

# HR-Analytics Insights Summary

---

The goal is to build a predictive model that predicts employee attrition. Below table are the data from which can analyse the factors that lead to employee attrition. First, we will do some pre-processing, exploratory data analysis

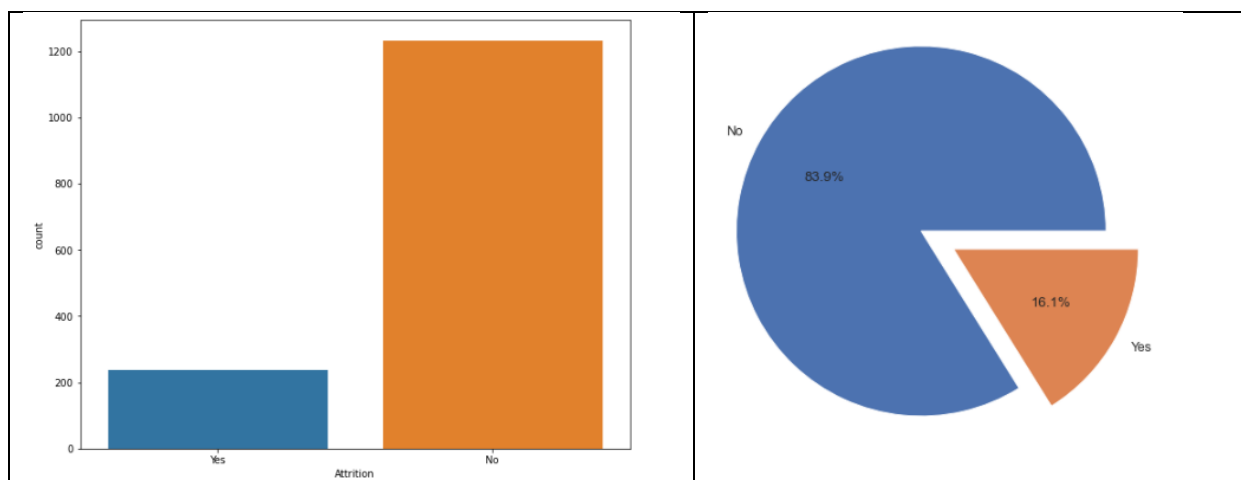
## Data Dictionary

Feature Name	Column Description
Age	The Age of the Employee
Attrition	Whether an Employee is leaving the company or not
BusinessTravel	How often an employee travels for business.
DailyRate	Salary Level
Department	Which department the employee was employed under
DistanceFromHome	The distance of an employee from home to office.
Education	The education of an employee in numerical representation (1=HR, 2=LIFE SCIENCES, 3=MARKETING, 4=MEDICAL SCIENCES, 5=OTHERS, 6= TEHCNICAL)
EducationField	Education Name of the employee has done.
EmployeeCount	The count of an employee
EmployeeNumber	Employee ID of an employee
EnvironmentSatisfaction	How far an employee is satisfied with environment.
Gender	The gender of an employee
HourlyRate	Hourly Salary of an employee.
JobInvolvement	Job Involvement of employee
JobLevel	Job level of employee
JobRole	Job role of employee
JobSatisfaction	How far an employee is satisfied doing his job.
MaritalStatus	The marital status of an employee
MonthlyIncome	The monthly income of an employee.
MonthlyRate	The monthly rate of an employee.
NumCompaniesWorked	Number of companies the employees has worked for
OverTime	Whether working Overtime or not
PercentSalaryHike	Percentage salary hike since their appointment in the company
PerformanceRating	Performance Rating of an employee
RelationshipSatisfaction	Relationship satisfaction of an employee.
StandardHours	Standard working hours of employee
StockOptionLevel	Level of opted for sharing the stock

TotalWorkingYears	Total years worked by the employees
TrainingTimesLastYear	How many trainings the employee has undergone
WorkLifeBalance	How well an employee balances his worklife
YearsAtCompany	Years spent at the present organisation
YearsInCurrentRole	Years spent at the current role
YearsSinceLastPromotion	Time gone in years since last promotion
YearsWithCurrManager	Years working under he current manager

