

SUPPLIER QUALITY ANALYSIS

● PROJECT PRESENTATION

February 2025

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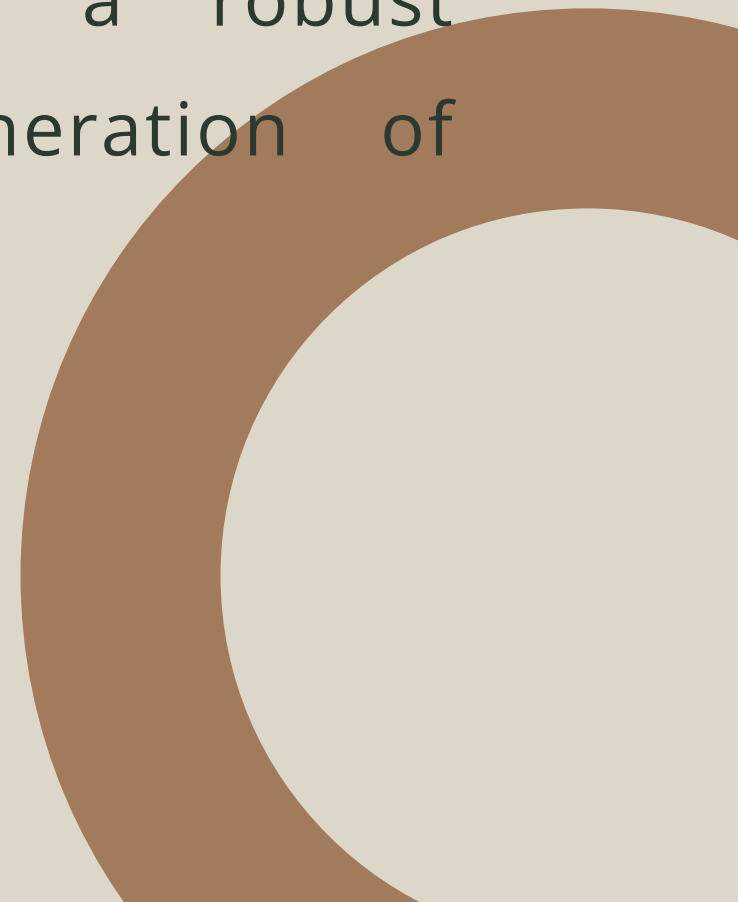
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PROJECT INTRO

The Supplier Quality Analysis Project. This initiative aims to provide a comprehensive understanding of supplier performance through in-depth analysis of defect data. Our dataset encompasses multiple facets of supplier quality including defect occurrences, vendor details, material types, plant information, and more. Each table in the dataset was carefully prepared to support a robust analytical model, enabling the generation of actionable insights



PURPOSE OF THE PROJECT

- Improve Supplier Quality: Identify suppliers with high defect rates, understand the nature of defects, and evaluate the operational impact.
- Data-Driven Decision Making: Equip stakeholders with insights that can drive improvements in supplier management and quality control.
- Operational Efficiency: Quantify downtime caused by defects to highlight production inefficiencies and areas for corrective action.
- Comprehensive Reporting: Develop a dashboard that provides both high-level KPIs and detailed drill-down analysis on supplier performance and defect trends.

DATA CLEANING (POWER QUERY)



Table Renaming

- Action: Renamed all tables using a clear naming convention:
 - Dimension Tables: dCategory, dDefect, dVendor, dDefect Type, dMaterial Type, dPlant
 - Fact Table: fDefect Report
- Purpose: Distinguish between dimensions and facts, improving clarity in the data model.

