

Introduction

In this Power BI case study, we will explore a dataset for Atlas Labs, a fictitious software company known for its dynamic and innovative approach to technology. Atlas Labs is currently facing a challenge regarding employee attrition rates. Consequently, our objective is to analyze the data and investigate the factors contributing to their high attrition rate. In this scenario, I am the Data Analyst in HR Department of Atlas Labs company.

To accomplish our task, we will follow the steps of the data analysis process of Google which are: **Define the problem (Ask), Collect and clean the data (Prepare), Explore the data (Process), Analyze the data (Analyze), Interpret the result (Share), and Make data driven decisions (Act).**

Dataset

[Click here](#) for the link of dataset.

[Click here](#) for the link of metadata.

Step 1. Define the problem (Ask)







As we discussed earlier, I will investigate why Atlas Labs company has a high attrition rate. With this, we need to come up with a question that will answer why we have a high attrition rate. The questions that I come up with are the following:

1. What is the attrition rate of the company, and what is the trend observed over the years?
2. Are there any specific departments or teams experiencing higher attrition rates compared to others?
3. What is the average tenure of employees who voluntarily leave the company?
4. Based on the available data, what are the trends in each department concerning Environment Satisfaction, Job Satisfaction, Relationship Satisfaction, Work-life Balance, Self-Rating, and Manager Rating?
5. Have employees in each department at Atlas Labs company received any training? If so, what is the average number of trainings they receive per year, both overall and per employee within each department?
6. What is the attrition rate based on the frequency of Business Travel?
7. How many employees are required to do overtime, and what is the attrition rate among those who work overtime?
8. What is the attrition rate per job role, and what is the average tenure for each role?
9. Among employees who have left the company, does the distance of their commute impact the attrition rate?

Step 2. Collect and clean the data (Prepare)

Atlas Labs company provided the employees data from January 2012 to December 2022.

Here are the datasets provided by Atlas Labs company.

Name	Status	Date modified	Type	Size
 DimDate	✓	16/05/2023 1:21 pm	Text Document	2 KB
 EducationLevel	✓	16/05/2023 1:21 pm	Microsoft Excel C...	1 KB
 Employee	✓	16/05/2023 1:21 pm	Microsoft Excel C...	225 KB
 PerformanceRating	✓	16/05/2023 1:21 pm	Microsoft Excel C...	287 KB
 RatingLevel	✓	16/05/2023 1:21 pm	Microsoft Excel C...	1 KB
 SatisfiedLevel	✓	16/05/2023 1:21 pm	Microsoft Excel C...	1 KB

To view or download the dataset [click here](#).

I inspected the datasets using Microsoft Excel and found that each file holds the following information:

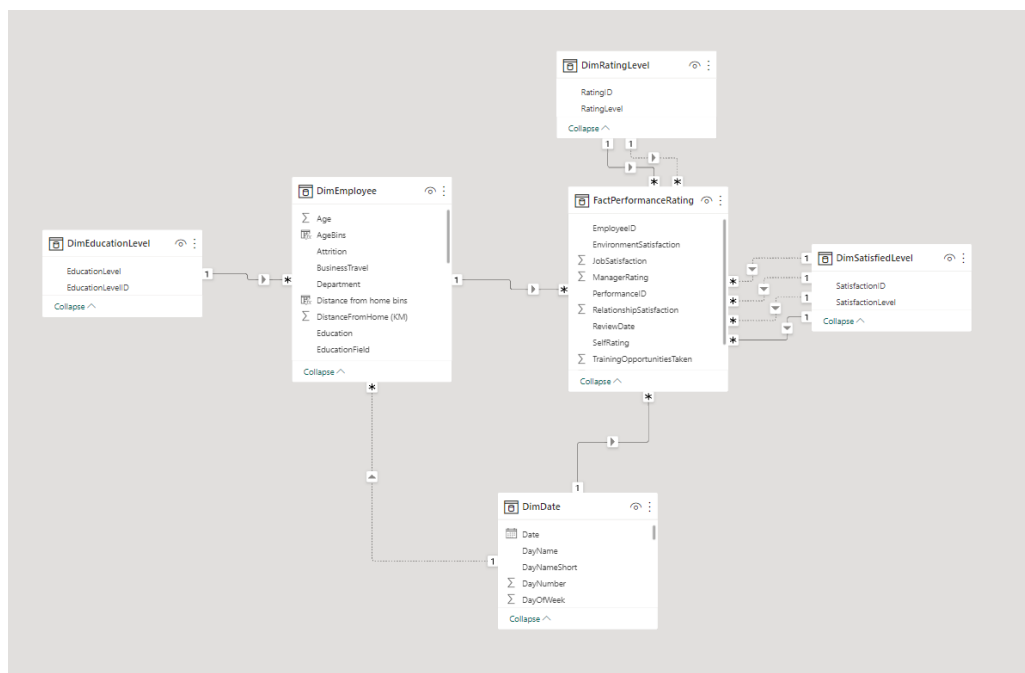
	Dataset	Column	Datatype	Number of Observation (rows)	
1	PerformanceRating.csv	PerformanceID	A unique ID that identifies an individual performance review.	text	6709
		EmployeeId	A unique ID that identifies an employee.	text	6709
		ReviewDate	Date an employee's review took place.	date	6709
		Environmentsatisfaction	Rating for employees' satisfaction with their environment.	number	6709
		JobSatisfaction	Rating for employees' satisfaction with their job role.	number	6709
		RelationshipSatisfaction	Rating for employees' satisfaction with their relationships at work.	number	6709
		WorkLifeBalance	Rating for employees' satisfaction with their work-life-balance.	number	6709
		SelfRating	Rating for employees' satisfaction based on their own view.	number	6709
		ManagerRating	Rating for employees' satisfaction based on their manager's view.	number	6709
		TrainingOpportunitiesWithinYear	Number of training opportunities offered in the last 12 months.	number	6709
		TrainingOpportunitiesTaken	Number of training opportunities taken.	number	6709
2	Employee.csv	EmployeeID	A unique ID that identifies an employee.	text	1470
		FirstName	First name of an employee	text	1471
		LastName	Last name of an employee	text	1472
		Gender	Self-defined employee gender identity	text	1473
		Age	Current age of an employee	number	1474
		BusinessTravel	Frequency of business travel: Frequent Traveller, Some Travel and No Travel	text	1475
		Department	Department an employee works in: Technology, HR, and Sales	text	1476
		DistanceFromHome	Kilometer distance between an employee's home and their office	number	1477
		State	State where the employee lives	text	1478
		Ethnicity	Self-defined employee ethnicity	text	1479
		Education	Education level for employees'	number	1480
		EducationField	Employee field of study	text	1481
		Job Role	Current/latest job role	text	1482
		MaritalStatus	Current/latest employee marital status	text	1483
		Salary	Current/latest employee salary	number	1484
		StockOptionLevel	The banding level for stock options that the employee has	number	1485
		Overtime	Contains "Yes" and "No" to indicate whether an employee is expected to work overtime in their role	text	1486
		HireDate	Date the employee joined the company.	d	1487
		Attrition	Contains "yes" and "No" to indicate whether an employee has left the organization	text	1488
		yearsAtCompany	Number of years since the employee joined the organization	number	1489
		YearsInMostRecentRole	Number of years the employee has been in their most recent role.	number	1490
		YearsSinceLastPromotion	Number of years since the employee last got promoted	number	1491
		YearsWithCurrManager	Number of years the employee has been with their current manager	number	1492
3	SatisfactionLevel	SatisfactionID	A unique ID that connects to Environmentsatisfaction, JobSatisfaction, RelationshipSatisfaction, and Work-life Balance in PerformanceRating.csv	number	5
		SatisfactionLevel	Provides meaning to the satisfaction level	text	5
4	RatingLevel	RatingID	A unique ID that connects to SelfRating and ManagerRating in PerformanceRating	number	5
		RatingLevel	Provides meaning to the rating level	text	5
5	EducationLevel	EducationLevelId	A unique ID that connects to Education in Employee.csv	number	5
		EducationLevelId	Provides meaning to the education level	text	5

To view the metadata [click here](#).

Step 3. Explore the data (Process).

Import the Data

Using Power BI, I import the dataset. After importing the dataset, I created a new table called **Date**. After importing and creating Date table, in the Data Model View, I created relationship between all of the tables (**star schema**), and rename the tables to **FactPerformanceRating**, **DimEmployee**, **DimSatisfactionLevel**, **DimRatingLevel**, and **DimEducationLevel**.



