IBM

HR EMPLOYEES ATTRITION

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Overview

- This dataset is from IBM to analyze the HR employee attrition and performance. It has 35 features describing each employee's background and characteristics; and labeled with if they are still in the company or not.

Attrition meaning

- Employee attrition refers to the deliberate downsizing of a company's workforce.
- Downsizing happens when employees resign or retire.
- There are many reasons why employee attrition takes place.
- For example:

  -Poor work environment

  -Poor work-life balance

  -Unsatisfactory pay and/or benefits

Data Analysis Process

- consists of six phases :
  1. **Ask:** effective questions to define the problem.
  2. **Prepare:** collect and view the information.
  3. **Process:** cleaning and checking the information.
  4. **Analyze:** to find patterns, relationships, and trends.
  5. **Share:** with audience/stakeholders.
  6. **Act:** on the data and use the analysis results

1. Ask: Business Objective

- Our goal is to explore and analyze the data to understand how these factors related to employee attrition, in order to prevent valuable employees from leaving.

2. Prepare: Exploring The Dataset

- Demographic Factors:

  Age, Education, Gender, Marital Status…

- Work-related Factors:

  Business Travel, Department, Monthly Income…

3. Process: Cleaning The Data

- Removed unnecessary columns:

    Employee Count, Over 18, Standard Hours.

- Changed the wrong data type.

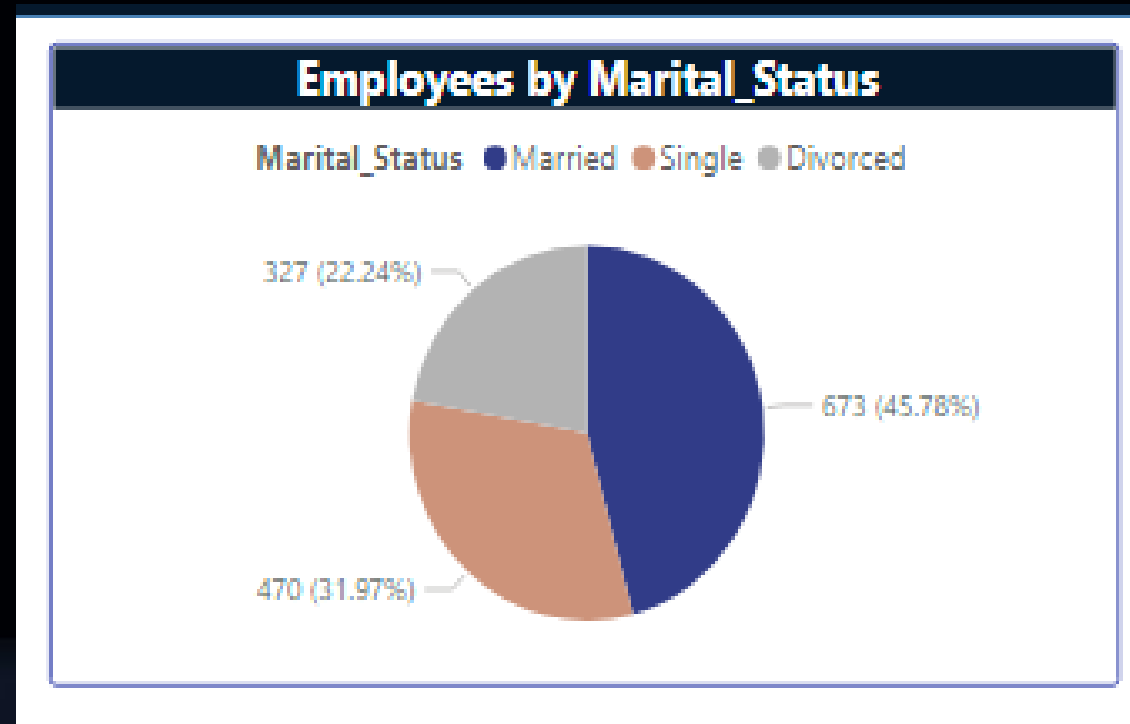- Divided tables to created a "Star Schema".

