HR ANALYTICS CASE STUDY

SUBMISSION

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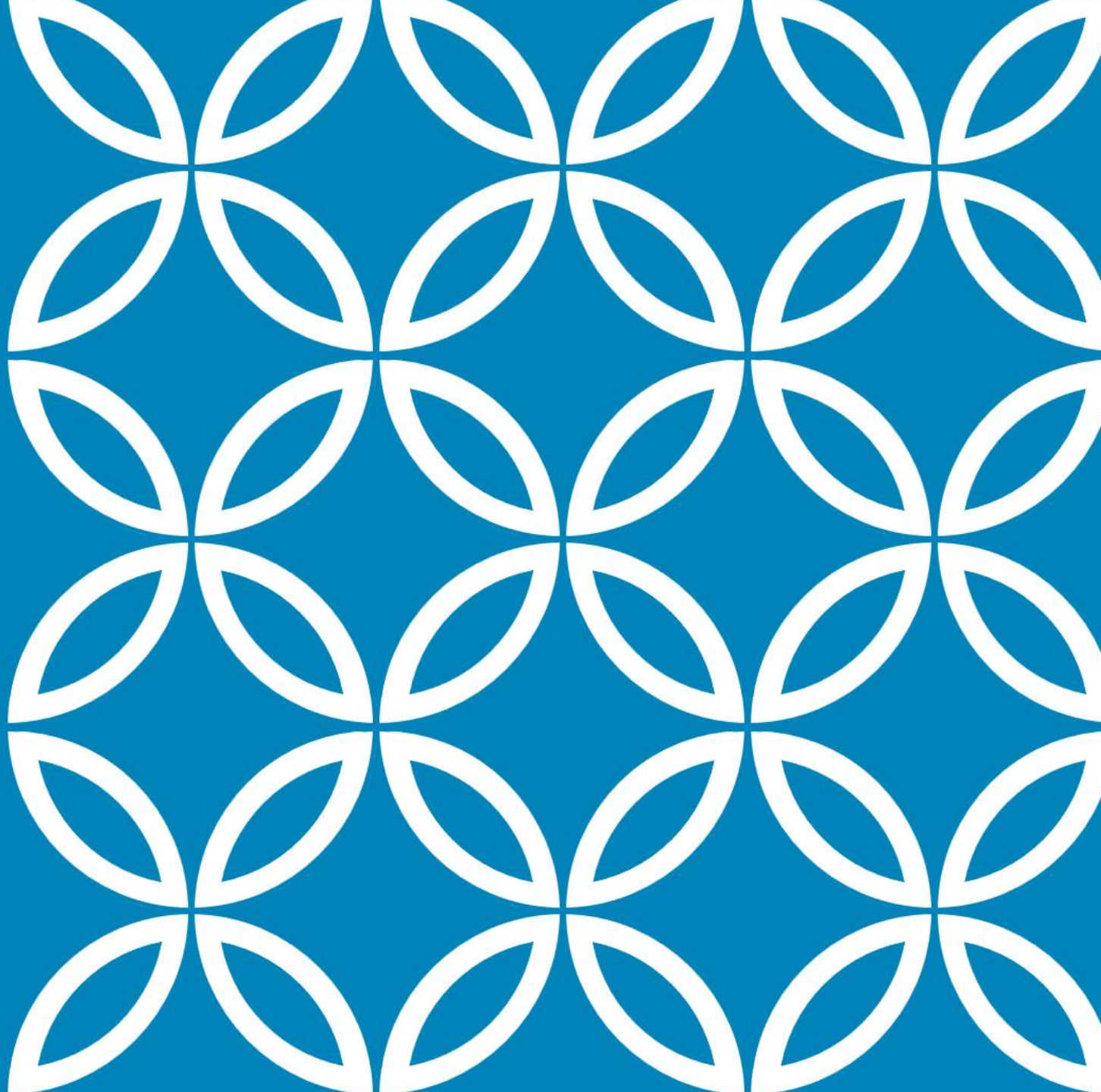


HR ANALYTICS CASE STUDY

XYZ company facts:
~4000 employees
Annual attrition rate ~15%

OBJECTIVE

- To identify the factors related to attrition.
- To reduce the attrition rate of employees.
- Find the best fit model for predicting attrition using logistic regression.

