

HR CASE STUDY

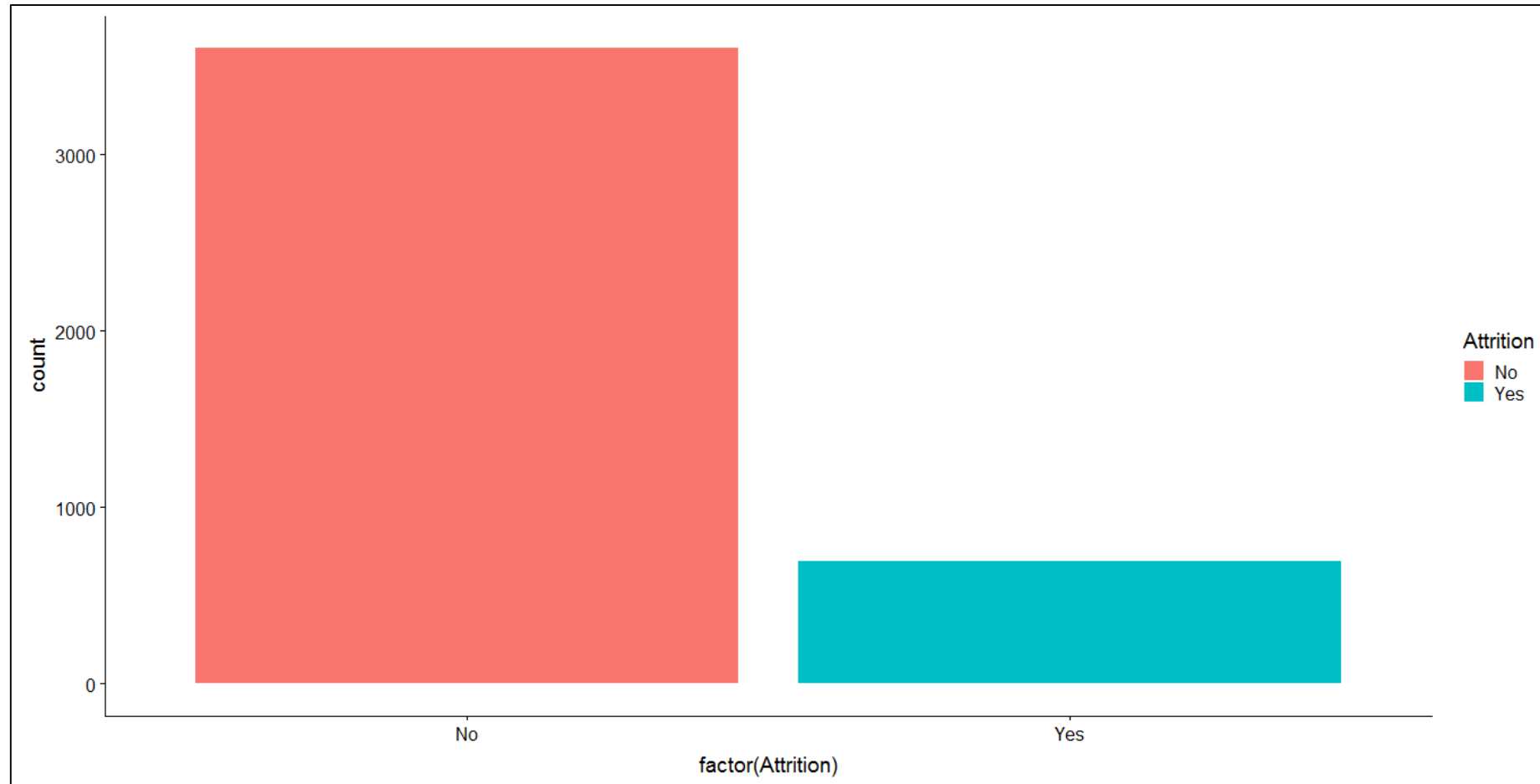
26-Aug-2018

A large company named XYZ, employs, at any given point of time, around 4000 employees. However, every year, around 15% of its employees leave the company and need to be replaced with the talent pool available in the job market. The management believes that this level of attrition (employees leaving, either on their own or because they got fired) is bad for the company, because of the following reasons -

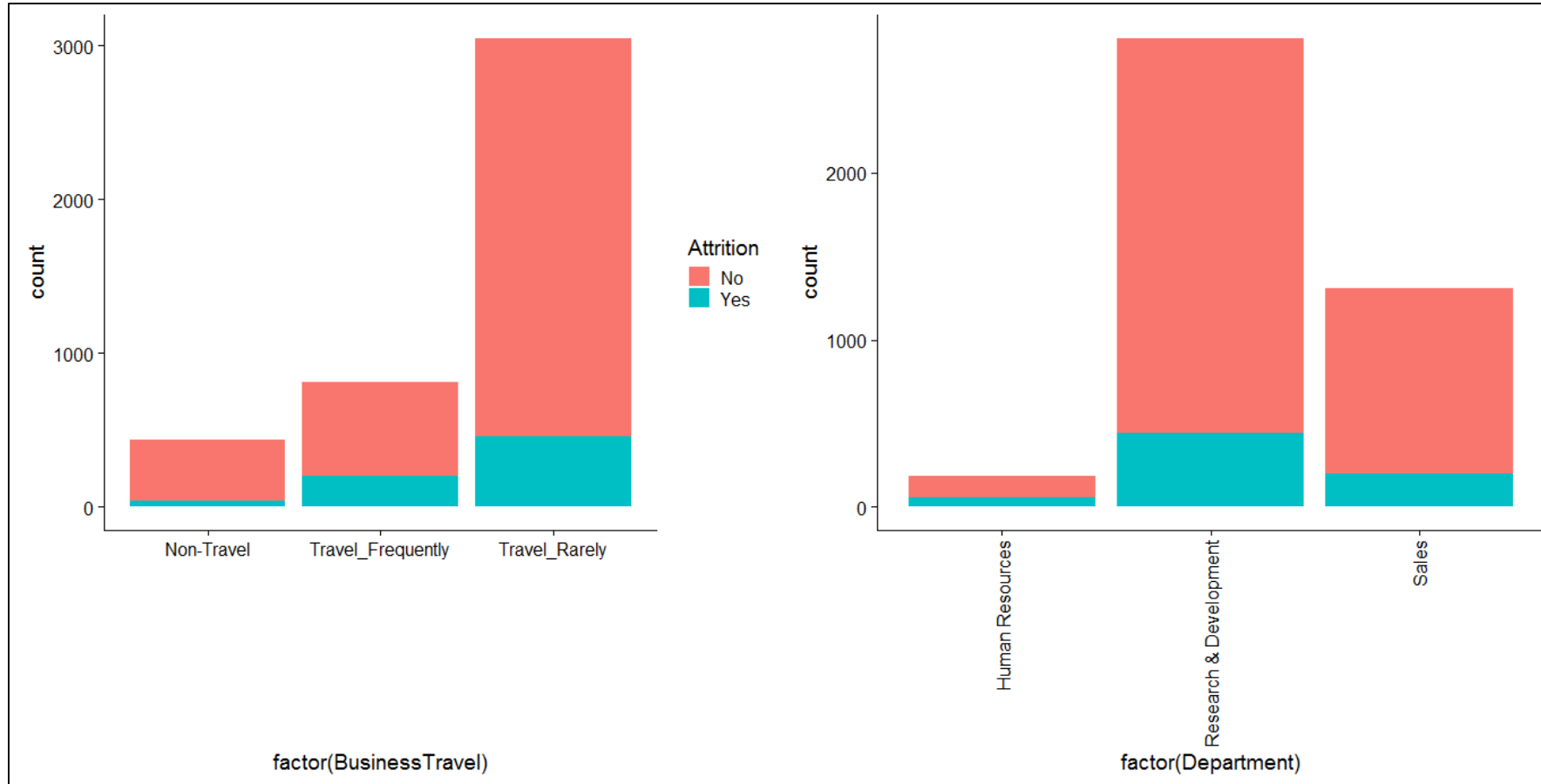
1. The former employees' projects get delayed, which makes it difficult to meet timelines, resulting in a reputation loss among consumers and partners
2. A sizeable department has to be maintained, for the purposes of recruiting new talent
3. More often than not, the new employees have to be trained for the job and/or given time to acclimatize themselves to the company

- Data is analyzed and cleaned in order to remove unwanted columns
 - Review of columns with NA values
 - Review of columns with zero values
 - Columns have the same value
 - Columns not having any significance with regard to this case study
- Perform bivariate analysis on columns to study possible trends.
- Factored and scaled the variable.
- Ran logistics regression to obtain driving factors for attrition
- Obtained cut-off values and applied KS on decile table.

