

• Introduction



Why HR Analytics Dashboard?

- Offers instant **visual insights** into employee attrition
- Highlights **key factors** influencing attrition:
 - Age, Salary, Education, Job Role, and Tenure
 - Enables **faster, informed** decisions in HR planning
- A *visual tool that uses data to uncover patterns and reasons behind why employees leave an organization.*

Who Will Benefit From This Dashboard?

-  **HR Managers** – Spot high-risk groups & take timely action
-  **Business Leaders** – Analyze workforce trends & talent gaps
-  **Recruitment Teams** – Adjust hiring based on real attrition data
-  **L&D Teams** – Plan upskilling in vulnerable roles

Project Overview

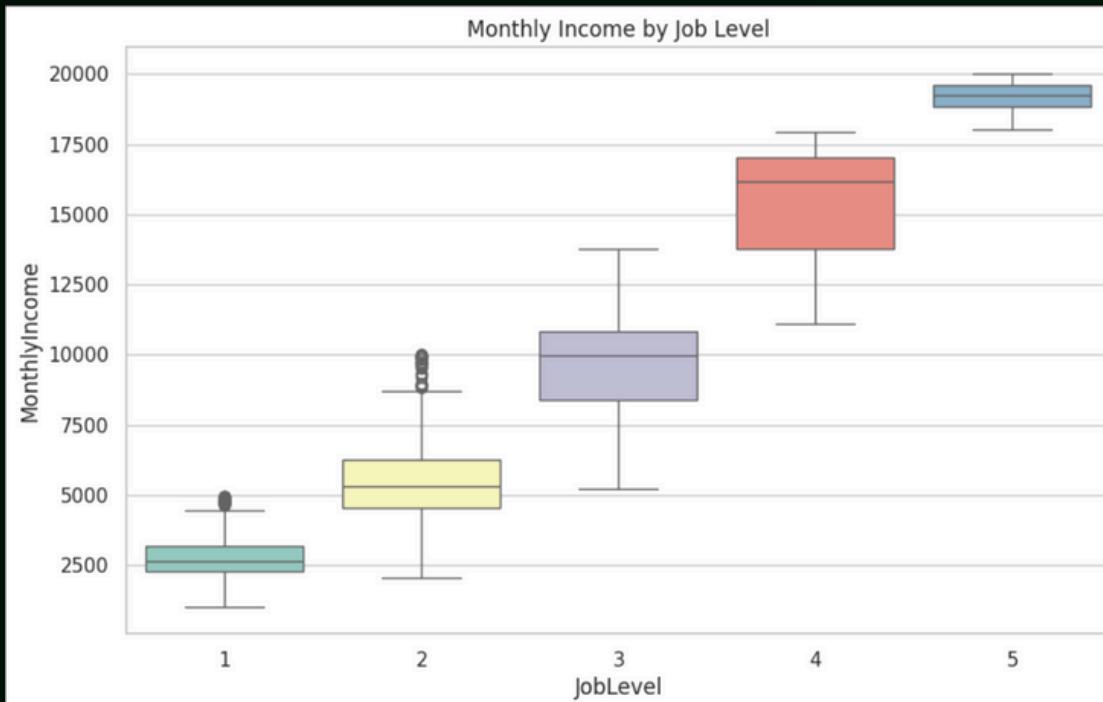
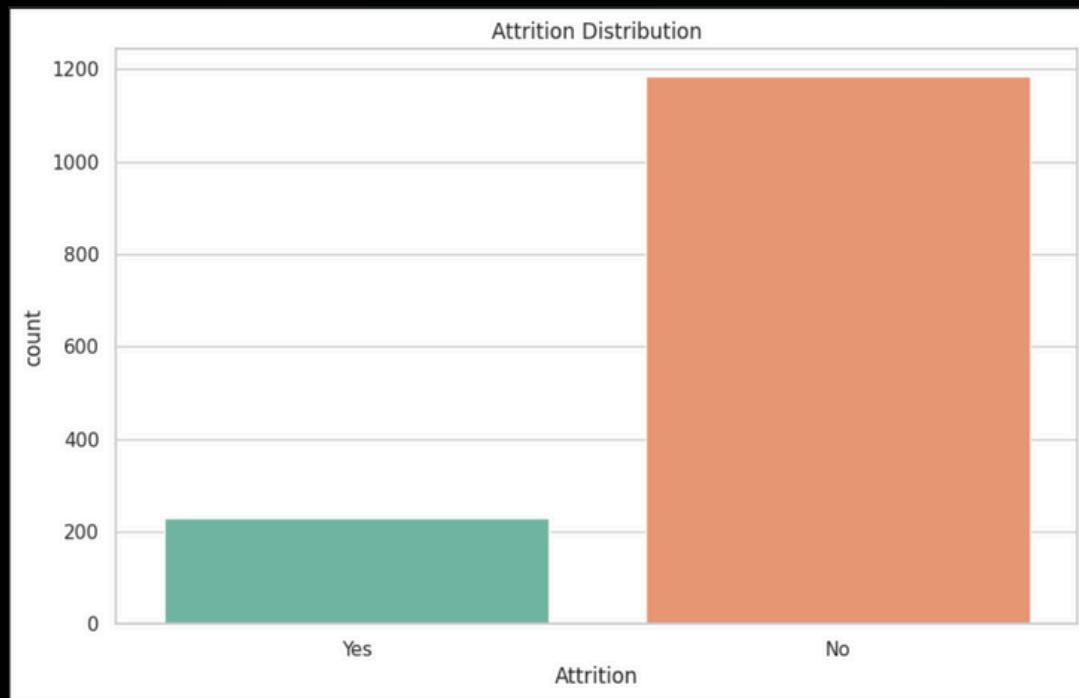


