Employee Attrition Analysis

Unveiling Key Insights to Reduce Employee Turnover and Enhance Retention

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Project Overview

❏ **Data & Tools Used**

Database: MySQL
Data Processing: Cleaned nulls, duplicates, and categorized data
Final Dataset: cleaned_employee_attrition_data.csv (Imported into Power BI)

❏ **Key SQL Queries**

Calculated total employees, attrition count, and attrition rate
Detect and treat outliers
Aggregated attrition by department, job role, salary, work-life balance and overtime.

❏ **Power BI Dashboard Components**

Multi-Row Cards: Total Employees, Attrition Count, Attrition Rate
Charts:
    Bar: Attrition by Department & Job Role
    Pie: Salary & Overtime Impact on Attrition
    Stacked Column: Work-Life Balance vs. Attrition

❏ **Tools Used**

🛠 **MySQL** – Data Processing
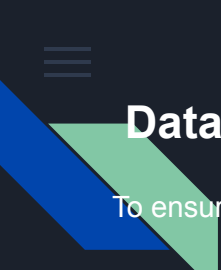📊 **Power BI** – Dashboard & Insights
📈 **DAX** – Multi- row card Calculations

Dataset Overview

- **Dataset Name:** HR Employee Attrition Dataset
- **Total Records:** 1,470
- **Total Columns:** 35
- **Data Source:** Kaggle
- **Key Variables:**
  - `Attrition` (Yes/No) - Indicates whether an employee has left the organization.
  - `Age`, `Gender`, `MaritalStatus` - Demographic information.
  - `Department`, `JobRole` - Work-related attributes.
  - `MonthlyIncome`, `YearsAtCompany`, `YearsInCurrentRole` - Financial and tenure-based factors.
  - `JobSatisfaction`, `WorkLifeBalance` - Employee satisfaction indicators.
  - `OverTime`, `BusinessTravel` - Work environment factors.

Data Cleaning (Using MySQL)

To ensure high-quality data, we performed the following cleaning steps:

Handling Missing Values

- Checked for NULL values across all columns.

Removing Unnecessary Columns

Certain columns were dropped because they contained redundant or irrelevant data:

- `EmployeeCount`, `Over18`, and `StandardHours` (all had the same value for every record).
- `EmployeeNumber` (unique identifier, not useful for analysis).

Data Transformation

- Standardize categorical values (`BusinessTravel`, `Gender`, `Marital status`) into values for easier analysis.
- Detect and Treat outliers in MonthlyIncome
- Add categorical column (TenureCategory, SalaryCategory). Assigning tenure categories based on YearsAtCompany and Assigning tenure categories based on YearsAtCompany.

Exploratory Data Analysis (EDA)

Overall Attrition Rate

	TotalAttrition	TotalEmployees	AttritionRate
▶	237	1470	16.12

Impact of Monthly Income on Attrition

	SalaryCategory	TotalEmployees	AttritionCount	AttritionRate
▶	Low	395	113	28.61
	Medium	694	84	12.10
	High	381	40	10.50

Influence of Overtime on Attrition

	OverTime	TotalEmployees	AttritionCount	AttritionRate
▶	1	416	127	30.53
	0	1054	110	10.44

Attrition by Department

	Department	TotalEmployees	AttritionCount	AttritionRate
▶	Sales	446	92	20.63
	Human Resources	63	12	19.05
	Research & Development	961	133	13.84

Overall Attrition by Job Role

	JobRole	TotalEmployees	AttritionCount	AttritionRate
▶	Sales Representative	83	33	39.76
	Laboratory Technician	259	62	23.94
	Human Resources	52	12	23.08
	Sales Executive	326	57	17.48
	Research Scientist	292	47	16.10
	Manufacturing Director	145	10	6.90
	Healthcare Representative	131	9	6.87
	Manager	102	5	4.90
	Research Director	80	2	2.50

Power BI Dashboard Visualisation
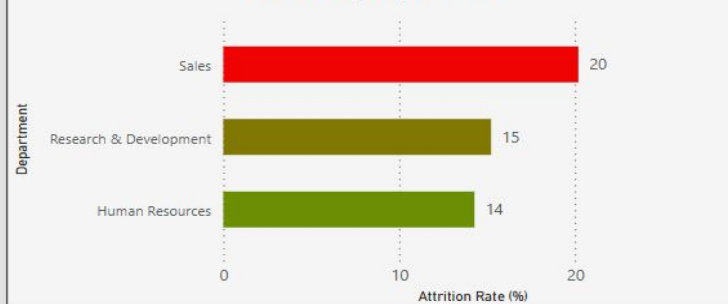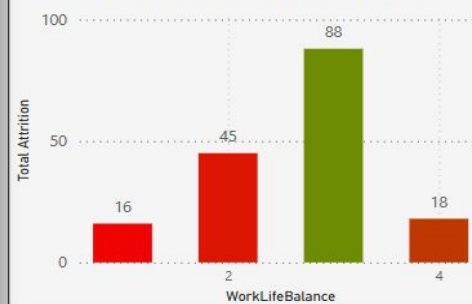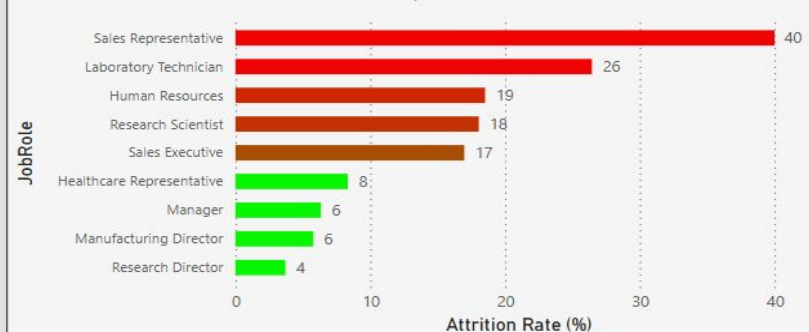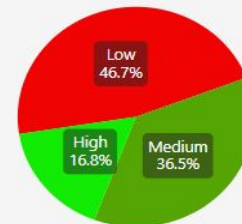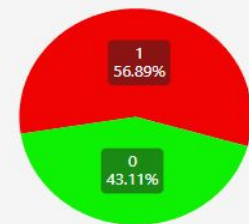
Key Findings & Business Recommendations

Findings:

- **Low Salaries Contribute to Attrition:** Employees earning under **$3,000 per month** have a significantly higher attrition rate.
- **Overtime Increases Turnover:** Employees working overtime leave at a **30% rate**, compared to **10%** for those who don't.
- **Job Satisfaction & Work-Life Balance Matter:** Employees rating these factors poorly are more likely to leave.
- **Sales Department Faces High Attrition:** Likely due to performance pressure and lower base salaries.

Recommendations:

1. **Competitive Salary Structure:** Increase compensation for low-income employees to improve retention.
2. **Reduce Overtime Work:** Optimize work schedules to avoid burnout and stress.
3. **Improve Employee Engagement in Sales:** Provide better incentives and career growth opportunities.
4. **Implement Work-Life Balance Policies:** Encourage flexible working hours and wellness programs.
5. **Monitor High-Risk Job Roles:** Focus on job roles with high attrition to understand retention gaps