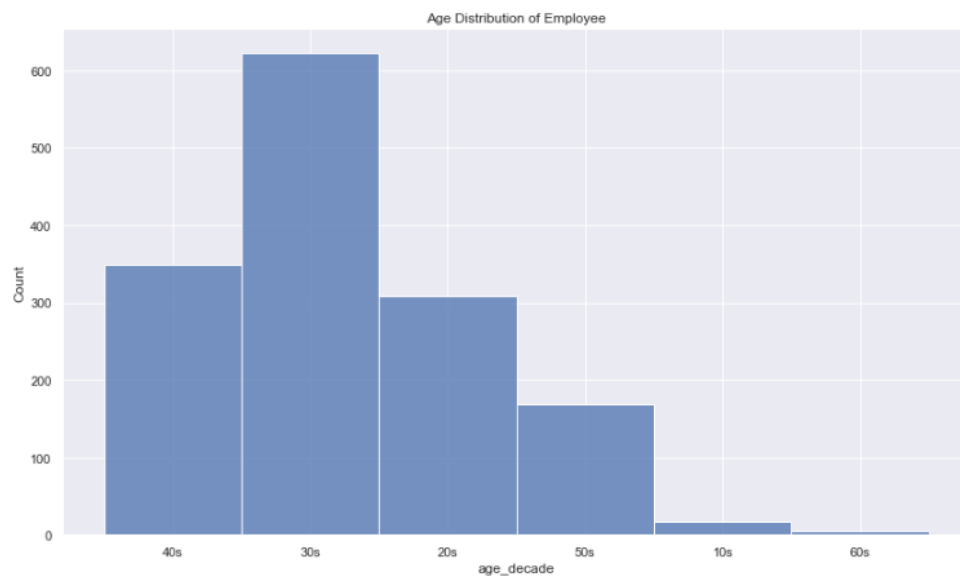
Below are the insights that came out of EDA

How much attrition percentage is there in the company?

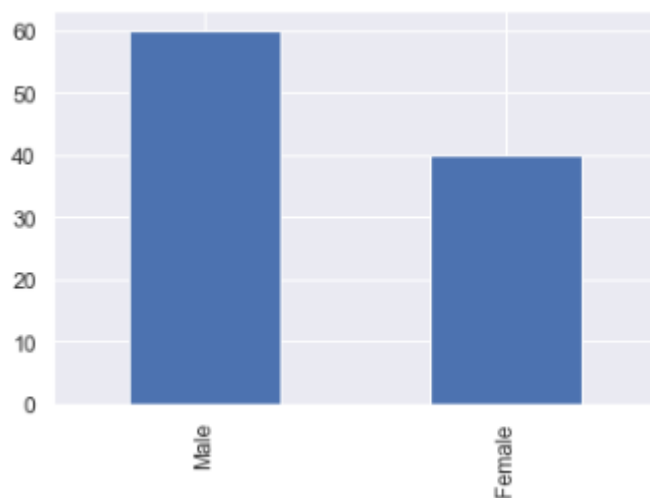


From the above two plots, it clearly indicates that attrition percentage is less. About 84 % of the employees have not left the company.

Now, we found the age distribution of employees and as per the below chart, most of the employees are in their 30s.