- **Objective** : To visually analyze and identify the key drivers of employee attrition enabling HR and leadership teams to take data-driven decisions for reducing turnover and improving employee retention.
- **Dataset** : ~1,416 employee entries
- **Tools**: Python (Pandas, Scikit-learn), Power BI
- **Methods**: EDA, PCA, K-means, Random Forest





Exploratory Data Analysis



The dataset shows a class imbalance:

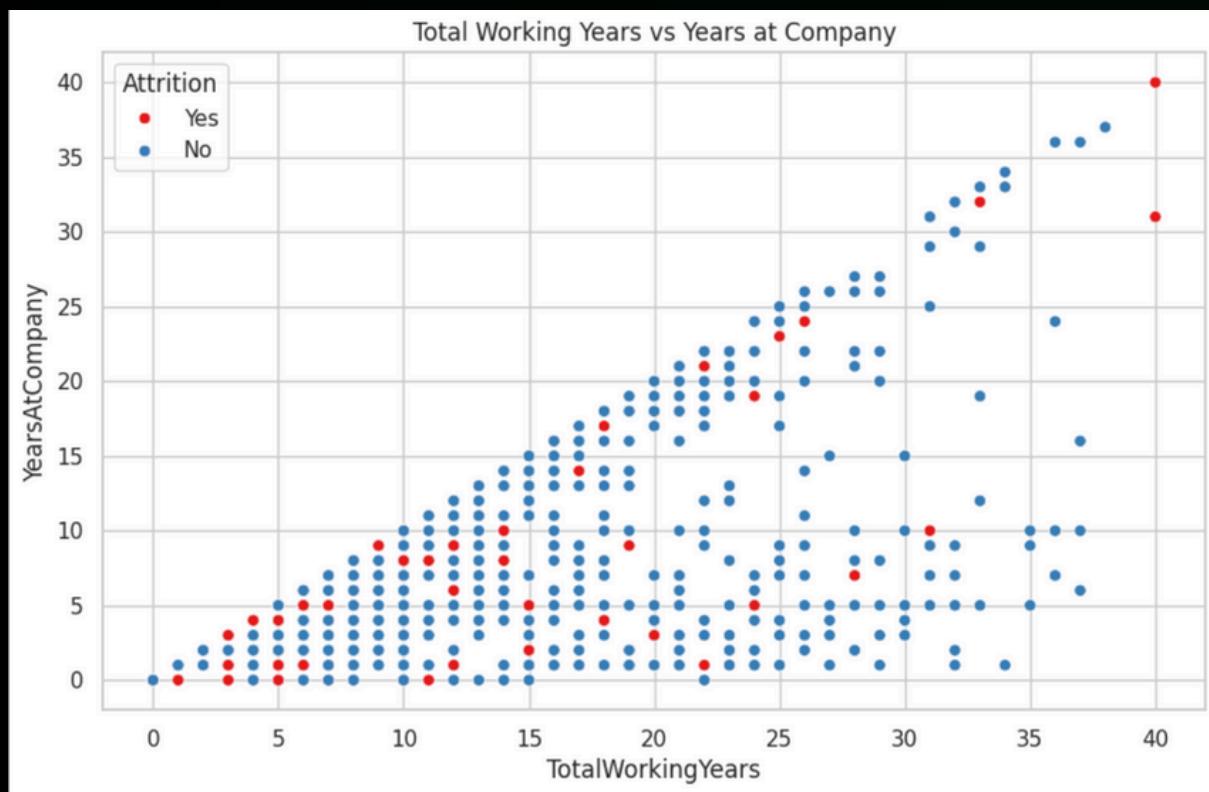
- Most employees have not left the organization.
- A smaller portion is marked as "Attrition = Yes".