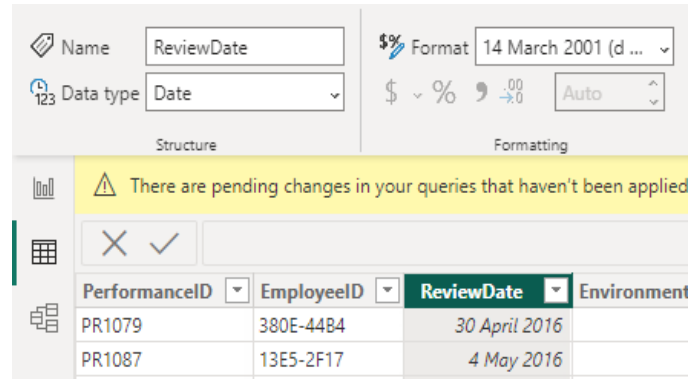
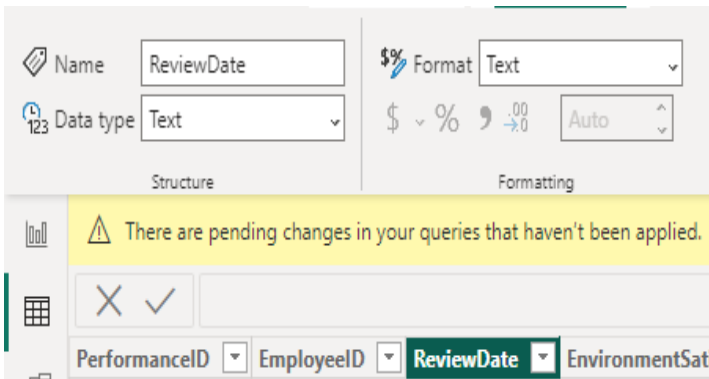
Limitation of the Data

- The coverage of the data is only from January 2012 to December 2020.

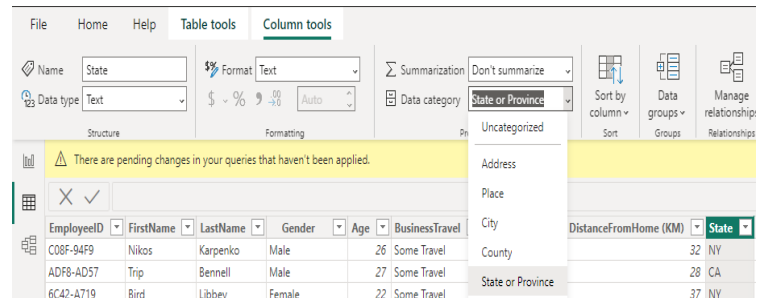
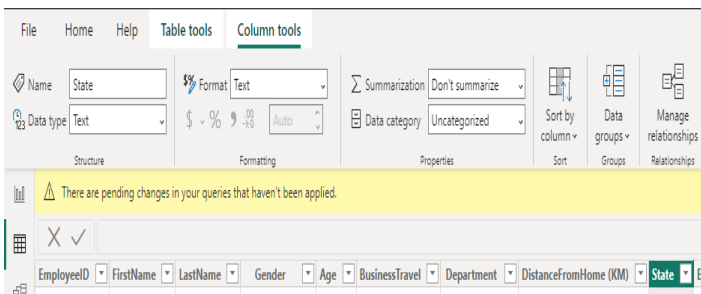
Some of these relationships are not active.

It's time for data cleaning!

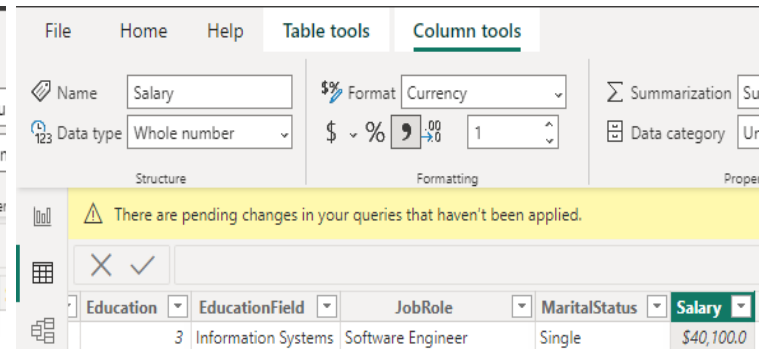
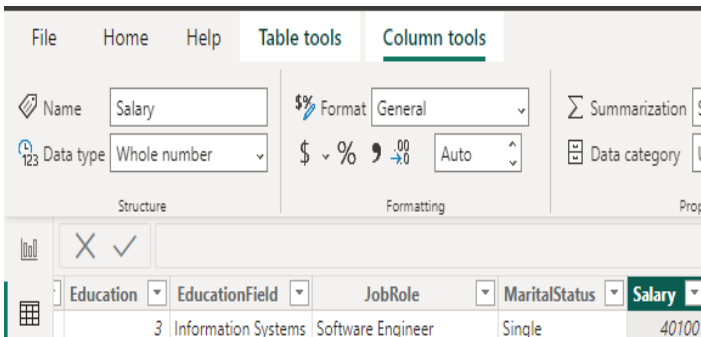
- ReviewDate is on Text data type. I convert it to Date data type and format the date output.



- State column is not categorized as State.



- Salary is not format as Currency.



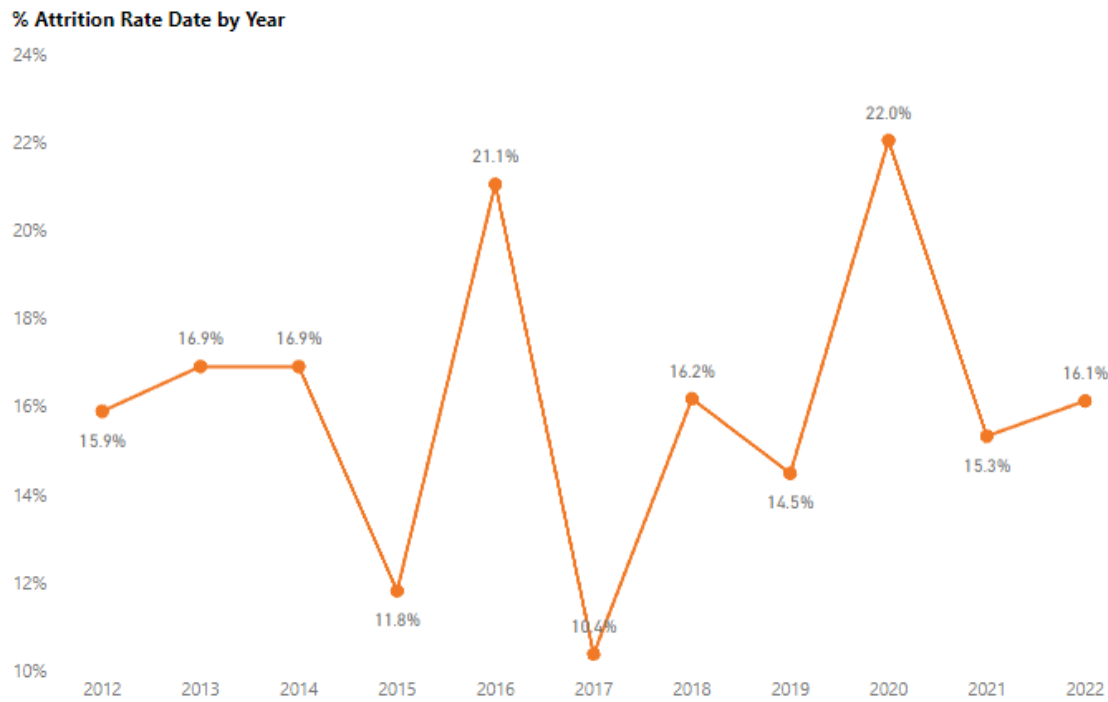
The datasets are already cleaned.

Step 4. Analyze the data (Analyze) and Interpret the Result (Share)

I will use the questions that I come up with to analyze why Atlas Labs company has a high attrition rate.

