Power BI Project

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I. Information About the Data Set

- **Link to Data Set:** https://www.kaggle.com/datasets/stealthtechnologies/employee-attrition-dataset
- **Target audience:** This analysis will be presented to the Head of HR Managed Services.
- **Context:** Using partner employee data, identify the characteristics and factors that may influence people's decisions to leave their jobs. Then, conduct further analysis for consultation.
- **Purpose:** Recommend changes to the work environment and company policy to reduce the attrition rate.
- **Describe the Data Set:** The data set comprises 59,598 records of employees from various companies. I divided the data set into 3 tables:
  - Lookup Table 1: Employee_infor

Columns Name	Description
Employee ID	A unique number assigned to each employee
Age	The age of the employee, ranging from 18 to 60 years.
Gender	Male/Female
Education Level	The highest education level attained by the employee: (High School, Associate Degree, Bachelor's Degree, Master's Degree, PhD)
Marital Status	The marital status of the employee: (Divorced, Married, Single)
Years at Company	The number of years the employee has been working at the company
Job Role	The department or role the employee works in, encoded into categories such as Finance, Healthcare, Technology, Education, and Media
Job Level	The job level of the employee: (Entry, Mid, Senior)
Company Size	The size of the company the employee works for: (Small,Medium,Large)

  - Lookup Table 2: Company_infor

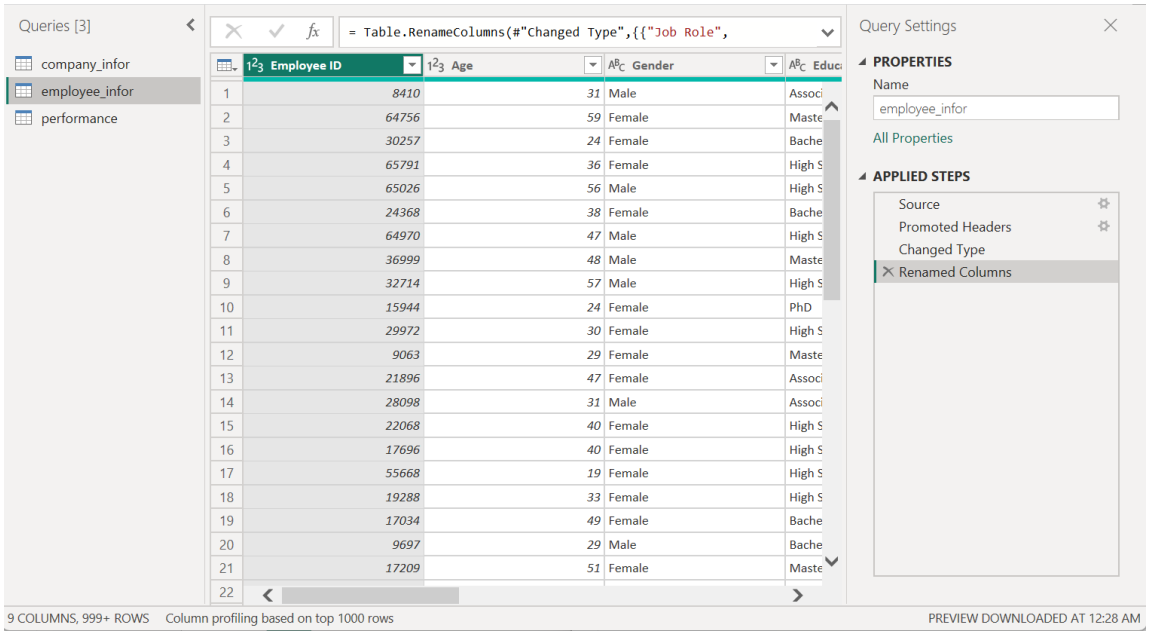
Columns Name	Description
Employee ID	A unique number assigned to each employee
Company Tenure	The total number of years the employee has been working in the industry
Company Reputation	The employee's perception of the company's reputation: (Very Poor, Poor,Good, Excellent)
Company Size	The size of the company the employee works for: (Small,Medium,Large)