2. Monthly Income vs Job Level (Box Plot)

- There's a strong positive correlation between Job Level and Monthly Income.
- As the job level increases from 1 to 5, average income rises significantly.

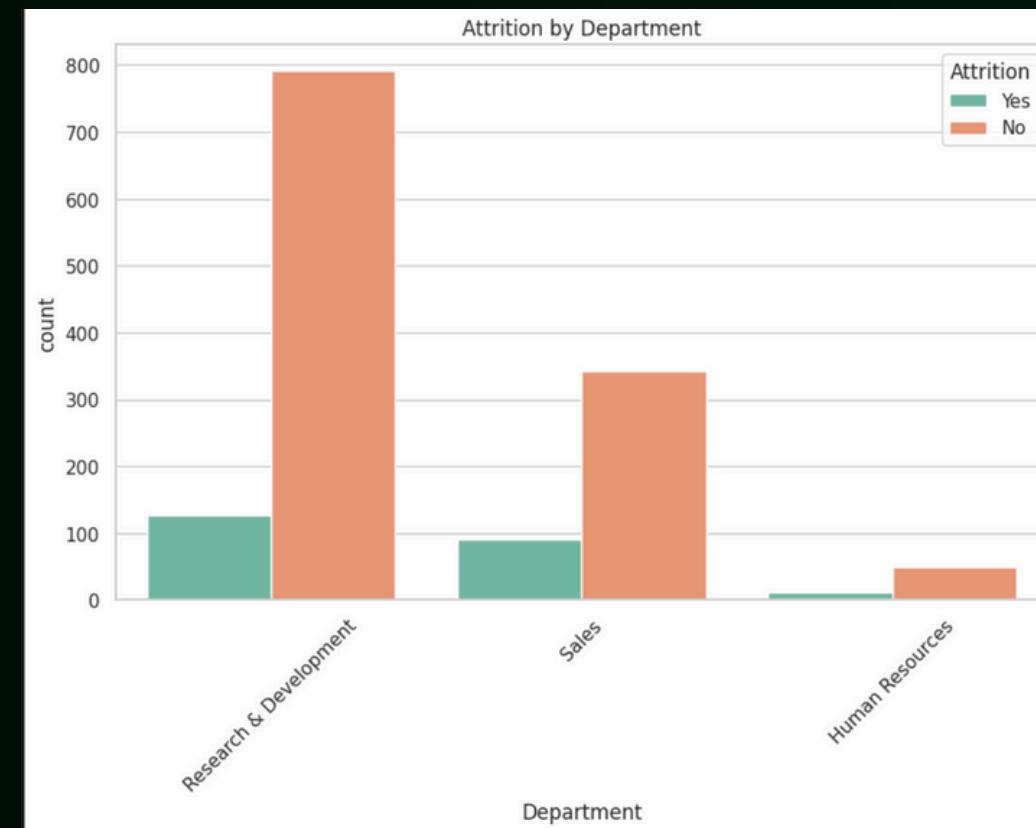


Exploratory Data Analysis



3. Total Working Years vs Years at Company

- A noticeable linear relationship exists between Total Working Years and Years at Company.
- Many employees with long experience have relatively short tenure at the company .