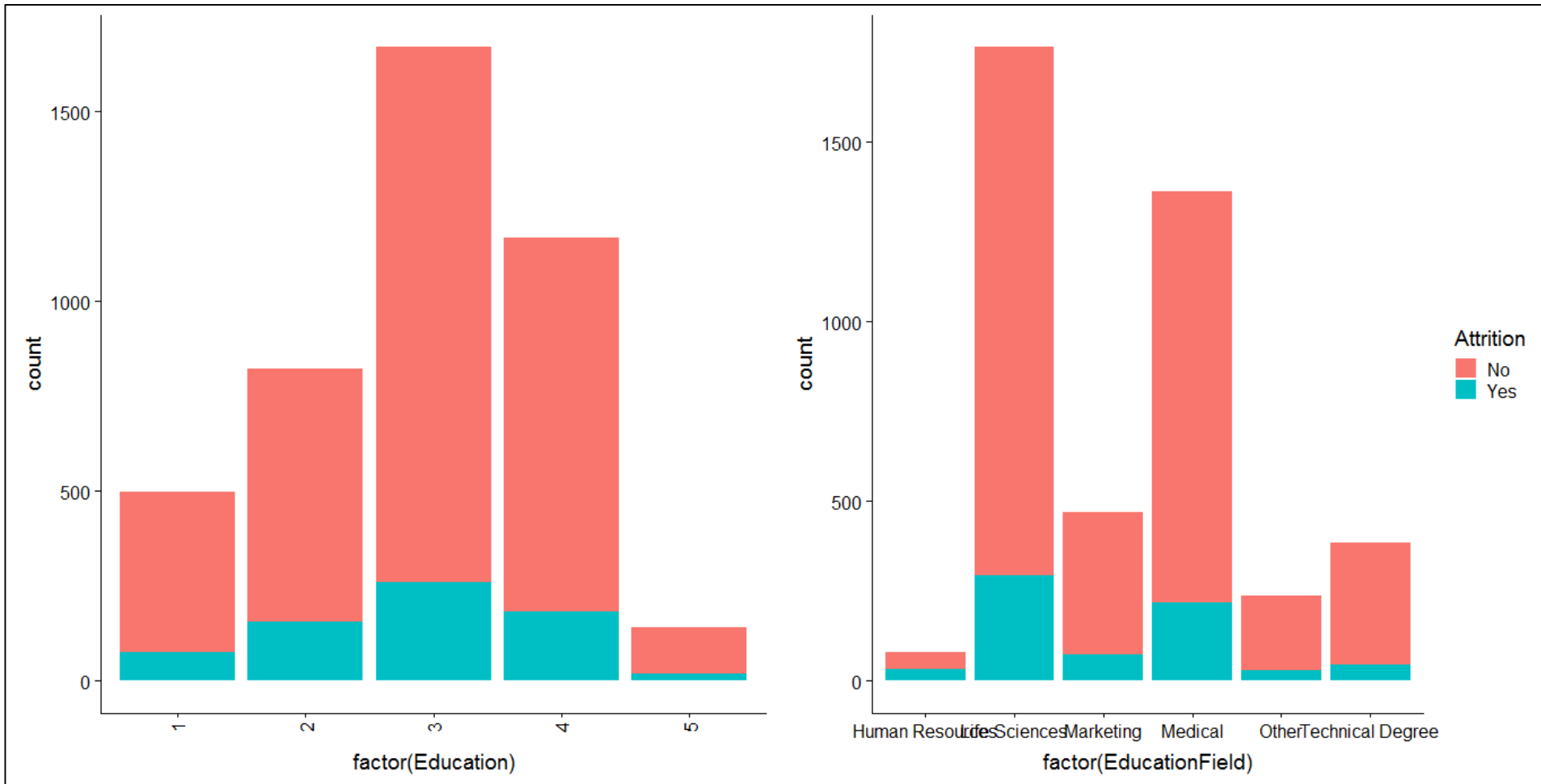
UNIVARIANT ANALYSIS



- 16% attrition observed which is much higher than industry standard.



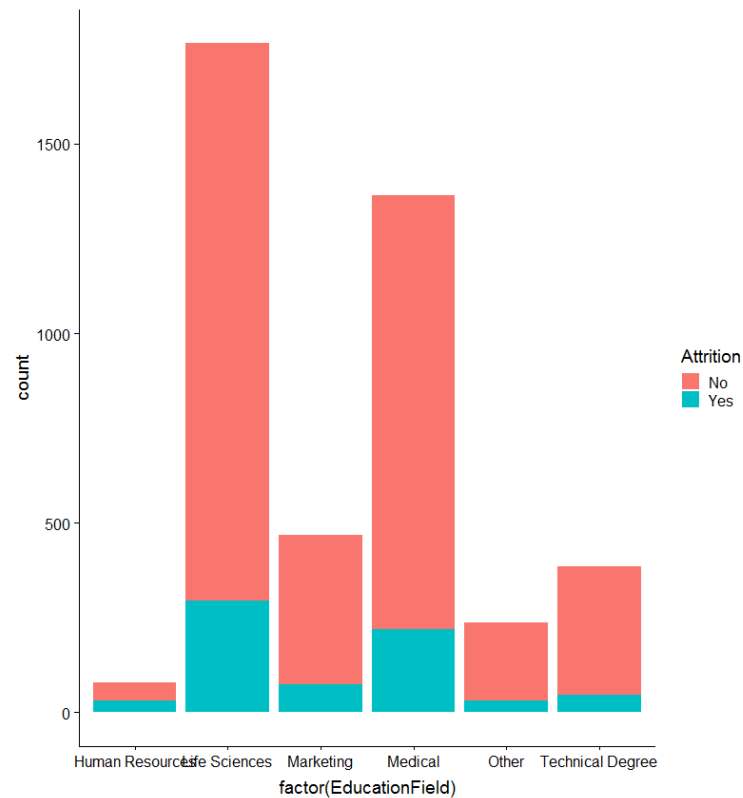
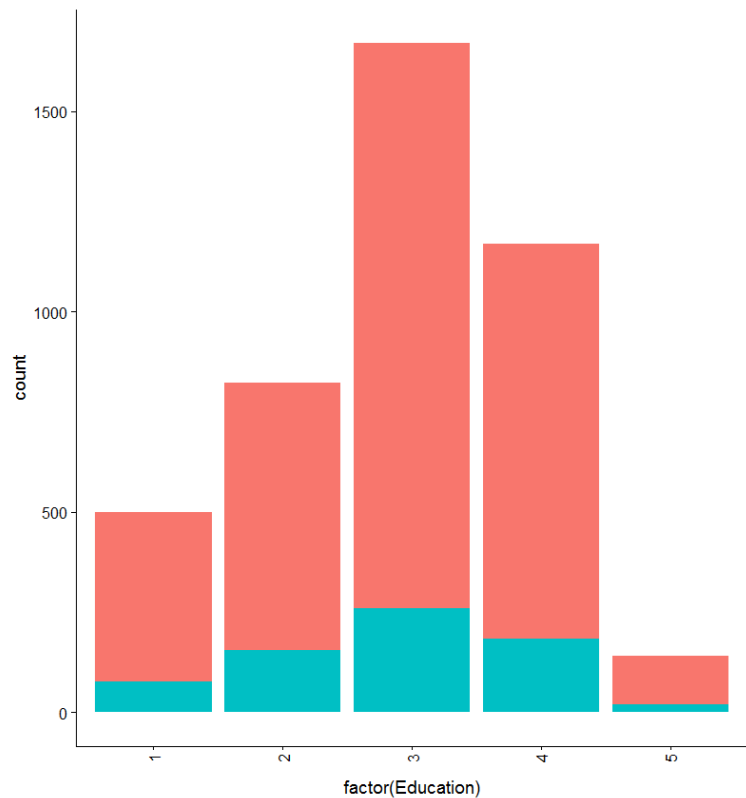
- No significant trend observed. More frequently travelled employees might see more churn as compared to those travelled rarely



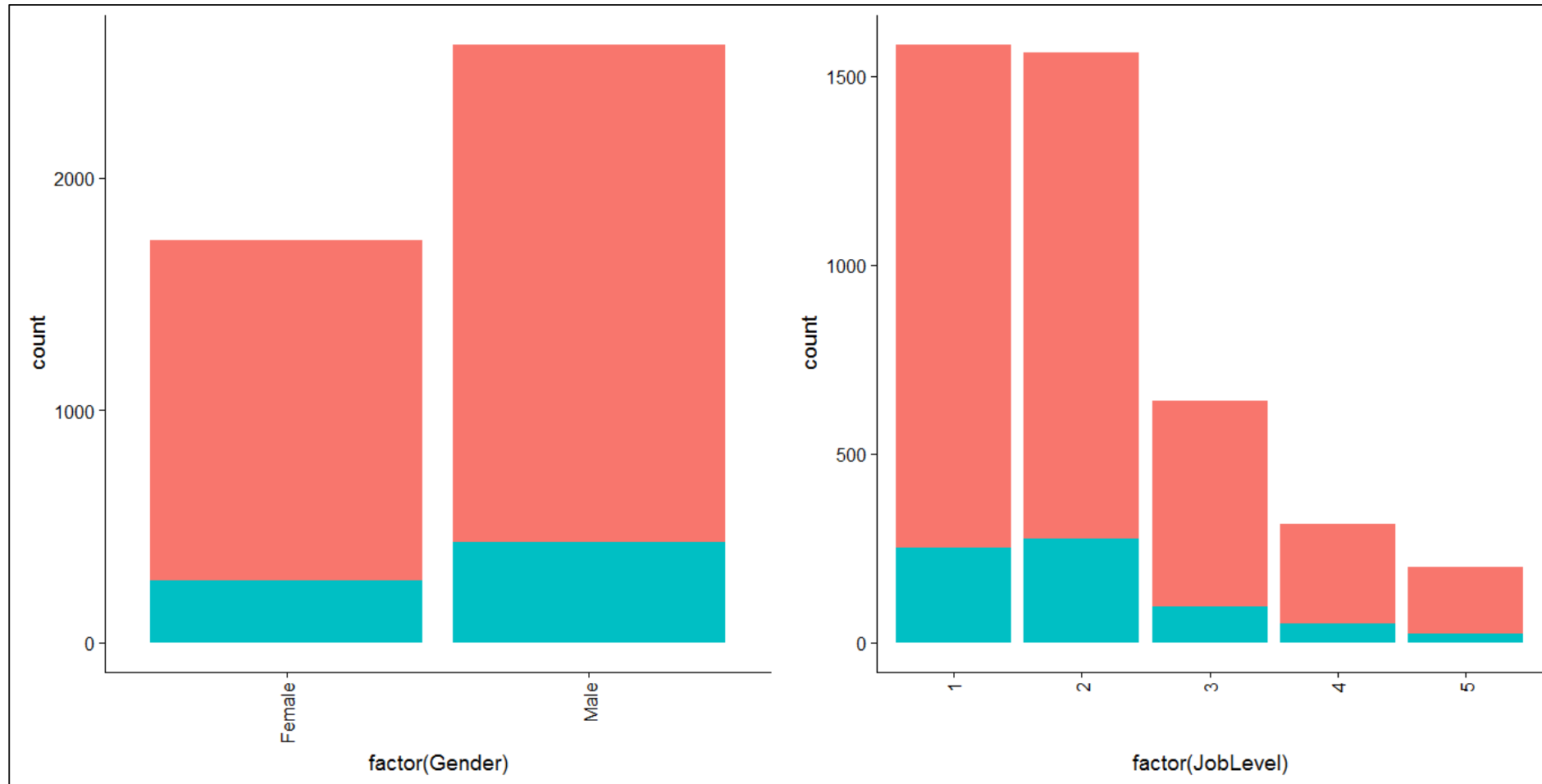
- No significant trend observed. Sales seems to show about 50% attrition.