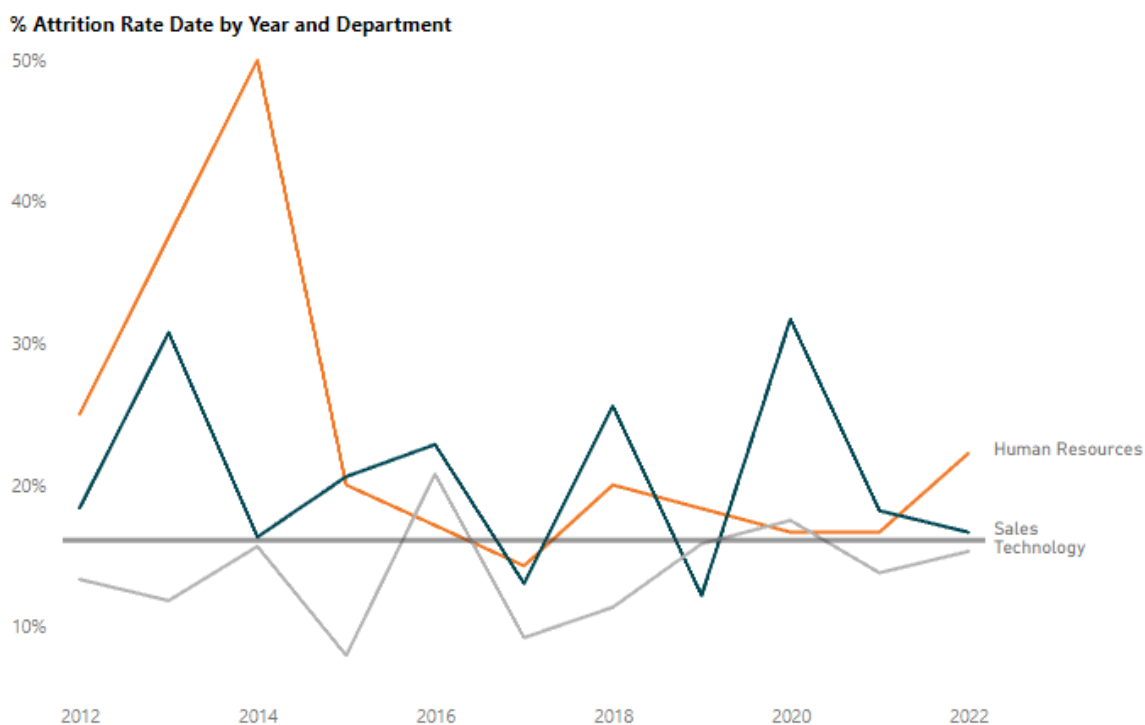
1. What is the attrition rate of the company, and what is the trend observed over the years?

As the data tells us, we have a drop from 2014(16.9%) to 2015(11.8%) and a massive increase from 2015(11.8%) to 2016(21.1%) which is our lowest in our data. And since 2017 we have an **upward trend** and we reached also the highest attrition rate on 2020(22%). The **current attrition rate** of Atlas Labs company is **16.1%**.



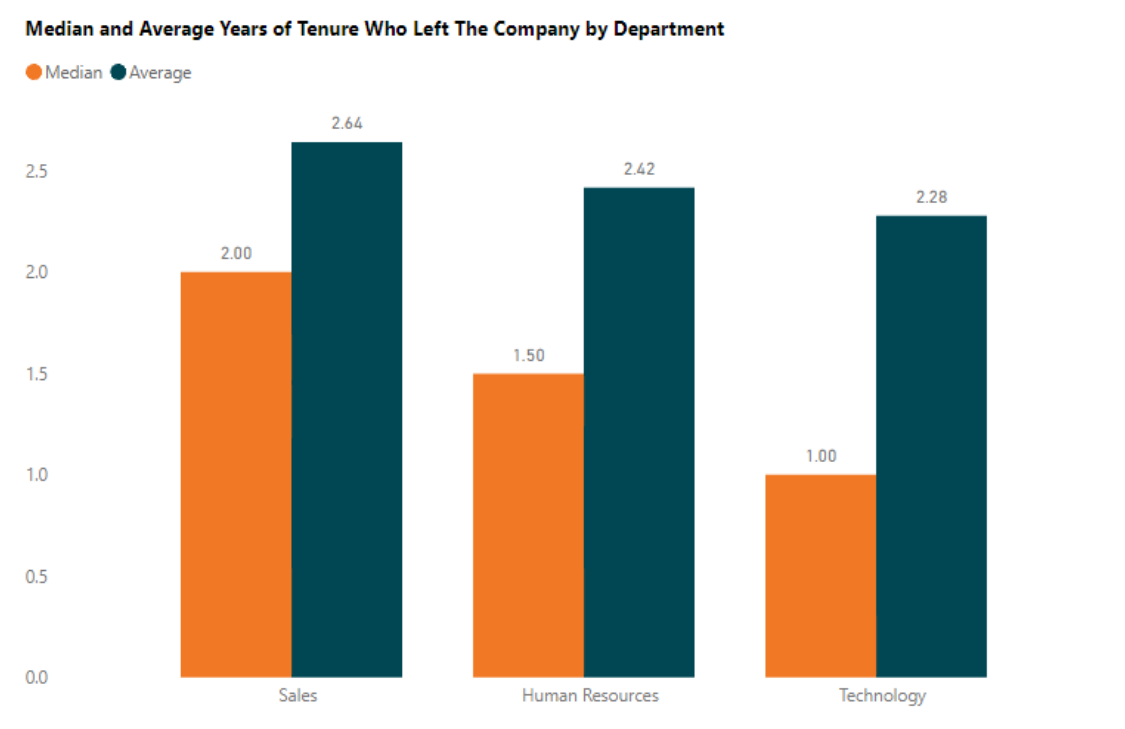
2. Are there any specific departments or teams experiencing higher attrition rates compared to others?

If we look at the 2022 attrition rate in each department, **Human Resources and Sales department are experiencing higher attrition rates** compared to technology who are below the current attrition rate.



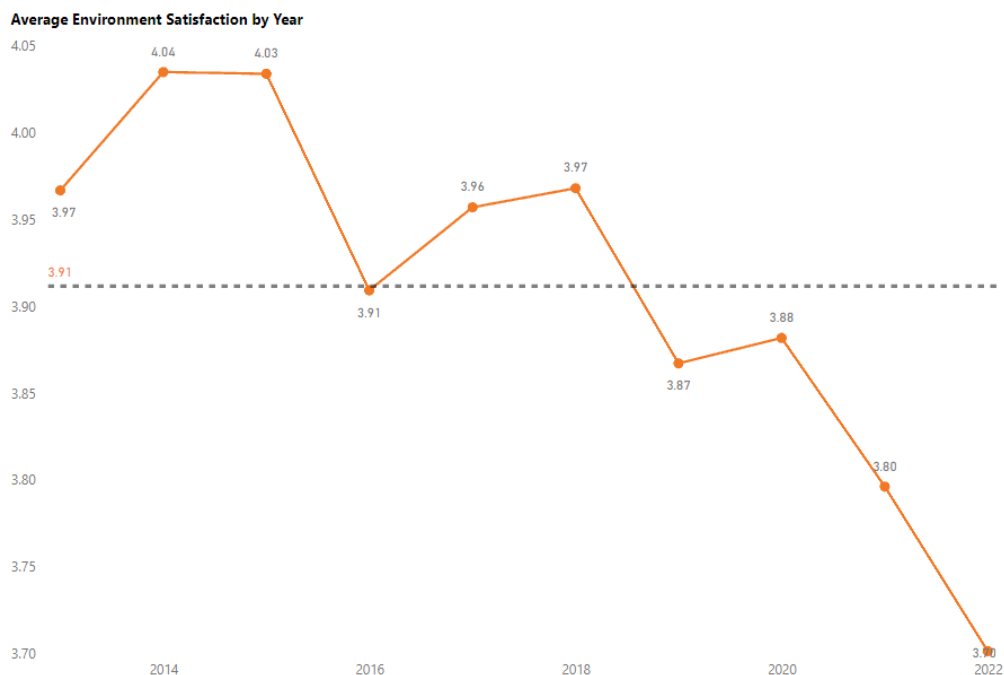
3. What is the average tenure of each department who leaves the company voluntarily?

For employees who leave voluntarily, the Technology department shows a low tenure rate with a median of 1 year and an average of 2.28 years. On the other hand, the Human Resources and Sales departments are likely to have similar tenure rates.