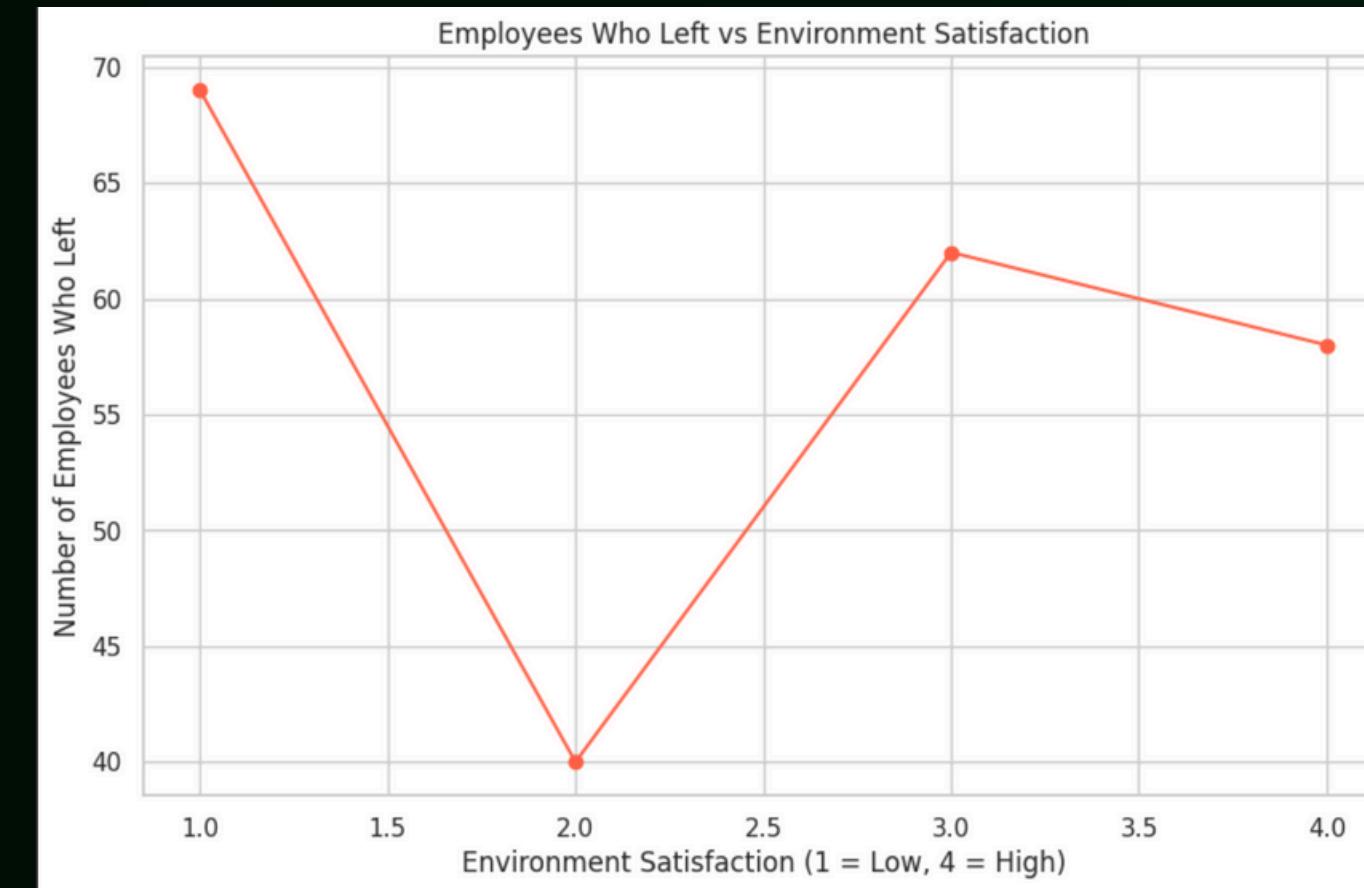
