DATANEST 4.0

Analysis of Apple Quality Dataset and Market Insights

Agenda:

- ❑ Overview of the Apple Quality Dataset
- ❑ Descriptive and Correlation Analysis
- ❑ Predictive Modeling for Apple Quality Classification
- ❑ Market Insights and Recommendations

Purpose: To explore the characteristics of apple quality and derive insights for potential applications in the apple market.

Presenters:
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Date: 11th March 2024

Apple Quality Dataset Overview and Cleaning

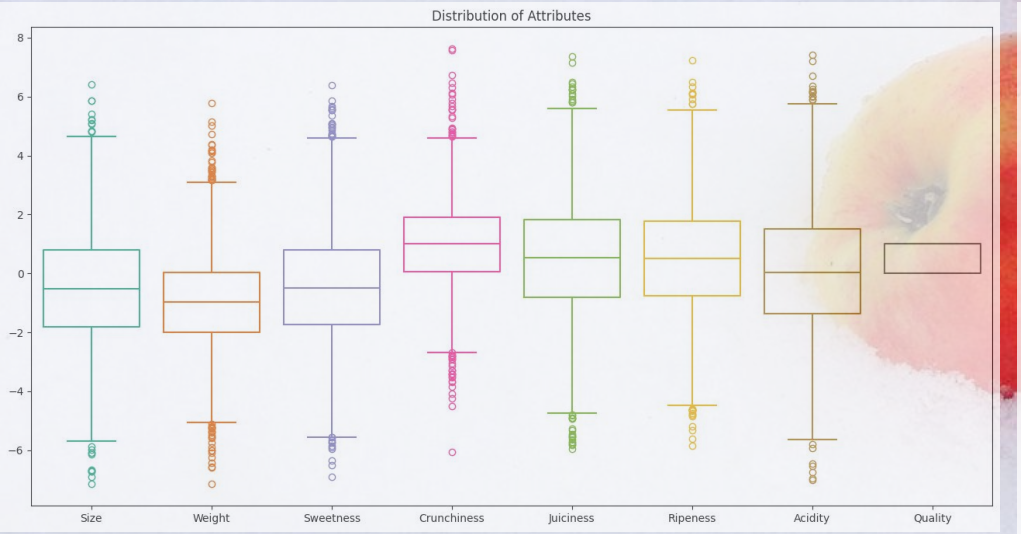
This dataset contains ~4000 entries of the following features

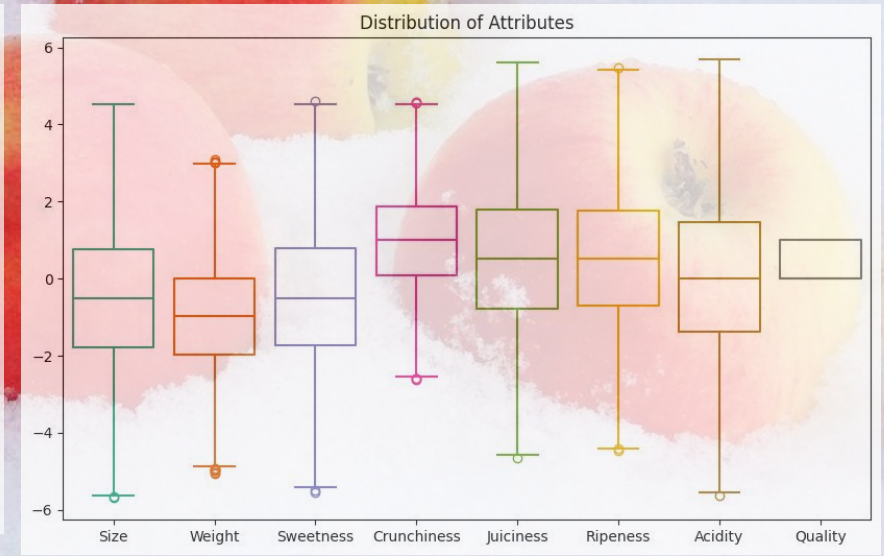
Features:	Size	Weight	Sweetness	Crunchiness	Juiciness	Ripeness	Acidity	Quality

Preprocessing Steps:

