Inferential Statistics of Wine Quality

Before I calculated the 90% confidence intervals mean or median values for the 11 features of wine quality, I determined any absolute conditions. Below will display all of my finding for each feature.

Alcohol mean 90% confidence intervals and absolute analysis

- High Quality: 10.77 - 12.07, mean = 11.42
- Mid Quality: 9.73 - 10.88, mean = 10.27
- Low Quality: 9.67 - 10.74, mean = 10.17
- Alcohol < 8.6 corresponds to low or mid quality wine

Density median 90% confidence intervals and absolute analysis

- High Quality: 0.99059 - 0.9935, mean = 0.99185
- Mid Quality: 0.9925 - 0.99634, mean = 0.99438
- Low Quality: 0.9927 - 0.99583, mean = 0.99421
- Density >1.0006 corresponds to mid quality wine
- Density < 0.9872 corresponds to high quality wine

Total Sulfur Dioxide median 90% confidence intervals and absolute analysis

- High Quality: 104.5 - 144.5, mean = 122.59
- Mid Quality: 115.5 - 172.0, mean = 140.83
- Low Quality: 93.5 - 175.0, mean = 124.62
- Total sulfur dioxide < 34 and > 229 corresponds to a mid or low quality wine
- Total sulfur dioxide > 344 corresponds to a low quality wine

Free Sulfur Dioxide median 90% confidence intervals and absolute analysis

- High Quality: 27.0 - 42.0, mean = 33.42
- Mid Quality: 25.5 - 47.5, mean = 34.63
- Low Quality: 11.5 - 34.0, mean = 19.56
- Free sulfur dioxide content > 108 corresponds to a mid or low level wine
- Free sulfur dioxide > 131 corresponds to a low quality wine

Chloride mean 90% confidence intervals and absolute analysis

- High Quality: 0.0332 - 0.045, mean = 0.03817
- Mid Quality: 0.0397 - 0.0646, mean = 0.04771
- Low Quality: 0.0411 - 0.0733, mean = 0.05059
- Chloride content > 0.135 corresponds to mid or low quality wine

- Chloride content < 0.012 corresponds to mid quality wine

Residual Sugar median 90% confidence intervals and absolute analysis

- High Quality: 2.15 - 8.18, mean = 4.04
- Mid Quality: 3.0 - 10.9, mean = 5.95
- Low Quality: 1.55 - 8.4, mean = 3.45
- Residual sugar < 0.8 corresponds to mid or low quality wine
- Residual sugar > 17.55 corresponds to a mid or high quality wine

Citric Acid mean 90% confidence intervals and absolute analysis

- High Quality: 0.288 - 0.371, mean = 0.326
- Mid Quality: 0.281 - 0.414, mean = 0.338
- Low Quality: 0.237 - 0.399, mean = 0.308
- Citric acid level > 0.74 corresponds to a mid or low quality wine
- Citric acid < 0.29 corresponds to all quality ratings 7 and below

Volatile Acidity mean 90% confidence intervals and absolute analysis

- High Quality: 0.222 - 0.32, mean = 0.265
- Mid Quality: 0.234 - 0.335, mean = 0.277
- Low Quality: 0.301 - 0.48, mean = 0.376
- Volatile acidity > 0.76 corresponds to mid or low quality wine
- Volatile acidity < 0.11 corresponds to mid or high quality wine

Fixed Acidity mean 90% confidence intervals and absolute analysis

- High Quality: 6.33 - 7.13, mean = 6.724
- Mid Quality: 6.46 - 7.34, mean = 6.876
- Low Quality: 6.62 - 7.84, mean = 7.181
- Fixed acidity > 9.2 corresponds to low quality wine

Sulphates mean 90% confidence intervals and absolute analysis

- High Quality: 0.44 - 0.58, mean = 0.5
- Mid Quality: 0.44 - 0.55, mean = 0.49
- Low Quality: 0.42 - 0.54, mean = 0.48
- Sulphates < 0.25 or > 0.87 corresponds to mid or high quality wine
- Sulphates < 0.23 or > 1.06 corresponds to a high quality wine

pH mean 90% confidence intervals and absolute analysis

- High Quality: 3.14 - 3.3, mean = 3.22
- Mid Quality: 3.11 - 3.26, mean = 3.18

- Low Quality: 3.1 - 3.27, mean = 3.18