HR Analytics Case Study

SUBMISSION

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Background

A large company named **XYZ**, employs, at any given point of time, around 4000 employees. Every year, about 15% of employees leaves the company. Since attrition rate is high. So, it is a big concern for the company. That's why, company wants to use Modelling to drop this attrition rate

Objective:-

-Help company to identify the employee which are more likely to leave.

-Possible ways to decrease the attrition rate of employee for future.

We do analysis in 3 steps:-

1. Data Understanding

2. Predictive Modeling

3. Recommendations: Ways to reduce the attrition rate.

DATA UNDERSTANDING

Data Understanding

We have 4 different categories of data

General Data	Manager Survey Data	Employee Survey Data	Biometric Data
Attrition	Job Involvement	Job Satisfaction	In Time
Age	Performance Rating	Work Life Balance	Out Time
Education		Environment Satisfaction	

PREDICTIVE MODELING

Model Interpretation

Variables which are significant to explain the model are:

Variables with Positive Slope
Number of Companies Worked
Years Since Last Promotion
Average hours
Environment Satisfaction
Job Satisfaction
Business Travel
Marital Status

Variables with Negative Slope
Age
Total Working Years
Years With Current Manager
Work Life Balance

- Positive value of intercept (slope) for any variable refers to attrition of employee from the company.

- Negative value of intercept (slope) for any variable refers that employee is going to stay in the company.

Predicting Attrition – Overall 77% accuracy

- We build a predictive model to explain the reason behind the attrition of employees.

- There are total 56 variables taken from 4 different sources of data.

- Two new variables are derived from biometric data i.e. Average hours and leaves.

- Our Logistic Regression model is able to predict with 77% accuracy.

- Sensitivity is more important to us.

- Sensitivity of our model is 77% i.e. it correctly identifies 77% of employees which are likely to leave the company.

- Specificity of our model is 77% i.e. it correctly identifies 77% of employees which are not likely to leave the company.

Accuracy	77%
Sensitivity	77%
Specificity	77%

Confusion Matrix

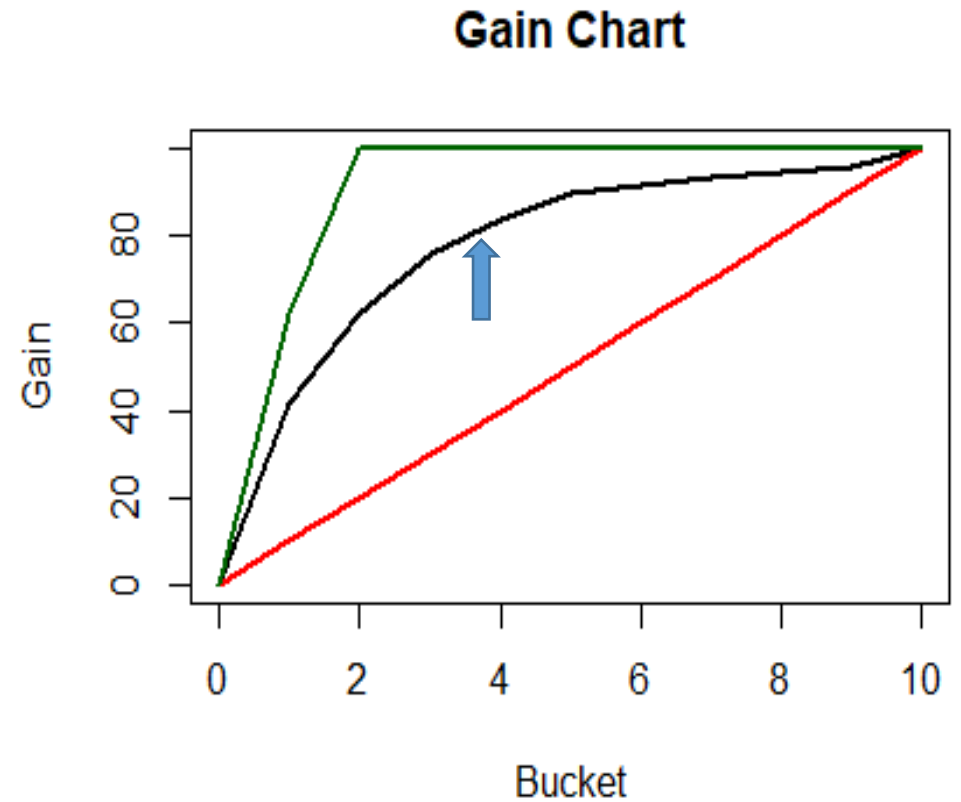KS Statistics for the model is 54% which indicates our model is fairly good and accurate.