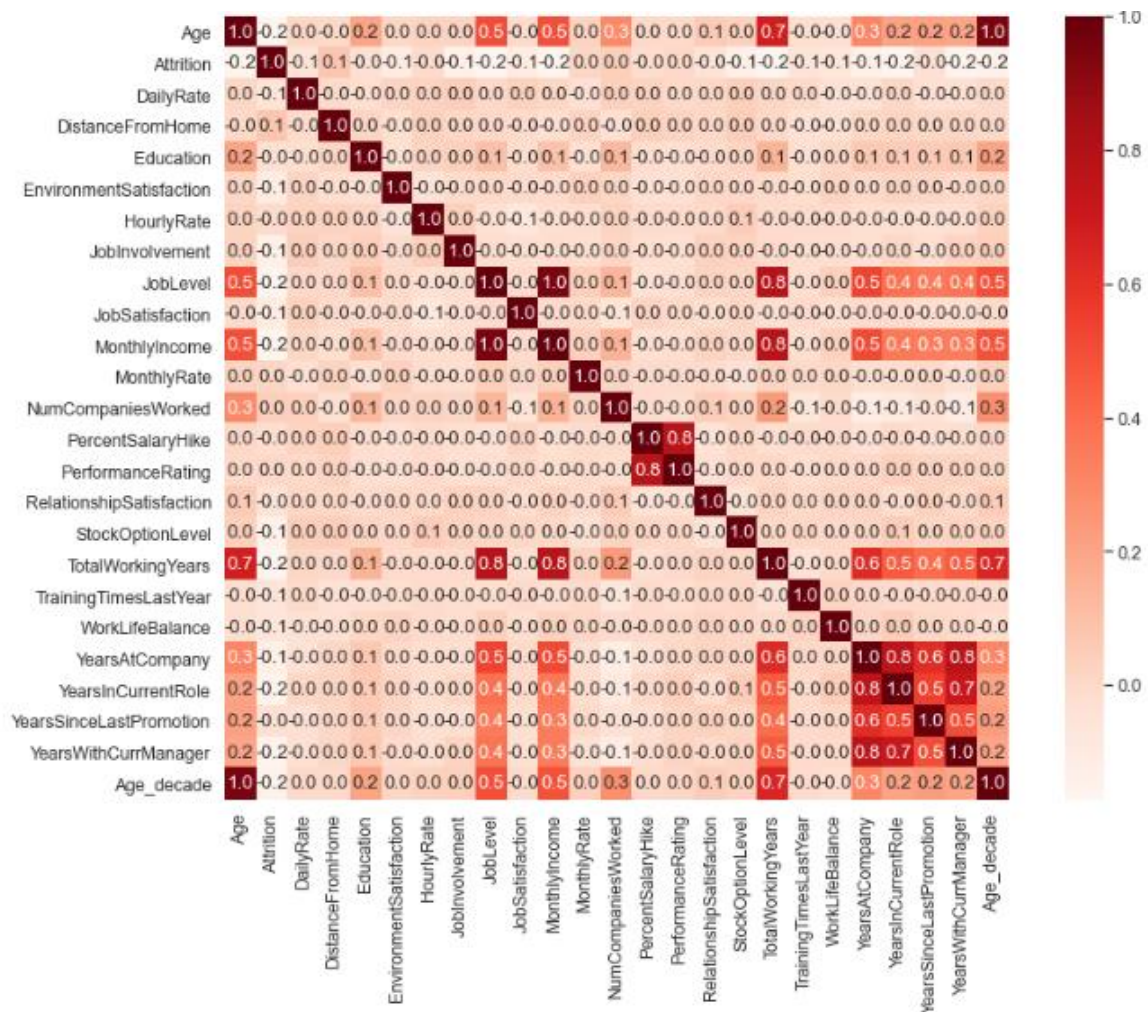


What percentage of Females and Males are working in the company?



From the above chart it clearly indicates that Male employees are more than that of female employees.

We used heat map for finding which factors are correlated for attritions of the employee.

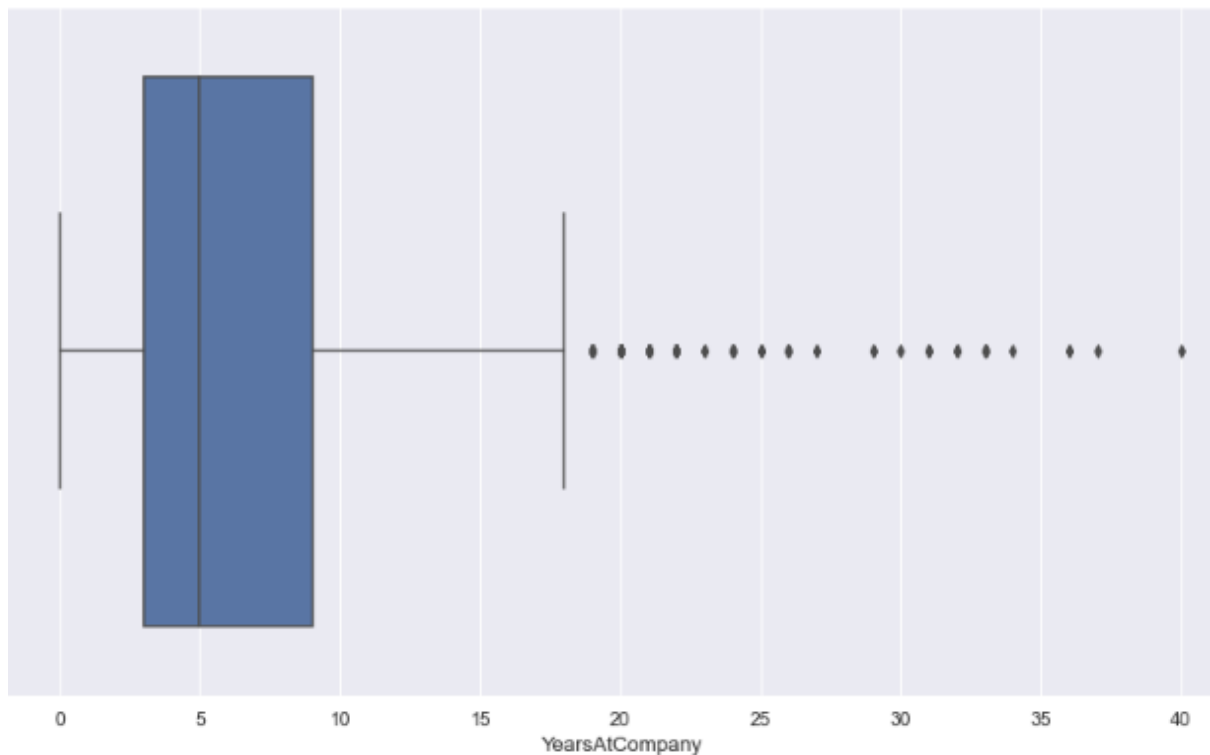


As we can see, there isn't a very strong correlation of the target column with any of the numerical columns. But we can see other correlations such as;

