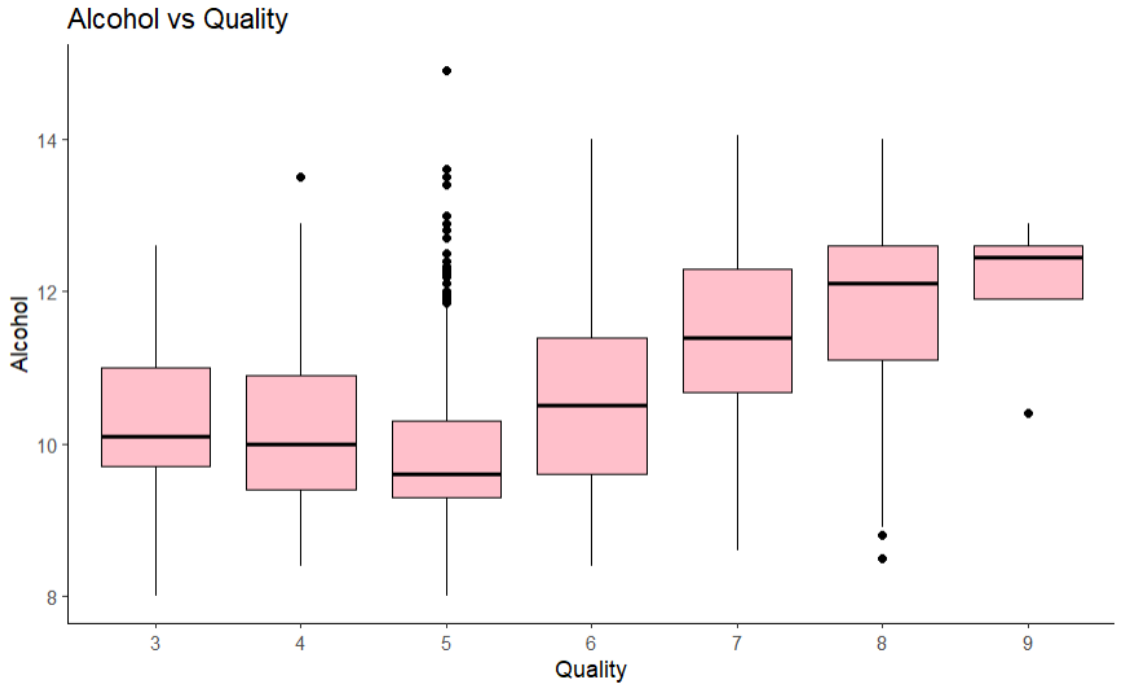






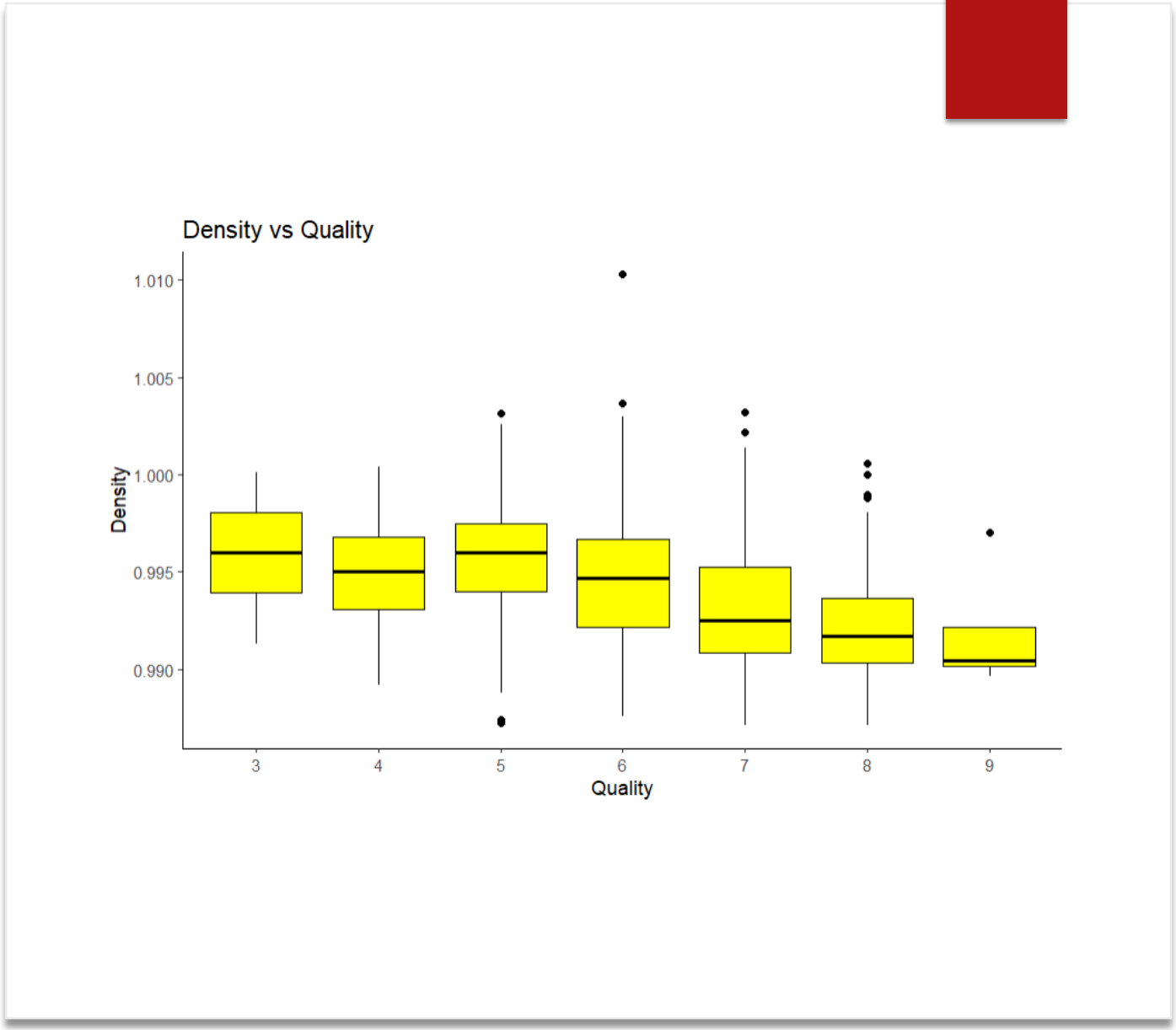
Alcohol vs. Quality

- Lower quality wines appear to be associated with lower average alcohol content as well as broad interquartile ranges.
- Quality Level 5 appears to have many outliers
- Average alcohol content steadily rises from quality levels 5-9.



