

HR Attrition Analytics Overview

Attrition is the silent killer that can swiftly disable even the most successful and stable of organizations in a shockingly spare amount of time. While many companies put an emphasis on the costly process of hiring and recruiting, there isn't enough attention invested in solving the issues that cause top talent to leave. Although compensation is the most commonly associated reason behind attrition, let's make an analysis to see if this is really one of the most important motives.

Understanding the motivations behind employee attritions the essential first step in understanding the problem and properly addressing it before substantial, long-lasting damage is caused to your organization. Thankfully, with this EDA we will be able to provide employers the actionable insights they need to better understand their employees and make any necessary changes before turnover rates well, productivity drops, and the entire company's future is suddenly less bright.



What does employee attrition mean?

The attrition rate is a calculation of the number of individuals that leave or move out of a business over a specified time frame.

What is the difference between employee turnover and attrition?

Both terms are used when an employee leaves a company but with a difference in processes, such as discharge, termination, or resignation, Attrition occurs when an employee retires or when the employee terminates the job position. When employee turnover occurs, the employers look for a replacement.

What is a good employee attrition rate?

A good, average turnover rate is around 10%

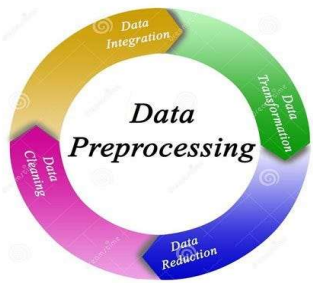
Hypothesized Impactors :

- We feel that these 6 variables might have the most impact on attrition.
 - Age
 - Monthly Income
 - Distance from Home
 - Years since last promotion
 - Job satisfaction
 - Overtime



Data Preprocessing

We perform data preprocessing steps below for optimal data preparation.



- **Data Collection:** We started by importing the HR dataset from an Excel source using Power Query.
- **Header Setup:** To establish data clarity, we designated the first row as headers using Power Query.
- **Data Cleansing:** A critical step in the process was the removal of null values, ensuring our dataset was devoid of incomplete or missing information.
- **Data Integrity:** Beyond cleaning, we meticulously validated data types in each row, safeguarding data consistency and integrity.

This meticulous data cleaning process lays the groundwork for our HR attrition analysis, guaranteeing that the data we work with is accurate and reliable.



Data Modeling & Data Transformation

In the data modeling and transformation phase, where we meticulously model and refined our dataset, we designed key performance indicators (KPIs) to gain insights from our HR dataset:



- **Overall Employee Count:** We determined that there are a total of 1,470 employees in the company find total overall employee count using sum formula.

```
SUM ('HR data'[Employee Count])
```

- **Attrition Identification:** Identifying employees who left their jobs, we found that there were 237 attritions. To categorize attrition, we utilized a DAX function by adding a conditional column that outputs '1' for 'Yes' attrition and '0' otherwise.

```
IF ('HR data'[Attrition]="Yes",1,0)
```

- **Attrition Rate:** Calculating the attrition rate at 16.12%, This was achieved using a DAX function in Measures, which divided the sum of 'Attrition Count' by the sum of 'Employee Count'.

```
SUM ('HR data'[Attrition Count])/SUM ('HR data'[Employee Count])
```

- **Active Employee Count:** We found there are 1,233 active employees in the company using a DAX function in Measures, which subtracts the 'Attrition Count' from the 'Employee Count'.

```
SUM ('HR data'[Employee Count])-SUM ('HR data'[Attrition Count])
```

- **Average Age:** The average age of employees in our company was calculated as 37 years, providing insights into the age composition of our workforce. Find average age using average formula

```
AVERAGE ('HR data'[Age])
```