DATA USED

1. General Data – Employee personal data.
2. The Manager Survey Data – Data from managers of the company
3. The Employee Survey Data – Data from surveyed employees
3. In-Time Data – Employee time sheet data
4. Out – Time Data – Employee time sheet data

DATA CLEANING AND PREPARATION

1. Removed rows containing NA from Employee Survey data and General Data.
2. Employee monthly income over 180000 was maxed out to 180000.
3. Total Working Hours over 26 was maxed out to 26.
4. Years at company over 24 was maxed out to 24.
5. Years Since last promotion over 11 was maxed out to 11.
6. Years with current manager over 11 was maxed out to 11.
7. Average work hours calculated for each employee from in_time and out_time timesheet files. (NA's present in the files are taken as leaves)

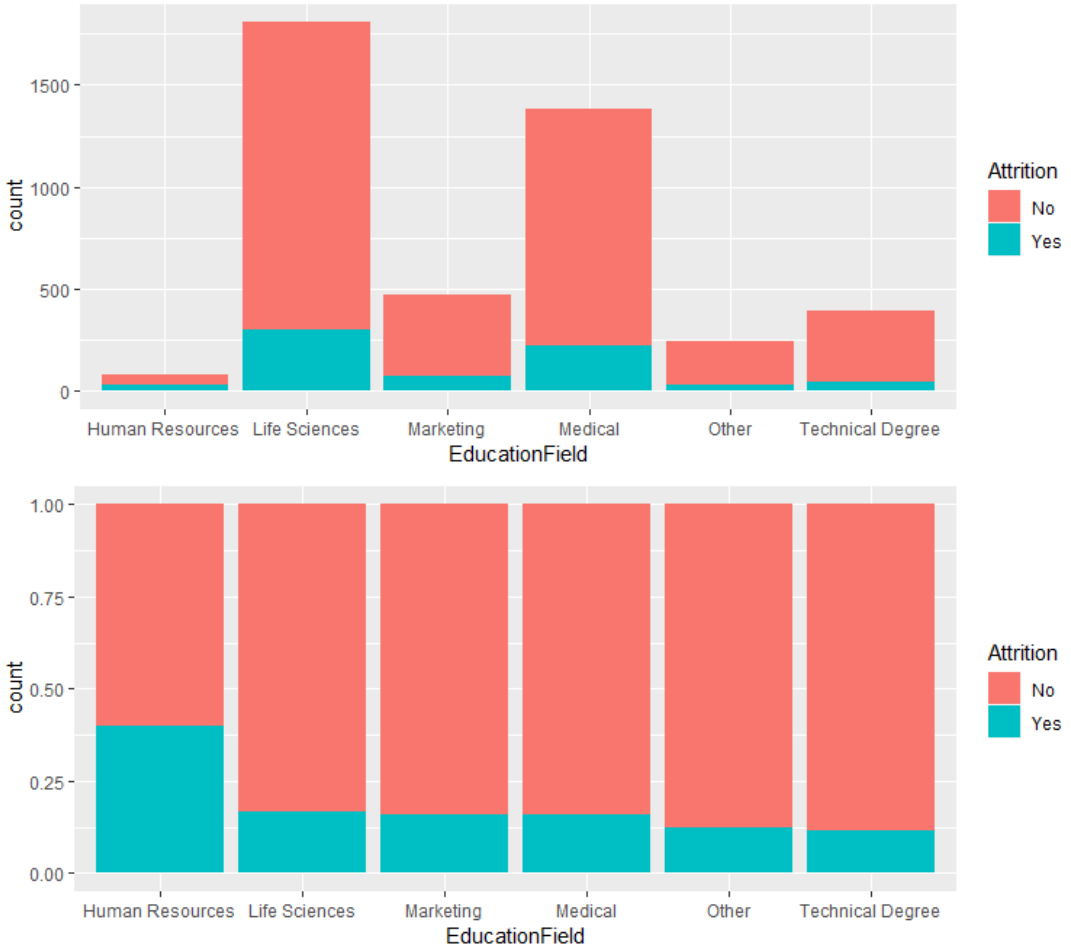
EXPLORATORY DATA ANALYSIS

Observation:
Employees travelling rarely leave more,
however the percentage of employees travelling frequently and leaving job are more.

