# Data Analysis Report: Employee Attrition and Performance Evaluation

**Executive Summary**

This report provides an analysis of employee attrition rates, performance evaluations, and their correlation with various factors such as job satisfaction, training opportunities, and other demographic elements. Key findings indicate that younger employees and those in certain job roles or departments are more likely to experience attrition. Additionally, while self-ratings and manager ratings show a high correlation, the overall employee satisfaction score does not strongly correlate with manager ratings.

**Introduction**

**Purpose**

The purpose of this analysis is to understand factors influencing employee attrition and performance ratings, focusing on satisfaction levels, training opportunities, and demographic characteristics.

**Scope**

The report covers:

* Attrition rates and demographic analysis.
* Performance ratings and their correlations with satisfaction levels.
* Training opportunities and their impact on performance.

**Background**

Employee attrition and performance are critical factors for organizational health and productivity. Understanding these factors helps in formulating strategies to improve retention and performance.

**Methodology**

**Data was sourced from the following CSV files:**

* PerformanceRating.csv: Contains employee performance ratings and satisfaction scores.
* Employee.csv: Provides demographic and job-related information.
* EducationLevel.csv: Details education levels.
* SatisfiedLevel.csv: Includes satisfaction levels.
* RatingLevel.csv: Lists rating levels.

**Data Collection**

Data was loaded into PostgreSQL databases and inspected for duplicates and null values.

**Analysis Techniques**

* Descriptive statistics and exploratory data analysis (EDA).
* Correlation analysis between performance ratings and satisfaction levels.
* Analysis of attrition rates by demographic factors and job roles.

## Data Analysis

**Satisfaction and Performance Ratings**

* Average Environment Satisfaction: 3.87
* Average Job Satisfaction: 3.43
* Average Relationship Satisfaction: 3.43
* Average Manager Rating: 3.47

**Correlation Analysis**

* Self-Rating vs. Manager Rating:
  + Average Self-Rating: 3.98
  + Average Manager Rating: 3.47
  + Correlation: 0.854 (strong positive correlation)
* **Overall Employee Satisfaction vs. Manager Rating:**
  + Average Overall Satisfaction: 3.24
  + Correlation with Manager Rating: -0.008 (nearly no correlation)

**Key Findings**

1. **Attrition Analysis:**
   * Age: 64% of employees who left the company were aged between 18-29.
   * Gender: Attrition rates between males and females are similar.
   * Marital Status: Single employees have a higher attrition rate (54%).
   * Job Role: High attrition rates observed in roles like Data Scientist (26%), Sales Executive (24%), and Software Engineer (19%).
   * Department: Higher attrition in Technology (56%) and Sales (38%).
2. **Impact of Training Opportunities:**
   * Training opportunities within the year had no significant correlation with performance ratings.
3. **Satisfaction and Performance:**
   * Self-ratings are consistently higher than manager ratings.
   * No significant correlation between overall employee satisfaction and manager ratings.

**Insights and Implications**

* Young Employees: Younger employees (18-29) are more prone to leaving, which suggests a need for targeted retention strategies.
* Job Roles and Departments: Roles such as Data Scientist and departments like Technology require focused attention to reduce attrition.
* Training Opportunities: The lack of correlation with performance ratings indicates that training alone may not impact performance significantly.

## Recommendations

1. **Retention Strategies:**
   * Develop programs specifically aimed at younger employees to enhance engagement and reduce turnover.
   * Address the needs of high attrition roles and departments through targeted interventions.
2. **Performance Management:**
   * Consider aligning self-ratings and manager ratings through more objective performance evaluation methods.
3. **Training Programs:**
   * Evaluate the effectiveness of current training programs and explore additional factors that may influence performance.

**Conclusion**

The analysis reveals critical factors impacting employee attrition and performance. By focusing on targeted retention strategies, aligning performance evaluations, and reassessing training programs, the organization can improve overall employee satisfaction and retention.