Confusion Statistics

| Prediction\Actual	No	Yes
No	833	78
Yes	248	161

Predicting Attrition : able to capture 80% which are likely to leave

Our model is able to capture 80% of employee which
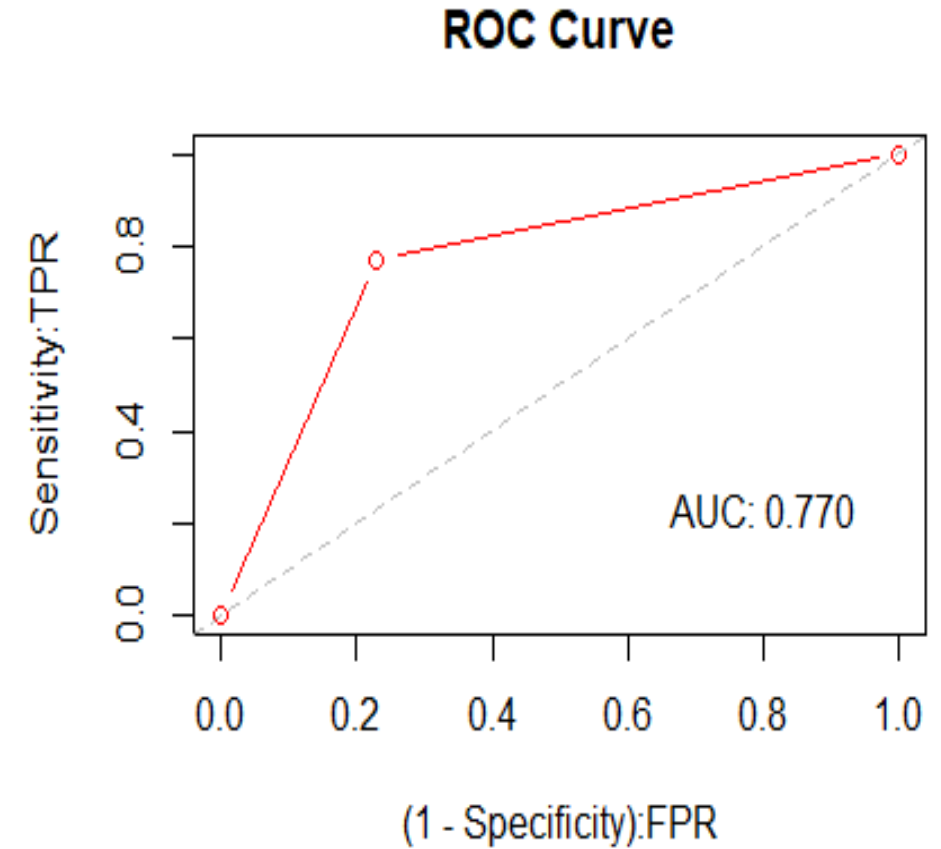are likely to leave in first 4 deciles.

Gain Chart

Predicting Attrition : gives lift of 2.1 over random model

- Our model has a lift of 2.1 for the 4th decile which is good.

- Performs 2.1 times better than random model.

Lift Chart
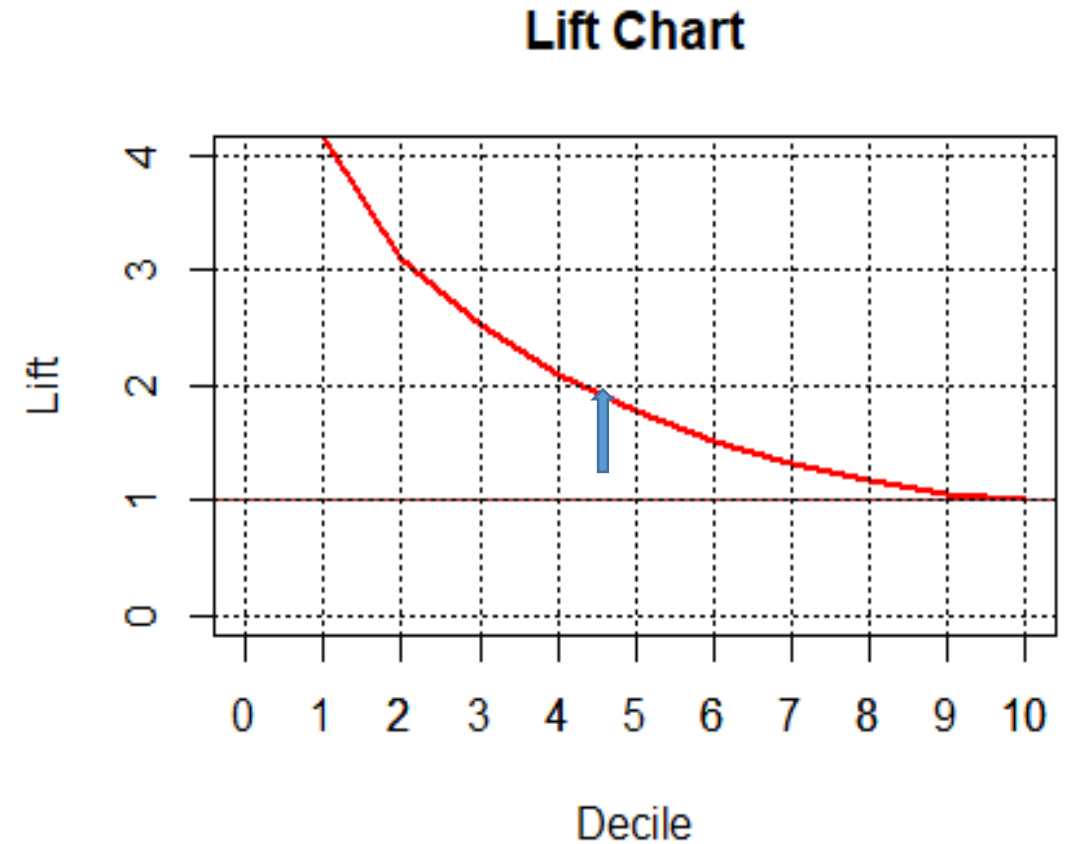
Predicting Attrition : ROC Curve

