

DATA ANALYTICS STUDY CASE

Human Resources Analytics in the Healthcare Industry

Our Data Team

HR Analytics Projects



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Human Resources: What You Need to Know

UNDERSTAND WHAT THE PROBLEMS ON THE DATA SET

Introduction: Data Set ‘Human Resources’

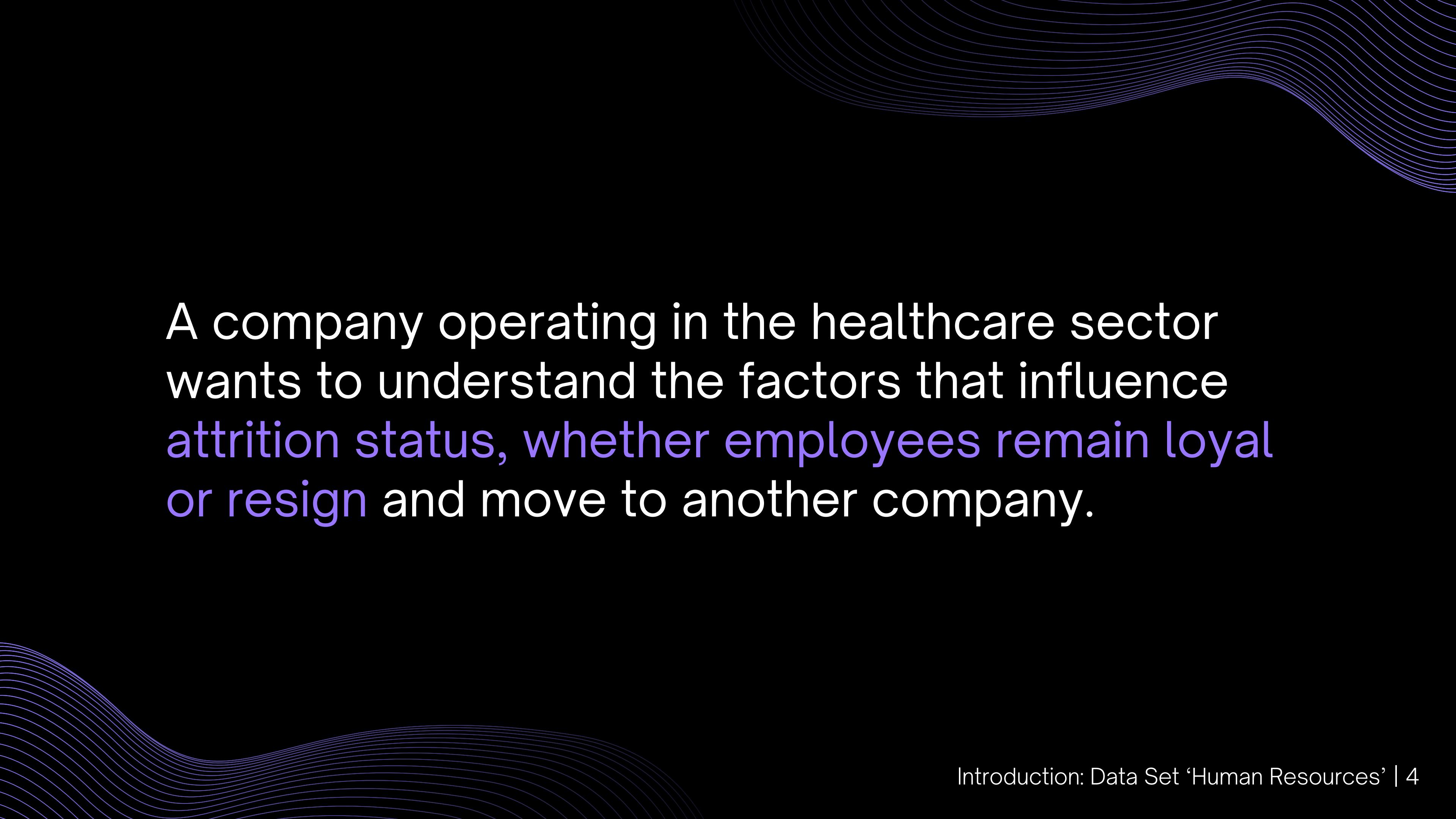
Descriptive Analyst

Job Satisfaction Analyst

Data Understanding and Cleaning

Attrition Analyst

Conclusion and Recomendation



A company operating in the healthcare sector wants to understand the factors that influence attrition status, whether employees remain loyal or resign and move to another company.

What are the consequences of attrition to an organization?



