

HR Analytics – Employee Satisfaction & Attrition Analysis

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Project Introduction & Dataset Overview

Project Scope

Analyze employee satisfaction, performance, attrition factors.

Dataset Details

- Employee.csv: 4410 rows × 34 columns
- PerformanceRating.csv: 4410 rows × 9 columns
- Includes demographics, roles, satisfaction, performance

Tools Used

- Python, Pandas, NumPy
- Matplotlib, Seaborn
- Jupyter Notebook, Power BI





Data Integration: Merging Datasets

1 Datasets Merged

Employee details & performance reviews combined

2 Method

Left join on EmployeeID followed by filtering missing performance entries

3 Outcome

Unified dataset for comprehensive analysis

ID	var1	var2	var3	var4	var5	var6
588	2	d	1	225	Apples	Breakfast
654	1	y	1	56	Bananas	Snack
527	1	o	0	245	Apples	Snack
455	2	r	0	46	Pears	Snack

Data Cleaning & Transformation

Nulls & Duplicates

Checked and removed inconsistencies

Date Conversion

Converted review dates to datetime format

Code Mapping

Mapped education and satisfaction levels to readable text

Key Analytical Questions

1. Do leavers have lower satisfaction?
2. Does overtime increase attrition?
3. Satisfaction differences by department/gender?
4. Impact of promotion frequency on satisfaction?
5. Performance metrics trends over time?

Attrition & Satisfaction Trends Over Time

Satisfaction Scoring

Mapped satisfaction levels to numeric scores (1-5)

Findings

Leaving employees show lower satisfaction consistently over years



Impact of Overtime on Attrition

Work-Life Balance

Lower scores linked to overtime workers

Attrition Rates

Higher among employees reporting overtime work

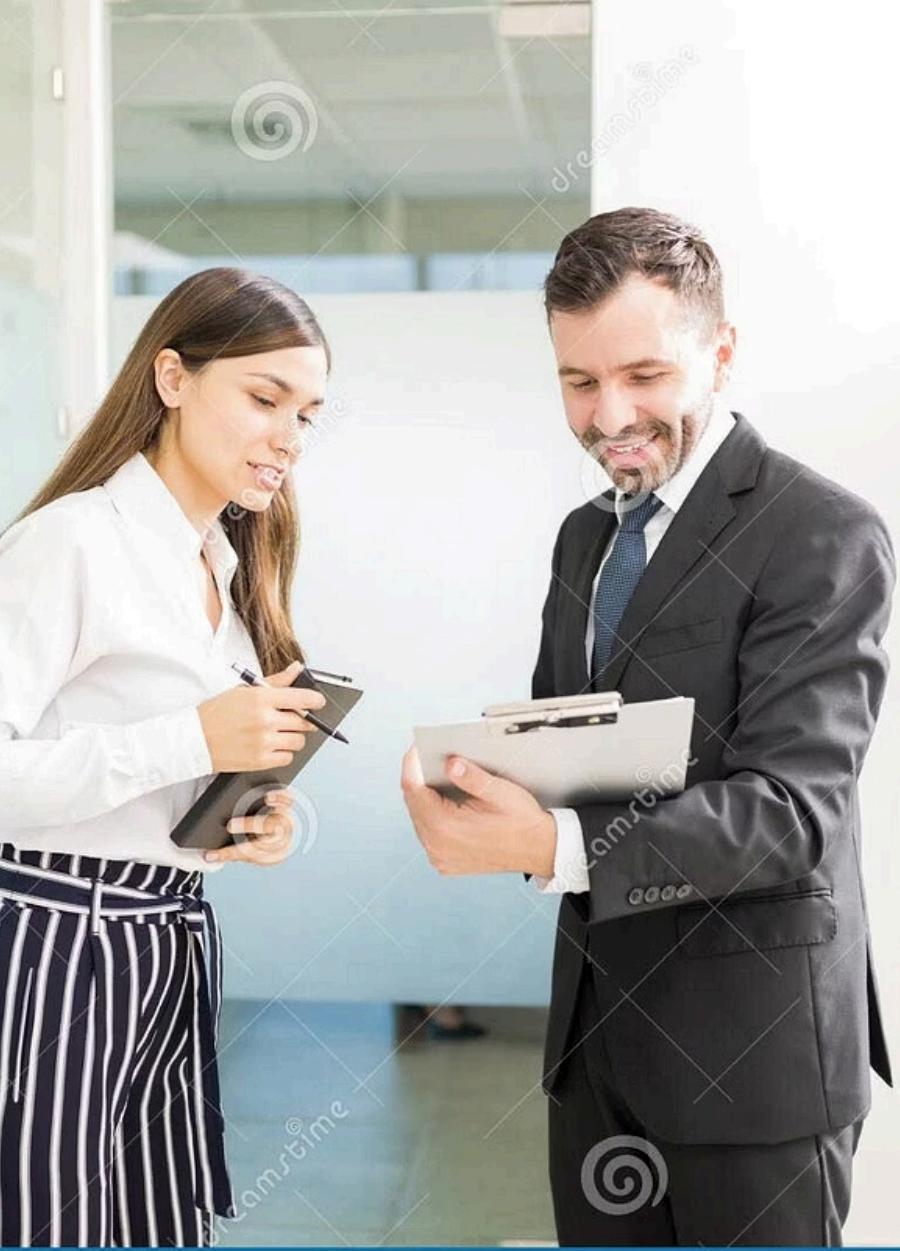
Department & Promotion Frequency Insights

Promotion Frequency

Calculated as years since last promotion over tenure

Findings

Departments with fewer promotions see higher attrition, dissatisfaction



Gender Differences in HR Metrics



Promotions

Males slightly higher promotion frequency



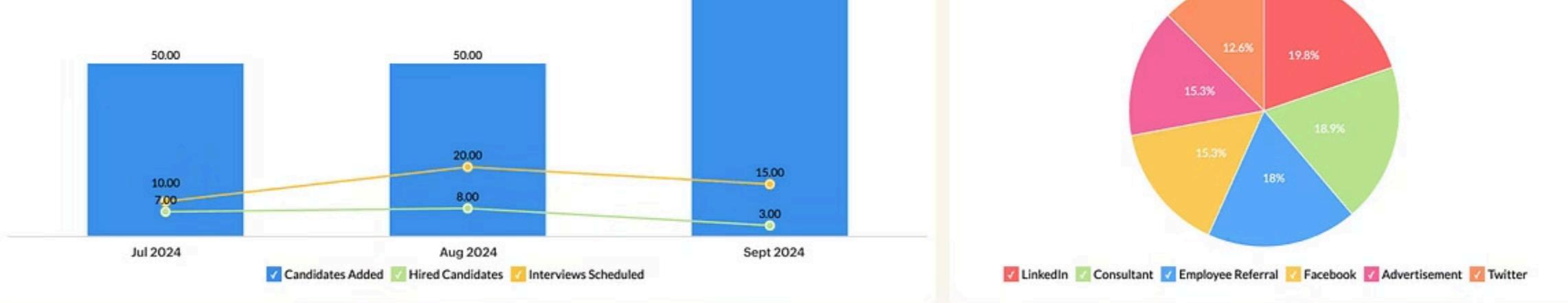
Attrition

Females show slightly lower attrition rates



Satisfaction

No significant gender bias detected



Dashboard & Visualization Summary

1

Charts Incorporated

- Attrition by Gender & Overtime
- Satisfaction by Job Role & Department
- Promotion Trends, Manager Rating vs Training

2

Tools

Python matplotlib, seaborn, and Power BI used for visualizations