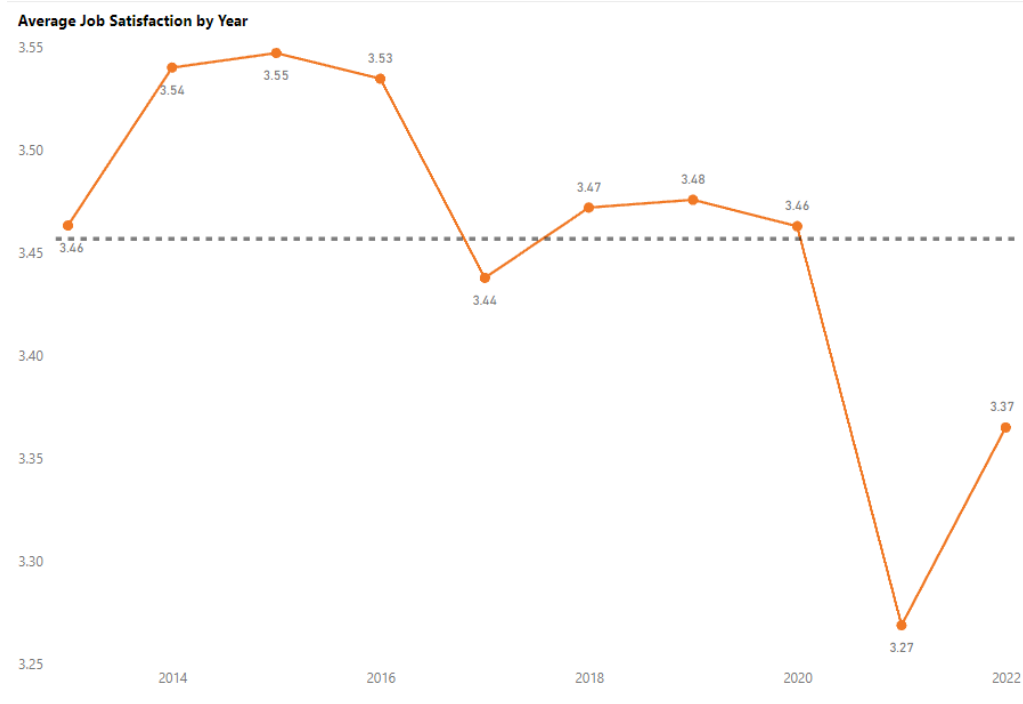


4. Based on the available data, what are the trends in each department concerning Environment Satisfaction, Job Satisfaction, Relationship Satisfaction, Work-life Balance, Self-Rating, and Manager Rating?

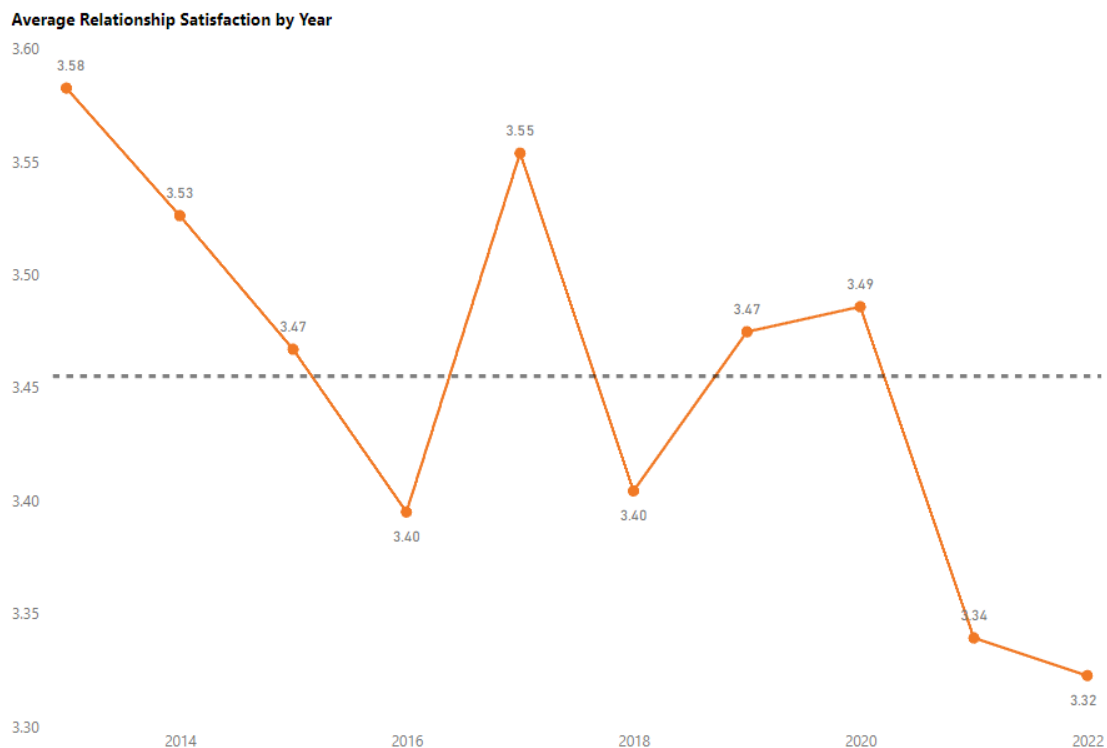
- a. **Environment Satisfaction:** Atlas labs have seen a consistent decline in Environment Satisfaction from 2014 (4.04) to 2022 (3.70), indicating a decrease of 0.34 in overall satisfaction levels.



- b. **Job Satisfaction:** Similarly, Job Satisfaction has been on a downward trend from 2015 (3.55) to 2021 (3.27), with a slight increase of 0.10 in 2022 (3.37). Overall, there has been a decrease of 0.18 in satisfaction levels from 2015 to 2022.



- c. **Relationship Satisfaction:** Over the years, from 2013 (3.58) to 2022 (3.32), the company has experienced a consistent decrease in Relationship Satisfaction, with a decline of 0.26 in overall satisfaction levels.



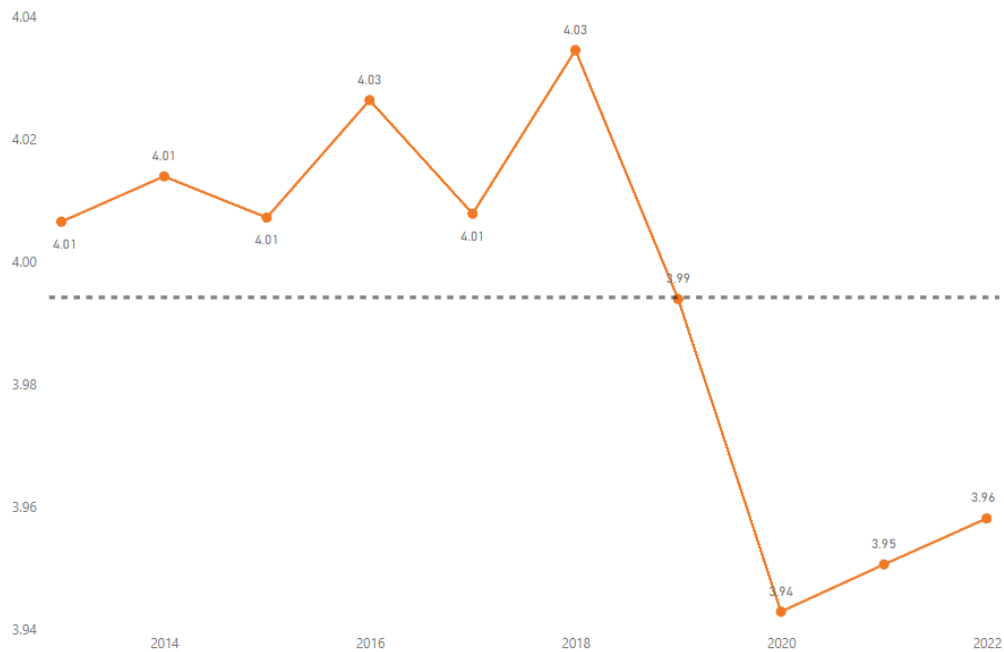
- d. **Work-life Balance:** In 2014 (3.33), we observed an upward trend in Work-life Balance until 2018 (3.53). However, since then, we have noticed a downward trend that continued until 2022 (3.37).

