# Employee Attrition Analysis

## Problem Statement

Employees are the backbone of any organization. An organization’s performance depends on the quality of employees and how they can retain them. Employee attrition can be for voluntary or involuntary reasons.

The reasons are through natural means like retirement, or it can be through resignation, termination of contract. It costs precious time and money and can result in a loss of staff morale. This could also tarnish a company's reputation.

It is important for any organization to monitor their employee attrition rate and understand why employees are leaving if they want to avoid negative repercussions.

Challenges faced by an Organization due to Employee Attrition:

- Cost in Training new employees

- Loss of experienced employees

- Employee Productivity

- Organization profit

We are using the IBM HR Analytics Employee Attrition & Performance dataset for this project. This data set has 1471 rows and 35 columns providing various information on employee’s personal and employment details which will help us in studying the behavioral pattern of the employees and predicting the employee churn rate.

Therefore, Organizations like IBM has to study the behavior of employee attrition to stabilize their work culture, in turn, decrease the loss of employee.

## Questions to answer from data :

- What is the likelihood of an active employee leaving the company?

- What are the key factors of an employee's attrition?

- If there is any gender bias in the organization, which gender has the higher rate of attrition?

- How are the variables correlated?

- How is the distribution of attrition variable?

### Data Dictionary

Name | Description

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Age|Age of Employee

Attrition|Employee leaving the company - (0=no,1=yes)

Business Travel|Employee traveling level - (1=No Travel, 2=Travel Frequently, 3=Tavel Rarely)

Daily Rate|Salary level of employee

Department|Department of Eployee - (1=HR, 2=R&D, 3=Sales)

Distance From Home|The distance from work to home

Education|Employee's education level - (1= Below College, 2= College, 3= Bachelor, 4= Master, 5= Doctor)

Education Field|Employee's field of Education - (1=HR, 2=LIFE SCIENCES, 3=MARKETING, 4=MEDICAL SCIENCES, 5=OTHERS, 6= TEHCNICAL)

Employee Count|Count of Employee

Employee Number| Employee ID

Environment Satisfaction|Satisfaction with Environment - (1=Low, 2=Medium ,3=High, 4=Very,5= High)

Gender|Employee Gender - (1=FEMALE, 2=MALE)

Hourly Rate|Employee Hourly Salary

Job Involvement|Job involvement- (1=Low ,2=Medium, 3=High, 4=Very High)

Job Level|Employee's level of job

Job Role|Employee's Job Role - (1=HC REP, 2=HR, 3=LAB TECHNICIAN, 4=MANAGER, 5= MANAGING DIRECTOR, 6= REASEARCH DIRECTOR, 7= RESEARCH SCIENTIST, 8=SALES EXECUTIEVE, 9= SALES REPRESENTATIVE)

Job Satisfaction|Employees Job Satisfaction- (1=Low, 2=Medium, 3=High, 4=Very High)

Martial Status|Employee's Martial Status- (1=DIVORCED, 2=MARRIED, 3=SINGLE)

Monthly Rate|Employee's Monthly salary

NumCompanies Worked|No. of companies worked at

Over 18|Is employee 18 years old? (1=Yes, 2=No)

Overtime|Does employee work overtime? (1=No, 2=Yes)

Percent Salary Hike|Employee's percentage increase in salary

Performance Rating|Employee's performance rating(1=Low, 2=Good, 3=Excellent, 4=Outstanding)

Relations Satisfaction|Employee's relations satisfaction(1=Low, 2=Medium, 3=High, 4=Very High)

Standard Hours|Employee's Standard working hours

Stock Options Level|Employee's stock options

Total Working Years|Employee total years worked

Training Times Last Year|Employee training hours

Work Life Balance|Employee's time spent between work and outside (1=Bad, 2=Good,3=Better, 4=Best)

Years at company|Employee's total nuber of years at company

Years in Current Role|Employee's number of years in current role

Years since Last Promotion|Number of years since last promotion

Years with Current Manager|Number of years spent with current manager