

Decoding Wine Quality

Variables Correlations

Variables Analysis

Select wine type:

red

**Variables that influence both red and white wines:**

**Fixed acidity:** influences taste, pH, and overall wine life.

**Volatile acidity:** refers to steam-distillable acids.

**Citric acid:** provides a certain freshness to the wine.

**Residual sugar:** the amount of sugar that could not be fermented.

**Chlorides:** mineral salts in the wine.

**Free sulfur dioxide:** a powerful antimicrobial agent.

**Total sulfur dioxide:** used as a preservative, antioxidant, and antiseptic.

**Density:** also known as "specific gravity," an analytical parameter of wine.

**pH:** a measure of acidity or alkalinity in an aqueous solution.

**Sulphates:** another preservative, antimicrobial, and antioxidant.

**Alcohol:** being wine a fermented beverage, it has an alcohol content.

**Quality:** a rating reflecting the overall quality of the wine.

6497

Dataset records



1599

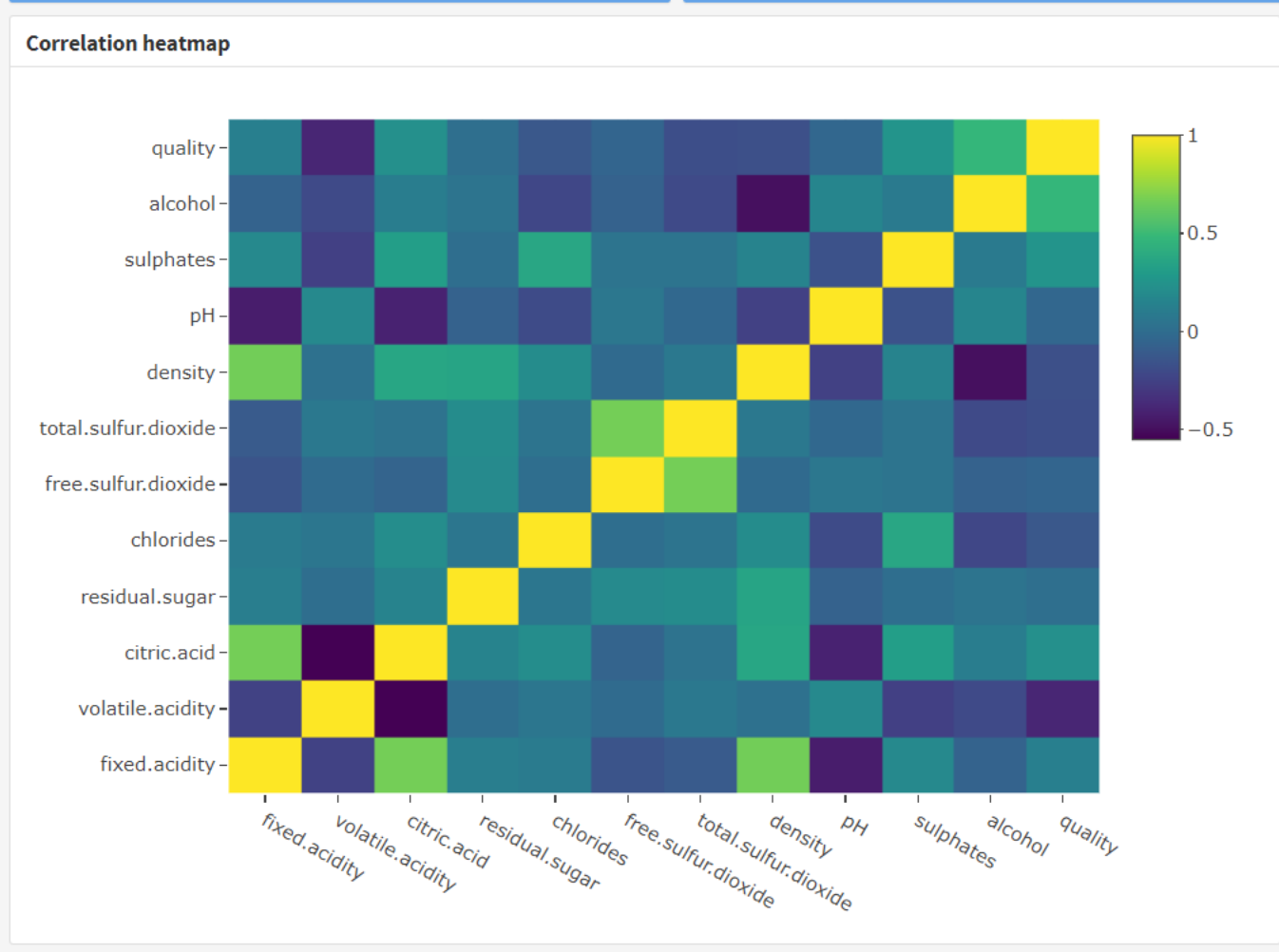
Wine type records



5.6

Average quality





Quality correlation and p-value

Statistically significant if  $p\_value < 0.05$

|                      | correlation | p_value |
|----------------------|-------------|---------|
| fixed.acidity        | 0.12        | 0.00    |
| volatile.acidity     | -0.39       | 0.00    |
| citric.acid          | 0.23        | 0.00    |
