

# HR Analytics – Analyzing Attrition rate

## Introduction:

What is Attrition? Attrition is a process of staff reduction which can be voluntary or involuntary. Employee attrition is a phenomenon most companies consider unavoidable. There are two types of attrition: Positive and Negative. Attrition is considered positive when underperforming employees resign or are laid off. This can have a positive impact on the company. Whereas Negative attrition happens when top performing employees leave the organization. This can have a negative impact on the company especially when the employee has directly contributed to the success of the company.

## Problem at hand:

Some industries are subjected to a higher attrition rate compared to others. Studies show that the attrition rate is the highest in the IT sector at 13%. Attrition rate higher than the average may be due an issue within the organization itself, can be low employee morale, lack of growth or even monetary reasons.

## Value to Client:

High attrition rate can affect a company in different ways.

1. **Costs** – Whenever an employee resigns, the company has to spend a significant amount in rehiring, re-training a replacement. There was an estimation made by Rain Maker Group that replacing an employee costs about one half of the salary for an unskilled employee. Whereas the replacement cost of a highly skilled employee is 3-5 times the annual salary.
2. **Low Workplace Morale** – In addition to the costs, the company also takes time to get a new-hire on board (6 months to 1 year in some cases). This would result in the remaining employees overburdened in order to fulfill a commitment invariably resulting in lower morale.
3. **Lower knowledge base** – If the company is unable to retain employees experienced in the domain, this would result in lack of domain knowledge and domain experts within the organization.
4. **Lack of growth** – Company spends a lot of time and money in order to hire replacements. This would result in the company being unable to invest sufficient time in the growth and development of its current employees.

With my analysis I wish to discover common trends among the employees leaving the organization. This will help the client address the issues and improve the quality of the work environment which will help the organization retain valuable talent.

## Data Source:

<https://www.kaggle.com/vjchoudhary7/hr-analytics-case-study>

The data is being sourced from Kaggle. As per Kaggle the data files contain survey results.

**Basic Methodology:**

1. Understand the problem at hand and come up with a solution.
2. Data collection.
3. Data selection that will help build a predictive model to help solve the problem.
4. Data preprocessing in order to get precise results from an applied machine learning model. The technique involves data formatting, cleaning and sampling.
5. Feature Engineering, transform data through scaling, attribute decompositions and attribute aggregations.
6. Data Splitting, so that we have three subsets each of them for specific purposes such as training, test and validation.
7. Model training which entails feeding the algorithm with training data. An algorithm will process the data and output a model that is able to find the solution we want to get with predictive analysis.(Supervised Learning or Unsupervised Learning)
8. Through model tuning develop the simplest model able to formulate a target value fast and well enough.
9. Improving prediction with one of the many ensemble methods. For eg: Stacking, bagging and boosting.
10. Model Deployment.

**Deliverables:**

1. Code in the form of a Jupyter Notebook which includes the reasoning to my conclusion.
2. Graphs to better represent my analysis.
3. Presentation that gives a high level overview of my analysis and conclusion.