Average Work Life Balance by Year

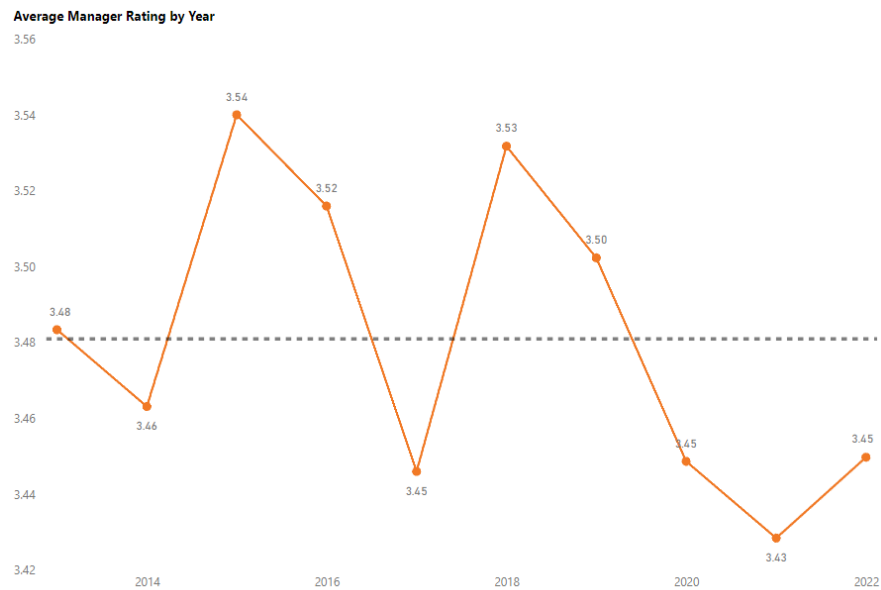


- e. **Self-Rating:** From 2013 (4.01) to 2018 (4.03), there was a slight increase in self-rating among their employees. Unfortunately, since 2018, there has been a continuous decline in self-rating, reaching 3.96 by 2022.

Average Self Rating by Year



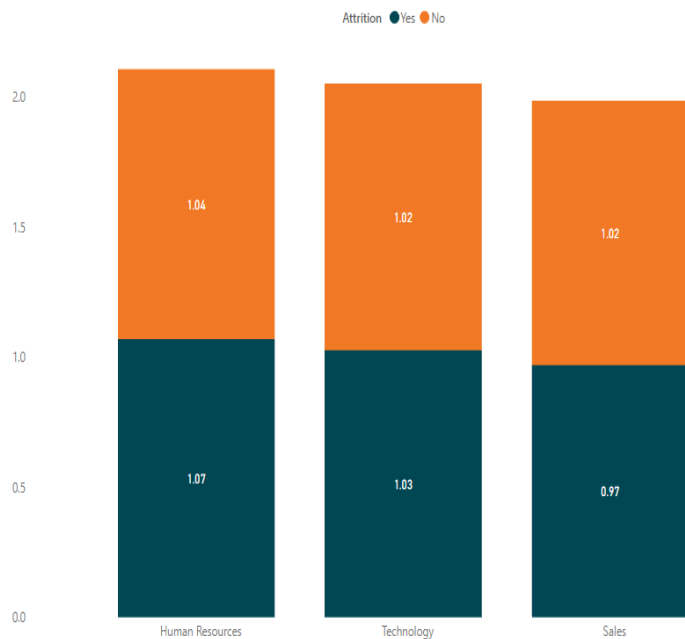
- f. **Managers Rating:** Atlas Labs' organization experienced an upward trend in rating their employees from 2013 (3.48) to 2015 (3.54). However, since 2015, there has been a downward trend in Manager Rating, reaching 3.45 by 2022.



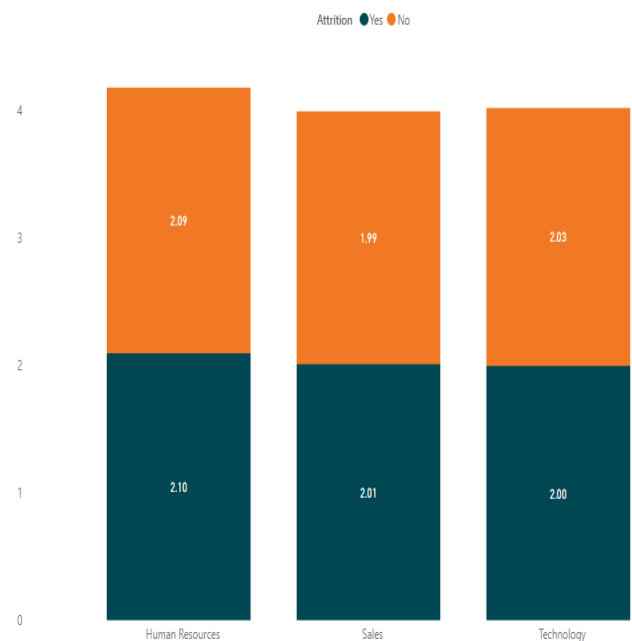
5. **Have employees in each department at Atlas Labs company received any training? If so, what is the average number of training courses they receive per year, both overall and per employee within each department?**

Based on the data, it is evident that all departments have received a relatively equal amount of training, particularly among employees who have chosen to leave the company.

Average of Training Opportunities Taken by Department and Attrition

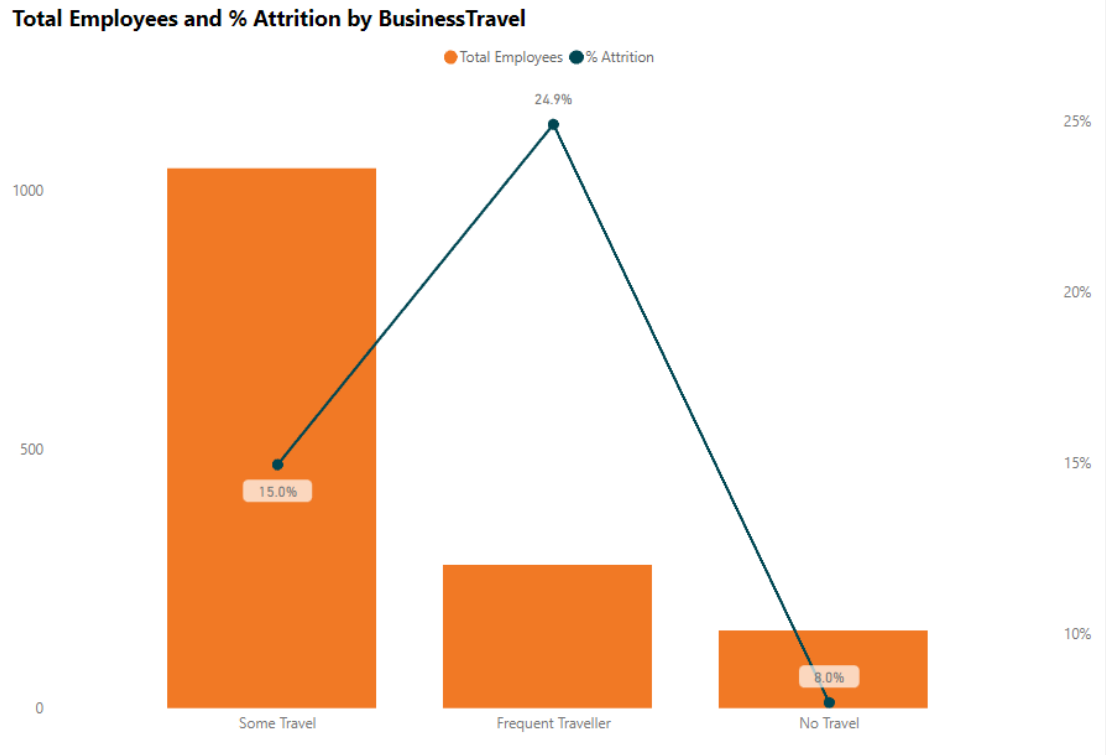


Average of Training Opportunities Taken Within a Year by Department and Attrition



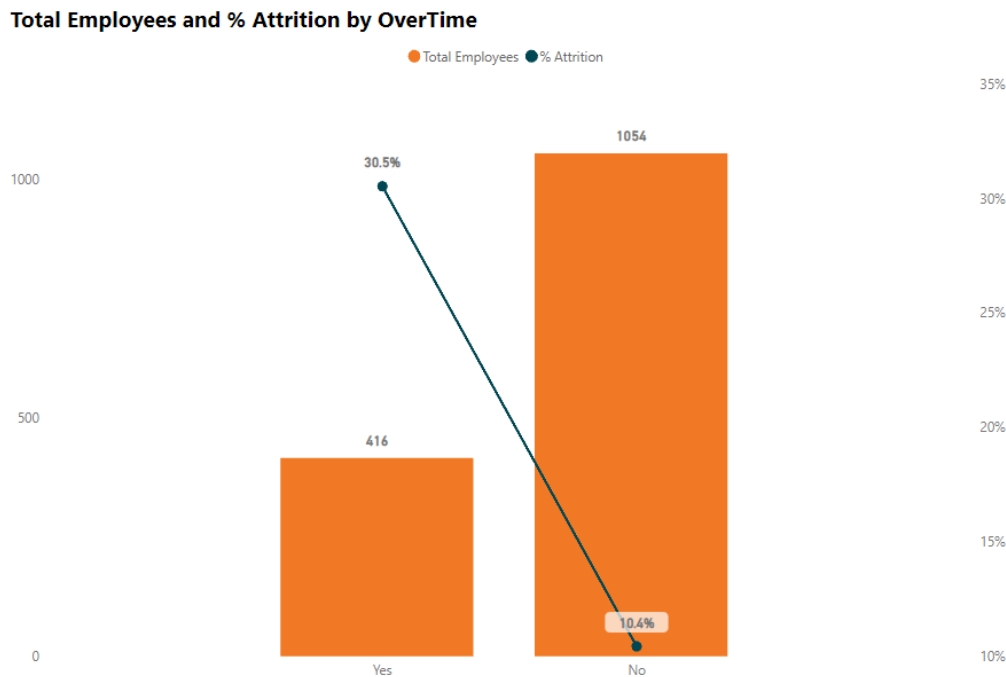
6. What is the attrition rate based on the frequency of Business Travel?