Disruption in
Productivity and
Workflow



Decrease in Customer
Satisfaction and
Reputation



Loss of Talent and
Expertise

Data Understanding

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1480 entries, 0 to 1479
Data columns (total 38 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   EmpID            1480 non-null    object  
 1   Age              1480 non-null    int64  
 2   AgeGroup         1480 non-null    object  
 3   Attrition        1480 non-null    object  
 4   BusinessTravel   1480 non-null    object  
 5   DailyRate        1480 non-null    int64  
 6   Department       1480 non-null    object  
 7   DistanceFromHome 1480 non-null    int64  
 8   Education        1480 non-null    int64  
 9   EducationField   1480 non-null    object  
 10  EmployeeCount    1480 non-null    int64  
 11  EmployeeNumber   1480 non-null    int64  
 12  EnvironmentSatisfaction 1480 non-null    int64  
 13  Gender            1480 non-null    object  
 14  HourlyRate       1480 non-null    int64  
 15  JobInvolvement   1480 non-null    int64
```

The dataset contains 38 columns and a total of 1480 rows.

Data Cleaning

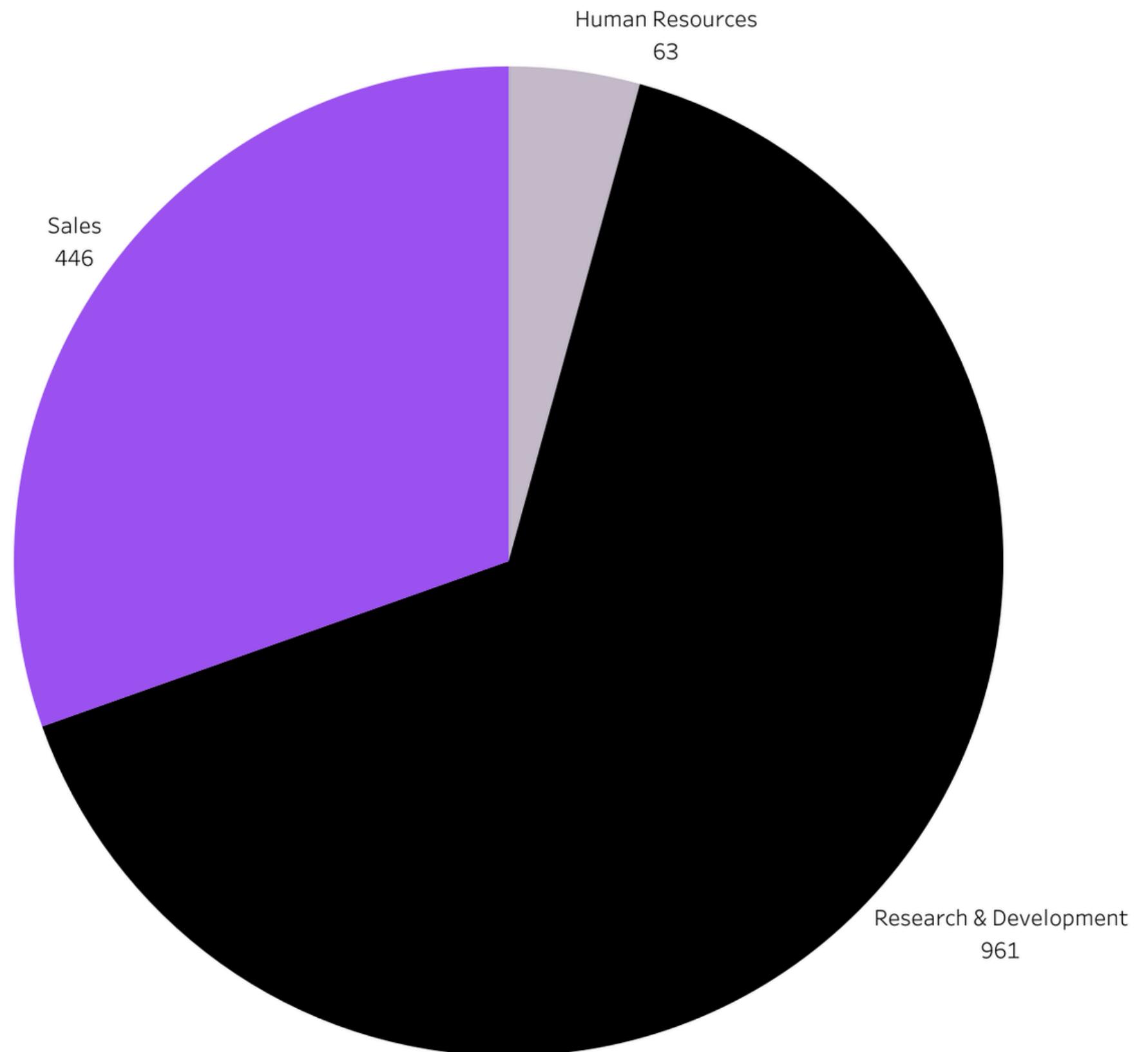
Missing Value: YearsWithCurrManager (57)

Duplicated Data: EmpID (10)

Drop Columns: Over18, EmployeeCount, StandardHours, YearsWithCurrManager

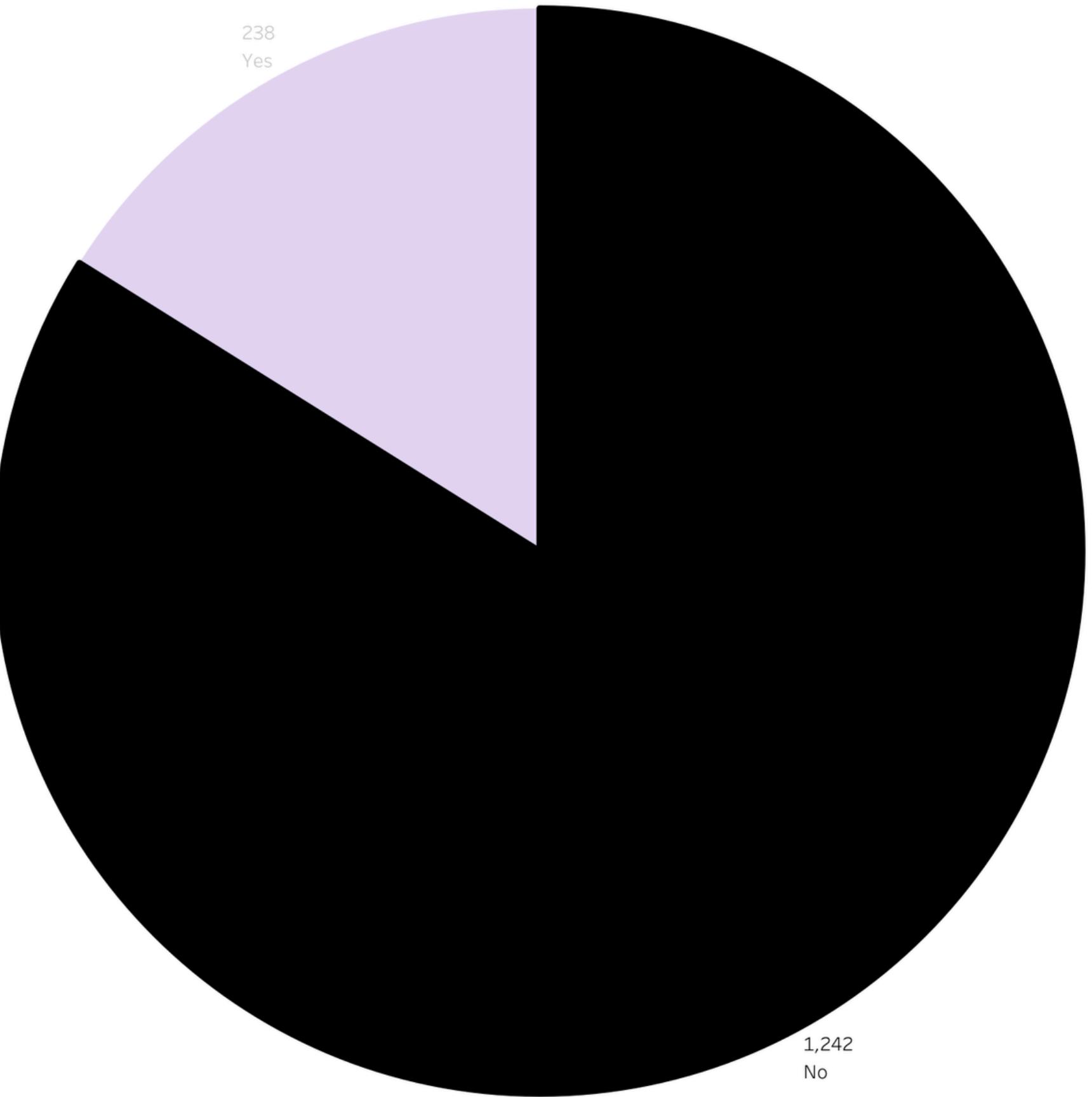
Department

The highest number of employees is in the R&D department, which is **2x higher** than the Sales department and **15x higher** than the Human Resources department



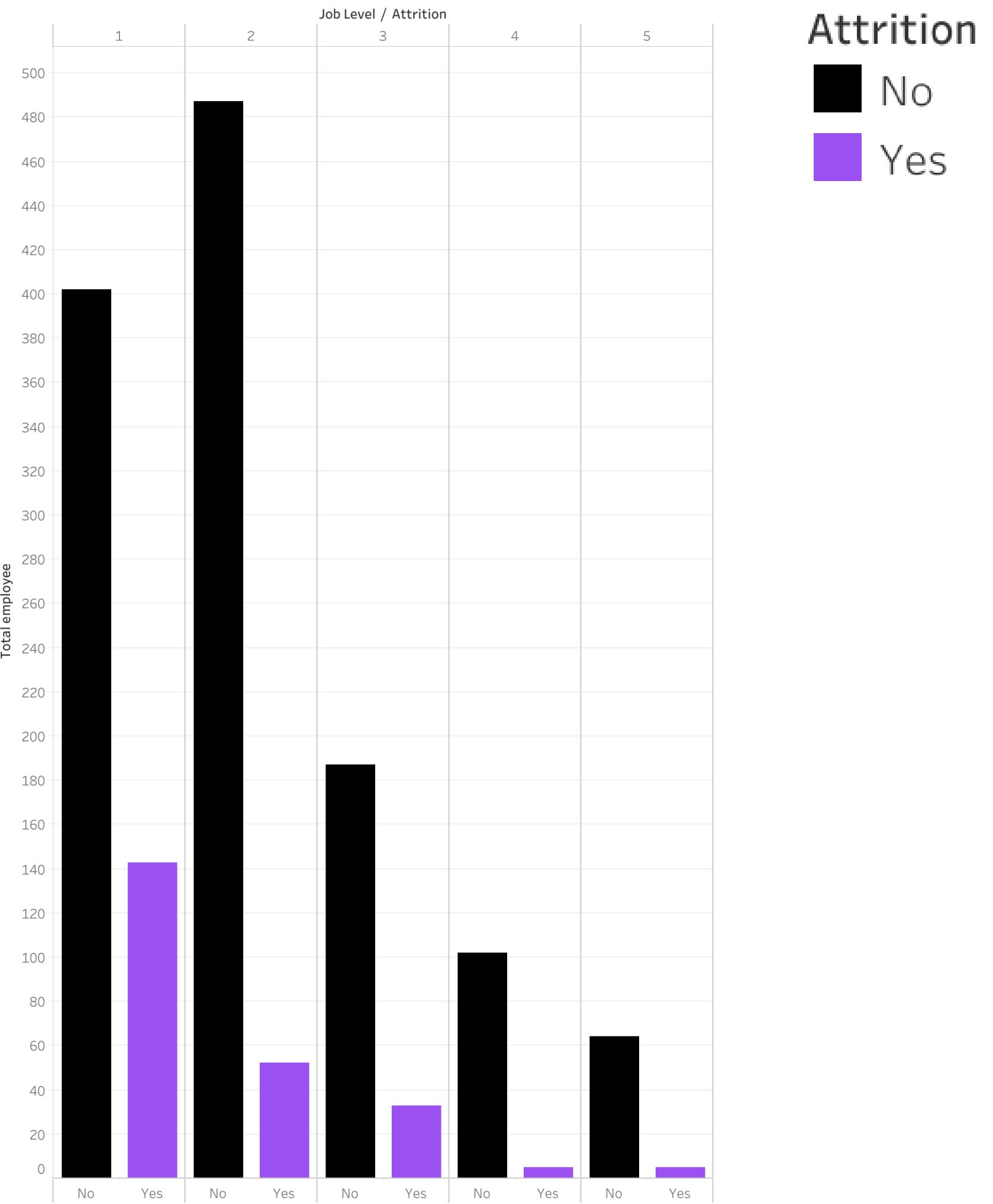
