Deloitte Data Analytics Job Simulation - Project Report

1. Project Overview

This project was completed as part of the **Deloitte Data Analytics Virtual Experience on Forage.**
The project involved analyzing two different business datasets to support fair decision-making and operational efficiency using Excel and Tableau.

The tasks focused on:

- Classifying employee compensation equality scores
- Analyzing machine downtime using telemetry data
- Creating dashboards to support data-driven insights

2. Business Problems

Problem 1: Machine Downtime Analysis (Tableau)

The business wanted to understand:

- Which factories experience the highest downtime
- Which device types contribute most to downtime
- How downtime varies across locations

Problem 2: Pay Equality Analysis (Excel)

The organization needed to assess whether employee compensation across factories and job roles was fair, unfair, or discriminatory based on an Equality Score.

3. Objectives

- Classify equality scores into meaningful categories
- Identify potentially discriminatory compensation patterns
- Calculate downtime using telemetry health data
- Visualize factory-wise and device-wise downtime
- Build an interactive dashboard for management decision-making

4. Tools Used

- **Microsoft Excel** – Data cleaning, classification, and analysis

  Dataset:

  - Factory
  - Job Role

- Equality Score (range: -100 to +100, where 0 is ideal)

- **Tableau** – Dashboard creation and data visualization

  Dataset:

  - Factory
  - Device Type
  - Health Status (Healthy / Unhealthy)
  - Telemetry timestamps

5. Data Preparation & Analysis

Tableau – Downtime Calculation

A calculated field **"Unhealthy"** was created:

- Value = **10 minutes** for every unhealthy status
- Represents potential downtime since the previous message

This enabled accurate aggregation of downtime across factories and device types.

Excel – Equality Score Classification

A new column **"Equality Class"** was created based on business rules and classifying the equality score into 3 types:

- Fair (+-10)
- Unfair (<-10 AND >10)
- Highly Discriminative (<-20 AND >20)

6. Data Visualization

Tableau Charts Created:

1. **Down Time per Factory** (Bar Chart)
2. **Down Time per Device Type** (Bar Chart)

Dashboard:

- Combined both charts into a single interactive dashboard
- Enabled factory selection as a filter
- Selecting a factory dynamically updates device-level downtime

7. Key Insights

- Certain factories experienced significantly higher downtime compared to others
- Specific device types contributed disproportionately to total downtime
- Classification of equality scores revealed areas requiring HR policy review
- Visual dashboards simplified complex data for non-technical stakeholders

8. Business Recommendations

- Investigate factories with high downtime to reduce operational losses
- Prioritize maintenance for high-risk device types
- Review compensation policies in areas flagged as highly discriminative
- Use dashboards regularly for proactive monitoring

9. Key Learnings

- Practical use of Excel for business rule-based classification
- Creating calculated fields in Tableau for real-world metrics
- Building interactive dashboards for decision-makers
- Understanding how consultants translate data into actionable insights