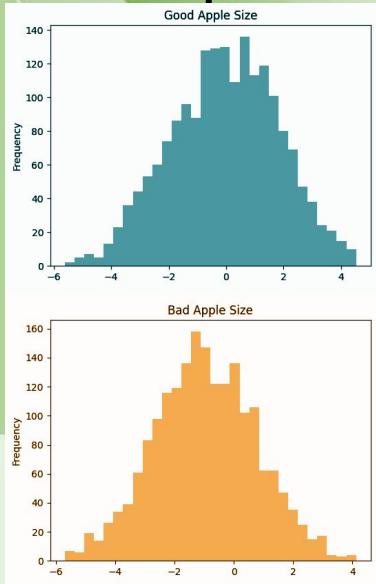
- Data cleaning
- Feature Scale

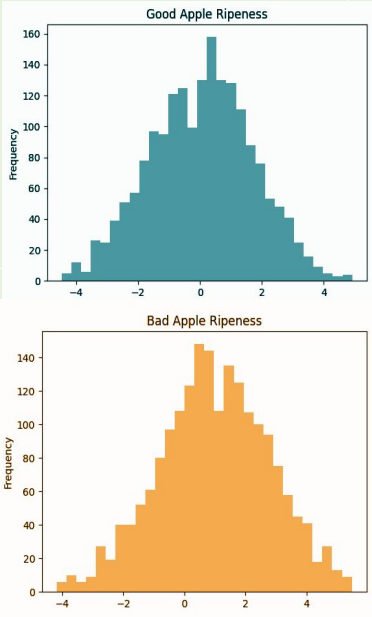
Objective: To understand the composition of the dataset and the initial steps taken to prepare it for analysis.

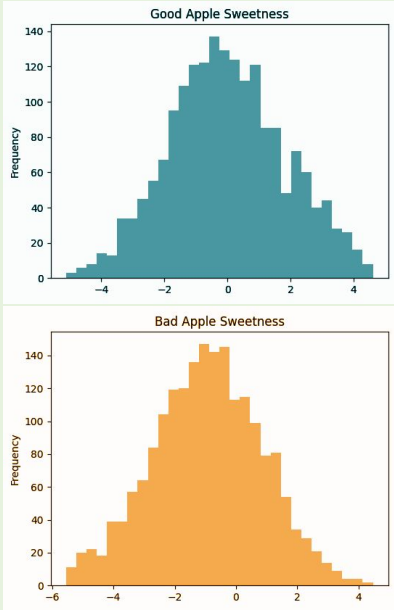


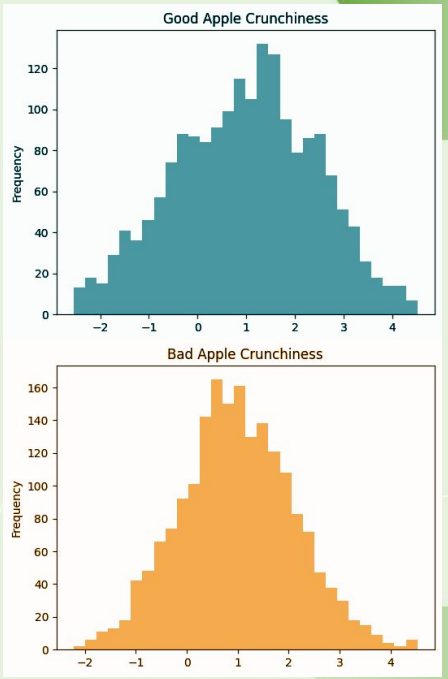


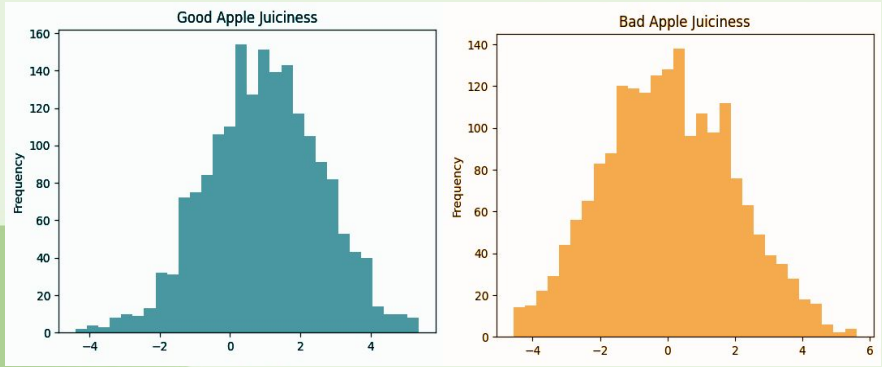
Descriptive Analysis of Apple Quality Dataset

