

# HR Analytics: Employee Attrition Analysis

Understanding and mitigating workforce turnover for a stronger organization.



# Project Goals & Approach

## 1 Identify Key Factors

Uncover primary drivers behind employee attrition.

## 2 Data-Driven Insights

Provide actionable intelligence for HR teams.

## 3 Enhance Retention

Support strategies to improve workforce stability.



## Integrated Toolset

Leveraging Python for data processing, PostgreSQL for structured analysis, and Power BI for interactive visualizations.

# Dataset Snapshot

## Employee Records

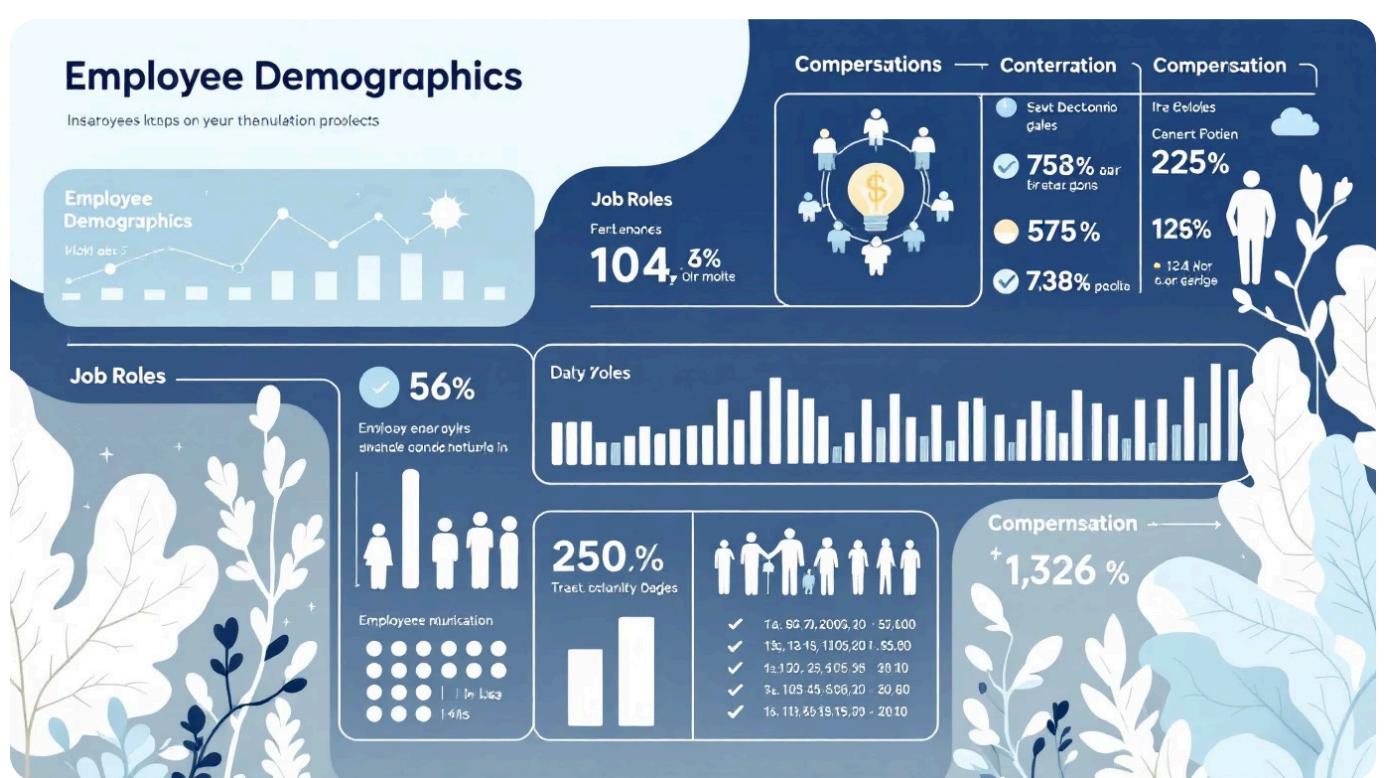
1,470 employee rows, 30+ features analyzed.

## Key Variables

Demographics, job details, compensation, experience, work patterns.

## Clean Data

No major missing values after rigorous cleaning.



# Exploratory Data Analysis (EDA) with Python

## Initial Exploration

Run `.info()` and `.describe()` for overview.