4. Analyze :

Found that :

- Employees are: 1470
- Attrition employees are : 273
- Attrition Rate is : 16%

Analyze …

conclusion :
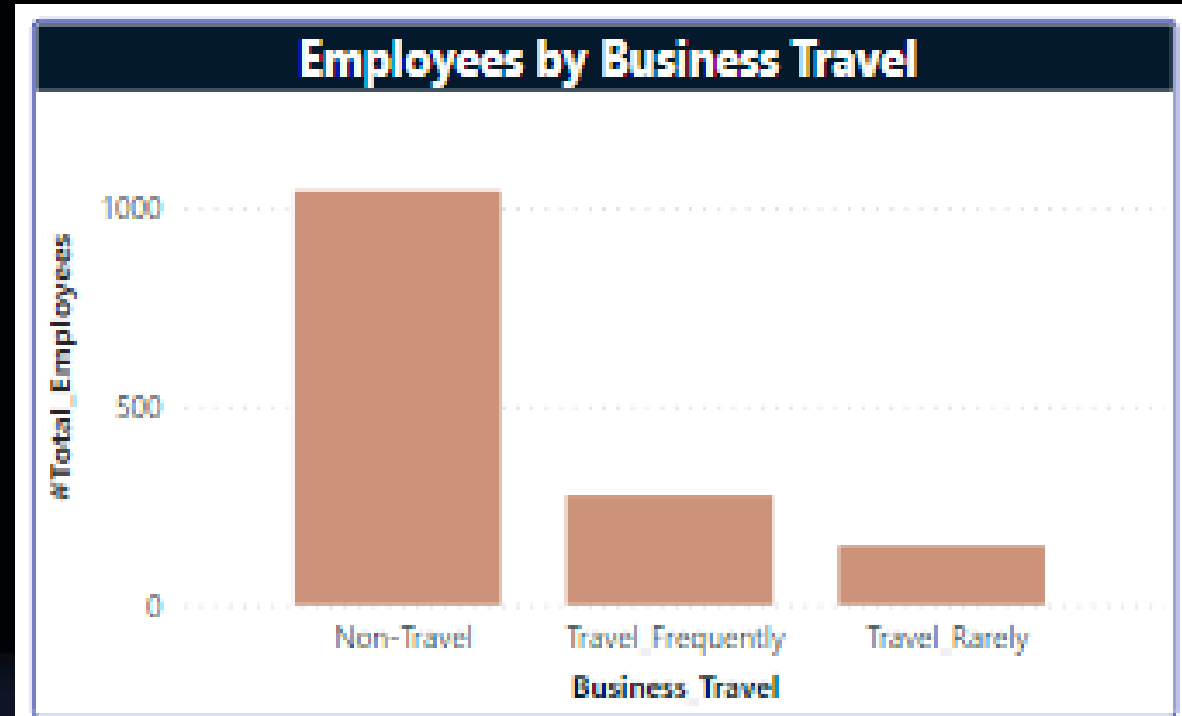
- Most employees are married