NA column removed
Exclusively in_out_time

BIVARIANT ANALYSIS ..2

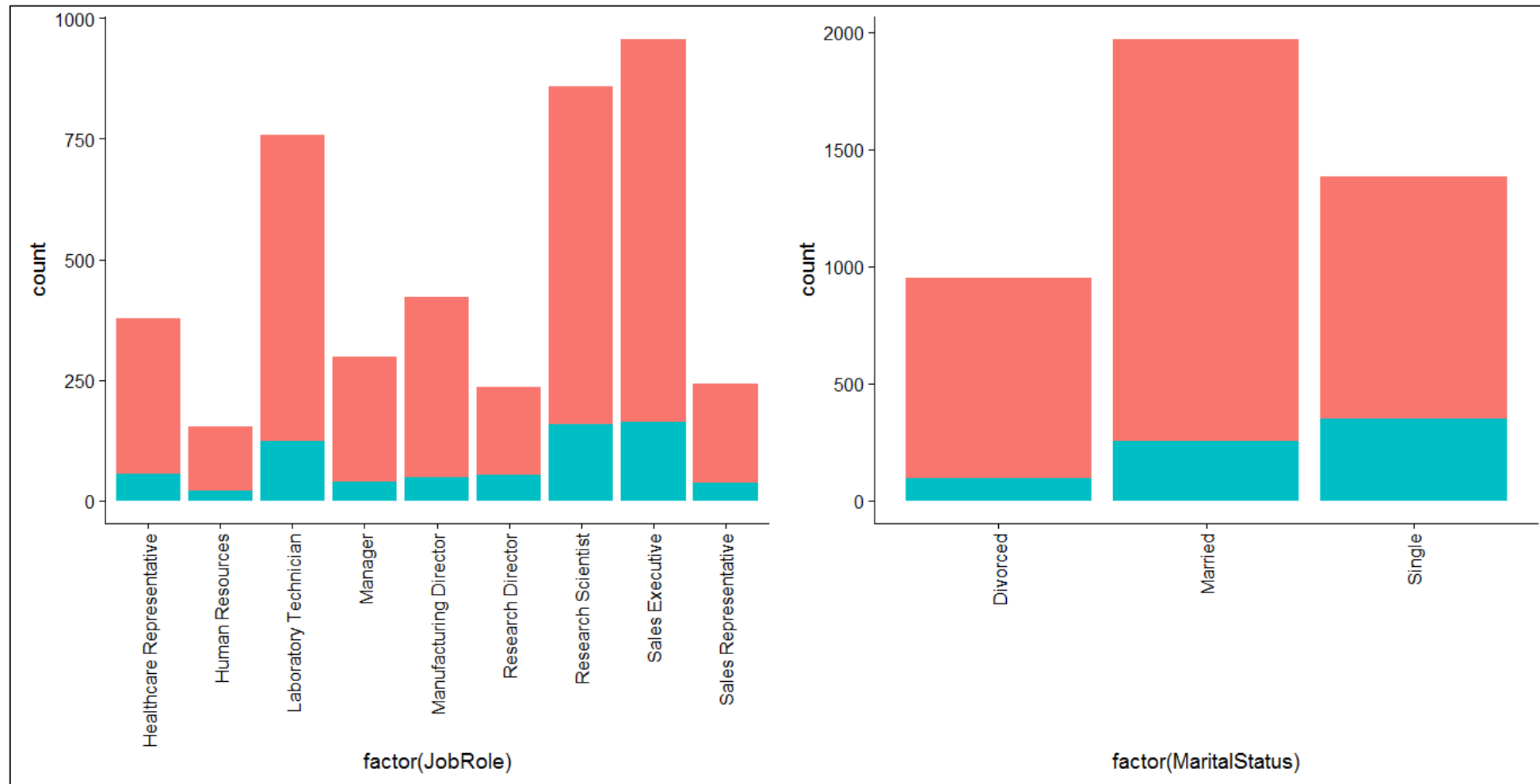


- ‘Life Science’ seems to show about More attrition. (instead of Sales)

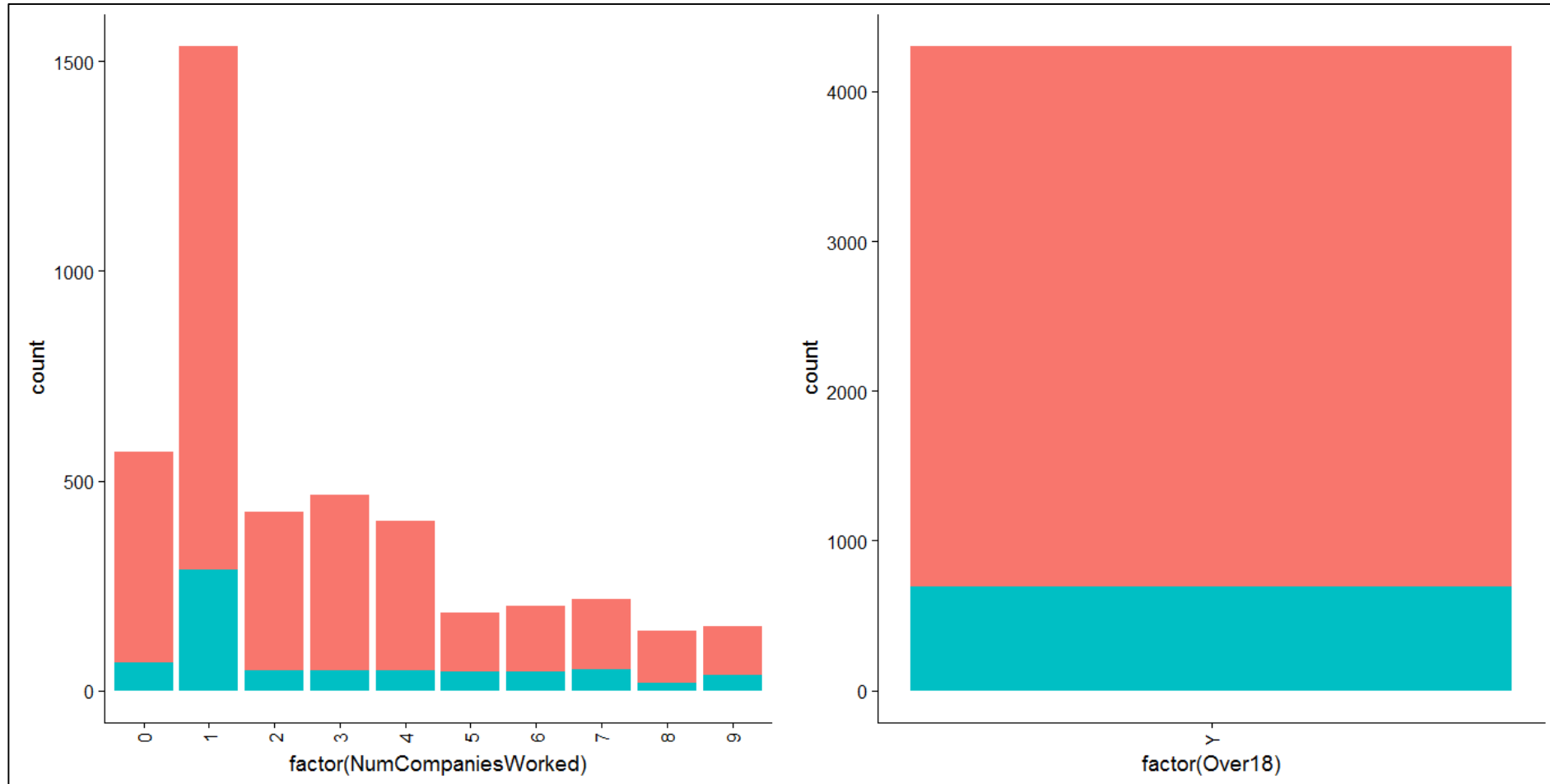


- Female employees seem to see more attrition as compared to male.