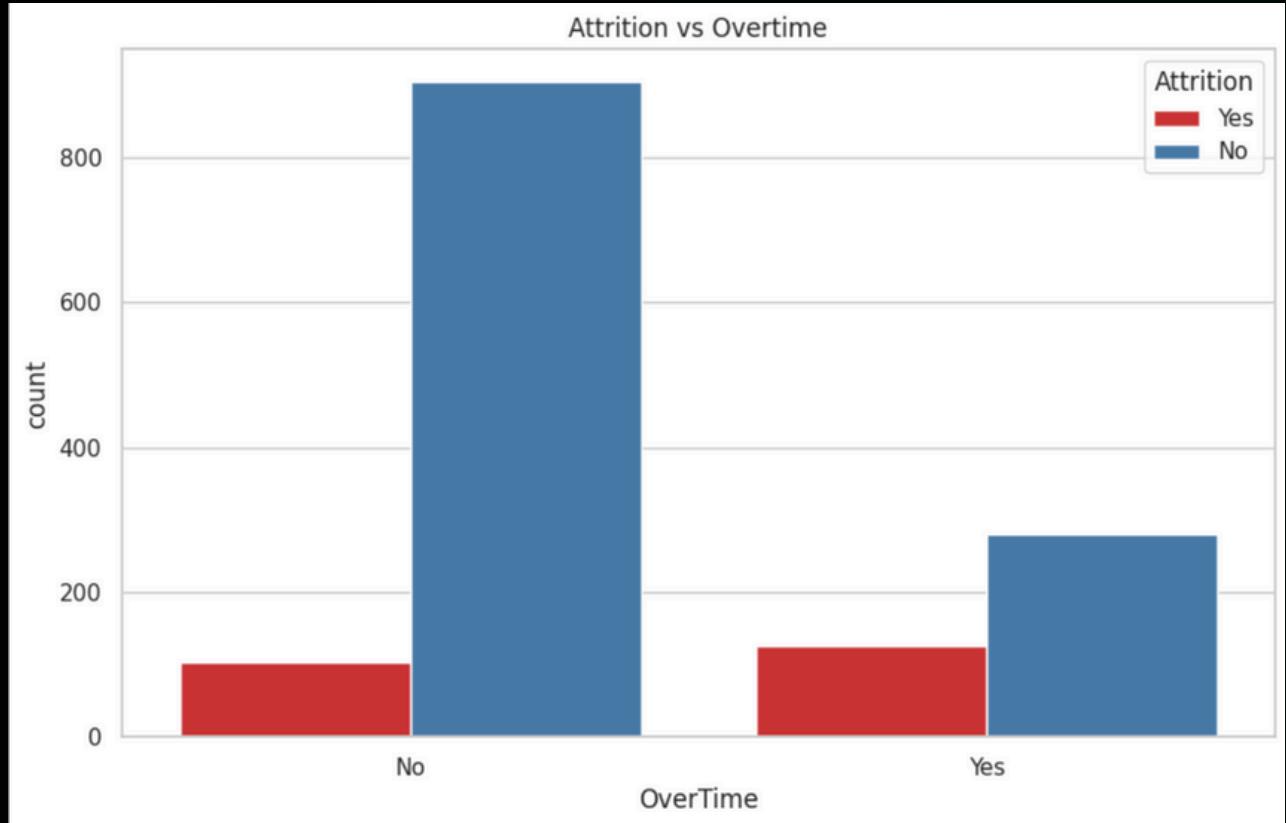