Conclusion:
Its hard to conclude the fact that employees do not like travelling. But few preventive steps can be taken.

Possible solution:
Increase in travelling allowances and reward, to churn out travelling discomfort.
Implementing travelling duties upon employee attitude.

EXPLORATORY DATA ANALYSIS

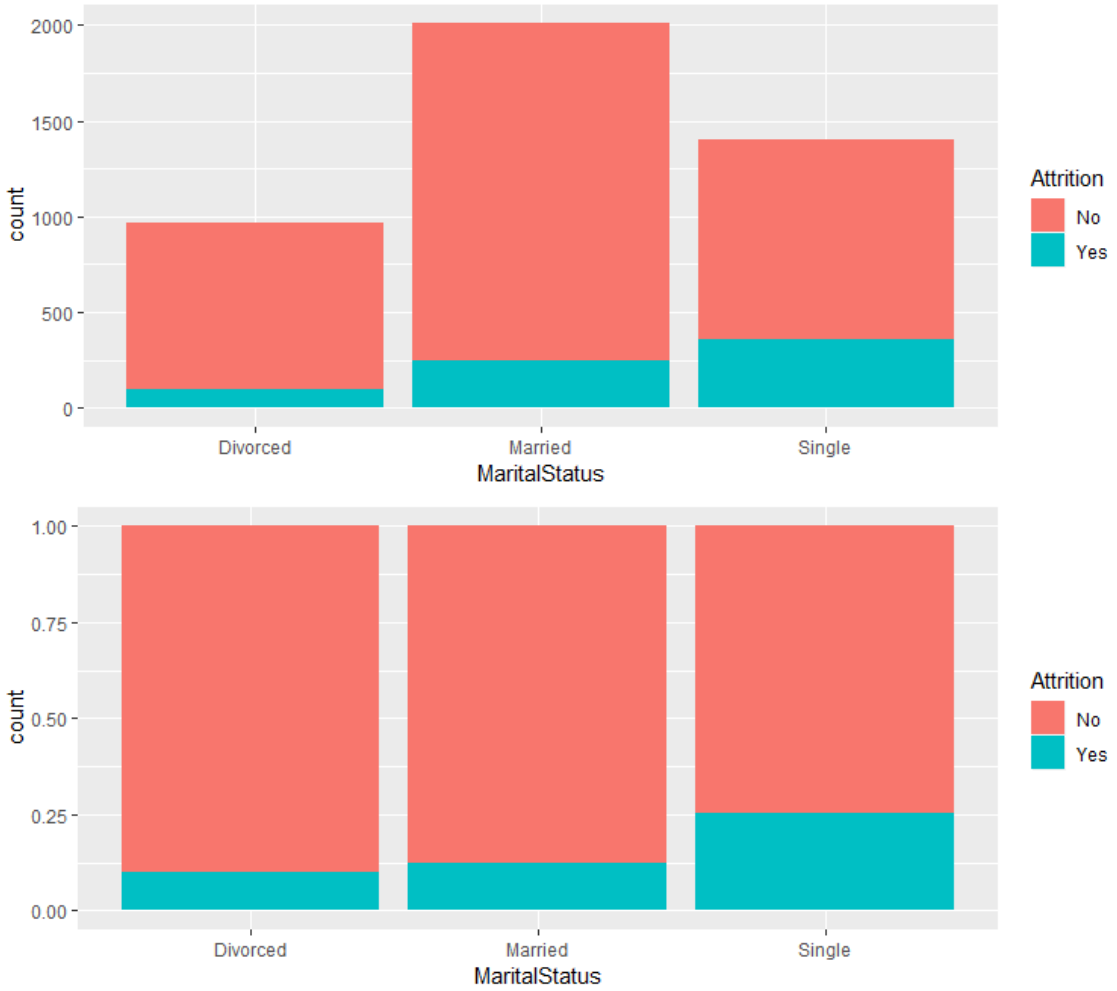


Observation:
Over 30% of human resources employees leave their job. However, the number of employees in HR team is very low comparing to other fields.

