Wine Tasting Predictions

# **Christine Hathaway Spring 2020** <https://github.com/chhathaway71/DSC-680>

# Which Domain?

1. Breton, F. (2019). *Types of white wines*. Retrieved from French Scout: <http://frenchscout.com/types-of-white-wines>. Reference guide to white wines, food pairings, grapes and regions.
2. Cortez, P., Cerdeira, A., Almeida, F., Matos, T., & Reis, J. (2009, November). Modeling wine preferences by data mining from physicochemical properties. *Decision Support Systems, 47*(4), 547-553. This is the website that contains the datasets and descriptions of the data used for this project.
3. Edison, T. (2020, May 1). *Understanding the 4 Sensory Characteristics of Wine*. Retrieved from Wine Turtle: <https://www.wineturtle.com/sensory-characteristics-of-wine/>. Describes how wine impacts our senses of taste, touch, smell and observation.
4. England, R. (2019, May 2). *Understanding the five basic characteristics of wine*. Retrieved from Cult Wines: <https://www.wineinvestment.com/wine-blog/2019/05/understanding-the-five-basic-characteristics-of-wine/>. Describes the five fundamental characteristics of wine.
5. Frazier, K. (2020). *Wine Characteristics Glossary From A to Z*. Retrieved from Love to Know: <https://wine.lovetoknow.com/wine-beginners/wine-characteristics-glossary>. A nice glossary of wine terms for reference.
6. Gregutt, P. (2011, March 16). *White Wine Basics*. Retrieved from Wine Enthusiast: <https://www.winemag.com/2011/03/16/white-wine-basics/>. Describes the different types of grapes and regions for growing and making white wines.
7. Gregutt, P. (2019, March 19). *Red Wine Information & Basics*. Retrieved from Wine Enthusiast: <https://www.winemag.com/2015/10/27/red-wine-basics/>. Describes the different types of grapes used for red wine and the regions they are found.
8. Jackson, R. (2017). *Styles and Types of Wine*. Retrieved from Science Direct: <https://www.sciencedirect.com/topics/food-science/white-wine>. Flowchart of major production options leading to various white wine styles.
9. Laube, J., & Molesworth, J. (1996, April 13). *Varietal Characteristics*. Retrieved from Wine Spectator: <https://www.winespectator.com/articles/varietal-characteristics-1001>. A thorough review of the different grapes and regions used to grow wine.
10. Puckette, M. (2016, January 22). *Red Wines From Lightest to Boldest*. Retrieved from Wine Folly: <https://winefolly.com/tips/the-spectrum-of-boldness-in-red-wines-chart/>. Contains in depth chart of the boldness of red wines.
11. Puckette, M. (2019, November 17). *Flavor Profiles of White Wines*. Retrieved from Wine Folly: <https://winefolly.com/tips/flavor-profiles-of-white-wines/>. Contains charts for white wine flavor profiles and aromas.
12. Puckette, M. (2020, April 8). *How Basic Wine Characteristics Help You Find Favorites*. Retrieved from Wine Folly: <https://winefolly.com/deep-dive/wine-characteristics/>. Describes wine characteristics and how they help us choose which traits we like best.
13. Teeter, A. (2015, June 15). *The 6 White Wines To Try To Help You Understand White Wine*. Retrieved from Vine Pair: <https://vinepair.com/wine-blog/the-6-white-wines-to-try-to-help-you-understand-white-wine/>. An introductioin to white wine by examining six popular varieties.

# Which Data?

The dataset I am using for this project was created by Paulo Cortez. There are two datasets related to red and white variants of the Portuguese “Vinho Verde” wine. The input variables include objective tests, such as PH values, while the output variable is based on sensory data, based on at least three evaluations made by wine experts (Cortez, Cerdeira, Almeida, Matos, & Reis, 2009). The dataset is found here: <https://archive.ics.uci.edu/ml/datasets/Wine+Quality>

# Research Questions? Benefits? Why analyze these data?

For this project, I wanted pick a topic that is fun and that I could also learn more about. My husband is somewhat of a self-described “wine snob”. I like sweet wine, but I don’t know as much about it as he does, including whether or not the shape of the wineglass makes a difference in the taste, as he insists. I wanted to learn more about red and white wines, what makes them different, how and where they are grown, and if there really is a difference in the taste of quality wines. While I don’t think this will be an earthshattering project that will solve any world crisis, I do think I will learn some things while trying to determine if there is any science to wine tasting.

# What Method?

I plan to use Python and R to perform exploratory data analysis, as well as cleaning the data. I find that each have different aspects that I like to use to examine data sets. The data sets can be viewed as classification or regression tasks (Cortez, Cerdeira, Almeida, Matos, & Reis, 2009). I plan create training and testing sets from the data, and use regression models in Python instead of R for a change. I do plan to use R for graphing using the ggplot package.

# Potential Issues?

Some potential problems could include missing data, as well as outliers or anomalies. I will need to decide how to treat these, based on what I learn after finding and examining them. Another potential issue is that I tend to use R more than Python for regression models, but I would like to try more in Python for this project, so there could be a learning curve from that aspect.

# Concluding Remarks

Wine comes in different colors and flavors. But to truly appreciate it, it’s important to understand the characteristics that different grapes offer, and how they are expressed in wines. Wine characteristics are expressed in five ways: sweetness, acidity, tannin, alcohol, and body. It is important to understand these basic characteristics in order to learn how to taste wine.

This project will look at the varietal characteristics of wine and how they impact how it tastes. Using two data sets for white and red wine, it will examine the characteristics of each wine, as well as the quality rating each receives from a panel of wine experts. Based on these data sets, this study will attempt to answer if it is possible to predict the quality of a wine based on the attributes that make up the measurable, physical characteristics of wine.