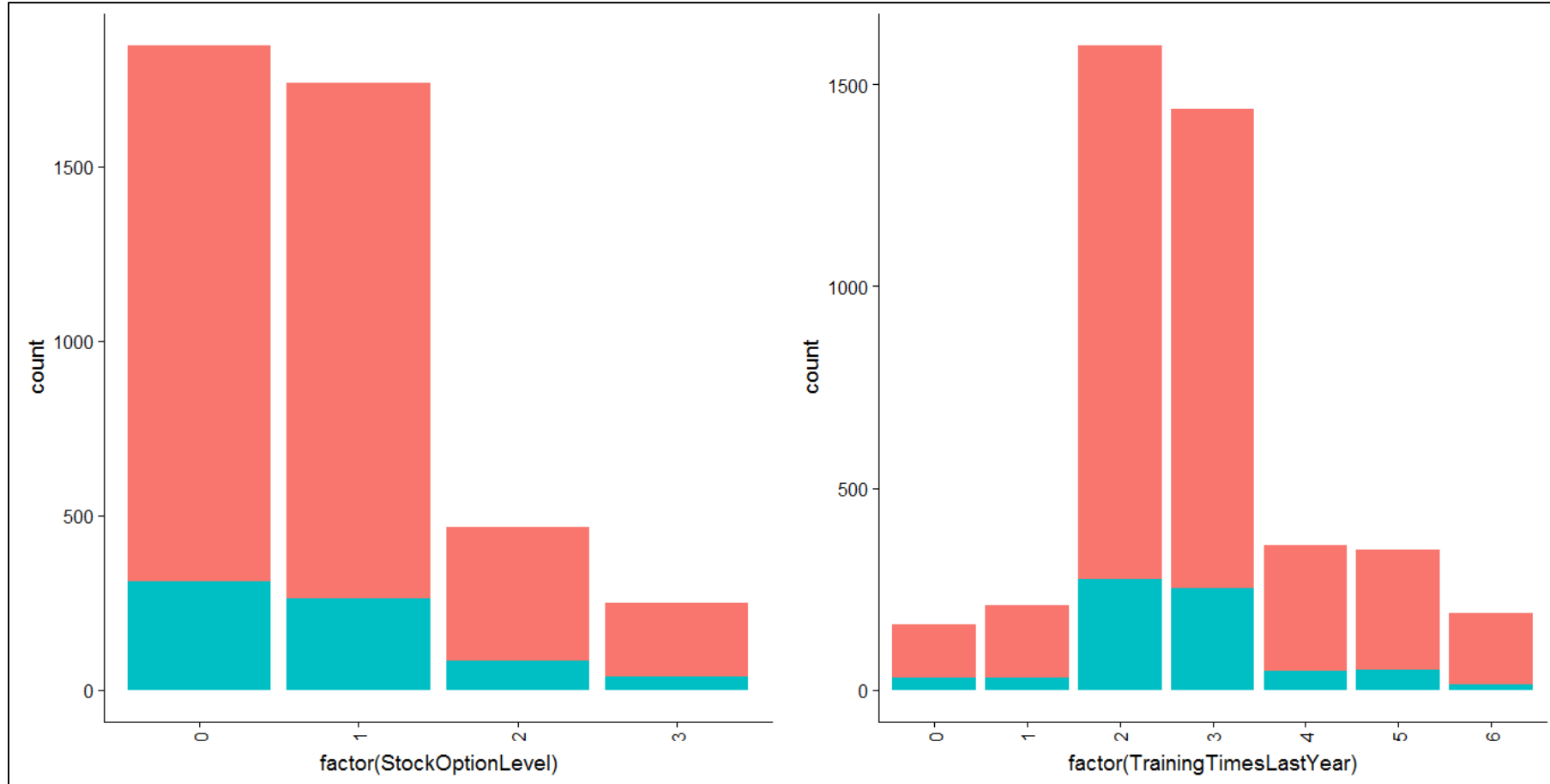
BIVARIANT ANALYSIS ..4



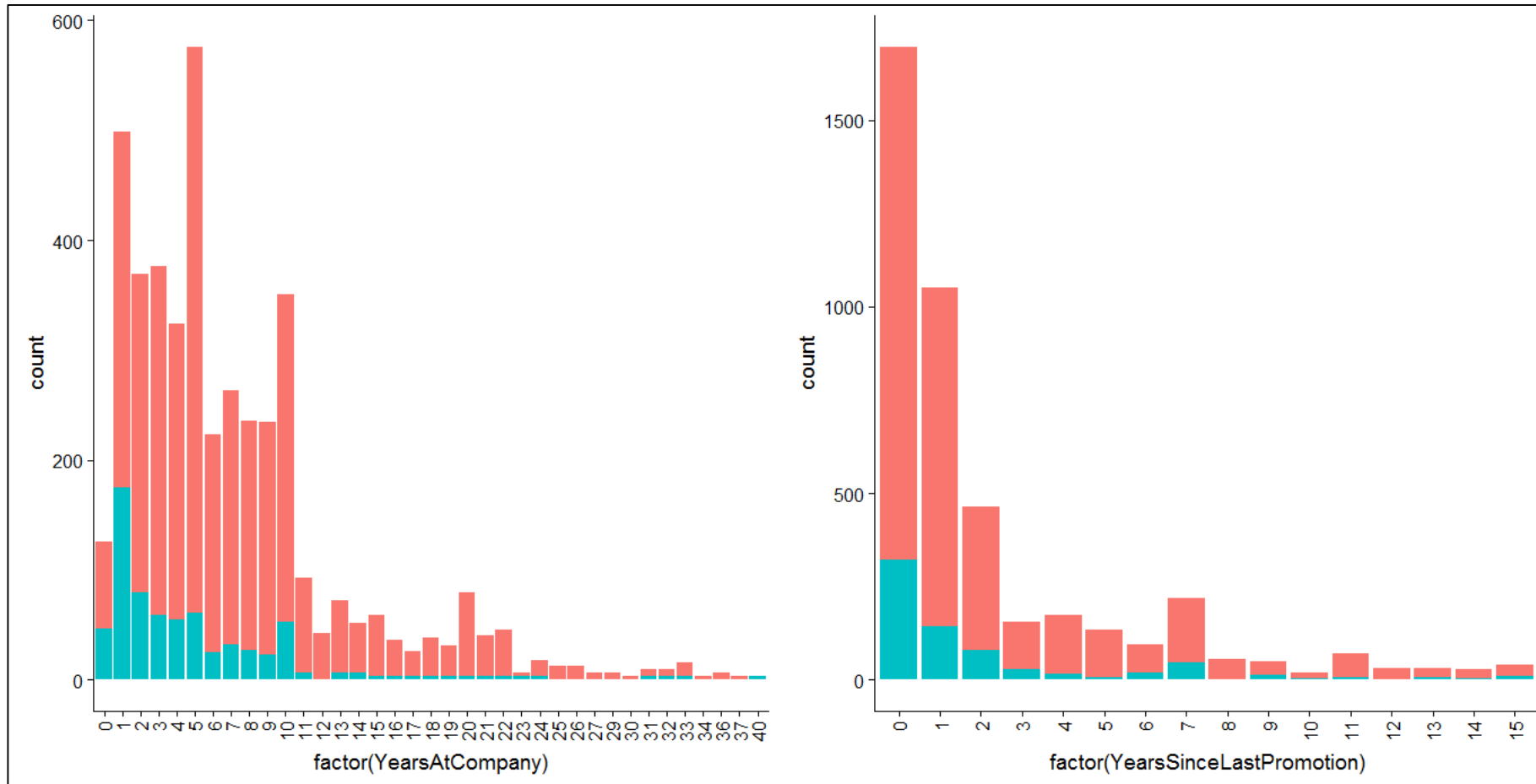
- Single employees seem to see more attrition as compared to male.



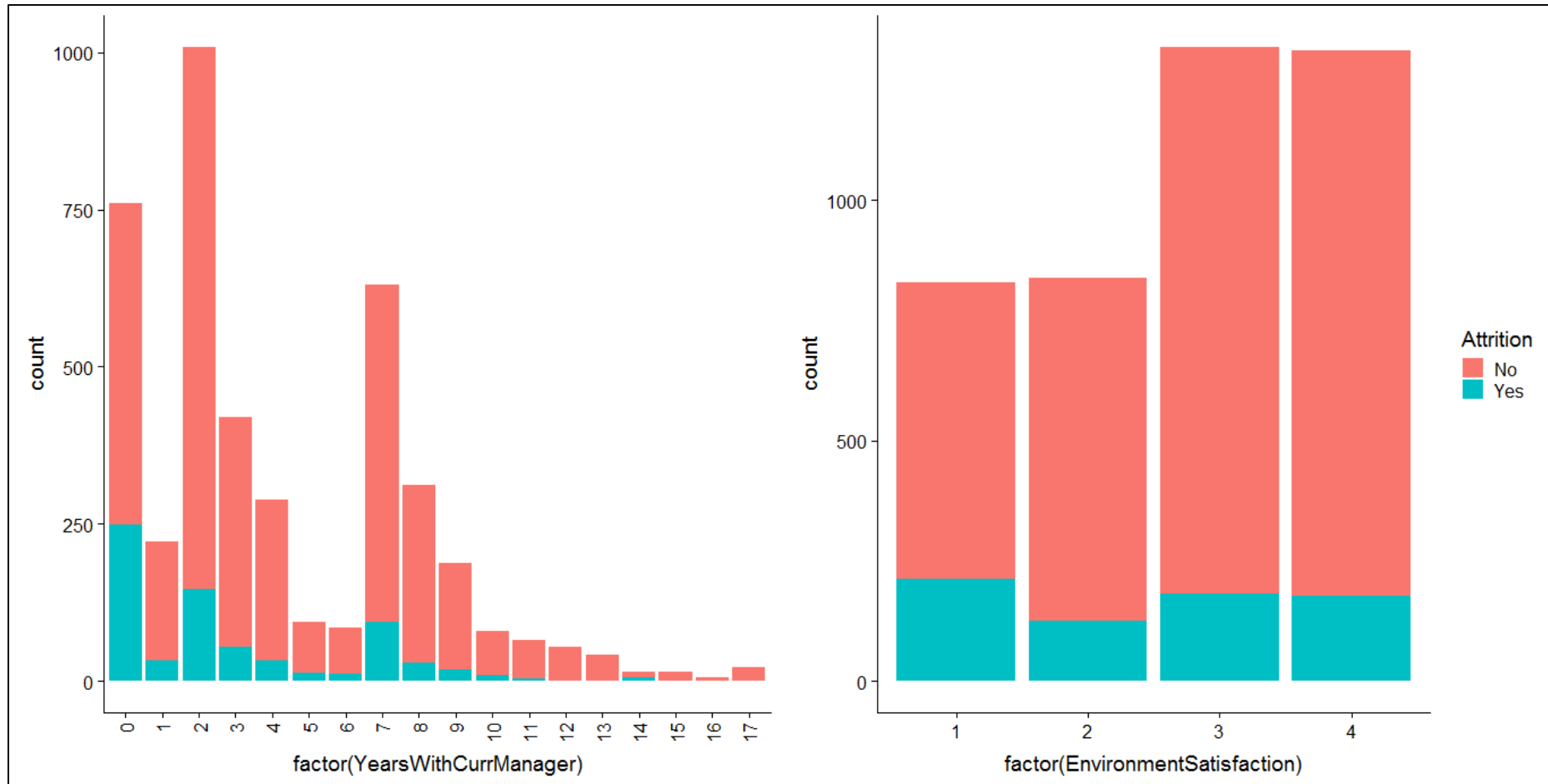
- Employees worked with 1 year in a company seem to be most vulnerable to attrition.



- No significant trend observed.

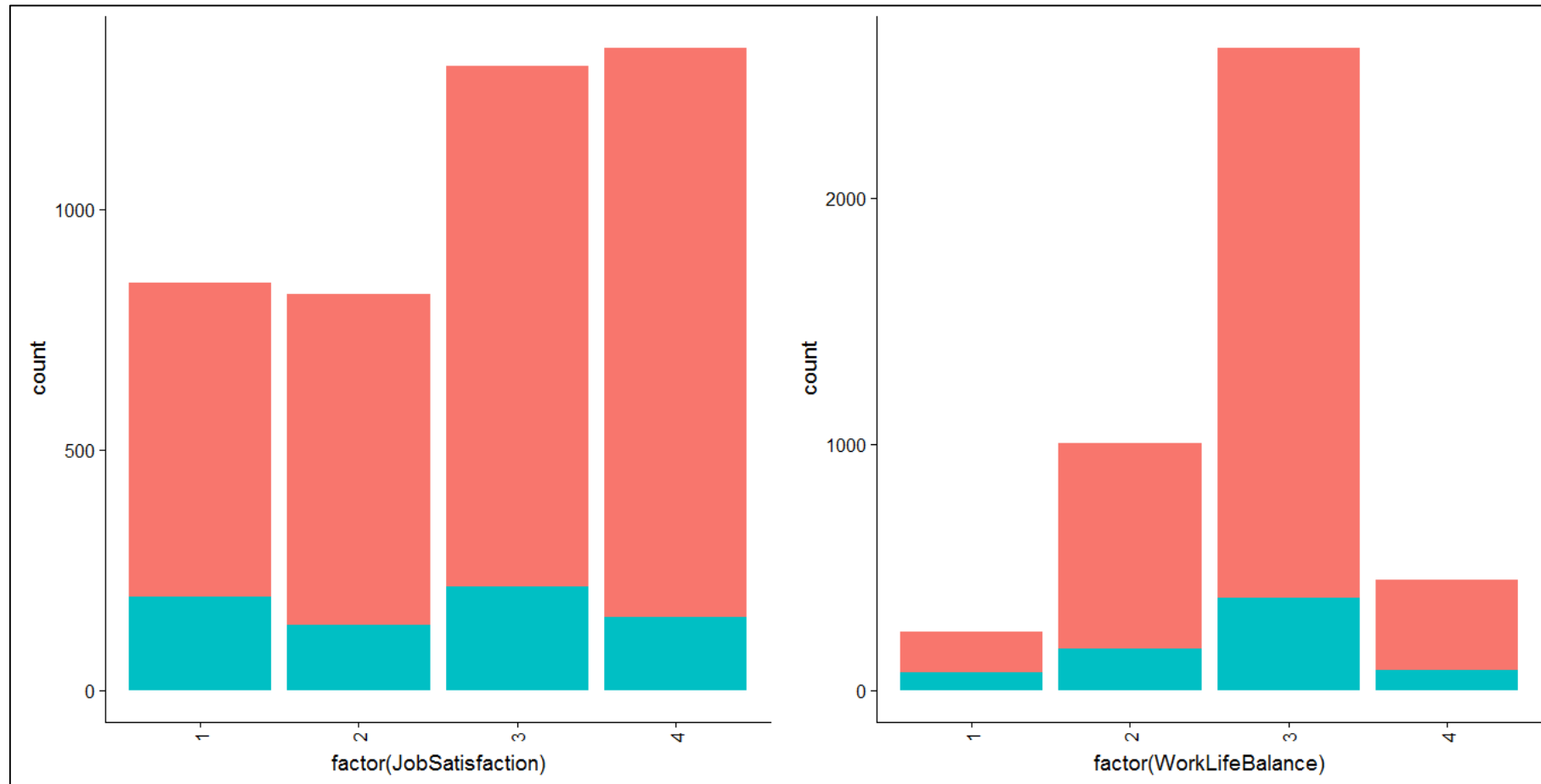


- Employees with 40 years in company see 100% attrition indicating retirement for employee.
- Employees with 7 years since no promotion shows higher attrition.

