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HR Analytics and Attrition Analysis Report

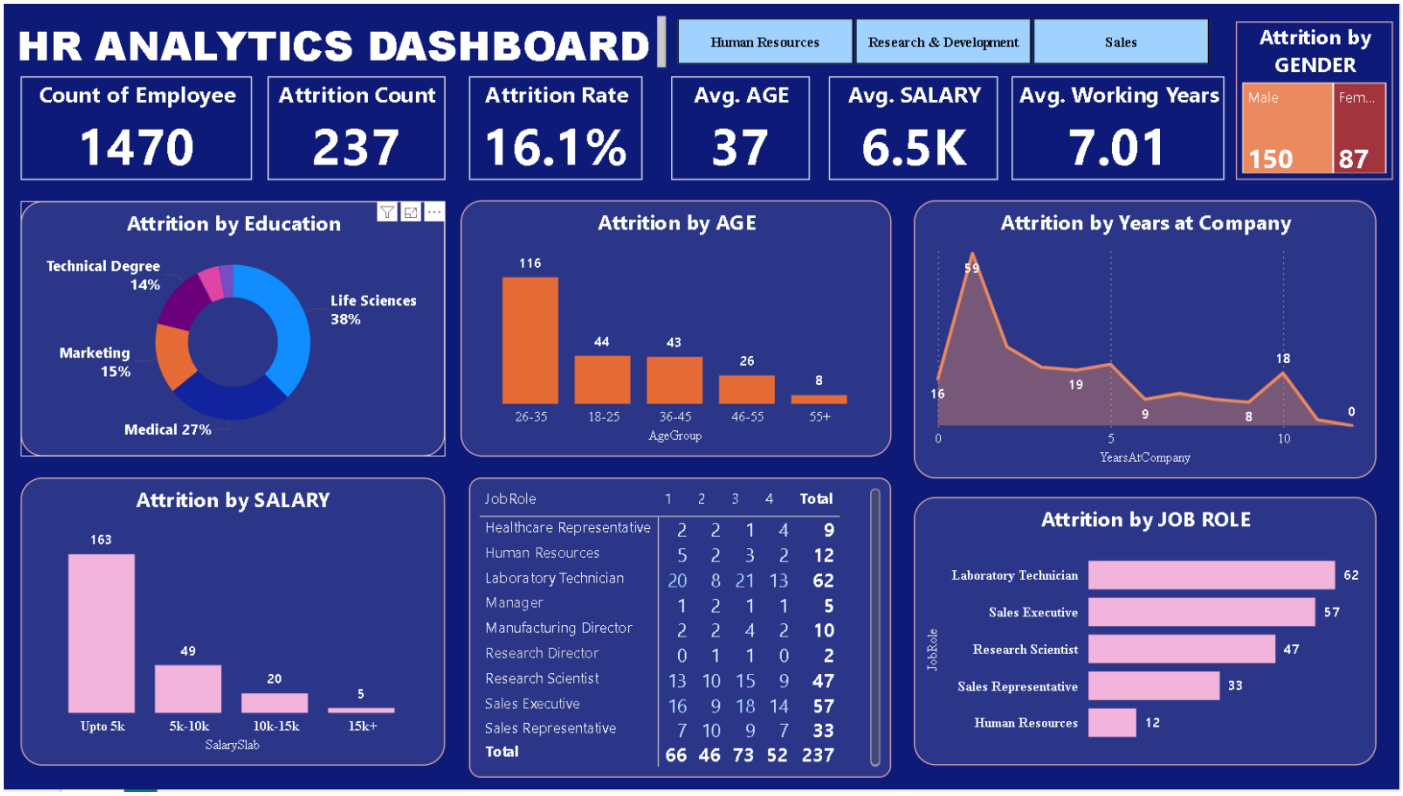
1. Executive Summary

This project involved a comprehensive analysis of employee attrition using Power BI on a dataset of **1,470 employees**. The primary goal was to identify key factors driving employee turnover and provide data-driven recommendations to improve retention. The analysis established an organizational attrition rate of **16.1%** and uncovered a critical trend: turnover is heavily concentrated among specific demographics and roles, indicating high-impact areas for immediate HR intervention.