Data Type Adjustments

- IDs: Converted all ID columns to Text to avoid unintended aggregations.
- Numeric Fields:
 - Defect Qty: Set to Whole Number
 - Downtime min: Set to Whole Number

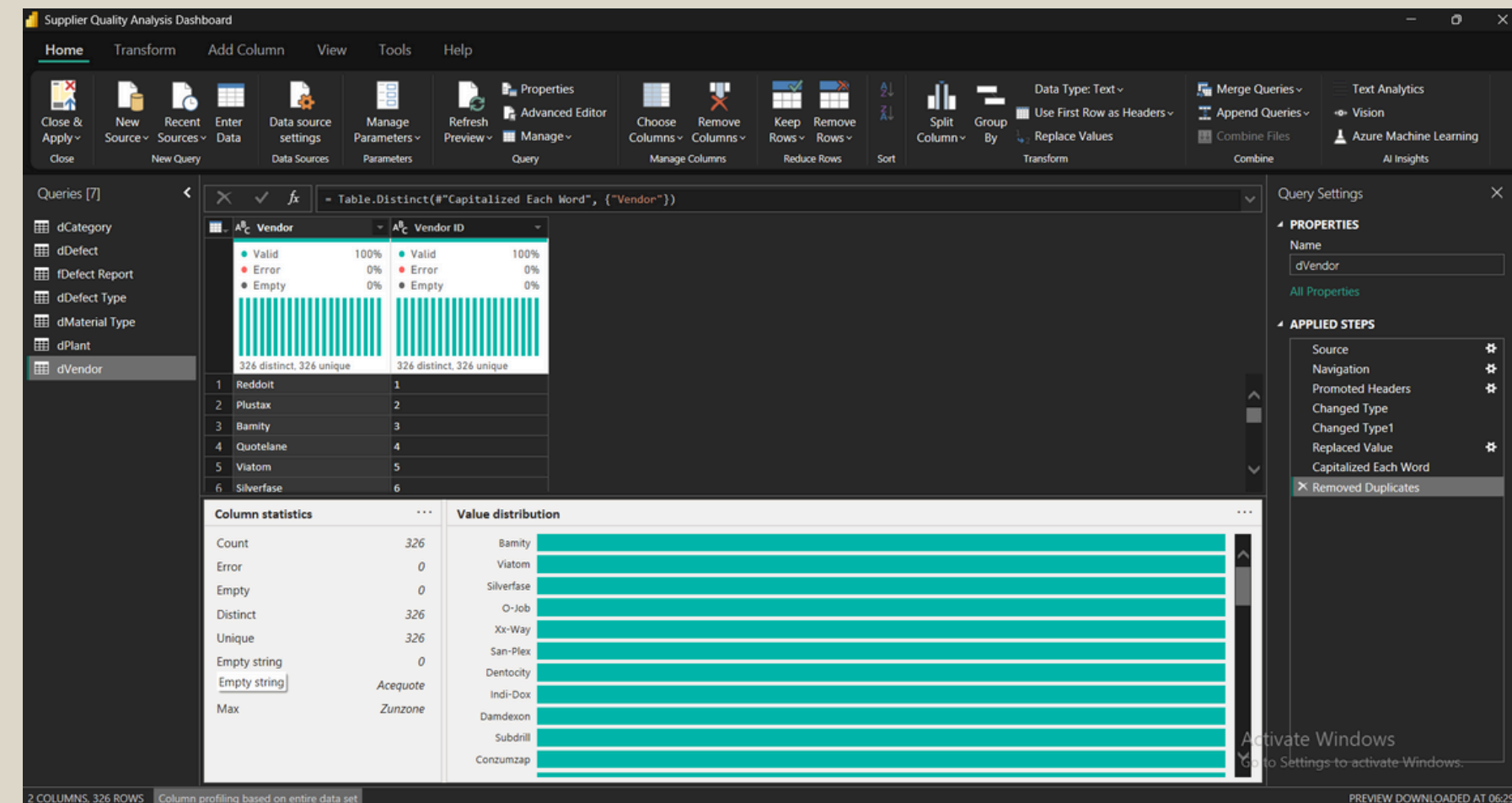
DATA CLEANING (CONT.)

Duplicate Removal & Null Handling

- Duplicates: Removed duplicate rows from all dimension tables.
- Nulls: Replaced any null values with 0 in applicable columns, ensuring completeness in our numerical analysis.

Text Standardization

- Vendor Names: Standardized casing (e.g., converted "reddoit" to "Reddoit") for consistency.
- Defect Type: Capitalized the first letter of each defect type.
- Trimming: Applied trimming to remove unnecessary spaces from text fields.



