📌 Employee Attrition Analysis

EDA Report

📖 1. Executive Summary

This report presents key findings from the Exploratory Data Analysis (EDA) on employee attrition. The goal is to identify factors driving employee turnover and provide actionable insights to improve retention strategies.

📊 2. Dataset Overview

◆ Total Records: 59598 employees

◆ Total Features: 27 variables

◆ Target Variable: Attrition (Left=1, Stayed=0)

	Employee ID	Age	Years at Company	Monthly Income	Number of Promotions	Distance from Home	Number of Dependents	Company Tenure
count	59598.000000	59598.000000	59598.000000	59598.000000	59598.000000	59598.000000	59598.000000	59598.000000
mean	37227.118729	38.565875	15.753901	7302.397983	0.832578	50.007651	1.648075	55.758415
std	21519.150028	12.079673	11.245981	2151.457423	0.994991	28.466459	1.555689	25.411090
min	1.000000	18.000000	1.000000	1316.000000	0.000000	1.000000	0.000000	2.000000
25%	18580.250000	28.000000	7.000000	5658.000000	0.000000	25.000000	0.000000	36.000000
50%	37209.500000	39.000000	13.000000	7354.000000	1.000000	50.000000	1.000000	56.000000
75%	55876.750000	49.000000	23.000000	8880.000000	2.000000	75.000000	3.000000	76.000000
max	74498.000000	59.000000	51.000000	16149.000000	4.000000	99.000000	6.000000	128.000000

⚠️ 3. Data Quality & Missing Values

✅ No missing values were found in the dataset.

📌 4. Key Findings

◆ Salary & Attrition: Employees with lower salaries have a higher likelihood of leaving.

◆ Job Role Impact: Certain roles, such as sales and customer service, experience higher turnover.

◆ Remote Work: Employees who work remotely tend to stay longer (-0.22 correlation with attrition).

◆ Work-Life Balance & Satisfaction: Lower scores in these areas increase attrition risk.
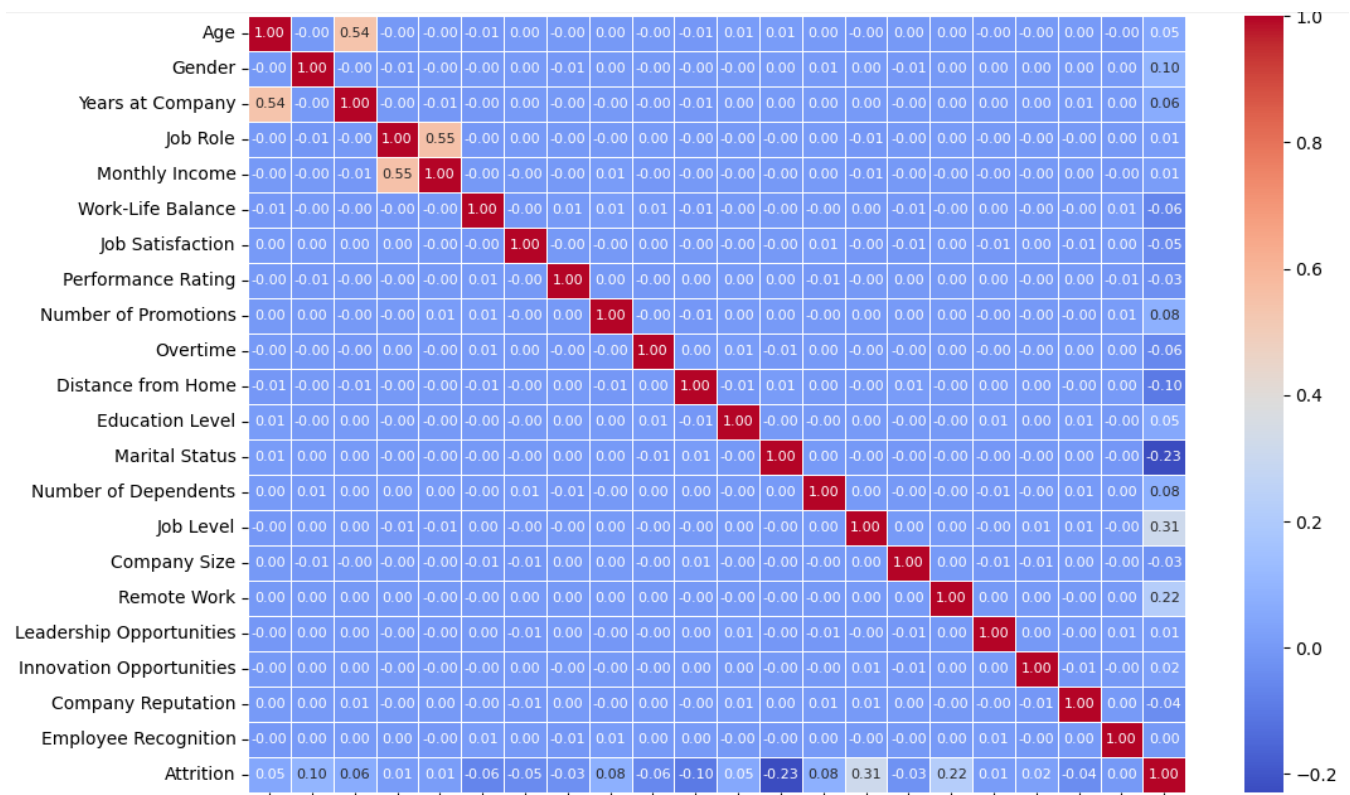
🛠️ 5. Advanced Insights & Feature Engineering