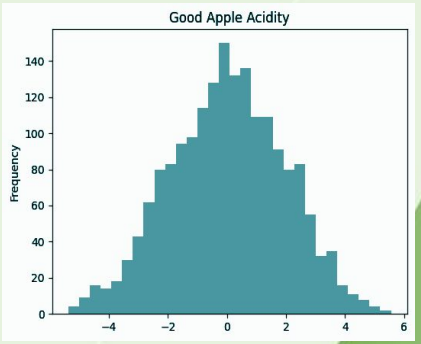


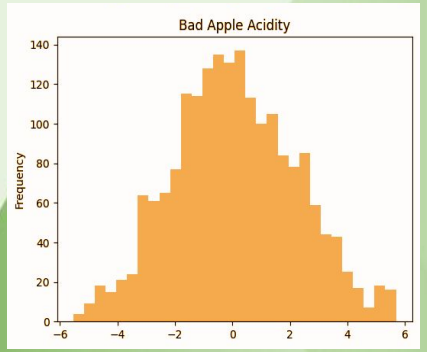


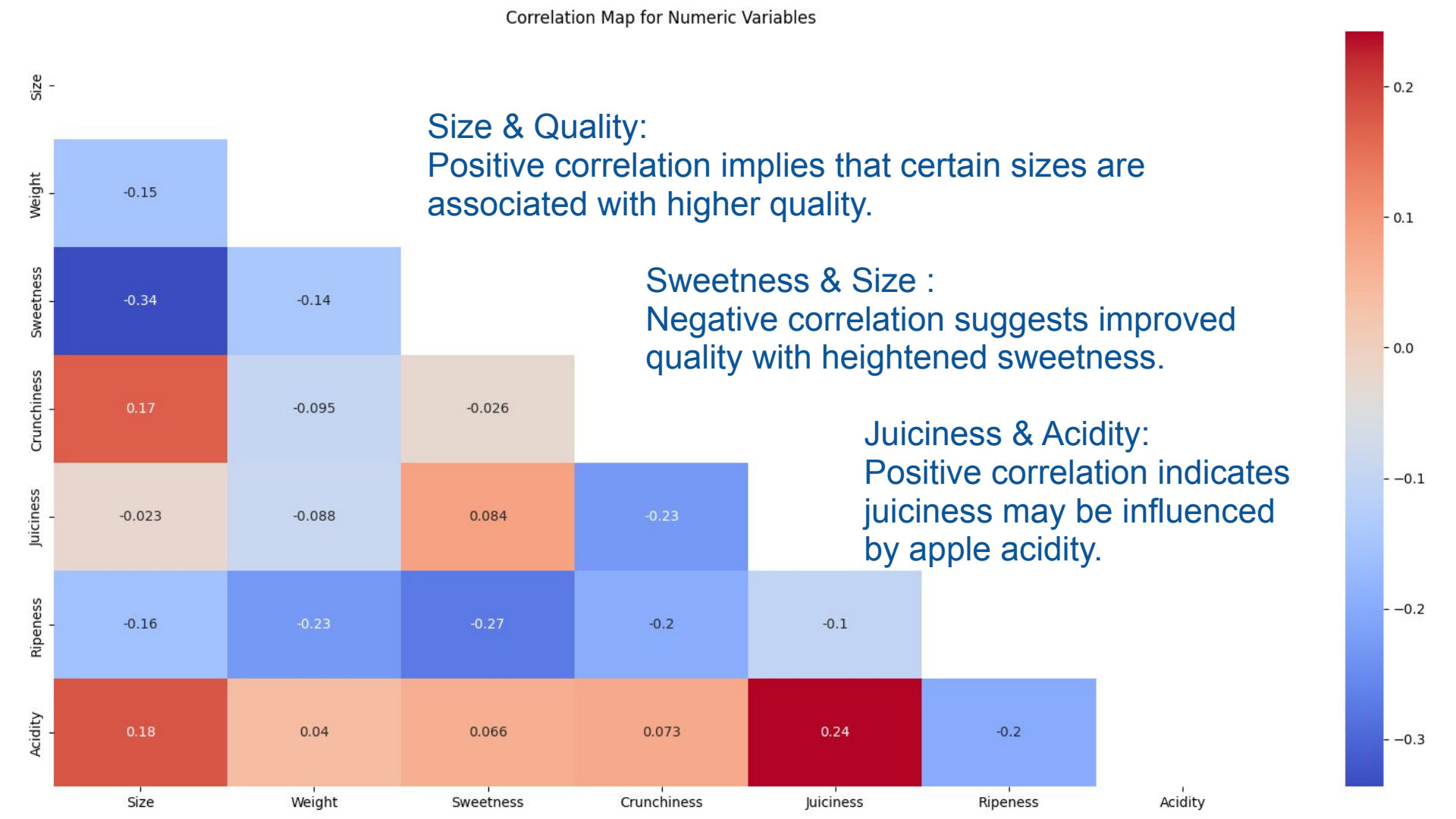











Correlation Map for Numeric Variables
Size
Weight
Sweetness
Crunchiness
Juiciness
Ripeness
Acidity
-0.15
-0.34
-0.14
0.17
-0.095
-0.026
-0.023
-0.088
0.084
-0.23
-0.16
-0.23
-0.27
-0.2
-0.1
0.18
0.04
0.066
0.073
0.24
-0.2
Size
Weight
Sweetness
Crunchiness
Juiciness
Ripeness
Acidity
0.2
0.1
0.0
−0.1
−0.2
−0.3
Size & Quality:
Positive correlation implies that certain sizes are associated with higher quality.
Sweetness & Size :
Negative correlation suggests improved quality with heightened sweetness.
Juiciness & Acidity:
Positive correlation indicates juiciness may be influenced by apple acidity.

Predictive Modeling for Apple Quality Classification

A random forest is a meta estimator that fits a number of multiple decision tree classifiers on various sub-samples of the dataset ,employing averaging to enhance predictive accuracy while effectively managing overfitting.

The KNeighborsClassifier is a supervised machine learning algorithm. It excels in classification tasks, learning from labeled datasets where each data point has an assigned class.

Classification Report

	precision	recall	f1-score	support
Bad	0.89	0.86	0.88	389
Good	0.86	0.88	0.87	362
accuracy			0.88	751

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Market Insights from Apple Quality Analysis

Overall Analysis:

- **Significant Differences**: **Apple size, sweetness, juiciness, and ripeness** exhibit substantial differences between the two groups.