| residual.sugar       | 0.01        | 0.58    |
| chlorides            | -0.13       | 0.00    |
| free.sulfur.dioxide  | -0.05       | 0.04    |
| total.sulfur.dioxide | -0.19       | 0.00    |
| density              | -0.17       | 0.00    |
| pH                   | -0.04       | 0.09    |
| sulphates            | 0.25        | 0.00    |
| alcohol              | 0.48        | 0.00    |
| quality              | 1.00        | 0.00    |

Decoding Wine Quality

Variables Correlations

Variables Analysis

Select wine type:

white

Variables that influence both red and white wines:

Fixed acidity:

influences taste, pH, and overall wine life.

Volatile acidity:

refers to steam-distillable acids.

Citric acid:

provides a certain freshness to the wine.

Residual sugar:

the amount of sugar that could not be fermented.

Chlorides:

mineral salts in the wine.

Free sulfur dioxide:

a powerful antimicrobial agent.

Total sulfur dioxide:

used as a preservative, antioxidant, and antiseptic.

Density:

also known as "specific gravity," an analytical parameter of wine.

pH:

a measure of acidity or alkalinity in an aqueous solution.

Sulphates:

another preservative, antimicrobial, and antioxidant.

Alcohol:

being wine a fermented beverage, it has an alcohol content.

Quality:

a rating reflecting the overall quality of the wine.