- More senior employees have higher total working years (very obvious).
- Higher performance ratings lead to salary hike percentage to increase.
- The more years an employee puts in, the more their monthly income increases.
- A lot of employees remain in their current role and also under the same manager as years pass by meaning they don't get promotion and this could be a major factor contributing to attrition.

From here, we can deduce that the lack of promotions may be a crucial factor to attritions.

How much an employee work at the same company?



From the above chart, we can say that most of the employees remain in the company for 3-9 years with median being 5 years.

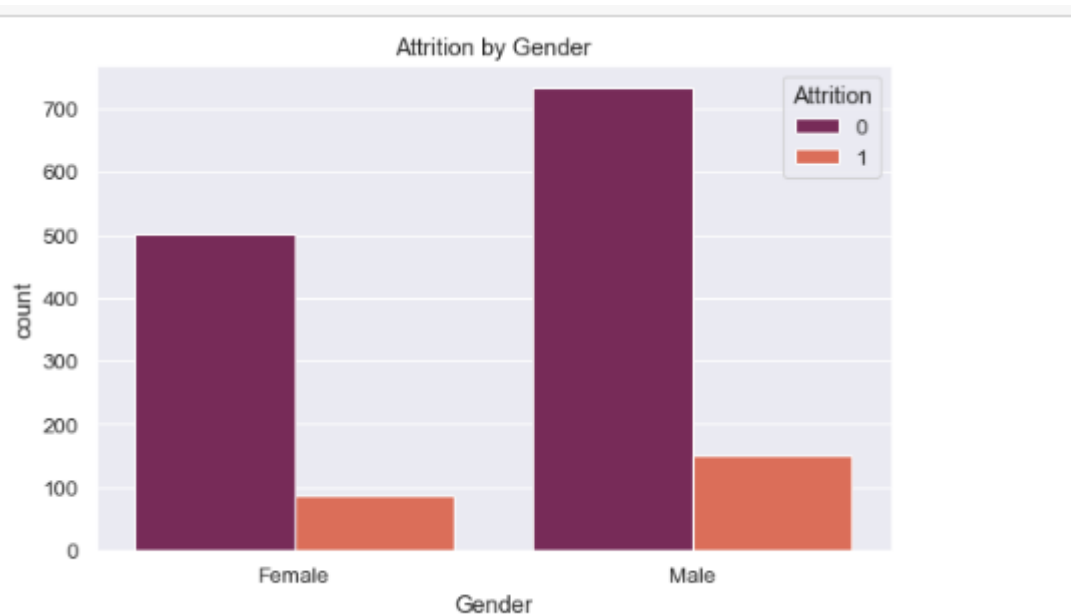
### Attrition by Department



Most attritions are from the research & development department only for sales department to come second by a small margin. Human resources has the least number of attritions. But R&D has a lot more employees than sales and HR.

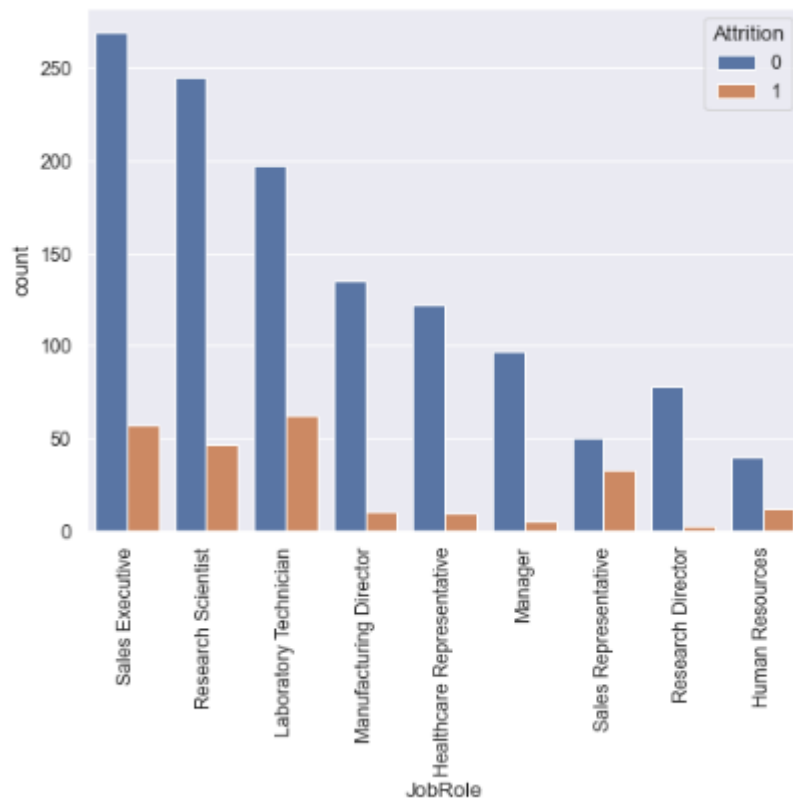
If we considered percentage of attritions per department, we would see that the HR department has most attrition.

