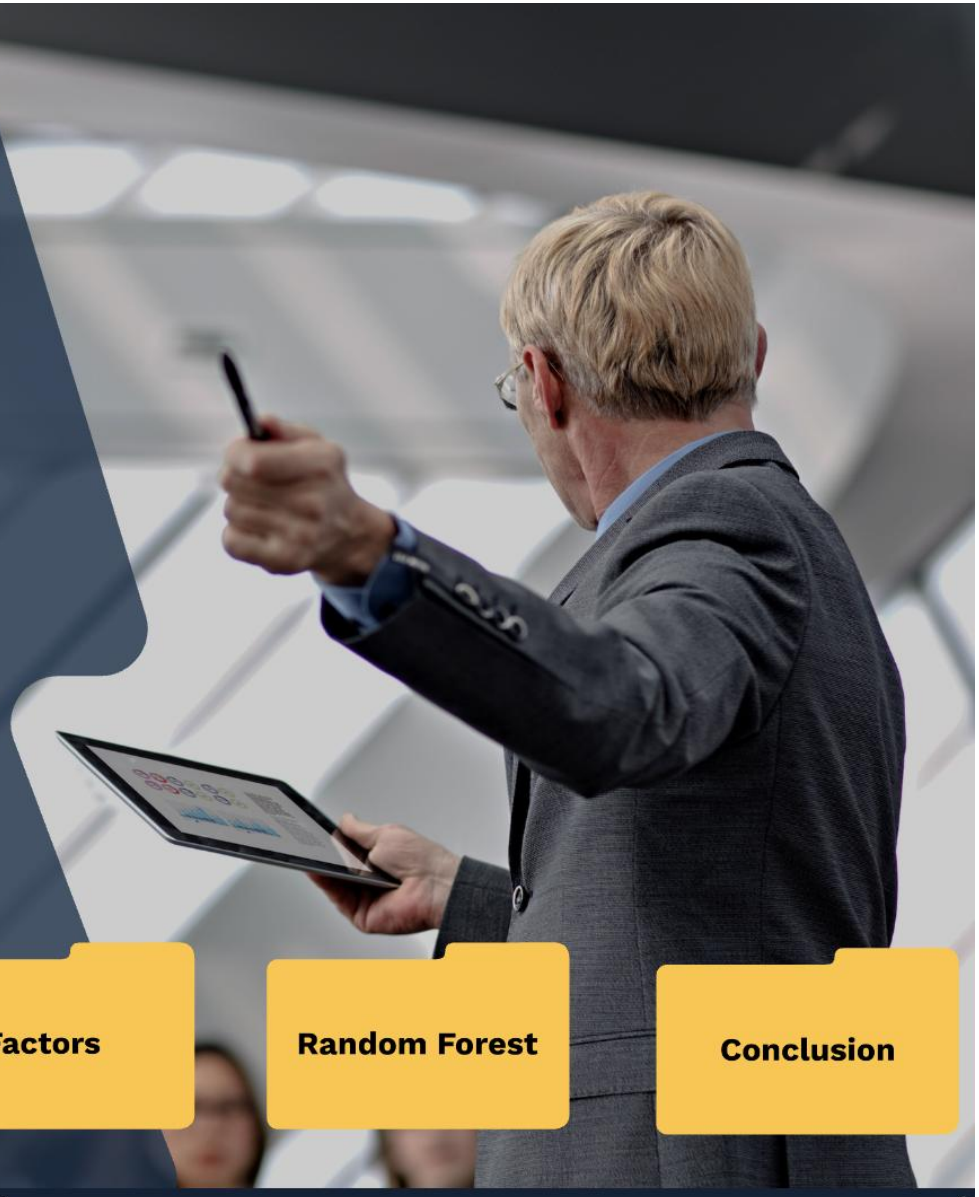
EMPLOYEE ATTRITION



Introduction

Data Cleaning

Factors

Factors

Random Forest

Conclusion

Prezi

Employee Attrition

The key to success in any organization is attracting and retaining top talent.

Companies needs to know what factors they can change to prevent the loss of good people.

Aim/Study

Prezi

Aim :

Determine which factors keep employees at the company and which prompt others to leave.

Null Hypothesis

01 Salary = main factor

02 Older Employee leaves the company more

03 Sales department have the highest mean salary

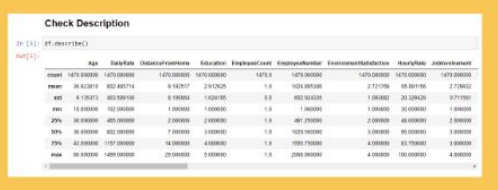
Prezi

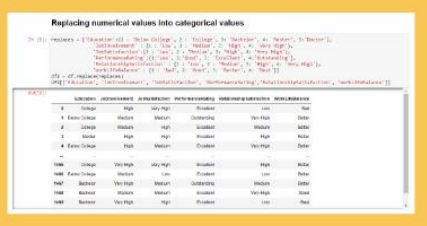
Data Cleaning

Check

Desc

Replace

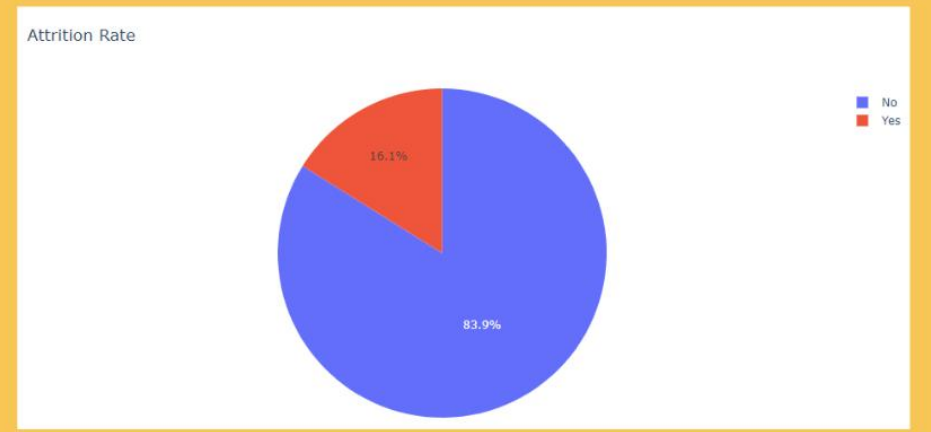




Prezi

Factors

Rate :



Gender

Age

Education

Job Role

Prezi

Attrition by Gender

Question :

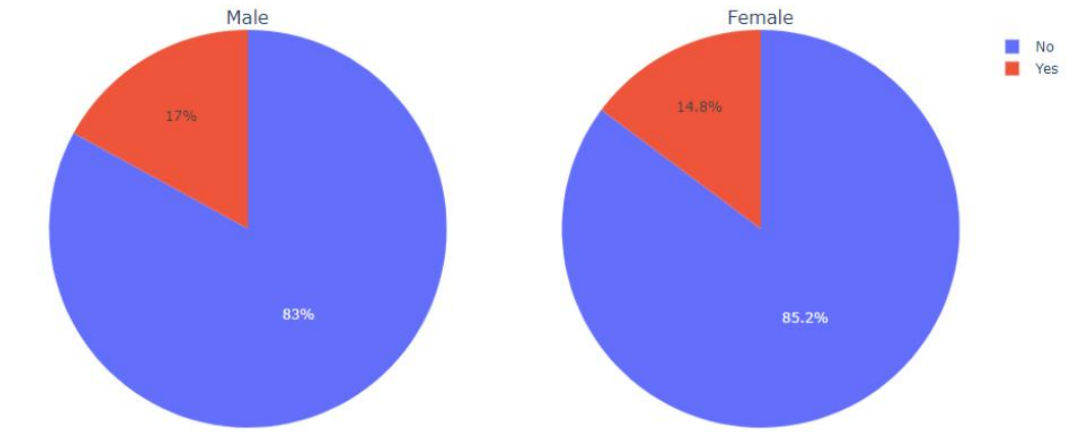
Does gender affect rate of attrition ?