Atlas Labs company has 3 categories in Business Travel: Frequent Traveler, Some Travel, and No Travel. With all these categories, Frequent Traveler has a high attrition rate (24.9%) followed by Some Travel (15%) and No Travel (8%).



7. How many employees are required to do overtime, and what is the attrition rate among those who work overtime?

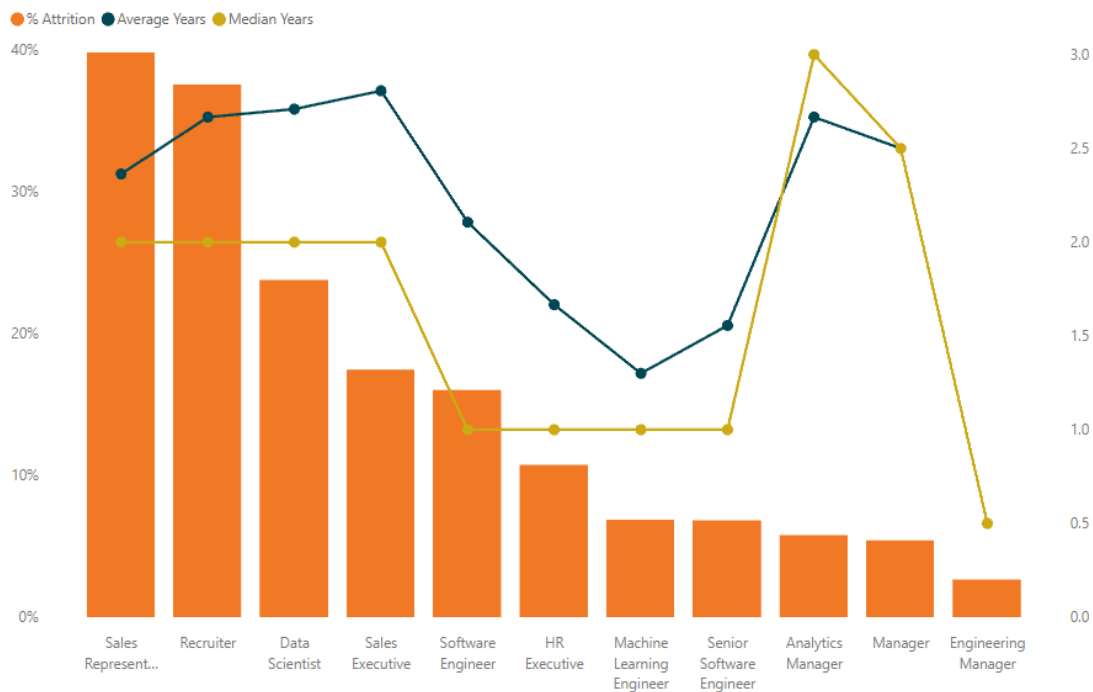
Employees who are required to do overtime show a significantly higher attrition rate of 30.5% compared to those who are not required to work extra hours, which have an attrition rate of 10.4%



8. What is the attrition rate per job role, and what is the average tenure for each role?

Among various roles in the company, the Sales Representative position has the highest attrition rate at 39.8%, followed by the Recruiter role at 37.5% and the Data Scientist position at 23.8%. Interestingly, despite the higher attrition rates, these roles also showcase an average tenure of at least 2.5 years within the company.

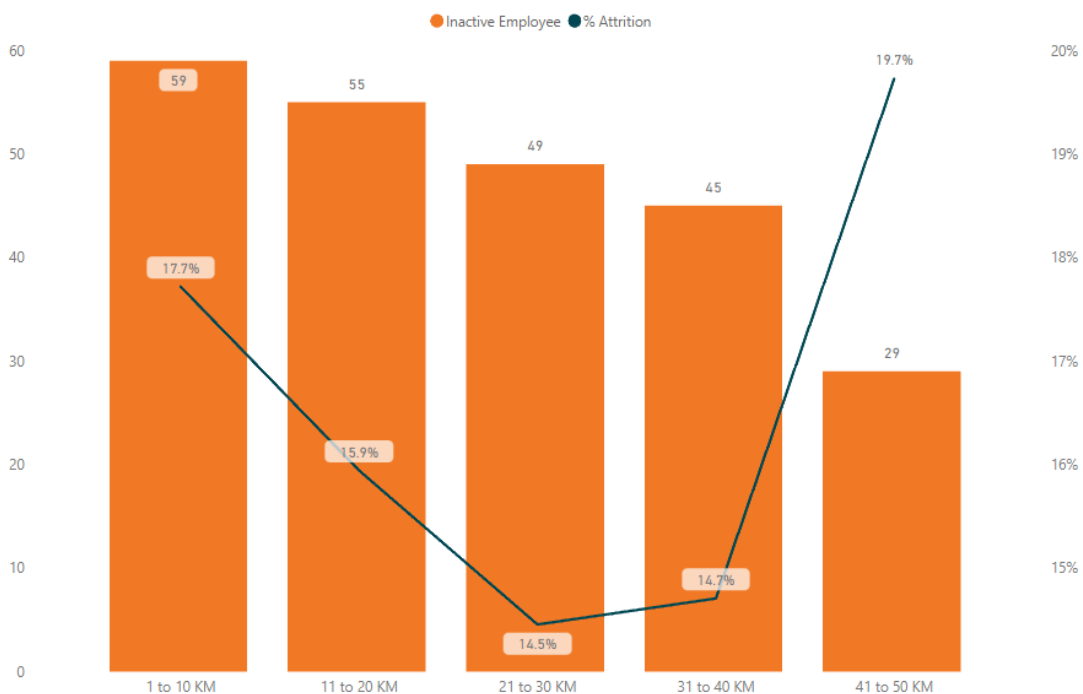
% Attrition, Average and Median Years Who Left Company by JobRole



9. Among employees who have left the company, does the distance of their commute impact the attrition rate?

Although the number of inactive employees who traveled more than 41 to 50 KM is relatively low, it is noteworthy that this group has the highest attrition rate of 19.7%. On the other hand, the groups of employees who traveled 1 to 10 KM and 11 to 20 KM not only have high attrition rates but also a significant number of inactive employees.

Inactive Employee and % Attrition by Distance From Home



Step 6. Make data driven decisions (Act).