4. Attrition by Department

- Attrition rates vary across departments:
 - **Sales** and R&D often show higher attrition counts.
 - HR usually has the lowest attrition.



Exploratory Data Analysis



5. Attrition by Overtime

- Employees who work overtime are far more likely to leave.

6. Environment Satisfaction vs Attrition

- Employees with low environment satisfaction are more likely to leave.
- High satisfaction scores correspond to lower attrition.



Advance Analytics



PCA

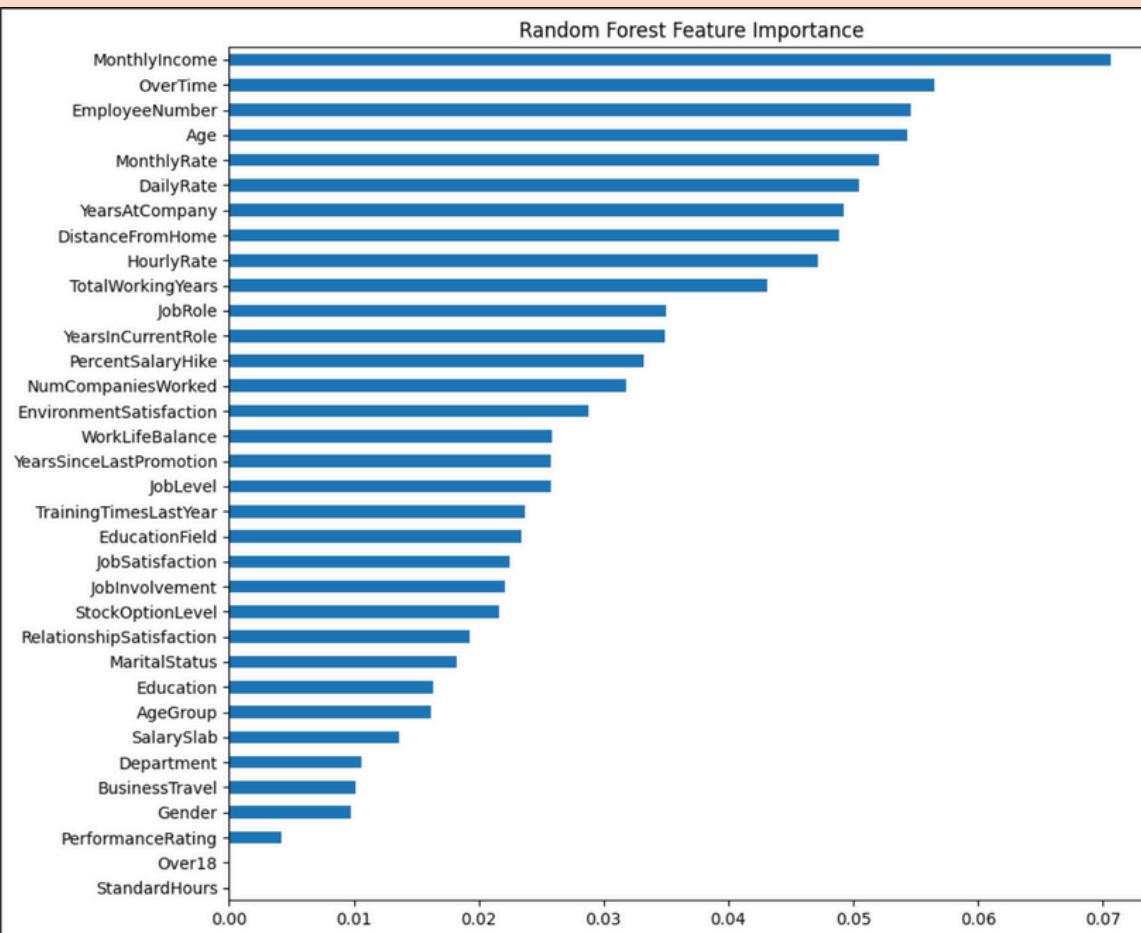
- ✓ Reduced 30+ features to 2 principal components
 - Simplified high-dimensional HR data for visualization and interpretation.
- ✓ Captured key variance in employee behavior
 - Preserved critical patterns related to attrition, tenure, and compensation.
- ✓ Enabled clear visualization of employee clusters
 - Helped distinguish distinct employee groups using K-Means clustering in 2D space.

K-Means Clustering:

- ✓ Identified 3 natural employee clusters
 - Grouped employees based on shared characteristics like salary, experience, and satisfaction.
- ✓ Revealed behavior-based segmentation
 - Helped distinguish between high-risk, stable, and new employees.
- ✓ Supported targeted HR strategies
 - Enabled action plans for retention, training, and performance optimization.



Advance Analytics



Random Forest:

- ✓ Predicted employee attrition with high accuracy
- Classified employees as likely to stay or leave based on key attributes.
- ✓ Top predictors: Job Level, Monthly Income, Total Working Years
- Highlighted the most influential features driving attrition.
- ✓ Achieved 85%+ accuracy in classification
- Provided a reliable model for proactive HR decision-making.



