

PROJECT-1

IBM HR Analytics: Predicting Employee Attrition & Performance

Leveraging data to make strategic HR decisions. This presentation introduces IBM's HR Analytics dataset and its value for workforce management.

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Understanding the IBM HR Analytics Dataset

Dataset Source

Fictional data created by IBM data scientists for HR research.

Key Features

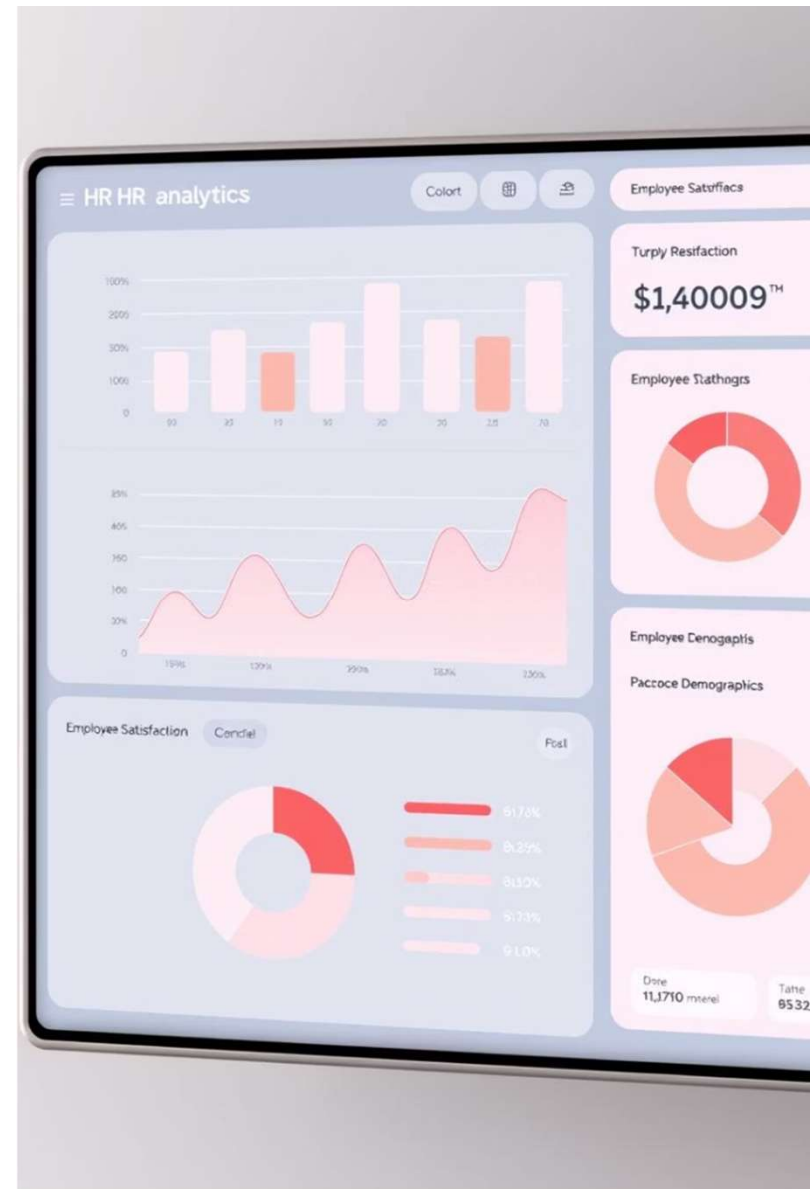
- Demographics and Job Satisfaction
- Performance Ratings
- Work-Life Balance

Dataset Details

1470 employees, 35 features. Target variable is Attrition (Yes/No).

Data Quality

Emphasizes importance of preprocessing and clean data.



Exploratory Data Analysis: Unveiling Insights



Problem Statement

Employee attrition impacts organizational stability, productivity, and culture, often resulting in high recruitment costs and lost expertise.

The underlying reasons for departures frequently remain unknown until it's too late.

This project analyzes HR data to identify key attrition drivers and support proactive retention strategies.



Objective

Discover patterns and anomalies in employee data.