6497

Dataset records

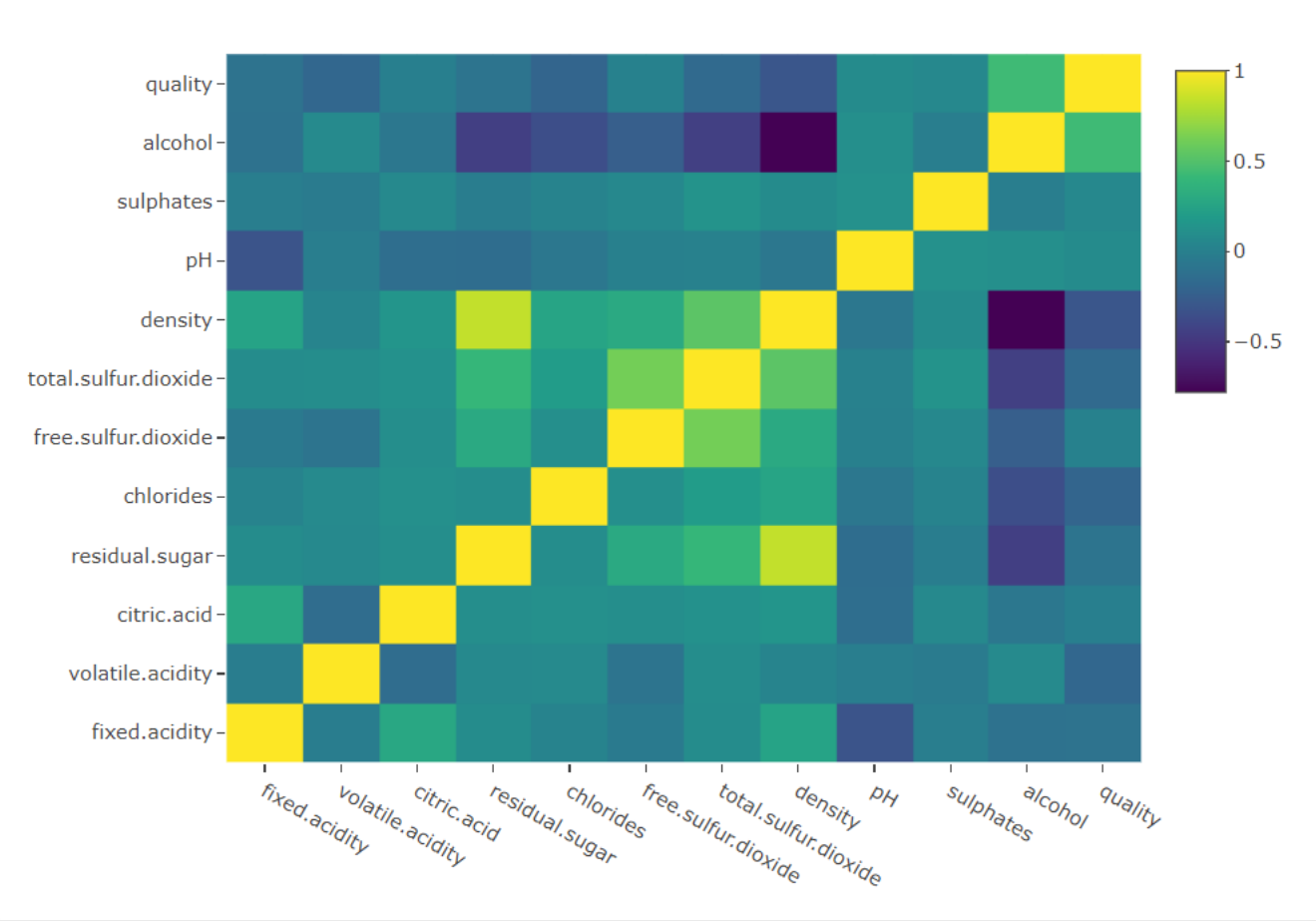
4898

Wine type records

5.9

Average quality

Correlation heatmap



Quality correlation and p-value

Statistically significant if  $p\_value < 0.05$

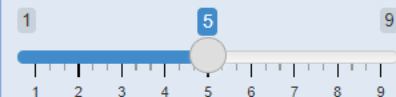
|                      | correlation | p_value |
|----------------------|-------------|---------|
| fixed.acidity        | -0.11       | 0.00    |
| volatile.acidity     | -0.19       | 0.00    |
| citric.acid          | -0.01       | 0.54    |
| residual.sugar       | -0.10       | 0.00    |
| chlorides            | -0.21       | 0.00    |
| free.sulfur.dioxide  | 0.01        | 0.57    |
| total.sulfur.dioxide | -0.17       | 0.00    |
| density              | -0.31       | 0.00    |
| pH                   | 0.07        | 0.00    |
| sulphates            | 0.05        | 0.00    |
| alcohol              | 0.44        | 0.00    |
| quality              | 1.00        | 0.00    |

## Decoding Wine Quality

Variables Correlations

Variables Analysis

Select wine quality:



Sample size:

2138

## Variables that influence wines' quality:

**Fixed acidity:** influences taste, pH, and overall wine life.

**Volatile acidity:** refers to steam-distillable acids.

**Citric acid:** provides a certain freshness to the wine.

**Residual sugar:** the amount of sugar that could not be fermented.

**Chlorides:** mineral salts in the wine.

**Free sulfur dioxide:** a powerful antimicrobial agent.

**Total sulfur dioxide:** used as a preservative, antioxidant, and antiseptic.

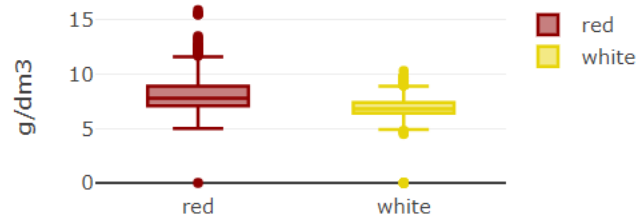
**Density:** also known as "specific gravity," an analytical parameter of wine.