Conclusion:
There might be a major shortage of people in HR field resulting in high work load/low job satisfaction/low work life balance which we will see it later.

Possible solution:
HR team can be flexible enough to work with employees from different sectors/fields among the organization making them efficient recruiters with low work burden.

EXPLORATORY DATA ANALYSIS

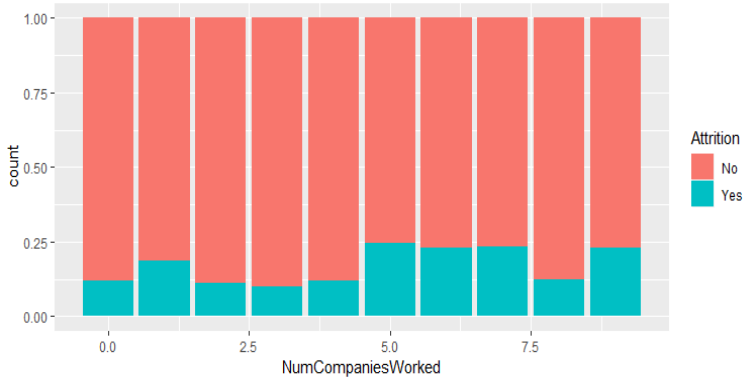


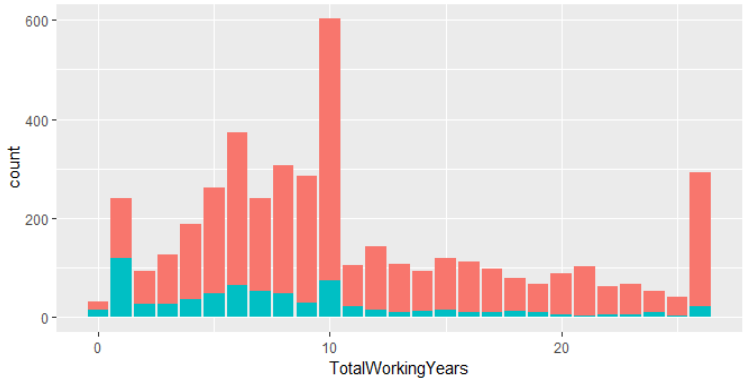
Observation:
People who are single/unmarried are leaving more.

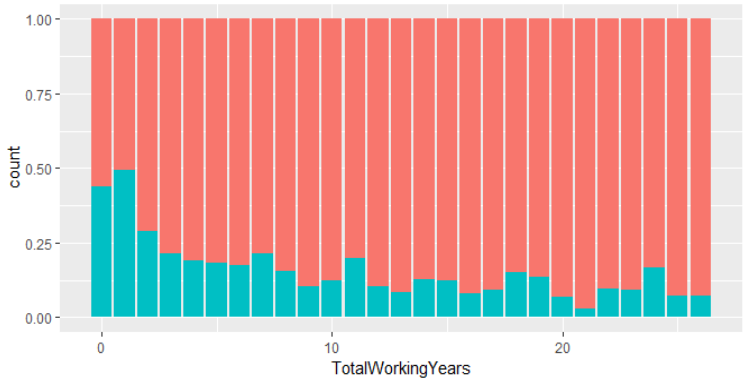
Conclusion:
Single people tend to be young and people with relatively lower experience then other groups.
In pursuit of better opportunity could be a leading factor.

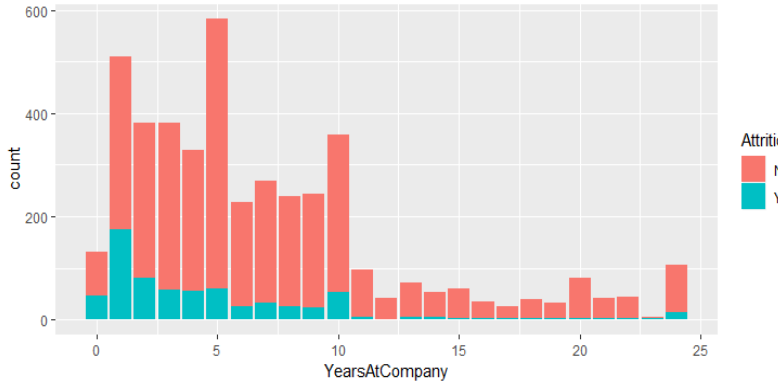
Possible solution:
HR team need to check better hiring attitude in fresher's and employees with low experience.
Providing growth within the organization.
Training managers to show respect to fresh employees.