### Attrition by Gender



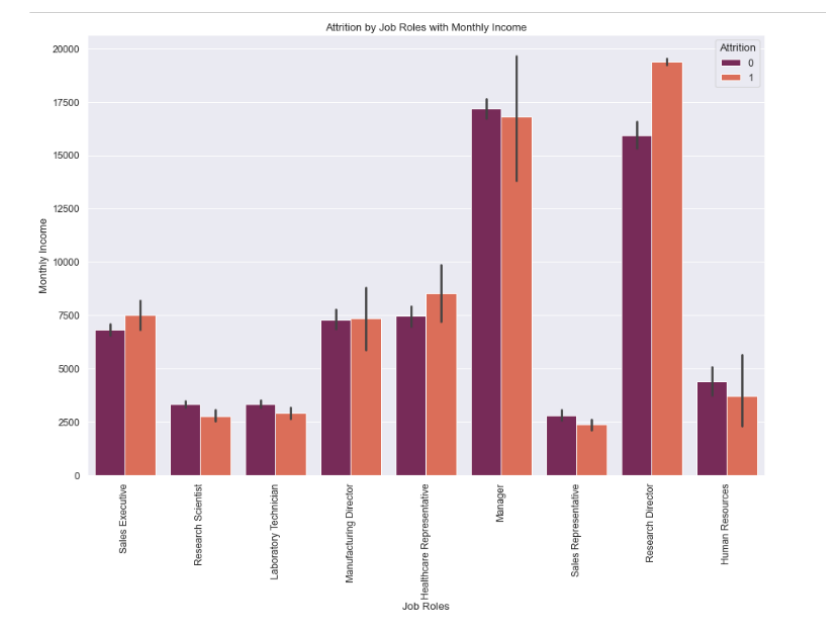
Clearly there are more males in the organisation than females, so attritions are higher but slightly. I don't think gender is too significant a factor behind attritions.

## Attrition by Job Roles



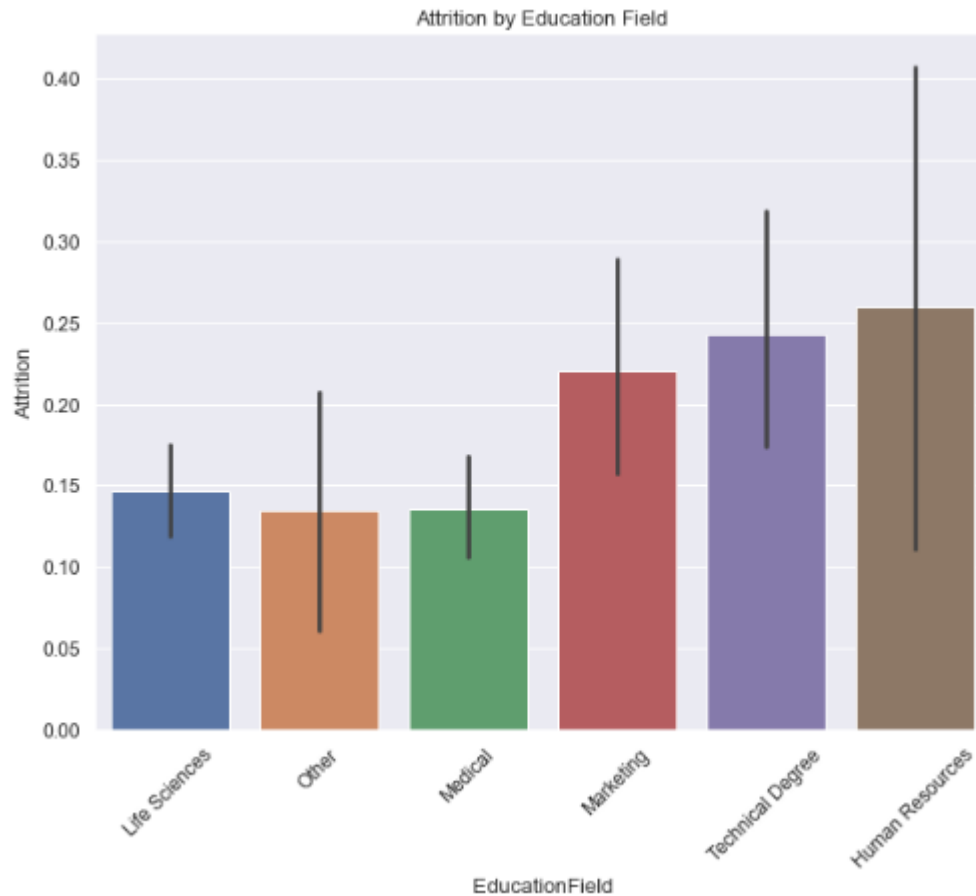
Among job roles, most laboratory technicians have departed from their jobs, only for research scientists, sales executives and sales representatives (% wise) to trail behind. We could look into salaries of each job roles and see if that may be the reason.

