HR ANALYTICS: PREDICTING EMPLOYEE PROMOTIONS

DATA-DRIVEN INSIGHTS FOR FAIR AND EFFECTIVE PROMOTION DECISIONS

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PROJECT OVERVIEW

Objective: Drive employee promotion prediction using machine learning and increase the efficiency of HR in a multinational corporation

Problem: Traditional promotion processes are manual and slow, based on delayed judgments.

Goal: Predict employees likely to be promoted, allowing HR teams to make data-driven, timely decisions.

Stakeholders : HR, Department Heads, Executive Leadership, Data Science/IT Teams.

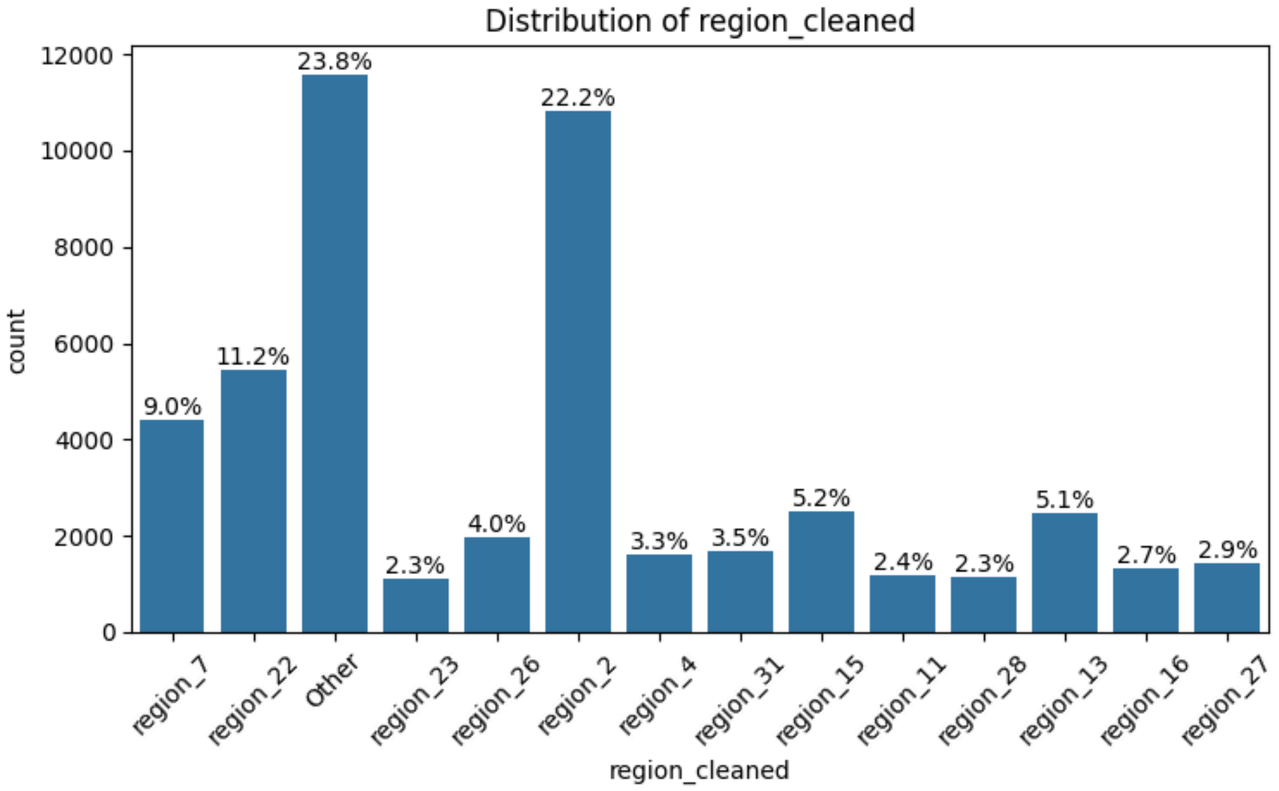
DATA CLEANING

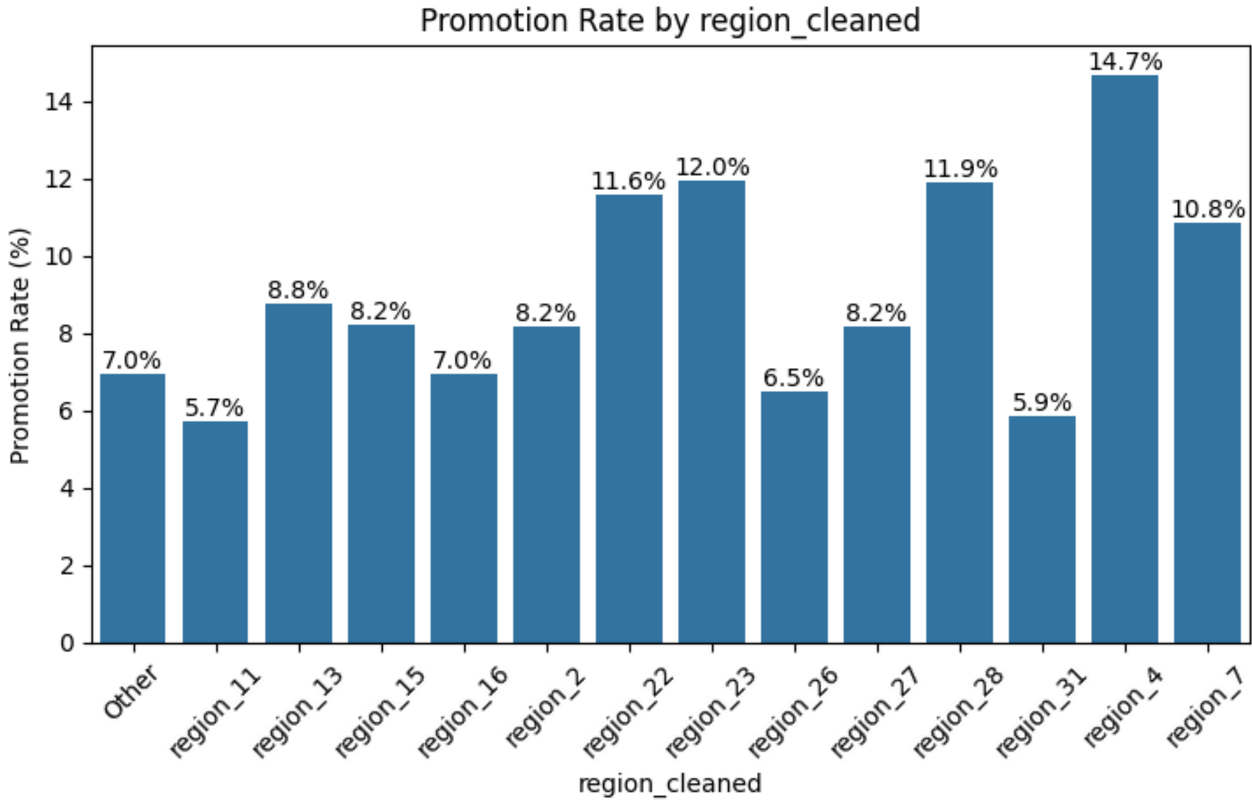
Dataset Overview

- 54,808 records in the training set, 14 features (e.g., department, age, length_of_service).
- Demographic and performance-based data.

Key Features

department, age, previous_year_rating, avg_training_score, is_promoted.