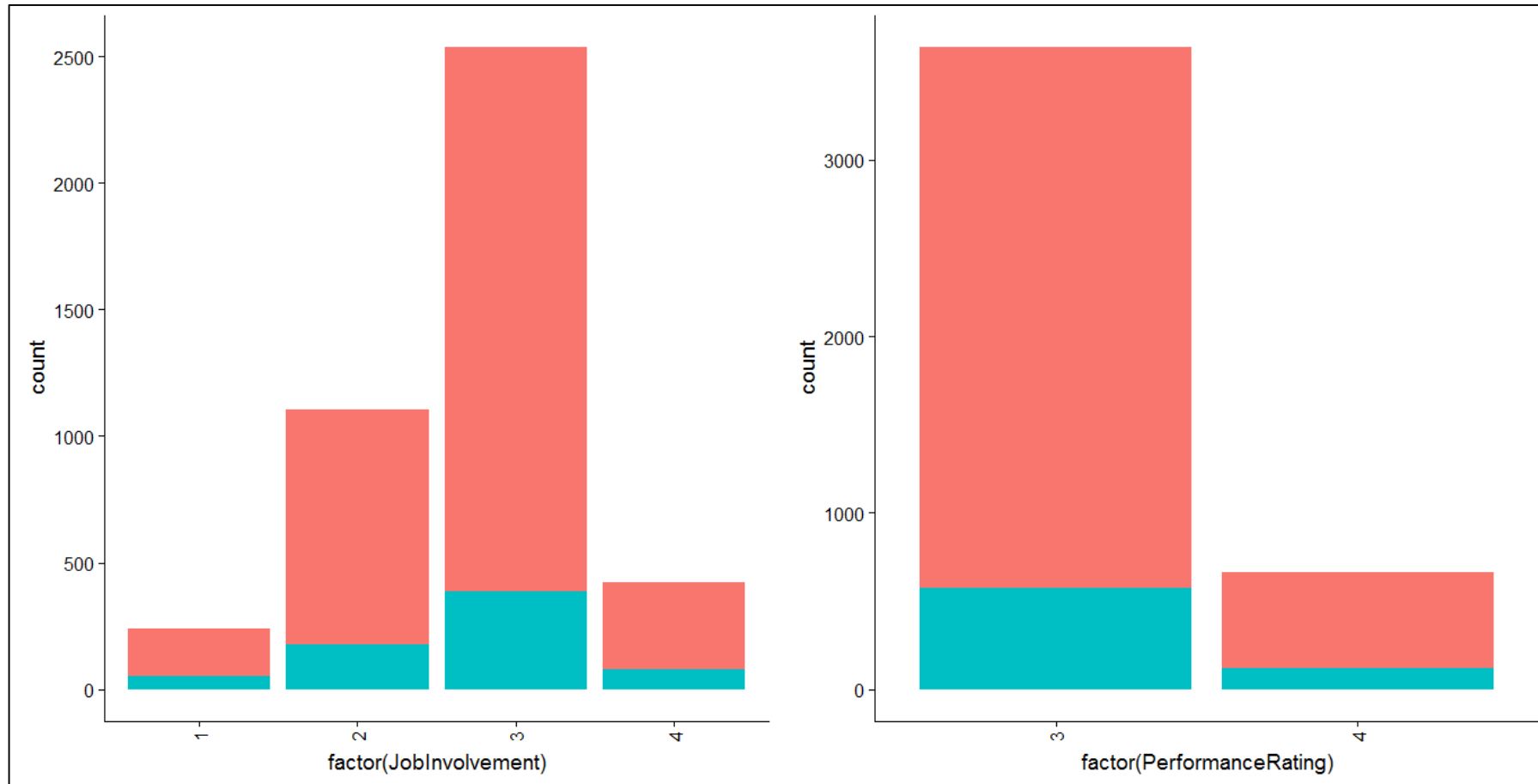


- The first year experience with manager plays an important role in employee attrition.
- Employees with same manager with 7 years show higher attrition possibility.
- Employees with lower satisfaction with environment show higher percentage of attrition.

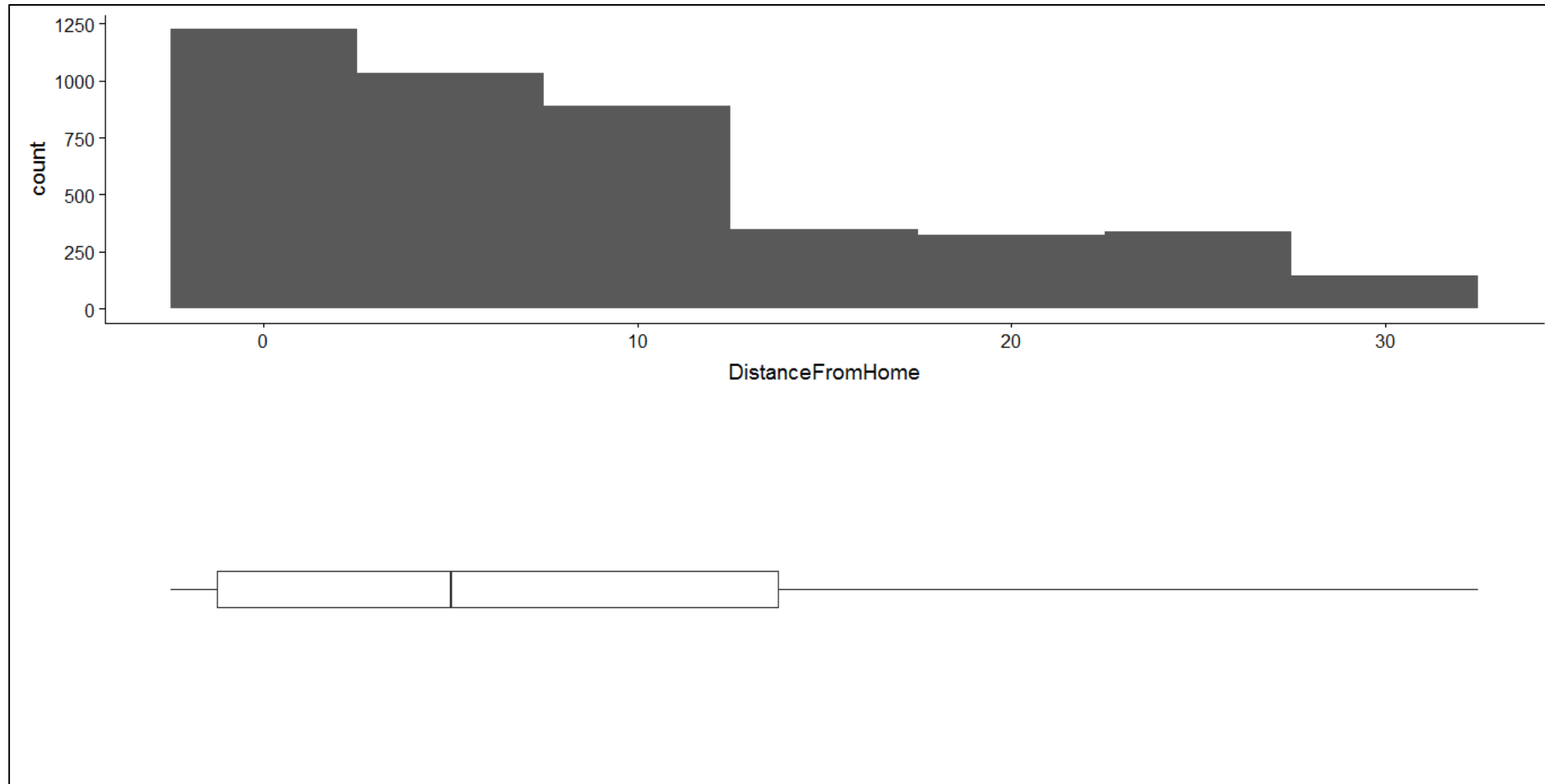
BIVARIANT ANALYSIS ..9



- Low job satisfaction can lead to employee attrition.
- Lower “Work Life Balance” can cause employee attrition.