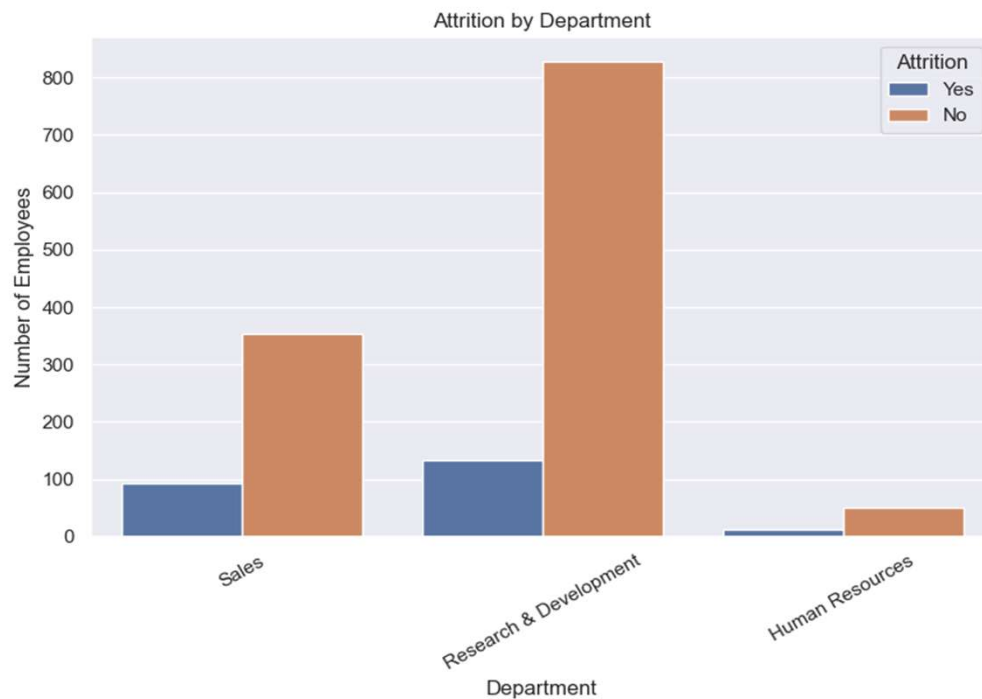
Tools Used

Python libraries: Pandas, NumPy, Matplotlib, Seaborn.

Visualizing Attrition Factors

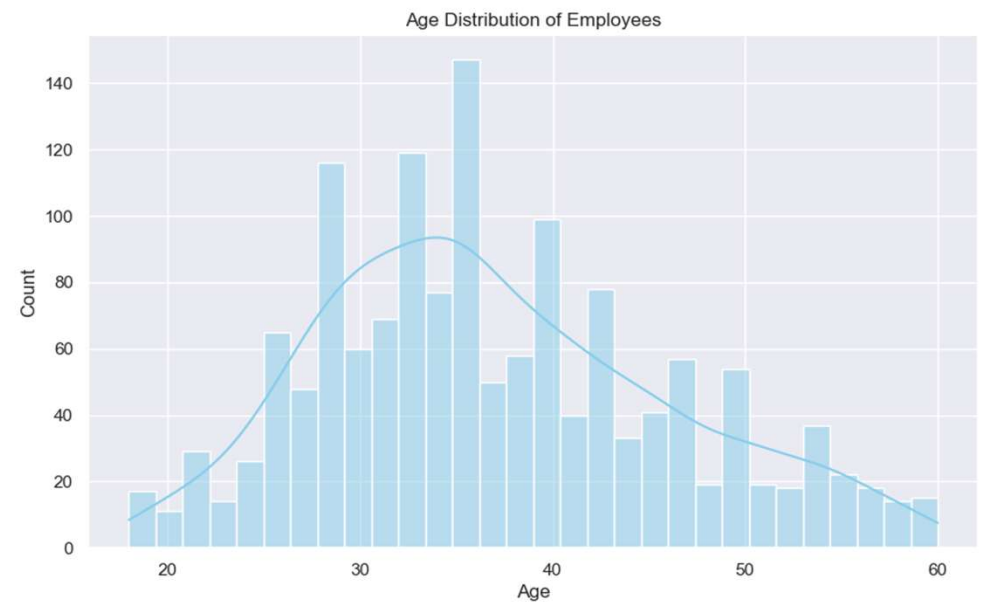
Attrition by Department

R&D shows highest attrition, followed by Sales and HR.