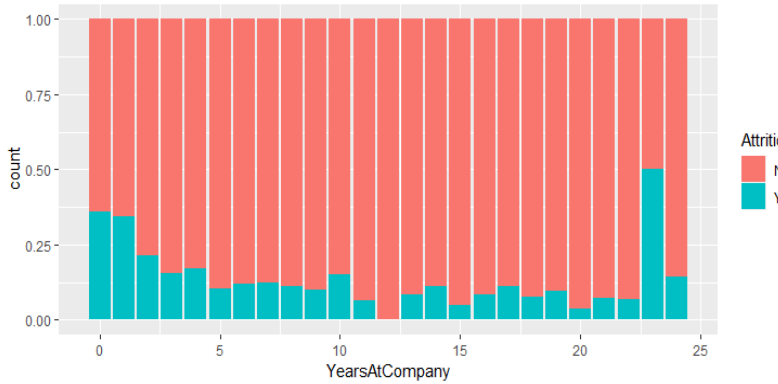
EXPLORATORY DATA ANALYSIS











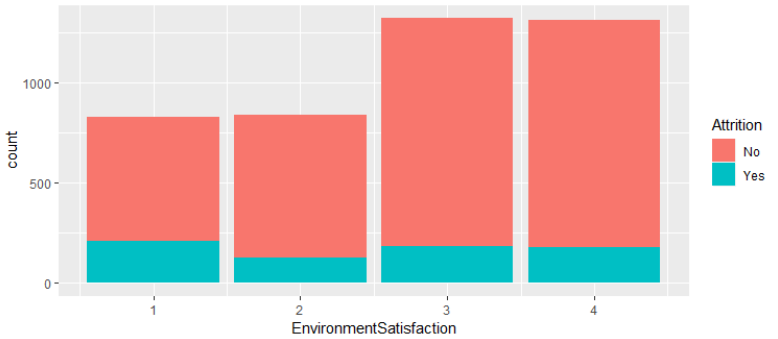
Observation:

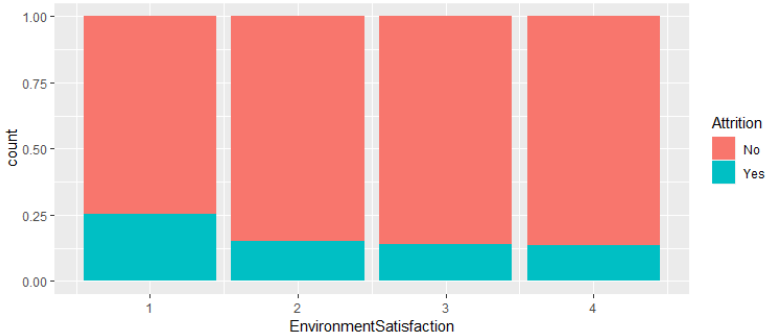
Employees with low experience of just 0-1 year and only 0-1 no of ex-companies leave a lot. Fresher's are leaving a lot.

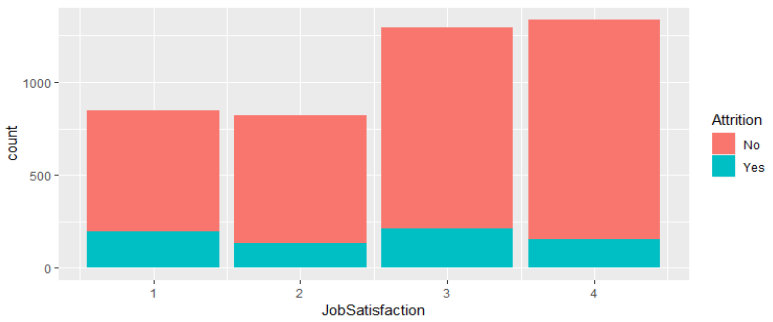
Possible solution:

