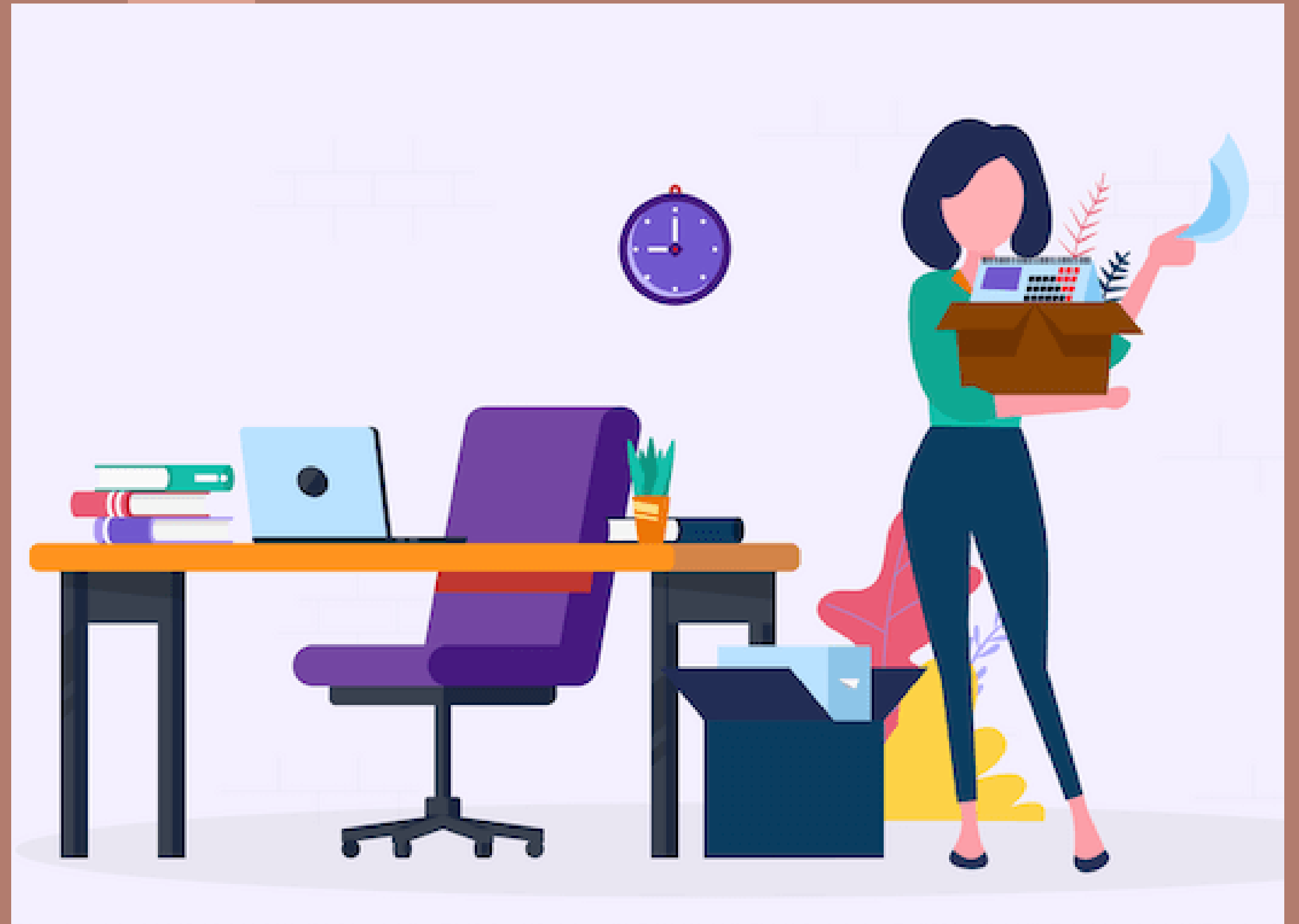


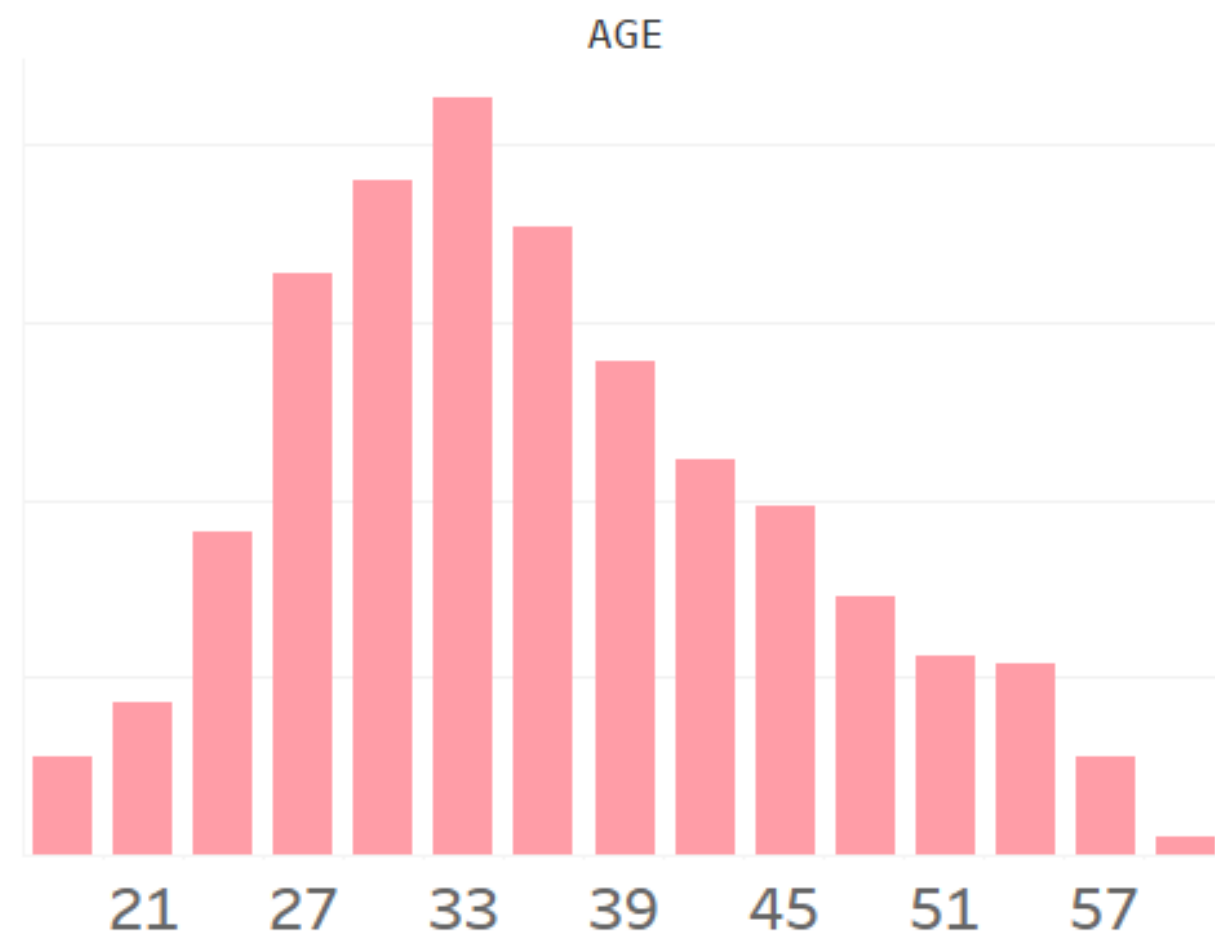
Exploratory Data Analysis On Employee Attrition