Employees by Marital_Status

Marital_Status ● Married ● Single ● Divorced

327 (22.24%)
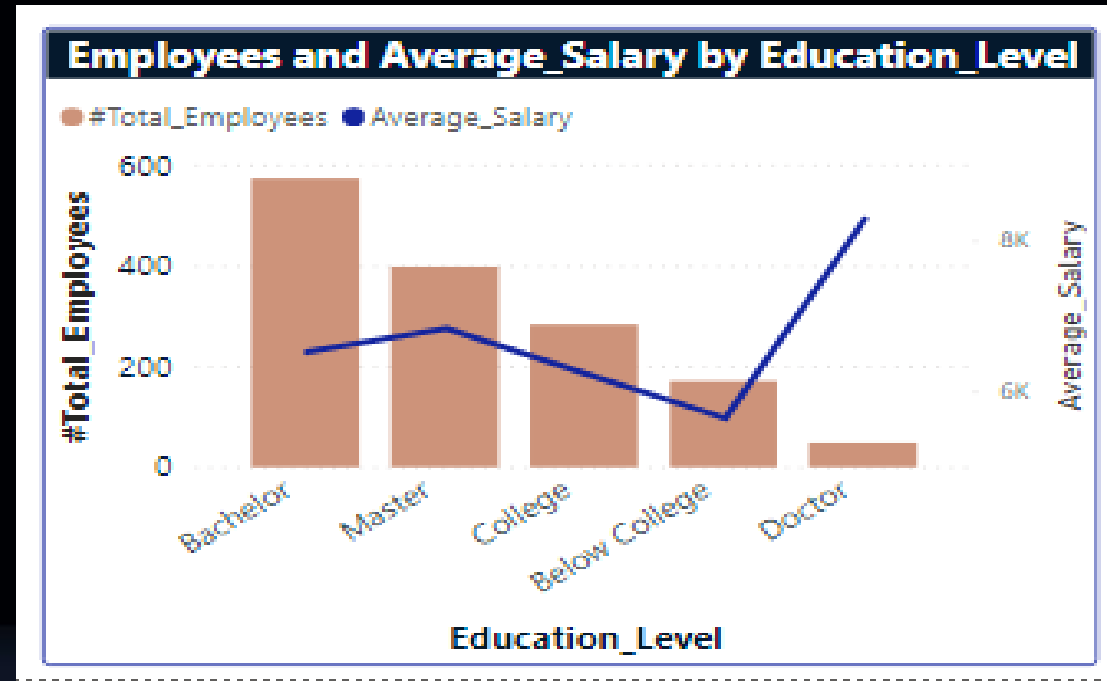
673 (45.78%)

470 (31.97%)

Analyze …

conclusion :

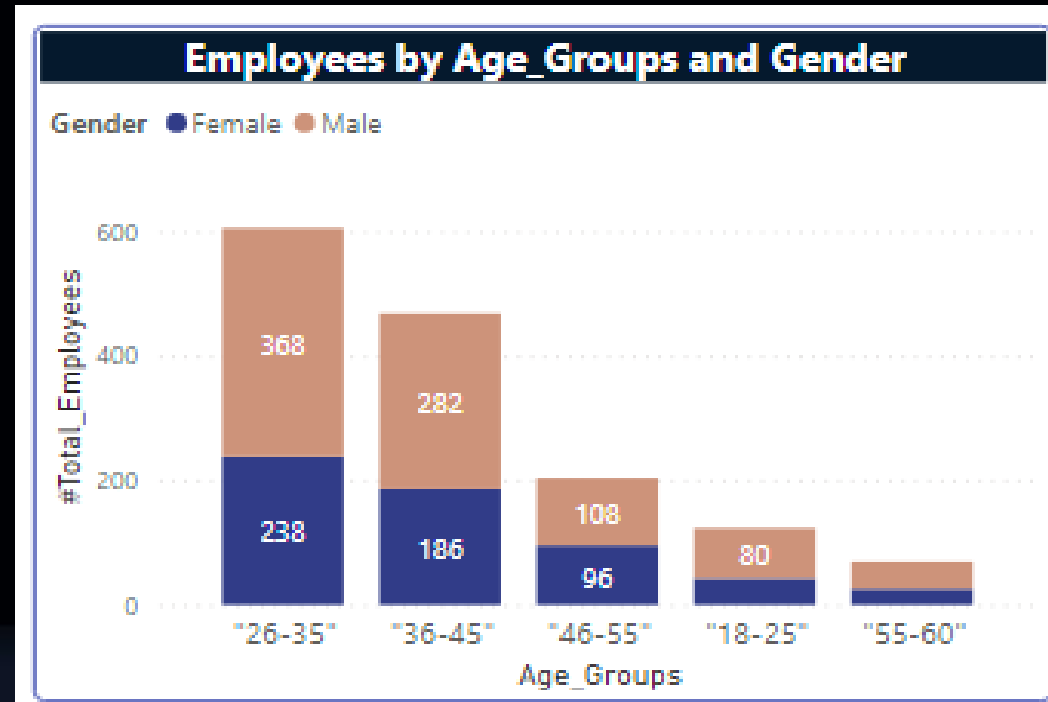- Most employees work and live in the same place.