- Data Table: Performance

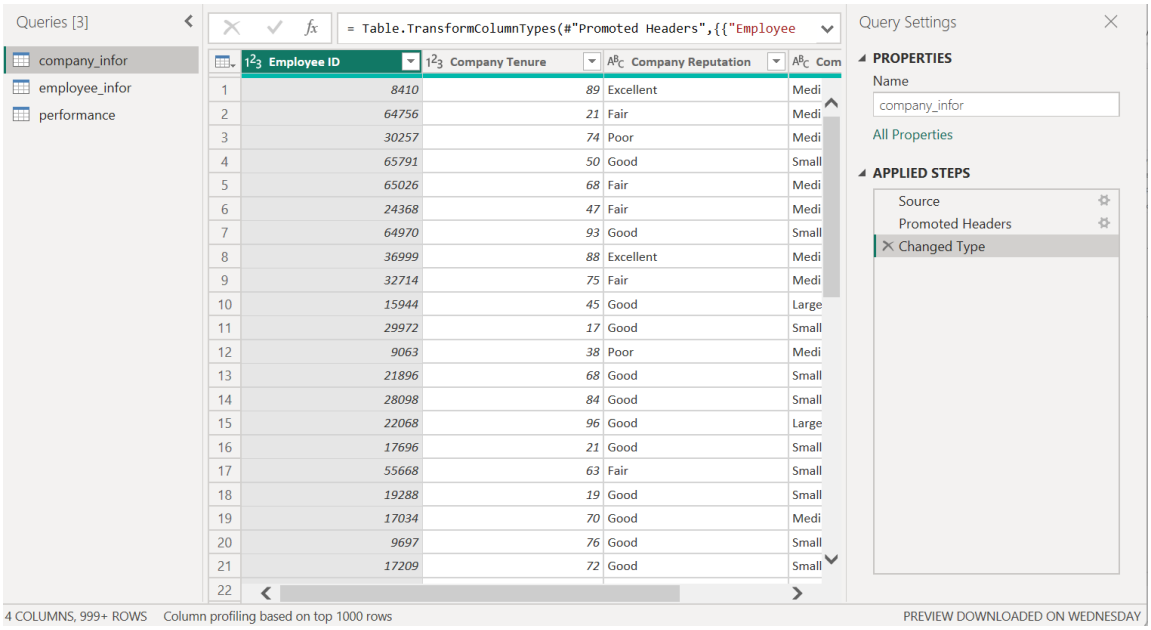
Columns Name	Description
Employee ID	A unique number assigned to each employee
Monthly Income	The monthly salary of the employee, in USD.
Work-Life Balance	The employee's perceived balance between work and personal life, (Poor, Below Average, Good, Excellent)
Job Satisfaction	The employee's satisfaction with their job: (Very Low, Low, Medium, High)
Performance Rating	The employee's performance rating: (Low, Below Average, Average, High)
Number of Promotions	The total number of promotions the employee has received
Overtime	Whether the employee worked overtime: (Yes or No)
Distance from Home	The distance between the employee's home and workplace, in miles
Number of Dependents	The total number of dependents of employee
Remote Work	Whether the employee works remotely: (Yes or No)
Leadership Opportunities	Whether the employee has leadership opportunities: (Yes or No)
Innovation Opportunities	Whether the employee has opportunities for innovation: (Yes or No)
Employee Recognition	The level of recognition the employee receives:(Very Low, Low, Medium, High)
Attrition	Whether the employee has left the company (Stayed or Left).

II. ETL Part

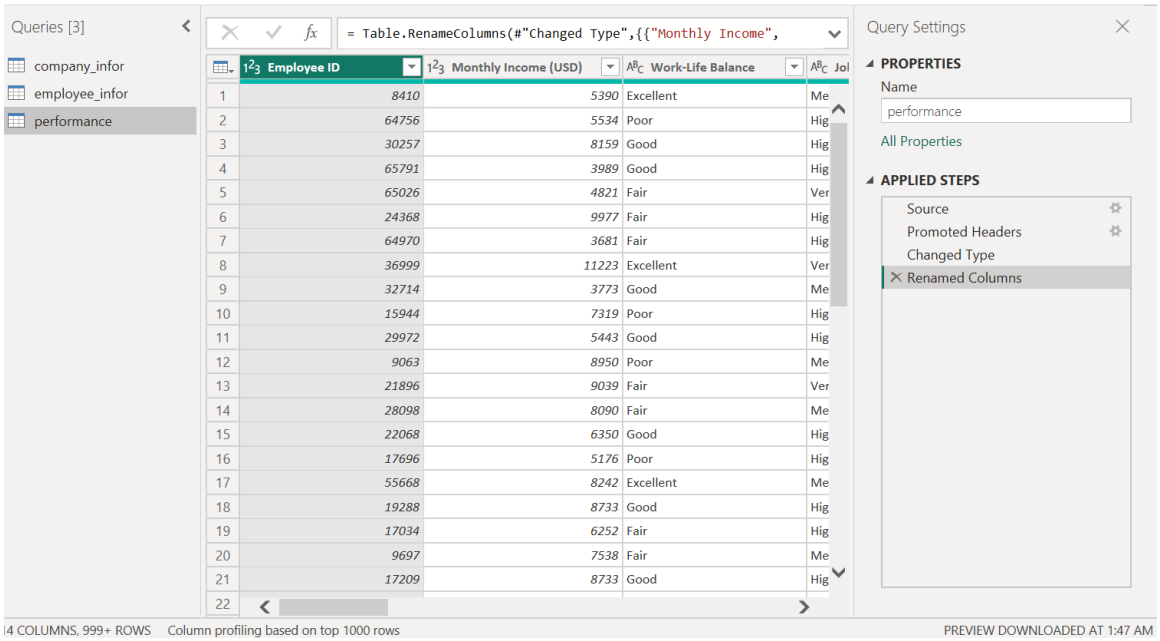
- **Employee_infor table:**
  - Promoted headers and changed the type of the “Employee_ID" column from string to number so I can use it later to establish table relationships.
  - ▪ Changed the data type in the following columns to number: "Age," "Gender," "Years at Company"
  - ▪ Renamed the column "Job Role" to "Industry" for clearer understanding