- This covers the area under the curve.
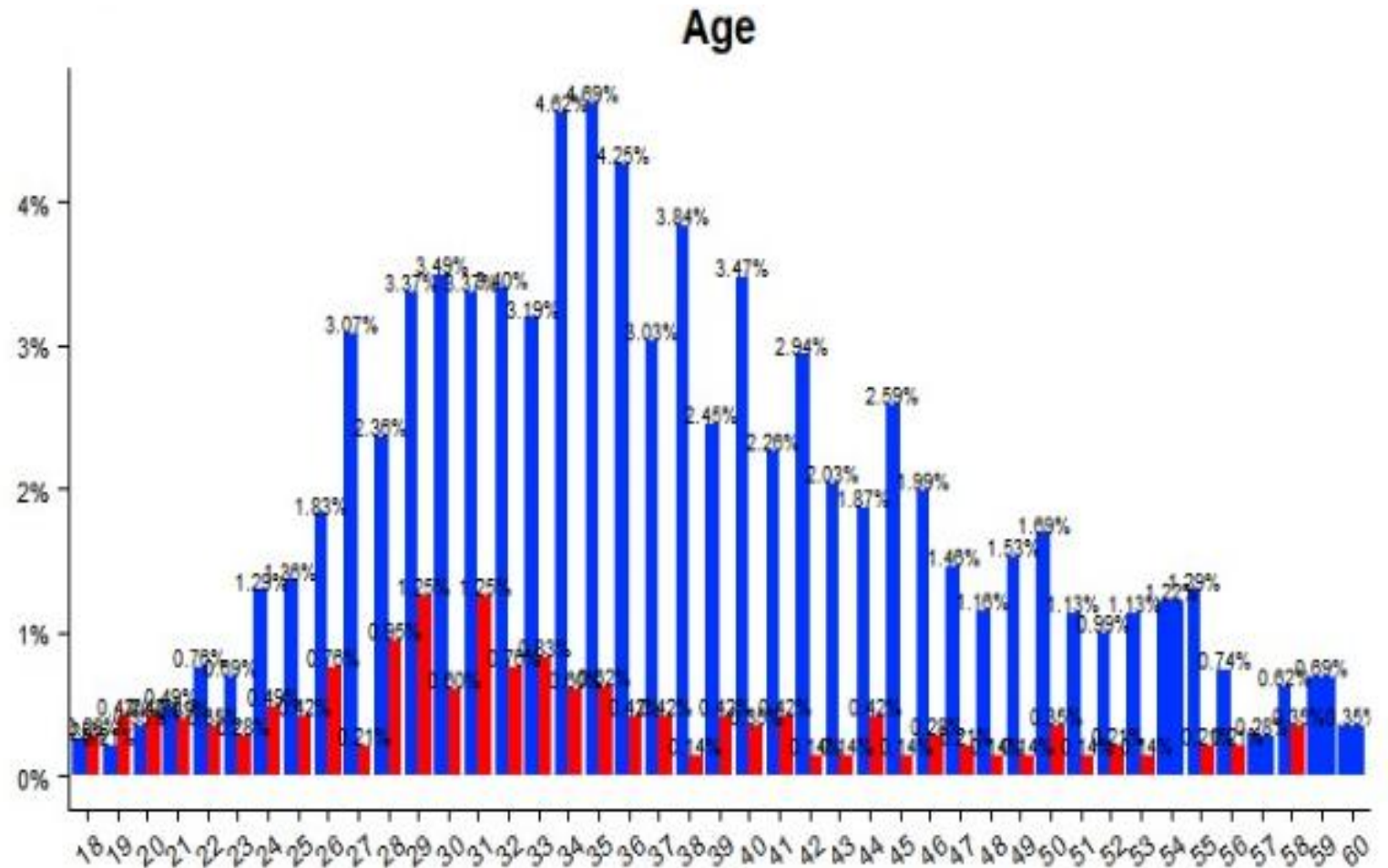
- AUC is 0.770 and accuracy is 77%