*-Presented by
Aditi Bhardwaj
Anurag Sharma
Atul Pandey*

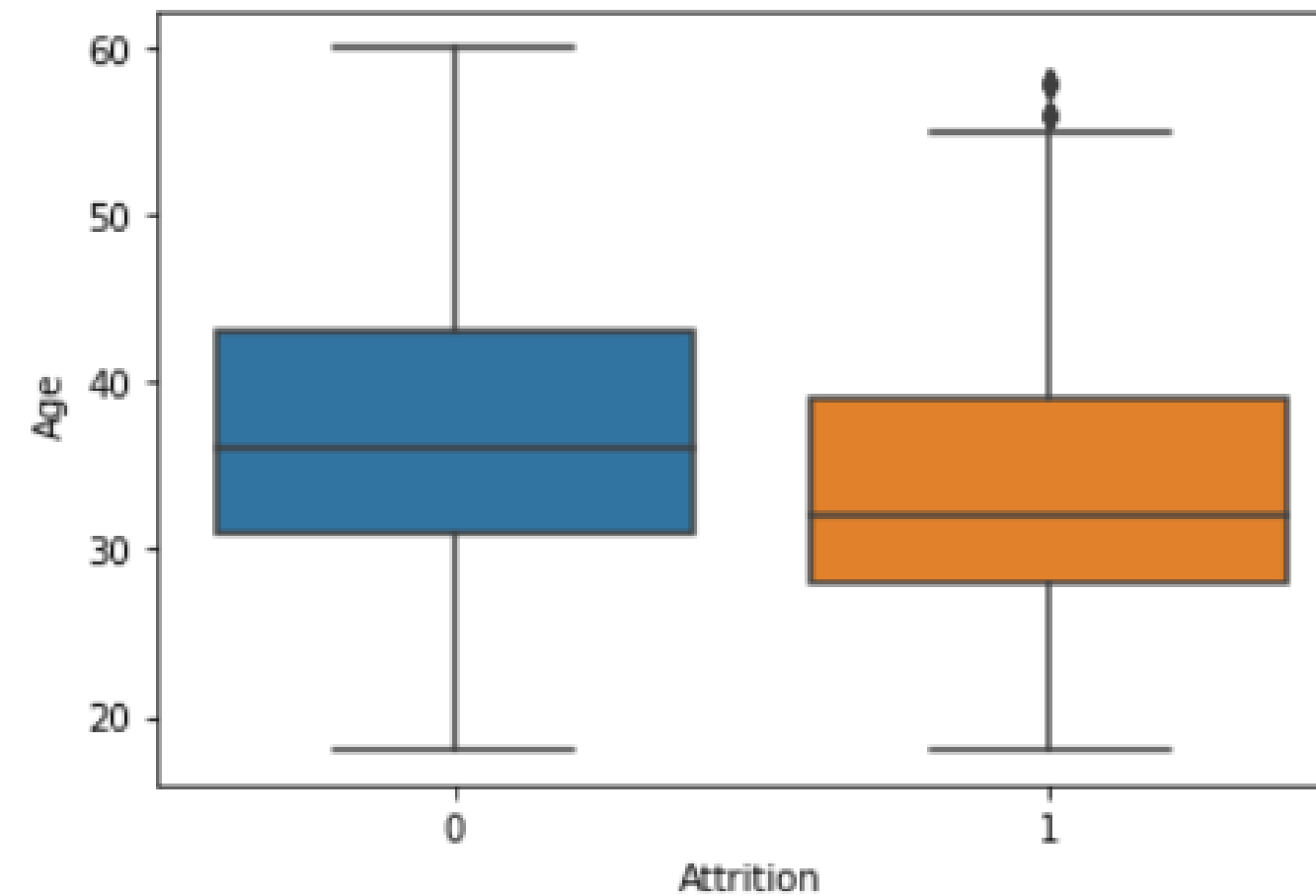


Age

Histogram of AGE



- Distribution is slightly right skewed distribution

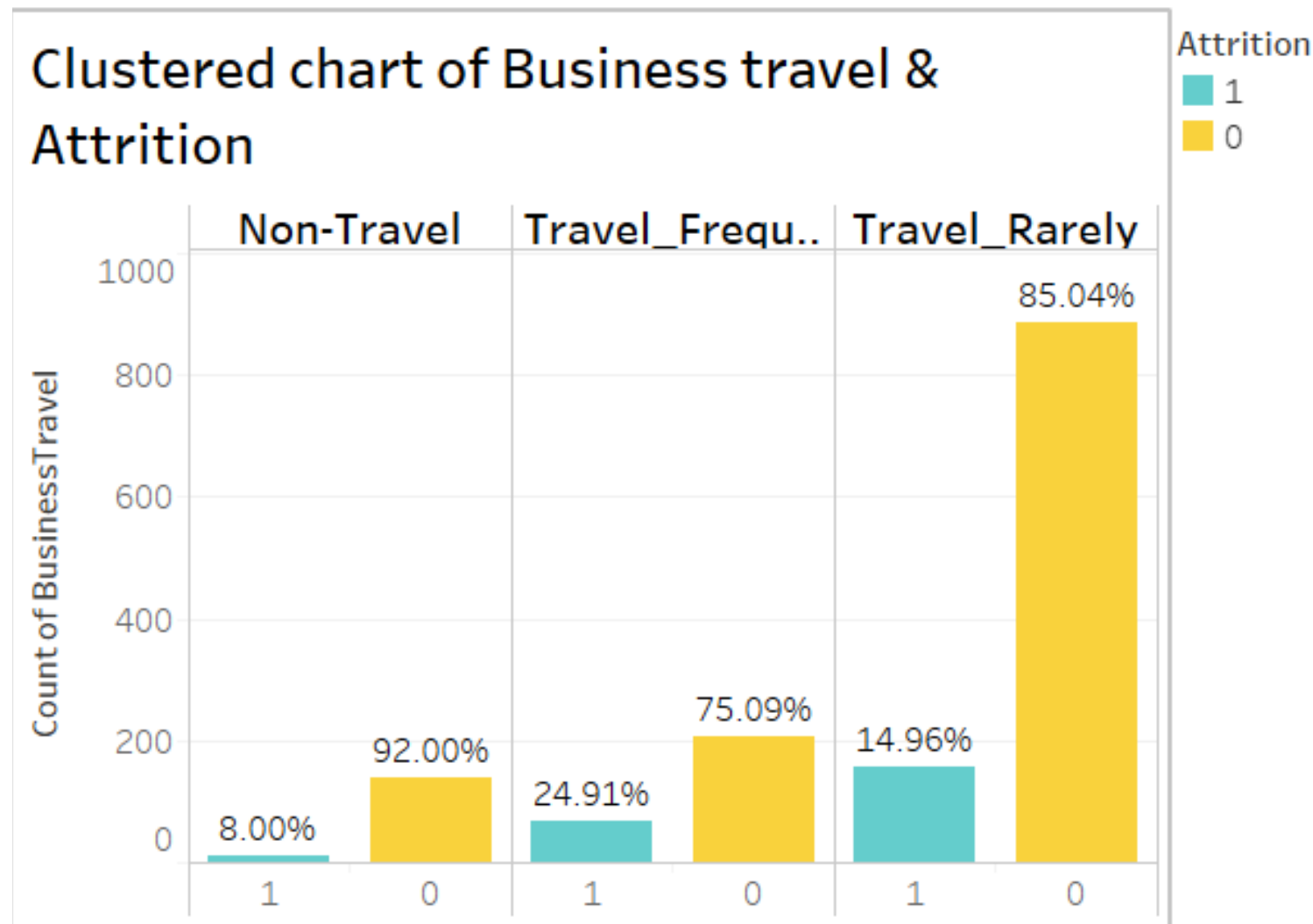


**MEDIAN
AGE FOR NON-
ATTRITION:36**

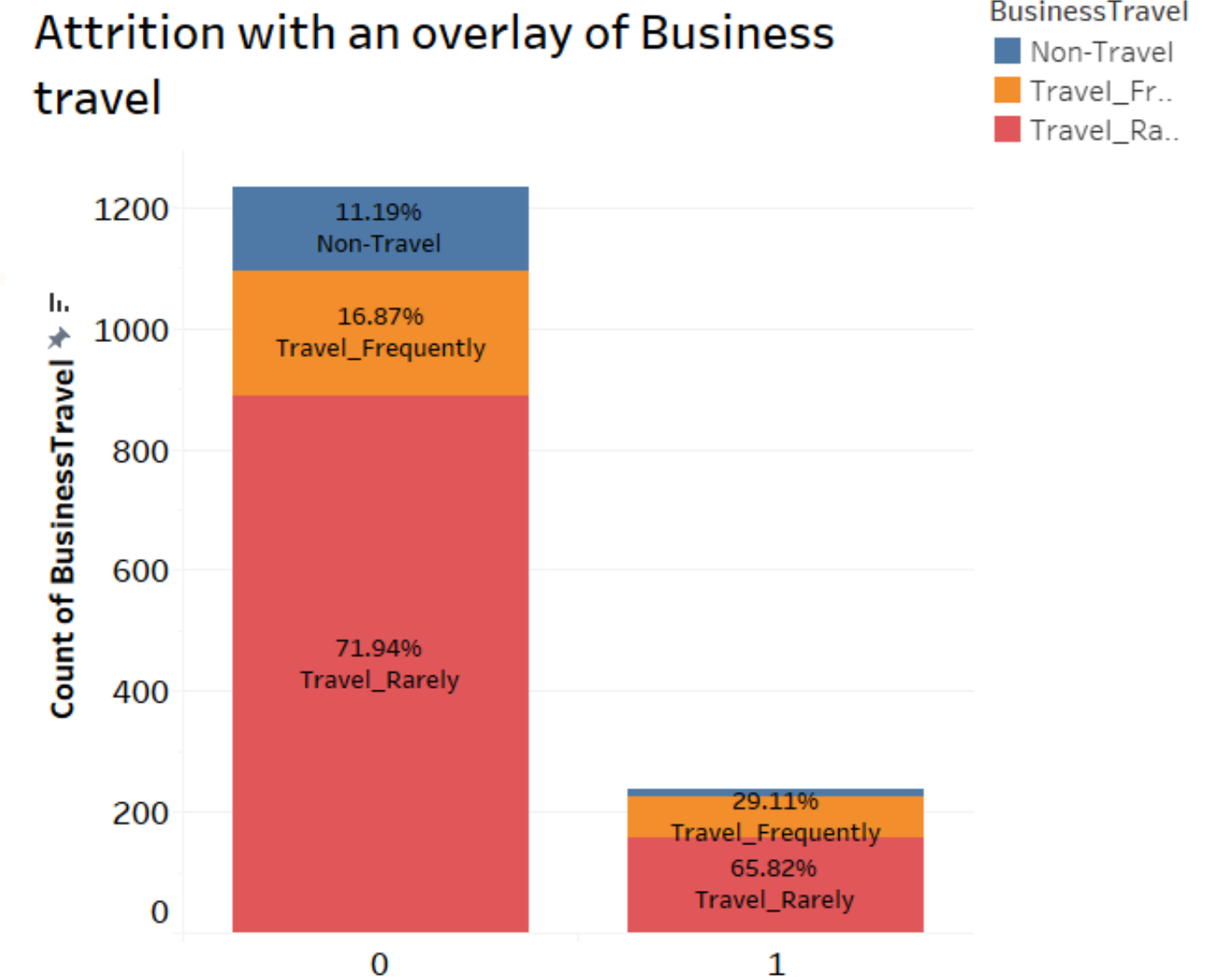
**MEDIAN
AGE FOR
ATTRITION:32**

- The probability of attrition is more in younger employees.
- Age(IQR) for employees that left the company is lower than the one that stayed