## Attrition by Job Roles with Monthly Income



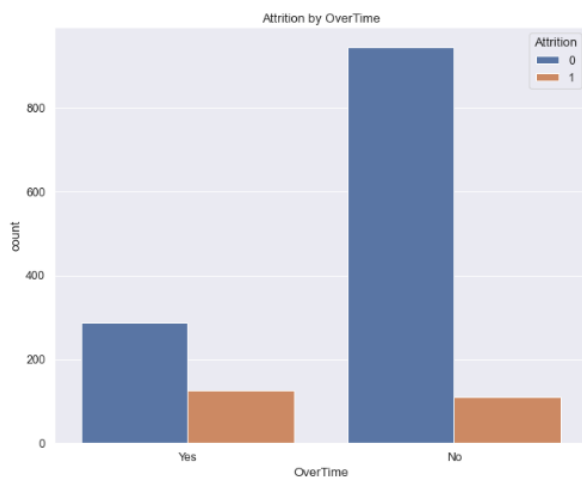
As doubted, laboratory technicians, research scientists and sales representatives and executives have very low salary and this could be a major factor behind attritions. Also, as we had seen earlier, the HR department had the most attritions and we can see they have very low salaries as well so once again, this is something to think about.

### Attrition by Education Field



I don't think the degrees of employees really matter here as most of the number of attritions are similar.

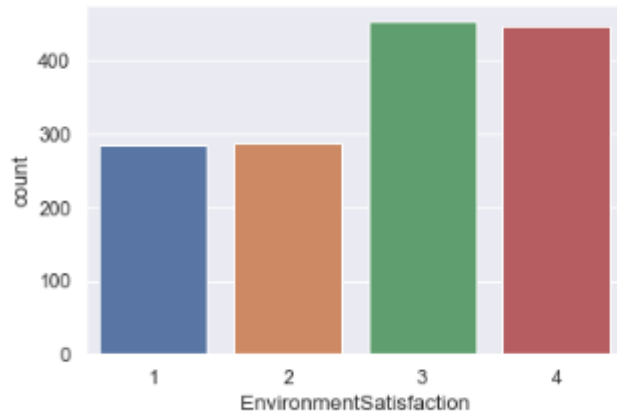
### Attrition by Overtime



Overtime does not seem to be a crucial factor for attrition either.

