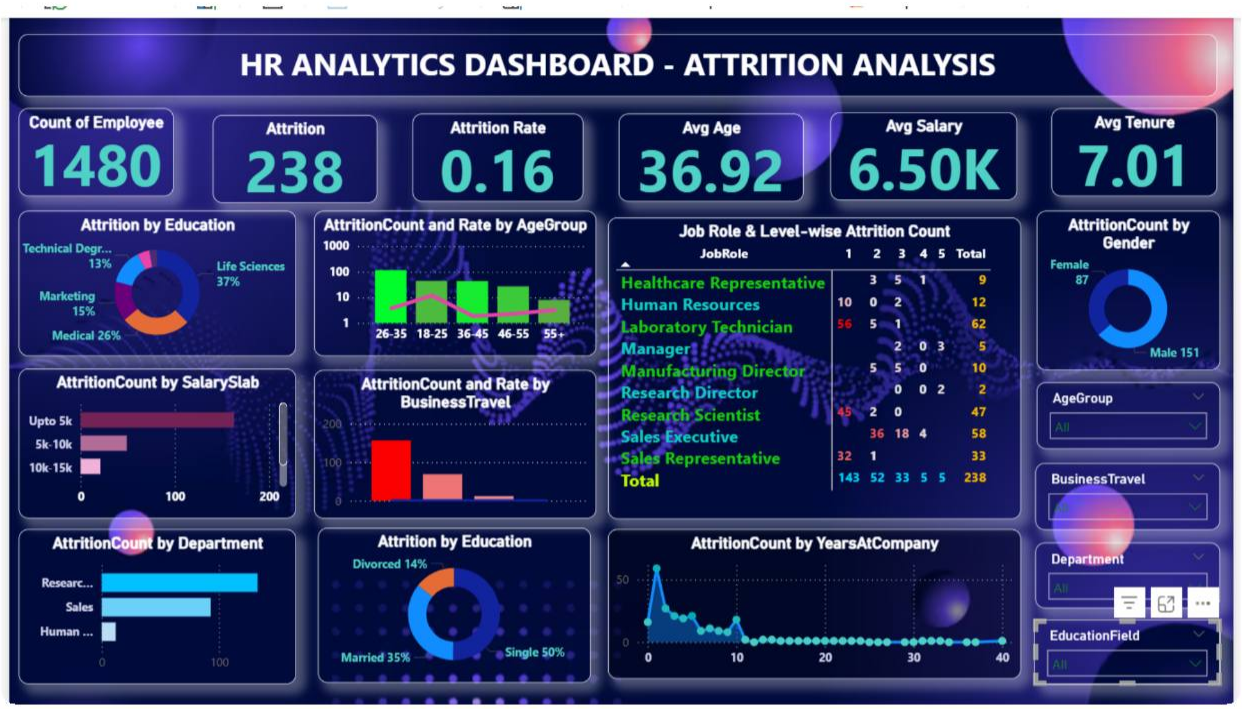
HR Analytics Dashboard – Attrition Analysis Project Report

I. Project Overview



This report documents the design, development, and analytical findings of the HR Analytics Dashboard – Attrition Analysis delivered in Microsoft Power BI Desktop. The dashboard enables HR leadership to monitor workforce composition, understand attrition drivers, and support data-driven retention strategies across job roles, departments, and demographic segments.

The solution consolidates employee master data, demographic attributes, job characteristics, and employment history to provide an interactive, single-page analytical view. It is optimized for executive review while still enabling HR analysts to drill into attrition trends by age group, salary slab, business travel, department, education, marital status, and tenure.

II. Project Objectives and Scope

The project was initiated to transform static HR reports into a dynamic, visual analytics solution capable of supporting proactive retention initiatives.

II.1 Objectives

- Provide a consolidated view of key HR attrition KPIs for leadership and HR stakeholders.
- Identify major drivers and high-risk segments contributing to employee attrition.
- Support scenario analysis through interactive slicers for age group, department, education field, and business travel.
- Standardize attrition reporting using a consistent data model, definitions, and visual layout.
- Enable continuous monitoring of attrition patterns by tenure and career level to inform targeted interventions.