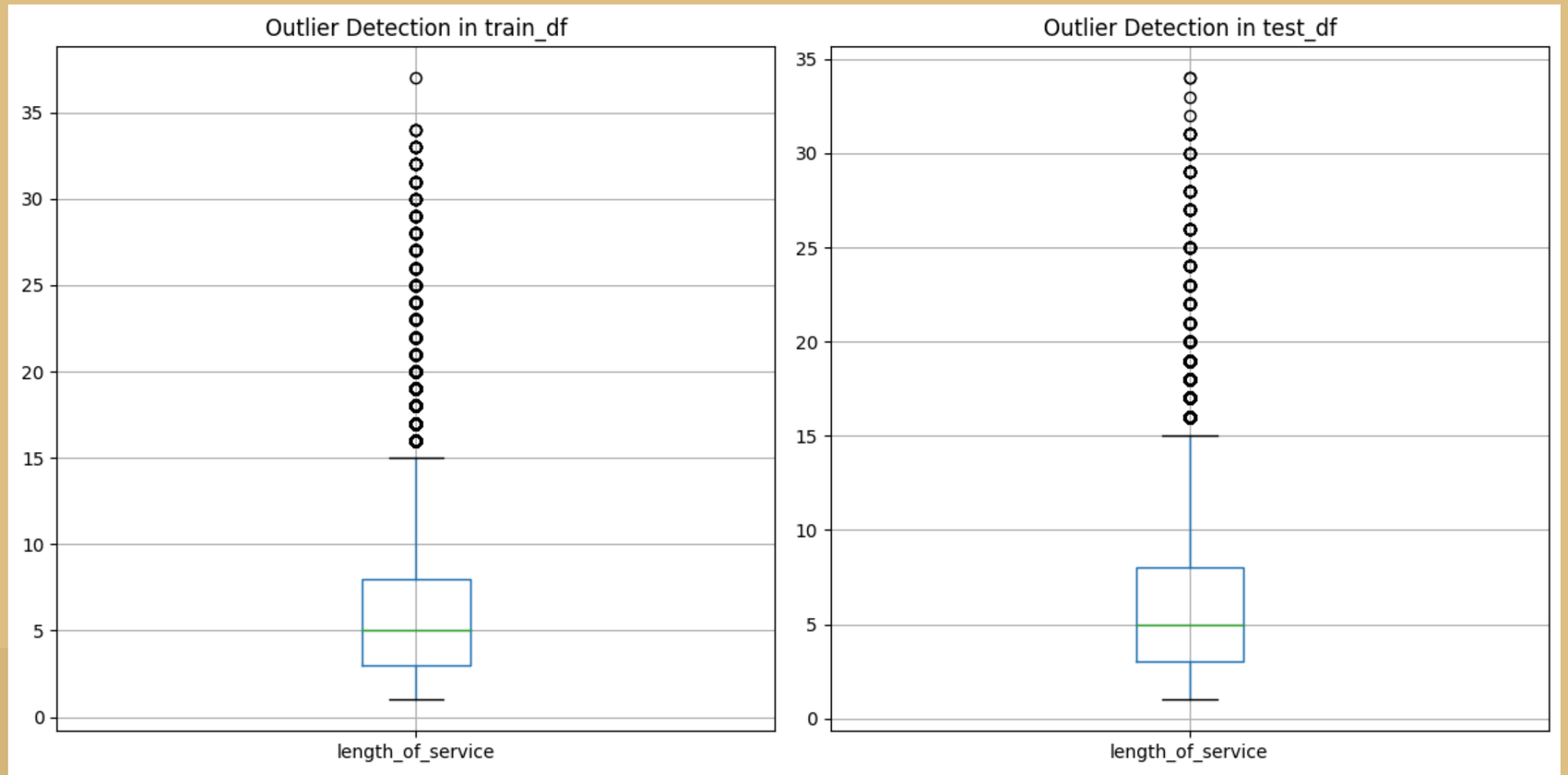
DATA CLEANING & PREPROCESSING

Data Quality

- Dataset Size: 54,808 records with 14 features.
- Missing Values: education and previous_year_rating columns with missing data were removed.

Length of Service

Box plot gave evidence of outliers, maybe long tenure employees. Addressed by checking data distribution.