✅ Salary-to-Performance Ratio - Determines whether highly paid employees perform better.

✅ Tenure Groups - Categorizes employees based on experience levels.
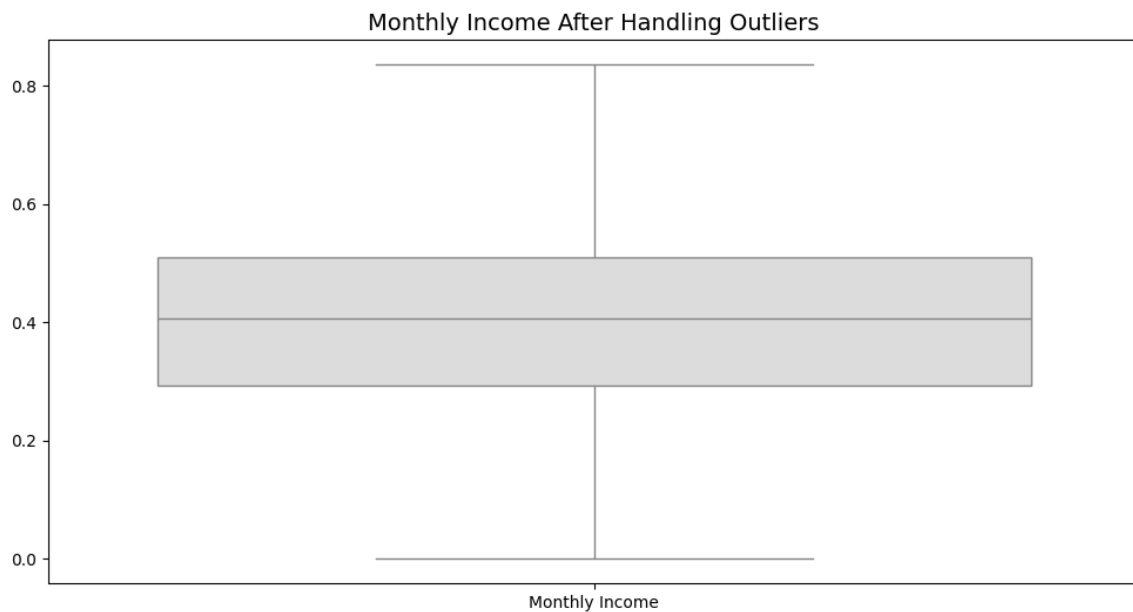
✅ Promotion Rate - Measures career growth speed.

📊 6. Correlation Analysis

A heatmap was used to identify strong correlations between key variables.

⚓ 7. Outlier Detection & Treatment

Box plots were used to detect salary outliers, which were capped to prevent model distortion.

Monthly Income After Handling Outliers

🏹 8. Business Recommendations

🎯 Focus on Retaining High-Potential Employees: Provide better compensation and growth opportunities.

🎯 Encourage Remote Work Flexibility: Helps reduce attrition risk.

🎯 Improve Job Satisfaction & Recognition: Key factors influencing employee retention.