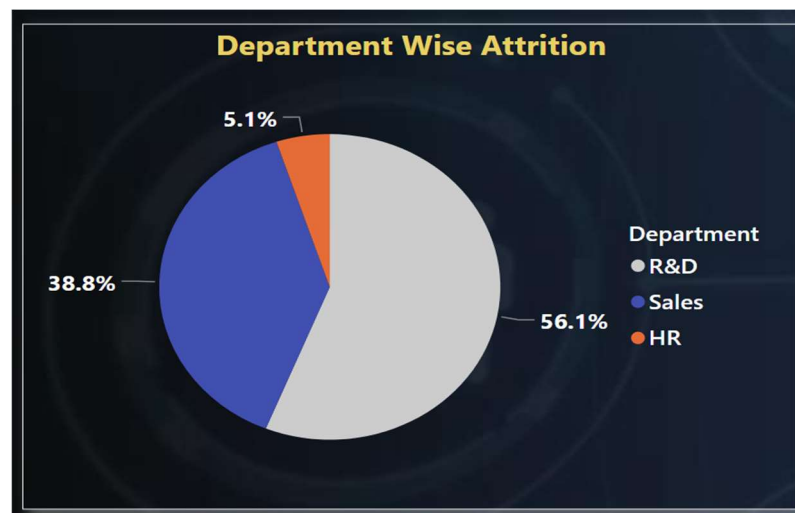
These KPIs were derived through meticulous data modeling and transformation, ensuring our analysis is both accurate and insightful.

Data Visualization

In our data visualization journey, we created a range of charts to unveil insights from our HR DATA SET :

1. Department wise attrition:

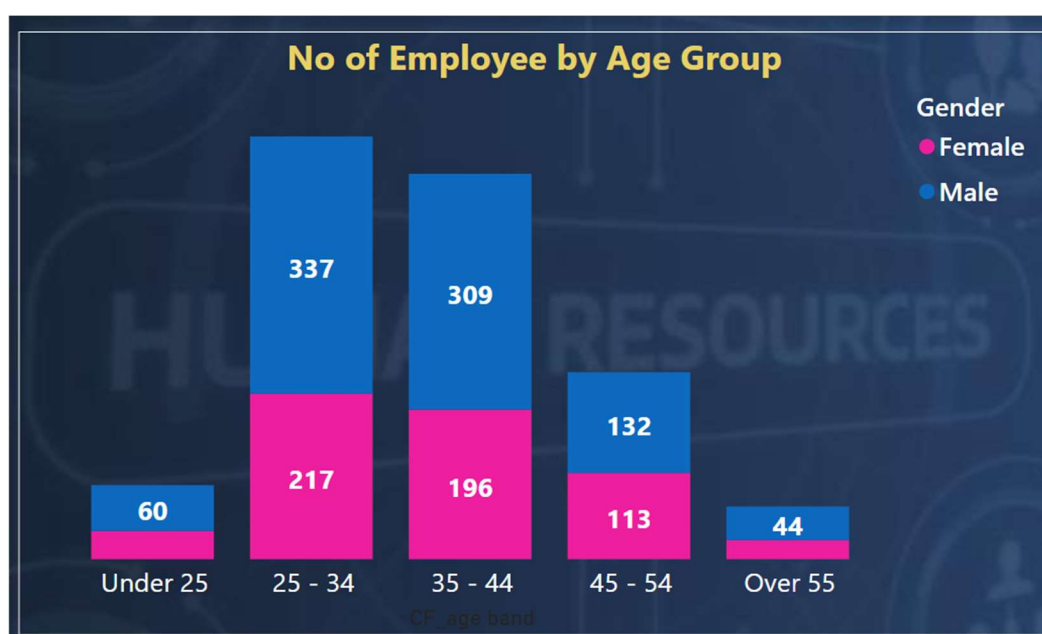
We used a pie chart to explore attrition across our organization's departments. The chart clearly shows the attrition rates in each department:



- **Sales Department:** Here, we observed an attrition rate of 38.8%, signifying a significant portion of our attrition cases emanated from the Sales department.
- **HR Department:** In contrast, the HR department experienced a notably lower attrition rate, accounting for just 5.1% of the total attrition count.
- **R&D Department:** Meanwhile, the R&D department had the highest attrition rate at 56.1%. This raises intriguing questions about the factors contributing to this trend.

The pie chart highlights differing attrition rates across departments. This suggests that each department has unique factors contributing to attrition. Understanding these departmental dynamics is crucial for developing tailored HR strategies to retain employees effectively.