Power Bi Dashboard



HR Analytics Dashboard

Count of Employee
1416

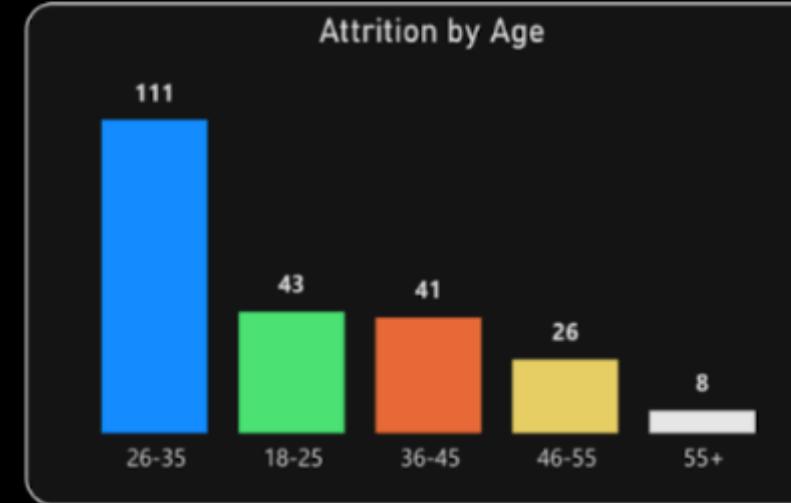
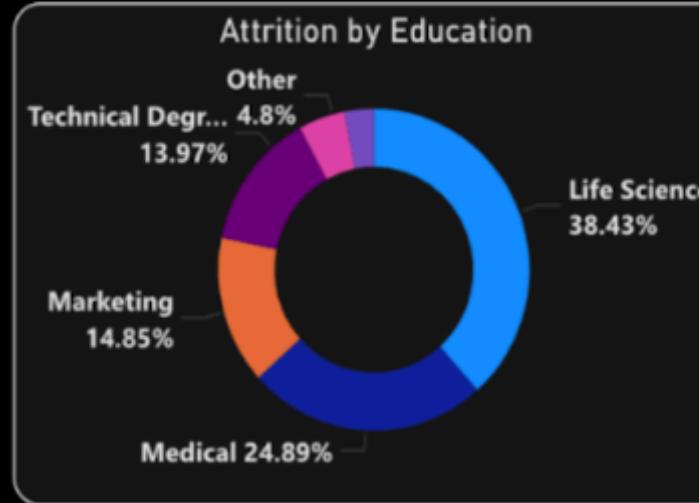
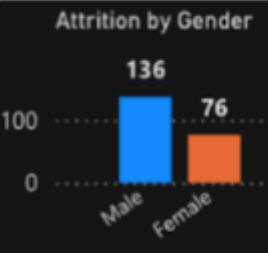
Attrition
229

Attrition Rate
16.2%

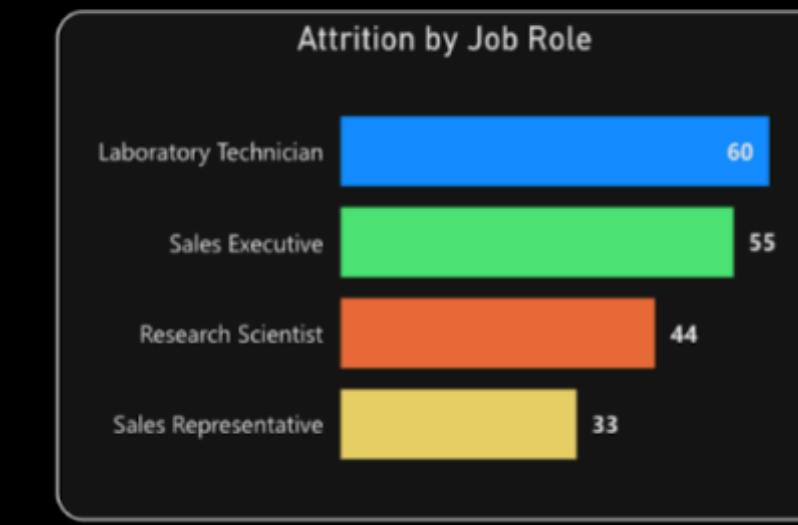
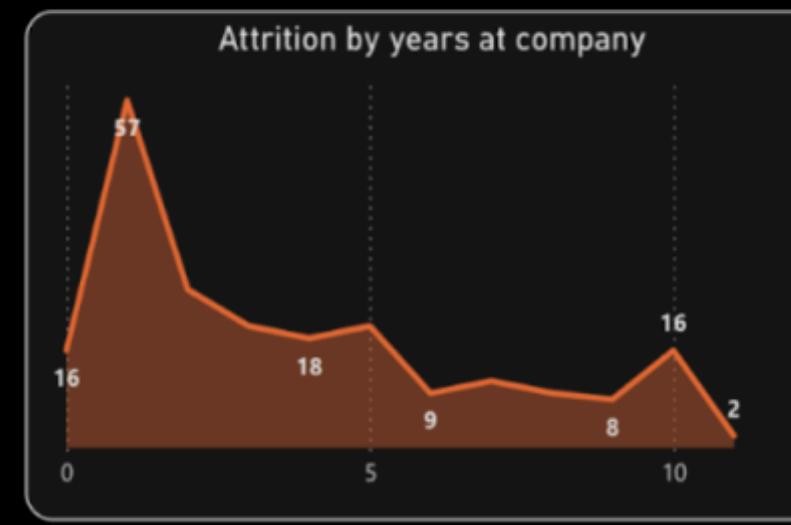
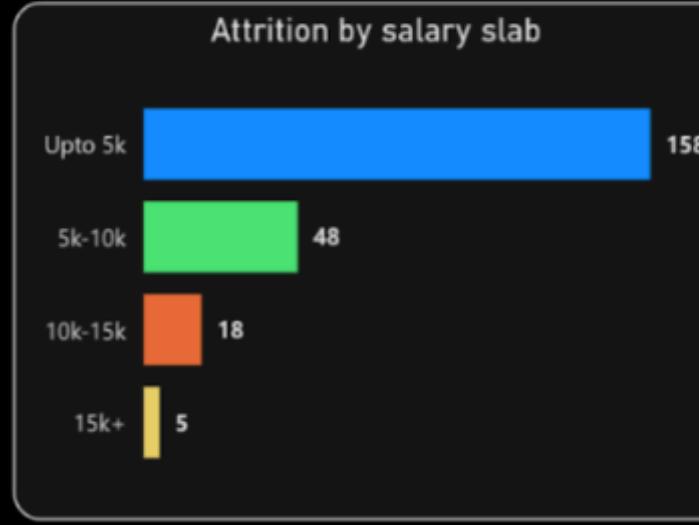
Avg Age
37