- **Company_infor table:**
  - Promoted headers and changed the column type of "Employee_ID" from string to number so I can use it later to create table relationships.
  - ▪ Changed the data type of the value in columns "Company Tenure" to number.

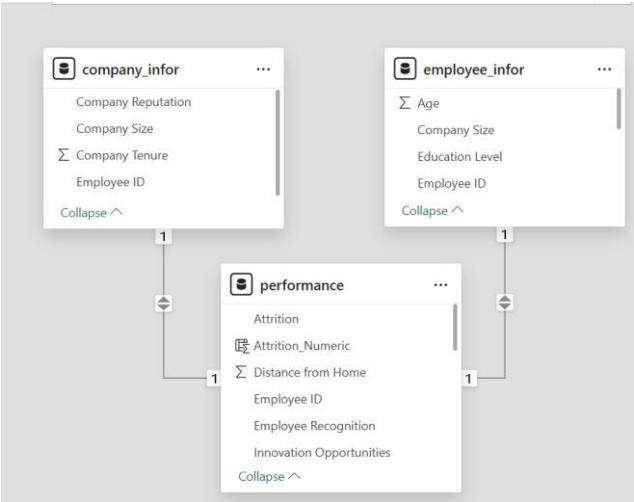


- **Employee_performance table:**
  - Promoted headers and changed the 'Employee_ID' column type from string to number so I can use it later to create table relationships.
  - ▪ Changed the data type in the following columns to number: "Monthly Income", "Number of Promotions", "Distance from Home", "Number of Dependents"
  - Renamed the column "Job Role" to "Industry" to better specify the currency used in the analysis.



III. Table Relationship

Three tables are connected by “Employee_ID”



IV. DAX

1. Measures (6)

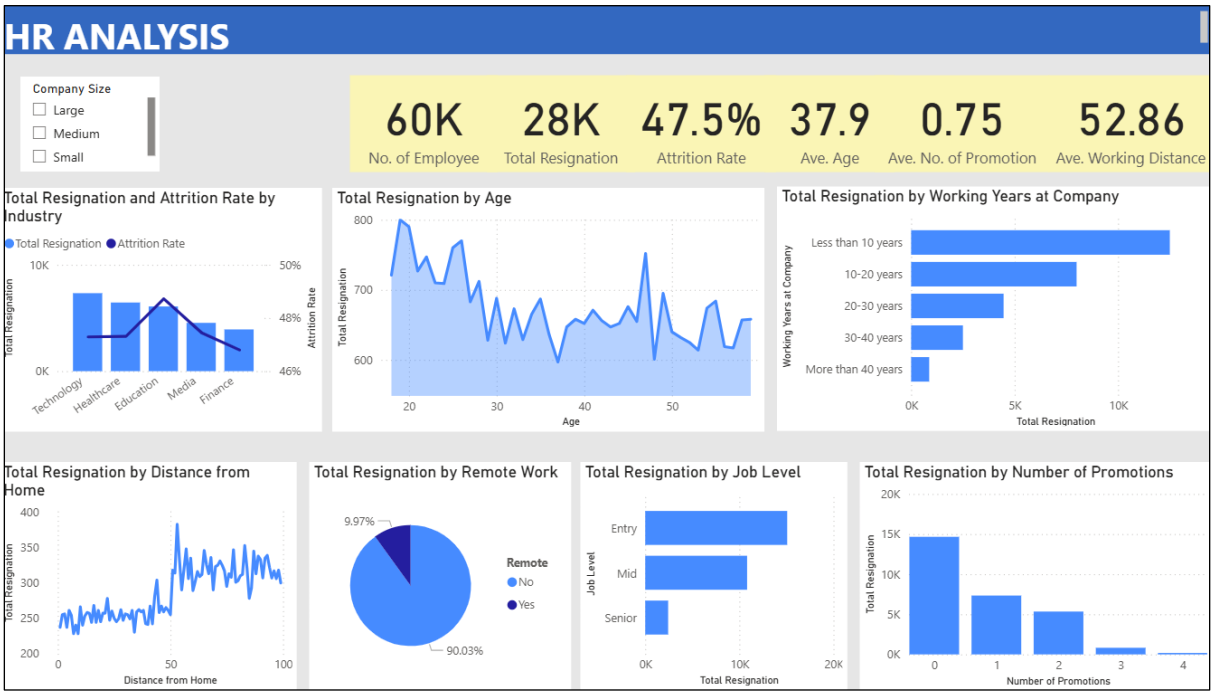
- Ave. Age = AVERAGE(employee_infor[Age])
- Ave. No. of Promotion = AVERAGE(performance[Number of Promotions])
- Ave. Working Distance = AVERAGE(performance[Distance from Home])
- No. of Employee = COUNTROWS(performance)
- Total Resigned = SUM(performance[Attrition_Numeric])
- % of Resigned = [Total Resigned]/[No. of Employee]