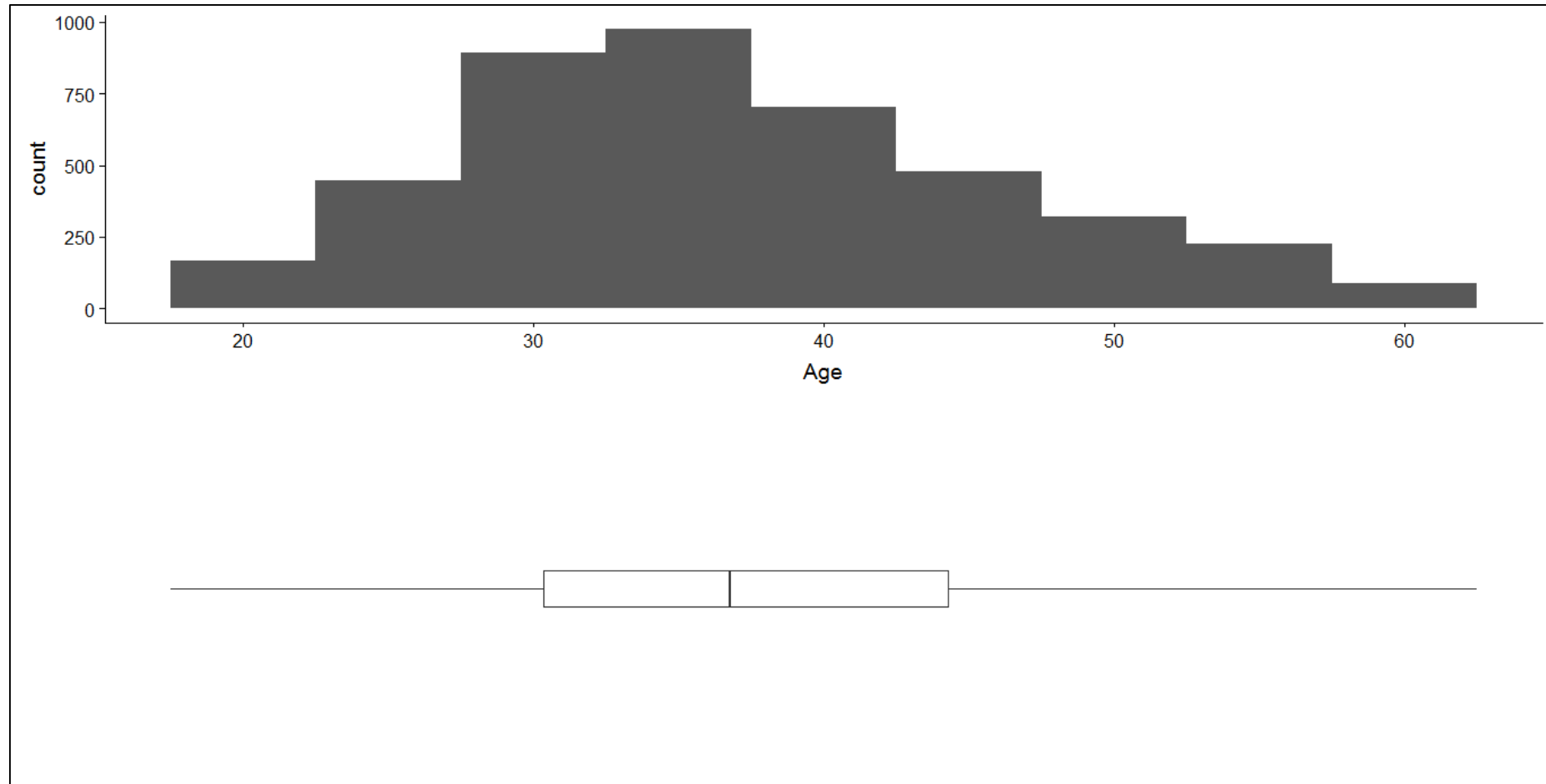


- No significant trend observed.



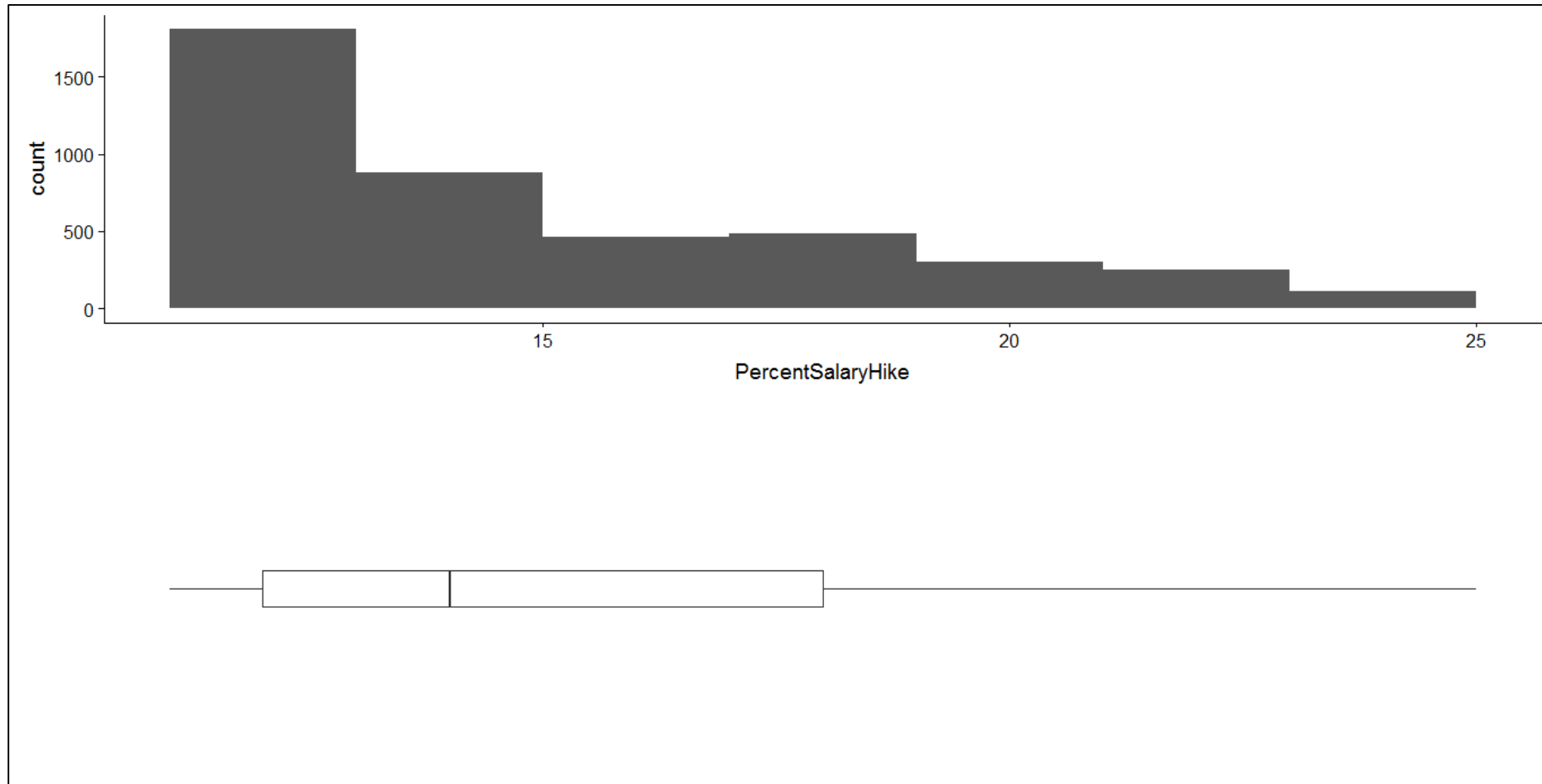
- Typically employees prefer to be up to 10kms away from office.

BIVARIANT ANALYSIS ..12



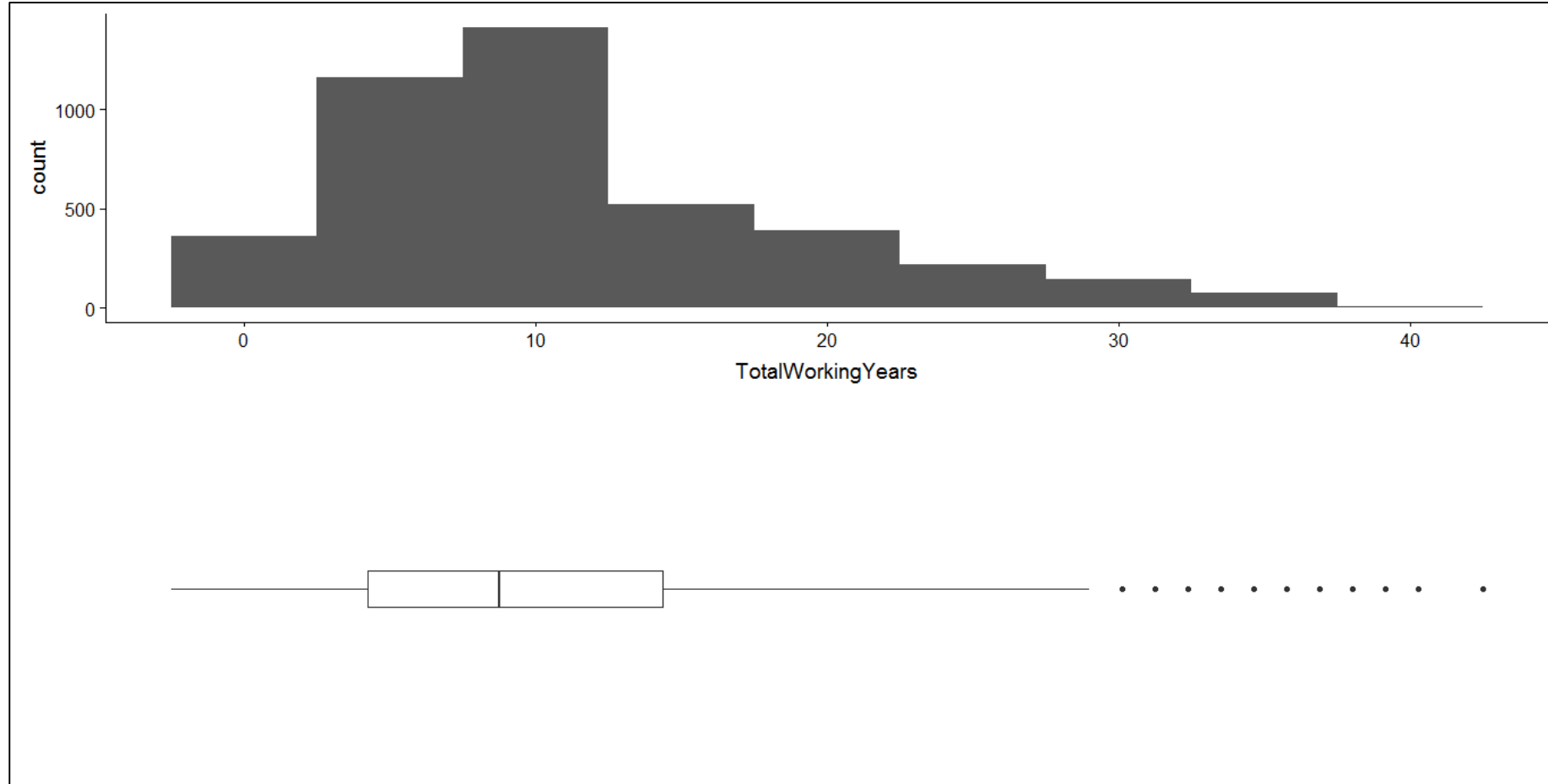
- Maximum work force in the company is in the age group between 30 and 40 years.