Business Travel



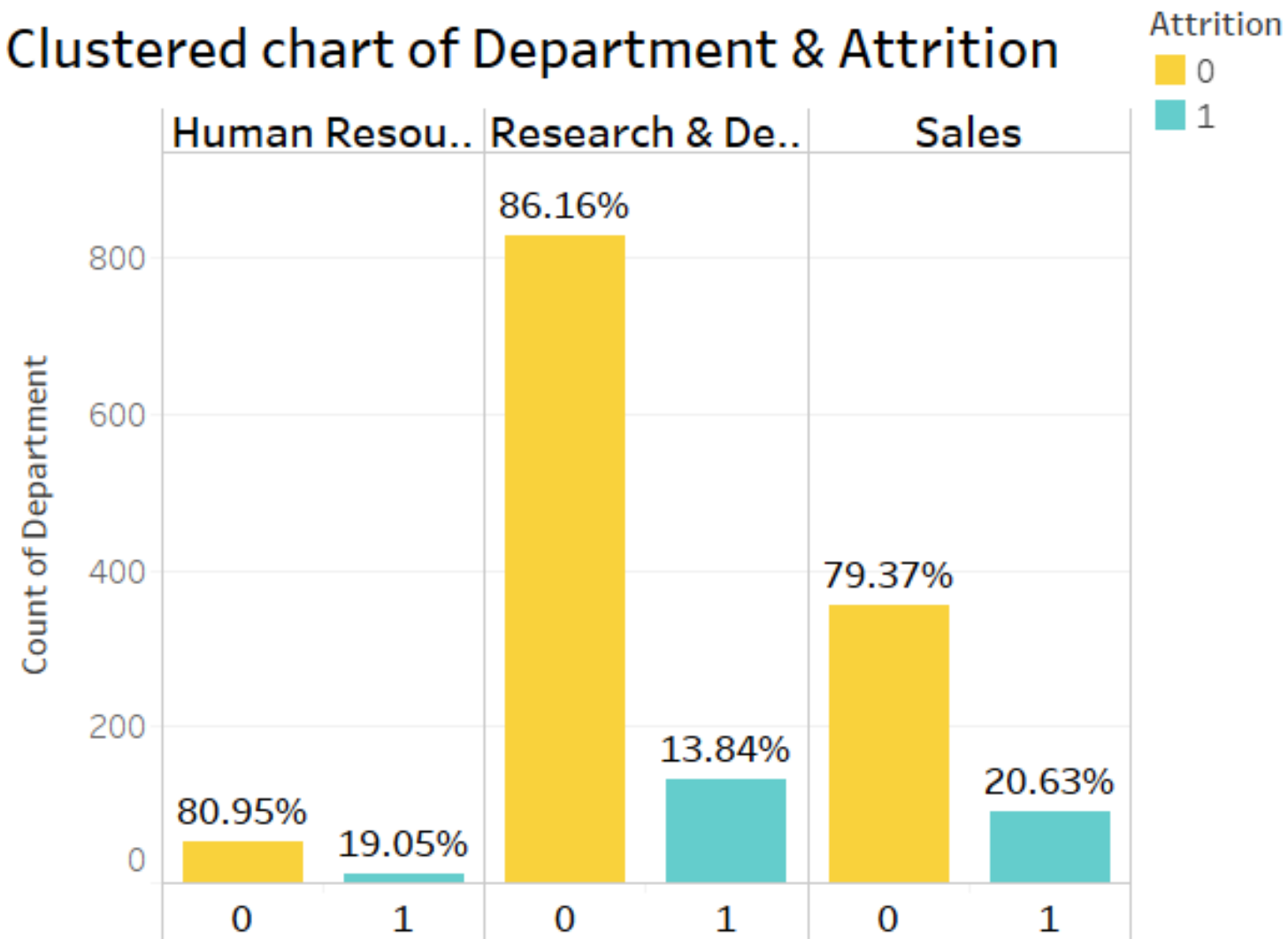
- The Category Travel Frequently has attrition 24% significantly more than the other categories
- But in the Travel frequently we can see that attrition is more (24%) and over all it contributes to 29% to attrition and to Non-attrition it 16% significantly low



- Travel rarely category has 65% of attrition but it has almost equal contribution to Non attrition(71%) also , which can be attributed to the fact that more number of employees fall in this category, the same can be observed from the chart on the left