DATA MODELING

Calendar Table Creation

- dCalendar Table:
 - Creation: dCalendar = CALENDARAUTO()
 - Enhancements: Derived additional date columns including Month, Month#, Quarter, Quarter#, and Year.
 - Sorting: Configured the Quarter and Month columns to be sorted by Quarter# and Month#, respectively.

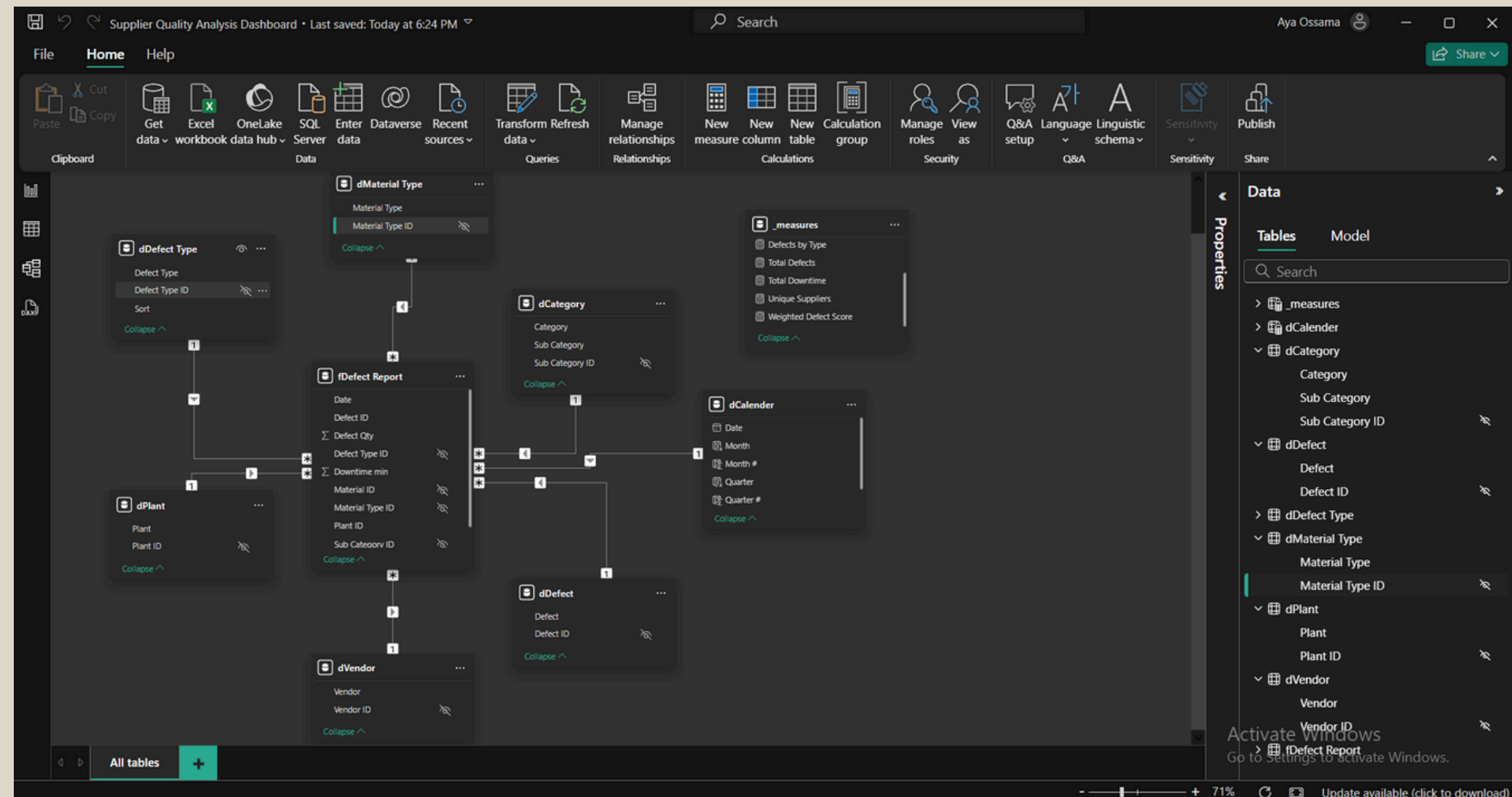
Relationship Setup

- Key Relationships:
 - fDefect Report[Vendor ID] → dVendor[Vendor ID]
 - fDefect Report[Defect Type ID] → dDefect Type[Defect Type ID]
 - fDefect Report[Plant ID] → dPlant[Plant ID]
 - fDefect Report[Material ID] → dMaterial Type[Material Type ID]
 - fDefect Report[Sub Category ID] → dCategory[Sub Category ID] (if applicable)
- Visual Cleanup:
 - Hidden primary keys in dimension tables and foreign keys in the fact table to streamline visualizations.

DATA MODELING(CONT.)

Measures Table Creation

- `_measures` Table: Created a dedicated table to house all DAX measures for centralized management and easier maintenance.