Analyze …

conclusion :

- Most employees have a bachelor's degree.

- The employee who has a doctor's degree has the largest salary.
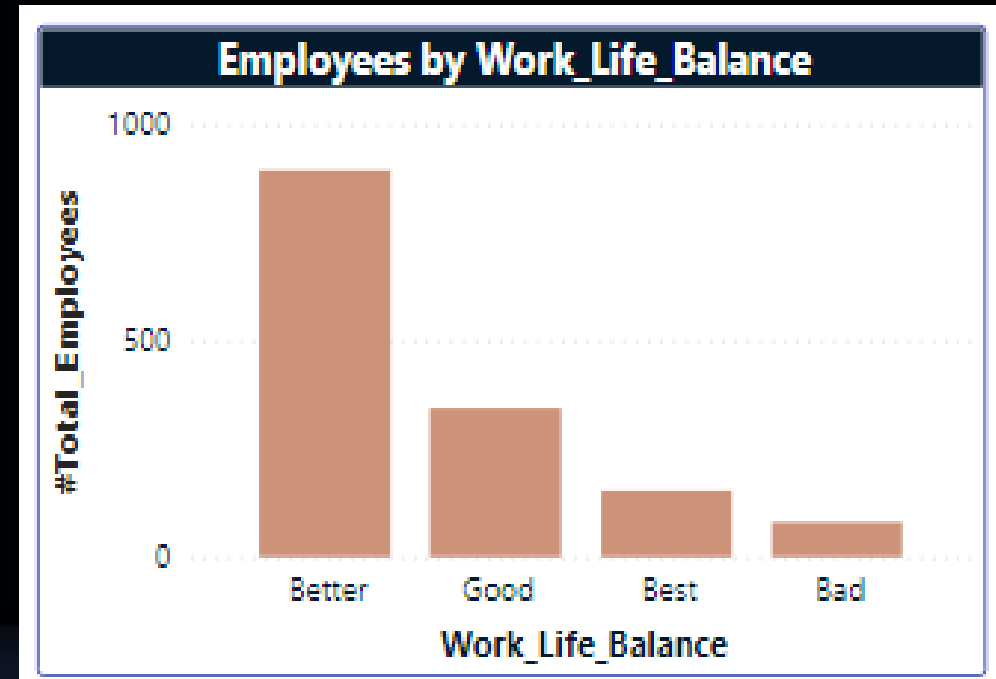
Analyze …

conclusion :

- The most popular employee age group is between 26:35.
- The Males are larger than the females.