ROC Curve

AUC: 0.770

RECOMMENDATIONS

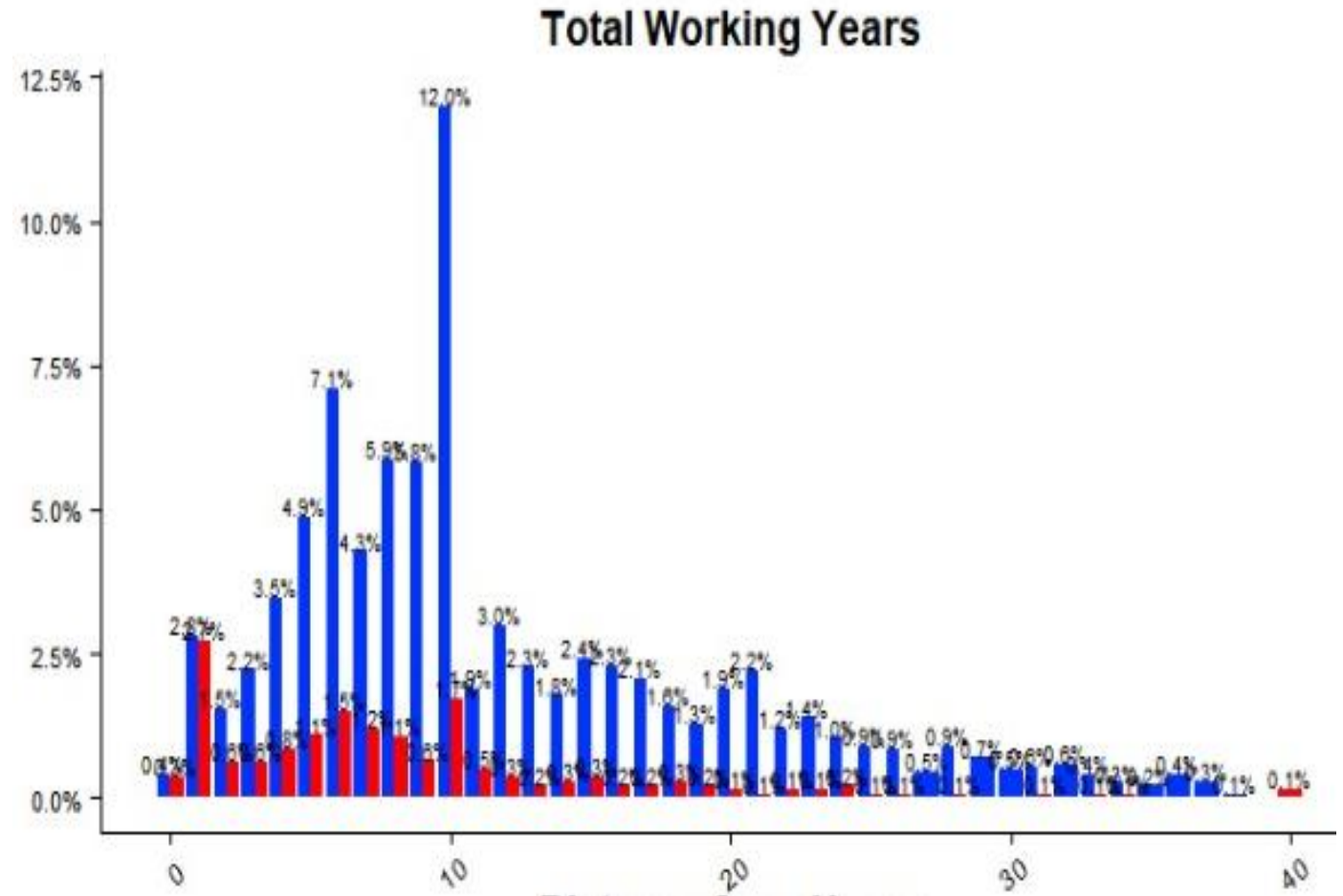# Recommendations: Factors that makes employee to leave/ stay

Age

- Employees whose age is 36 or above are more likely to stay in the company.

- Employees whose age is below than 35 are more likely to leave the company.