BIVARIANT ANALYSIS ..13



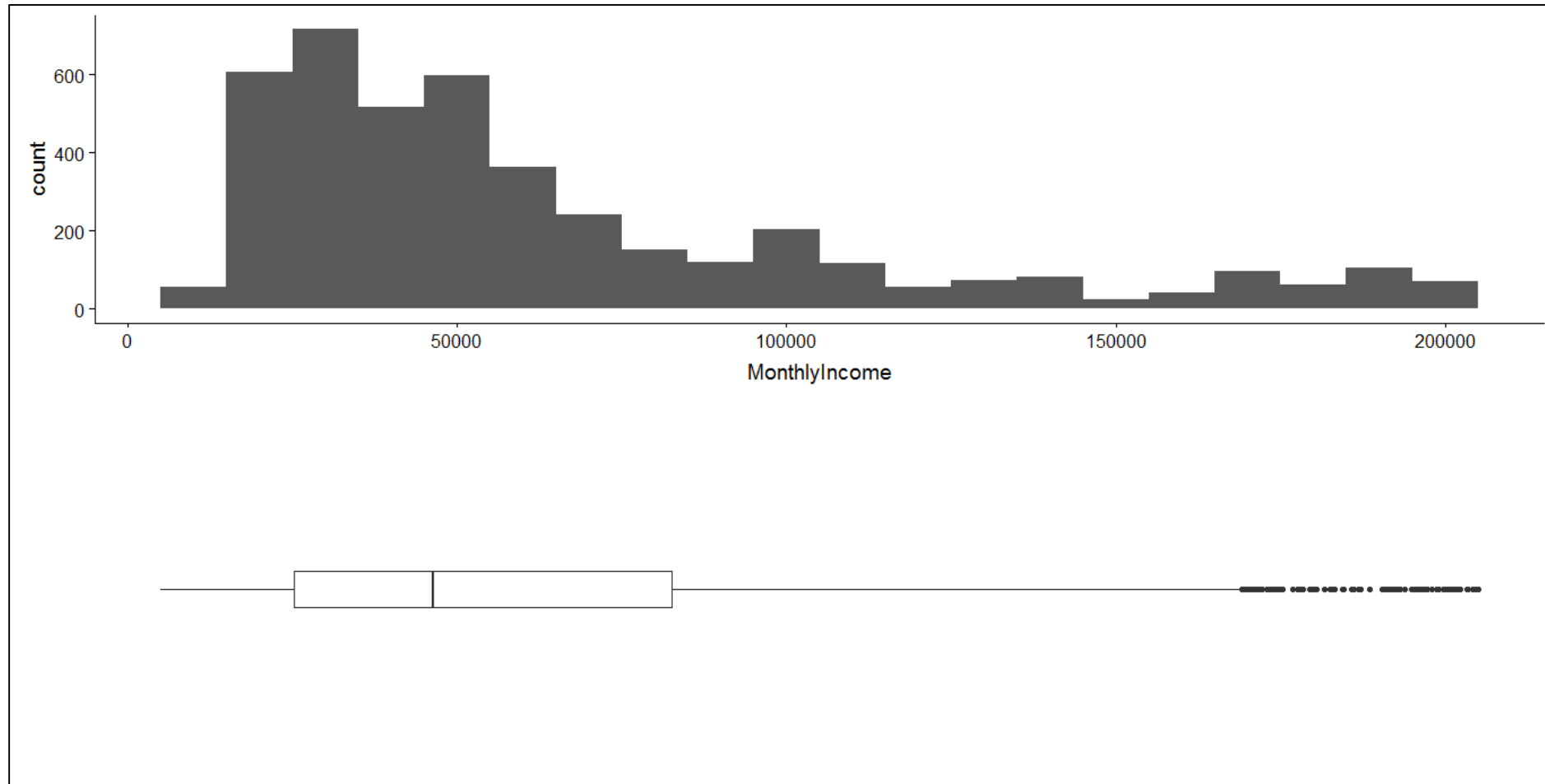
- Average salary hike in this company is up to 15%.

BIVARIANT ANALYSIS ..14

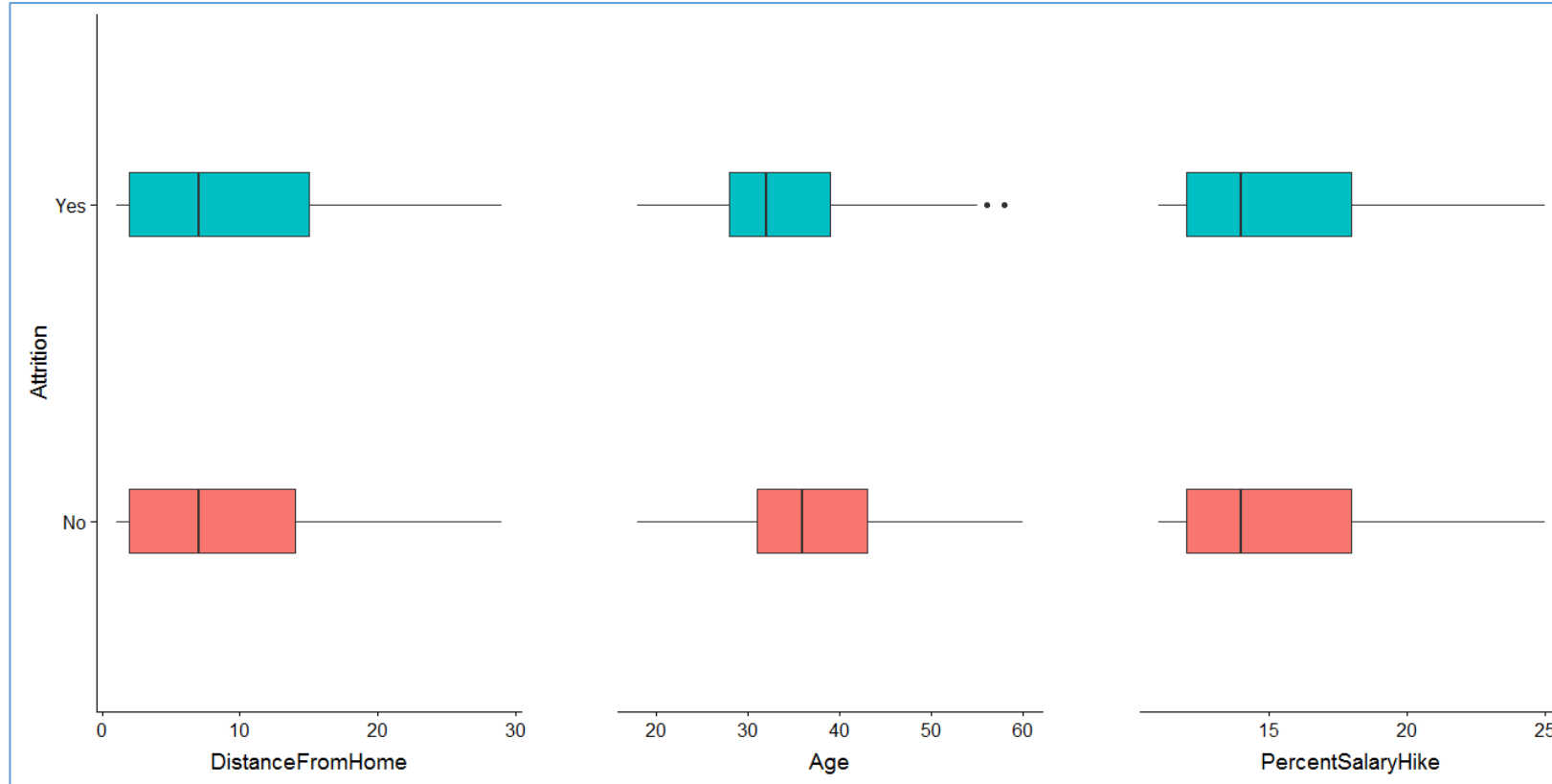


- Maximum work force in the company are those with approximately 10 years of experience.