**pH:** a measure of acidity or alkalinity in an aqueous solution.

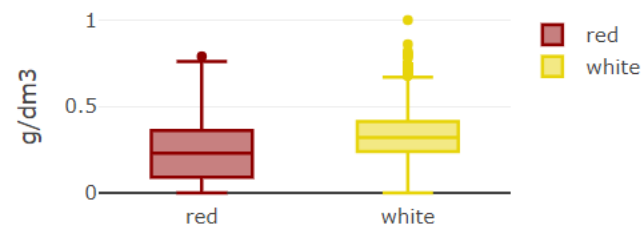
**Sulphates:** another preservative, antimicrobial, and antioxidant.

**Alcohol:** being wine a fermented beverage, it has an alcohol content.

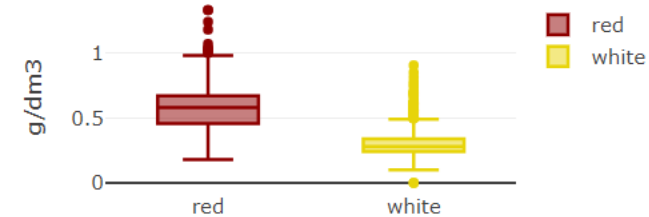
## Fixed acidity



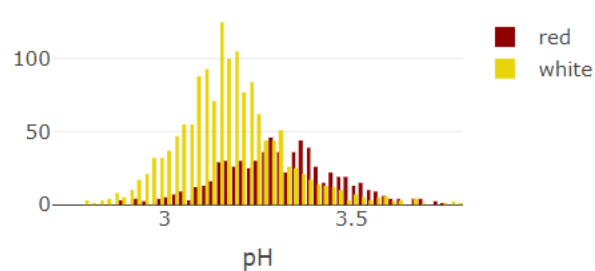
## Citric acid



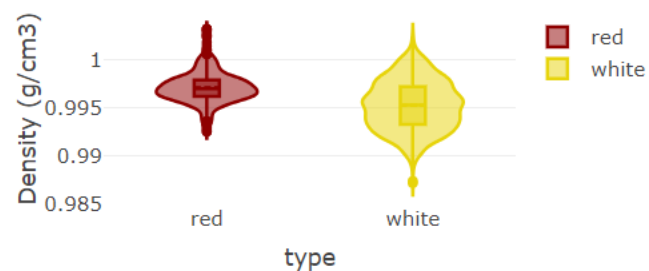
## Volatile acidity



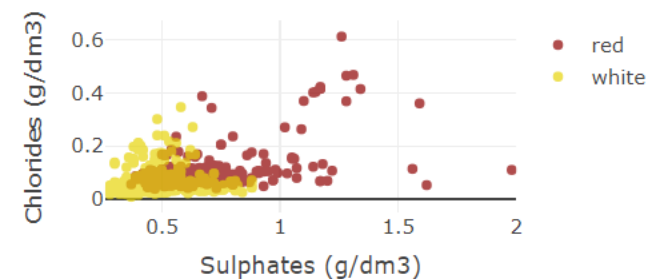
## PH



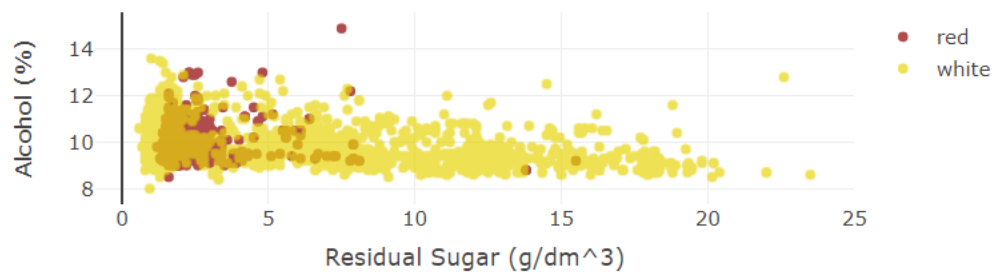
## Density



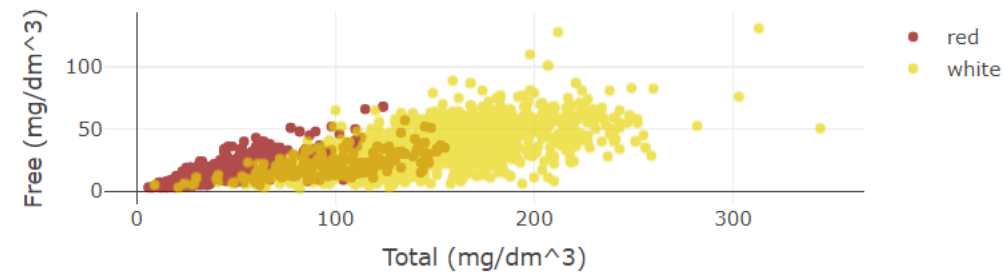
## Chlorides vs sulphates



## Alcohol vs residual sugar



## Sulfur dioxide

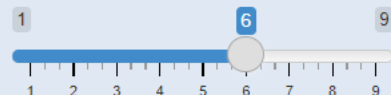


## Decoding Wine Quality

Variables Correlations

Variables Analysis

Select wine quality:



Sample size:

2836

## Variables that influence wines' quality:

**Fixed acidity:** influences taste, pH, and overall wine life.

**Volatile acidity:** refers to steam-distillable acids.

**Citric acid:** provides a certain freshness to the wine.

**Residual sugar:** the amount of sugar that could not be fermented.

**Chlorides:** mineral salts in the wine.

**Free sulfur dioxide:** a powerful antimicrobial agent.

**Total sulfur dioxide:** used as a preservative, antioxidant, and antiseptic.

**Density:** also known as "specific gravity," an analytical parameter of wine.

**pH:** a measure of acidity or alkalinity in an aqueous solution.

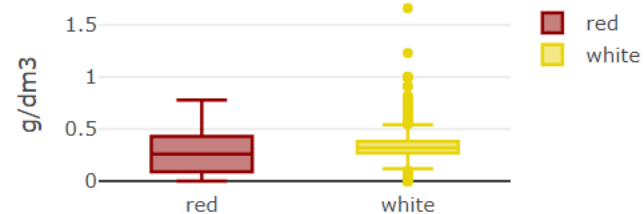
**Sulphates:** another preservative, antimicrobial, and antioxidant.

