## Problem Statement

Attrition is basically the turnover rate of employees inside an organization. This can happen for many reasons like better opportunities, negative working environment, bad management, employee sickness, excessive working hours (overtime) etc.

The analysis on the below data gives a better understanding for the lead of the organization that how the rate of attrition can be reduced inside the company and also to avoid the negative effect of attrition.

## Visualization Context

1. **WHO? KNOW YOUR AUDIENCE**
2. List the primary groups or individuals to whom you’ll be communicating.

Board of governors, CEO of the organization

1. If you had to narrow that to a single person, who would that be?

Board of governor

1. What does your audience care about?

Our audience care about retaining employees because new hire is costly. They also care about the productivity which should be high for the organization.

1. What action does your audience need to take?

Our audience need to revise the policy of the organization so that working environment can be enhanced for the employees. There has to be more opportunities inside the organization and compensation and increments should be given to the employees to retain them. Company should invest in trainings for enhancing the technical skills and personal growth.

1. What is at stake? What is the benefit if the audience acts in the way you want them to? What are the risks if they don’t?

*At stake -* The overall performance is at stake as it will impact the business**.**

*Benefits -* If the audience acts in the way we want then the business will not undergo losses as the employee count will not reduce and the productivity for the organization will increase.

*The risks -* Employee count will become less, the organization will face additional cost for new hire, and there will be more work pressure, insufficient head count of resources for the projects which will impact the business.

1. **WHAT?**

* What are you trying to communicate? What questions are you trying to answer/display in your visualizations?

The questions that we were trying to answer were as follows:

1. Which department has higher attrition rate and which job role has highest attrition?

Answered using Viz1.

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

Answered using Viz3, Viz4

1. How is the marital status affecting the attrition in the organization?

Answered using Viz2.

1. **The BIG IDEA**

Employees should be offered with benefits and better career progression opportunities which will enable the organization to retain their employees, as the overall performance of the business is getting impacted by employee attrition.

1. **HOW?**
2. **Chart 1: What type of viz did you create? Why did you select the viz that you did?**

## Viz1- Horizontal Bar Plot

We have created Horizontal Bar plot to perform EDA on Job Role (categorical) vs Employee Count (quantitative ratio), filtered by Attrition (categorical) and Department(Categorical).

As we are trying to compare the attrition count in different Job \Department role so Horizontal Bar is the best suited visualization chart for this scenario. The height difference between the bars are clearly demonstrating which category is having more attrition count.

We also filtered with [Attrition = Yes] to show the highest attrition in the department and job roles.

Generated Horizontal Bar plot clearly depicts below:

* Highest number of Attrition is in the role of Laboratory Technician followed by Sales Executive and Research Scientist.
* Lowest number of Attrition is in the field of Research Director and Manager.
* Research and Development department has highest number of attrition.
* **We have highlighted the top 3 roles having highest attrition in the organization**.

1. **Chart 2: What type of viz did you create? Why did you select the viz that you did?**

## Viz2- Heat Map

The chart has made use of Heat map in table as they show comparison of Marital Status (categorical) and Age group with number of employees (numerical) having attrition. We have created 4 groups for age <30, 31-40, 41-50 & 51-60. The table is showing comparison between 3 categorical attributes and 1 numerical attribute.

From the chart we can come up with the below points:

* Single Male \Female are having higher number of attritions than divorced and married.
* Attrition is highest for age group less than 31 for both male and female.
* Highest number of attrition is seen on single male having age <31.
* Male employees are having more attrition than female employees.

1. **Chart 3: What type of viz did you create? Why did you select the viz that you did?**

## Viz3-Stacked Bar Graph

We have divided the monthly income into 10 classes: <2K, 2-4K, 4-6K, 6-8K, 8-10K, 10-12K, 12-14K ,14K-16K,16K-18K,>18K. We have created bins with these classes and created a Stacked Bar Plot.

We put the Employee Count (numerical) into y axis. Monthly Income was a continuous value which we converted to discrete by putting the data into bins.

We wanted to see the distribution of monthly income in for both the condition whether attrition happened or not happened.

* **After examined the graph, we concluded that people having less monthly income having more number of attrition.**
* Those who are having monthly income greater than 12K tend to retain in the organization.
* People having monthly income less than 6K quit more often.

## Viz4-Line Graph

We have selected the Line graph for this purpose as we plotted Employee Count (qualitative ratio) and Years with categorical variable Attrition. We have created a new feature by differencing years at company and years in current role. The difference clearly shows if the value is 0 then the employee did not get any opportunity to move from their current role in the organization and working in the same role since joining time. The low value of this variable depicts how long the person working in the same role.

We have filtered (attrition =yes) in this graph and plotted against the employee count on y axis. We observed below points:

* **People who could not change their role for longer period of time inside the organization tend to quit the job.**
* People who have worked less than 3 years in the current role are quitting often.
* People who have recently changed their job role are retaining in the organization.

1. **For each of the Visualisation, identify at least 3 Gestalt principles employed.**

Viz 1 –

* Similarity: Top 3 bar are highlighted with one same color and rest of the bars of another color.
* Closure: The bars and the gap between them are creating a line for y axis.
* Focal point: Top 3 bar are highlighted with deep blue.
* Figure & ground: Bar is in blue color and there is white background.

Viz 2 –

* Similarity: The cells are visually similar in color for the higher and lower attrition count respectively.
* Proximity: The cells are close in proximity.
* Focal Point: Highest number of attrition is highlighted with dark blue.
* Figure & ground: The table is in foreground.

Viz 3 –

* Similarity: Employee count with attrition is having blue color and no attrition is having grey.
* Closure: The bars and the gap between them are creating a line for x axis.
* Figure & ground: Bar is in blue and grey color and there is white background.

Viz 4 –

* Continuity: The blue line is perceived to be part of a group.
* Proximity: Values of employee count kept closer to the points in line.
* Focal point: Top 3 values of employee count having attrition highlighted.
* Figure & ground: Line is in blue color and there is white background.

1. **For each of the Visualisation, mention how you strategically used pre-attentive attributes to draw the audience's attention.**

* Viz 1 – We have used Color & Form (Length) as a pre-attentive attributes to differentiate the attrition rate among the department &job roles.
* Viz 2 - We have used Color & Form (Intensity) as a pre-attentive attributes to differentiate the attrition count among the Employee’s Marital Status and different age group.
* Viz 3 - We have used Color & Form (Length) as a pre-attentive attributes to differentiate the attrition rate among the monthly income of the Employee’s.
* Viz 4 – We have used Form (Length), Movement (Motion) as a pre-attentive attributes to differentiate the attrition rate based on the internal opportunities within the organization.