Distribution

Summary

Prezi

Pie Chart

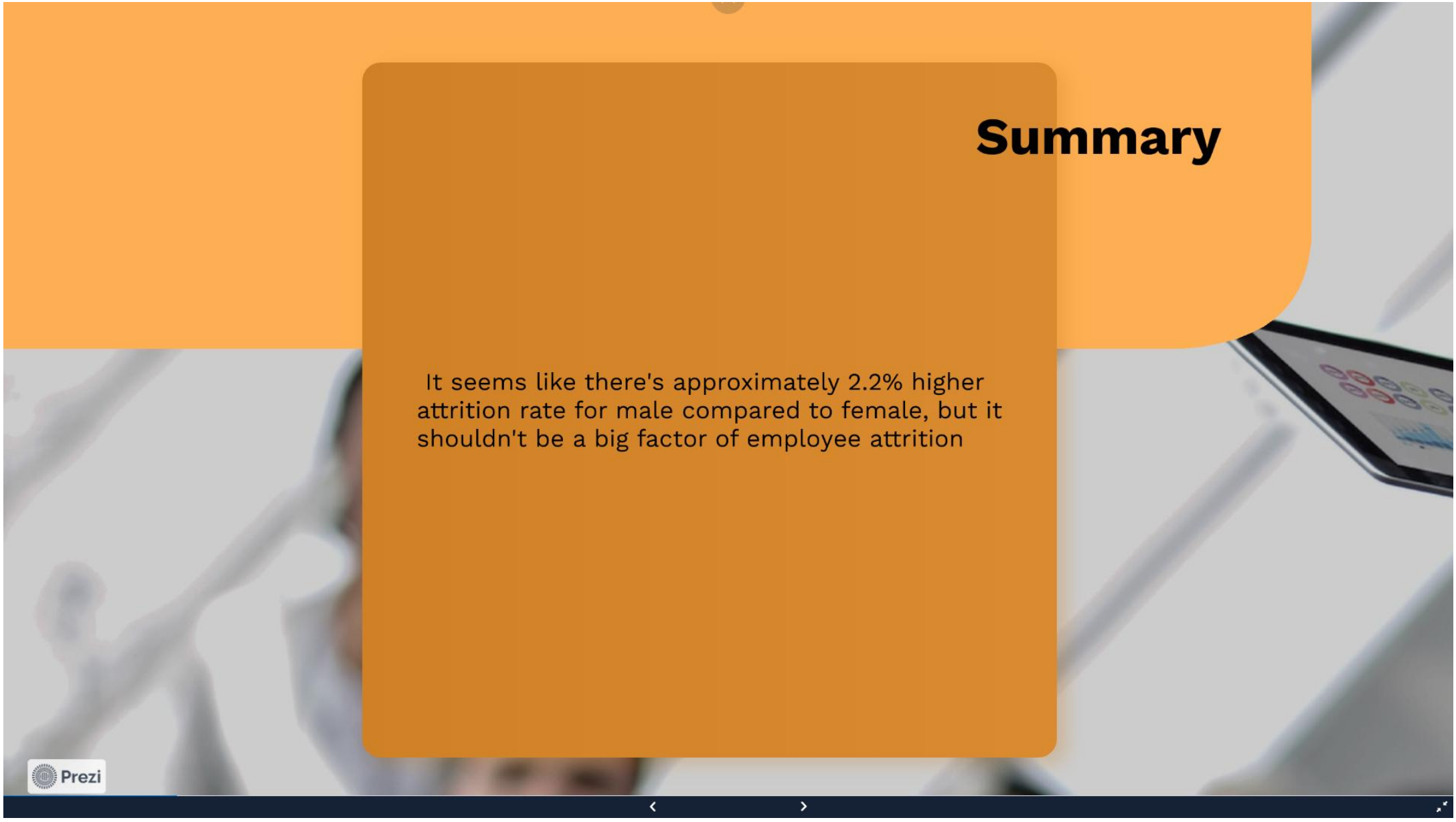


Attrition	Gender	EmployeeCount
No	Female	501
No	Male	732
Yes	Female	87
Yes	Male	150

Prezi

Summary

It seems like there's approximately 2.2% higher attrition rate for male compared to female, but it shouldn't be a big factor of employee attrition



Attrition by Age

Question :

What is the range of age which leaves the organization more frequently than the others?

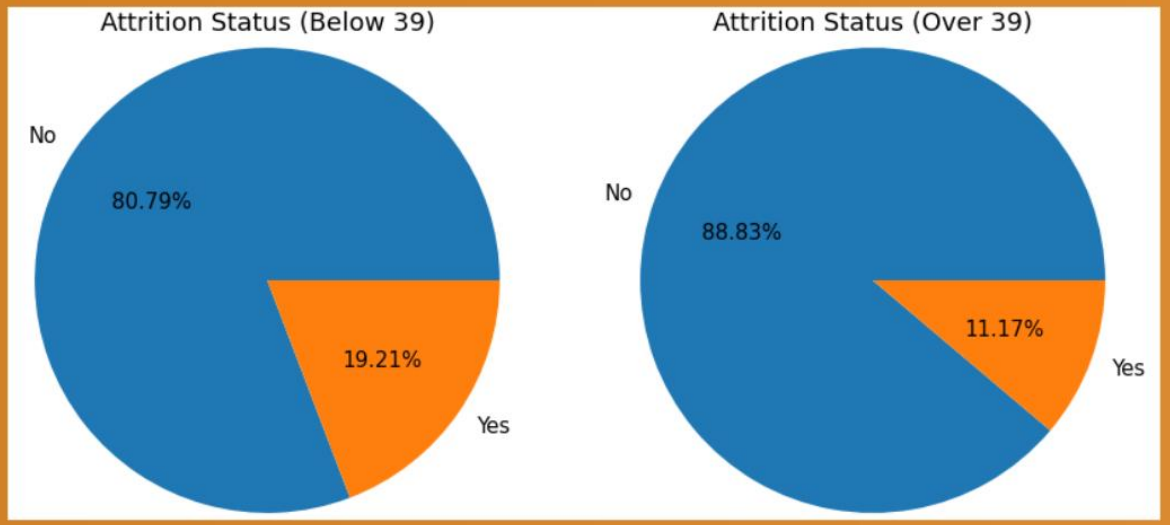
Distribution

Summary

Prezi

Age Distribution with Attrition

Total Working Years

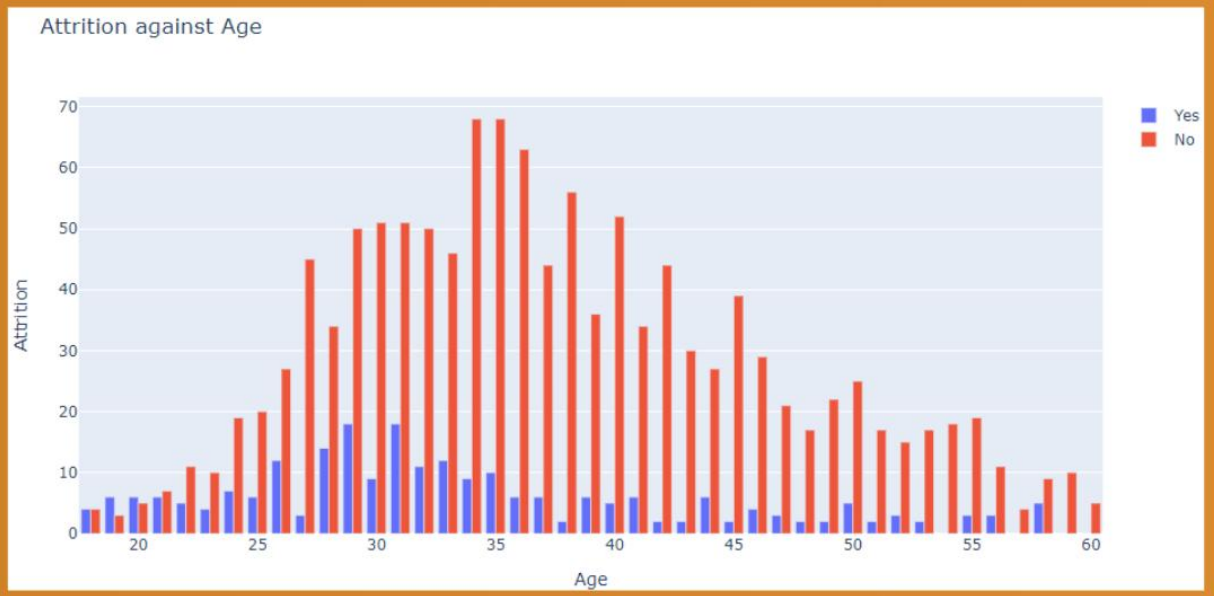


People who are young (Millennial) seems to have a higher attrition rate than the older ones (Boomers).