II.2 Project Scope

The scope of this phase focused on building a single-page executive dashboard using the available HR dataset of 1480 employees, incorporating:

- Historical employee and attrition records at the individual level.
- Dimensions for age group, gender, department, job role and level, salary slab, business travel, education field, and marital status.
- Derived metrics for attrition rate, average age, average salary, and average tenure.
- Interactive slicers and filters for self-service exploration.

III. Timeline, Phases, and Milestones

III.1 Project Timeline

Phase	Key Activities	Planned Duration	Actual Duration
Initiation and Requirements	Stakeholder interviews, metric definitions, visual layout concept	1 week	1 week
Data Preparation	Data extraction, cleaning, feature engineering (age groups, salary slabs, tenure)	2 weeks	2 weeks
Modeling and DAX	Star schema design, measure creation (attrition rate, averages, counts)	2 weeks	2 weeks
Dashboard Design and Build	Creating visuals, aligning layout, theming, interactions, slicers	2 weeks	2 weeks
Validation and UAT	Data validation, stakeholder review, refinements, documentation	1 week	1 week

III.2 Key Milestones

Milestone	Description	Status
M1: Requirements Sign-off	Approval of KPIs, dimensions, and layout concept	Completed
M2: Data Model Freeze	Star schema and DAX measures finalized	Completed
M3: First Dashboard Prototype	End-to-end page with all visuals connected to source data	Completed
M4: User Acceptance	Feedback from HR leadership incorporated and accepted	Completed
M5: Production Deployment	Dashboard prepared for publishing to Power BI Service (next phase)	In scope conceptually, execution pending organizational environment

IV. Data Summary and Key KPIs

IV.1 Workforce Profile

The dashboard is built on a dataset of 1480 employees, of whom 238 are recorded as attritions during the analysis window. Gender distribution among attritions is 151 male and 87 female. Average age is approximately 36.9 years, with an average tenure of 7.01 years and an average monthly salary of 6.50 K (currency unit aligned with organizational payroll).

IV.2 KPI Overview

KPI	Definition	Value	Insight
Count of Employee	Total employees in the dataset for the analysis period	1480	Baseline population for attrition calculations
Attrition Count	Number of employees who left the organization	238	Indicates total exit volume under review
Attrition Rate	Attrition Count divided by Count of Employee	0.16	Equivalent to 16 percent overall attrition in the dataset
Average Age	Mean age of employees	36.92 years	Mid-career workforce composition
Average Salary	Mean monthly pay across employees	6.50 K	Used to benchmark attrition against compensation levels
Average Tenure	Mean years at company	7.01 years	Reflects moderately experienced workforce

V. Dashboard Design and Architecture

V.1 Layout and Visual Structure

The dashboard is implemented as a single Power BI Desktop report page titled HR ANALYTICS DASHBOARD – ATTRITION ANALYSIS, using a dark blue and purple corporate theme with rounded visual containers and gradient highlights. The layout is sectioned into three primary zones:

- Top KPI card row presenting headline metrics for employee count, attrition, attrition rate, average age, average salary, and average tenure.
- Central analytical visuals including education-based attrition, age-group analysis, job role and level matrix, and gender breakdown.

- Lower-tier visuals focusing on salary slabs, business travel, department-wise attrition, marital status distribution, and tenure-based attrition trends.

V.2 Data Model and Measures

The data model follows a star schema with a central fact table capturing employee status and attrition events, linked to dimension tables for employee, job, department, date, and compensation attributes. Core measures are built using DAX to ensure consistency across visuals:

- Employee Count: distinct count of Employee ID.
- Attrition Count: count of records flagged as attrition.
- Attrition Rate: ratio of Attrition Count to Employee Count.
- Average Age, Average Salary, Average Tenure: arithmetic means calculated over active and attrited employees, filtered contextually by slicers.

V.3 Interactivity and Filters

A set of slicers is positioned on the right side of the canvas, providing fast segmentation:

- AgeGroup
- BusinessTravel
- Department
- EducationField

All slicers are configured in single-select mode by default, with All as the initial state, allowing users to quickly isolate high-risk cohorts or specific business units.

VI. Detailed Visual Analyses

VI.1 Attrition by Education Field

The donut chart displays attrition segmented by education field. Life Sciences constitutes the highest share at approximately 37 percent of attritions, followed by Medical at 26 percent, Marketing at 15 percent, and Technical Degree at 13 percent. Remaining fields, grouped as Other, contribute roughly 9 percent.