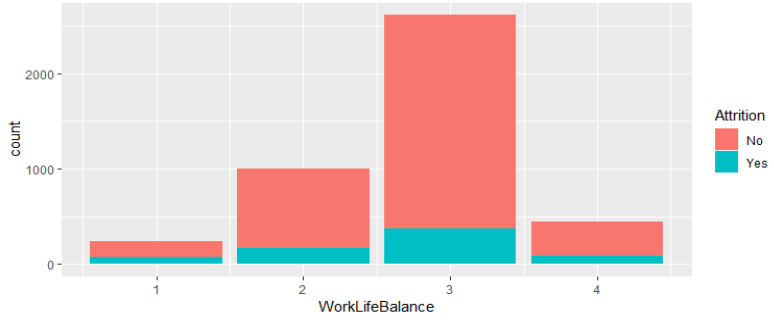
Providing these groups of people as mentioned above with individual sessions, working as a united body to provide these group of people with the right growth opportunity within the organization.

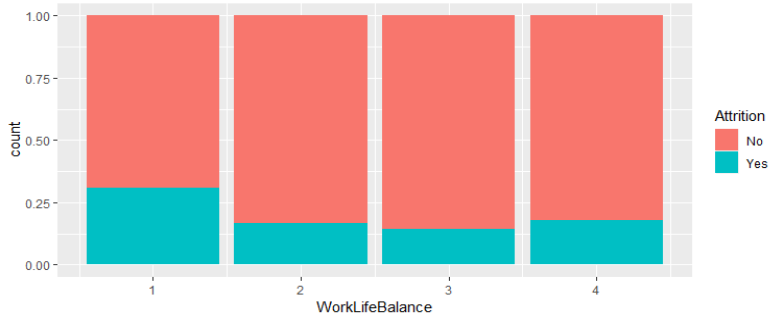
EXPLORATORY DATA ANALYSIS











Observation:

People with low environment satisfaction, low job satisfaction and low work-life balance satisfaction tend to leave more.

Moreover, Work life balance for the employees is a major cause of concern as it is seen that majority of people are not satisfied.

Average rating and low rating are a cause of concern., nobody is completely happy.

Possible solutions:

Introduction of ideas like flexible timing.

Sessions/counselling to employees for managing their work life in accordance to their own.

Optimizing background noise or silence, personalizing space, plants, open windows/natural lighting, water and snacks.