Recommendations: Factors that makes employee to leave/ stay
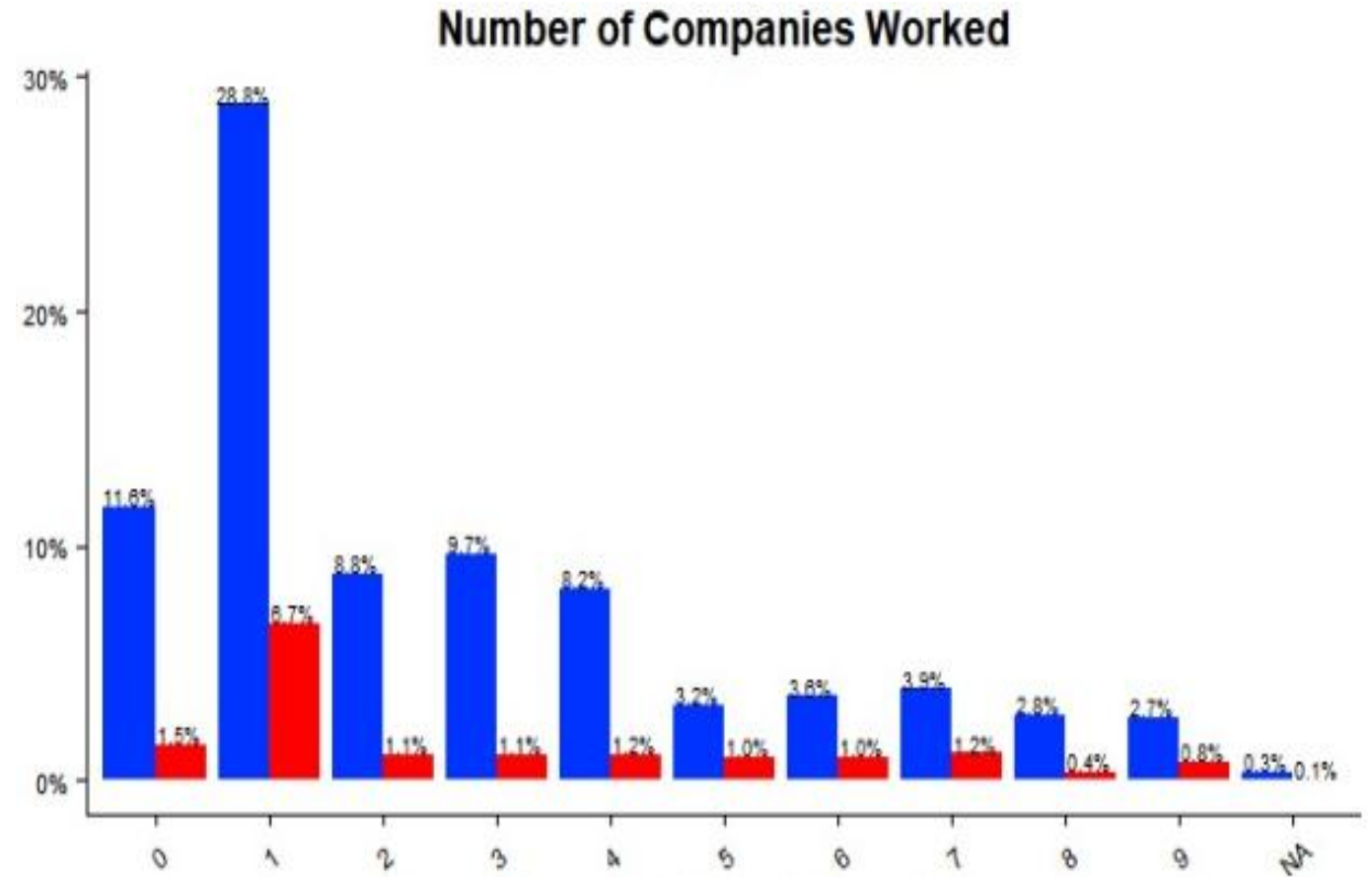
Total Working Years

- Employees who are working in the company for more than 10 years are more likely to stay in the company.

- Employees who are working in the company for 10 or less years are more likely to leaves in the company.

Total Working Years

Recommendations: Factors that makes employee to leave/ stay

Number of Companies Worked

- Employees who worked for 0 or 1 Companies are more likely to leave the Job.

Number of Companies Worked

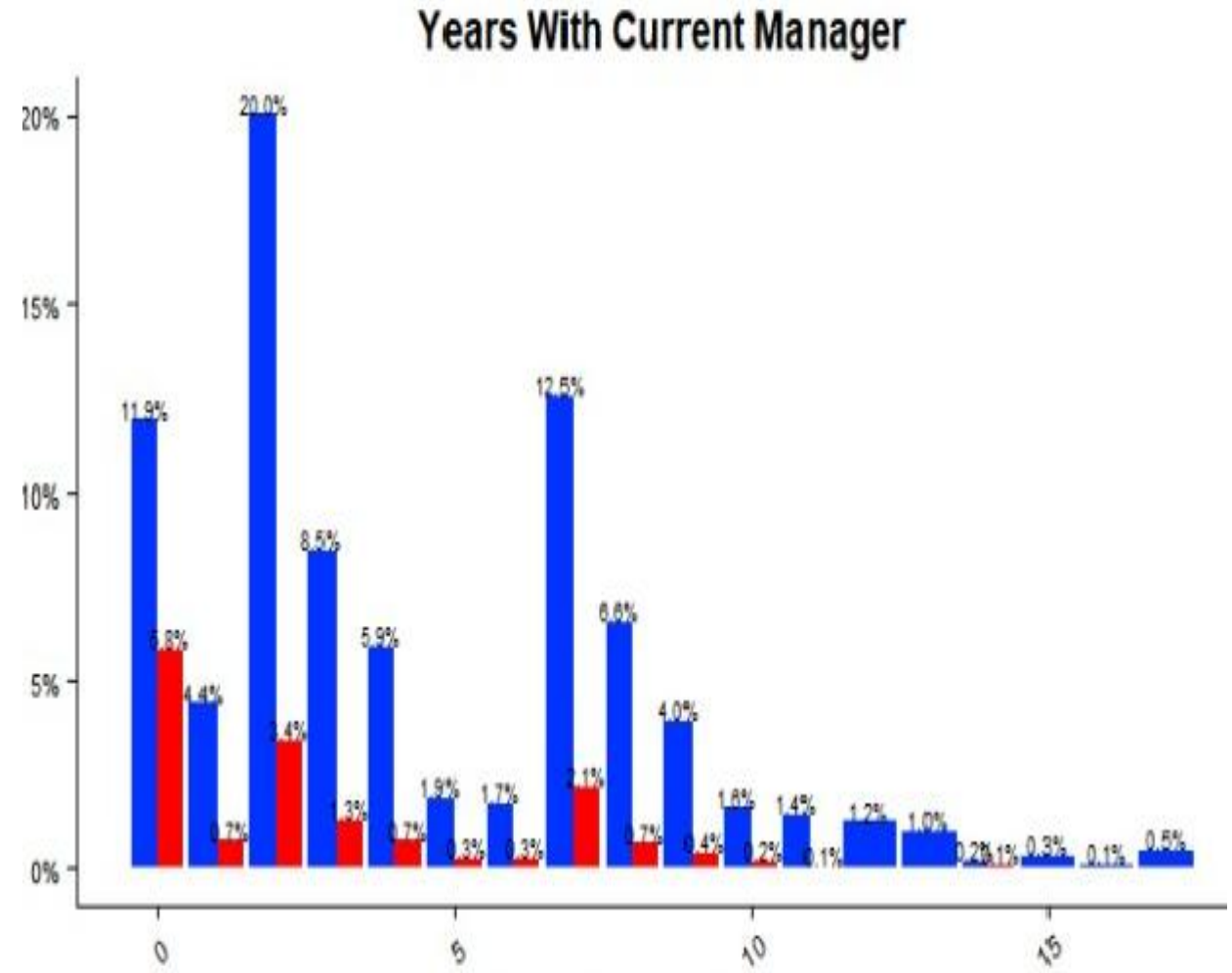**Recommendations: Factors that makes employee to leave/ stay**