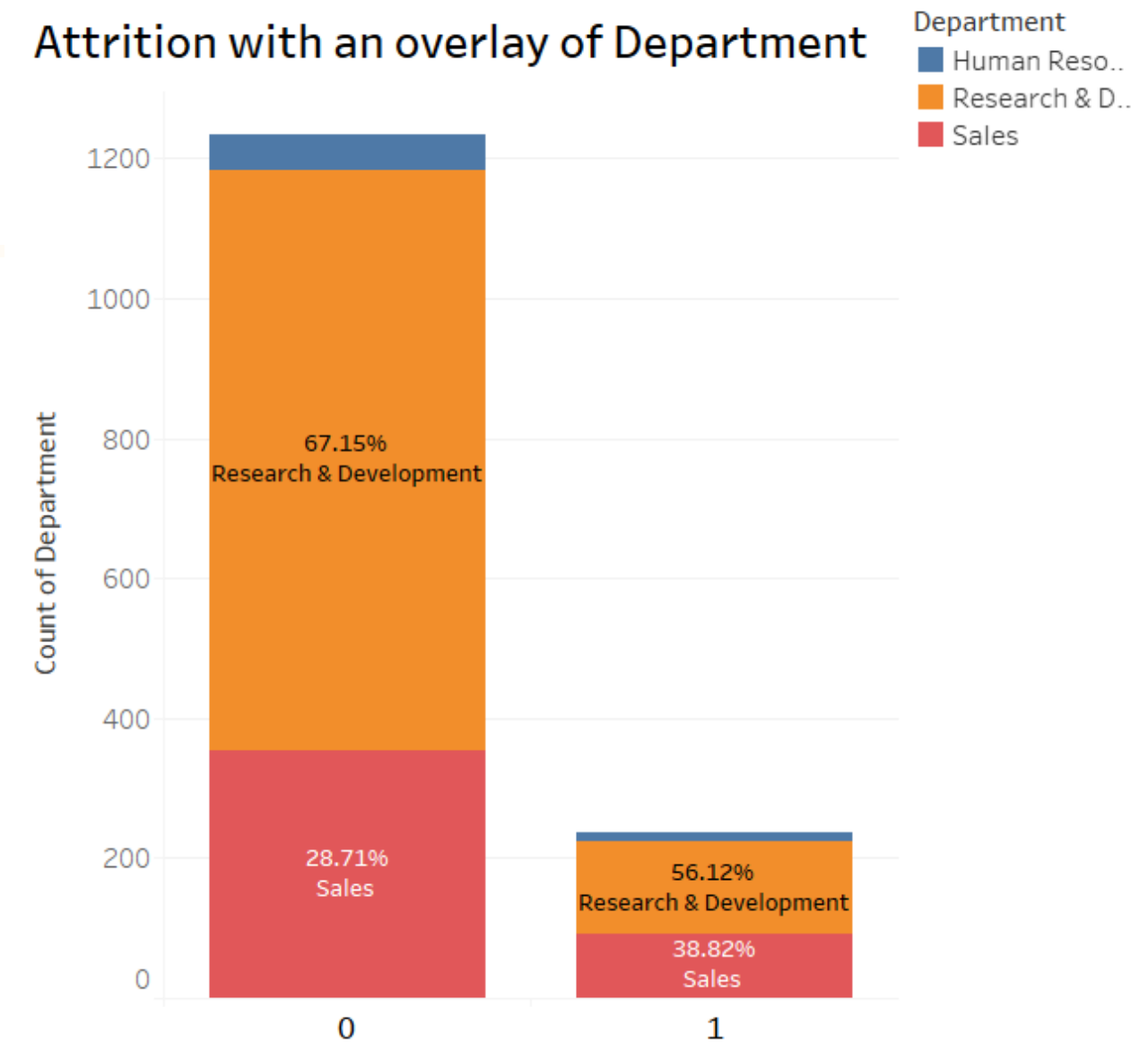
Department

Clustered chart of Department & Attrition



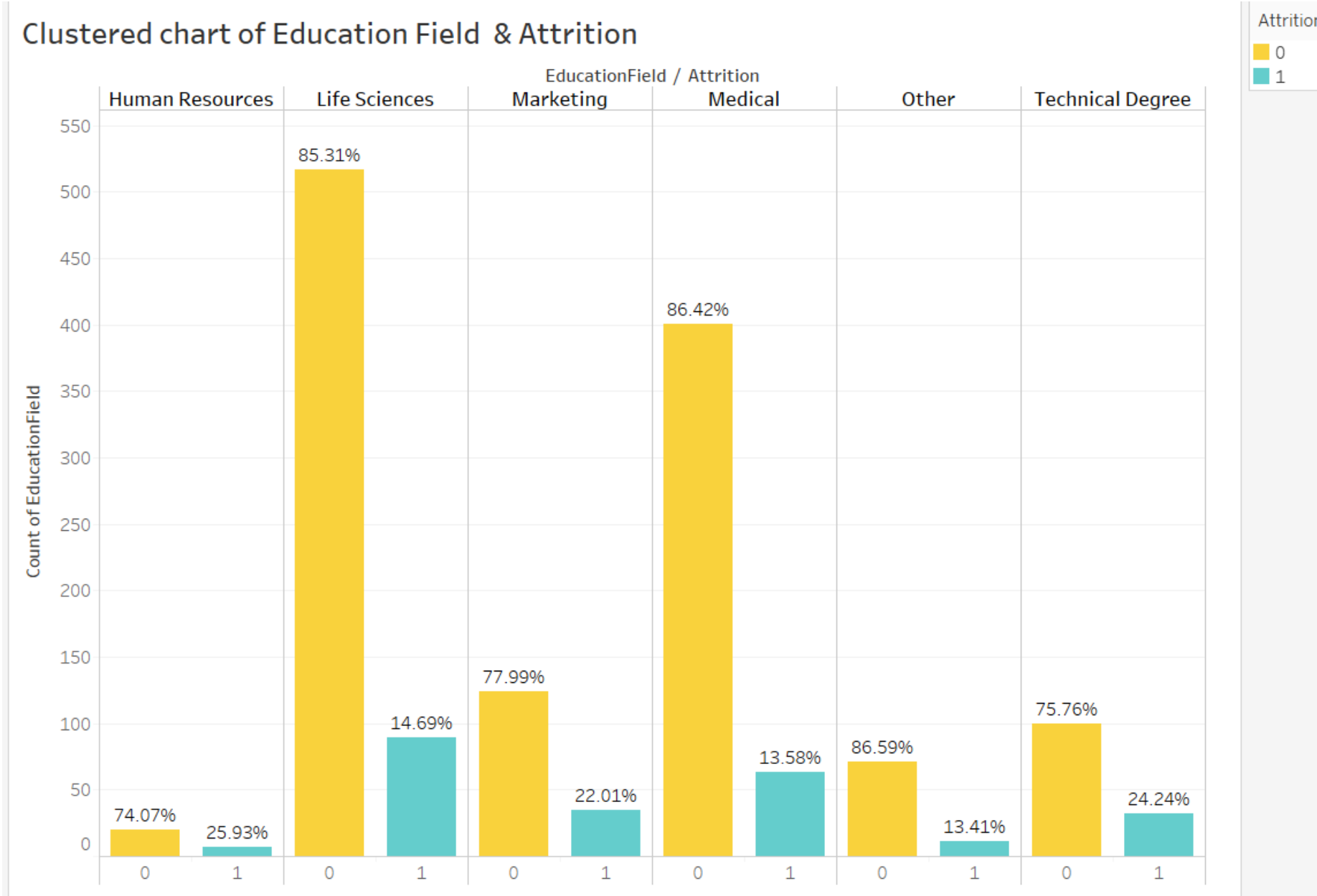
- HR and sales have almost similar % of attrition (20%) whereas R&D contribute 13% a little lesser .

Attrition with an overlay of Department



- Over all R&D department contributes 56% to attrition
- But this difference is mainly because there are more no. of employees in the department

Education Field



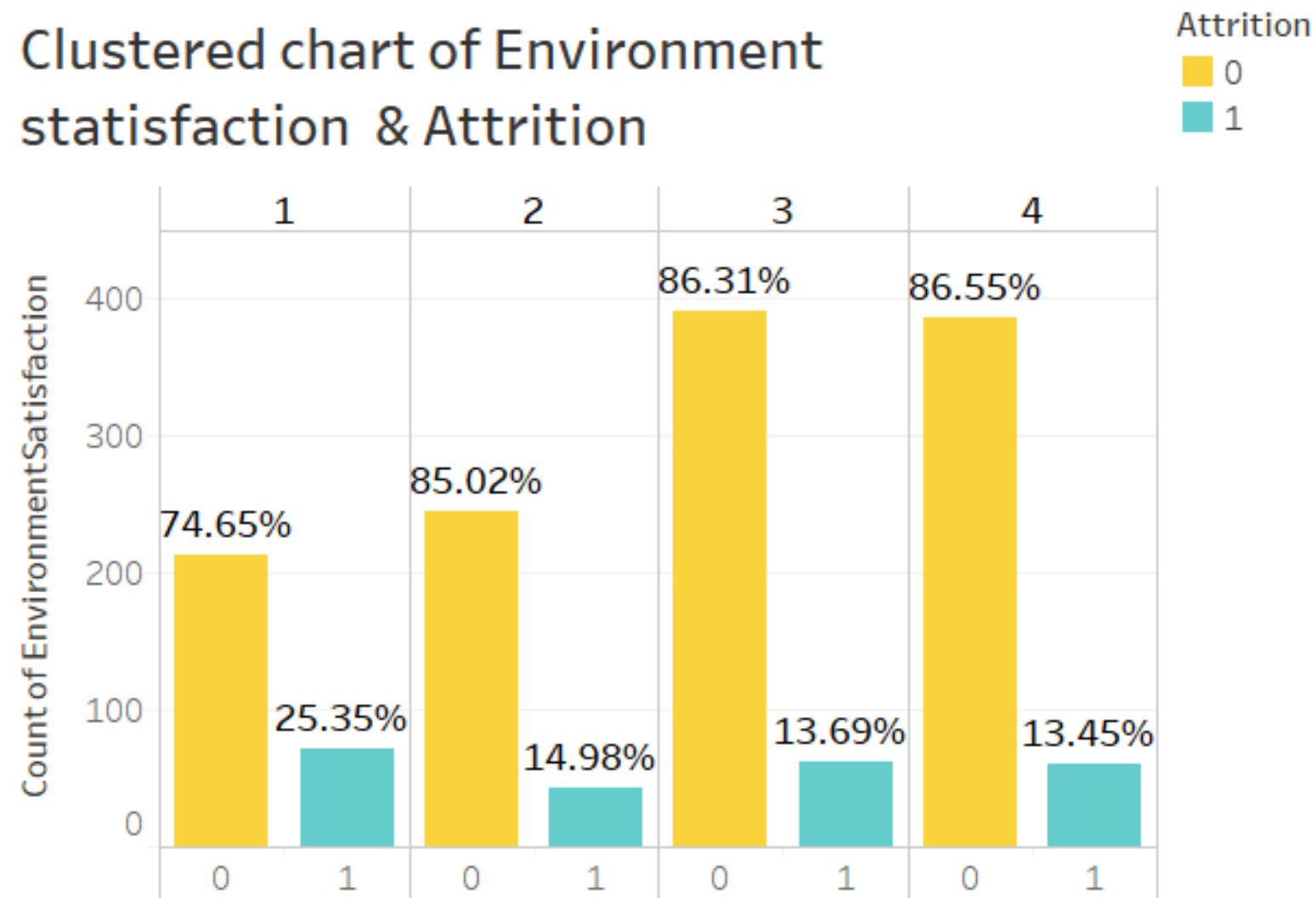
- From the cluster chart we can Observe that HR and Technical Degree have Highest (25%) attrition .
- But it is also observable that both the categories have very less number of employees hence the high % value.
- The maximum number of employee attrition is from life sciences(it has the tallest Blue bar).
- The same is confirmed through the contingency table below , that Life sciences contributes the most to attrition 37%, which can be attributed to the fact that Life sciences have more number of employees and so it has 41% contribution to Non attrition as well.

EducationField	Human Resources	Life Sciences	Marketing	Medical	Other	Technical Degree
Attrition						
0	1.622060	41.930251	10.056772	32.522303	5.758313	8.11030
1	2.953586	37.552743	14.767932	26.582278	4.641350	13.50211

We can say that education field does not have any obvious observable impact on attrition.