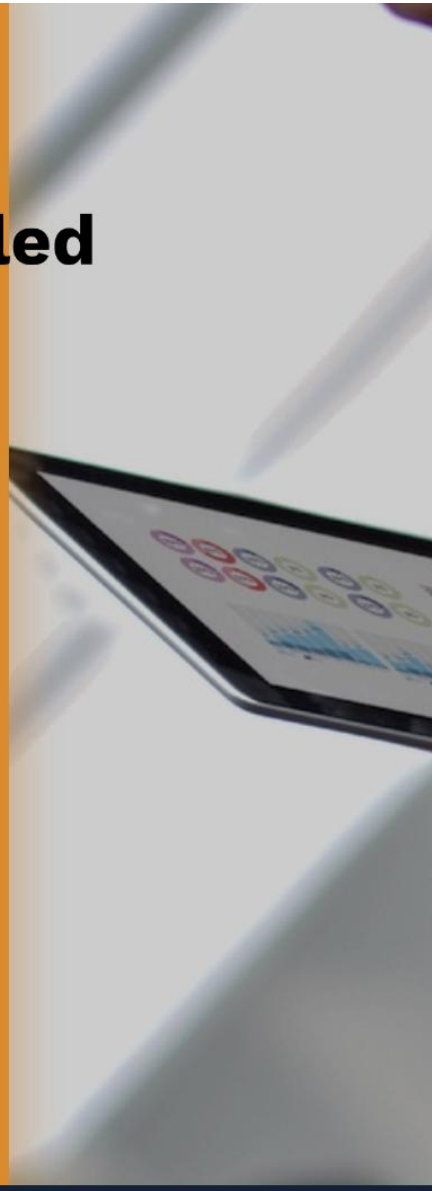
Detailed Age

Prezi

Detailed

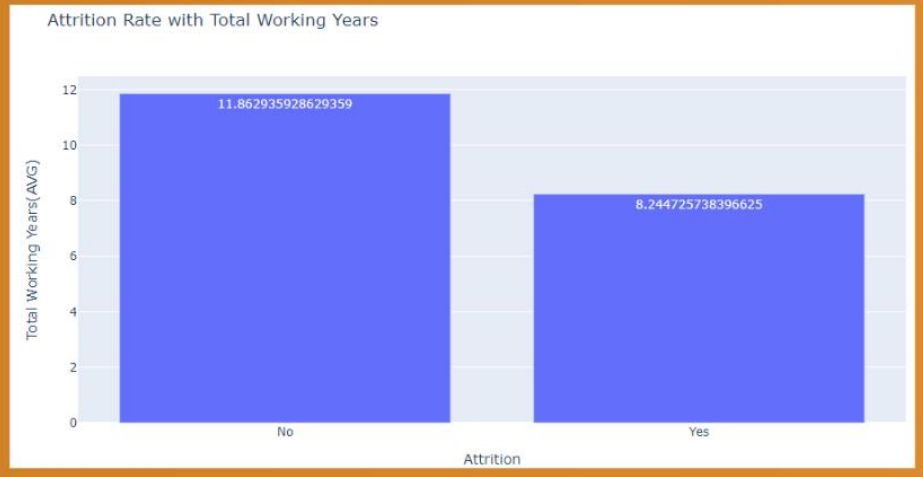


Range of most people who leave the organization : 25-35



Prezi

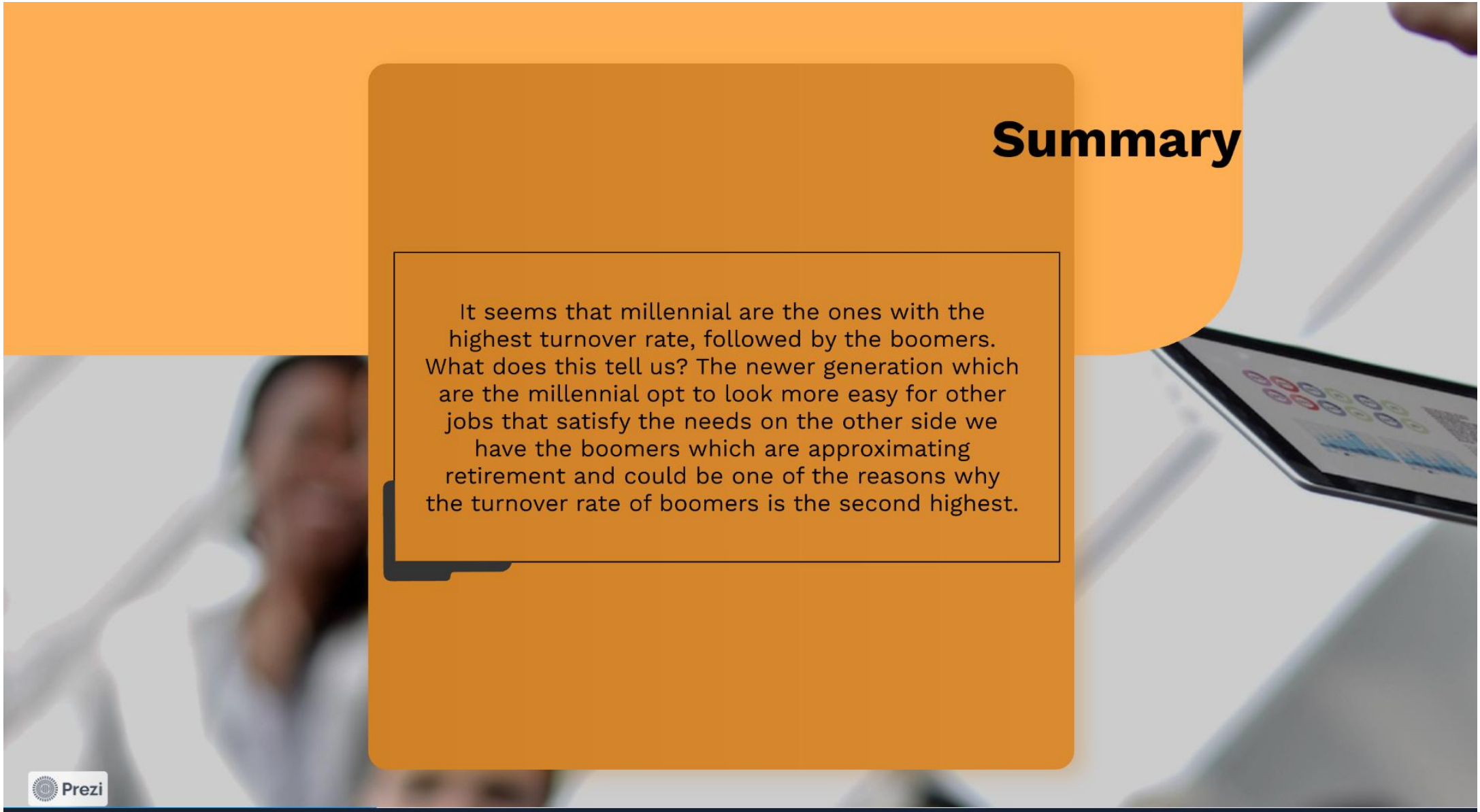
Total Working Years



It seems like those who have less total working years leaves the organization which is true as Millennial has a higher attrition rate.

Summary

It seems that millennial are the ones with the highest turnover rate, followed by the boomers. What does this tell us? The newer generation which are the millennial opt to look more easy for other jobs that satisfy the needs on the other side we have the boomers which are approximating retirement and could be one of the reasons why the turnover rate of boomers is the second highest.



Prezi

Education Level

Question :

Is Education Level a factor of employee attrition?

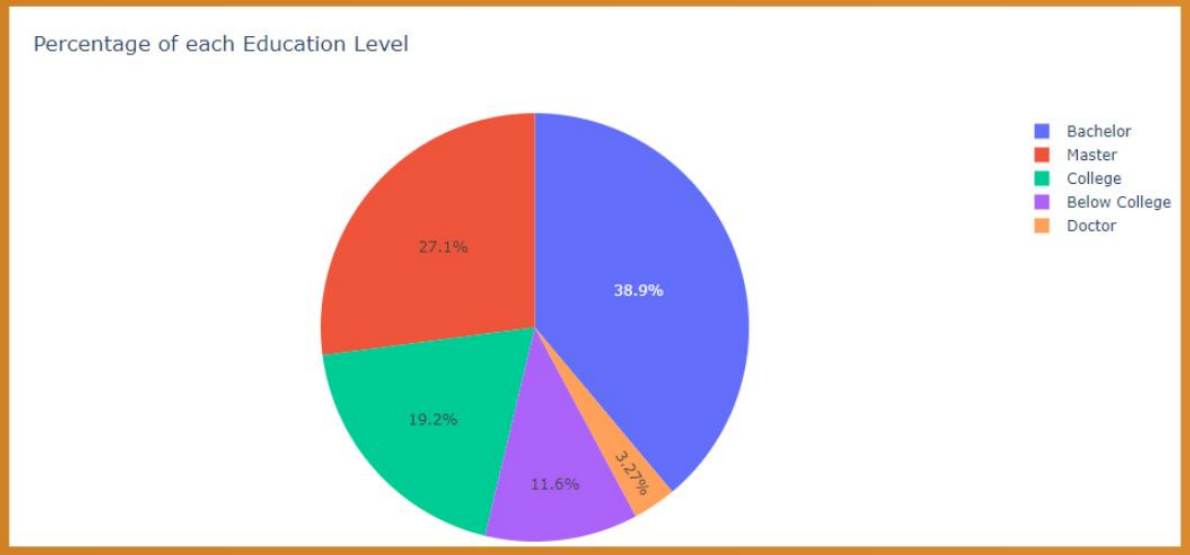
Count

Attrition

Summary

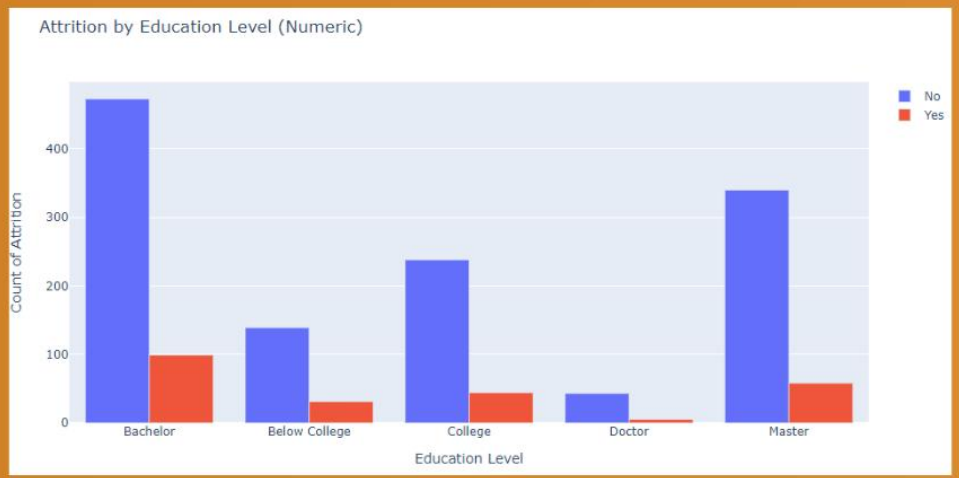
Prezi

Count


Percentage of each Education Level
Bachelor
Master
College
Below College
Doctor
38.9%
27.1%
19.2%
11.6%
3.27%