LOGISTIC REGRESSION : DUMMY AND SETS

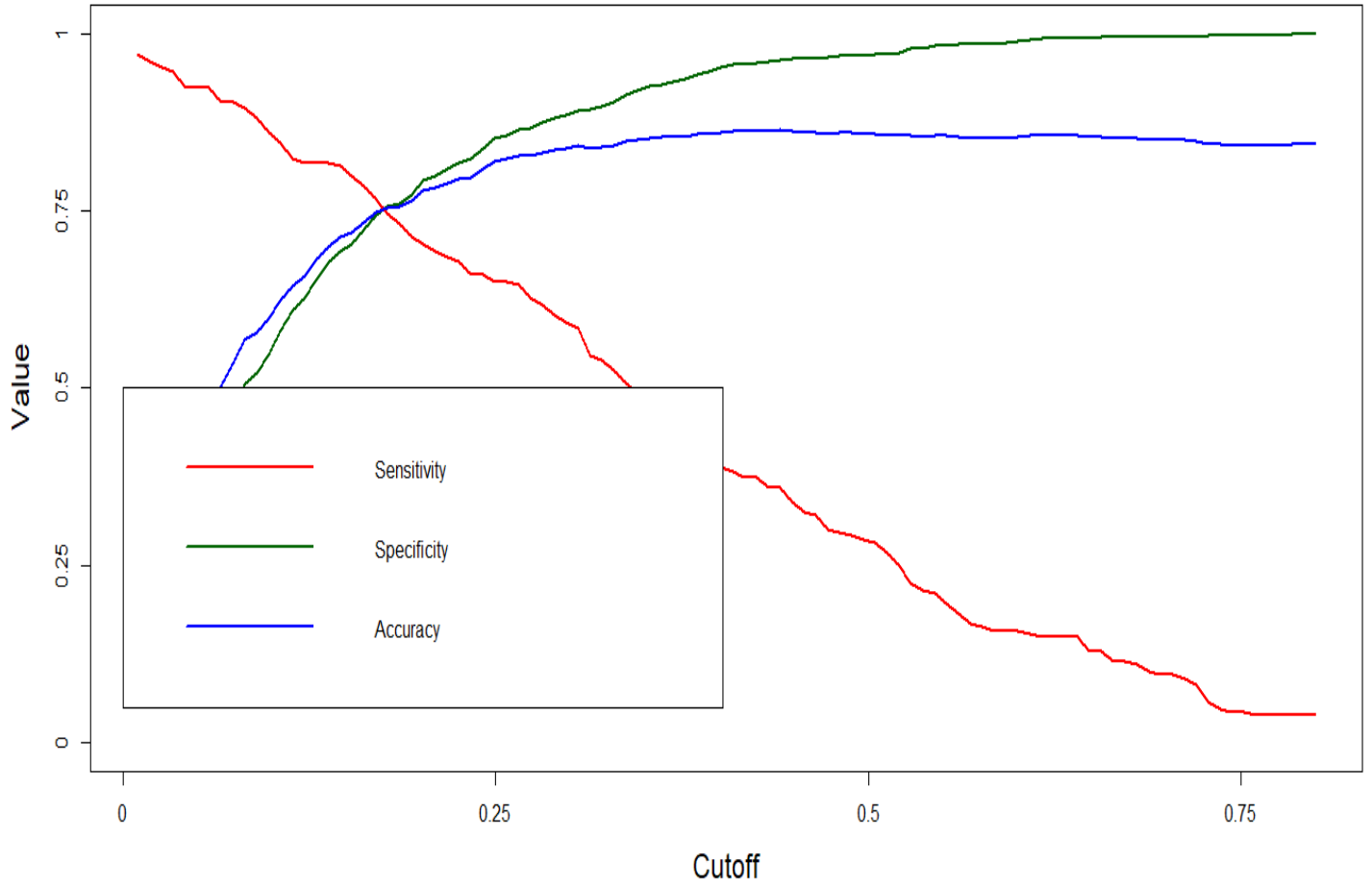
1. Merged all datasets by Employee Id.
2. Response Variable is Attrition (1 for Yes and 0 for No)
3. Created dummy variables for BusinessTravel, Department, EducationField, Gender, JobRole, MaritalStatus.
4. Created Training and Test dataset (Used 70% data for training and 30% for test)
5. Used stepAIC and glm function to get the best fit model by removing high p value elements

LOGISTIC REGRESSION : FINAL MODEL

Attributes	Pr(>|z|)
EnvironmentSatisfaction	8.63E-10
JobSatisfaction	4.53E-11
WorkLifeBalance	5.91E-05
Age	0.000101
NumCompaniesWorked	1.23E-08
TotalWorkingYears	1.15E-08
TrainingTimesLastYear	0.000268
YearsSinceLastPromotion	2.89E-16
YearsWithCurrManager	4.55E-09
BusinessTravelTravel_Frequently	1.41E-07
JobRoleManufacturing.Director	4.90E-05
MaritalStatusSingle	1.40E-15
Average_work	2.00E-16

Null deviance: 2661.4 on 3009 degrees of freedom
Residual deviance: 2124.4 on 2996 degrees of freedom
AIC: 2152.4

