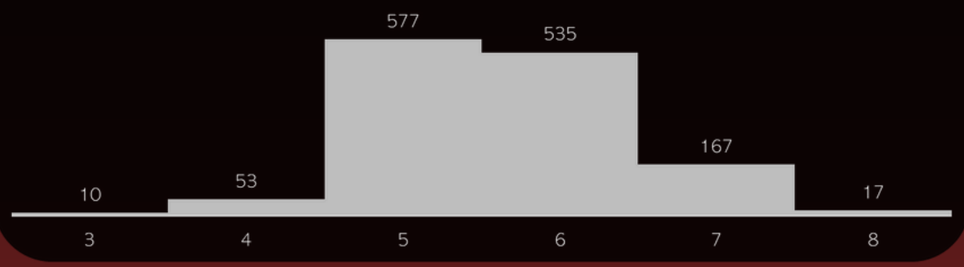
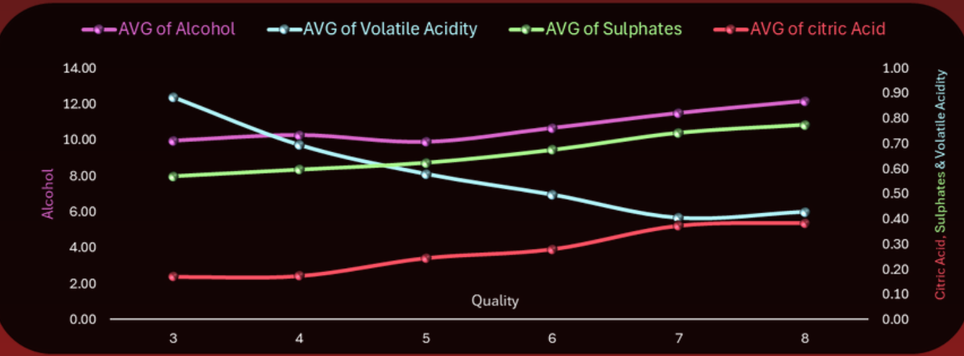
WINE QUALITY

Total Wine Samples 1,359

Quality Distribution



Impact of Volatile Acidity, Citric Acid & Alcohol on The Quality



Residual Sugar	Density	PH
HighResidualSugar	HighDensity	Strong Acid
LowResidualSugar	LowDensity	Weak Acid

VINHO VERDE

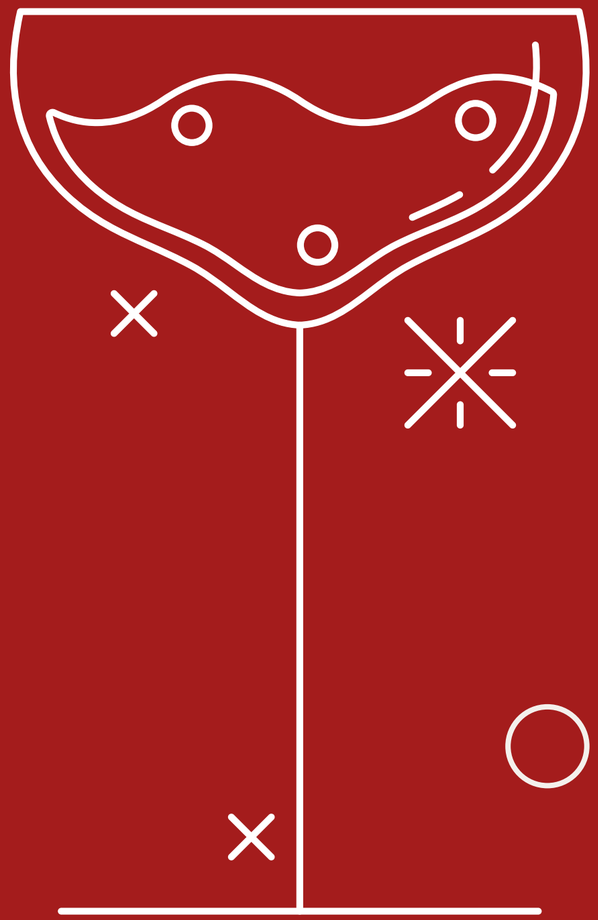
Red Wine Quality

Task 4 with CognoRise InfoTech

Presented By Kareem Shaaban

INTRODUCTION

This project aims to analyze the factors that influence the quality of red wine by examining various chemical properties. Using a dataset from Kaggle, a Excel dashboard was developed to visualize and explore the correlations between these properties and wine quality ratings