Attrition

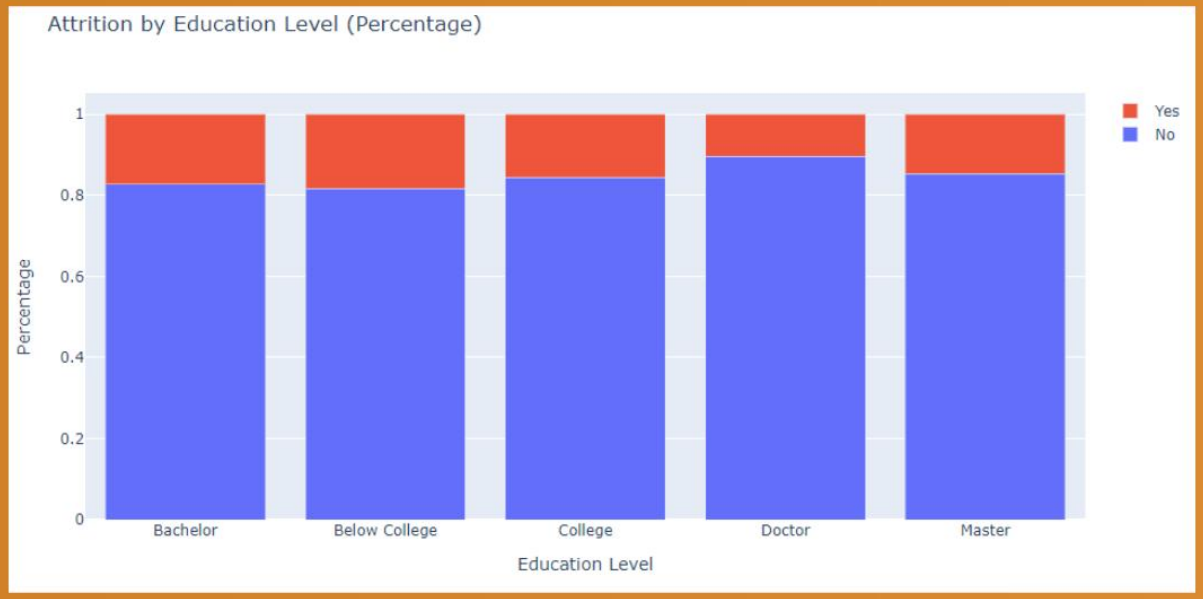
Percentage



Looks like Bachelor holder have a higher Attrition Rate

Prezi

Percentage

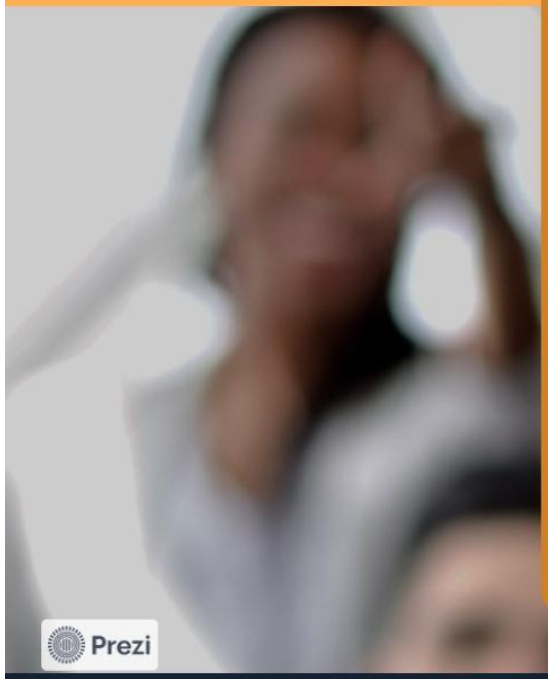


It seems that the rate of attrition are quite the same

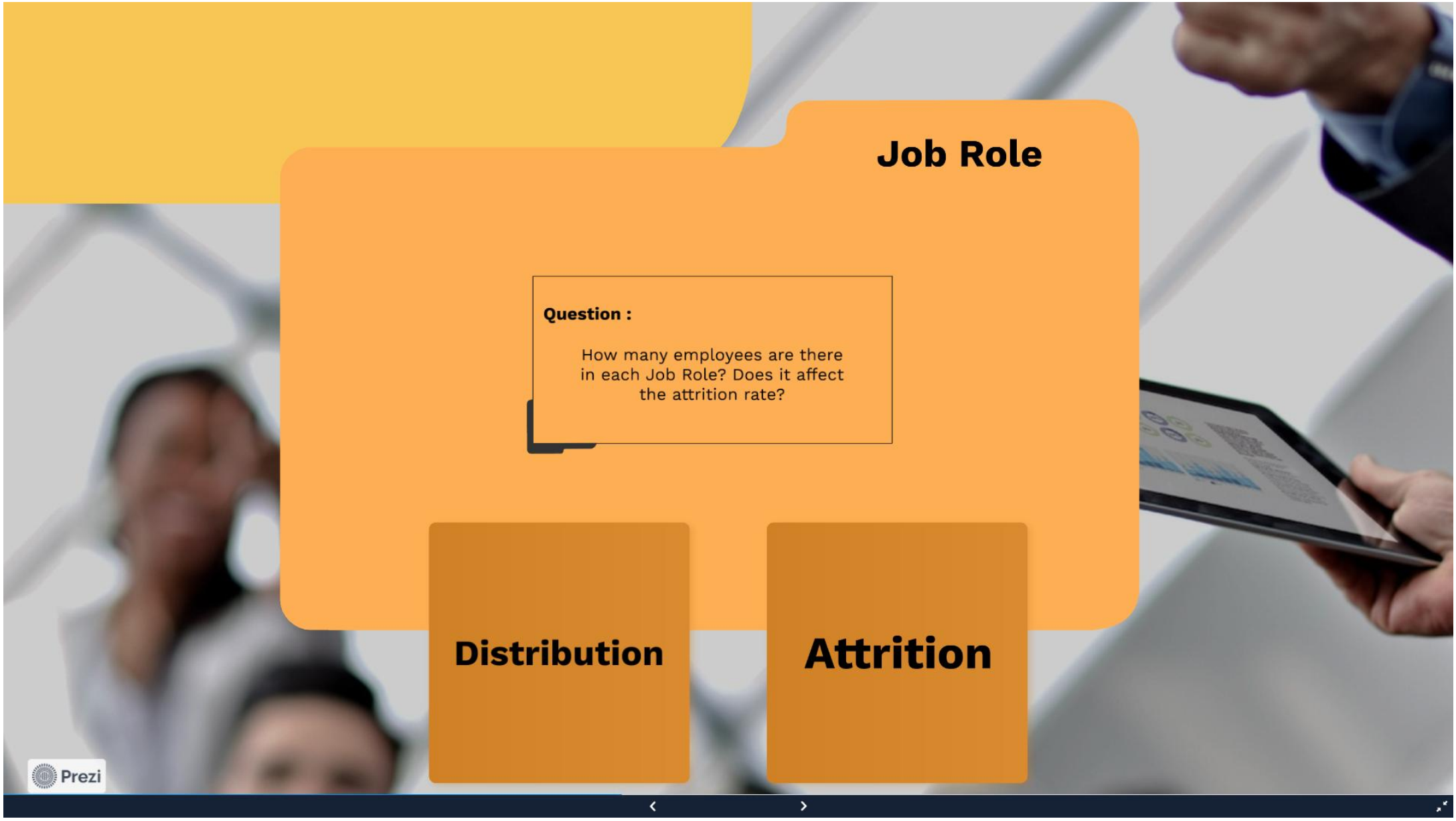
Prezi

Summary

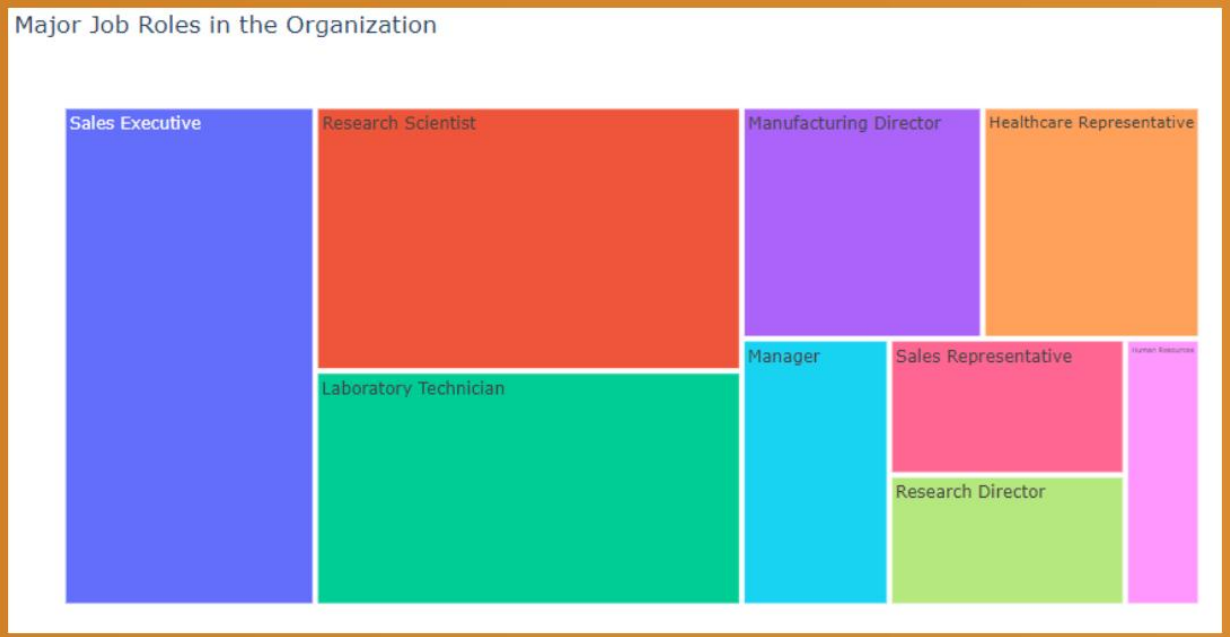
It seems like education is a main factor of Attrition at first. However, if we compare it into percentage, they are quite the same. Therefore, Education Level is not a main factor of Employee Attrition



Prezi


Job Role
Question :
How many employees are there in each Job Role? Does it affect the attrition rate?
Distribution
Attrition
Prezi