Average Hours

- Employees who are working for more than 8 hours are more likely to leave the company.

- Employees which are working for less than 8 hours are likely to stay in the company.

Average hours worked by Employee ID
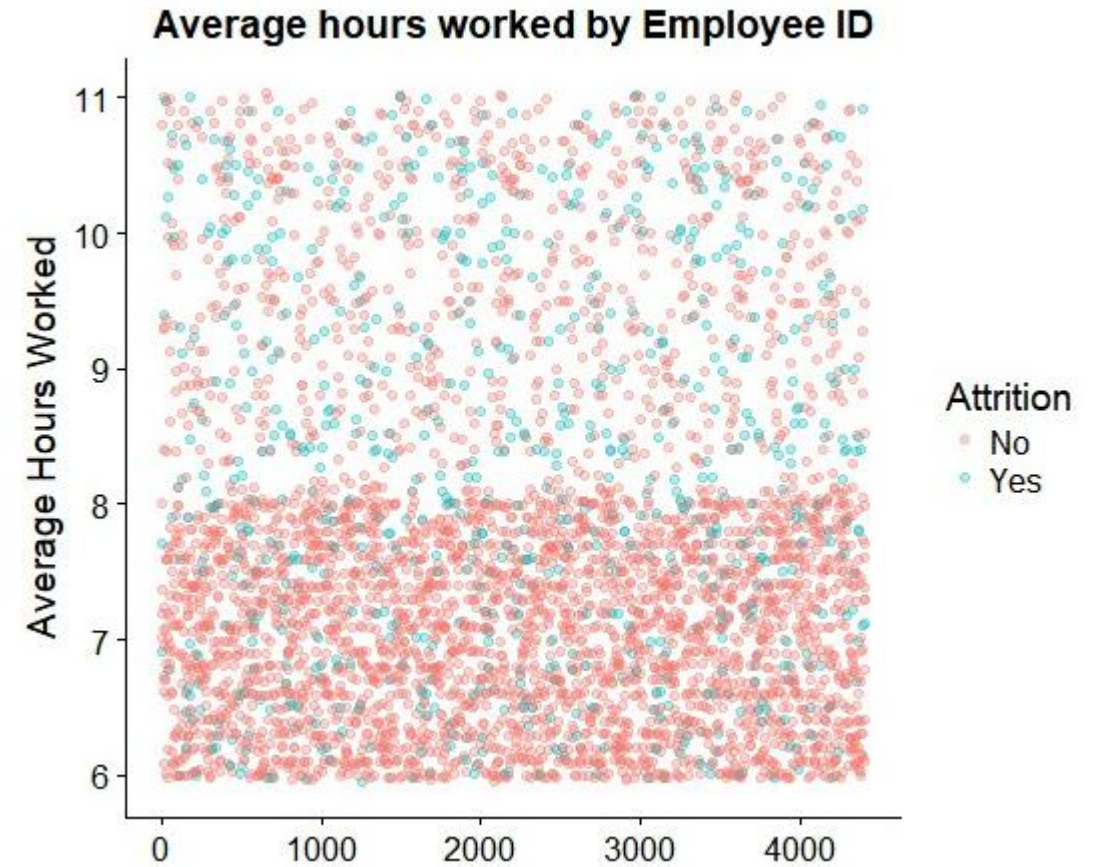
Recommendations: Factors that makes employee to leave/ stay

Years with Current Manager

- Employees who worked under same manager for 4 or more years are likely to stay in the company.

- Employees which worked under same manager for 3 or less years are more likely to leave the company.