Attrition Status

Up to 1/5 of total employees had resigned from their positions



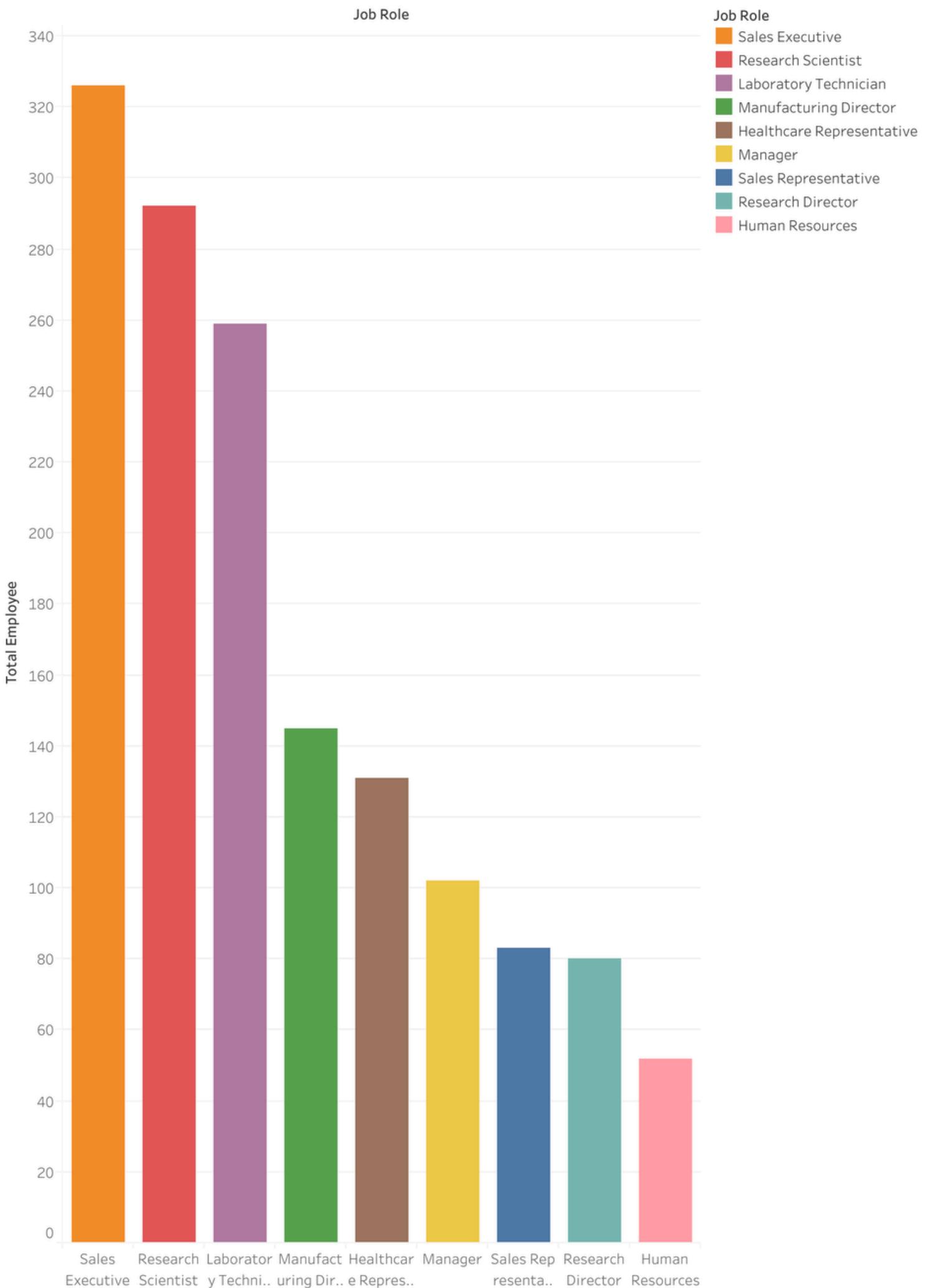
JobLevel

The majority of employees who have resigned are from early career job level



JobRole

Sales executive and Research Scientist are the majority role in the company



Attrition Analysist

Analyzing the difference and association between the status of attrition with other parameters

Significant test

MonthlyIncome, DailyRate, YearsAtCompany, TrainingTimesLastYears, YearsSinceLastPromotion, YearsInCurrentRole.

Association test

SalarySlab, EnvironmentSatisfaction, JobLevel, WorkLifeBalance, MaritalStatus, JobSatisfaction.

Not significantly different

MontlyRate, HourlyRate, PercentSalaryHike, Education.

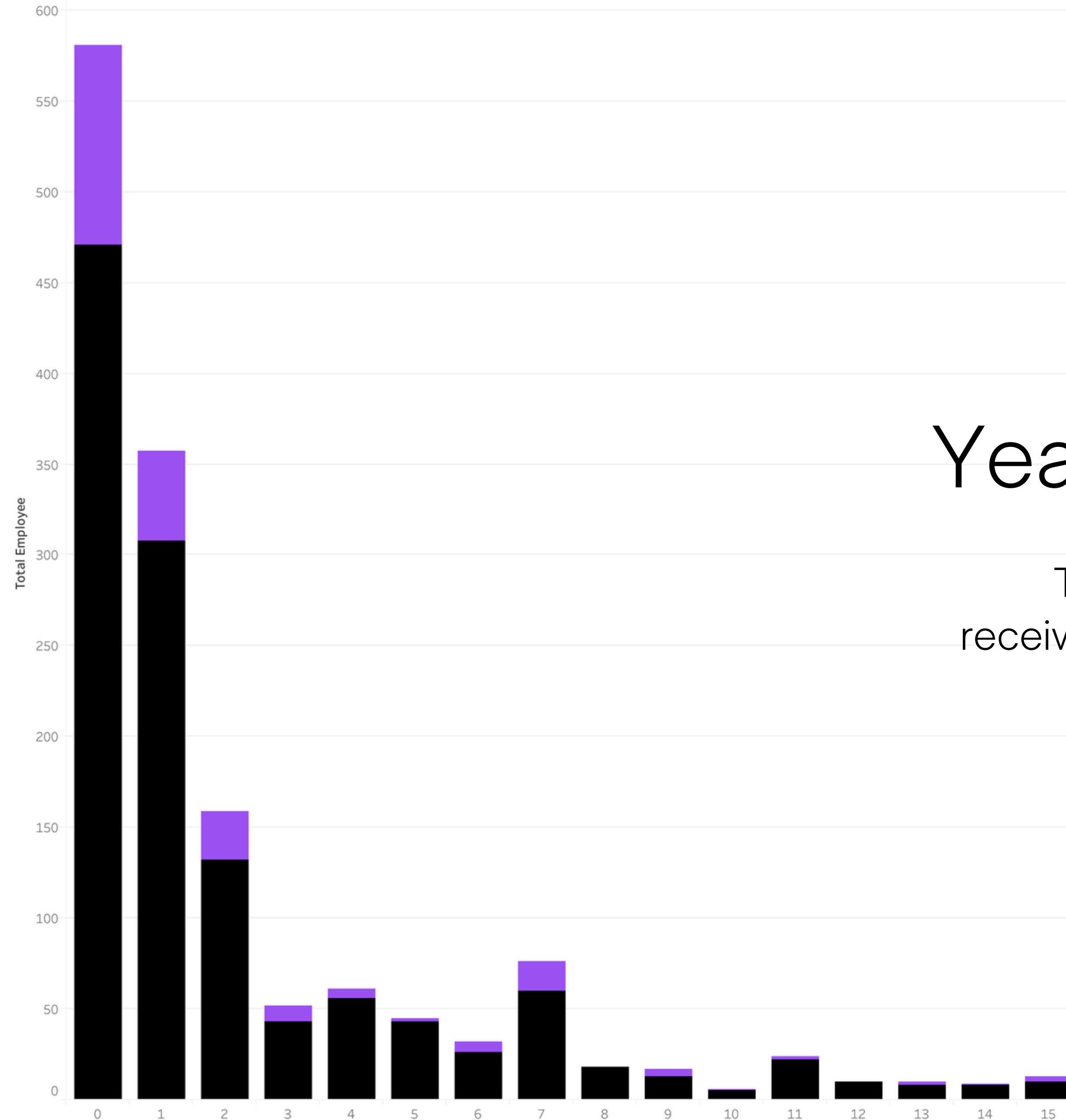