DAX MEASURES

1- Unique Suppliers DAX :

**Unique Suppliers =
DISTINCTCOUNT('dVendor'[Vendor ID])**

2-Defects by Type :

**Defects by Type = CALCULATE([Total Defects],
ALLEXCEPT('fDefect Report', 'fDefect
Report'[Defect Type ID]))**

3-% Defects by Type :

**% Defects by Type = DIVIDE([Defects by Type],
[Total Defects], 0)**

4-Total Downtime DAX :

**Total Downtime = SUM('fDefect
Report'[Downtime min])**

5-Total Defects DAX :

**Total Defects = SUM('fDefect Report'[Defect
Qty])**

6-Avg Downtime per Defect DAX :

**Avg Downtime per Defect = AVERAGE('fDefect
Report'[Downtime min])**

7-Weighted Defect Score DAX :

**Weighted Defect Score =
SUMX(
'fDefect Report',
'fDefect Report'[Defect Qty] *
RELATED('dDefect Type'[Sort]))**

8- Defect Rate :

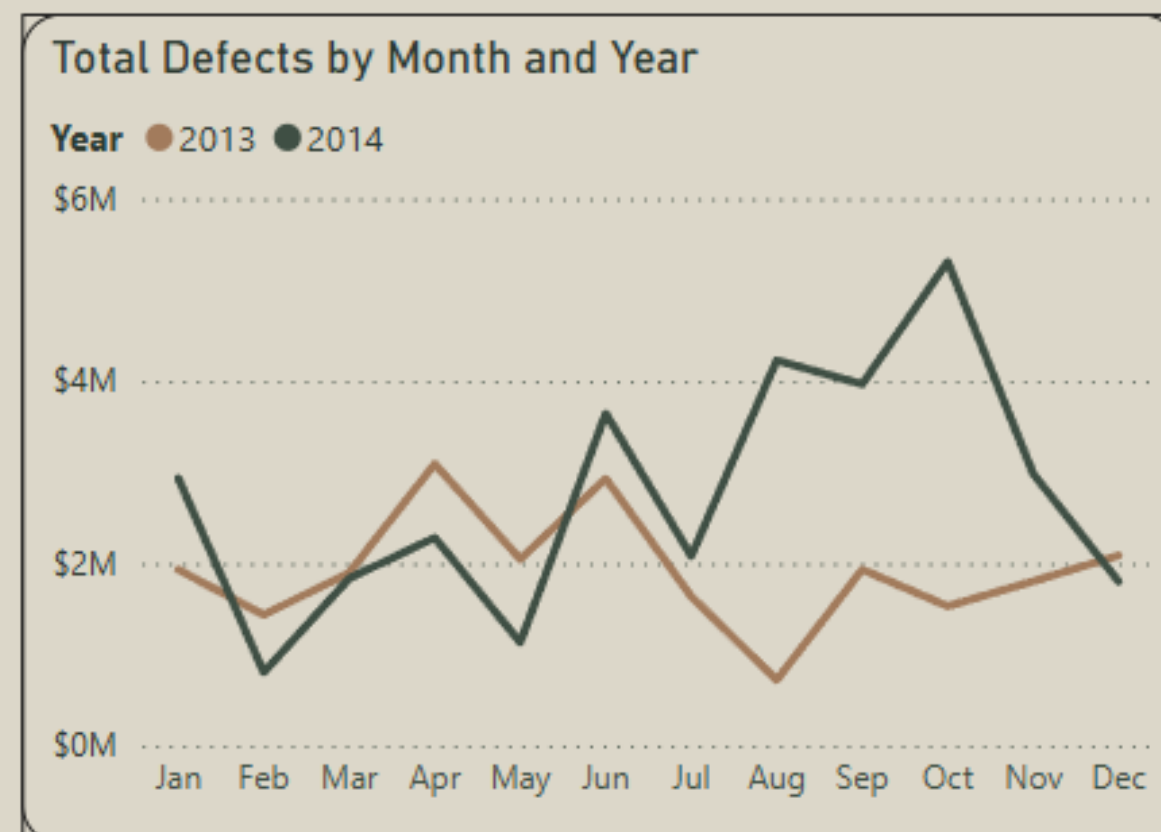
**Defect Rate =
DIVIDE(SUM('fDefect Report'[Defect Qty]),
CALCULATE(SUM('fDefect Report'[Defect
Qty]), ALL('fDefect Report')), 0)**