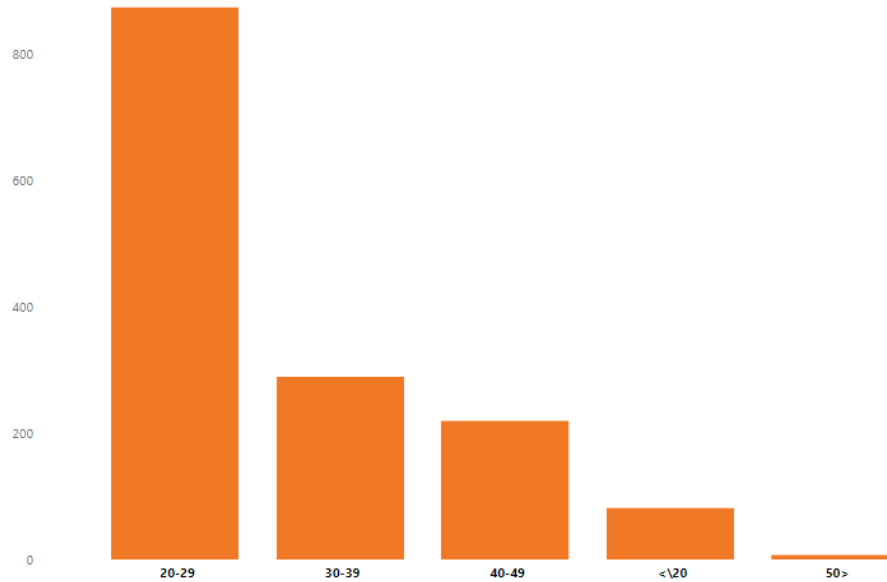
1. **Address Employee Satisfaction:** Recognize the decline in Environment Satisfaction, Job Satisfaction, Relationship Satisfaction, Work-life Balance, Self-Rating, and Manager Rating. Implement measures to improve these aspects, such as conducting employee surveys, providing opportunities for feedback, and addressing the identified concerns.
2. **Evaluate Training Effectiveness:** Although all departments receive a similar amount of training, assess the impact and effectiveness of the training programs. Ensure that the training provided aligns with employees' needs and job requirements and consider incorporating ongoing professional development opportunities to enhance employee satisfaction and retention.
3. **Focus on Employee Travel:** Pay attention to the attrition rates among employees who frequently travel and those required to do overtime. Explore ways to minimize excessive travel demands and reassess the necessity of overtime work. Balancing work-life commitments and promoting employee well-being can contribute to higher job satisfaction and lower attrition.
4. **Address Department-Specific Challenges:** Recognize the higher attrition rates in the Sales Representative, Recruiter, and Data Scientist roles. Conduct exit interviews and engage with employees in these departments to identify specific challenges they face. Implement targeted retention strategies, such as career development opportunities, competitive compensation, and a supportive work environment.
5. **Enhance Communication and Feedback Channels:** Establish open and transparent communication channels to foster employee engagement and address any concerns promptly. Encourage regular feedback from employees to understand their needs and provide opportunities for improvement.
6. **Develop Retention Programs:** Implement targeted retention programs, such as mentorship initiatives, recognition programs, and employee wellness initiatives, to enhance employee engagement and job satisfaction.
7. **Strengthen Work-life Balance Initiatives:** Review and improve existing work-life balance policies and programs. Consider flexible work arrangements, wellness initiatives, and support systems to help employees maintain a healthy work-life balance.
8. **Monitor and Analyze Attrition Trends:** Continuously monitor attrition rates and analyze trends to identify emerging issues and take proactive measures. Regularly review employee satisfaction surveys, exit interviews, and retention metrics to gain insights into the factors impacting attrition.

By implementing these recommendations, Atlas Labs can create a positive work environment, enhance employee satisfaction, and ultimately reduce attrition rates within the company.

Key Insights uncovered

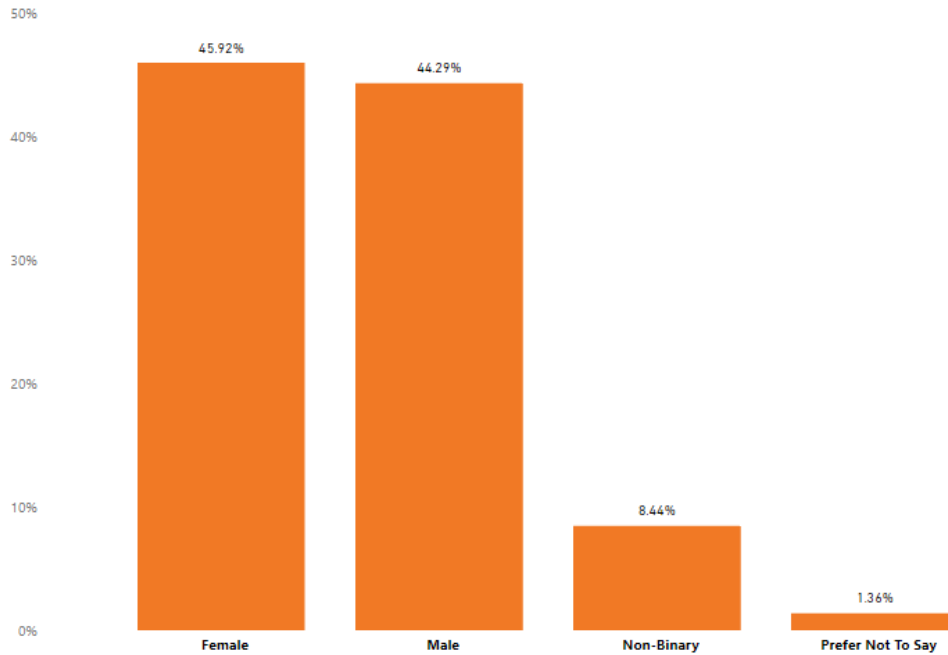
1. Majority of employees are between 20-29 years old.

Employee by Age



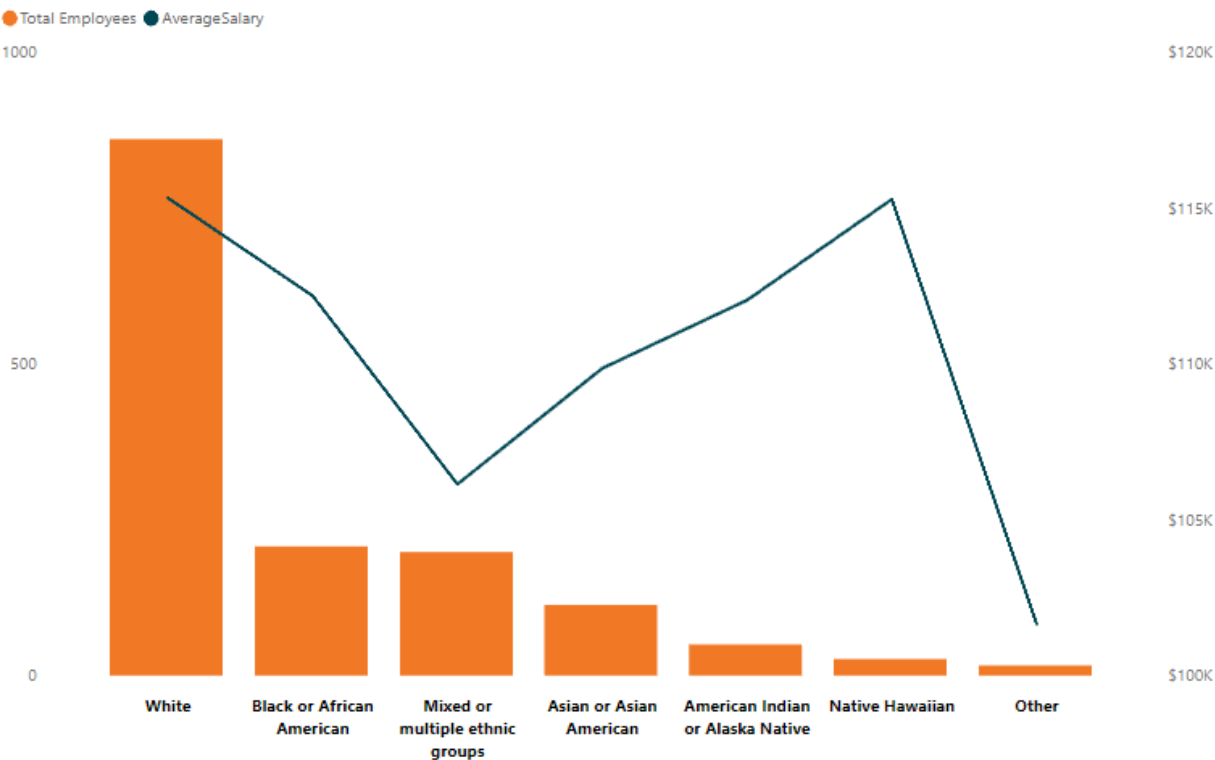
2. Currently, Atlas Labs employ 2.7% more women than men.