Distribution

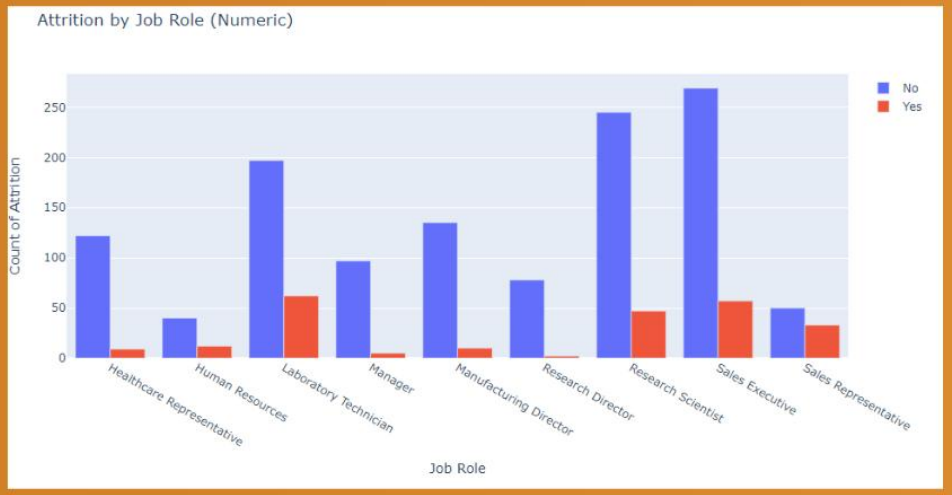


Most Employee work as Sales Executive in the organization

Prezi

Attrition

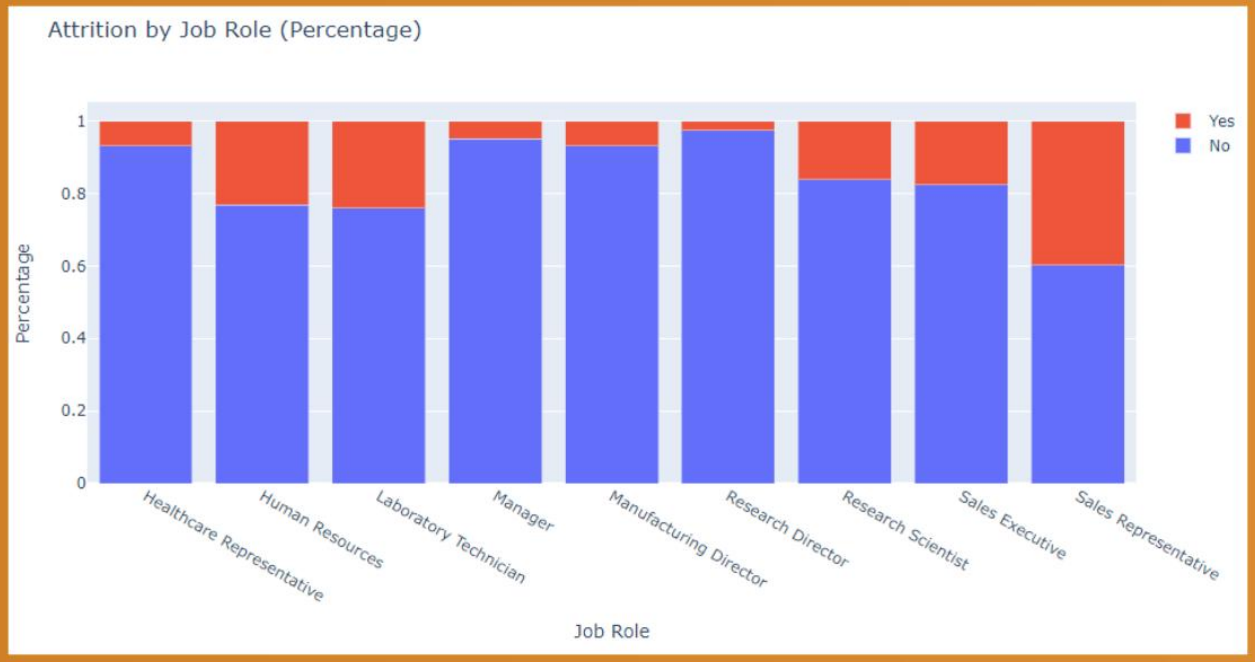
Percentage



Laboratory Technician , Sales Executive and Research Scientist seems to have a higher rate of attrition

Prezi

Percentage

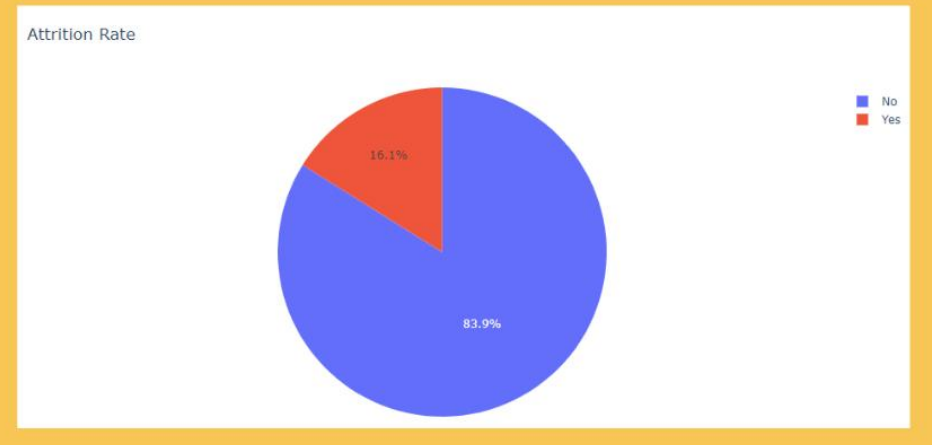


Summary : Sales Representatives, Human Resources and Laboratory Technician have the highest attrition rates. This could give us a hint that in these departments we are experiencing certain issues with employees.

Prezi

Factors

Rate :



Satisfaction

Work Life Balance

Salary

Overtime

Prezi

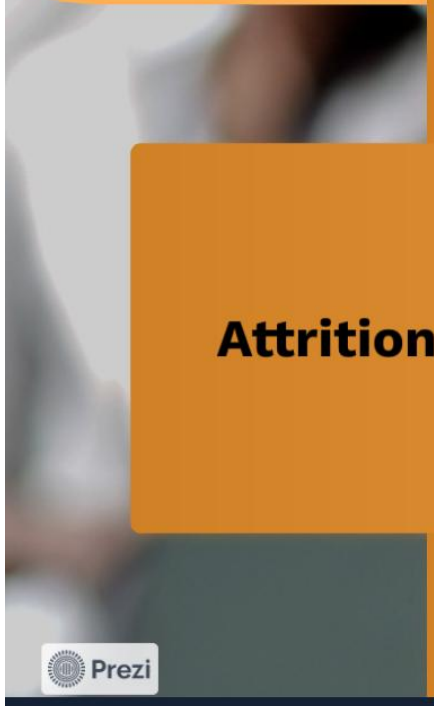
Attrition by Satisfaction
Question :
How does satisfaction affect attrition?
Environment
Job
Prezi

Attrition by Environment Satisfaction

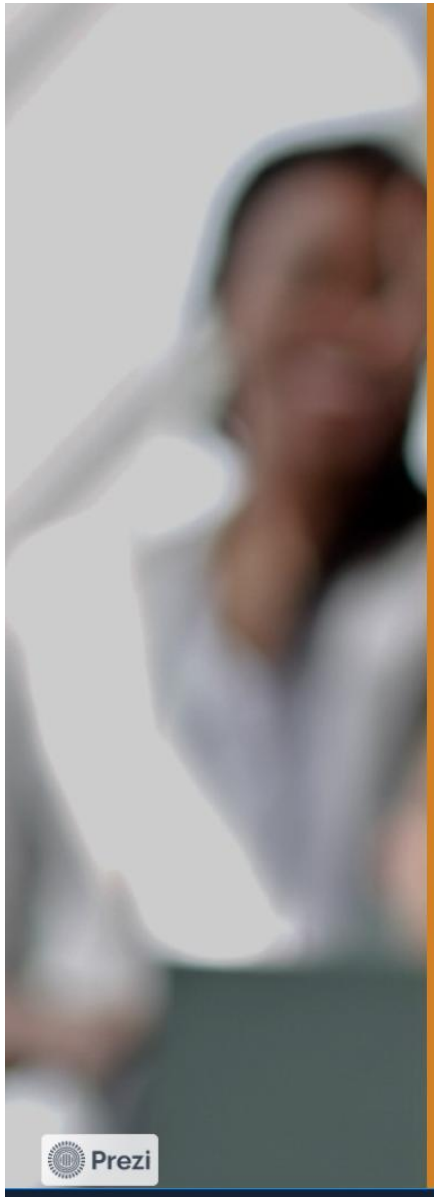
Question :

What's the working environment by job role?
Is this a major factor of employee attrition?

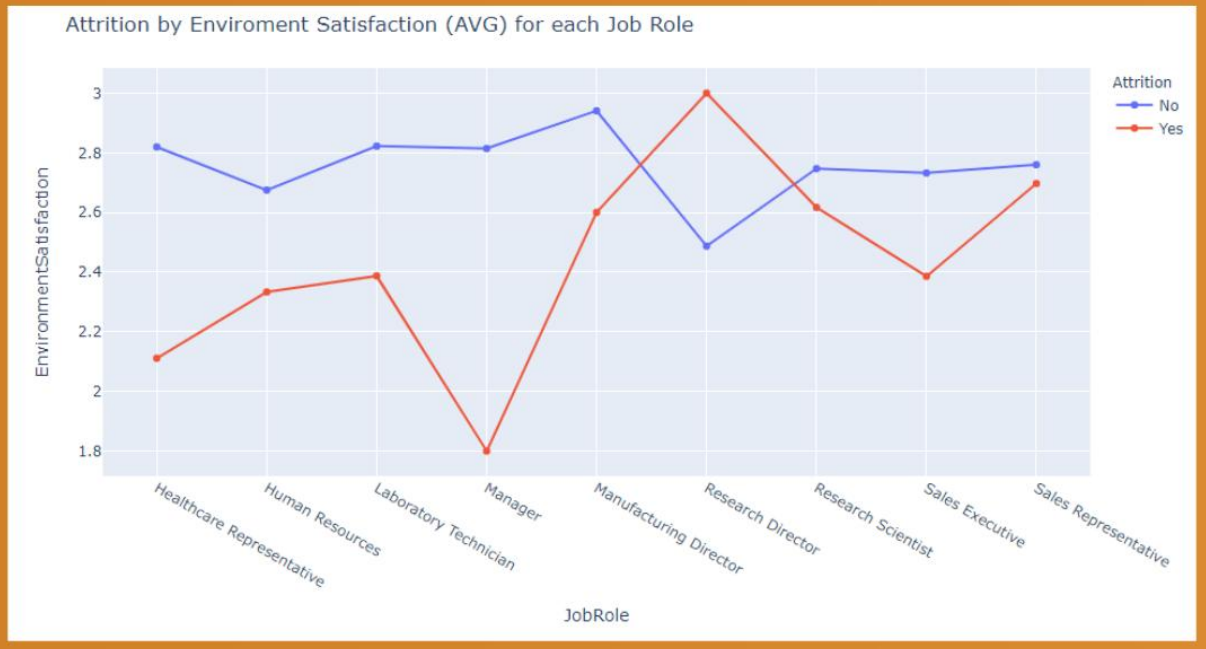
Attrition



Prezi



Attrition



Summary : As expected, managers and healthcare representatives are dealing with a lower working environment however, we don't see the same with sales representatives that could be because most sales representatives work outside the organization. Those who have lower environment satisfaction tend to leave the organization too compared to those who are satisfied.