2. Calculated Columns (2)

- Attrition_Numeric = if(performance[Attrition]=="Stayed",0,1)

- Working Years at Company = SWITCH(TRUE(), employee_infor[Years at Company] <= 10, "Less than 10 years", employee_infor[Years at Company] <= 20, "10-20 years", employee_infor[Years at Company] <= 30, "20-30 years", employee_infor[Years at Company] <= 40, "30-40 years", "More than 40 years")

V. Dashboard



VII. Selected KPI and its justification

1. **Total Resignation:** The total number of employees who leave their jobs. The segment with the highest number of total resignations will need more detailed analysis. This KPI helps measure the attrition rate.

2. **Attrition Rate:** Shows the percentage of employees who leave their jobs relative to the total workforce. This KPI assesses the effectiveness of HR department's retention strategies. By tracking this KPI, HR can see the overall rate and specific segment rates, which helps identify departments with the highest turnover. Additionally, this KPI can act as a benchmark for comparing with other companies and market averages.

3. **Average Age:** The average age of employees who resign. By tracking this KPI, the HR department can better understand which age groups are more likely to leave and make targeted improvements. For instance, if older employees are quitting, HR should focus on enhancing work-life balance or retirement benefits.

4. **Number of Promotions:** The total promotions that resigned employees received while working at the company. This KPI can help identify whether a lack of promotion contributes to attrition. It also assists in designing fair incentive and promotion policies.

5. **Distance from Home:** The distance between employees' homes and workplaces. This KPI shows how work distance affects employee retention. It assists the HR department in adjusting remote work policies.

6. **Working Years in the Company:** The total number of years former employees worked at the company. This KPI helps HR departments identify when employees might leave and develop strategies to improve job satisfaction over time.

VIII. Observations and Recommendations

1. **Observation 1:** The Technology Industry has the highest number of resignations across all company sizes, including SMEs and large companies. However, the Education Industry has the highest attrition rate among SMEs, and the Healthcare Industry has the highest attrition rate among large companies.
   → **Recommendation:** Since the technology, education, and healthcare industries have high attrition rates, companies in these sectors are more likely to be clients of HR Managed Services. Therefore, the company should reach out to firms within these industries to explore potential clients. Additionally, the company should conduct a more detailed HR analysis across these sectors to better prepare for future consulting opportunities**.**

2. **Observation 2:** Across all industries and company sizes, the distance from home to workplace seems to be positively linked to the attrition rate. This indicates that the shorter the commuting distance, the lower the likelihood of resignation. Additionally, 90% of employees who resigned don't work remotely at any point.
   → **Recommendation:** For current employees with longer commutes, we should offer more remote work options, such as hybrid arrangements, or provide choices for flexible working hours to boost employee satisfaction. Additionally, in future recruitment efforts, it's helpful to consider hiring candidates within a reasonable distance to reduce turnover risk.

3. **Observation 3:** Over 50% of employees who resigned never received a promotion, and more than 25% of those who resigned received only one promotion. Therefore, it suggests that the higher the opportunity for career growth, the lower the chances of job turnover.
   → **Recommendation:** Utilize data such as employee performance, company budgets, and machine learning to identify who is qualified and in need of a promotion. This approach can motivate employees to stay and lead to greater recognition. Additionally, the HR department should implement training and mentorship programs that support employees in reaching their career goals.

4. **Observation 4:** The longer employees stay with a company, the less likely they are to leave their jobs. The job level with the highest attention rate is entry-level, usually linked to the age range of 20s to 30s. However, employees in their 45s to 50s also tend to have a high retention rate.

→ **Recommendation:** Develop retention strategies tailored to different age groups, such as offering fast-track career advancement for young and new employees to boost their ambition, providing leadership training for mid-level employees, and implementing work-life balance policies for senior staff.