Not associated

RelationshipSatisfaction, PerformanceRating,

Attrition

No

Yes

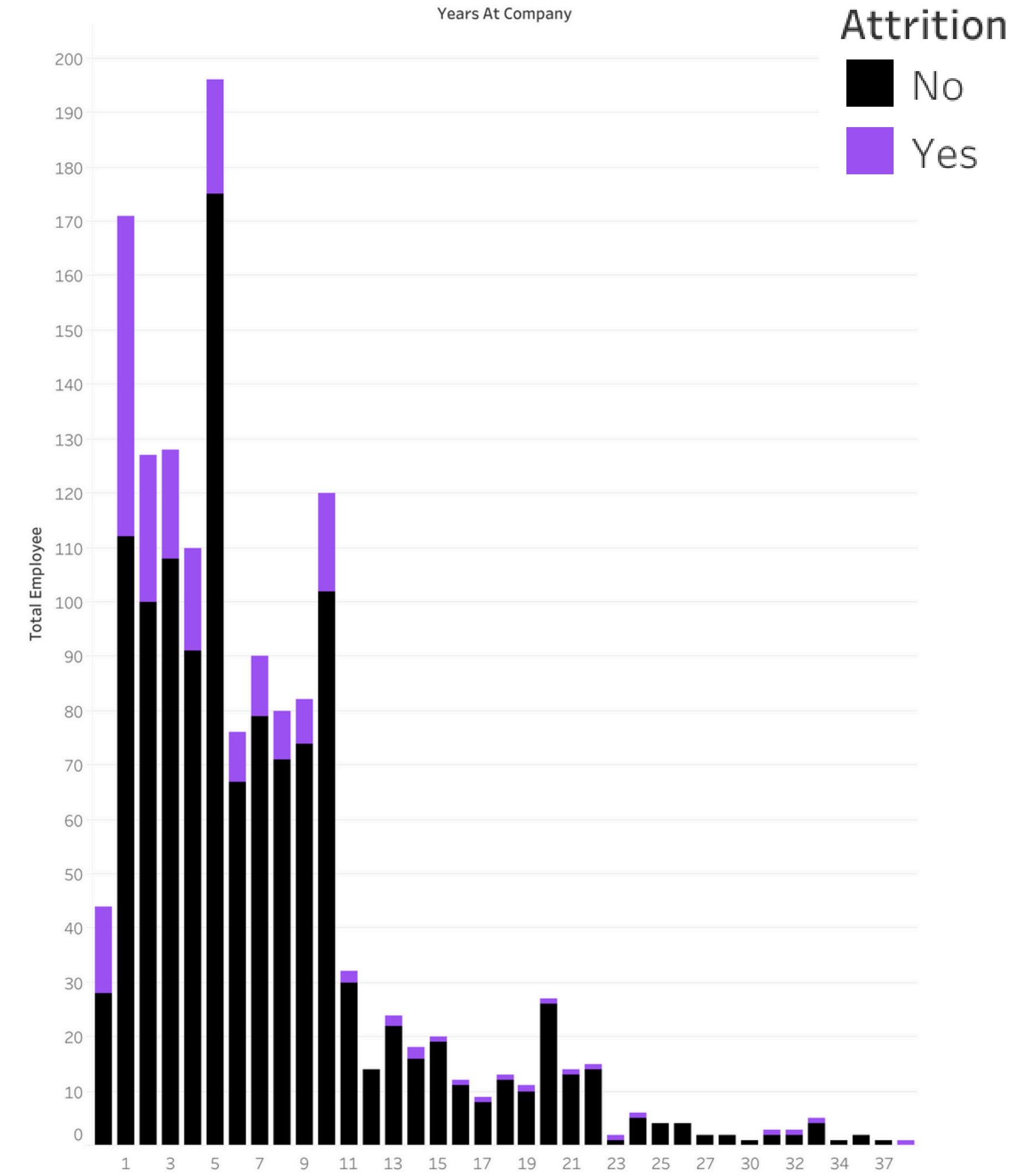


Attrition vs YearsSinceLastPromotion

The majority of resigned employees have never received a promotion or 0 YearsSinceLast Promotions

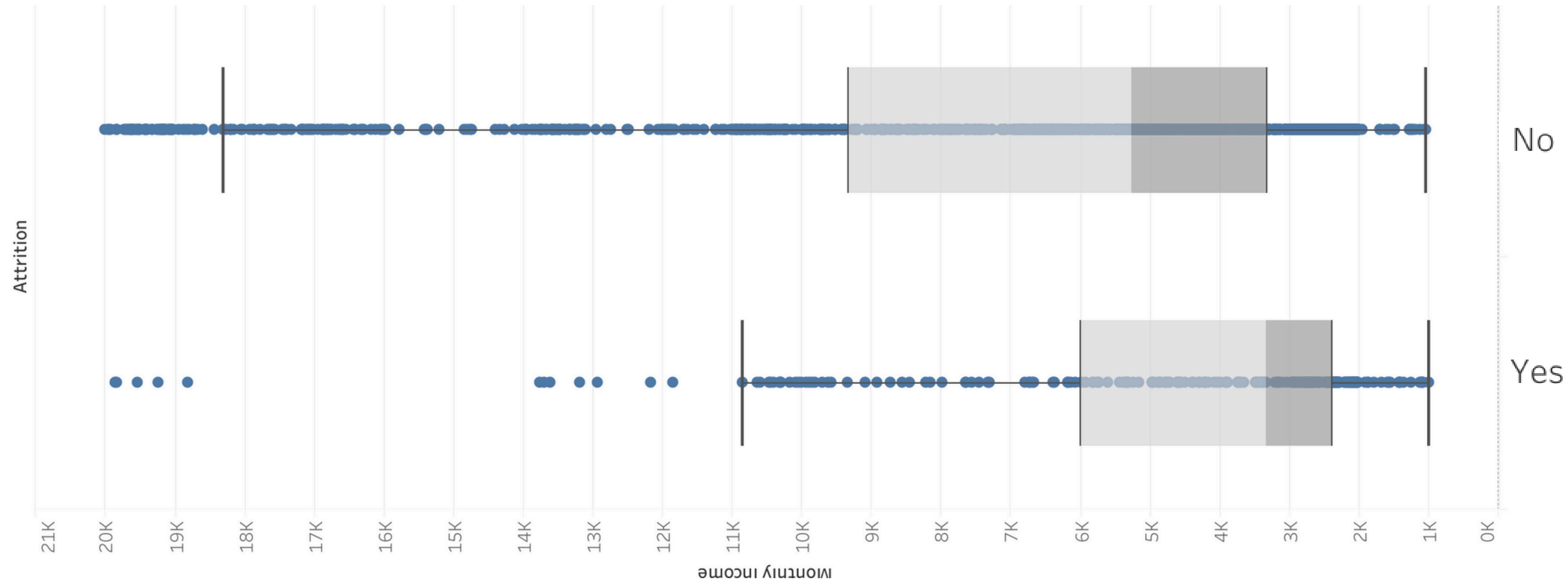
Attrition vs YearsAtCompany

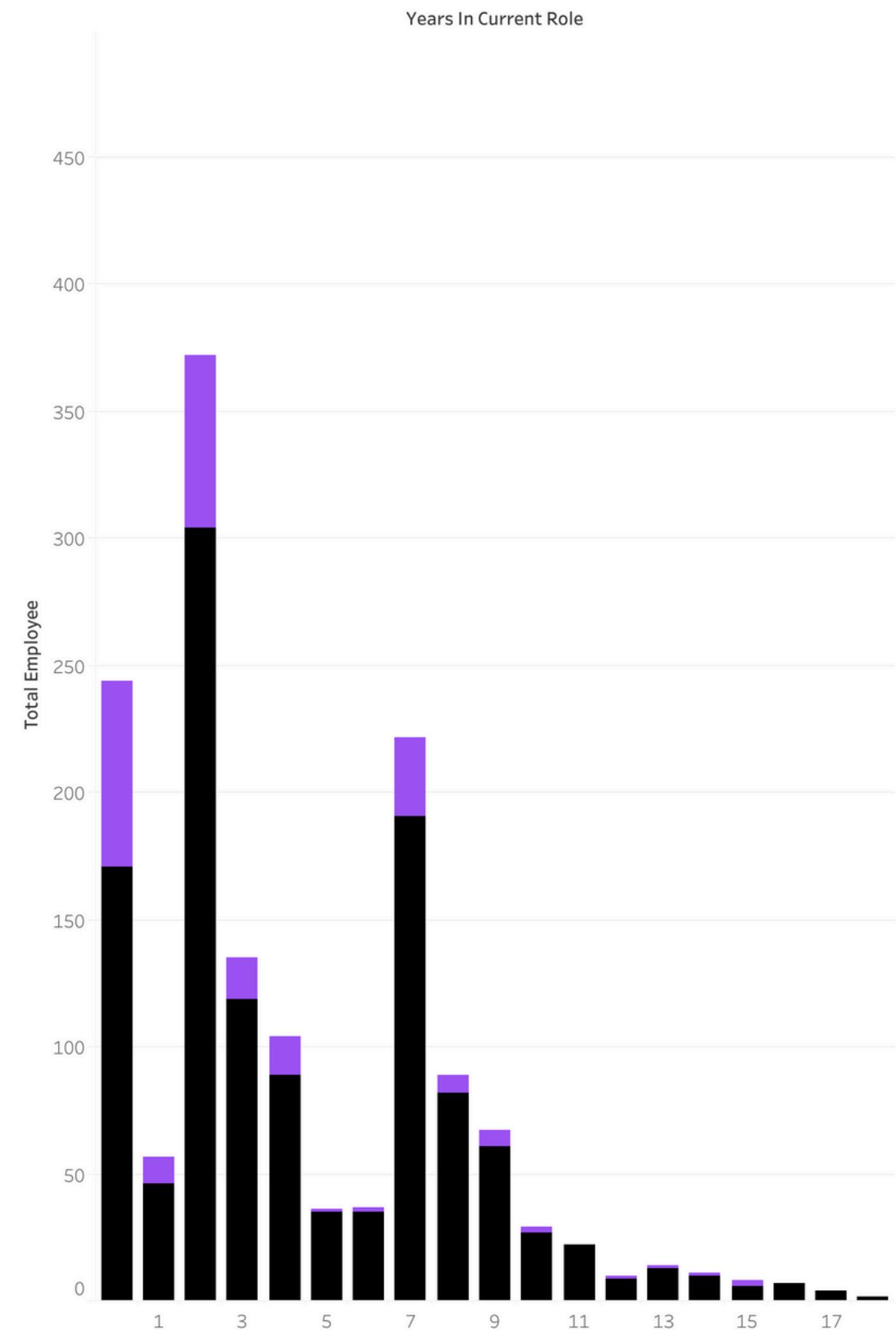
The leaving employees spend less duration in the company than the active company



Attrition vs MonthlyIncome

Leaving employees have a significantly lower income than the active employees ($p\text{-value} \leq 0.05$)



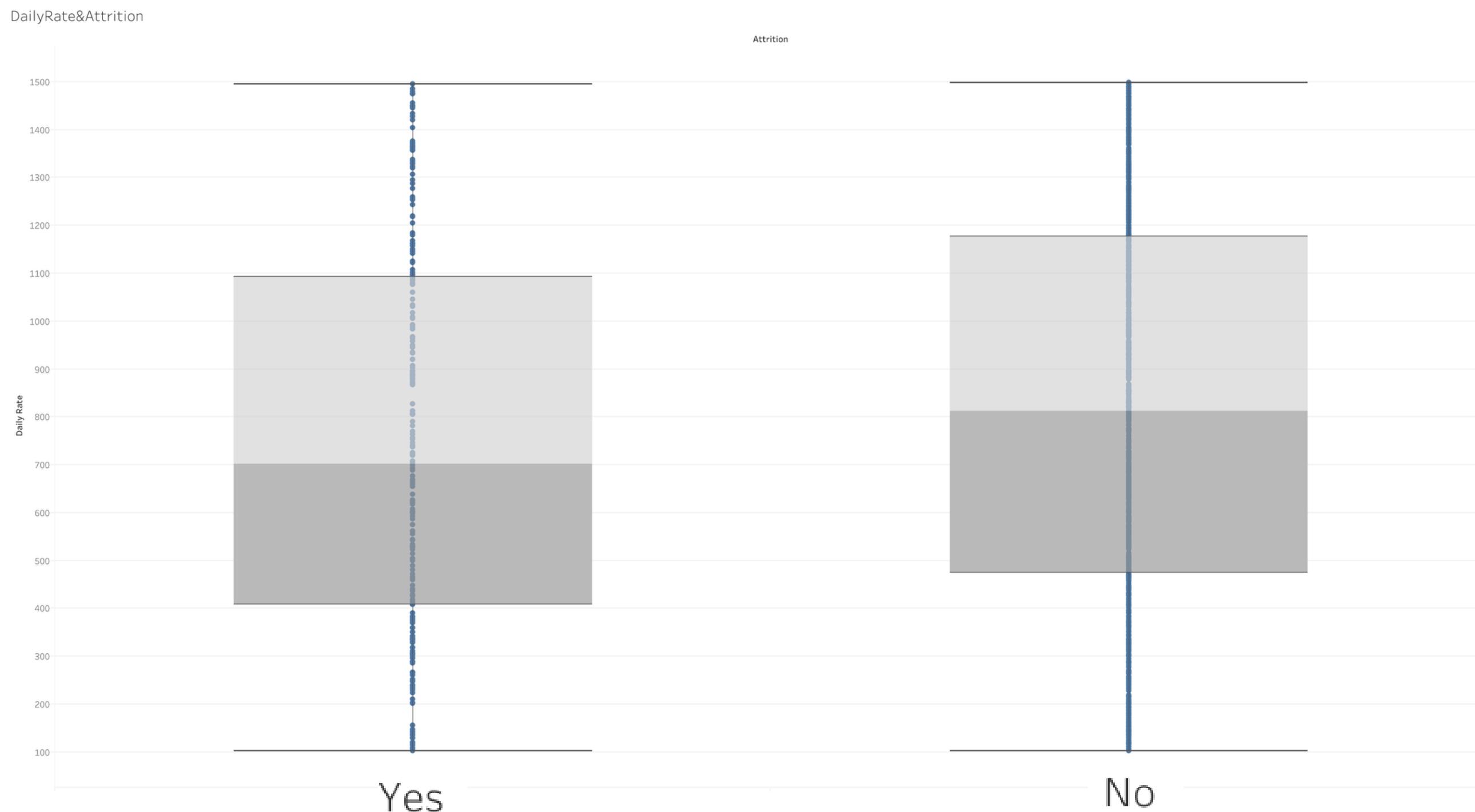


Attrition vs YearsInCurrentRole

Leaving employees also spent significantly less duration in their position (p-value ≤ 0.05)..

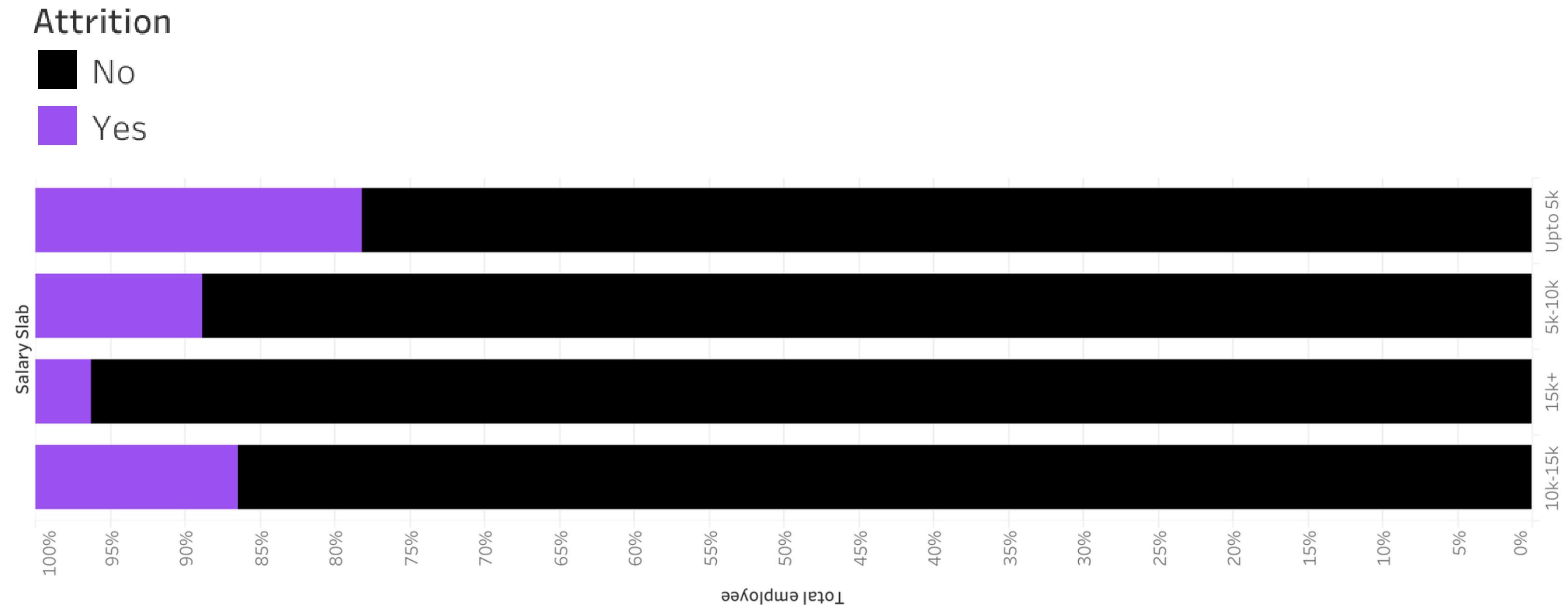