Attrition by Job Satisfaction

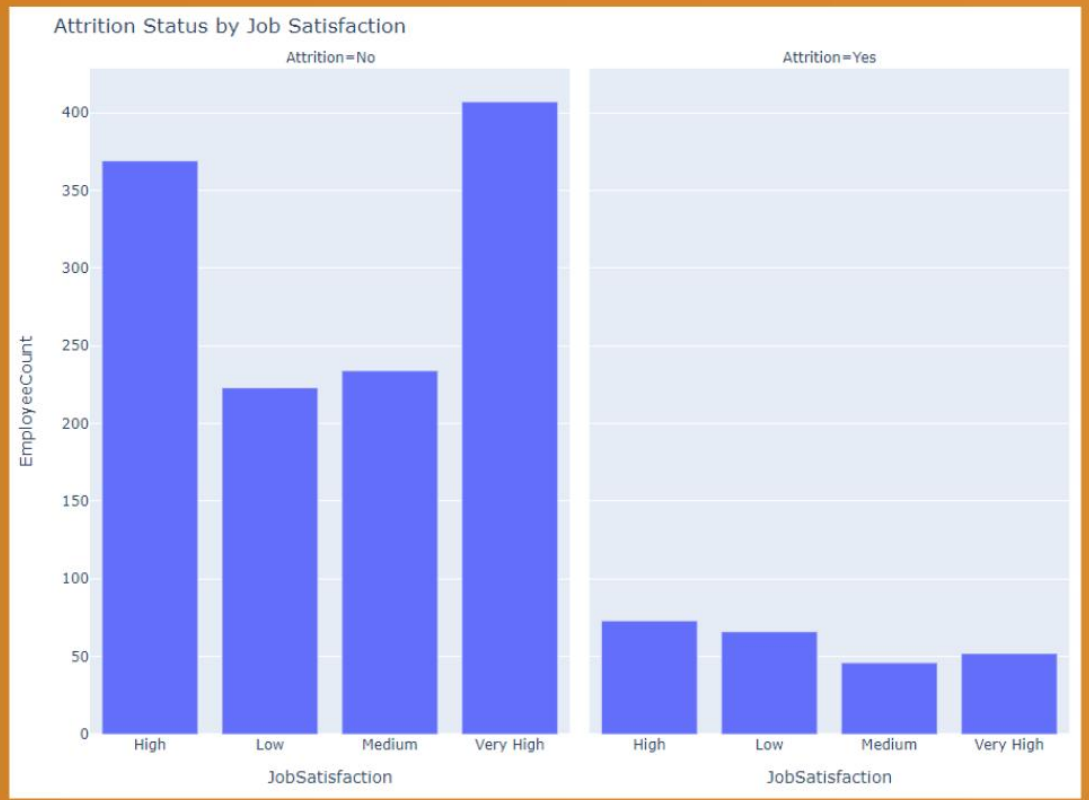
Question :

Does Job Satisfaction affect the attrition rate? Are individuals with a lower satisfaction quit the organization than the ones who are more satisfied?

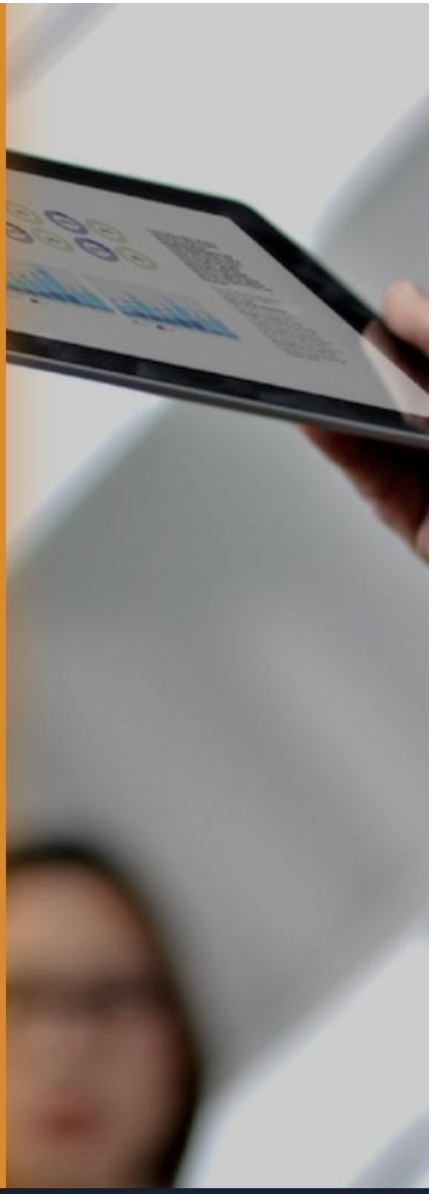
Attrition

Prezi

Attrition



Summary : Job Satisfaction seems to be quite balance for those who leaves the company and who doesn't.



Prezi

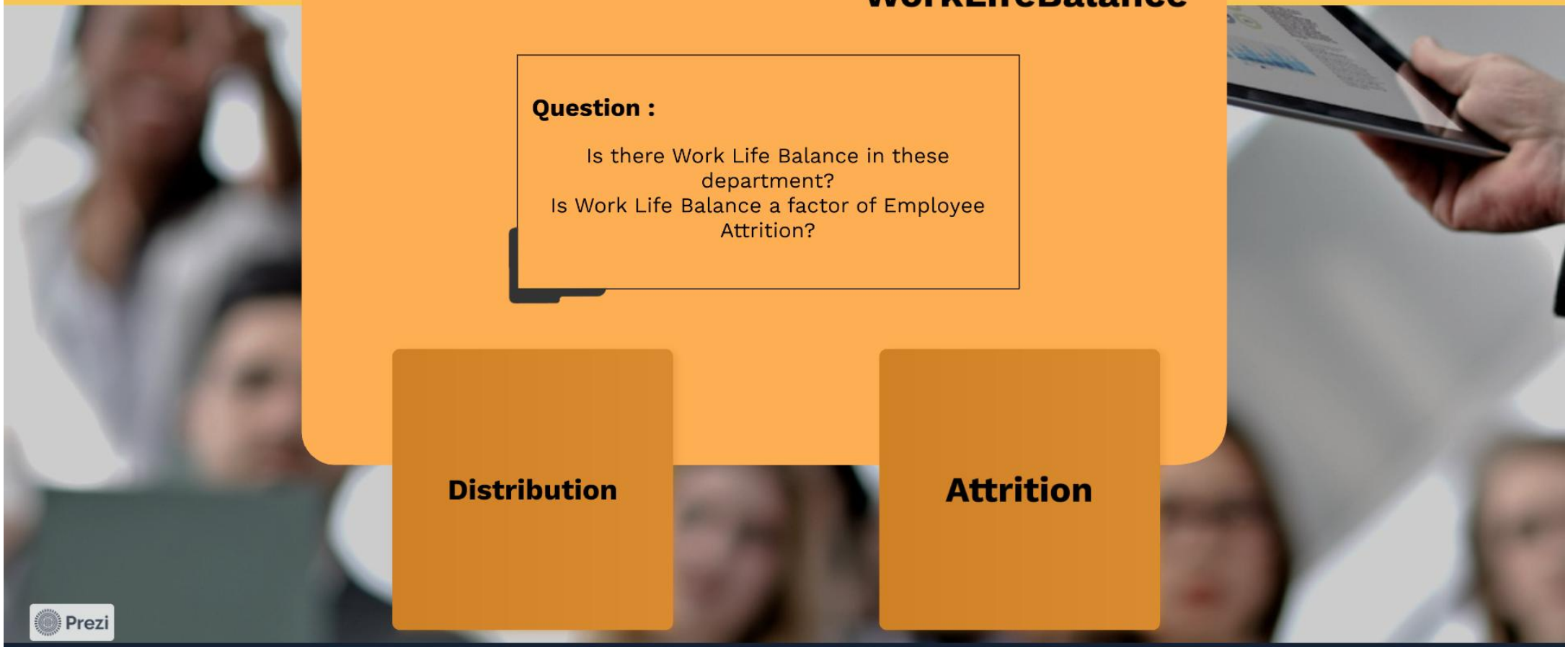
Attrition by WorkLifeBalance

Question :

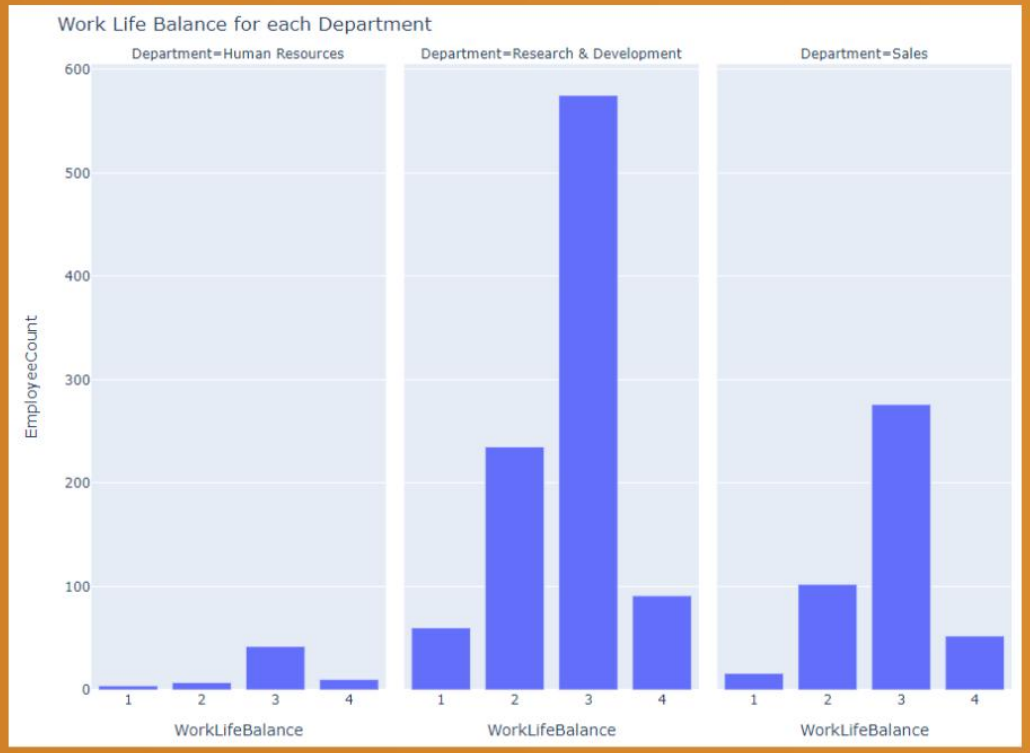
Is there Work Life Balance in these department?
Is Work Life Balance a factor of Employee Attrition?