Analyze …

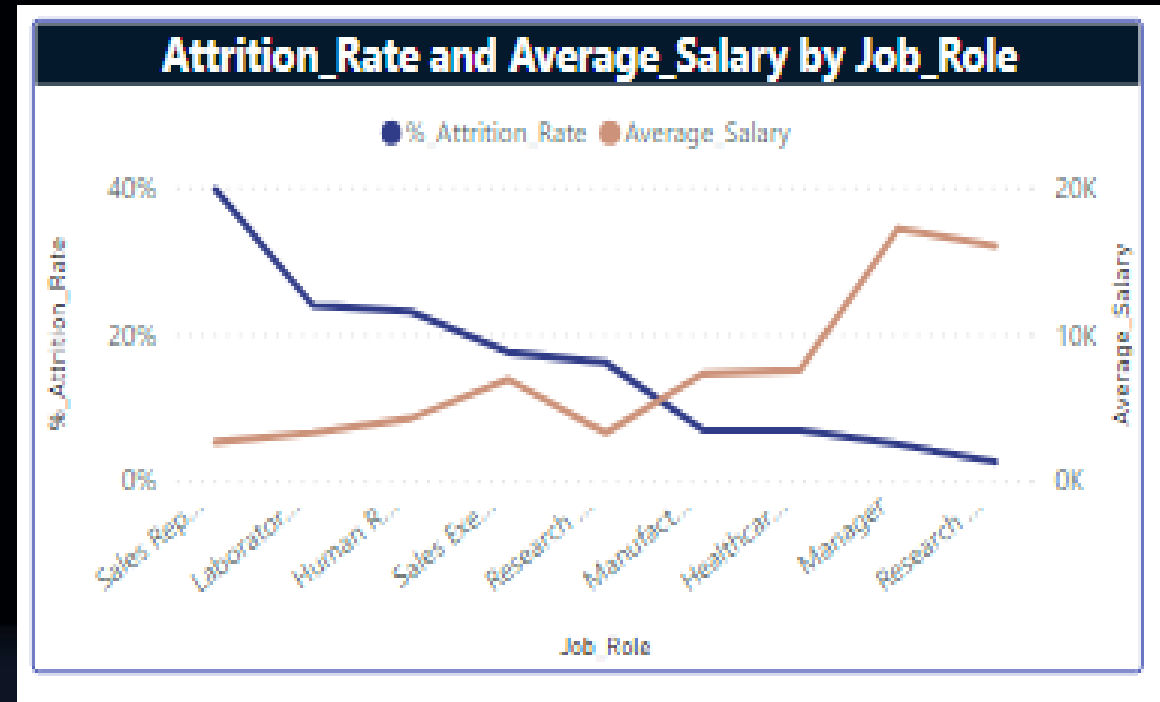conclusion :

- Most Employees have Better work-life balance.

Attrition Analysis

Attrition Analysis…

conclusion :