CUTOFF CHOICE



Intersected at 0.178

CONFUSION MATRIX

For intersection Point 0.178

	Actual	
Prediction	No	Yes
No	818	53
Yes	263	156

Max KS 0.50

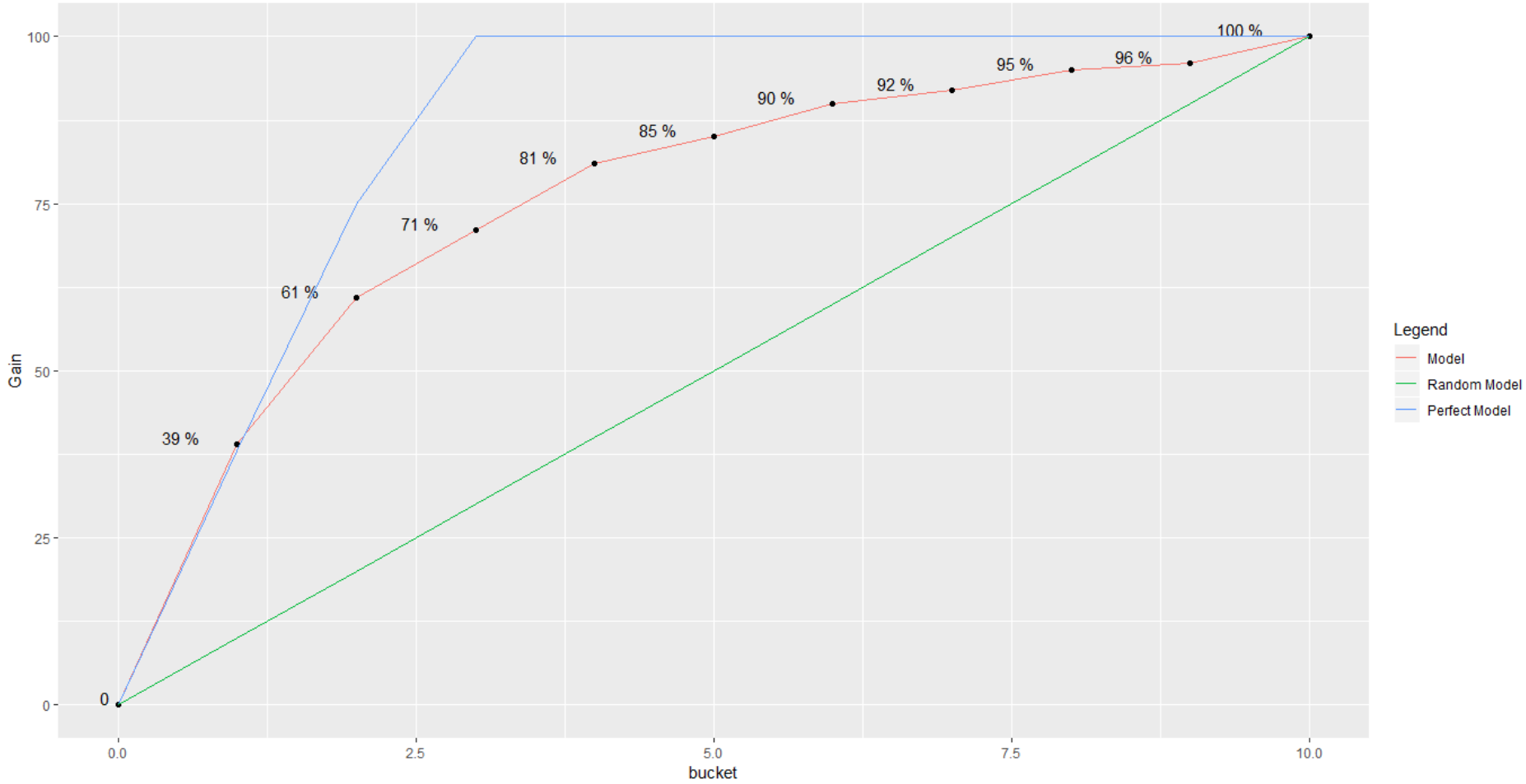
For Max Accuracy 0.44

	Actual	
Prediction	No	Yes
No	1040	134
Yes	41	75

Max KS 0.32

Maximum KS found to be at 0.17 which is 0.51

GAIN CHART


100
75
50
25
0
Gain
0.0
2.5
5.0
7.5
10.0
bucket
0
39 %
61 %
71 %
81 %
85 %
90 %
92 %
95 %
96 %
100 %
Legend
Model
Random Model
Perfect Model

SUGGESTIONS

1. Get detailed feedback from Employees who are showing displeasure through Job Satisfaction and Environmental satisfaction and other ratings. Improve based on their feedback and recommendations.
2. Freshers are more likely to leave hence it advisable to provide better growth opportunity within organization and prefer hiring experienced people.
3. The more a employee works the more he/she will leave the company. Find these individuals and have a session with them if possible
4. Employees may prefer to stay with current manager. Allow them to do that if possible.