## Feature Engineering

Create Salary Band and Tenure Group.

## Data Loading

Use pandas to read CSV and inspect.

## Data Export

Save cleaned dataset to CSV for modeling.

### Data Loading & Inspection

Pandas for data loading; `.info()` and `.describe()` for initial structure and statistics.

### Feature Engineering

Created 'Salary Band' (Low/Medium/High) and 'Tenure Group' (0-2, 3-5, 6-10, 10+ years).

### Data Cleansing

Removed irrelevant columns; converted 'Attrition' to numeric (1=Left, 0=Stayed).

### Consistency & Export

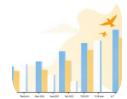
Ensured data consistency, checked null values, exported to PostgreSQL.

# Key Attrition Questions Answered



## Overall Attrition Rate

What percentage of employees leave?



## Departmental Risk

Which departments experience the highest turnover?



## Overtime Impact

Does working overtime correlate with higher attrition?



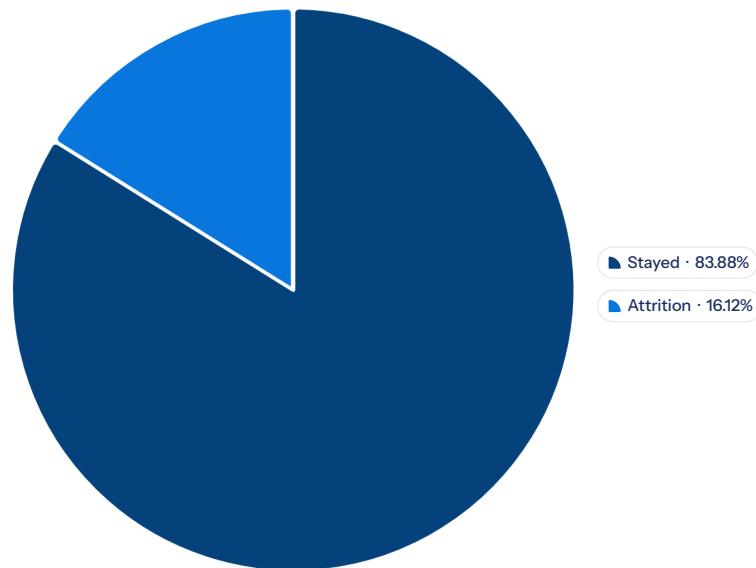
## Salary Band Attrition

Which salary bands face the highest attrition rates?

# Key Attrition Answers Visualized

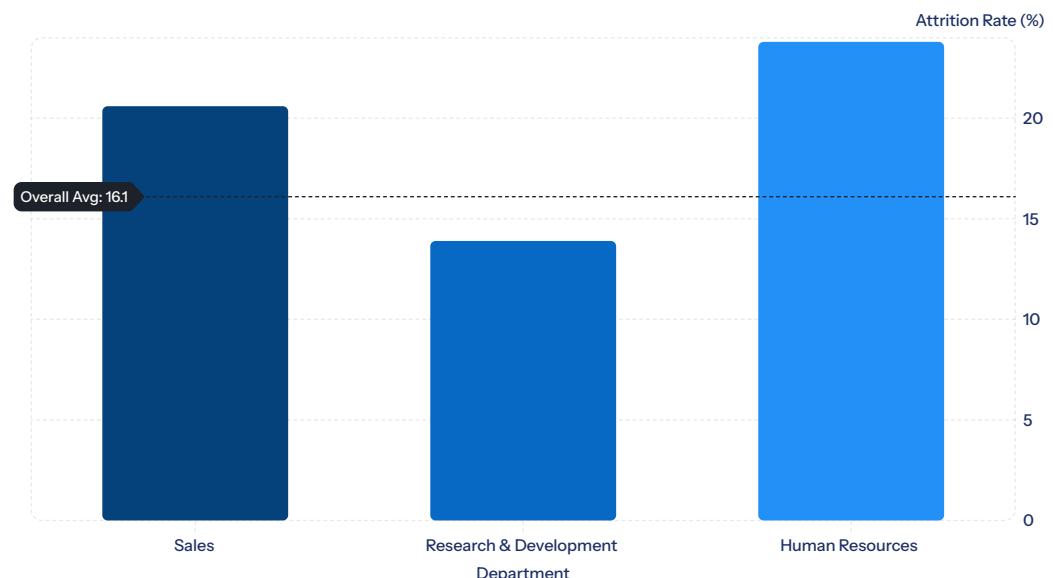
Here are the data-driven answers to our core attrition questions, visualized for clarity:

## Overall Attrition Rate



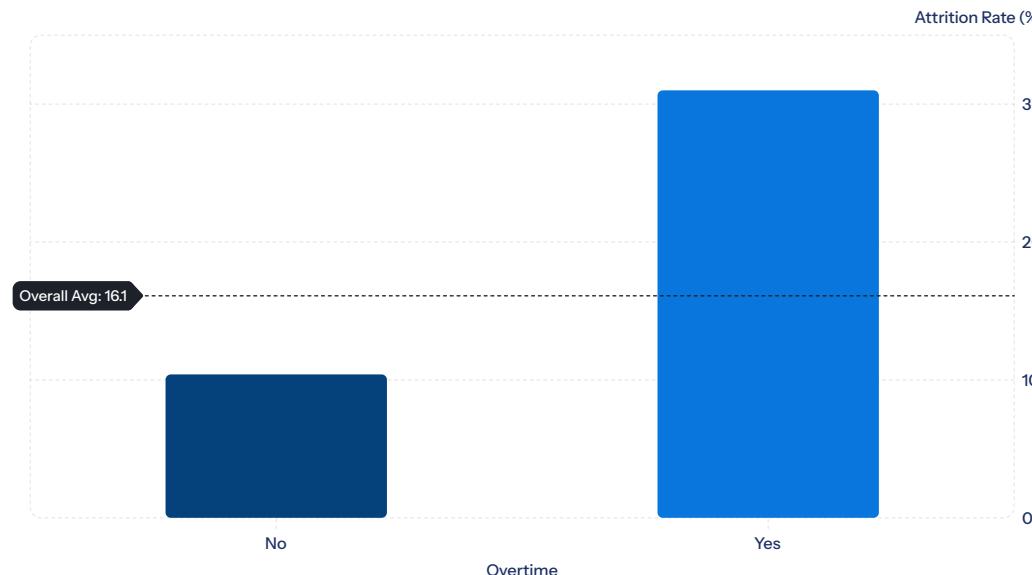
Approximately **16.1%** of employees have left the company, indicating a significant turnover challenge.

## Attrition by Department



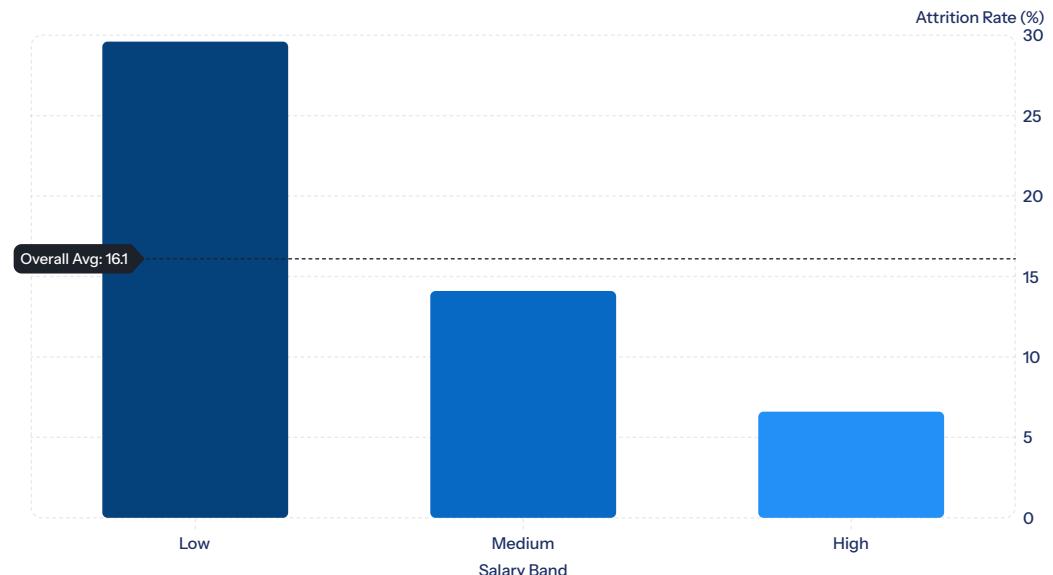
Human Resources and Sales departments show higher attrition rates compared to Research & Development, with HR notably above the company average.