Age Distribution by Attrition

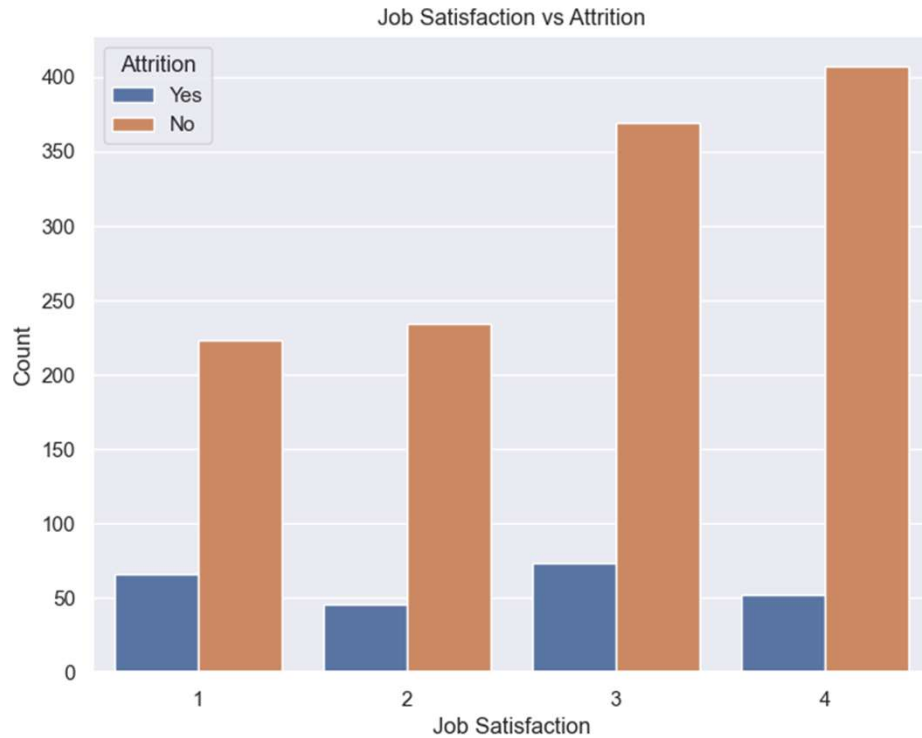
Younger employees are more likely to leave the company.



Performance and Job Satisfaction Analysis

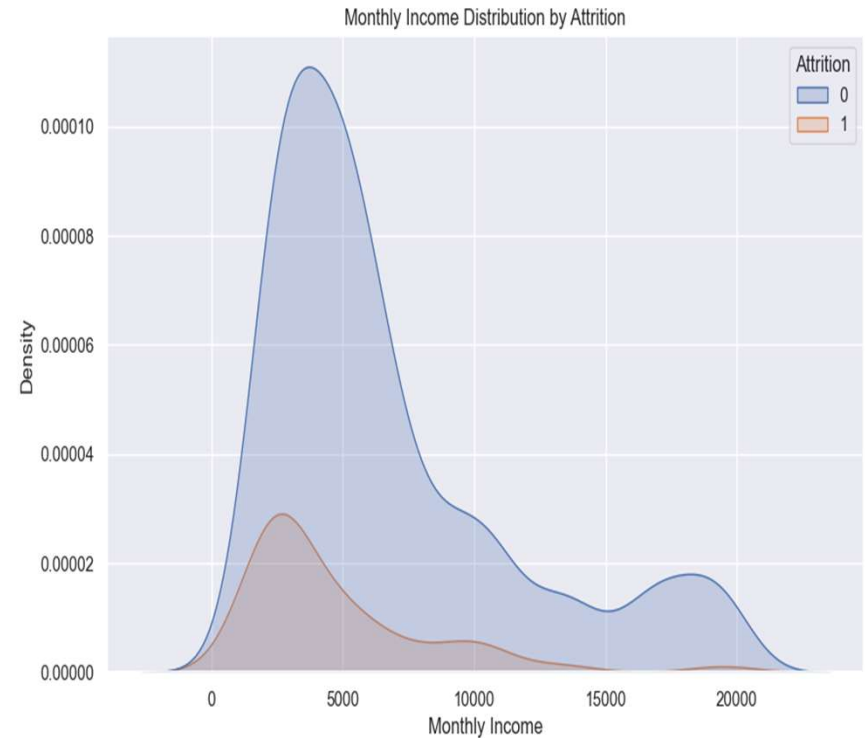
Job Satisfaction & Performance

Lower satisfaction often coincides with higher attrition risk.



Monthly Income Distribution by Attrition

Attrited employees tend to earn less than those retained.