DATASET DESCRIPTION

The dataset includes 1,599 red wine samples with various chemical properties, including alcohol, volatile acidity, citric acid, residual sugar, and sulphates. Each sample has a quality rating between 3 and 8, which serves as our target variable

ANALYZE THE DATA

Correlation Matrix

	fixed acidity	*volatile acidity*	*citric acid*	*residual sugar*	*chlorides*	*free sulfur dioxide*	*total sulfur dioxide*	*density*	*pH*	*sulphates*	*alcohol*	*quality*
fixed acidity	1											
volatile acidity	-0.26	1										
citric acid	0.67	-0.55	1									
residual sugar	0.11	0.00	0.14	1								
chlorides	0.09	0.06	0.21	0.03	1							
free sulfur dioxide	-0.14	-0.02	-0.05	0.16	0.001	1						
total sulfur dioxide	-0.10	0.07	0.05	0.20	0.05	0.67	1					
density	0.67	0.02	0.36	0.32	0.19	-0.02	0.08	1				
pH	-0.69	0.25	-0.55	-0.08	-0.27	0.06	-0.08	-0.36	1			
sulphates	0.19	-0.26	0.33	-0.01	0.39	0.05	0.04	0.15	-0.21	1		
alcohol	-0.06	-0.20	0.11	0.06	-0.22	-0.08	-0.22	-0.50	0.21	0.09	1	
quality	0.12	-0.40	0.23	0.01	-0.13	-0.05	-0.18	-0.18	-0.06	0.25	0.48	1

The correlation matrix helped identify which chemical properties have the strongest influence on wine quality. Notably, alcohol, volatile acidity, and citric acid were among the most impactful features

ANALYZE THE DATA

Correlation Matrix

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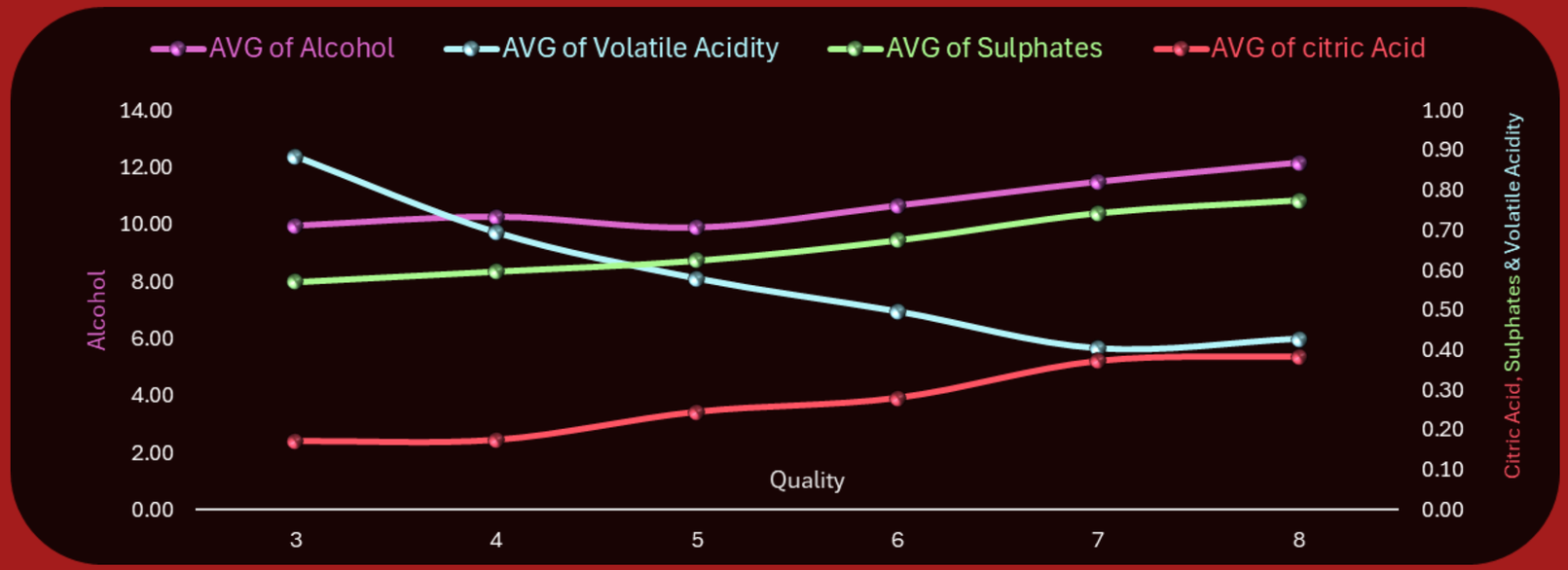
quality	0.12	-0.40	0.23	0.01	-0.13	-0.05	-0.18	-0.18	-0.06	0.25	0.48	1