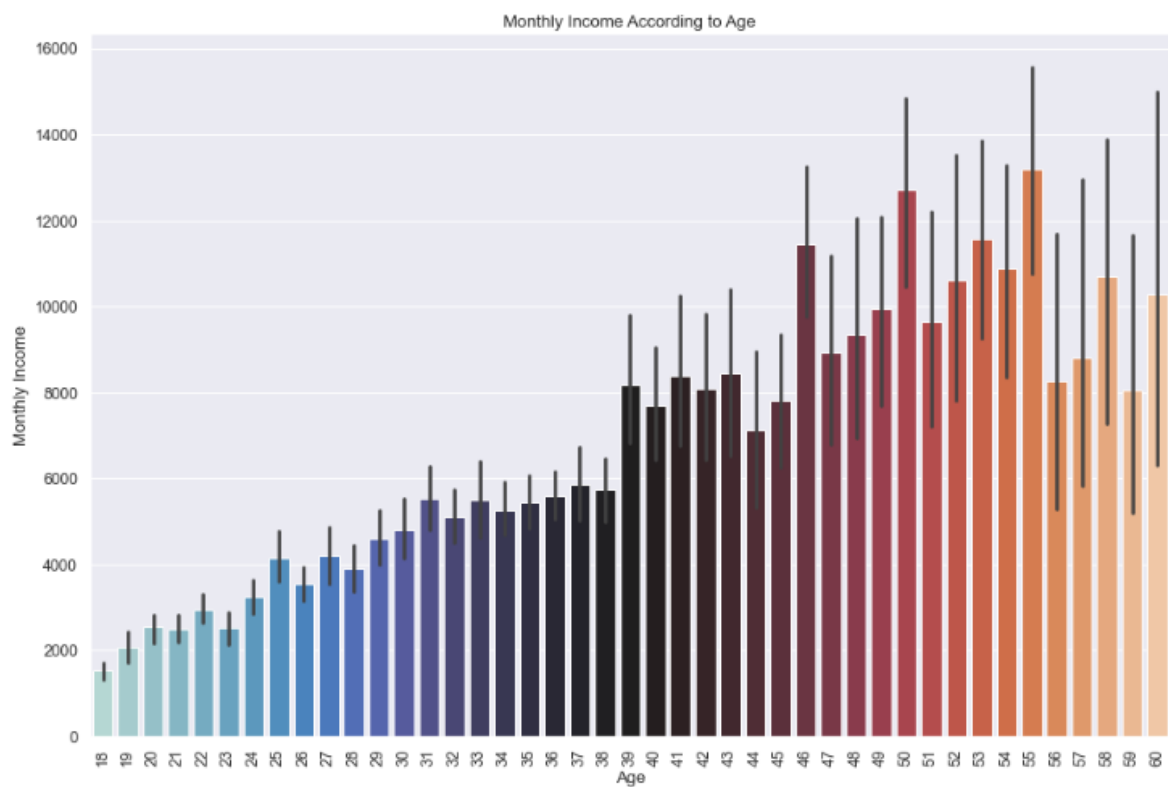


Is the Employee satisfied with the work environment?

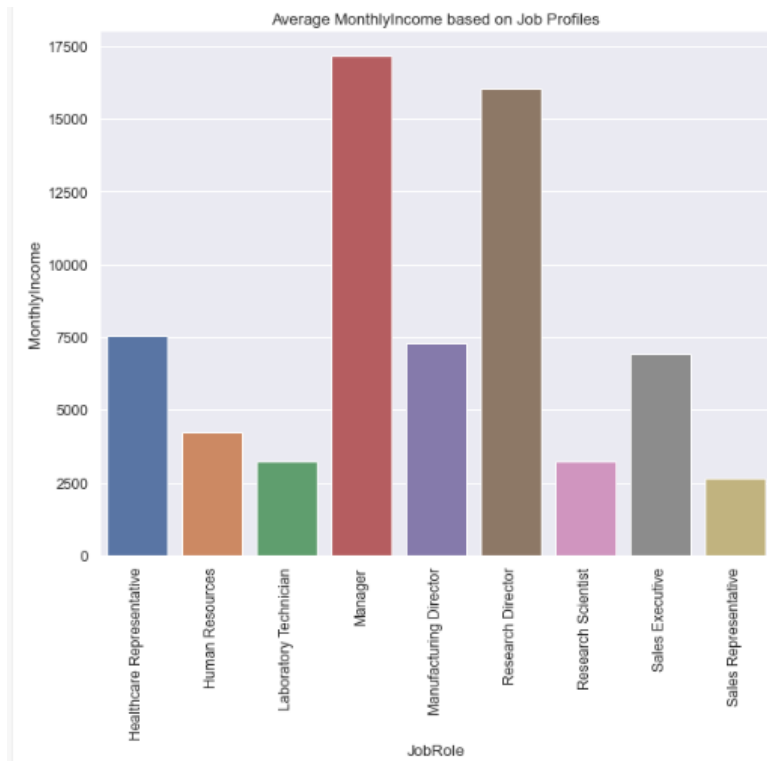


As per the chart, most of the employees are satisfied with their environment.