- Employees who have a **high salary**, have the **smallest attrition rate and** they work **as Research Directors**.
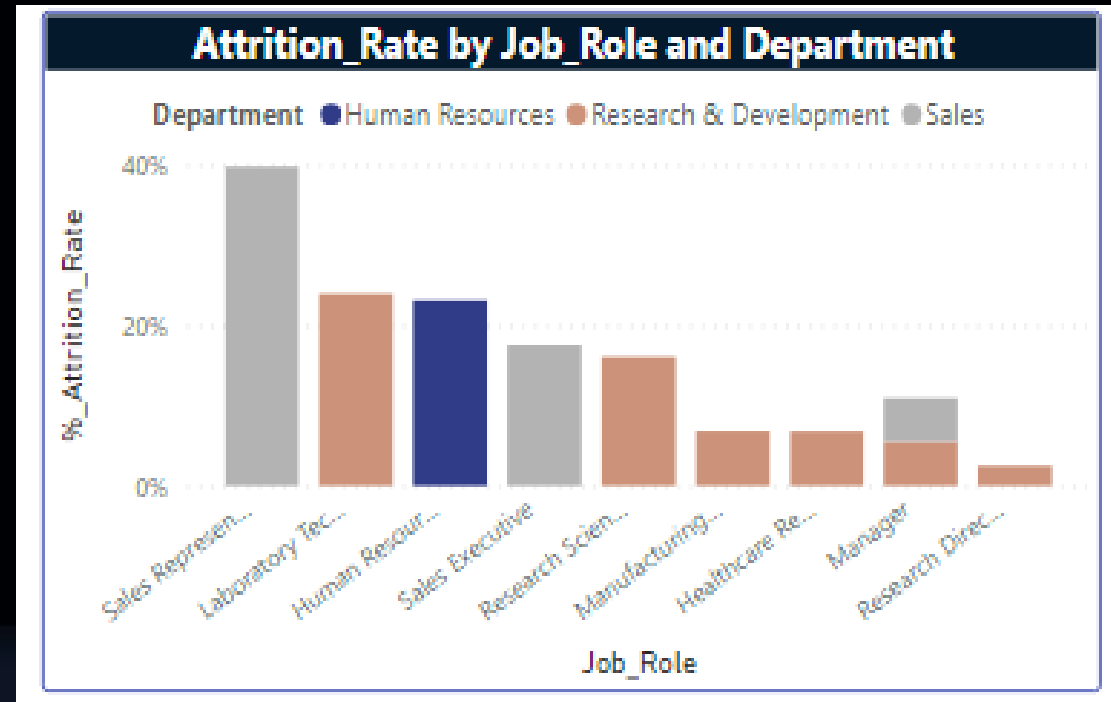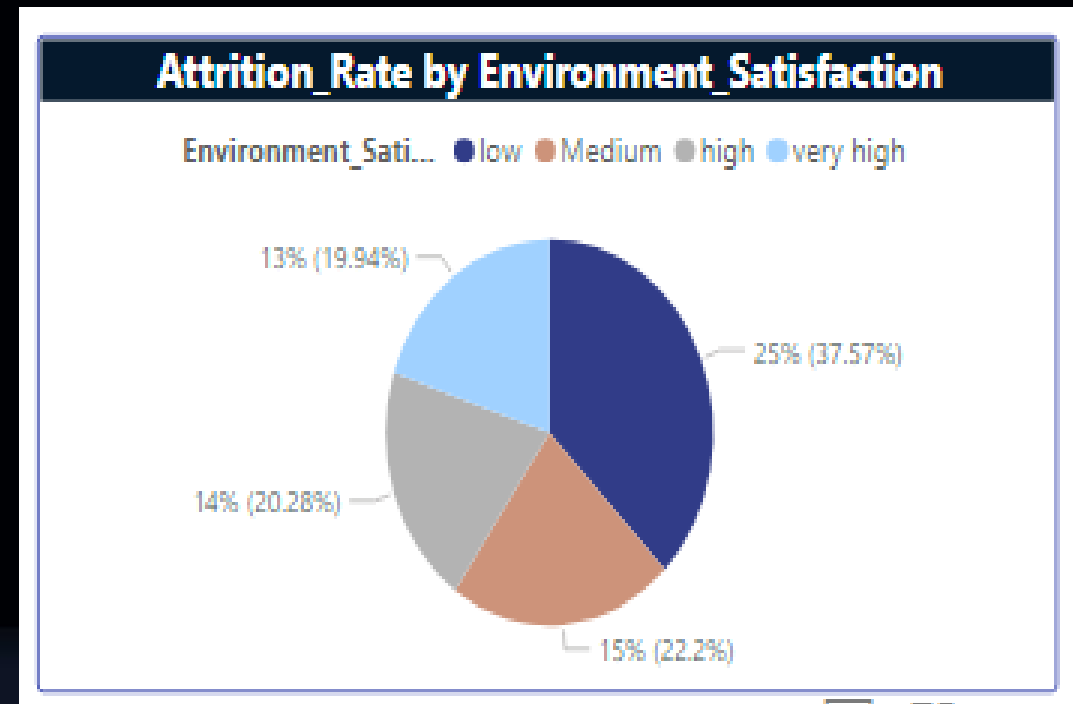
Attrition Analysis…

conclusion :

- Employees who are in the **Sales** department, especially in the **Sales representative** role, have the highest attrition rate.


Attrition_Rate by Job_Role and Department

Attrition Analysis…

conclusion :

- Employees who have **low environmental satisfaction**, have the **biggest attrition rate**.