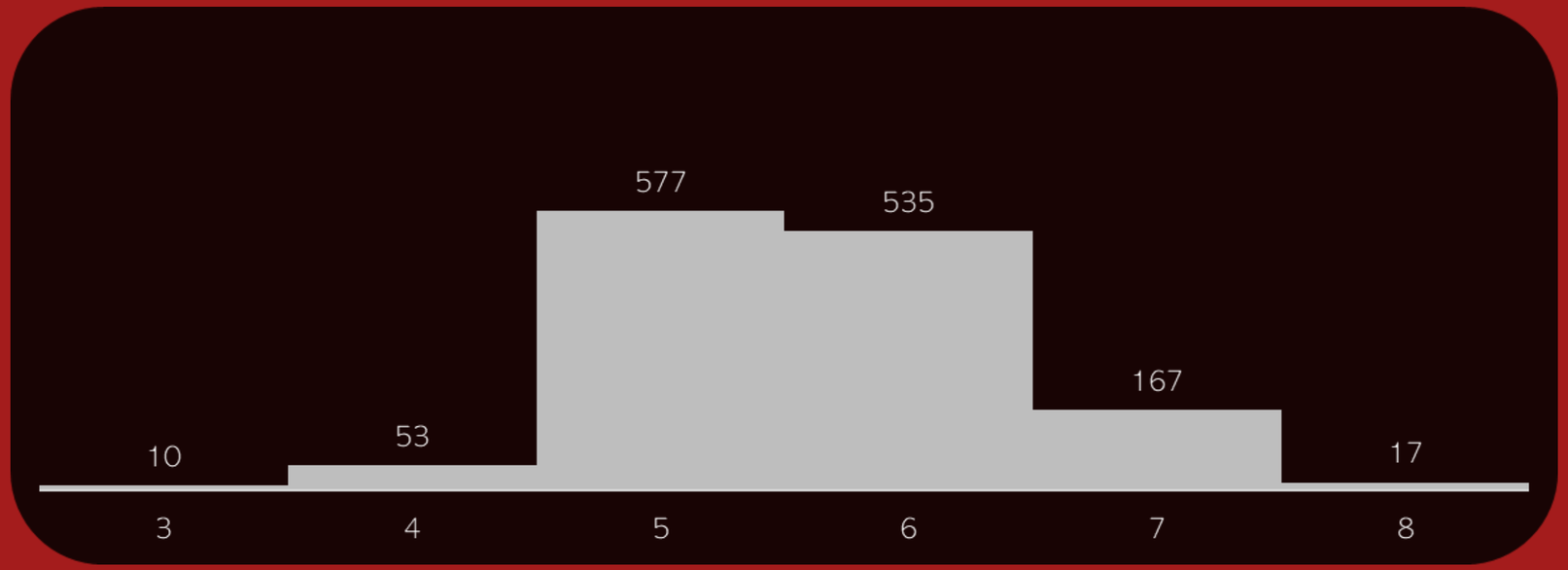
- Alcohol's Impact on Quality: The correlation matrix shows a positive correlation between alcohol content and wine quality (0.48), indicating that higher alcohol levels are generally associated with higher quality scores.
- Volatile Acidity's Impact on Quality: Volatile acidity has a negative correlation with quality (-0.40), meaning that wines with lower volatile acidity tend to be rated higher in quality.
- Sulphates and Citric Acid: Both show a moderate positive correlation with quality (0.25 and 0.23, respectively), implying they might also contribute positively to wine quality.