**Monthly Income of the employees according to their age.**

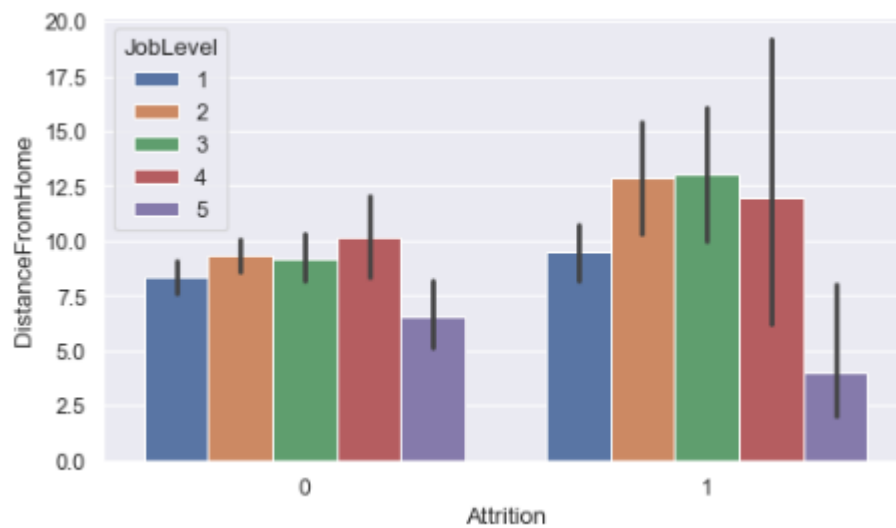


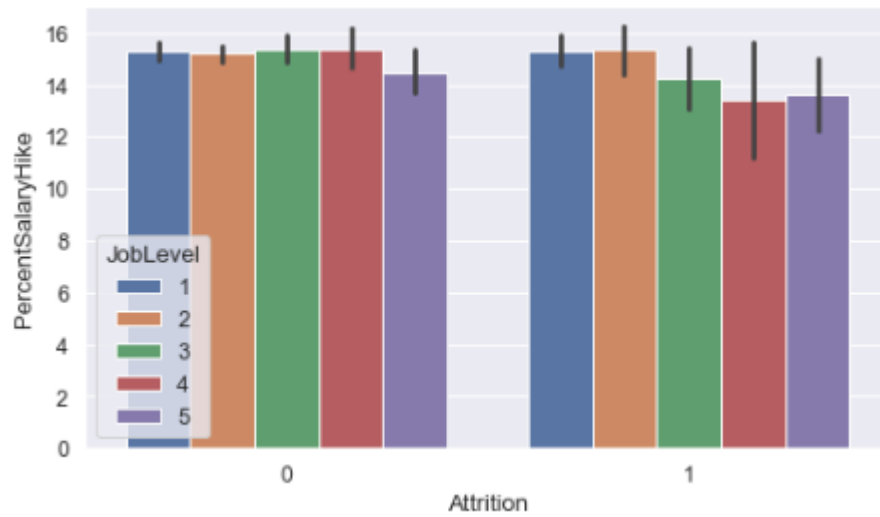
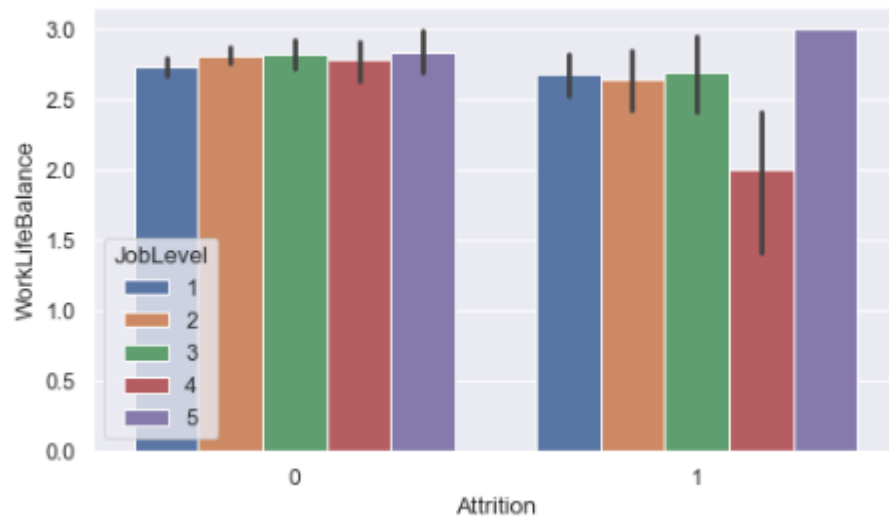
Average Monthly Income of the employees according to their job profiles.



Manager and Research Director have the highest average income.

Is Distance from Home is reason for employee attrition





Employees are more likely to quit, when

Distance from Home is above 8KM and (Married people are higher in this case)  
 Distance from Home is above 2.5 for Job Level 5