DATA VISUALIZATION

KEY VISUALS CREATED

Defect Trends Over Time:

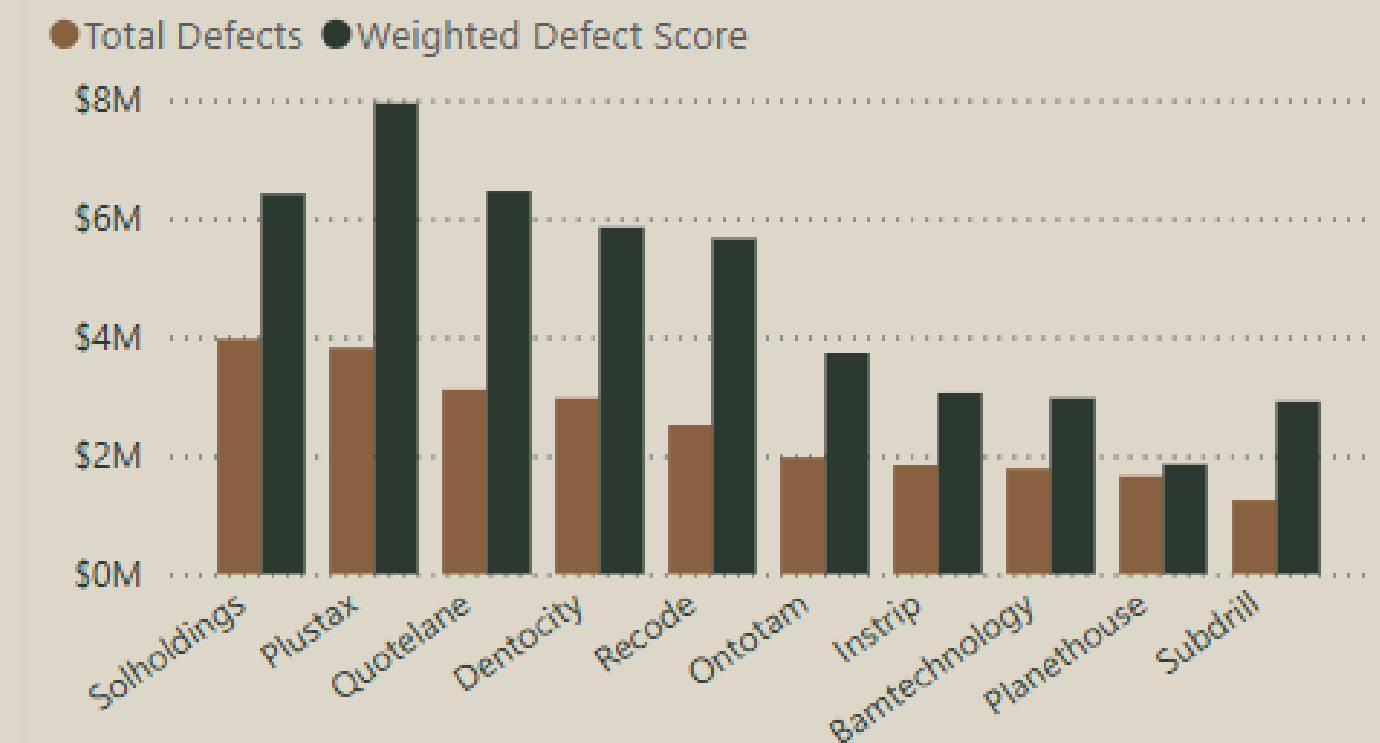
- Type: Line Chart
- Axes: Date (X-Axis) and Total Defects (Y-Axis) ,
Year in the legend
- Purpose: Identify trends and seasonal patterns in
defect occurrences.