**Alcohol:** being wine a fermented beverage, it has an alcohol content.

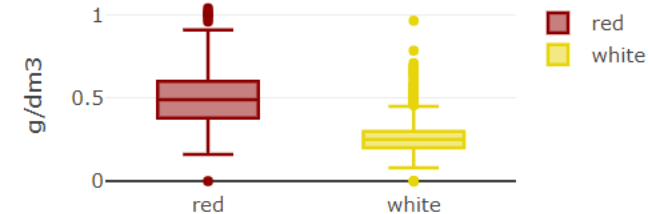
## Fixed acidity



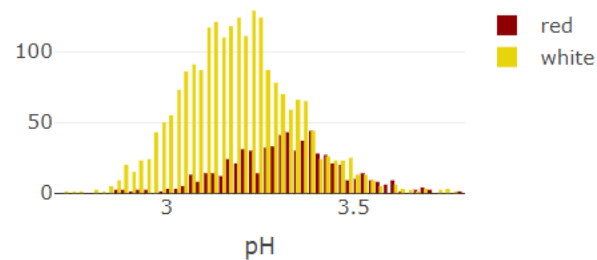
## Citric acid



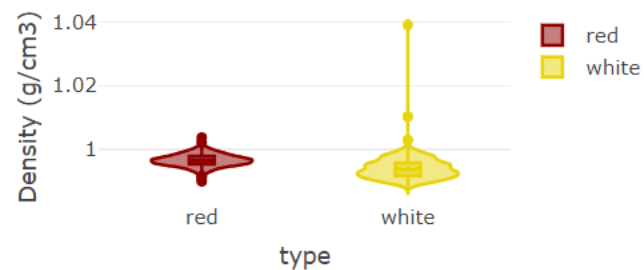
## Volatile acidity



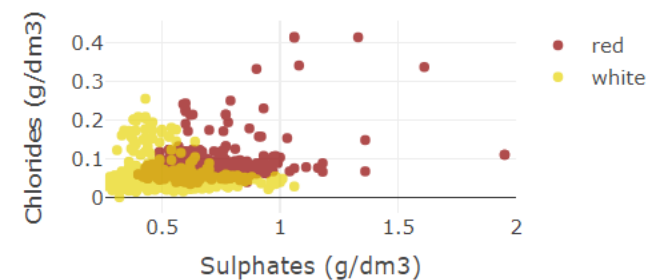
## PH



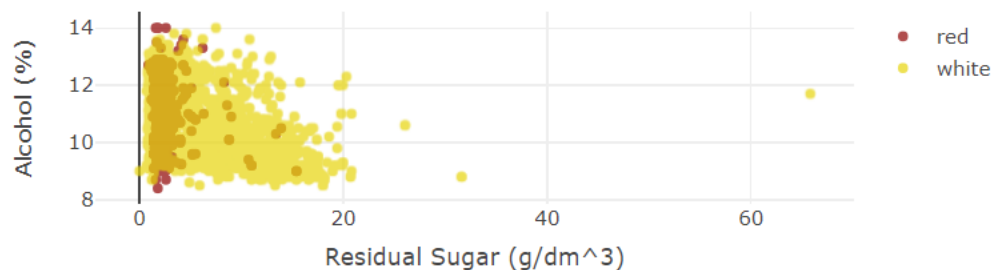
## Density



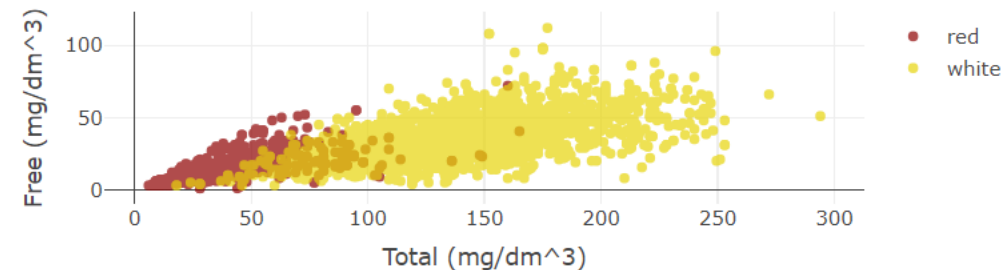
## Chlorides vs sulphates



## Alcohol vs residual sugar



## Sulfur dioxide

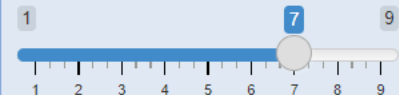


## Decoding Wine Quality

Variables Correlations

Variables Analysis

Select wine quality:



Sample size:

1079

## Variables that influence wines' quality:

**Fixed acidity:** influences taste, pH, and overall wine life.

**Volatile acidity:** refers to steam-distillable acids.

**Citric acid:** provides a certain freshness to the wine.

**Residual sugar:** the amount of sugar that could not be fermented.

**Chlorides:** mineral salts in the wine.

**Free sulfur dioxide:** a powerful antimicrobial agent.

**Total sulfur dioxide:** used as a preservative, antioxidant, and antiseptic.

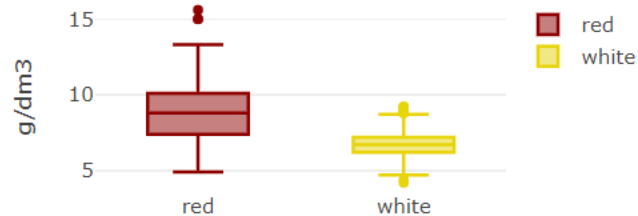
**Density:** also known as "specific gravity," an analytical parameter of wine.