Attrition vs DailyRate

Leaving employees received significantly smaller daily rate (p-value ≤ 0.05)



Attrition vs SalarySlab

Chi-squared test showed there was association between salary slab and the employee attrition status ($p\text{-value} \leq 0.05$)

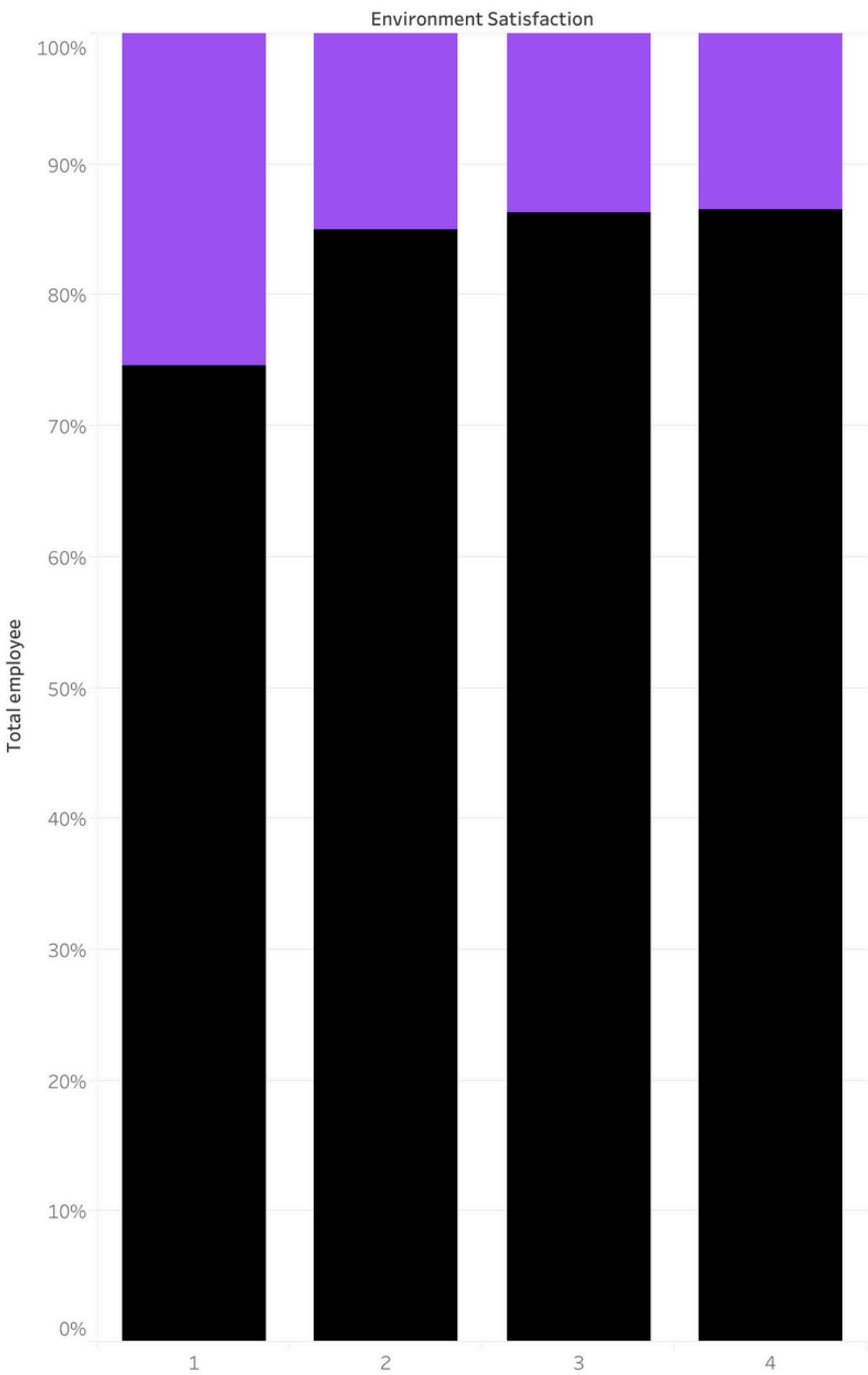


Attrition vs EnvironmentSatisfaction

There is a significant association between EnvironmentSatisfaction and employee attrition's status (p-value ≤ 0.05)

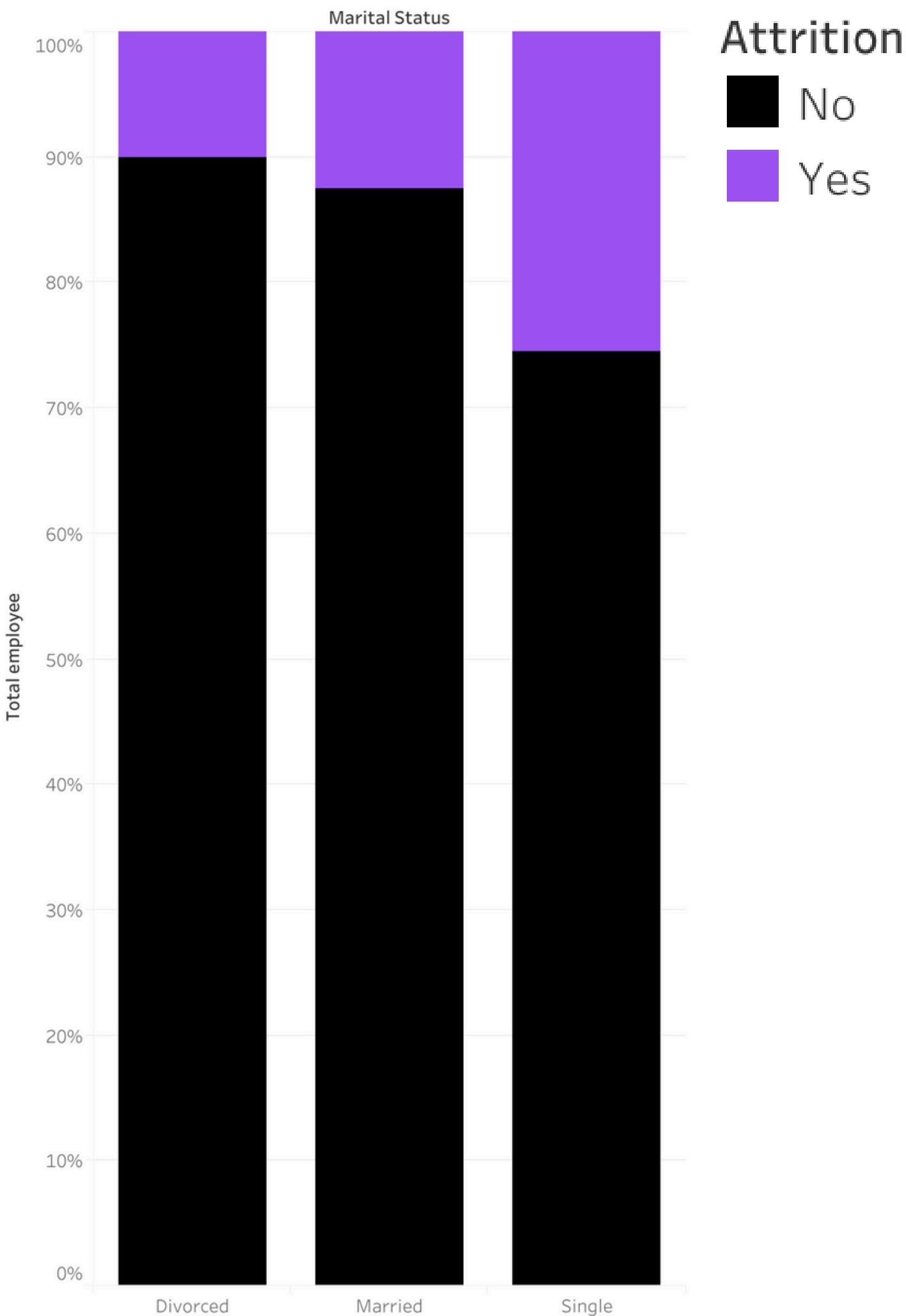
Attrition

- No
- Yes



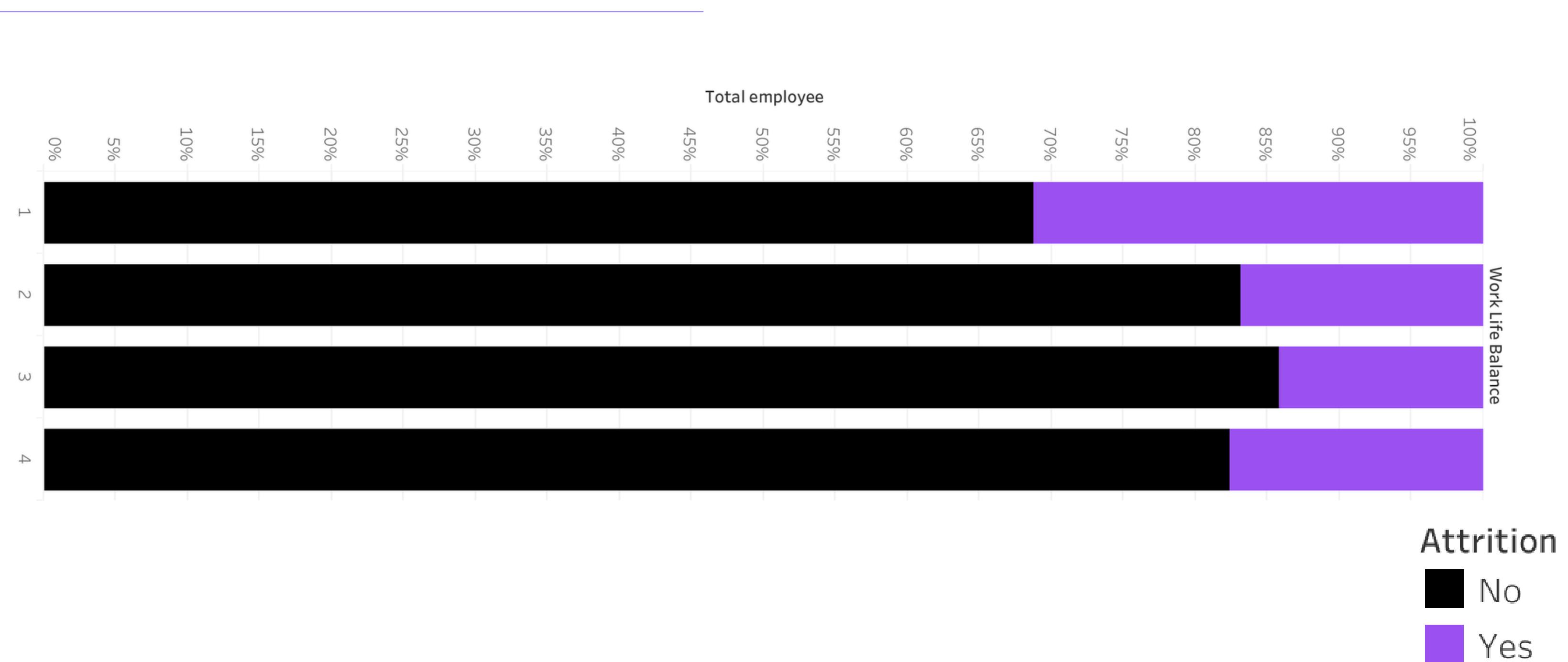
Attrition vs Marital Status

There was also influence of marital status to the staff's attrition status ($p\text{-value} \leq 0.05$)



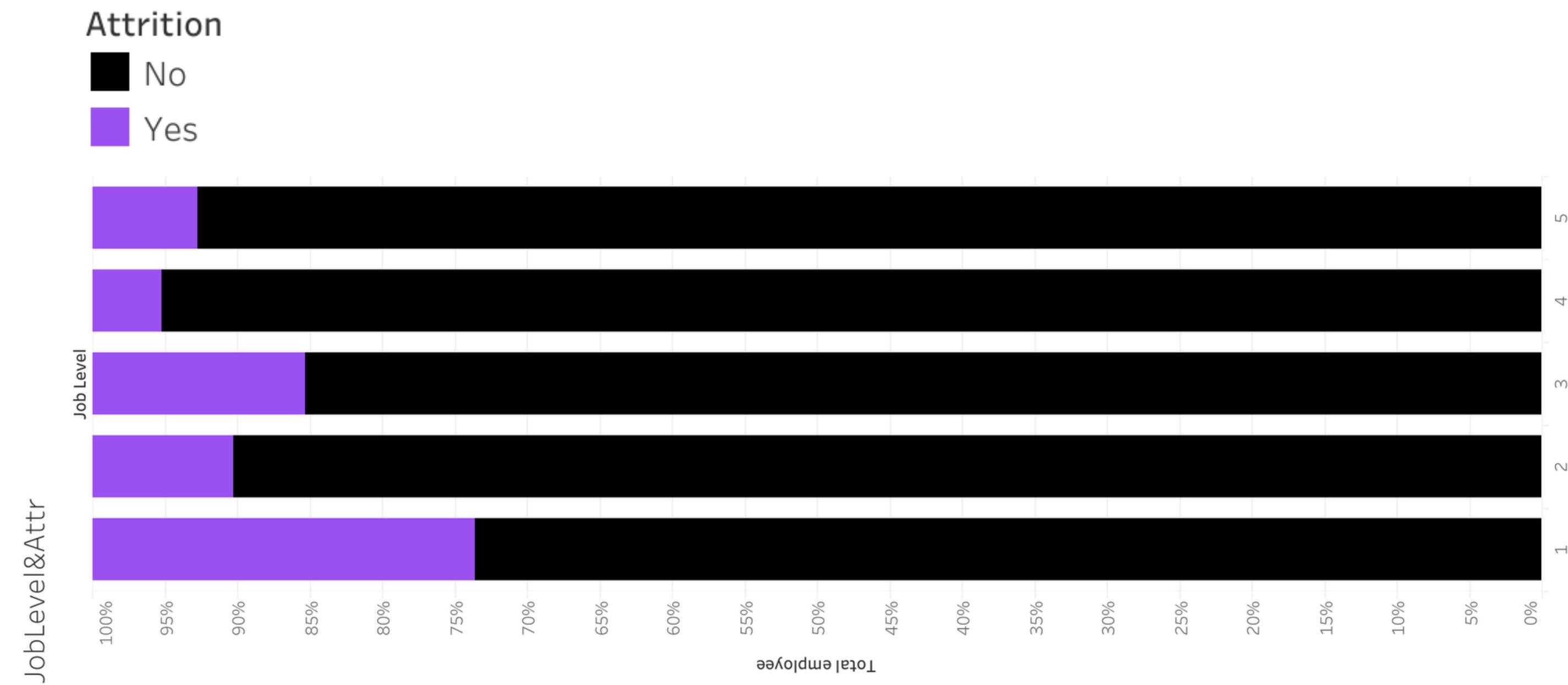
Attrition vs WorkLifeBalance

There was an association between employee's perspective of worklife balance and attrition status ($p\text{-value} \leq 0.05$)



Attrition vs JobLevel

There was an association between employee's JobLevel and attrition status ($p\text{-value} \leq 0.05$)



Conclusion and Recommendation

ATTRITION STATUS (CONCLUSION)

- A significant difference was identified in the Monthly Income between employees who stayed and those who left the organization.
- A significant difference was found in the Daily Rate between employees who stayed and those who left.
- The Salary Slab (or salary group) is associated with whether an employee stays or leaves the organization.
- Environment Satisfaction is correlated with employee retention.
- Job Level is associated with whether an employee stays or leaves.
- Marital Status has a relationship with employee retention.
- Employees' perspectives on Work-Life Balance within the company are linked to their likelihood of staying or leaving.

Conclusion and Recommendation

RECOMMENDATION

- Ensure a fairer approach to compensating employees.
- Improve Environment Satisfaction by fostering a healthier and more comfortable workplace for all employees.
- Provide clear communication and guidance about career progression within the company.

The background of the slide features a dark navy blue color. Overlaid on it are numerous thin, light blue lines that form a complex, undulating pattern resembling waves or ripples. These lines are more concentrated in the lower right quadrant and spread out towards the top left.

Do you have
any questions?