Key Findings:

- **Highest Attrition Group:** Employees aged **26–35** (early-to-mid career).
- **Major Financial Driver:** The **"Up to 5k" salary slab** contributed the highest number of departures (163 attritions).
- **Most Affected Roles:** Critical operational roles, led by **Laboratory Technicians** (62), **Sales Executives** (57), and **Research Scientists** (47)

2. PROJECT SHOWCASE



Final look of the HR ANALYTICS DASHBOARD

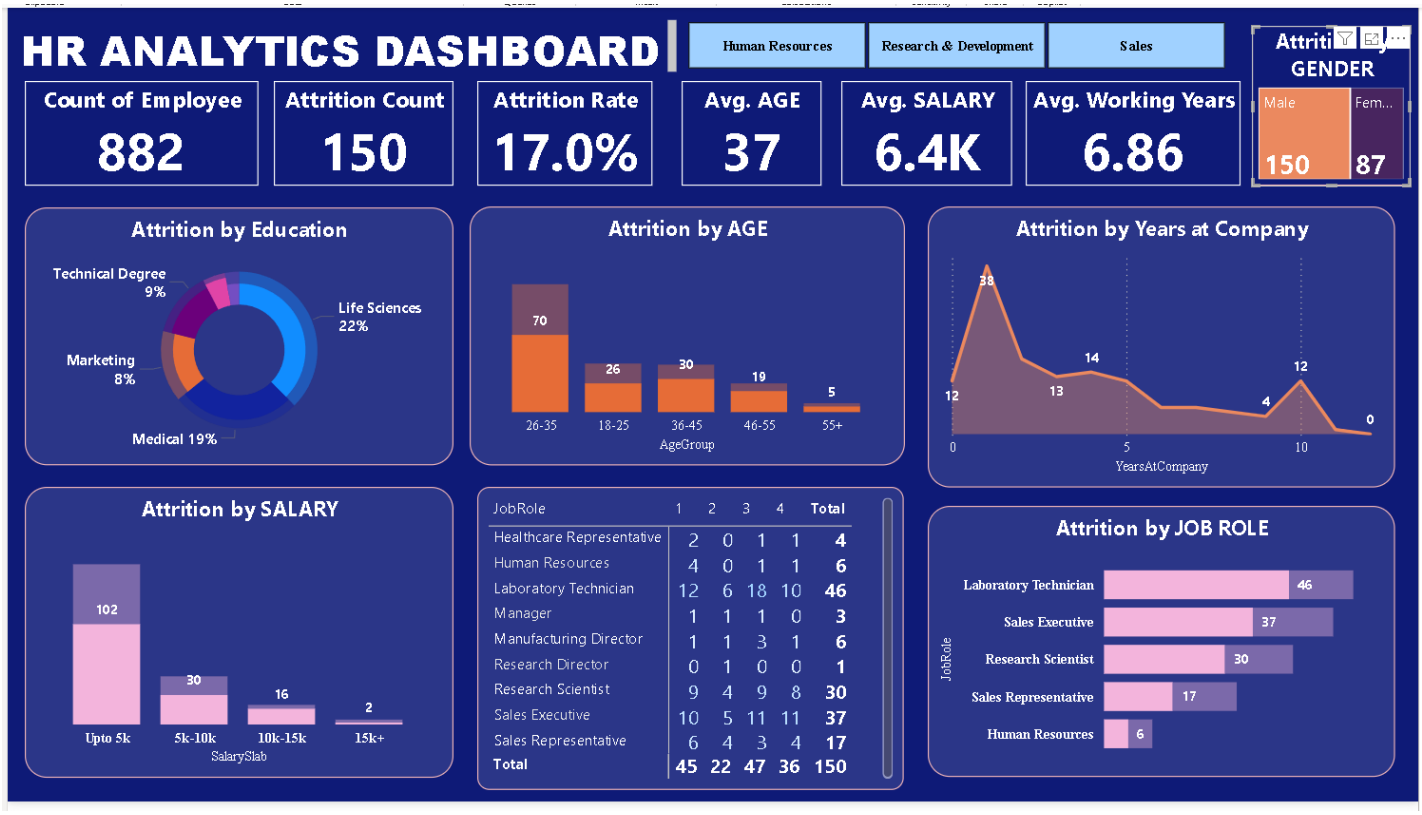


Figure 1. Data filtered on the basis of male employee

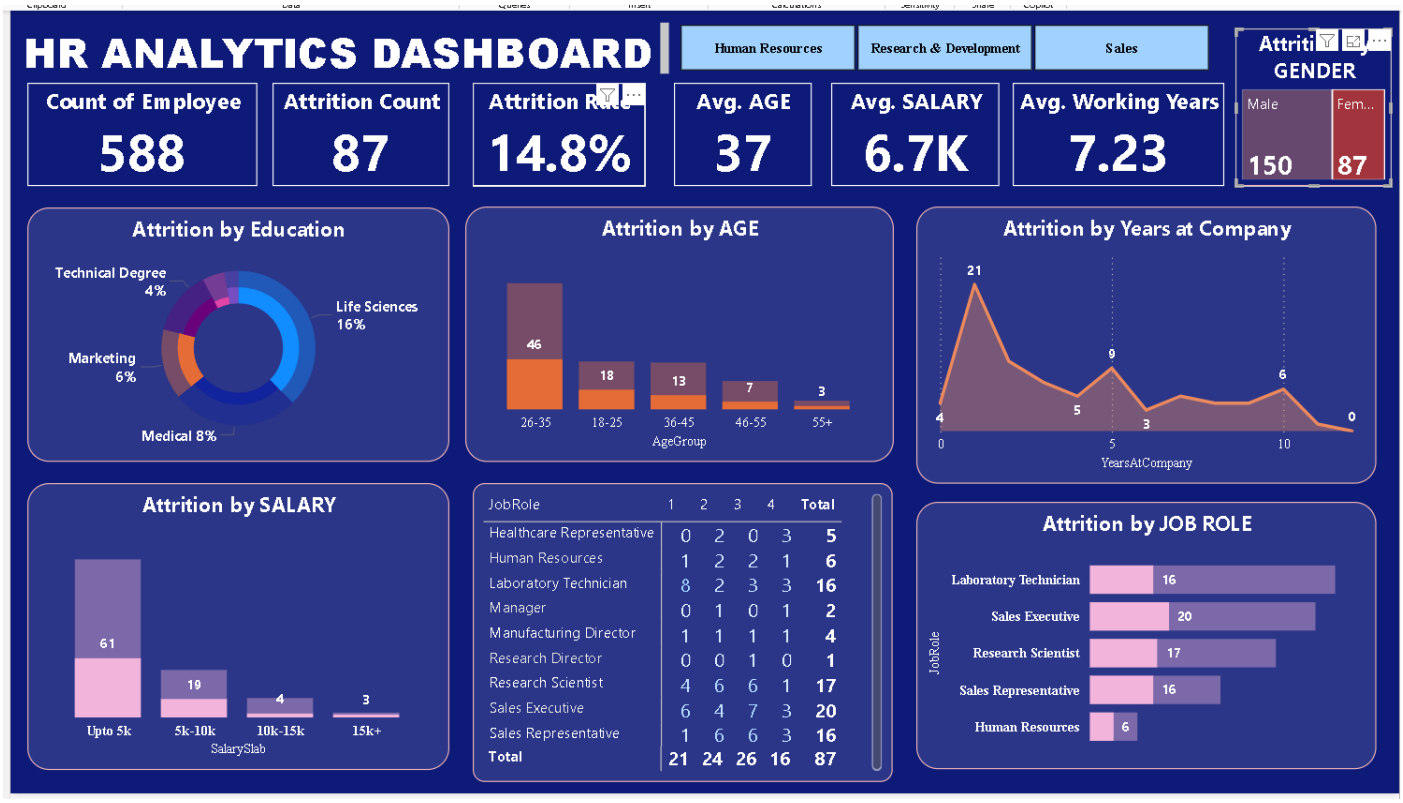


Figure 2. Data filtered on the basis of female employees

Slicer used for advance filtering

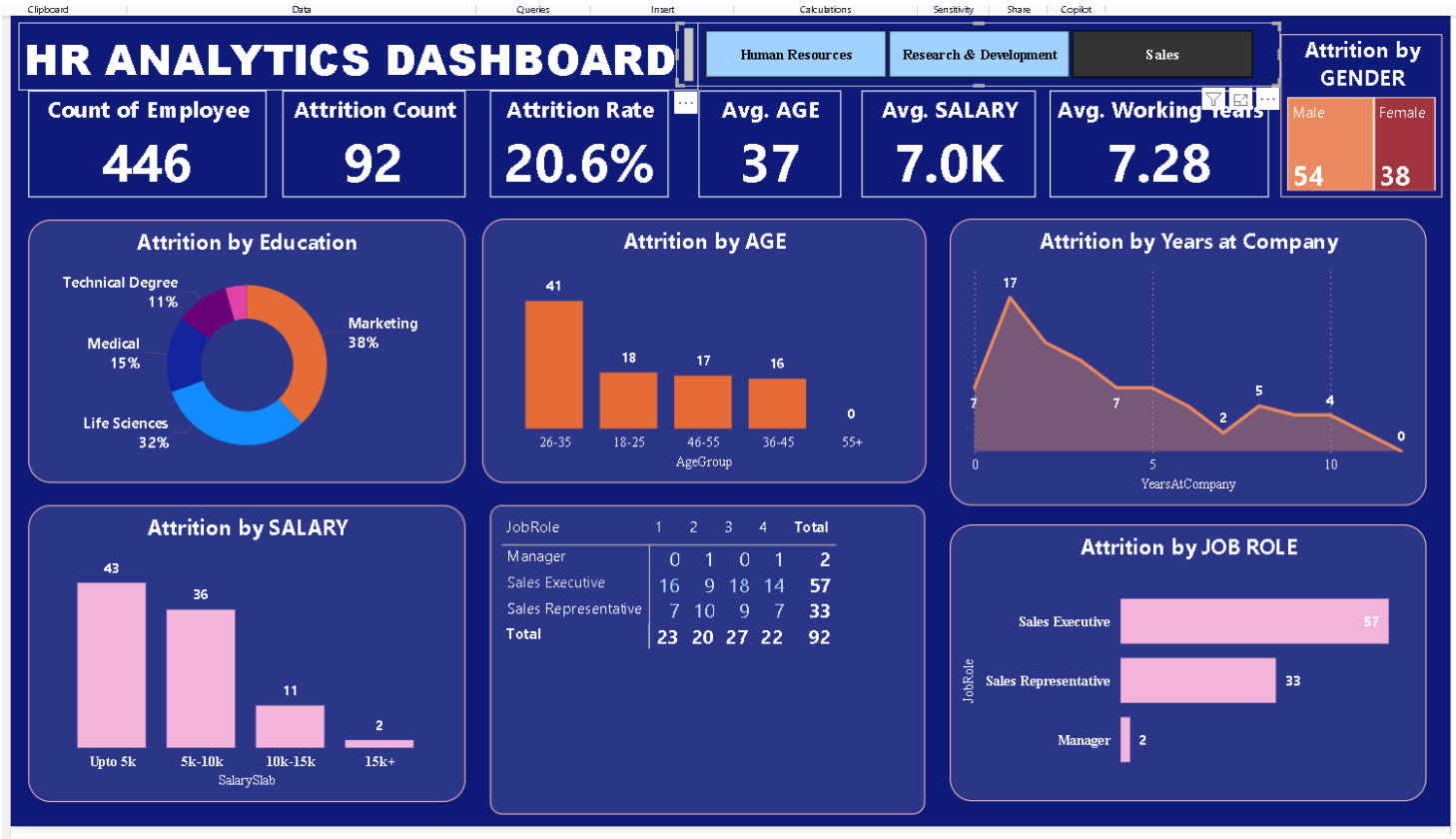


Figure 4. Data filtered out on the basis of Sales