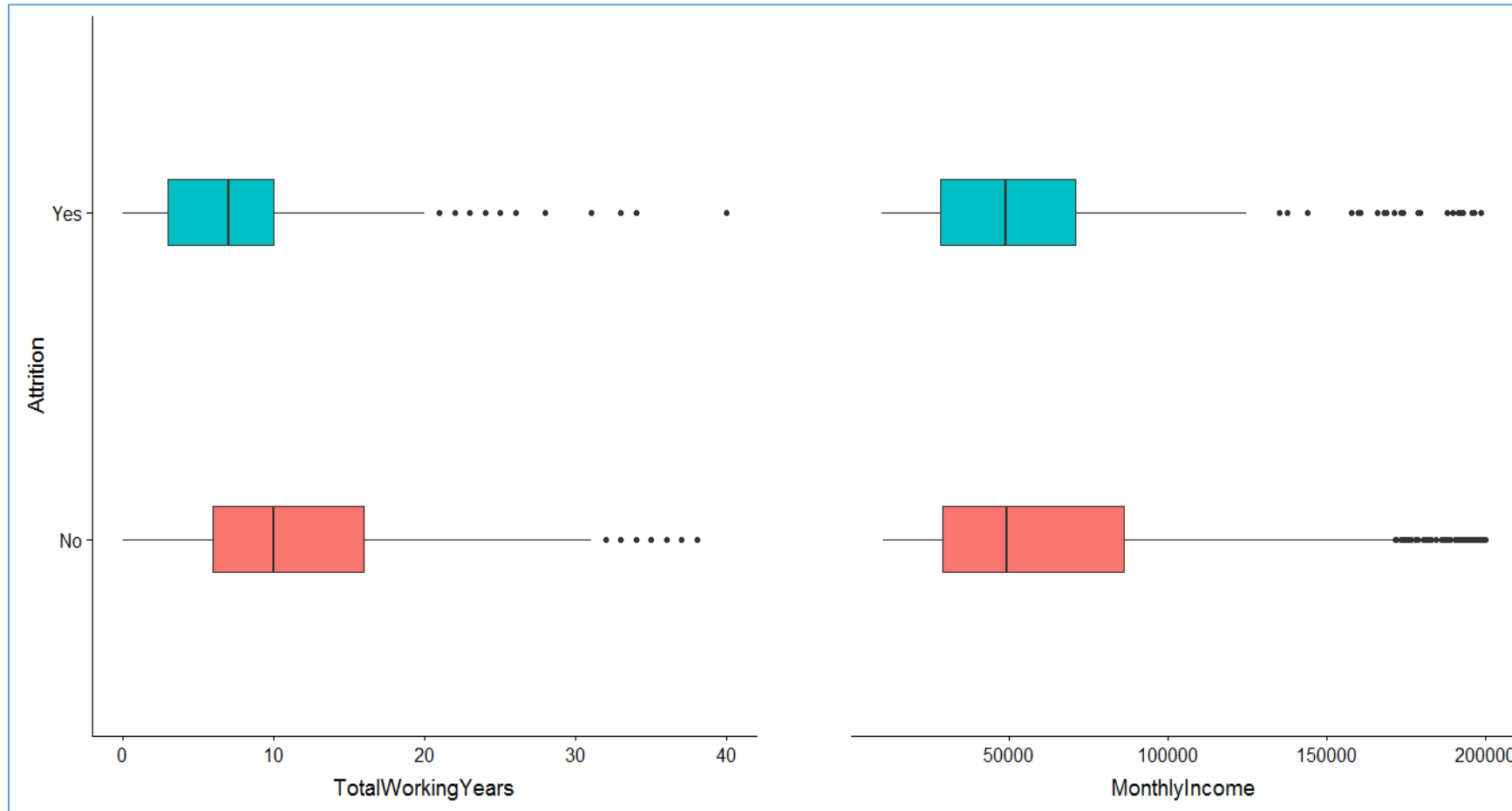
BIVARIANT ANALYSIS ..15



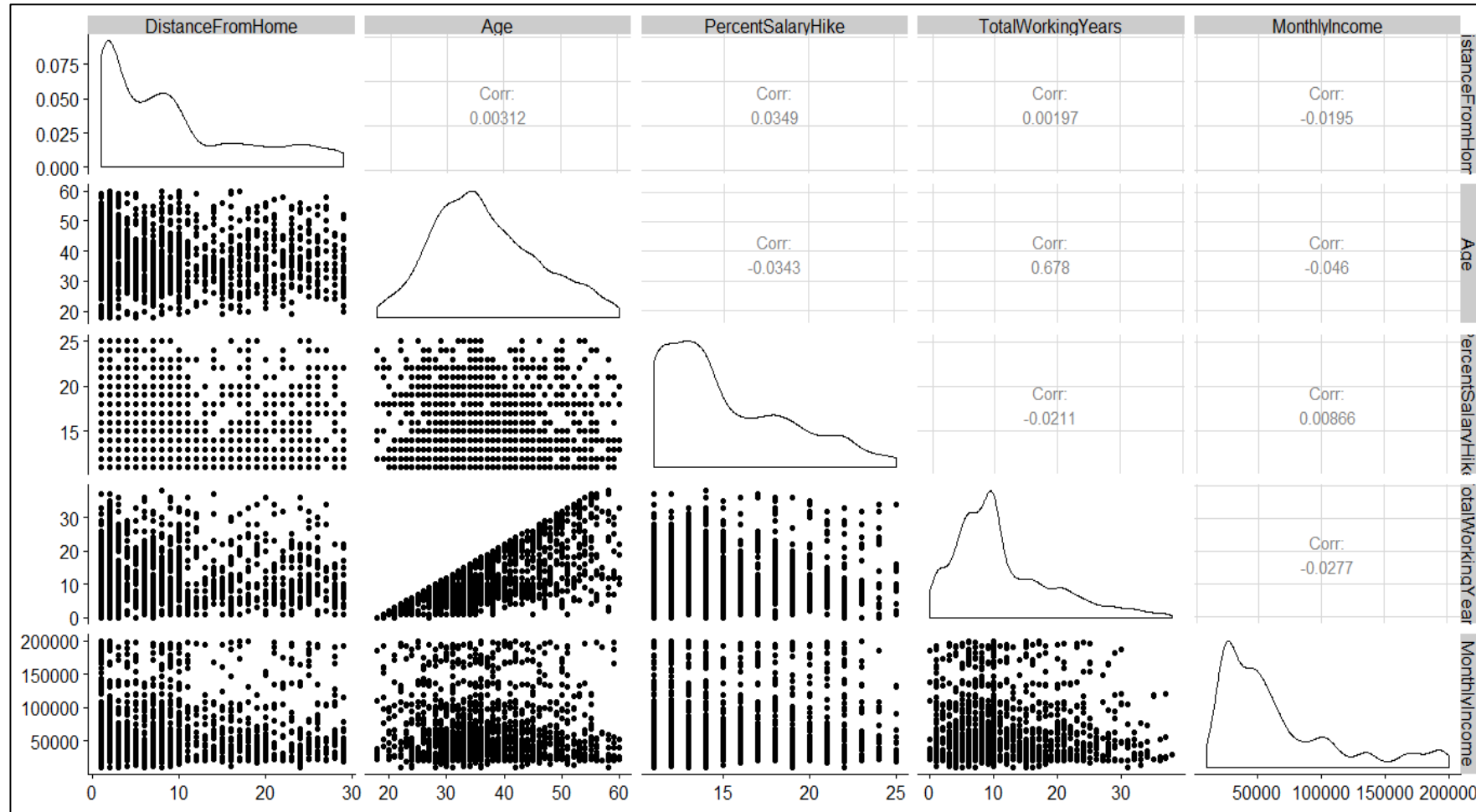
- Average salary for employees is about 50000 per annum.



- Employees worked with 1 year in a company seem to be most vulnerable to attrition.



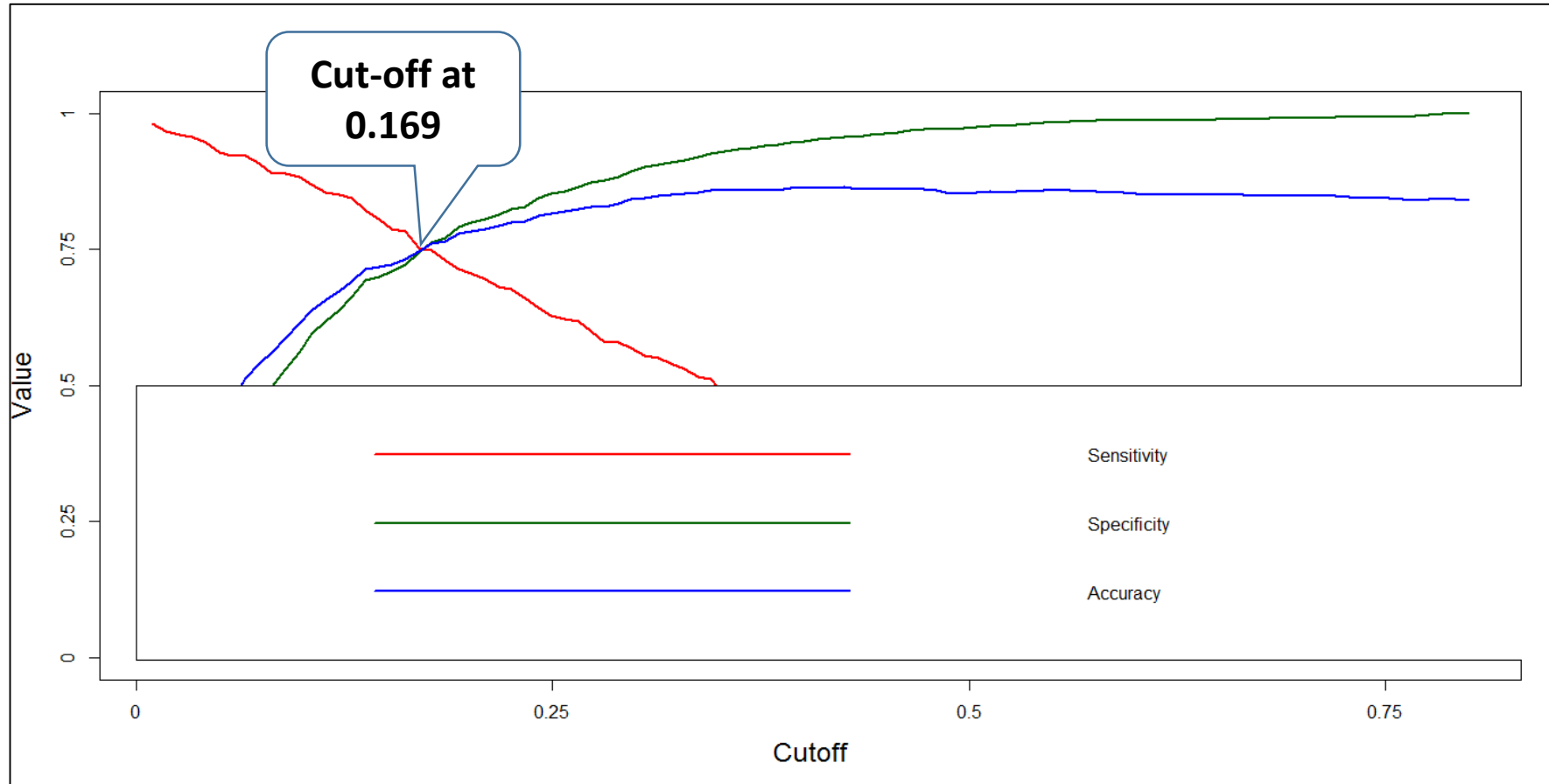
- Employees with greater than 35 years seems to wait for retirement.



- Age and no. of years of experience are correlated as expected

Coefficients:					
	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	-1.58068	0.34550	-4.575	4.76e-06	***
TotalWorkingYears	-0.74305	0.07759	-9.577	< 2e-16	***
BusinessTravel.xTravel_Frequently	1.74937	0.26737	6.543	6.03e-11	***
BusinessTravel.xTravel_Rarely	1.01372	0.25112	4.037	5.42e-05	***
Department.xResearch...Development	-1.24676	0.23722	-5.256	1.47e-07	***
Department.xSales	-1.35757	0.24935	-5.444	5.20e-08	***
MaritalStatus.xSingle	0.89923	0.11501	7.819	5.34e-15	***
NumCompaniesWorked.x5	1.03983	0.24644	4.219	2.45e-05	***
NumCompaniesWorked.x7	0.83865	0.22938	3.656	0.000256	***
YearsAtCompany.x1	1.08265	0.15032	7.202	5.91e-13	***
YearsAtCompany.x23	4.53728	1.18392	3.832	0.000127	***
YearsSinceLastPromotion.x7	0.96419	0.22331	4.318	1.58e-05	***
YearsSinceLastPromotion.x9	1.67976	0.45184	3.718	0.000201	***
YearsWithCurrManager.x14	3.35938	0.80933	4.151	3.31e-05	***
Environmentsatisfaction.x2	-0.85881	0.16975	-5.059	4.21e-07	***
Environmentsatisfaction.x3	-0.88033	0.15504	-5.678	1.36e-08	***
Environmentsatisfaction.x4	-1.19227	0.16004	-7.450	9.34e-14	***
JobSatisfaction.x4	-0.70846	0.13260	-5.343	9.16e-08	***
sumhours	0.59674	0.05336	11.183	< 2e-16	***

ACCURACY, SENSITIVITY & SPECIFICITY CHART



- The cutoff value where accuracy, sensitivity and specificity meet is: 0.16959595959596

GAIN TABLE

# A tibble: 10 x 6						
	bucket	total	totalresp	Cumresp	Gain	Cumlift
	<int>	<int>	<dbl>	<dbl>	<dbl>	<dbl>
1	1	129	80.	80.	38.6	3.86
2	2	129	41.	121.	58.5	2.92
3	3	129	28.	149.	72.0	2.40
4	4	129	23.	172.	83.1	2.08
5	5	128	10.	182.	87.9	1.76
6	6	129	6.	188.	90.8	1.51
7	7	129	4.	192.	92.8	1.33
8	8	129	6.	198.	95.7	1.20
9	9	129	2.	200.	96.6	1.07
10	10	128	7.	207.	100.	1.00

- Gain table shows that KS value 49.922910884983 falls between 1st and 2nd decile

CONCLUSIONS

The factors that contribute to employee attrition are as under

1. Total working years.
2. Business Travel.
3. Departments R&D and Sales
4. Single employees
5. Years at company 1 or 13
6. Years since last promotion being 7 to 9
7. Years with current manager being 14
8. Environment satisfaction
9. Job satisfaction should be high.
10. Number of hours spent in office.