Distribution

Attrition



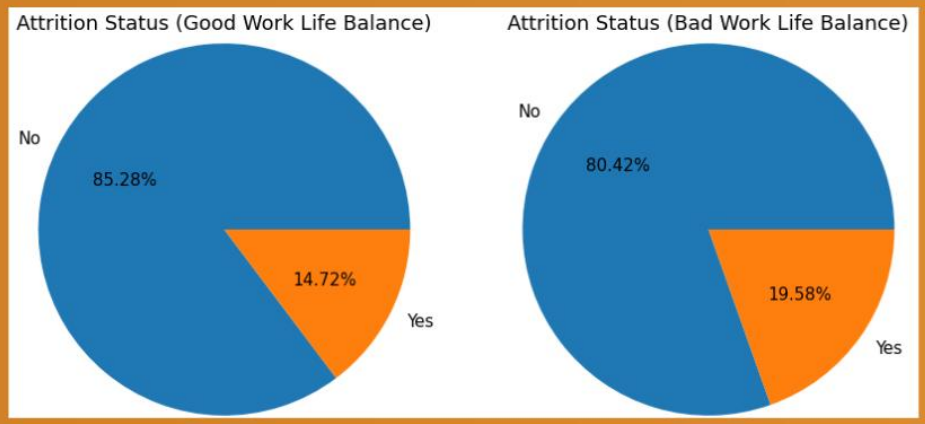
Distribution of WorkLifeBalance by Department



Work Life Balance does exist in these Department. However, there are still many of them who stated that they didn't have Work Life Balance, it might be a factor of attrition, lets dive deeper into it.

Prezi

Attrition



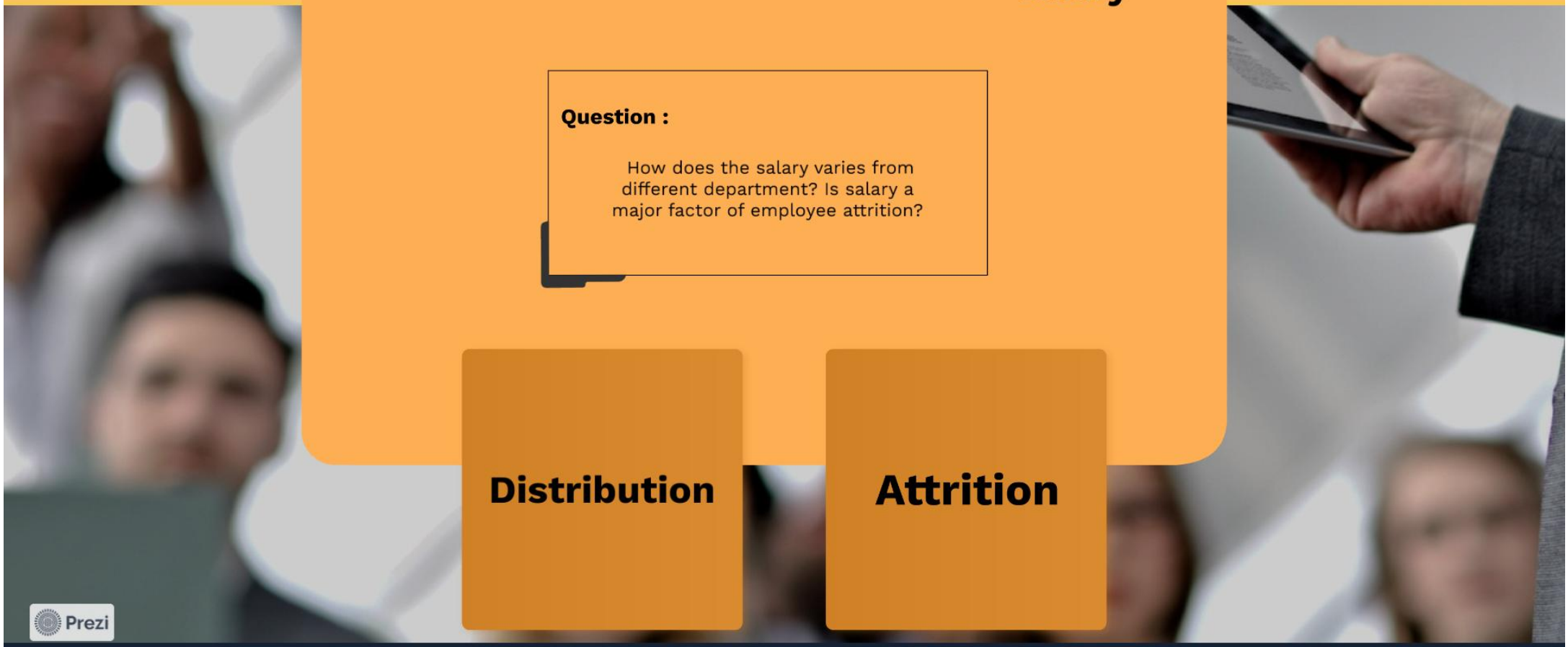
Summary : 19.58% of those who have bad work life balance and 14.72% of those who have good work life balance leaves the company. Therefore, this shouldn't be a major factor of employee attrition as both of the rate of attrition are quite similar.

Prezi

Attrition by Salary

Question :

How does the salary varies from different department? Is salary a major factor of employee attrition?

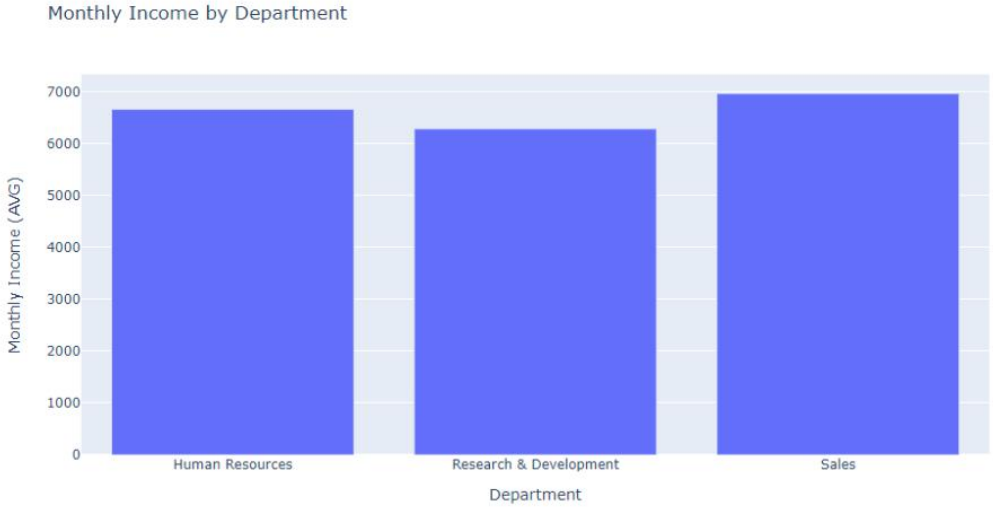


Distribution

Attrition

Prezi

Salary Distribution by Department



Department	MonthlyIncome
Human Resources	6654.507936507936
Research & Development	6281.252861602497
Sales	6959.17264573991