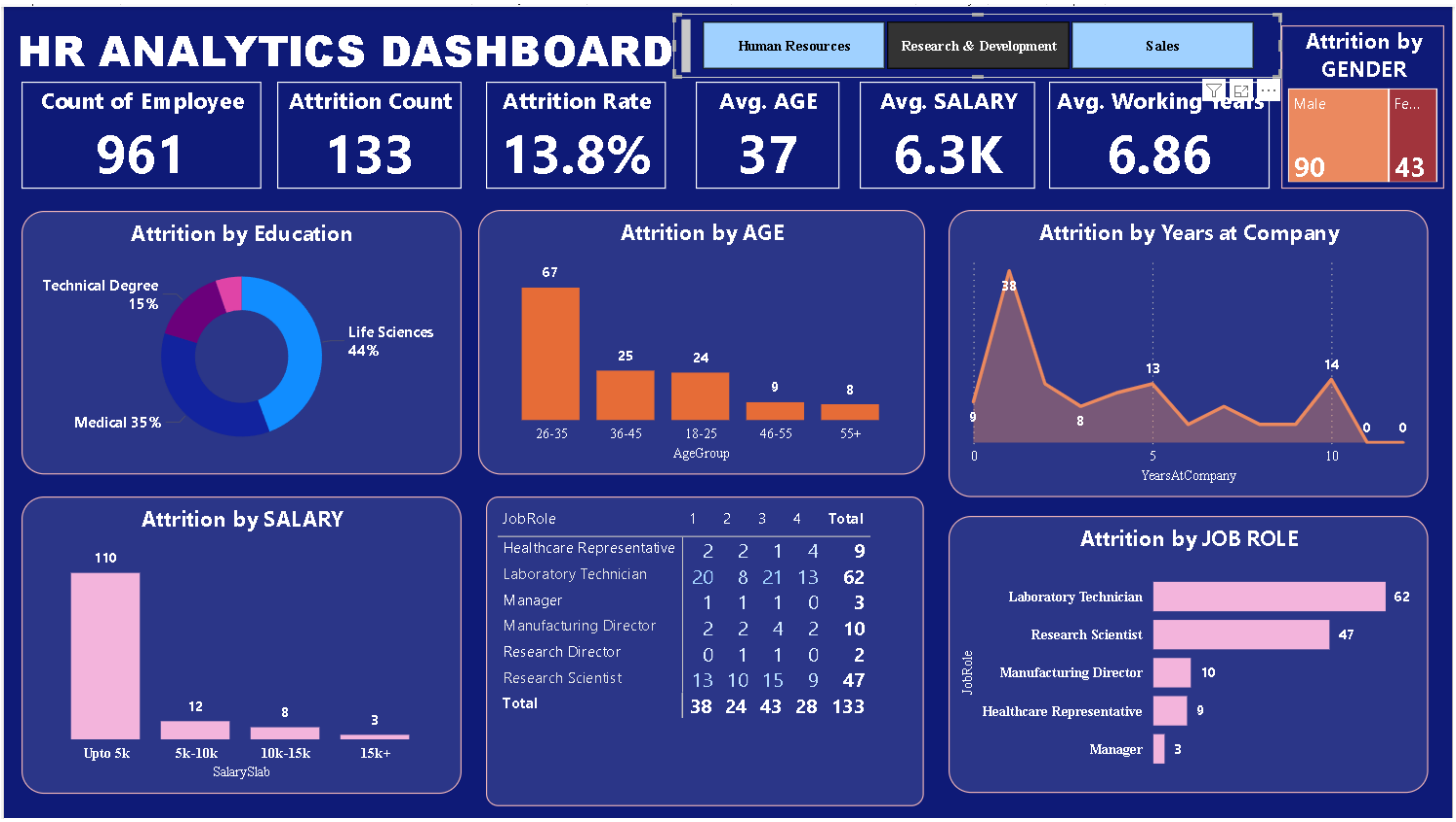


Figure 3. Data filtered out on the basis of R&D

PROJECT WORKING DEMO : https://vimeo.com/1124175918?share=copy

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3. Project Goals and Methodology

Objectives

1. Analyze employee attrition patterns using historical HR data.
2. Identify key drivers of attrition (age, salary, role, department, gender, tenure).
3. Develop an **interactive Power BI dashboard** for HR stakeholders.
4. Provide specific recommendations to improve employee retention.

Tools and Technology Stack

Category	Tool / Technology	Purpose in Project
Data Source	HR_Analytics.csv (1,470 rows)	Source of employee data.
Data Preparation	MS Excel / CSV	Initial data inspection and storage.