2. No. Of employee by age group (female/male):



We use DAX function for sorting age:

```
IF (CF_age band = "<25", 1, IF (CF_age band = "25 IF (CF_age band = "35-44", 3, IF (CF_age band = "45-54", 4, 5))))
```

- **Majority Employee Age Group by Gender:**
 - For Males, the majority age group is "25-34" with 337 individuals.
 - For Females, the majority age group is also "25-34" with 217 individuals.
- **Least Employee Age Group by Gender:**
 - For Males, the least represented age group is "Over 55" with 44 individuals.
 - For Females, the least represented age group is also "Over 55" with 25 individuals.

In summary, the age group "25-34" is the majority for both males and females, while the age group "Over 55" is the least represented for both genders.

3. Job Satisfaction Rating:

Job Satisfaction Rating					
Job Role	1	2	3	4	Total
Sales Representative	12	21	27	23	83
Sales Executive	69	54	91	112	326
Research Scientist	54	53	90	95	292
Research Director	15	16	27	22	80
Manufacturing Director	26	32	49	38	145
Manager	21	21	27	33	102
Laboratory Technician	56	48	75	80	259
Human Resources	10	16	13	13	52
Healthcare Representative	26	19	43	43	131
Total	289	280	442	459	1470

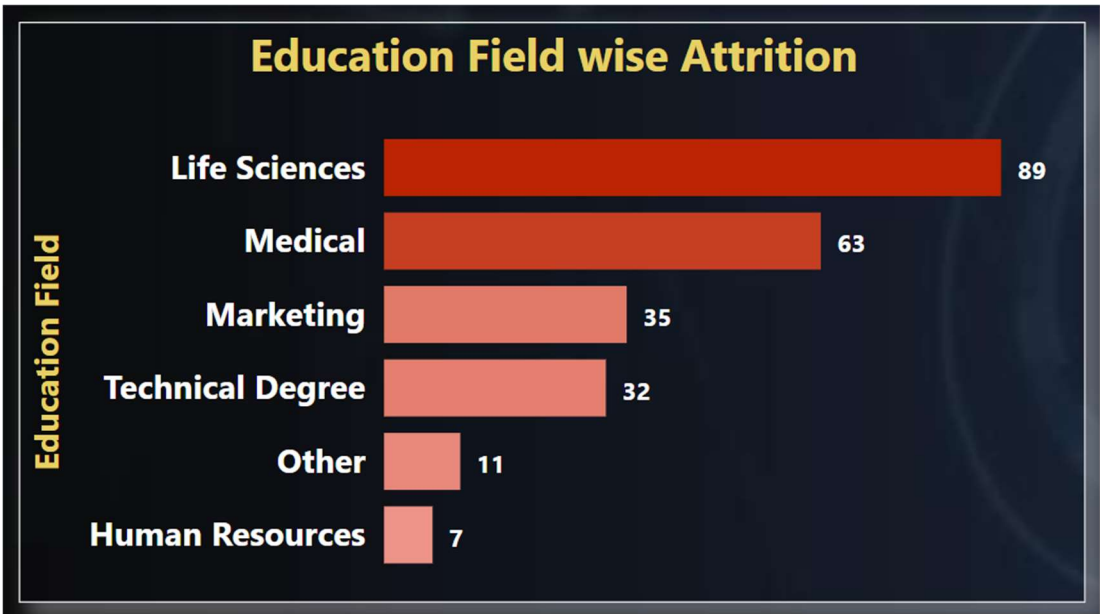
In our pursuit of understanding employee satisfaction levels across different job roles, we've examined the data through a comprehensive Matrix chart that elegantly summarizes the distribution of job satisfaction ratings.

