**HR Attrition Analysis Dashboard**

*Data Source:*

*GitHub Repo:*

*Power Bi Dashboard:*

**🔹 Project Overview**

This project focuses on analyzing employee attrition patterns within an organization, aiming to uncover the key drivers of employee turnover and recommend actionable strategies. The solution integrates **SQL for data storage and preprocessing**, **Python for exploratory data analysis and correlation studies**, and **Power BI for interactive dashboards powered by DAX measures**.

By combining advanced data modeling and visualization, the project provides HR leadership with a **comprehensive, insight-driven dashboard** to better understand attrition risks and improve workforce retention.

**🔹 Data Pipeline & Tools**

1. **Data Source & Storage:**
   * Raw HR dataset stored in **MySQL**.
   * Performed feature transformations (e.g., categorizing Age, Salary Bands, Promotion Years, Work-Life Balance, etc.) before loading into the BI layer.
2. **Exploratory Data Analysis (Python):**
   * Conducted **Age distribution analysis** (young, mid, senior employee buckets).
   * Ran **correlation analysis** to detect relationships between attrition and features.
   * Example: YearsWithCurrManager (-0.156), Age (-0.159), MonthlyIncome (-0.159), and TotalWorkingYears (-0.171) showed moderate negative correlation with attrition, meaning attrition tends to be higher among less experienced, lower-paid, and younger employees.
3. **Data Visualization (Power BI):**
   * Built calculated columns for categories (Age Groups, Years in Role, Promotion Status, etc.).
   * Developed **domain-specific ratios** and KPIs using **DAX** to quantify attrition drivers.

**🔹 Key DAX Measures & Ratios**

* **Attrition Rate:** Overall % of employees leaving the company.
* **Attrition–Workload Ratio:** Employees leaving relative to overtime burden (30.53%).
* **Compensation Stability Ratio:** Attrition in low salary band employees (28.6%).
* **High Performer Attrition Ratio:** Attrition among top-rated employees with delayed promotions (14.2%).
* **Work-Life Balance Attrition Ratio:** Attrition among poor work-life balance employees (31.3%).
* **Overtime Impact, Distance from Home Grouping, Job Satisfaction Levels, Environment Satisfaction categories** — all created via DAX to support segmented analysis.

**🔹 Insights & Findings**

1. **Overtime Impact** – Employees working overtime show disproportionately high attrition, suggesting burnout.
2. **Salary Band Impact** – Lower salary bands saw **28.6% attrition**, highlighting compensation as a major driver.
3. **Distance from Home Impact** – Attrition was higher among employees living farther from the office, pointing to commuting stress.
4. **Job Satisfaction Levels** – Lower satisfaction ratings strongly correlated with higher attrition.
5. **Career Growth (Promotion vs Performance)** – High performers with **>3 years without promotion** showed a **14.2% attrition ratio**, indicating career stagnation risks.
6. **Department & Role Pressure** – Certain roles/departments reported higher turnover, tied to workload and promotion opportunities.
7. **Workplace Satisfaction** – Poor **environment satisfaction** and **job involvement** correlated negatively with retention.
8. **Relationship Satisfaction & Work-Life Balance** – Work-life imbalance drove **31.3% attrition**, showing nearly **1 in 3 employees left due to balance issues**.

**🔹 Dashboard Features**

* Interactive visuals: Attrition segmented by **Salary Band, Distance from Home, Overtime, Job Role, and Department**.
* KPI Cards with tooltips explaining attrition ratios (e.g., *“31.3% of poor work-life balance employees left the company — nearly 1 in 3”*).
* Comparison visuals: **Promotion vs Performance**, **Work-Life Balance vs Relationship Satisfaction**, **Salary Band vs Attrition**.
* Executive-ready metrics for **monitoring HR health and retention risks**.

**🔹 Conclusion**

The analysis confirmed that attrition is not random — it is driven by identifiable factors like **salary, overtime, promotions, job satisfaction, and work-life balance**. By monitoring these metrics, HR can **proactively design interventions** such as better compensation planning, promotion policies, flexible schedules, and employee engagement initiatives to improve retention.

This project demonstrates a **complete data analysis lifecycle** — from SQL-based storage, Python-driven correlation analysis, DAX-powered KPIs, and Power BI dashboarding — making it a strong addition to a professional portfolio.