Work-Life Balance & Attrition

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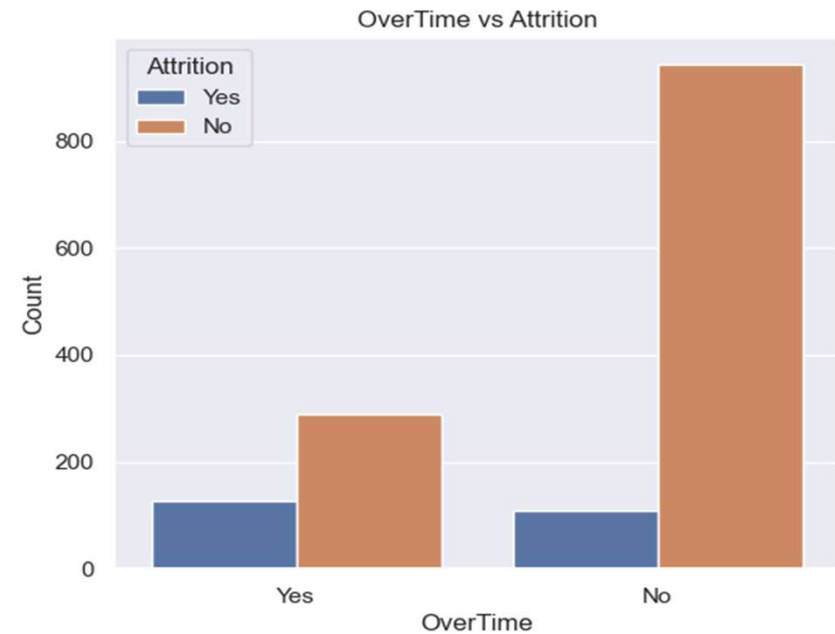
Attrition & Work-Life Balance

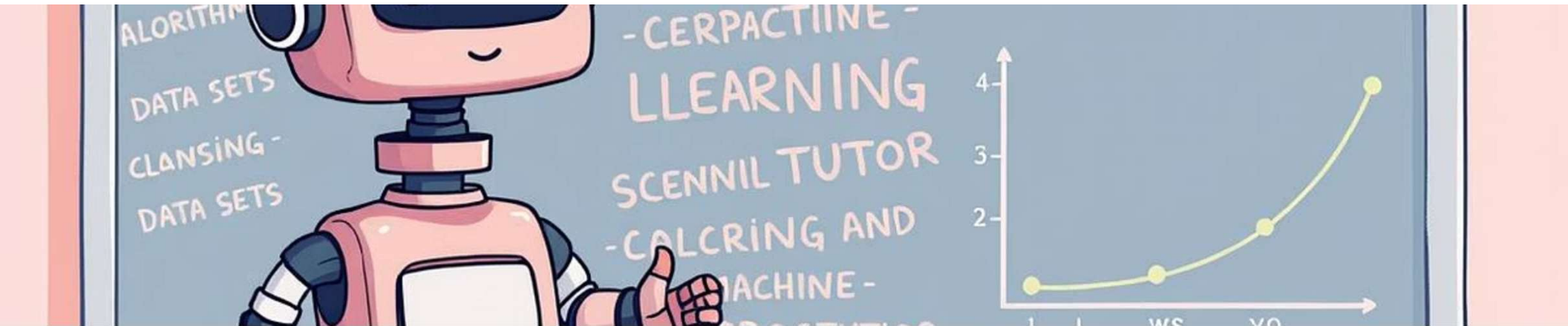
Poor balance increases employee turnover rates.

2

Overtime Impact

Employees working more overtime show higher attrition likelihood.





Building Predictive Models

1 Algorithms Used

Random Forest.

2 Evaluation Metrics

Accuracy, Precision, Recall, F1-score, Confusion_matrix.

3 Model Performance

Random Forest achieved 84% accuracy in attrition prediction.

Feature Importance: Key Attrition Drivers



Actionable Insights & Recommendations

Improve Work-Life Balance

Reduce overtime and offer flexible scheduling.

Enhance Job Satisfaction

Boost compensation and provide career growth.

Focus Retention Programs

Target younger employees and high-risk departments.

Continuous Monitoring

Track attrition trends to adjust strategies promptly.



Conclusion: Data-Driven HR for Retention

Empower Decisions

Use data to guide HR strategy effectively.

Proactive Management

Identify and address attrition risks early.

Optimize Engagement

Drive better performance and satisfaction.

Continuous Improvement

Regularly refine HR initiatives with analytics.