## Impact of Overtime on Attrition



Employees working overtime experience a significantly higher attrition rate (**31.0%**) compared to those who do not.

## Attrition by Salary Band



The lowest salary band has a substantially higher attrition rate (**29.6%**), suggesting potential issues with compensation or perceived value.

# Deeper Dives into Attrition Factors



## Tenure's Influence

How does years at the company affect attrition?



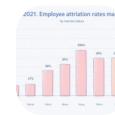
## High-Risk Job Roles

Identifying specific roles with elevated turnover.



## Gender Differences

Are there significant gender-based attrition patterns?



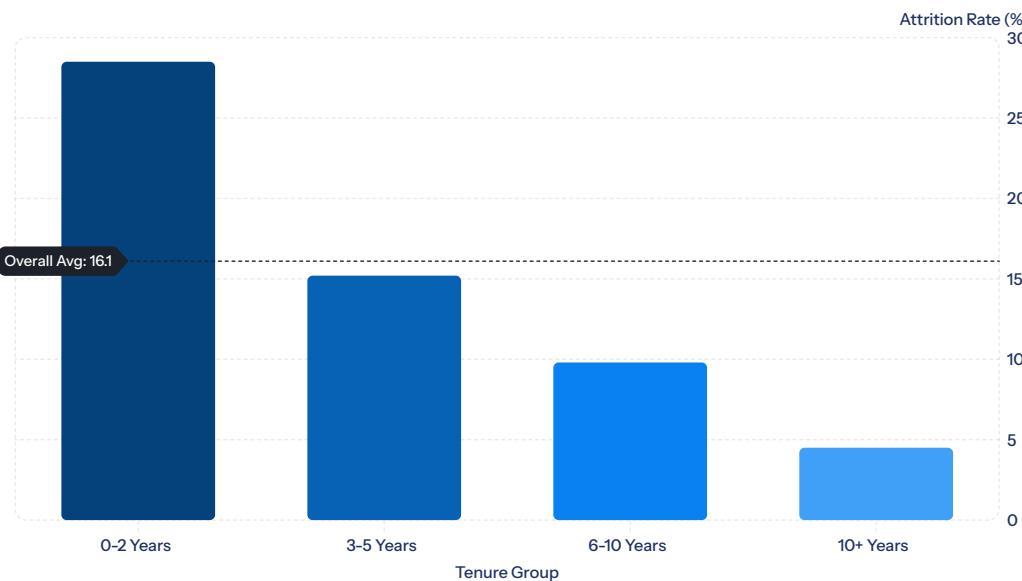
## Marital Status Effect

Does marital status play a role in employee retention?

# Additional Attrition Insights from SQL

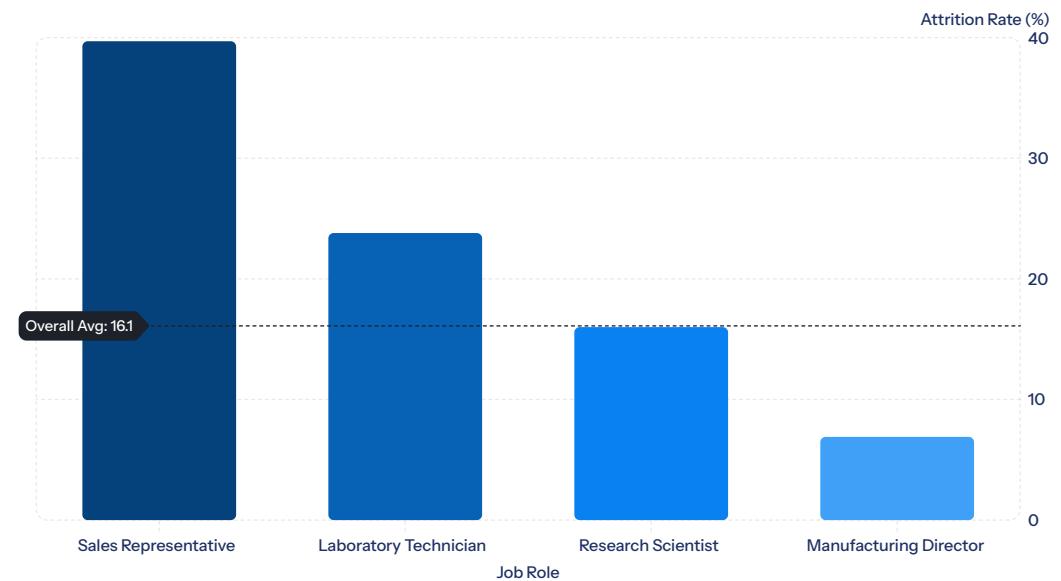
Further analysis reveals how factors like tenure, job role, gender, and marital status influence employee attrition, providing targeted areas for intervention.

