Power BI Project Documentation: Coffee Quality Analysis

Project Overview

Project Name: Coffee Quality Analysis

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Purpose: The primary goal of this project is to leverage the rich dataset provided by CQI to understand the factors that contribute to coffee quality. This includes analyzing sensory attributes, processing methods, origin regions, and defect occurrences to identify key determinants of coffee quality.

Organization Background

Organization: Coffee Quality Institute (CQI)

Founded: 1996

Headquarters: California, USA

Mission: CQI's mission is to promote coffee quality through research, training, and certification programs, working with stakeholders across the coffee industry to improve standards, promote sustainability, and support the specialty coffee sector.

Data Description

Data Source: Provided by Coffee Quality Institute (CQI)

Key Components:

- **Sensory Evaluations**: Scores for Aroma, Flavor, Aftertaste, Acidity, Body, Balance, Uniformity, Clean Cup, and Sweetness.
- **Defects**: Information on Category One and Category Two defects.
- **Other Factors**: Coffee genetics, soil types, processing methods, and origin regions.

Total Cup Points: Sum of the scores for Aroma, Flavor, Aftertaste, Acidity, Body, Balance, Uniformity, Clean Cup, and Sweetness.

Objectives

1. Identify the key determinants of coffee quality based on sensory attributes.
2. Analyze the correlation between processing methods, origin regions, and coffee quality scores.
3. Identify trends or patterns in defect occurrences and their impact on overall coffee quality.
4. Explore the interaction between different variables and their influence on Total Cup Points.

Data Source Details

Data Sources:

- Sensory Evaluation Data: Scores for various sensory attributes.
- Defect Data: Details on Category One and Category Two defects.
- Additional Data: Coffee genetics, soil types, processing methods, and origin regions.

Data Connections:

- Import data from CSV files provided by CQI.
- Use Power Query to clean and transform the data as needed.

Data Model

Tables:

- **Sensory_Evaluations**: Contains scores for Aroma, Flavor, Aftertaste, Acidity, Body, Balance, Uniformity, Clean Cup, and Sweetness.
- **Defects**: Contains information on Category One and Category Two defects.
- **Additional_Factors**: Contains data on coffee genetics, soil types, processing methods, and origin regions.

Relationships:

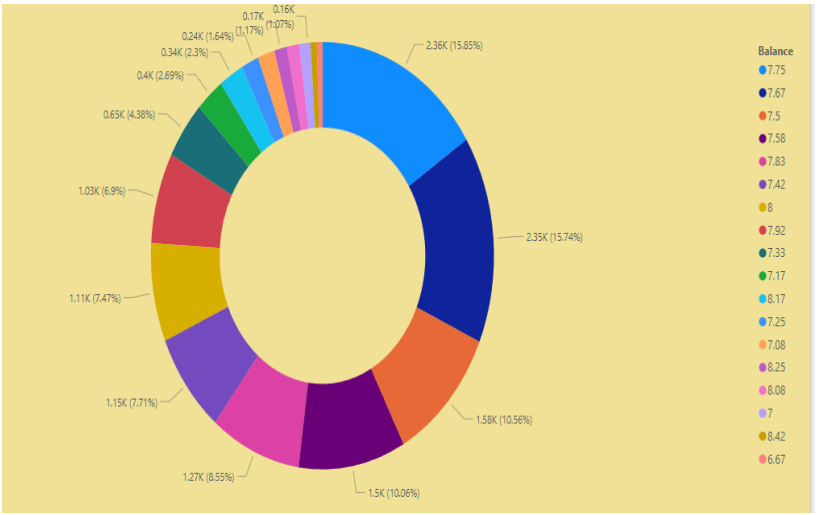
- Establish relationships between sensory evaluation data, defect data, and additional factors based on common keys like sample ID or batch number.

Calculated Columns/Measures:

- **Total Cup Points**: `Total Cup Points = Aroma + Flavor + Aftertaste + Acidity + Body + Balance + Uniformity + Clean Cup + Sweetness`

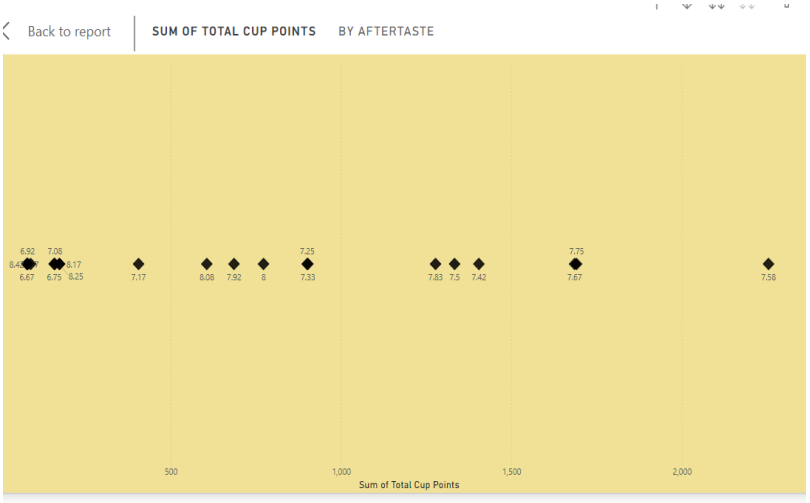
Visualizations

1. **Donut chart**:
    - Visualize the contribution of sensory attributes to tge Total Cup Points.
    - Highlight key determinants of coffee quality.