Environment Satisfaction |

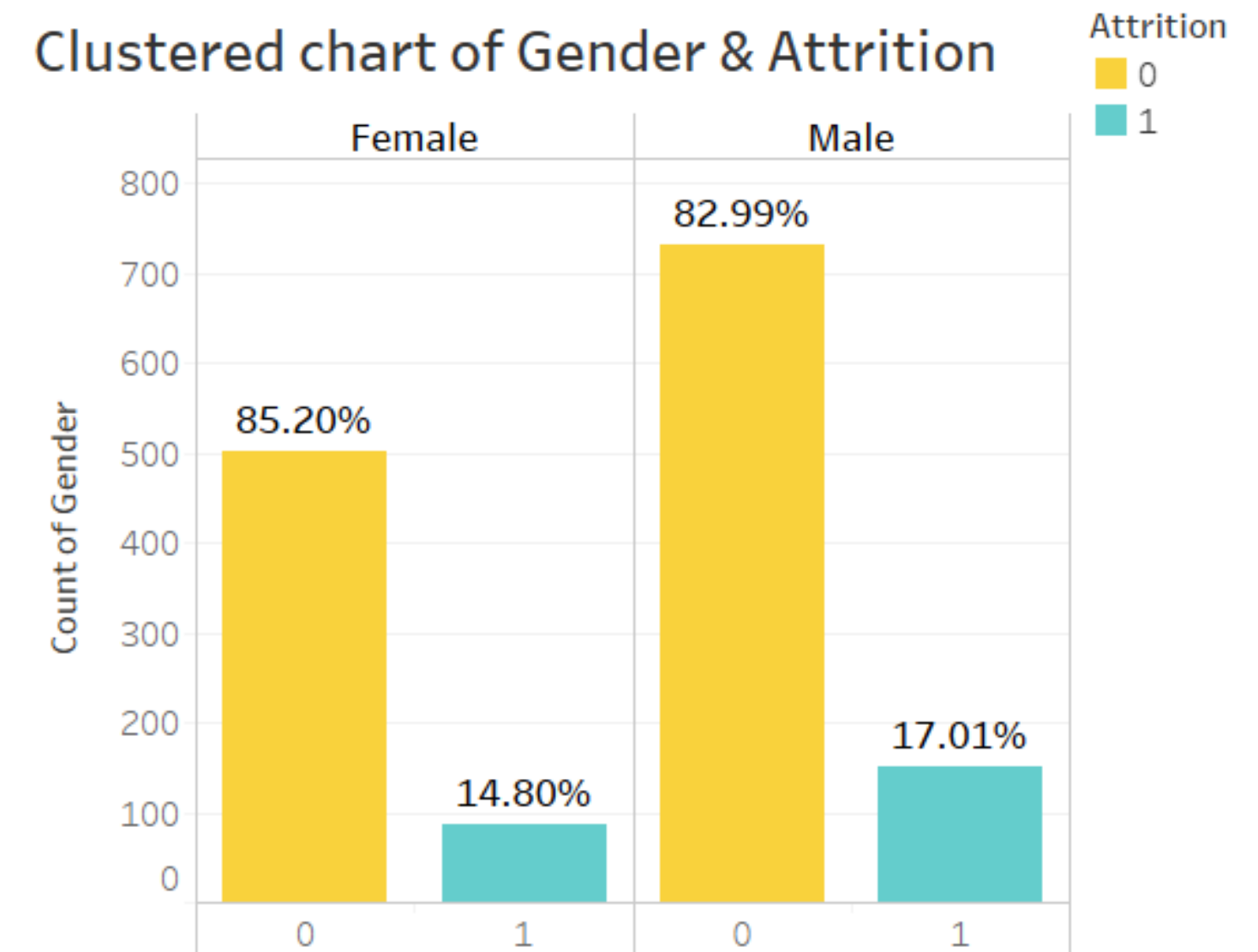
Clustered chart of Environment satisfaction & Attrition



- It is Observable that attrition is higher in environment satisfaction category 1 i.e. 25% but it is approximately the same for all other categories.
- So we can say that employees with Environment satisfaction value 1 are likely to leave the company, but our confidence in this expectation is perhaps not quite high

Gender

Clustered chart of Gender & Attrition

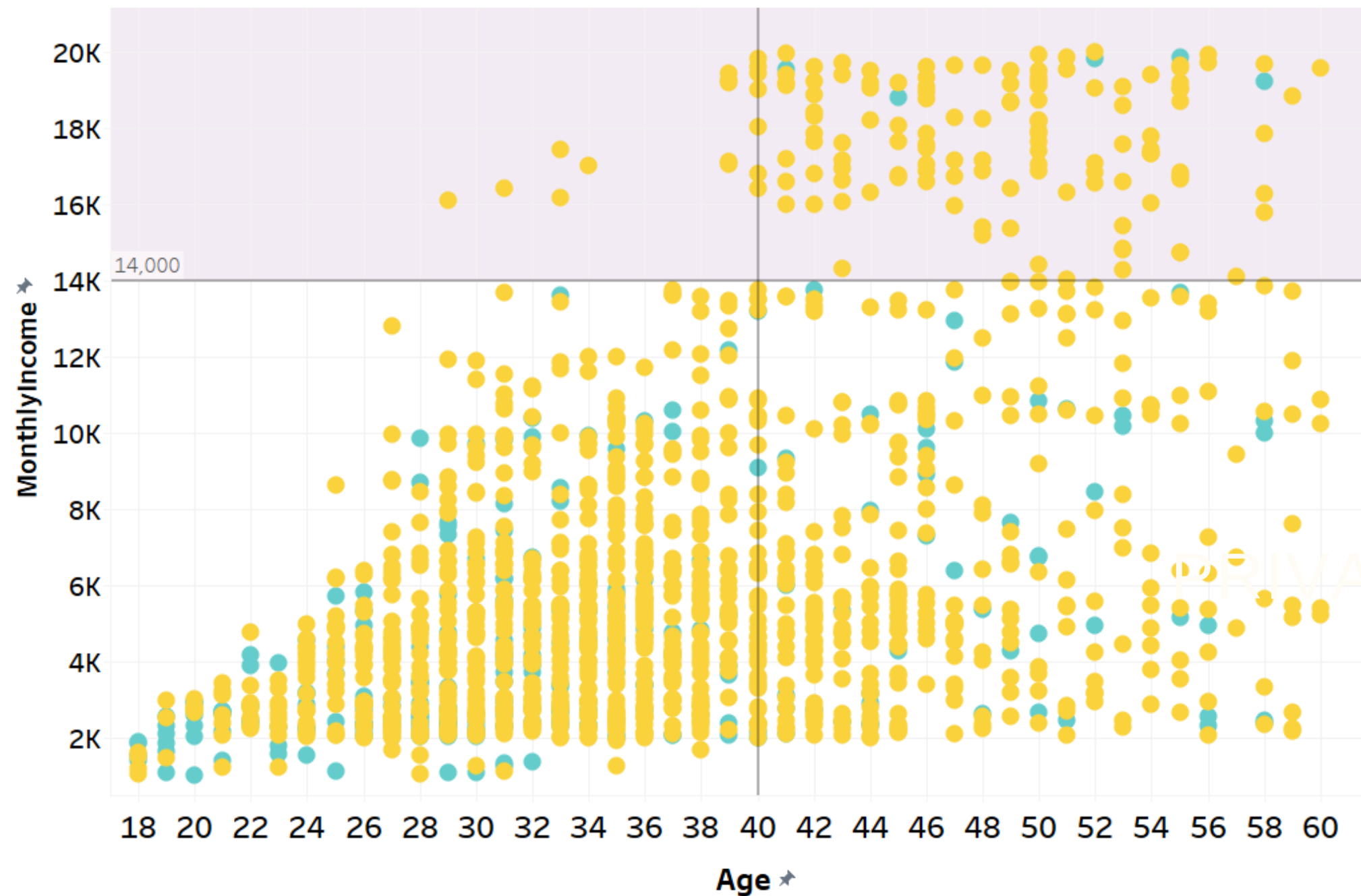


- We can observe that there is no significant difference in attrition between male and female employees
- So there is low expectation that this variable affects attrition

Multivariate Analysis of Age v/s Monthly Income over Attrition

Age v/s Monthly Income

The upper right Quadrant has lowest attrition



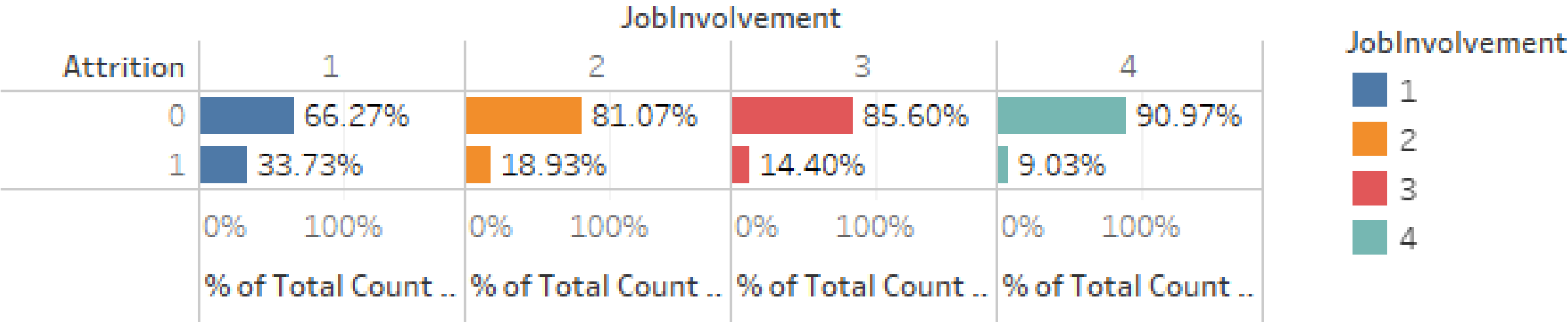
Attrition
0
1

Employeess with age > 40 and Monthly income >14K have very low probablity of Attrition