Our analysis reveals compelling insights:

- **Highest Satisfaction Rating:** Among these job roles, 'Sales Executive' (Sales Ex) stands out with the highest satisfaction rating, achieving an impressive 112 employees who have rated their job satisfaction as the highest (Rating 4). This emphasizes the positive work environment and engagement within the sales executive team.
- **Lowest Satisfaction Rating:** On the other hand, 'Human Resource' lowest job satisfaction rating, with only 10 employees giving it the lowest rating (Rating 1). This insight calls for a closer examination of factors affecting job satisfaction within this role.
- **Overall Trend:** The Matrix chart demonstrates a trend towards higher job satisfaction ratings as we move from left to right across the columns, indicating an overall positive job satisfaction climate within the organization.

In conclusion, our exploration of job satisfaction across various job roles highlights the exemplary job satisfaction within the 'Sales Executive' team, while also shedding light on the overall positive satisfaction levels within the organization. These insights are invaluable for shaping HR and management strategies to maintain and improve employee satisfaction levels.

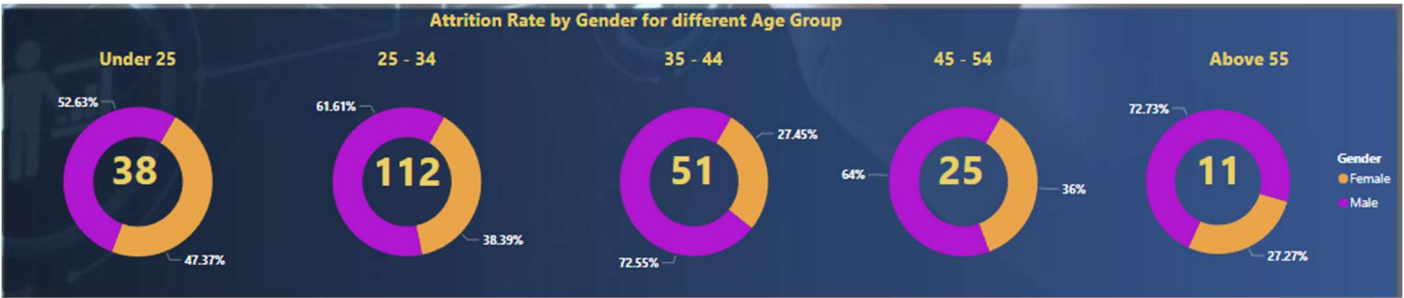
4. Education Filed wise Attrition:



In our analysis of employee attrition, we examined the impact of education fields on workforce stability. The clustered bar chart vividly illustrates the attrition counts across various education fields.

- We found that **'Life Sciences'** stands out with the highest attrition count, where 89 employees have left the company. This suggests a need for closer examination of factors within this field. On the other hand, **'Human Resources'** shows the lowest attrition count, with just 7 employees departing.
- The data indicates that employees with educational backgrounds in **'Medical'** and **'Marketing'** are also experiencing significant attrition, with 63 and 35 departures respectively. In contrast, **'Other'** and **'Technical Degree'** fields fall in the middle range, with attrition counts of 11 and 32.
- This analysis not only helps us identify areas of concern but also highlights potential opportunities for retention strategies, particularly in 'Life Sciences' and 'Medical' fields. Further investigation into the factors driving attrition in these fields may provide valuable insights for HR and management decisions.

5. Attrition Rate by Gender for different Age Group:



In our exploration of employee attrition, we examined the data through the lens of age groups, shedding light on the nuanced attrition patterns among different generations.

- **Highest Attrition Rate:** The age group **'25-34'** exhibits the highest attrition rate, with males departing at a notably higher rate of 61.61%, making it a critical focus area for retention efforts.
- **Lowest Attrition Rate:** Conversely, the **'35-44'** age group boasts the lowest attrition rate, particularly for females, standing at 27.45%.
- **Overall:** Our analysis highlights that the age group '25-34' experiences the highest attrition count and rate, predominantly driven by male departures. In contrast, the '35-44' age group displays remarkable stability with the lowest attrition rate, particularly among females. These findings unveil valuable insights into our workforce dynamics, guiding us toward targeted strategies for enhancing retention and employee satisfaction.

📊 What are some effective methods to reduce a high attrition rate?

- Recruit and hire the right people.
- Offer benefit and compensation.
- Offer flexibility.
- Pay attention to employee engagement.
- Recognize and reward employee.