INSIGHTS



The line chart visually supports these findings, displaying how the average values of these key variables align with changes in wine quality. By connecting the correlation matrix insights with the line chart, you've illustrated which chemical properties most significantly impact quality. This combined view helps identify actionable areas for winemakers aiming to improve wine quality.

INSIGHTS



The histogram shows the distribution of wine quality ratings:

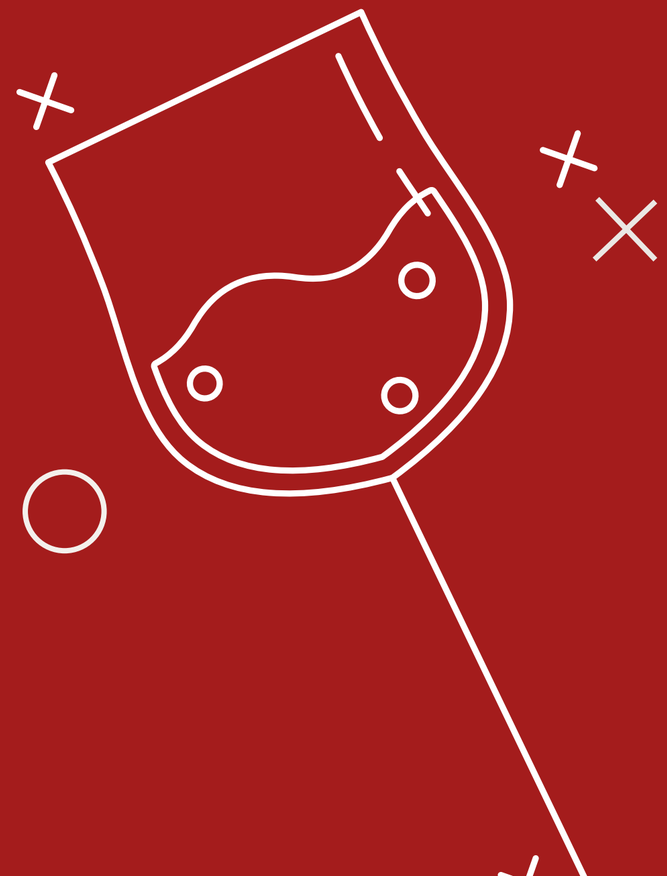
- Most Common Ratings: Scores of 5 and 6 are the most frequent, indicating average quality.
- Few Extremes: Ratings of 3 and 8 are rare, suggesting few very low or very high-quality wines.
- Slight Left-Skew: More wines fall on the higher end, indicating a general trend toward moderate to good quality.

This distribution highlights a focus on average-quality wines, with potential to improve and increase high-quality samples.

INSIGHTS

Total Wine Samples 1,359

The Total Wine Samples KPI represents the size of the dataset, indicating the total number of wine samples analyzed. It provides an overview of the dataset's scale, showing that insights and trends are drawn from a significant number of observations, which strengthens the reliability of the analysis.



SUMMARY

The analysis reveals that most wines have a quality rating around 5-6, with key factors like alcohol and sulphates positively influencing quality, while volatile acidity negatively impacts it. Citric acid has a moderate positive effect on quality, while other factors such as density and pH show weaker correlations. These insights help understand how chemical properties affect wine quality, offering guidance for potential improvements.

THANKS

Presented By Kareem Shaaban