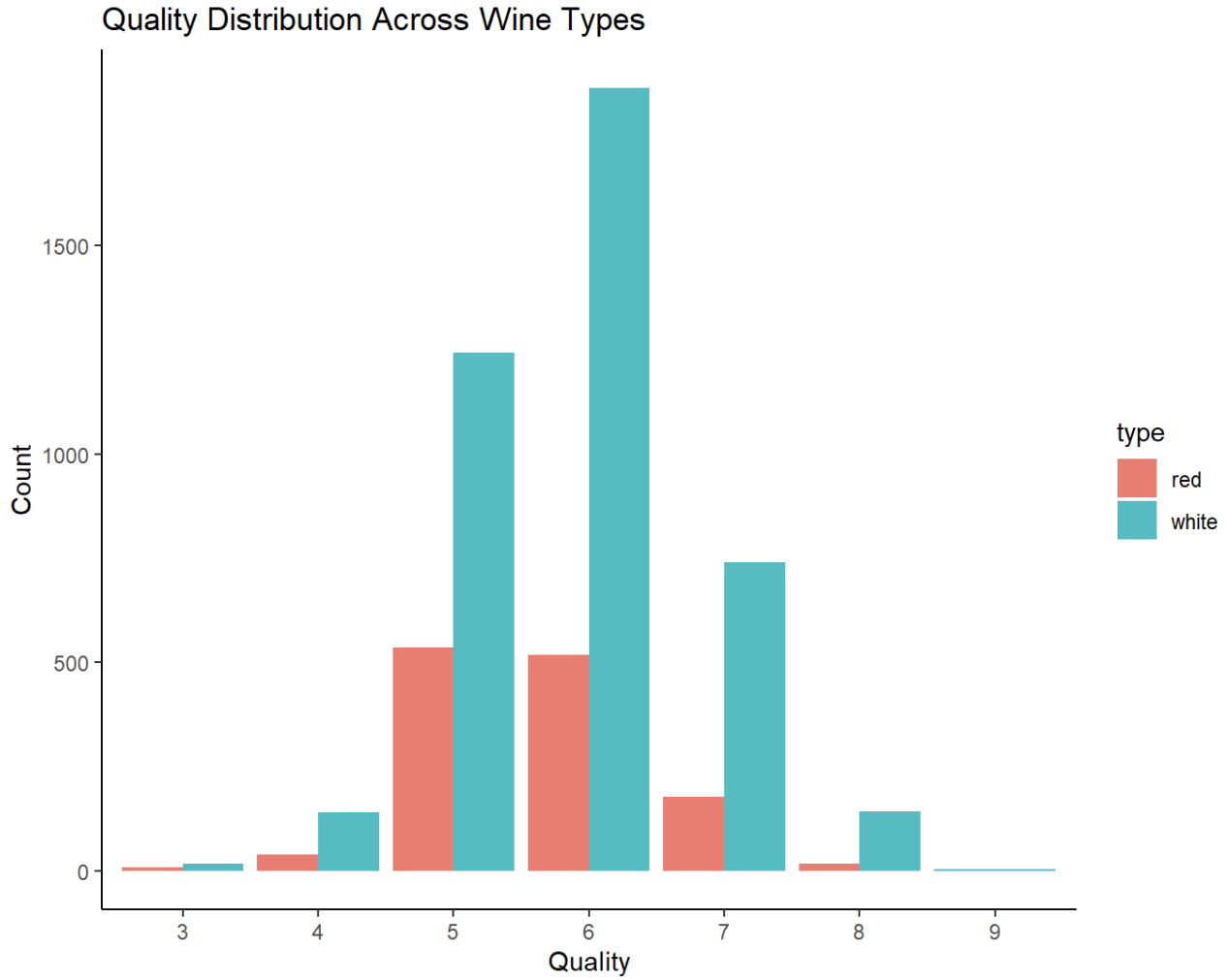
Density vs. Quality

- General trend that a lower density equals a higher quality
- Lower density is correlated with a lower average quality from quality levels 5-9.



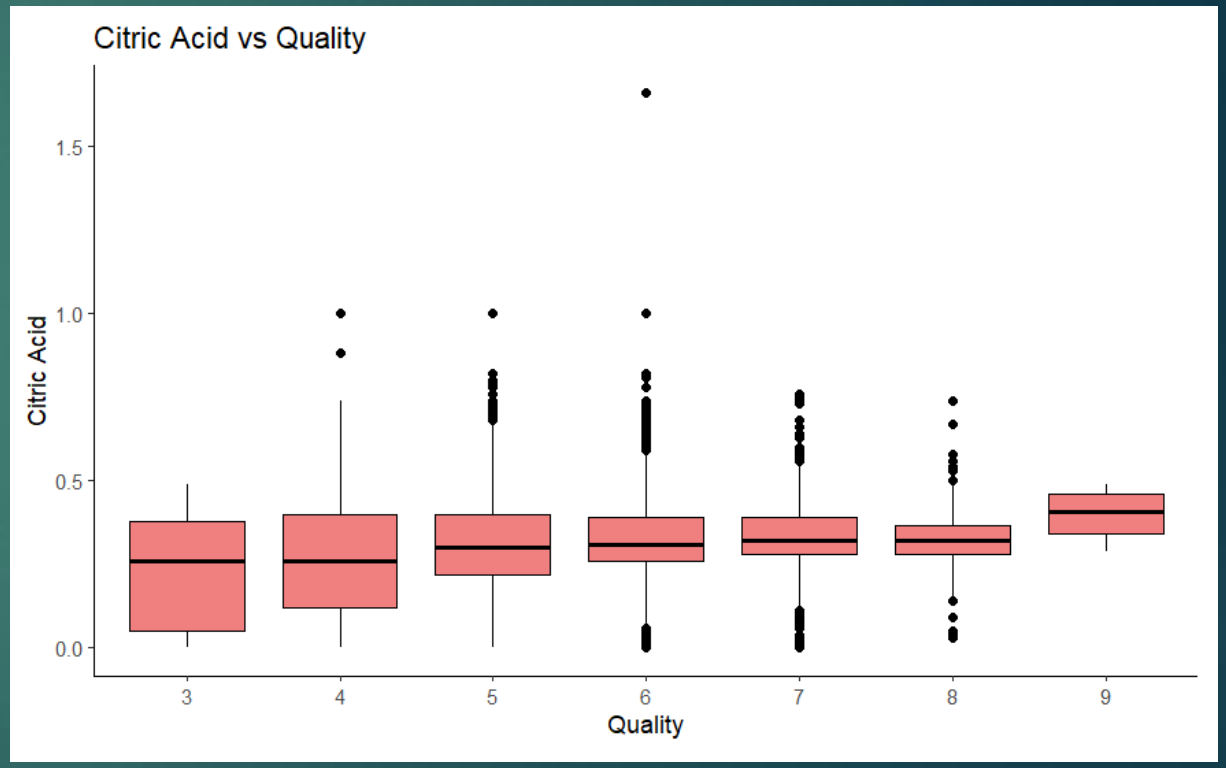
Wine Type vs. Quality

- With imputed values, there are much more white wines than red
  - Mode imputation
- White wines have a higher quality distribution than red wines
  - Correlation matrix shows a moderate correlation between type and location



Citric Acid vs. Quality

- There does not seem to be much of a relationship between citric acid and quality
- That being said, the highest quality wines look to have more citric acid on average



Conclusion

- There are many variables which can be used to predict the quality of wine
  - Location and type seem to have a moderate correlation, which can show some collinearity
- More precise evaluation needs to be done to determine which variables are significant in a multiple linear regression model