## Attrition by Tenure Group



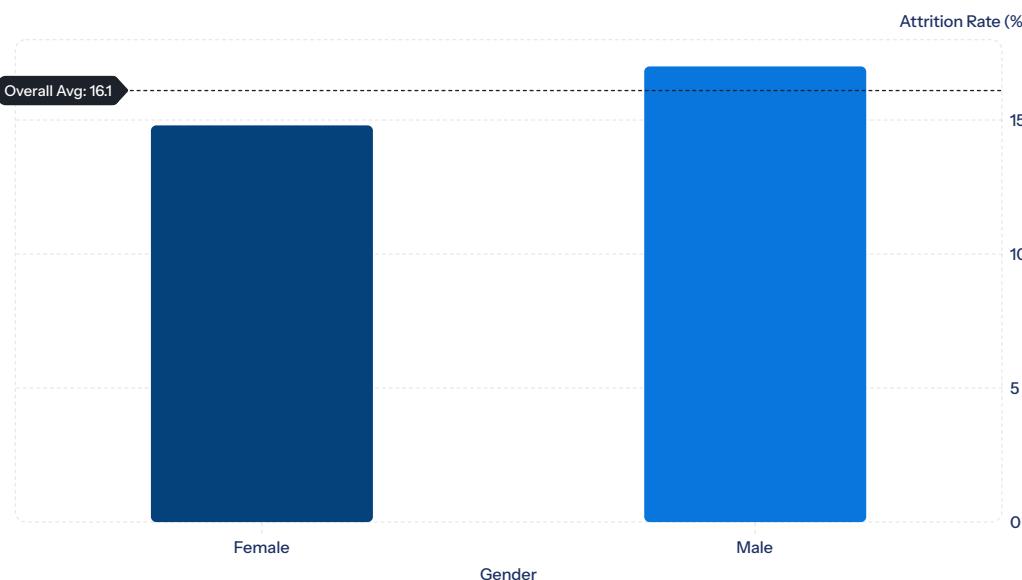
Newer employees (0-2 years) exhibit the highest attrition rate at **28.5%**, significantly above the company average, highlighting early career challenges.

## Attrition by Job Role



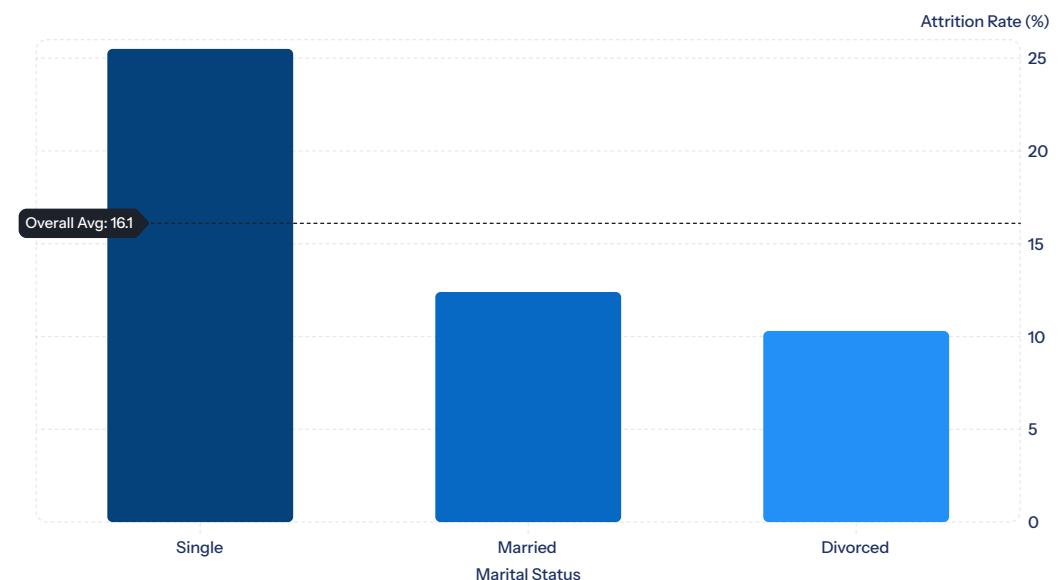
Sales Representatives face a strikingly high attrition rate of **39.7%**, indicating a critical area for retention focus within this role.