- **Consistent Attributes**: **Crunchiness and acidity** show no significant differences, indicating consistent quality attributes.

Strategic Considerations:

- **Marketing Emphasis**: Highlight unique features such as **size, sweetness, and juiciness** to appeal to consumer preferences.
- **Quality Control**: Focus on maintaining consistent **crunchiness and acidity** levels for overall product reliability.
- **Market Positioning**: Leverage significant differences in attributes for targeted market positioning and consumer segmentation.

Recommendations for Apple Quality Improvement

Sorting Excellence:

- Prioritize medium-sized apples for superior quality.

Sweetness Segmentation:

- Tailor apples to specific taste preferences for market appeal.

Optimal Storage:

- Preserve crunchiness and Sweetness with precise storage conditions.

Strategic Marketing & Grading:

- Strategically market medium size and quality correlation; develop comprehensive grading systems for informed consumer choices.

Diversification Opportunities:

- Explore appealing apple varieties for a competitive market edge.

Conclusion

- Informed marketing strategies and quality control measures will contribute to enhanced competitiveness,
  increased consumer satisfaction,
  and improved market positioning for apple products.

- These insights empower stakeholders to make data-driven decisions that align with consumer expectations and market trends.

"Thank you for your valuable attention. Your engagement is appreciated. Much gratitude."