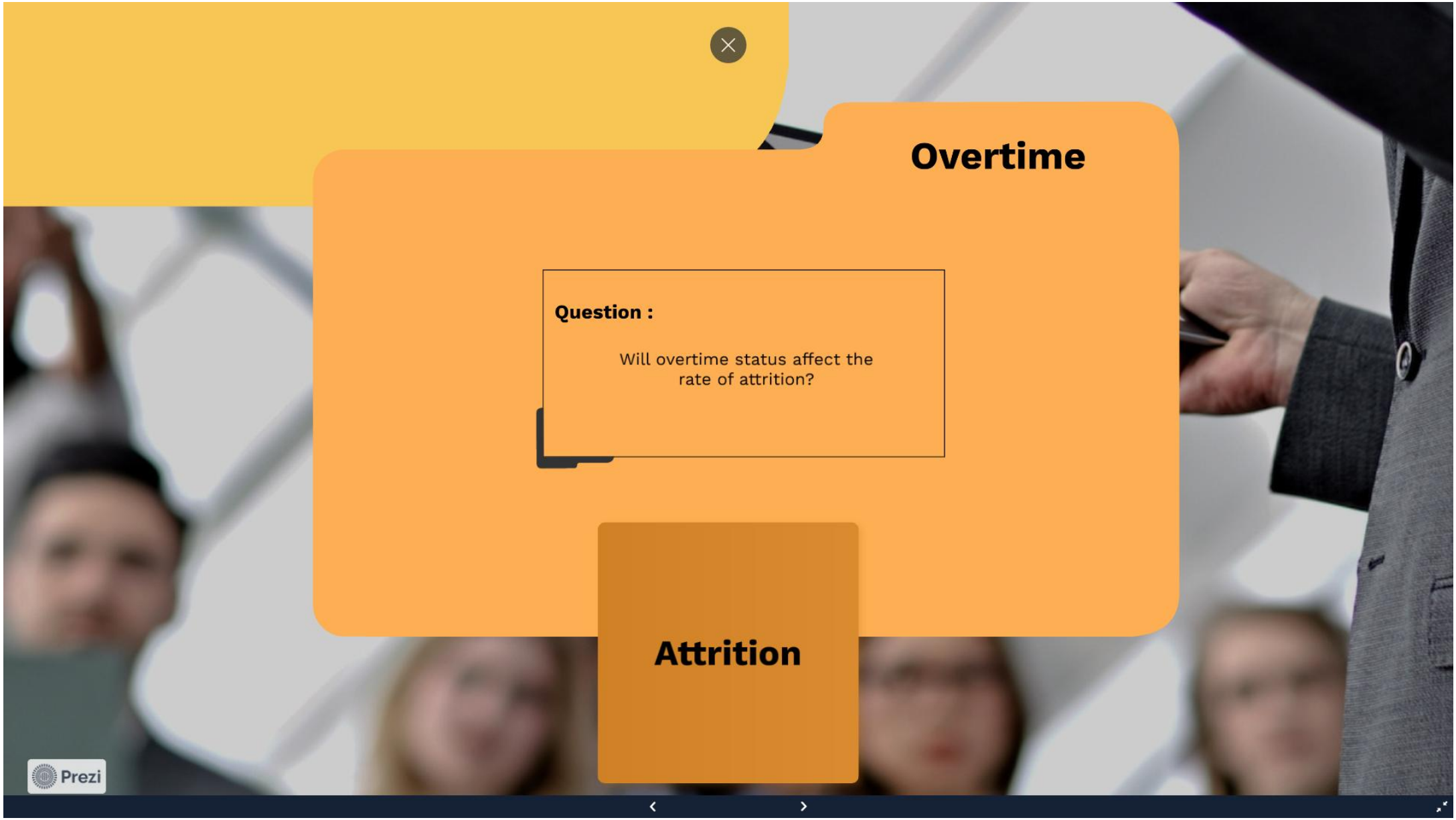
Sales Department have the highest mean monthly salary followed by Human Resource, lastly Research and Development

Prezi

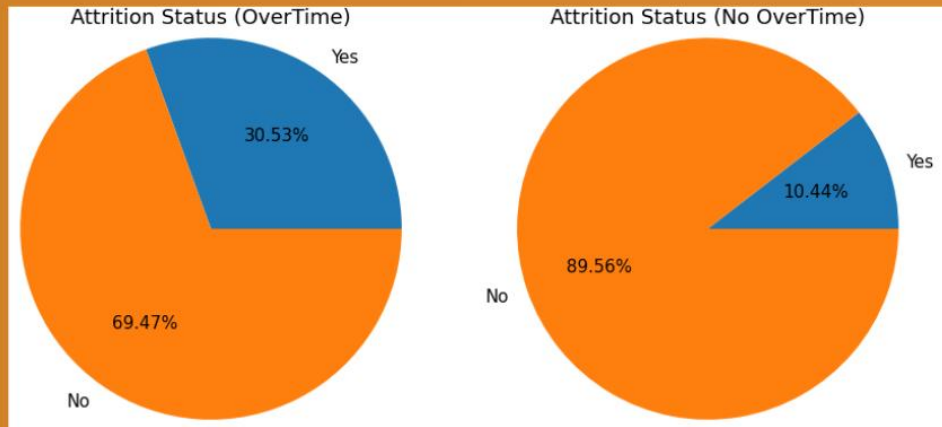
Attrition

Summary : As we can see, for those who leave the organization, they have a significant lower mean salary compared to those who stay. Therefore, we could clearly see that this is a major factor of Employee Attrition.

Prezi


Overtime
Question :
Will overtime status affect the rate of attrition?
Attrition
Prezi

Attrition Rate



OverTime	Attrition	EmployeeCount
No	No	944
No	Yes	110
Yes	No	289
Yes	Yes	127

Summary : Over 30% of workers who left the organization worked overtime compared to those who didn't worked overtime! Will this be a reason why employees are leaving?

Random Forest Classifier
Aim :
• Get importance of each features
• Build a model to predict employee Attrition
Features & labels
Importance
Model
Prezi

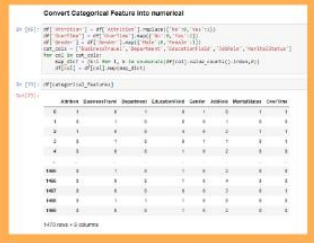
Features and label

Data Cleaning

Drop

Get

Convert



Final

```
In [67]: # Selecting features and label
         x = df.drop(['Attrition'], axis = 1)
         y = df['Attrition']
```

Prezi

Importance

Prezi

Model

Split

```
In [71]: # Splitting data
         x_train,x_test,y_train,y_test = train_test_split(x_scaled,y,test_size=0.3,random_state=42)
         print('training shape: ',x_train.shape)
         print('testing shape: ',x_test.shape)

         training shape:  (1029, 30)
         testing shape:  (441, 30)
```

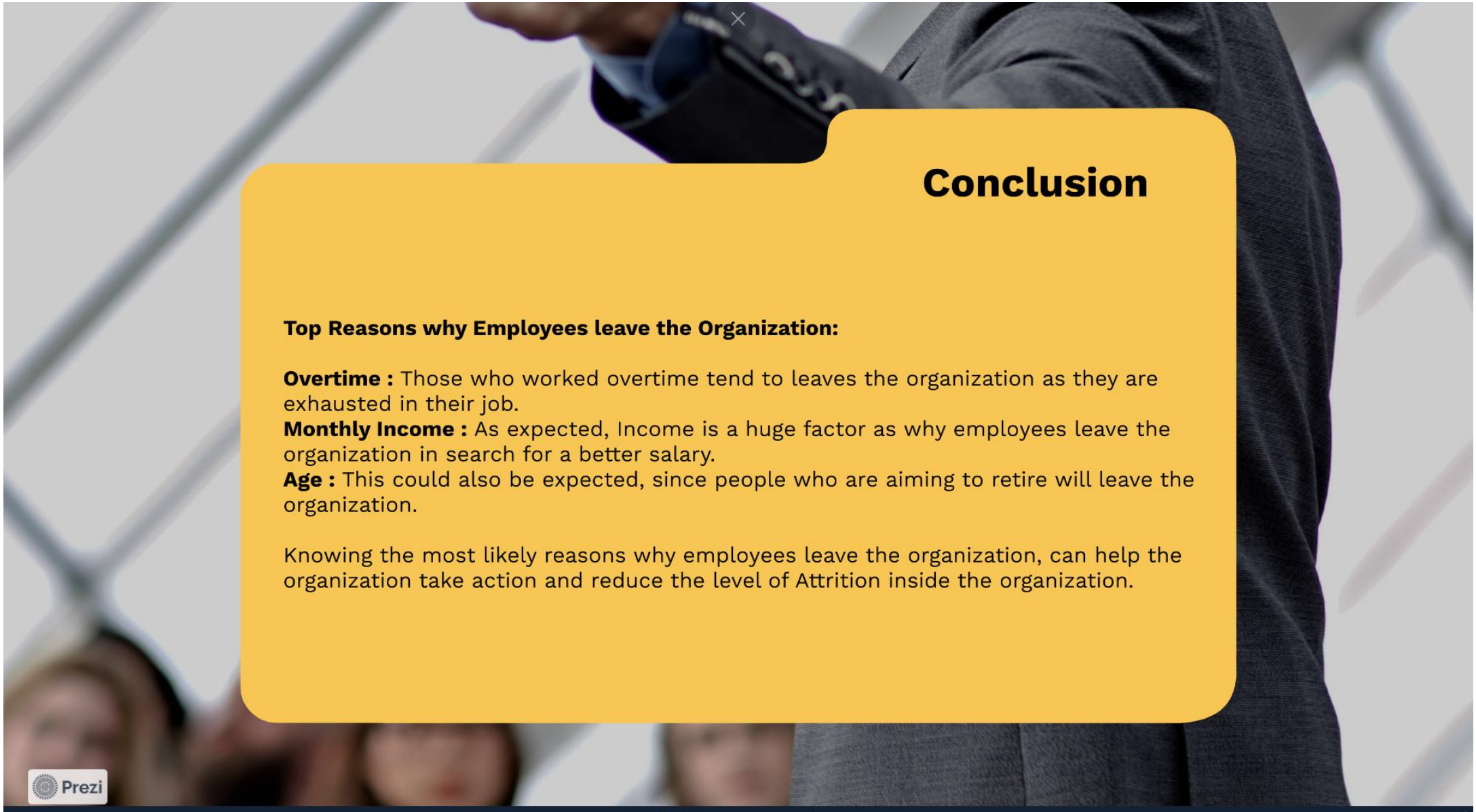
Fit

```
In [75]: # Fit model and accuracy score

         clf = RandomForestClassifier()

         clf.fit(x_train, y_train)

Out[75]: RandomForestClassifier()
```

Predict

```
In [76]: pred = clf.predict(x_test)
         print(clf.__class__.__name__," : ", accuracy_score(y_test,pred))
         RandomForestClassifier  :  0.8934240362811023
```

Prezi



Conclusion

Top Reasons why Employees leave the Organization:

Overtime : Those who worked overtime tend to leaves the organization as they are exhausted in their job.
Monthly Income : As expected, Income is a huge factor as why employees leave the organization in search for a better salary.
Age : This could also be expected, since people who are aiming to retire will leave the organization.

Knowing the most likely reasons why employees leave the organization, can help the organization take action and reduce the level of Attrition inside the organization.

Prezi