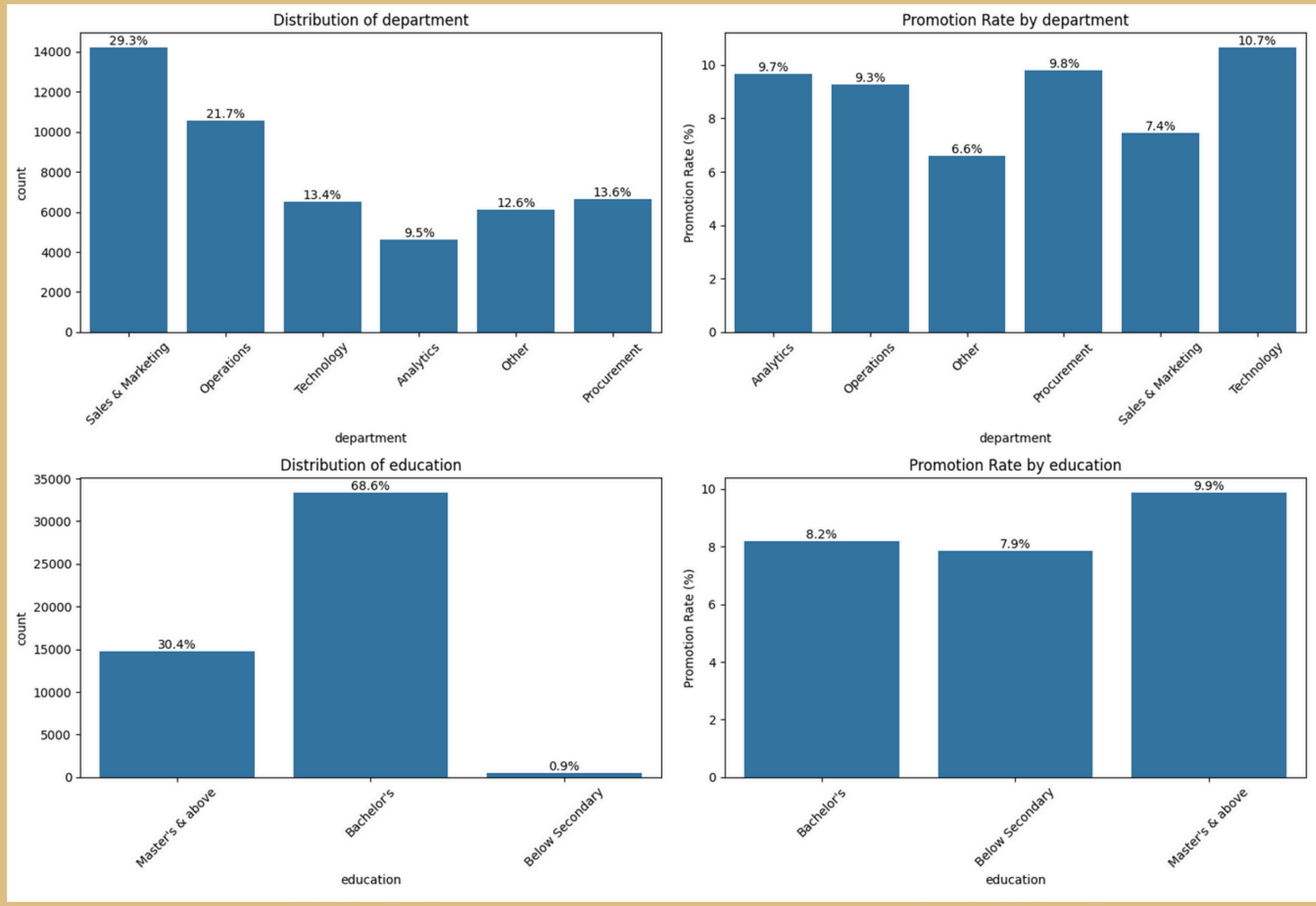
EXPLORATORY DATA ANALYSIS

Department Distribution

The largest is Sales & Marketing at 29.3%, followed by Operations at 21.7%, and then Technology at 13.4%. Technology has the highest promotion rate at 10.7%, and HR/Legal have lower rates, which may be areas to improve.

Education Level

Most employees hold a Bachelor's degree (68.6%). Advanced degree holders receive promotions more often than Bachelors (9.9% vs. 8.2%).



THANK YOU