Percentage of Employee by Gender

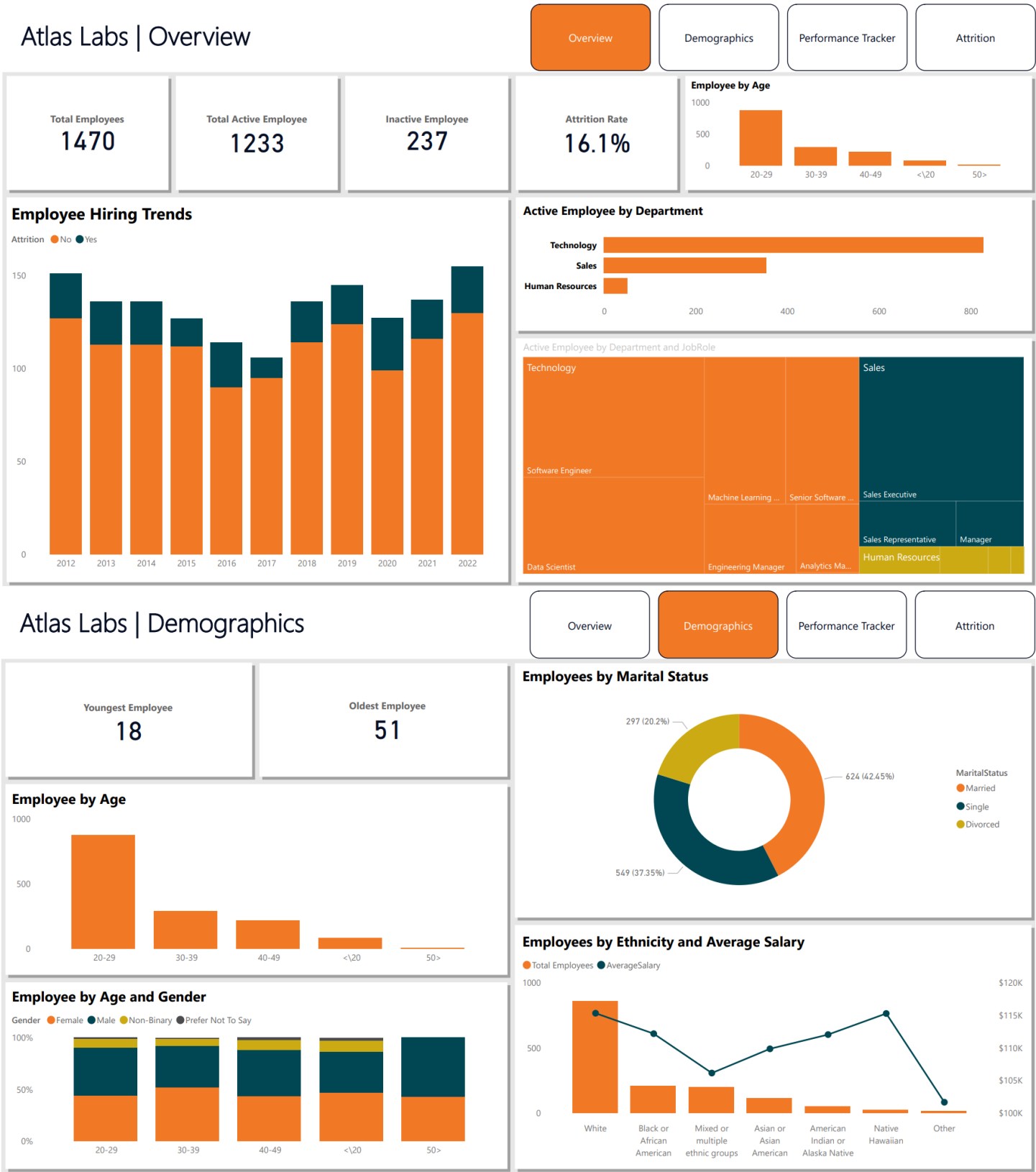


3. White have the highest number of employees and also have the highest average salary, while Mixed or multiple ethnic groups have on of the lowest average salaries.

Number of Employees by Ethnicity and Average Salary



Here is my dashboard for the Atlas Labs company. It contains a report about the employees of the company.



Atlas Labs | Performance Tracker

Overview

Demographics

Performance Tracker

Attrition

Select Employee

Estelle Chung

Start Date

7/15/2018

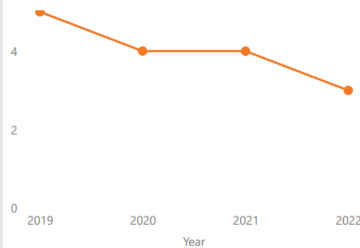
Last Review

03/24/2022

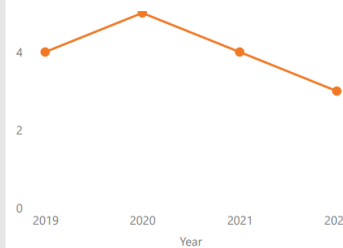
Next Review Date

3/24/2023

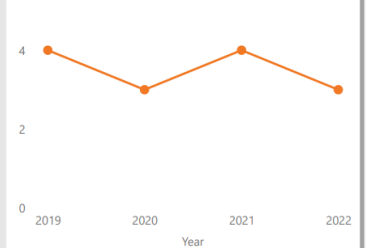
Job Satisfaction by Year



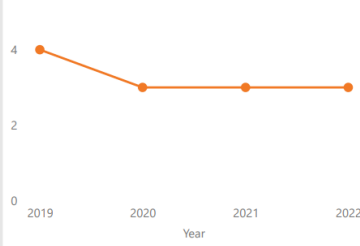
Relationship Satisfaction by Year



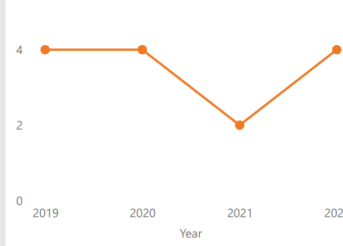
Self Rating by Year



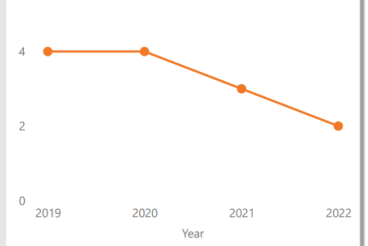
Environment Satisfaction by Year



Work-Life-Balance by Year



Manager Rating by Year



SatisfactionLevel	SatisfactionID
Very Satisfied	5
Satisfied	4
Neutral	3
Dissatisfied	2
Very Dissatisfied	1

RatingLevel	RatingID
Above and Beyond	5
Exceeds Expectation	4
Meets Expectation	3
Needs Improvement	2
Unacceptable	1

Atlas Labs | Attrition

Overview

Demographics

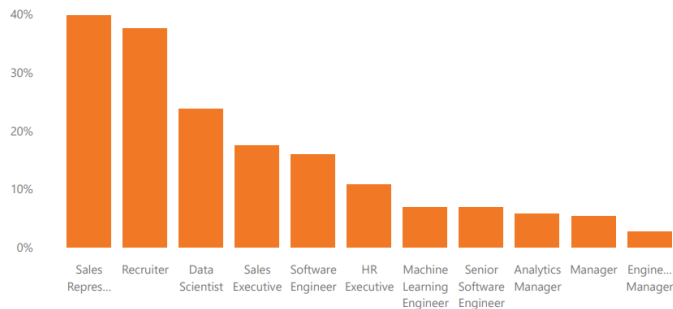
Performance Tracker

Attrition

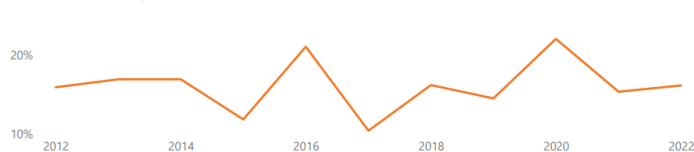
Attrition Rate

16.1%

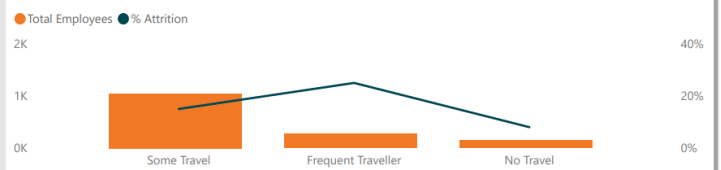
Attrition by JobRole



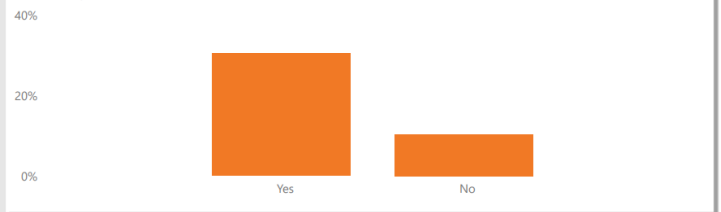
Attrition Rate Date by Year



Attrition by Travel Frequency



Attrition by Overtime Requirement



Attrition by Tenure