Vendor Performance Analysis:

- Type: Bar/Column Chart
- Axes: Vendor (X-Axis) and Total Defects / Avg Downtime (Y-Axis)
- Purpose: Compare suppliers to highlight those with the highest defect rates

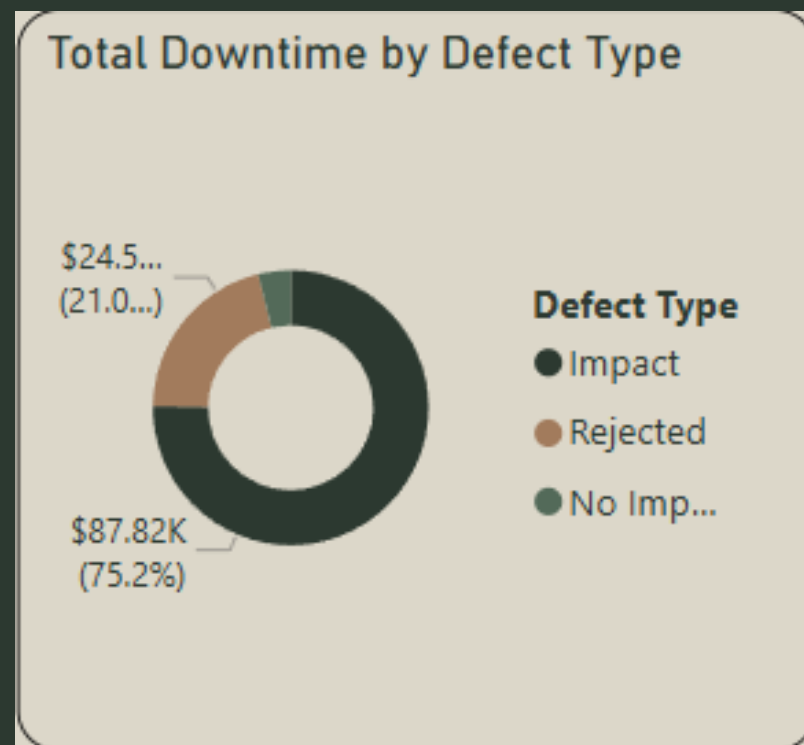
Top 10 Vendors by Total Defects & Weighted Defect Score



DATA VISUALIZATION (CONT.)

Defect Type Breakdown:

- Type: Pie/Donut Chart
- Data: Proportion of each defect type based on Unique Suppliers.
- Purpose: Visualize the composition of defect types.



KPI & Cards:

- Metrics: Unique Suppliers, Total Defects, Total Downtime, Avg Downtime per Defect
- Purpose: Provide at-a-glance insights into key performance indicators
- Adding Slicers to filter its Measures.