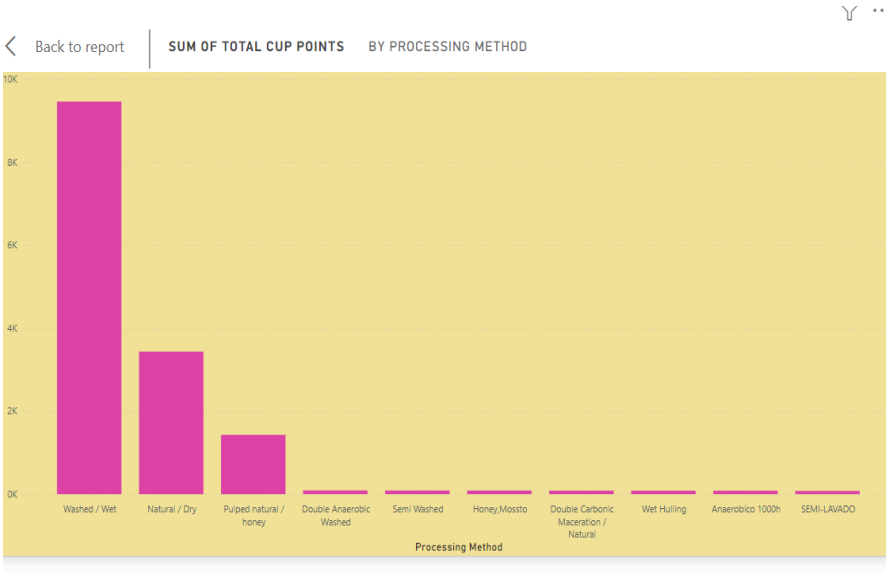
2. Scatter Plots:

- Display relationships between Total Cup Points and individual sensory attributes.
- Analyze the impact of defects on Total Cup Points.



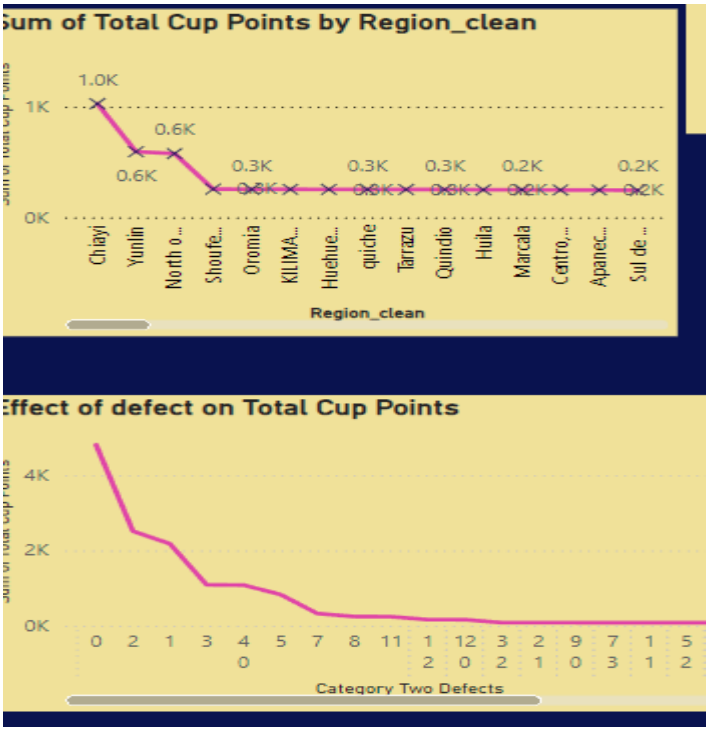
3. Bar Plots:

- Compare the distribution of Total Cup Points across different origin regions and processing methods.



4. **Line Charts**:

- Show the trend and impact of different defects on coffee quality.



Interactive Dashboards:

- Create a comprehensive dashboard summarizing key insights, including correlation heatmap, scatter plots, box plots, and bar charts.
- Enable filtering by origin region, processing method, and other relevant factors.

Power BI Features

DAX Functions:

- Use DAX to create calculated columns and measures for detailed analysis.
- Example: `Total Cup Points = SUM(Sensory_Evaluations[Aroma] + Sensory_Evaluations[Flavor] + ... + Sensory_Evaluations[Sweetness])`

Custom Visuals:

- Use Power BI's marketplace to import custom visuals like Correlation Plot, Box and Whisker Chart, etc.

Drill-Through and Drill-Down:

- Implement drill-through and drill-down features to explore data at different levels of granularity.

Reports and Dashboards

Overview:

- Provide a detailed description of the main reports and dashboards created.
- Include screenshots and descriptions of key visuals.

Usage Instructions:

- Provide instructions on how to navigate and use the reports and dashboards.
- Highlight interactive features and filters available for deeper analysis.

Security and Sharing

Access Control:

- Define who has access to the Power BI reports and datasets.
- Implement role-based access if needed.

Row-Level Security:

- Explain any row-level security measures implemented to restrict data access.

Performance Optimization

Optimizations:

- Document steps taken to optimize the performance of Power BI reports (e.g., query reduction, efficient DAX code).
- Include tips on managing large datasets and improving load times.