

# What Factors Contribute to A Top Tier Red Wine? An Analysis

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# Objective

1. Does an increase in alcohol concentration lead to an increase in the red wine quality, while controlling for pH, fixed acidity, and residual sugar?
2. Are pH, alcohol concentration, fixed acidity, and residual sugar significantly linearly related to the quality of red wine?

Factors: pH, alcohol concentration, fixed acidity, residual sugar

# Dataset and Methods



Factors: pH, alcohol  
concentration, fixed acidity,  
residual sugar

Linear Regression  
Model

Correlation Test

Analysis of  
Results

# Results

## Correlations and Correlation Tests

Factor	R	P value
pH	-0.058	0.02096*
Alcohol concentration	0.476	< 2.2e-16*
Residual Sugar	0.014	0.5832
Fixed Acidity	0.124	6.496e-07*

\* means significant to  
alpha level = 0.05

# Results

## Linear Regression Model

Factor	Slope Estimate	P value
pH	-0.558	0.000462*
Alcohol concentration	0.380	< 2e-16*
Residual Sugar	-0.014	0.252841
Fixed Acidity	0.042	0.002458*
Fixed Acidity interacting with Alcohol concentration	-0.0097	0.232832

\* means significant to  
alpha level = 0.05

Adjusted R-squared: 0.2548

# Implications



Quality Score

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

# Limitations/Areas for Future Research



# Picture Sources

- World Map:  
[https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.amazon.com%2FWorld-Map-Robinson-Projection-19-9%2Fd%2F1635979684&psig=AOvVaw09yeBme\\_8BsL4KnqHrkEpT&ust=1588537478978000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCPDLjrqBlukCFQAAAAAdAAAAABAD](https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.amazon.com%2FWorld-Map-Robinson-Projection-19-9%2Fd%2F1635979684&psig=AOvVaw09yeBme_8BsL4KnqHrkEpT&ust=1588537478978000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCPDLjrqBlukCFQAAAAAdAAAAABAD)
- Europe Map:  
<https://www.google.com/url?sa=i&url=http%3A%2F%2Fontheworldmap.com%2FEurope%2F&psig=AOvVaw38t4NWxpT7sArljw2PsVf4&ust=1588537385408000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCKji2NmBlukCFQAAAAAdAAAAABAD>
- Portugal Map:  
<https://www.google.com/url?sa=i&url=http%3A%2F%2Fontheworldmap.com%2FPortugal%2F&psig=AOvVaw38AcYf9wGd6o4TNTuoGO6S&ust=1588537320960000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCLiHouKBlukCFQAAAAAdAAAAABAD>
- Question Mark:  
[https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.pngwave.com%2Fpng-clip-art-dllff&psig=AOvVaw357L\\_4vbsoaWqV1bA20UE4&ust=1588537011702000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCIDlvCBlukCFQAAAAAdAAAAABAD](https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.pngwave.com%2Fpng-clip-art-dllff&psig=AOvVaw357L_4vbsoaWqV1bA20UE4&ust=1588537011702000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCIDlvCBlukCFQAAAAAdAAAAABAD)
- Glass of Red Wine:  
<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.bedbathandbeyond.com%2Fstore%2Fproduct%2Fenox-reg-tuscany-classics-reg-24-oz-red-wine-glasses-buy-4-get-6-value-set%2F1040165684&psig=AOvVaw0wbbcPMg91Ao77BDs1TNq4&ust=1588536669856000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCPDvrf-BlukCFQAAAAAdAAAAABAD>
- Wine Bottle:  
<https://www.google.com/url?sa=i&url=https%3A%2F%2Fdrizly.com%2Fwine%2Fred-blend%2Fproprietary-red-blend%2Fbarefoot-sweet-red-blend%2Fp10282&psig=AOvVaw0wbbcPMg91Ao77BDs1TNq4&ust=1588536669856000&source=images&cd=vfe&ved=0CA0QjhxqFwoTCPDvrf-BlukCFQAAAAAdAAAAABAJ>