Attrition_Rate by Environment_Satisfaction

Environment_Sati… ● low ● Medium ● high ● very high

13% (19.94%)

25% (37.57%)

14% (20.28%)

15% (22.2%)

Attrition Analysis…

conclusion :

- Employees who are at **18:25 group age** and whose **marital status is single**, have the **highest attrition rate**.
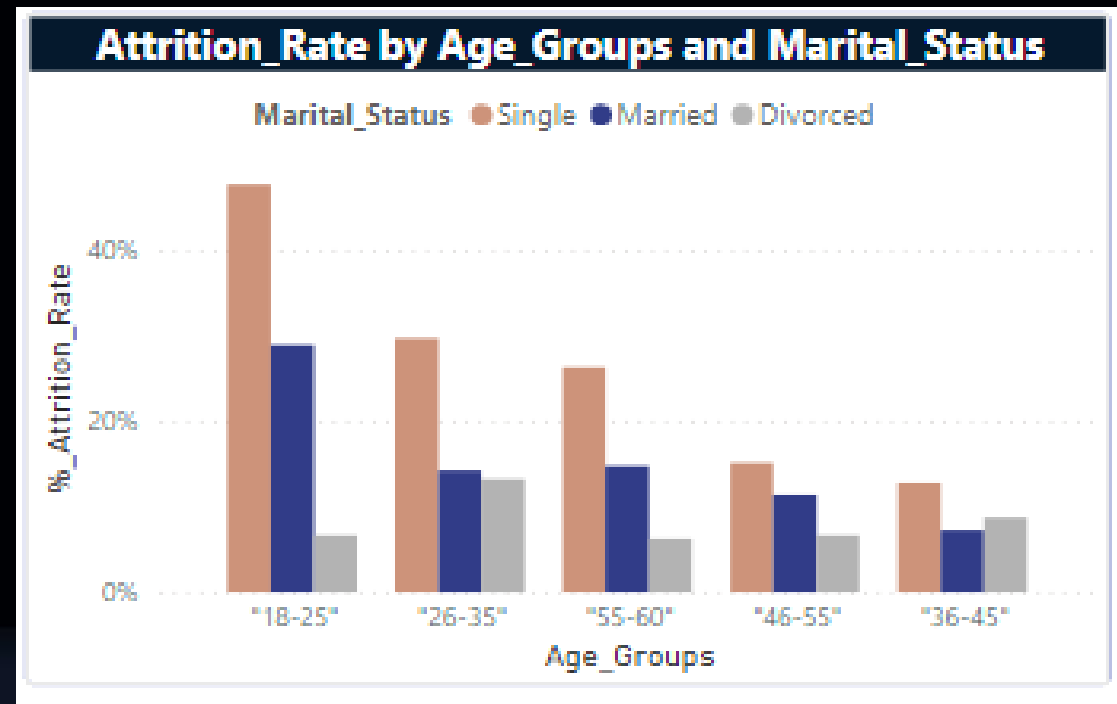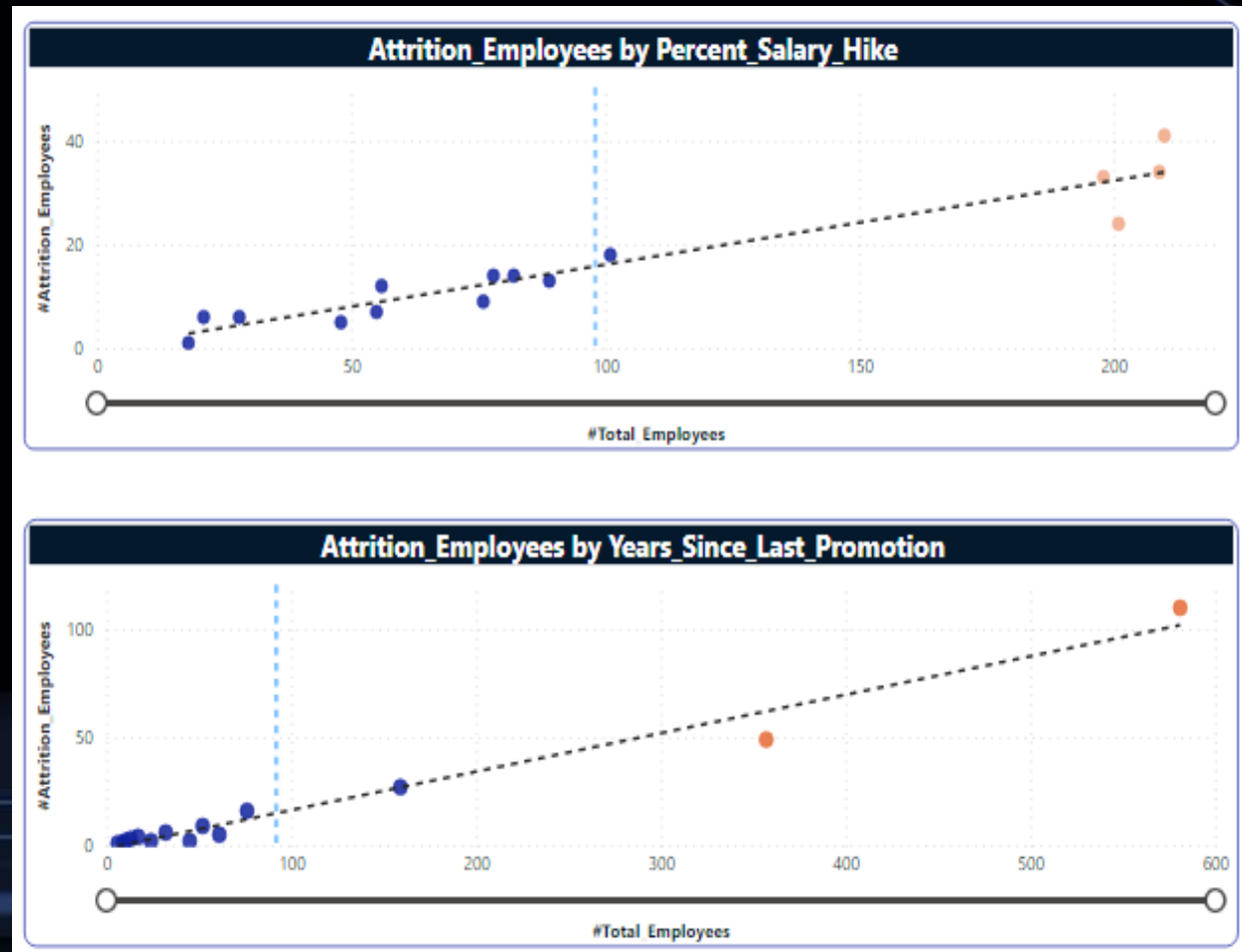
Outliers

- An outlier is an observation that lies an abnormal distance from other values.

- There are **no** outliers in:

  -Monthly income

  -percent salary hike.

Outliers…

- But there are outliers when we group attrition with another factor.

- For example:
   - percent salary hike.
   - years since the last promotion.

Recommendations

Recommendations…

To have a low attrition rate, it is important for a company to:

- Fairly pay employees in different job roles, in proportion to the average payment in the job market.

- Deeper consideration into the sales department, especially the Sales representative role to understand the causes of attrition and resolve them. For example: increase the payment, and make sure that their working overtime is being paid.

Recommendations…

- consider the employees' environmental satisfaction, by discussing the reasons for this low satisfaction with them and resolve them. Frequent and one-to-one communication is strongly recommended.

- care about juniors in the team, especially those who are single by increasing the learning curve, activities, and awards.

Hopefully, to decrease employee attrition in the future with those recommendations.

Thanks