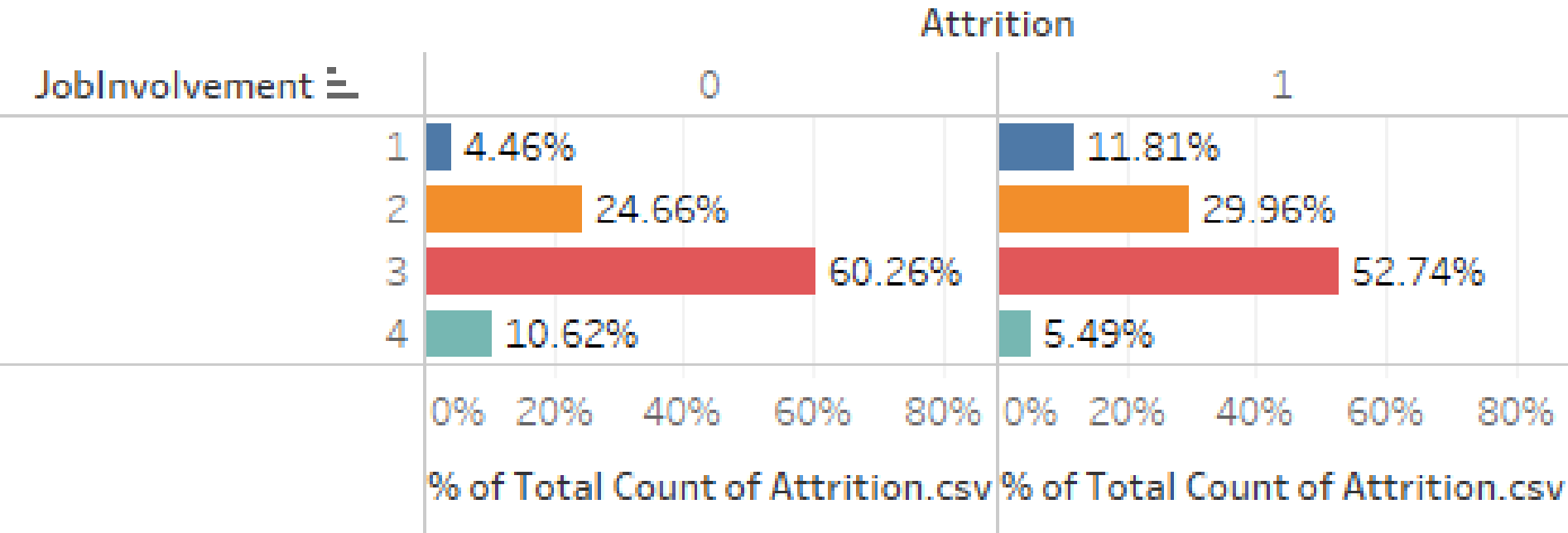
- **There is an interaction effect between Age and Monthly Income with respect to Attrition**

Job Involvement

Attrition | Job involvement



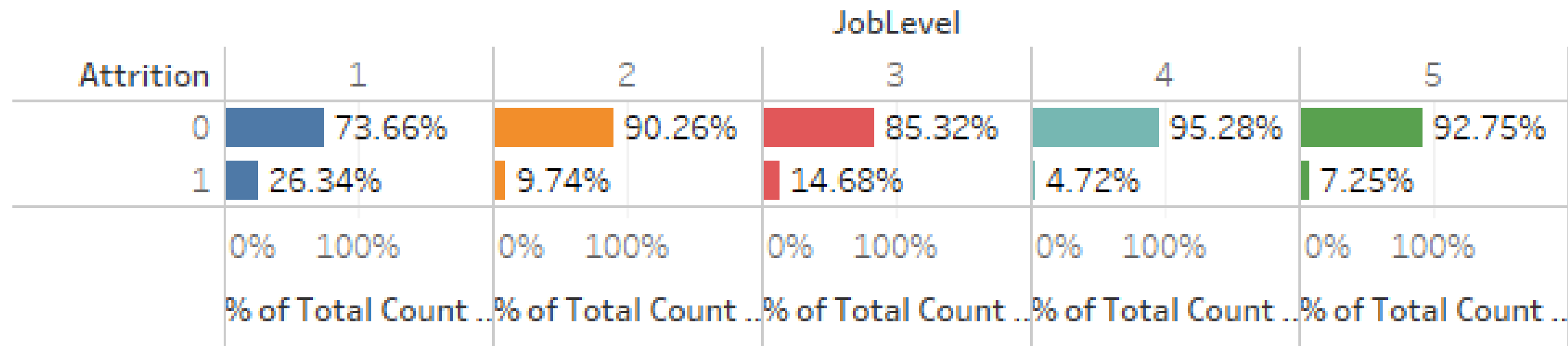
Job involvement | Attrition



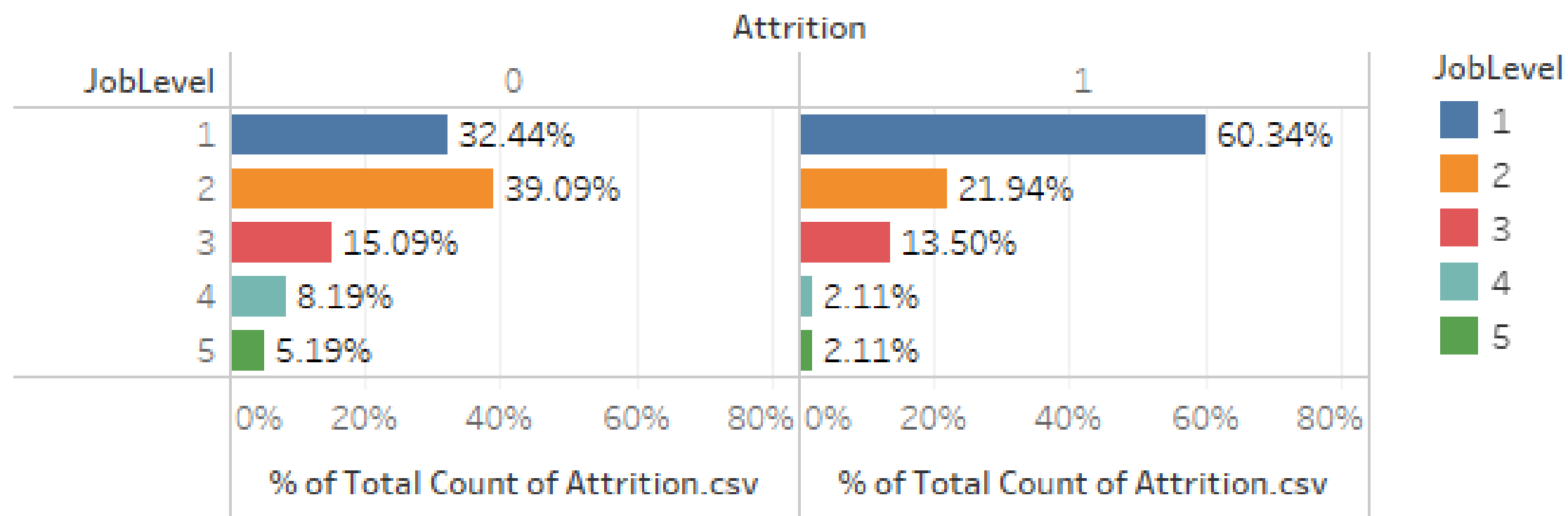
- We have shown two Conditional Probabilities here However second one gives more clear picture because in first one Higher Attrition percentage might be because of more number of people working in that Job Involvement Category,
- but second one shows contribution of particular job involvement category in total attrition, as we can see in second graph Attrition percentage at job involvement 3 is 52.74% but at the same time we can see that percentage of people staying is also high 60% at job involvement 3.
- And attrition trend is almost similar at all job involvement level.