Data Cleaning & Modeling	**Power BI Query Editor** (M Language)	Data transformation, cleansing, and structure optimization.
Visualization & Reporting	**Power BI Desktop**	Dashboard creation, report generation, and interactive filters.

Key Metrics (KPIs)

The dashboard was designed around the following key performance indicators (KPIs) and metrics:

Metric	Value	Interpretation
Total Employees	1,470	Total employee base analyzed.
Attrition Count	237	Total number of employees who left the company.
Attrition Rate	**16.1%**	The core measure of employee turnover.
Average Age	37 years	Overall average age of the workforce.
Average Salary	$6.5K	Average salary (likely per month/year) of the workforce.

Metric	Value	Interpretation
Average Working Years	7.01 years	Average tenure across all employees.

3. Interactive Features and User Experience (UX)

The dashboard was built with a focus on self-service analytics, allowing HR stakeholders to quickly drill down into data without needing a specialist.

lnteractive Filters Implemented:

The following slicers/filters enable dynamic exploration of the data:

- **Department:** Focus analysis on specific business units (e.g., filter to only view "Sales" attrition).
- **Education:** Isolate turnover trends based on academic background (e.g., "Life Sciences" or "Technical Degree").
- **Age Band:** Easily compare attrition rates across cohorts (e.g., **26–35** vs. 46+).
- **Salary Slab:** Quickly isolate the impact of low/high compensation on retention.
- **Job Role:** Focus on critical operational or management roles.