Avg Salary
6.5K

Avg Years
7.0



JobRole	1	2	3	4	Total
Healthcare Representative	2	2	1	4	9
Human Resources	5	2	3	2	12
Laboratory Technician	18	8	21	13	60
Manager	1	2	1	1	5
Manufacturing Director	2	2	3	2	9
Research Director	0	1	1	0	2
Research Scientist	11	10	14	9	44
Sales Executive	16	9	18	12	55
Sales Representative	7	10	9	7	33
Total	62	46	71	50	229





Business Application

This HR Analytics Dashboard empowers key organizational roles to make informed, strategic decisions:

HR Managers

Identify high-risk employee groups and implement timely retention strategies.

Business Leaders

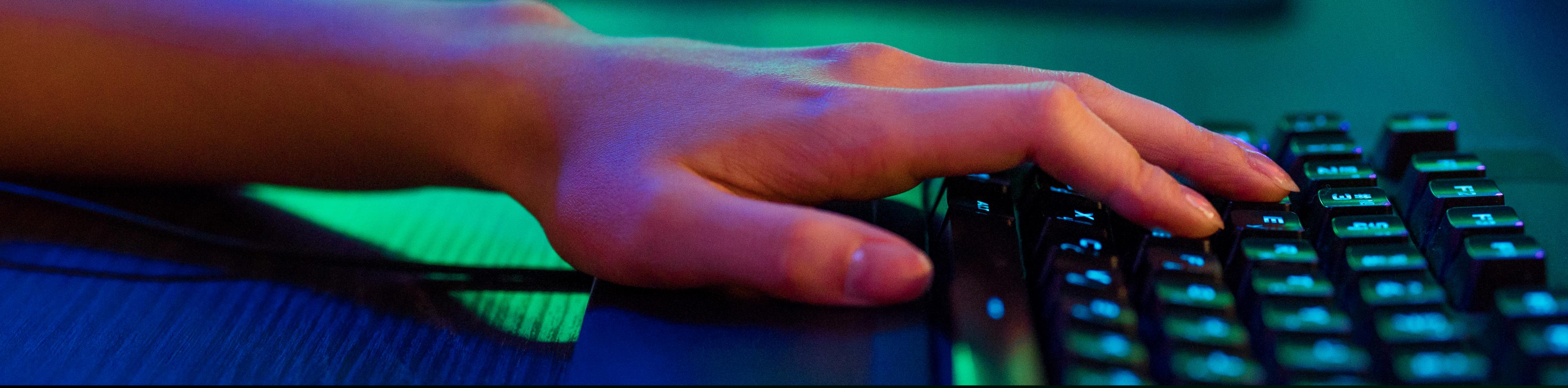
Analyze workforce trends and uncover talent gaps for better resource planning.

Recruitment Teams

Align hiring strategies with actual attrition patterns to improve recruitment outcomes.

Learning & Development (L&D) Teams

Target upskilling efforts in departments and roles with higher attrition risks.



THANK YOU