**pH:** a measure of acidity or alkalinity in an aqueous solution.

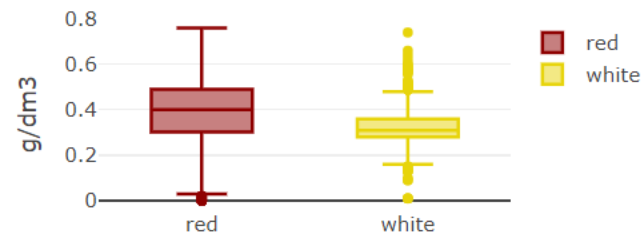
**Sulphates:** another preservative, antimicrobial, and antioxidant.

**Alcohol:** being wine a fermented beverage, it has an alcohol content.

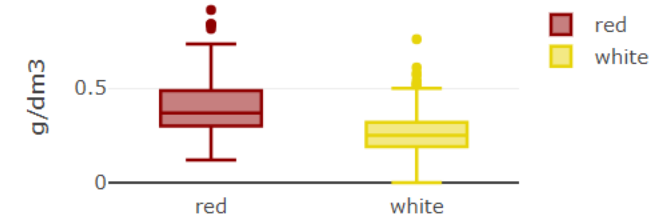
## Fixed acidity



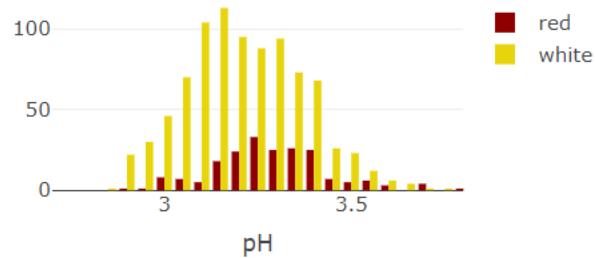
## Citric acid



## Volatile acidity



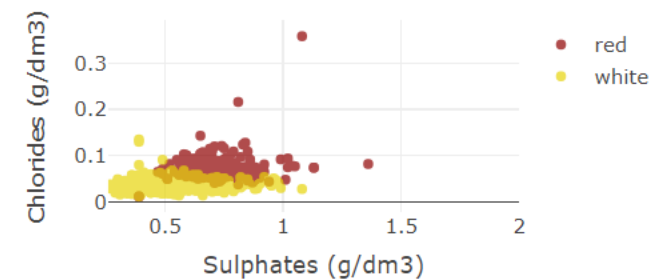
## PH



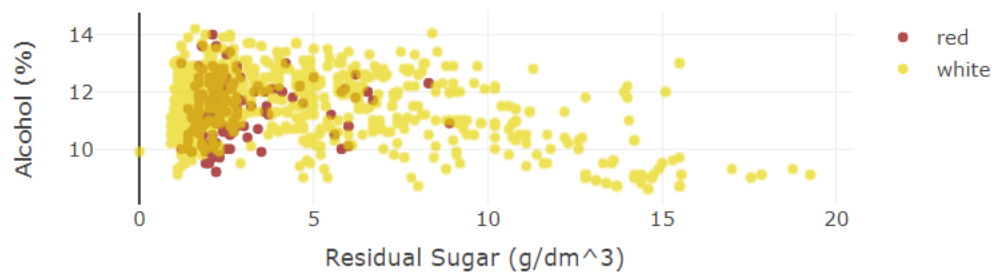
## Density



## Chlorides vs sulphates



## Alcohol vs residual sugar



## Sulfur dioxide

