
Wine: Predicting quality ratings to increase sales

— Presentation by Aisling Gilder —

Wine: on the rise

- Wine is consumed by 32% of Americans. That is market of 79 million potential customers
- In 2021, Wine sales were up 16.8% over 2020.
- This resulted in total wine sales of \$78.4 billion
- All signs point the trend continuing to increase in 2022

Data overview

The data used to create this prediction model is a collection of chemical analysis measurements from over 3,800 white wines from the north of Portugal

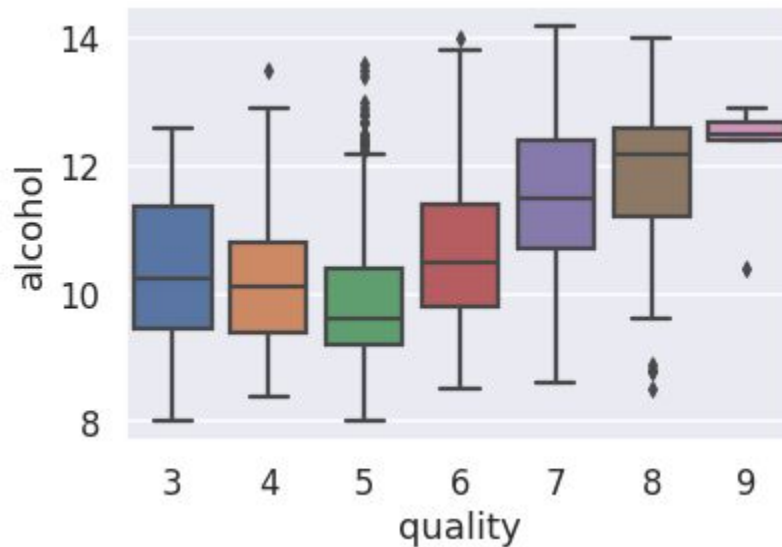
Source: <https://archive.ics.uci.edu/ml/datasets/wine+quality>

What makes a quality wine

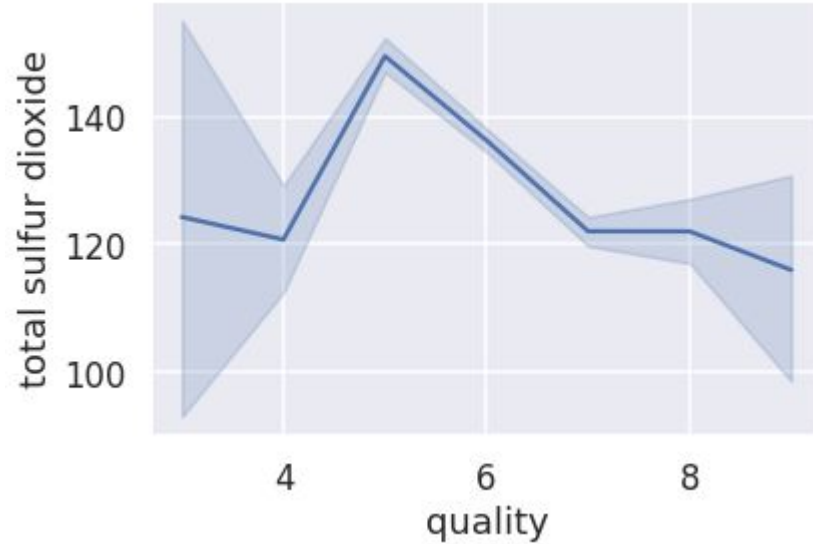
The number one driver of quality is the alcohol by volume, or abv, of the wine.

As the quality rating increases, so too does the average ABV range.

Wines receiving a rating of 7 or higher had a significantly higher floor for ABV ratings vs their middle of the pack counterparts



Sulfur Dioxide(SO₂)



SO₂ is used as a preservative and anti spoiling agent in wines. It sees an increased use in white wines as they lack the higher antioxidant count of red wines.

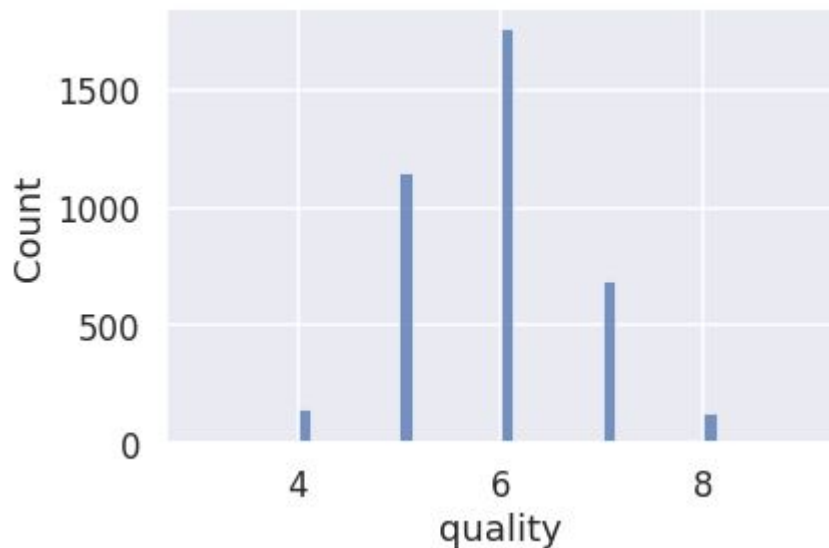
SO₂ is also used in the commercial production of sugar. Sugar is added to wine to assist with the fermentation process when the grapes sourced for the wine are of poor quality or have yet to ripen.

Higher levels of SO₂ lead to lower quality ratings.

Additionally, there is a regulatory ceiling of 350 mg/L set by the US FDA

Why predict the quality of wine?

The majority of wines sold receive a rating of 5 or higher. This gives us a good minimum target for producing wines that will be received well by the consumer



The model

- The model can predict the rating of wines with a 56% overall accuracy
- The accuracy increases for the most populated rating of 6, being 62%
- However, it currently has limitations in predicting both high, 8 or more, and lower, 4 or less, ratings

The impact

- Target production of middle ratings gives the largest market exposure without the need for a perfect product
- This will increase sales by a greater factor than the costs involved, increasing profits

Conclusion

While not recommended for immediate deployment, the model will become more accurate as more data becomes available. When used with sequential batches of wine, this will lead to a continually improving product, and bottom line.