## Attrition by Gender



There is a slight difference in attrition rates, with male employees having a marginally higher rate of **17.0%** compared to female employees.

## Attrition by Marital Status



Single employees show a significantly higher attrition rate of **25.5%**, suggesting that life stage and support systems may play a role in retention.

# Interactive Dashboard in Power BI

## Dynamic KPIs

- Total Employees, Employees Left
- Attrition Rate (%), Average Salary
- Average Years at Company

## Key Visualizations

- Attrition by Department & Salary Band
- Overtime vs Attrition, Attrition by Tenure Group
- Attrition by Job Role

## Interactive Features

Slicers for Department, Gender, Salary Band, Job Role to filter and analyze high-risk segments dynamically.

# Employee Attrition Overview

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**1470**

Total Employees

**237**

Employees Left

**16.12%**

Attrition Rate %

**6.50K**

Avg Salary

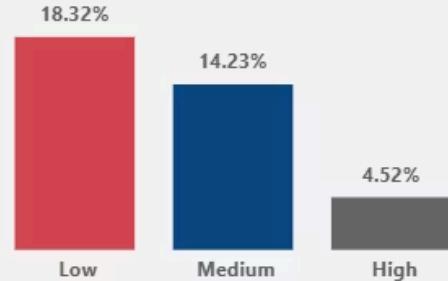
**7.01**

Avg Years at comp...

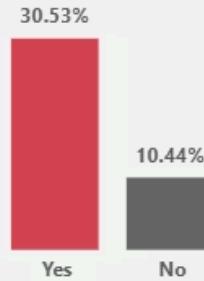
Attrition by department



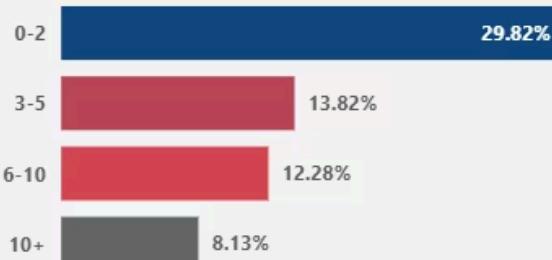
Attrition by salary\_band



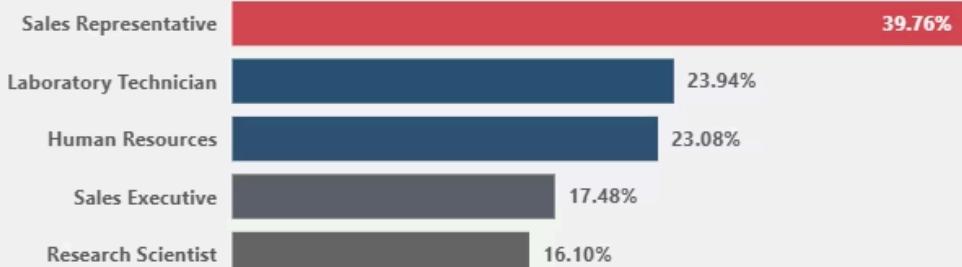
Attrition by overtime



Attrition by tenure\_group



Attrition by jobrole



department

- Select all
- Human Resources
- Research & Develop...
- Sales

gender

- Female
- Male

jobrole

- All

salary\_band

- High
- Low
- Medium

# Key Insights from the Analysis

## 1 Compensation Disparity

Low Salary Band employees show significantly higher attrition.

## 2 Overtime Burnout

Employees working overtime are more prone to leaving the organization.

## 3 Departmental Vulnerabilities

The Sales department has the highest contribution to total attrition.

## 4 Promotion Stagnation

Lack of promotion for 3+ years correlates with increased exit rates.

## 5 Role-Specific Risks

Certain job roles consistently present high attrition risk.

## ACTION PLAN

# Business Recommendations for Retention



## Review Compensation

Improve structure for low-salary band employees.



## Manage Overtime

Monitor workload to prevent burnout and fatigue.



## Targeted Strategies

Develop specific retention plans for high-risk departments.



## Promotion Policies

Implement regular review policies for long-stagnating employees.



## Boost Engagement

Introduce development programs and foster career growth opportunities.