**HR Dataset Report**

**1. Data Cleaning Process**

**Raw Data:**

The original HR dataset contained 35 columns, including various numeric and categorical values related to employee information, job satisfaction, and performance. However, many columns had numeric encodings that needed to be converted into meaningful categorical labels.

**Data Cleaning Steps:**

1. **Mapping Numeric Values to Categorical Labels:**
   * The columns representing attributes like education, environment satisfaction, job involvement, and others had numerical values (1 to 5) that lacked context. These were mapped to meaningful categories such as:
     + Education (1 = 'Below College', 2 = 'College', 3 = 'Bachelor', 4 = 'Master', 5 = 'Doctor')
     + Job Satisfaction (1 = 'Low', 2 = 'Medium', 3 = 'High', 4 = 'Very High')
     + Performance Rating (1 = 'Low', 2 = 'Good', 3 = 'Excellent', 4 = 'Outstanding')
     + And similar mappings for other columns like **Job Involvement**, **Work-Life Balance**, **Relationship Satisfaction**, etc.
2. **Creating Derived Columns:**
   * A new column, **ExperienceLevel**, was created based on the **JobLevel** column to provide better insights into employee experience. The levels were mapped as:
     + 1 = 'Entry Level', 2 = 'Junior Level', 3 = 'Mid Level', 4 = 'Senior Level', 5 = 'Executive Level'

**Cleaned Data:**

After cleaning, the dataset became more interpretable, with columns having descriptive labels that allowed for better analysis. The cleaned data provided a solid foundation for generating insights.

**2. Insights & Dashboards**

After cleaning the data, we built three dashboards to present key findings. Each dashboard focuses on different aspects of the HR data, from employee distribution to attrition and growth.

**2.1. 1st Dashboard: Workforce Overview**

**Insights:**

1. **Total Employees (Card):** Displays the total number of employees.
2. **Average Salary (Card):** Shows the average employee salary.
3. **Gender Distribution (Bar Chart):** Visualizes gender distribution across the workforce.
4. **Employee Headcount by Department / Gender (Stacked Column Chart):** Shows the number of employees in each department, broken down by gender.
5. **Job Satisfaction Levels (Stacked Column Chart):** Presents employee satisfaction levels categorized into four tiers.
6. **Age Distribution (Bar Chart):** Visualizes the age range of employees.

**Interpretation:**

* These insights provide a high-level overview of the organization’s workforce demographics, gender diversity, and job satisfaction.

**2.2. 2nd Dashboard: Attrition and Work-Life Balance**

**Insights:**

1. **Attrition Rate (Card):** Shows the percentage of employees who have left the company.
2. **Total Attrition (Card):** Displays the exact number of employees who have left.
3. **Current Employees (Card):** Indicates the current number of employees post-attrition.
4. **Employee Count by Job Role / Gender (Stacked Column Chart):** Shows employee distribution by job role and gender.
5. **Attrition Rate by Job Role (Bar Chart):** Highlights which job roles experience the most attrition.
6. **Work-Life Balance vs. Overtime (Line Chart):** Compares work-life balance scores between employees who work overtime and those who don’t, segmented by gender.
7. **Employee Distribution by Education Level (Tree Map Chart):** Visualizes how employees' education levels are distributed across the workforce.

**Interpretation:**

* These insights help understand employee turnover, its causes, and its effect on various job roles. The work-life balance comparison provides crucial insight into the relationship between overtime and satisfaction.

**2.3. 3rd Dashboard: Employee Development and Growth**

**Insights:**

1. **Average Tenure (Years of Service) (Card):** Shows the average time employees stay with the company.
2. **Training Hours per Employee (Average) (Card):** Displays the average number of training hours each employee receives.
3. **Department with the Highest Overtime (Card):** Identifies the department with the most overtime.
4. **Employee Growth & Promotion Analysis (Stacked Column Chart):** Shows how employees advance within the company over time.
5. **Education Level vs. Department Distribution (Stacked Column Chart):** Highlights how education levels vary across departments.
6. **Workforce Demographics (Tree Map Chart):** Presents a comprehensive view of workforce composition by key demographics.

**Interpretation:**

* These insights focus on employee development and career progression, offering valuable information for evaluating the company’s training and promotion efforts.

**3. Conclusion**

The dashboards provide a comprehensive view of the HR dataset, offering key insights into employee distribution, satisfaction, attrition, and growth. These findings will help inform future HR strategies, focusing on retention, work-life balance, and employee development.