Years With Current Manager

Recommendations: Factors that makes employee to leave/ stay

Years since Last Promotion

- Employees who have recently been promoted this year or last year are most likely to quit
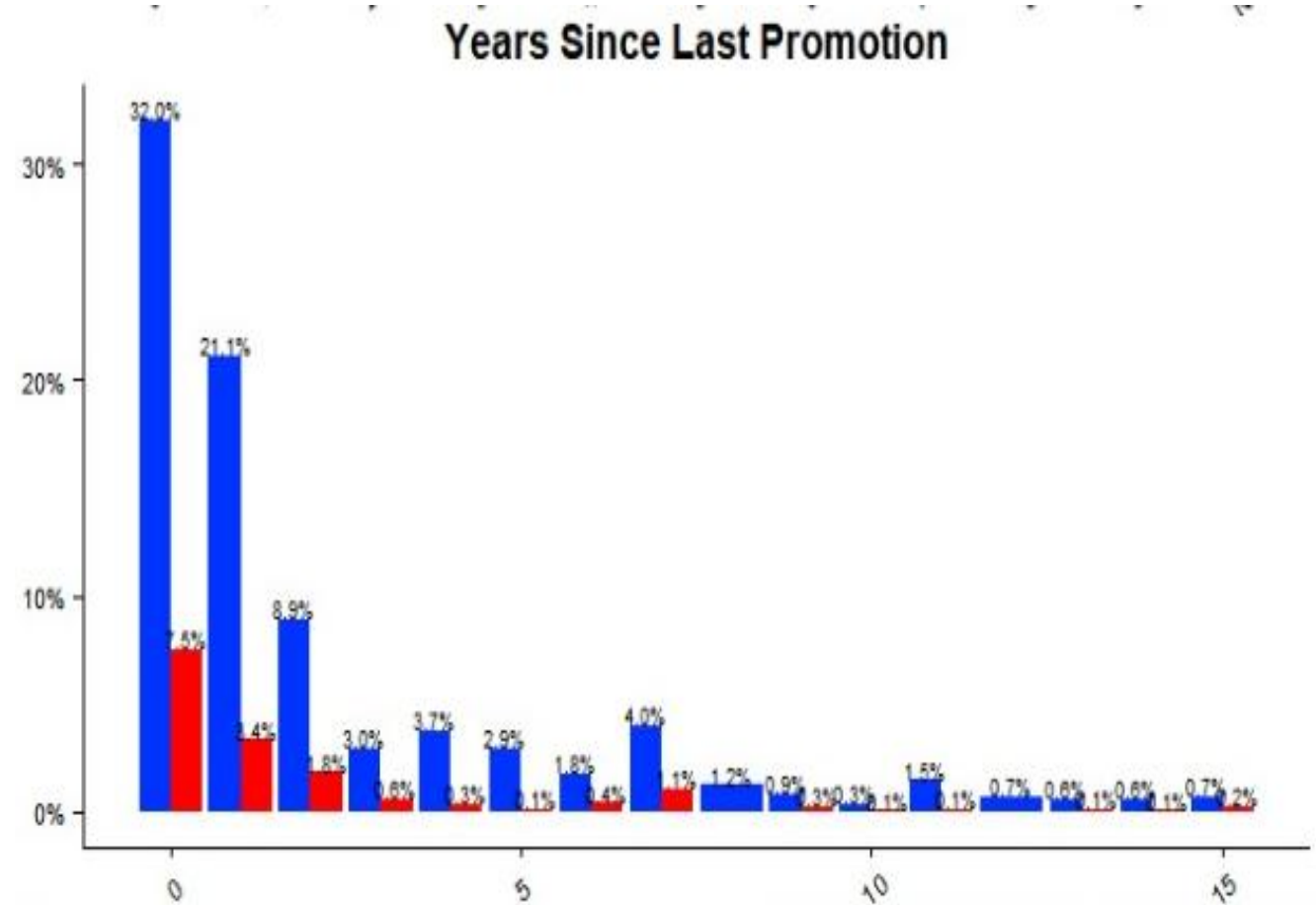
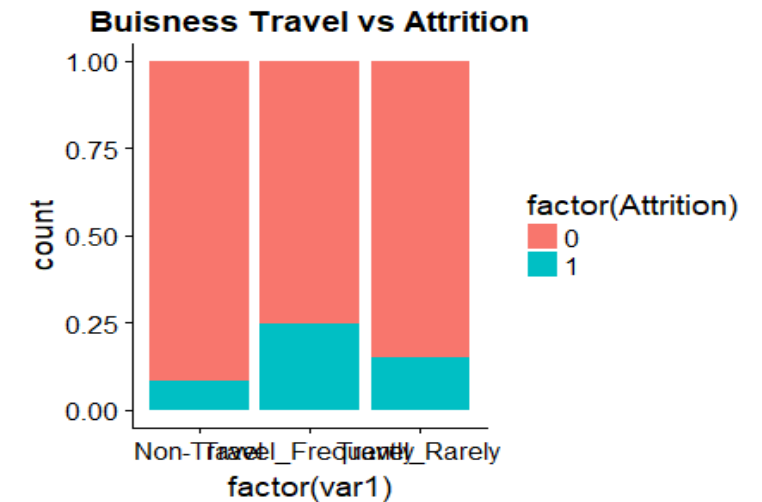# Recommendations: Factors that makes employee to leave/ stay

Work Life Balance

- When work life balance is **Good, Better and Best**, than higher chances of staying in the company i.e. most likely to stay in the company.