This distribution suggests that health and life sciences oriented roles dominate the workforce and the associated attrition. Any retention strategy must therefore prioritize these education segments, ensuring competitive compensation, career pathways, and optimized workloads.

VI.2 Attrition by Age Group

The combined bar and line chart in the dashboard represents attrition count and attrition rate by age group. Early-career and mid-career employees between 18 and 35 show both the highest attrition counts and the highest rates, indicating elevated mobility and external market opportunities for these segments.

Attrition drops steadily for employees older than 36, with the 46–55 and 55+ groups demonstrating comparatively lower and more stable attrition rates. This pattern highlights a need for enhanced engagement and development initiatives directed at early-career employees, including tailored learning, rapid progression opportunities, and mentoring.

VI.3 Job Role and Level-wise Attrition

The matrix table titled Job Role & Level-wise Attrition Count provides a granular breakdown of attrition by job role and internal level bands (1 to 5). Roles represented include Healthcare Representative, Human Resources, Laboratory Technician, Manager, Manufacturing Director, Research Director, Research Scientist, Sales Executive, and Sales Representative.

The totals row confirms an aggregated attrition count of 238, aligning with the headline KPI. Visual scanning of the matrix shows comparatively higher attrition in frontline roles such as Laboratory Technician, Sales Representative, and Healthcare Representative, especially at lower levels. Senior leadership roles such as Manufacturing Director and Research Director show limited but strategically significant attritions.

This structure supports targeted discussions with business unit leaders on succession planning, workload design, and incentive structures, particularly in sales and laboratory functions.

VI.4 Attrition by Gender

The gender donut chart reveals that 151 attritions are male and 87 are female. While the dashboard does not display total gender headcount, the absolute attrition volume is higher for male employees, plausibly reflecting their larger presence in the workforce and in sales or field roles with higher turnover.

Further analysis, using the same data model, is recommended to compute gender-specific attrition rates to identify potential biases or unequal working conditions.

VI.5 Attrition by Salary Slab

The horizontal bar chart segments attrition by salary slabs up to 5K, 5K–10K, and 10K–15K. The majority of attrition is concentrated in the lowest salary bracket, followed by moderate attrition in the mid-range and substantially lower attrition in the highest slab.

This pattern strongly suggests price-sensitive turnover, where employees in lower-paying roles may be more inclined to change jobs for relatively small pay increments. Compensation benchmarking and targeted retention incentives for the lowest salary slab are recommended.

VI.6 Attrition by Business Travel Frequency

The bar chart with overlaid attrition rate analyzes attrition by business travel category. Employees who travel frequently register both higher attrition counts and higher rates, signaling potential fatigue, work-life imbalance, or job market alternatives with more favorable travel expectations.

Employees who rarely travel or do not travel show lower attrition levels. These insights highlight the need for travel policy review, rotational staffing, enhanced travel benefits, and flexible work arrangements to retain high-travel employees.

VI.7 Attrition by Department

The department-wise bar chart indicates that Research and Development contributes the highest attrition volume, followed by Sales, while Human Resources records comparatively lower attrition.

Given that many education fields in the dataset are life-science related, it is consistent that R&D houses a large share of the workforce and corresponding attrition. Nevertheless, the combination of high attrition counts and specialized skills in R&D elevates the strategic risk and necessitates focused retention planning.

VI.8 Marital Status Distribution within Attrition

The donut visual labeled Attrition by Education in the lower section actually displays marital status distribution among attrited employees, with Single employees accounting for about 50 percent of attritions, Married at 35 percent, and Divorced at 14 percent.

Single employees may experience higher geographic mobility and job change flexibility, which partly explains their proportional representation. While marital status alone should not drive policy, it can enrich segmentation when combined with age group, role, and travel requirements.

VI.9 Attrition by Tenure (Years at Company)

The line chart tracking AttritionCount by YearsAtCompany demonstrates a sharp spike in attrition within the first three years of employment, followed by a gradual decline as tenure increases. Early tenure attrition is a critical focal point, as losses during onboarding and ramp-up phases carry high replacement and training costs.

After 5 years, attrition stabilizes at lower levels, reflecting increased organizational commitment and career embedding. This insight underscores the importance of structured onboarding, robust induction programs, and early-career engagement strategies.