Interactivity and Drill-Down Capability:

- **Cross-Filtering:** Selecting any visual element (e.g., clicking the "Laboratory Technicians" bar in the Job Role chart) automatically filters **all other KPI cards and charts** to reflect the data for that selected segment. This allows for instant comparison (e.g., viewing the average salary and age *only* for Laboratory Technicians who left).
- **Data Consistency:** All KPI cards (Total Employees, Attrition Rate, Average Salary) are dynamic and recalculate in real-time based on the user's filter selections, ensuring data coherence and relevance for ad-hoc queries.
- **Tooltips:** Custom tooltips were implemented to provide rich, context-sensitive details on hover, enhancing the user's ability to interpret data without cluttering the main dashboard view.

4. Detailed Attrition Analysis and Insights

The core of the project involves drilling down into specific demographic and operational factors to pinpoint areas of concern.

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A. Attrition by Compensation and Tenure

- **Salary Slab Impact:** The **"Up to 5k" salary slab** accounts for the highest absolute number of attritions (**163 employees**). This indicates that low compensation is a primary and urgent factor in employee turnover.
- **Tenure Analysis:** The "Tenure analysis shows significant early-career churn." This suggests that retention efforts should be concentrated on employees in their first few years, possibly focusing on better onboarding, mentorship, or early-career development programs.

B. Attrition by Demographics (Age and Gender)

- **Age Group (26–35):** This group has the single highest concentration of attrition, with **116 employees** leaving. This represents a substantial loss of employees in their early-to-mid career stage, which is crucial for organizational talent pipelines.
- **Gender:** In absolute numbers, **Male attrition (150)** is higher than **Female attrition (87)**. The report notes that this must be viewed in context, recommending a comparison of *attrition rates by population size* (Male % Attrition vs. Female % Attrition) for accurate equity assessment.

C. Attrition by Role and Education

- **Job Role Hotspots:** Attrition is highest in three critical operational and revenue-facing roles:
    1. **Laboratory Technicians (62)**
    2. **Sales Executives (57)**
    3. **Research Scientists (47)** This highlights a weakness in retaining staff essential for core business functions and innovation.
- **Education/Department:** There is notable attrition among employees with **Life Sciences, Medical, and Technical Degree** backgrounds. This suggests the organization may be failing to meet the career progression or compensation expectations of its technically skilled workforce.

5. Business Impact and Recommendations

The analysis transitioned data into actionable recommendations for HR stakeholders.

Insight	Business Implication	Recommended Action
Low Salary Attrition (≤5k slab)	The company is likely not competitive on compensation for its entry-level/lower-paid roles, leading to high turnover costs.	Conduct an immediate **Compensation Review** for roles falling into the ≤5k band. Implement targeted salary adjustments to mitigate immediate flight risk.
26–35 Age Churn	Significant loss of talent at a critical career growth stage, suggesting dissatisfaction with career path, upskilling, or work-life balance.	Develop a **Targeted Career Development** program and **Mentorship Scheme** specifically for employees in this age bracket to show clear growth pathways.
High Attrition in Lab Techs, Sales, & Research	Loss of essential staff cripples R&D, operations, and revenue generation.	Implement **Role-Specific Retention Plans**, including stay interviews, improved bonus structures for sales, and specialized training/equipment for technical roles.
Early-Career Churn (Tenure)	Indicates a flaw in the initial employee experience (onboarding, training, or first-year responsibilities).	Enhance the **Onboarding and 6-Month Review Process** to proactively identify and address dissatisfaction among new hires before they decide to leave.

6. Project Showcase and Skills Demonstrated

This project showcases the ability to execute an end-to-end data analysis lifecycle:

- **Data Analysis & Modeling:** Calculating complex HR metrics (e.g., Attrition Rate, Average Tenure) and structuring data effectively for analysis.
- **Visualization & Dashboarding:** Designing an intuitive and interactive Power BI dashboard with KPI cards and cross-filtering functionality.
- **Data Storytelling:** Translating complex data patterns (e.g., the concentration of attrition by age/salary) into clear, actionable business insights and recommendations.
- **Domain Expertise:** Applying analytical skills directly to a critical HR business problem (retention), demonstrating strong HR domain understanding.