Job Level

Attrition | Job level



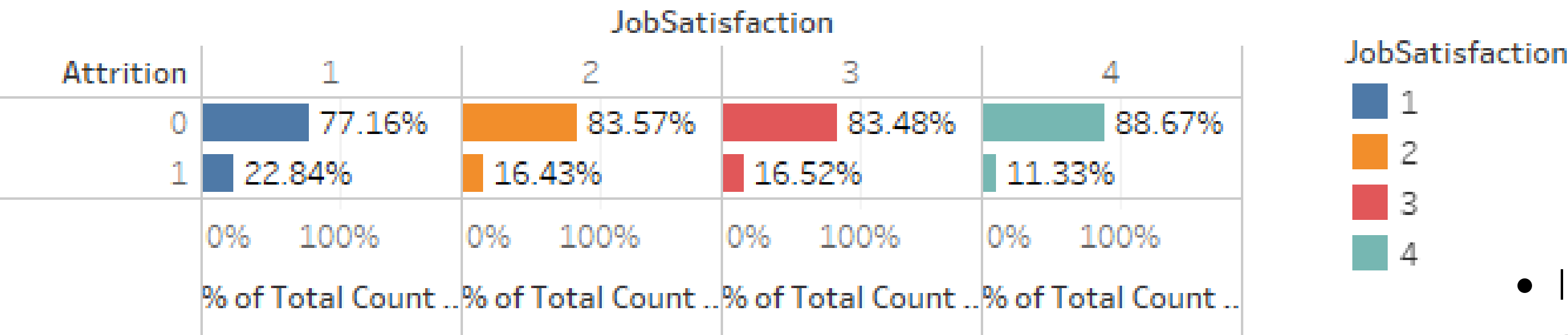
Job level | Attrition



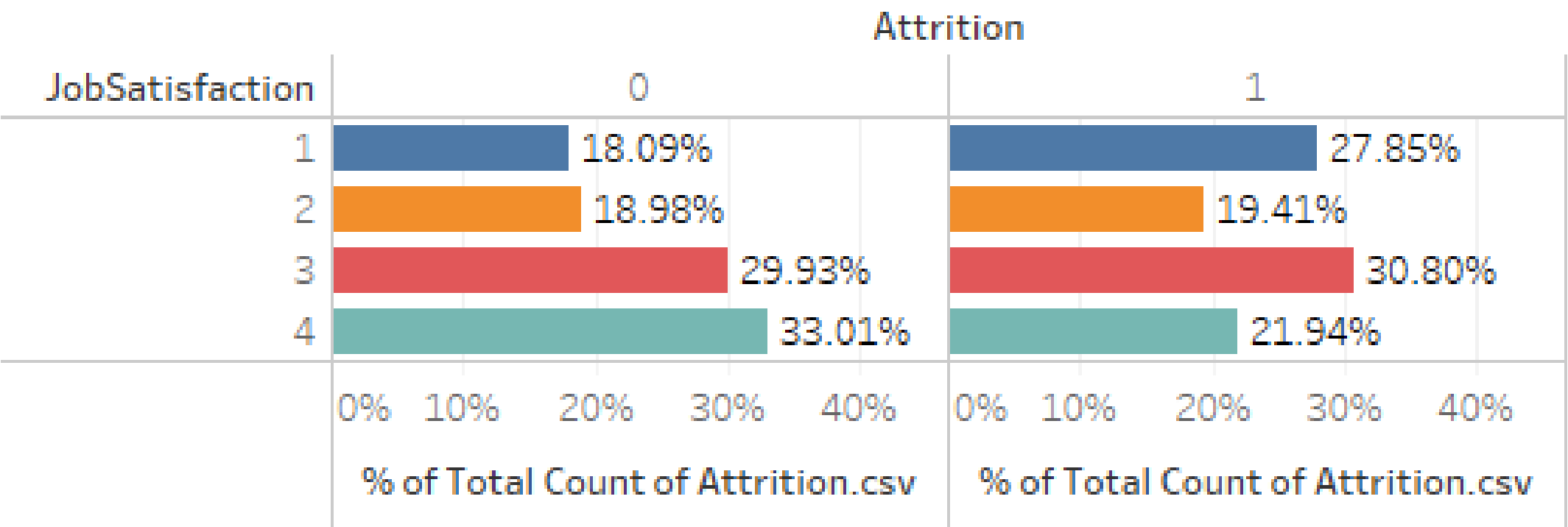
- In second graph we can see that Attrition percentage at job level 1 is highest 60.34% but at the same time we can see that percentage of people staying is also high :32%,
- second highest Attrition percentage 21% at job level 2 with high percentage of people staying :39%.
- so job level a factor in attrition

Job Satisfaction

Attrition | Job satisfaction



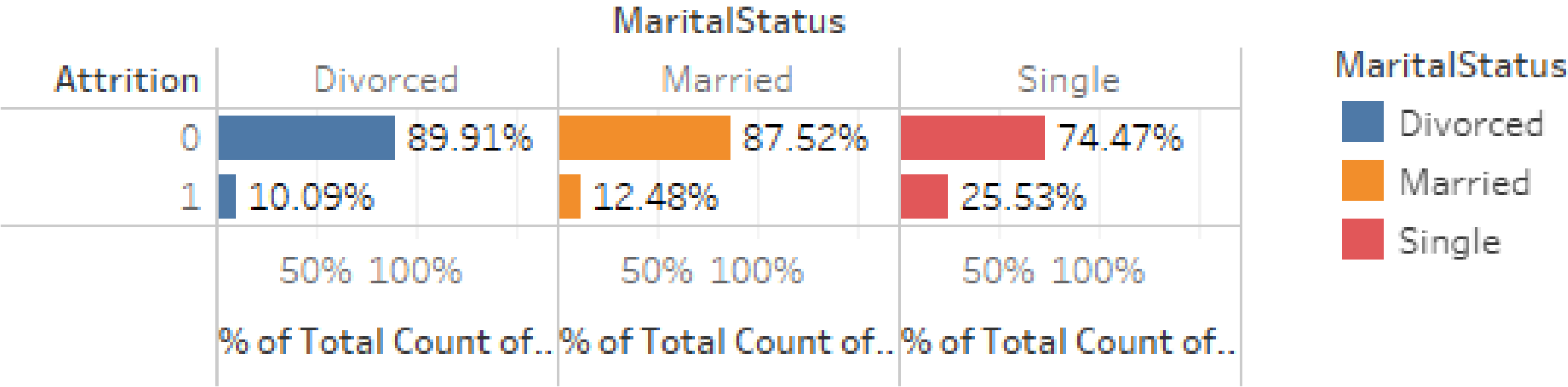
Job satisfaction | Attrition



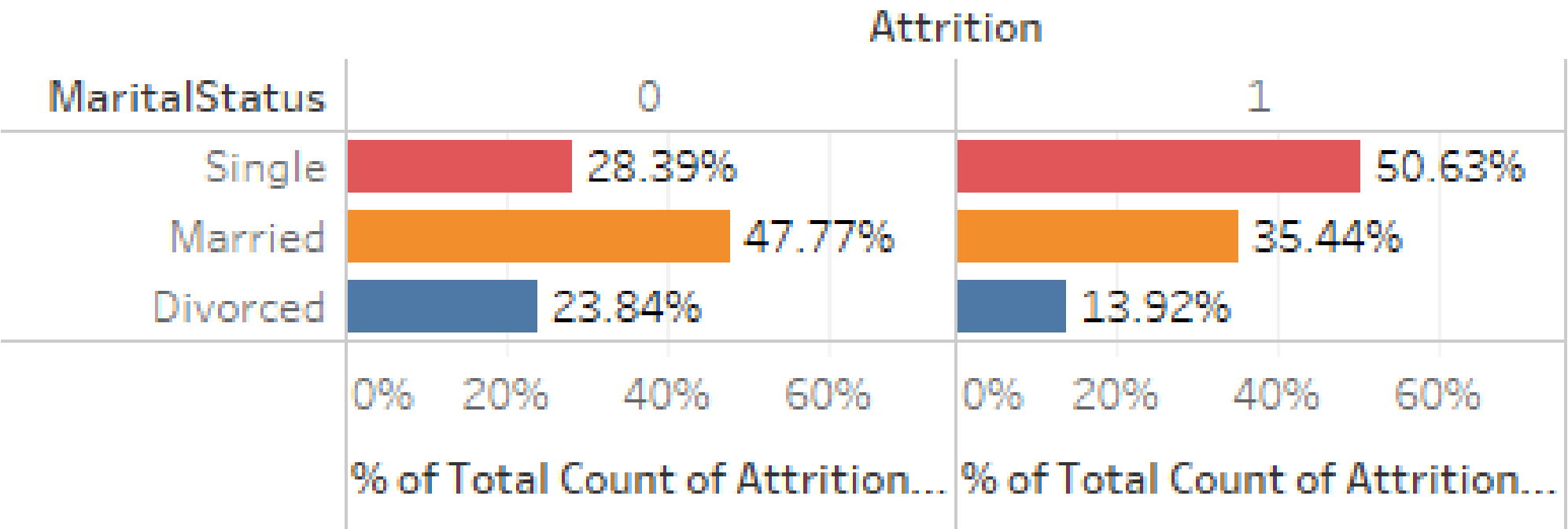
- In second Graph we can see that Attrition percentage at Job Satisfaction 3 is highest :30.8% but at the same time we can see that percentage of people staying at Job Satisfaction 3 is also high :29.92%,
- Attrition trend is almost similar at all Job Satisfaction level