VII. Budget and Resource Overview

VII.1 Budget Summary

Cost Component	Description	Estimated Cost
Licensing	Power BI Pro or Premium per user access for HR stakeholders	Moderate, recurring (dependent on license model)
Data Engineering	ETL setup, data cleaning, transformation scripts	Medium, one-time with minor ongoing maintenance
Analytics and Modeling	DAX development, data model design, QA	Medium, one-time project investment
Change Management and Training	Workshops, documentation, adoption support	Low to medium, primarily time allocation

VII.2 Human Resources Involved

- Data Analyst: responsible for data cleansing, modeling, and DAX measures.
- BI Developer: responsible for dashboard layout, visuals, interactions, and theme.
- HR Business Partner: domain expert providing metric definitions and validation.
- Project Sponsor (HR Head): owner of objectives, acceptance, and strategic alignment.

VIII. Risks, Constraints, and Assumptions

VIII.1 Key Risks

- Data Quality Risk: incomplete or inconsistent HR records could bias attrition patterns.
- Scope Creep: requests for additional KPIs or pages beyond agreed scope could delay timelines.
- Misinterpretation: users might infer causality from correlations without proper statistical validation.
- Privacy and Compliance: sensitive employee data must be handled in accordance with organizational and regulatory standards.

VIII.2 Constraints

- Historical data coverage limited to the available export, constraining long-term trend analysis.
- Single-page design chosen for executive usability, limiting the amount of granular detail displayed simultaneously.
- Dependence on Power BI Desktop editing environment; publishing to the Service depends on organizational infrastructure.

VIII.3 Assumptions

- All attrition flags in the source system accurately represent voluntary or involuntary exits.
- Employee demographic and compensation attributes are recorded at the time of attrition and correctly reflect status.
- Salary values are normalized to a common time period and currency.

IX. Outcomes and Insights

IX.1 Analytical Outcomes

- Confirmed overall attrition rate of approximately 16 percent for the analyzed population of 1480 employees.
- Identified high-risk cohorts: early-career employees (18–35 years), low salary slabs (up to 5K), frequently traveling staff, and R&D and Sales departments.
- Observed strong early-tenure attrition spike in the first three years of employment, emphasizing onboarding effectiveness.
- Revealed concentration of attrition among Life Sciences and Medical education fields, aligning with R&D-heavy workforce composition.

- Provided gender and marital status breakdowns for deeper equity and lifestyle-related analysis.

IX.2 Business Value

- Enables HR leaders to monitor attrition continuously rather than relying on periodic static reports.
- Supports swift, evidence-based decisions on retention programs, recruitment focus, and workforce planning.
- Improves communication with business unit heads by providing a shared visual reference during reviews.
- Creates a reusable data and modeling foundation for additional HR analytics use cases such as performance, promotion, and diversity dashboards.

X. Recommendations and Next Steps

X.1 Strategic HR Recommendations

- Design targeted retention programs for early-career employees in R&D and Sales, especially in lower salary slabs.
- Review travel policies and support structures for frequently traveling staff, introducing rotations or flexible work options.
- Enhance onboarding, mentoring, and first-year support to reduce early-tenure attrition peaks.
- Conduct further analysis to compute and compare attrition rates by gender and department to confirm equity.
- Align compensation bands for critical skill groups in Life Sciences and Medical disciplines with external benchmarks.

X.2 Technical and Reporting Enhancements

- Publish the dashboard to Power BI Service with role-based access control and scheduled refresh.
- Extend the data model to include time series across multiple years for seasonal and macro-trend analysis.
- Add drill-through pages for detailed employee-level views and exit reason analysis.
- Incorporate advanced analytics, such as attrition risk scoring models, using integrated AI or external tools.

- Standardize documentation, including metric definitions, data lineage, and governance guidelines.

XI. Conclusion

The HR Analytics Dashboard – Attrition Analysis project successfully delivers a comprehensive, interactive view of workforce exits, integrating key demographic, role, and compensation dimensions within a single Power BI page. The dashboard exposes critical risk areas in early-tenure employees, heavily traveled roles, and specific departments, while providing HR leadership with actionable insights to guide retention strategies.

With further integration into the organizational BI ecosystem and continued refinement of data coverage, this dashboard can serve as the foundation for a broader HR analytics capability, improving workforce stability, optimizing recruitment investments, and supporting long-term organizational performance.

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