\$47,182,585.00
Total Defects

\$116,772.00
Total Downtime

326
Unique Suppliers

100.00%
Defect Rate

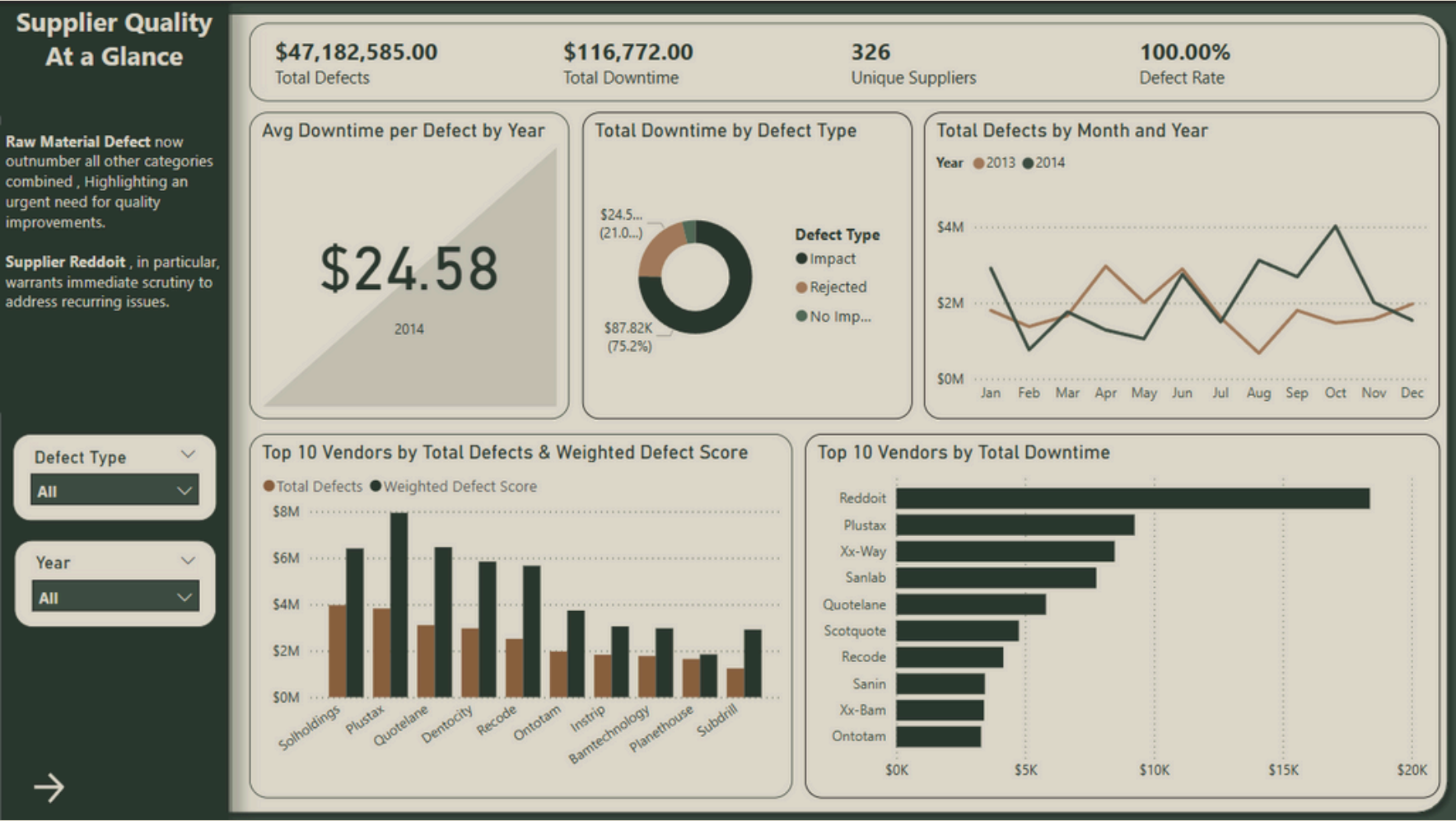
Avg Downtime per Defect by Year

\$24.58

2014

SUPPLIER QUALITY REPORT

This dashboard offers an interactive view of supplier quality performance—highlighting defect trends, vendor insights, and operational impacts to empower data-driven decisions.





THANK YOU

February 2025