- When Work Life Balance is **Bad**, than employee is most likely to leave the company.
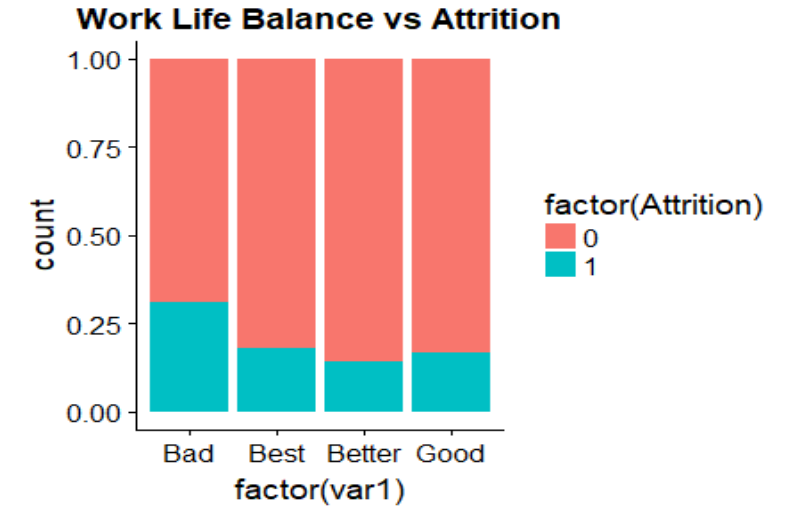
Business Travel

- Employees who are **Non-Travel or Travel rarely** are likely to stay in the company

- Employees who are **frequently travels** are likely to leave the company

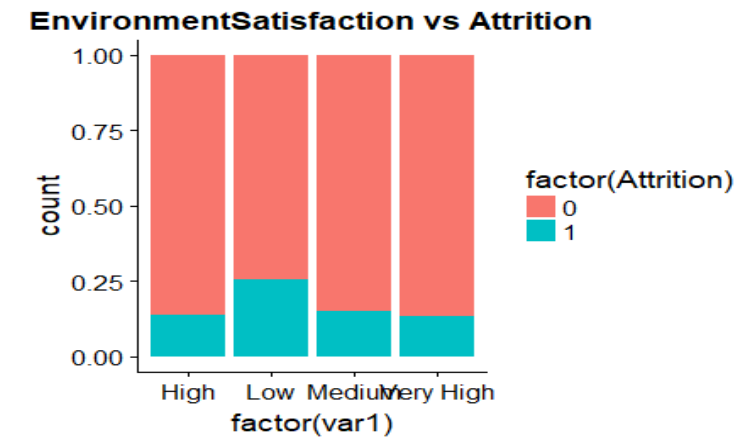# Recommendations: Factors that makes employee to leave/ stay

Job Satisfaction

- Employee having **medium, high and very high**, Job Satisfaction are likely to stay in the company

- Employee having **low**, Job Satisfaction are more likely to leave the company.

Environmental Satisfaction

- Employee having **medium, high and very high**, Environment Satisfaction are likely to stay in the company

- Employee having **low**, Environment Satisfaction are more likely to leave the company.

Job Satisfaction vs Attrition

EnvironmentSatisfaction vs Attrition

Recommendations: Factors that makes employee to leave/ stay

Marital Status

- Employees who are single are more likely to leave in the company

- Employees who are divorced or married are likely to stay in the company.

Marital Status vs Attrition
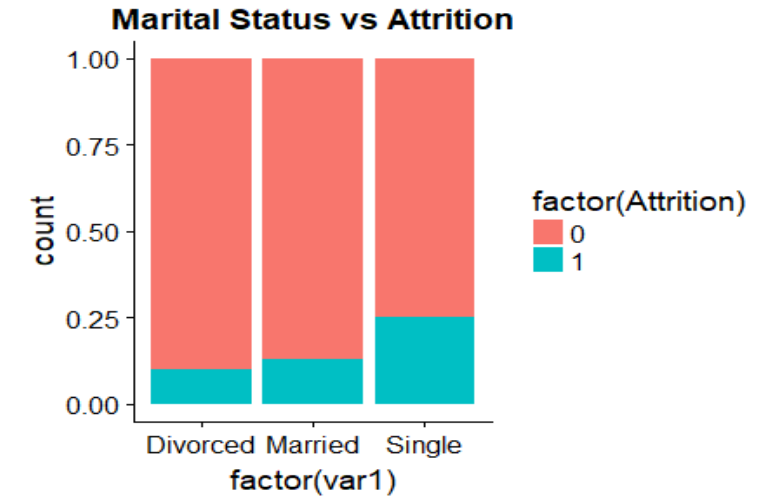
Conclusion and Recommendations

- Company should takes some actions to improve work life balance of employees.

- Working environment should be improved. Employees should get regular breaks. Quizes and indoor games should be promoted.

- Managers should not be changed very frequently.

- For Frequently traveling employees, company should take some steps to keep them in our company.