Marital status

Attrition | Marital status



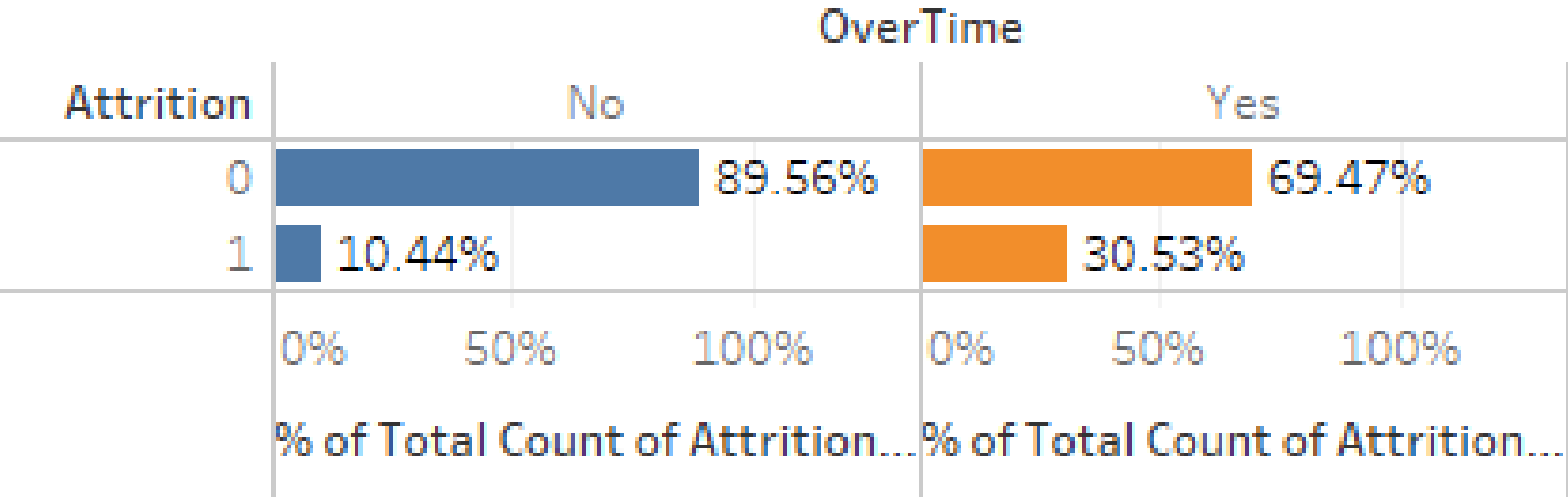
Marital status | Attrition



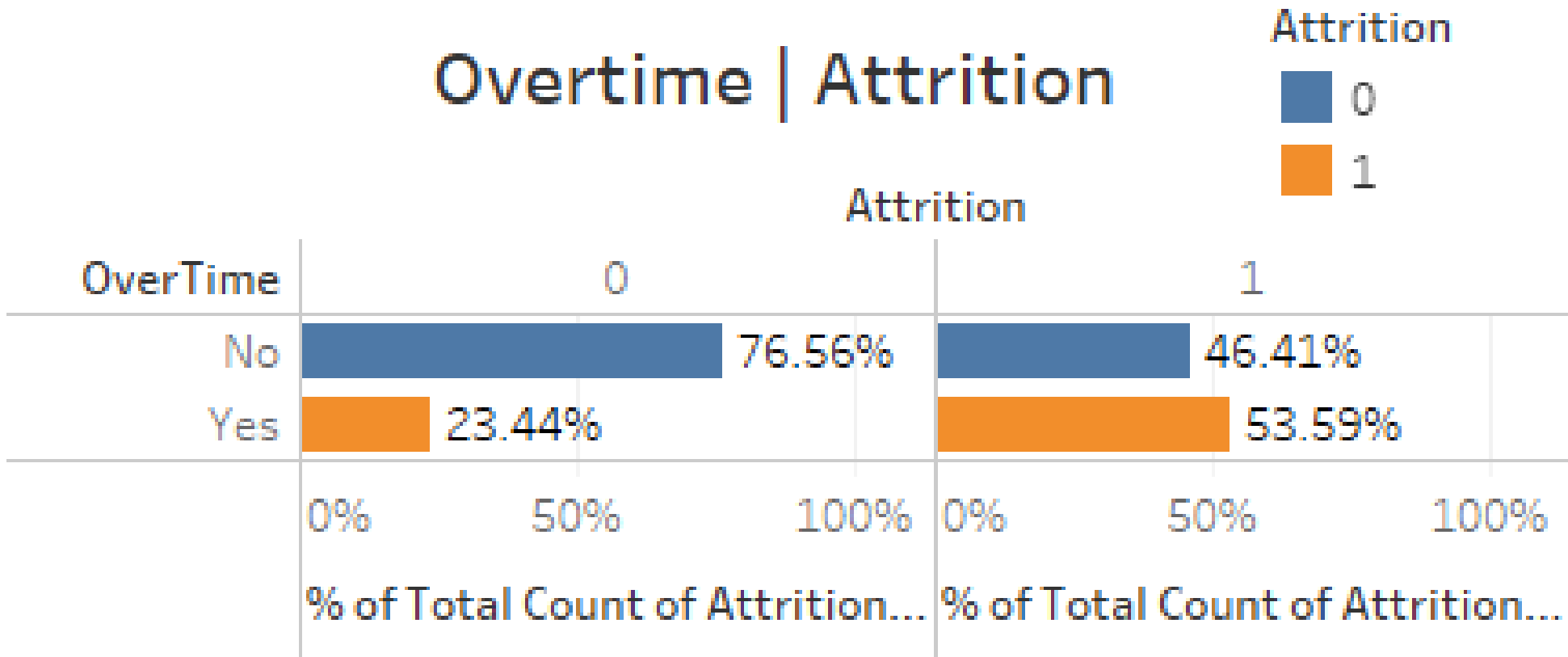
- In second Graph we can see that Attrition percentage at Marital Status (single) is highest 50.63% and at the same time we can see that percentage of people staying at MaritalStatus(single) is low :28.38%,
- so we can conclude that Single Employees are more likely to leave the company ,And married more likely to stay.

Over time

Attrition | Overtime



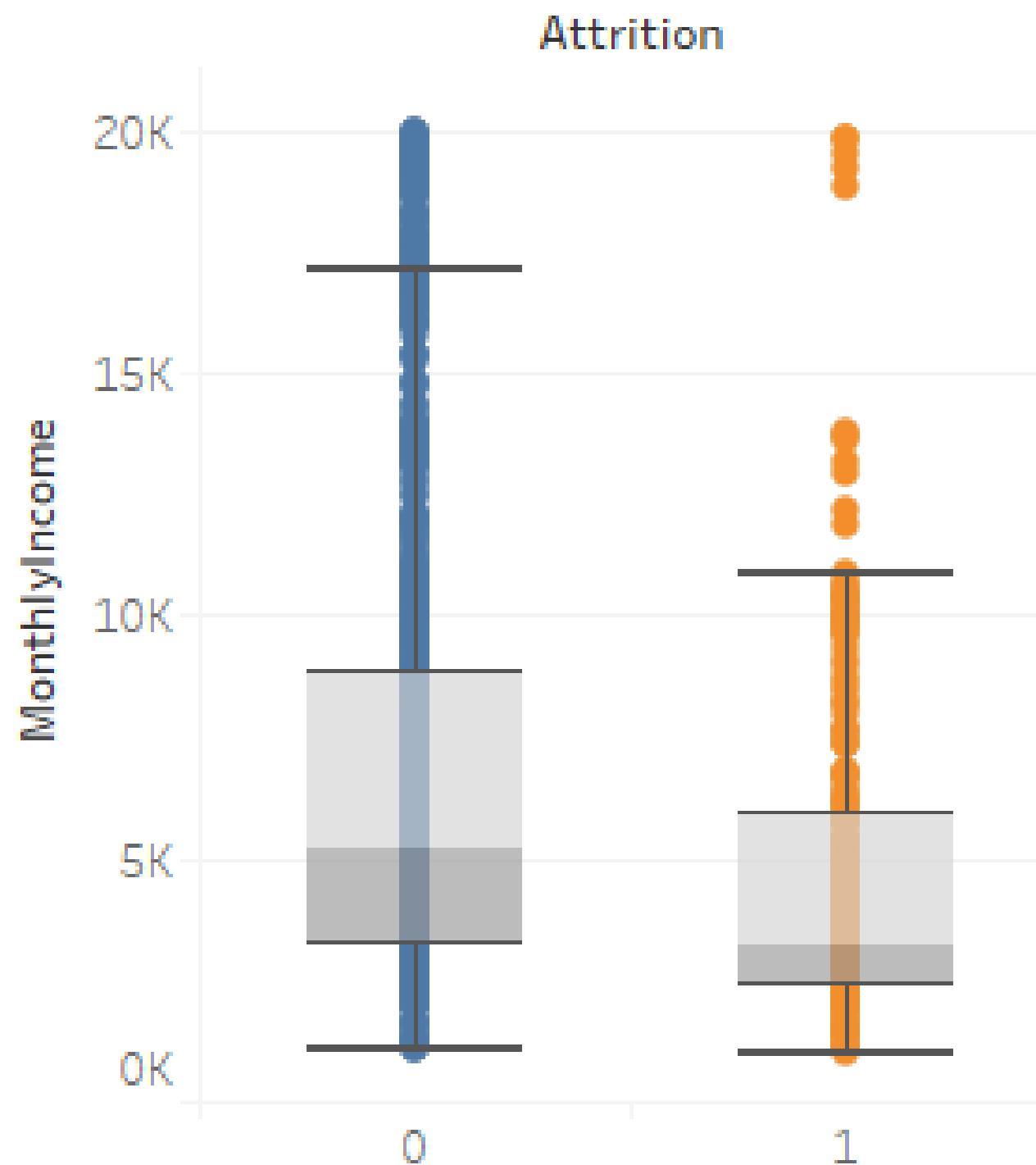
Overtime | Attrition



- we can see from second graph that Attrition percentage at OverTime(yes) is highest 53.59% and at the same time we can see that percentage of people staying at OverTime(yes) is low :23.43%
- for OverTime(NO) percentage of people staying is as high as 76.56% while Attrition percentage is relatively low as 46.41% . So the people who do OverTime are more likely to leave .

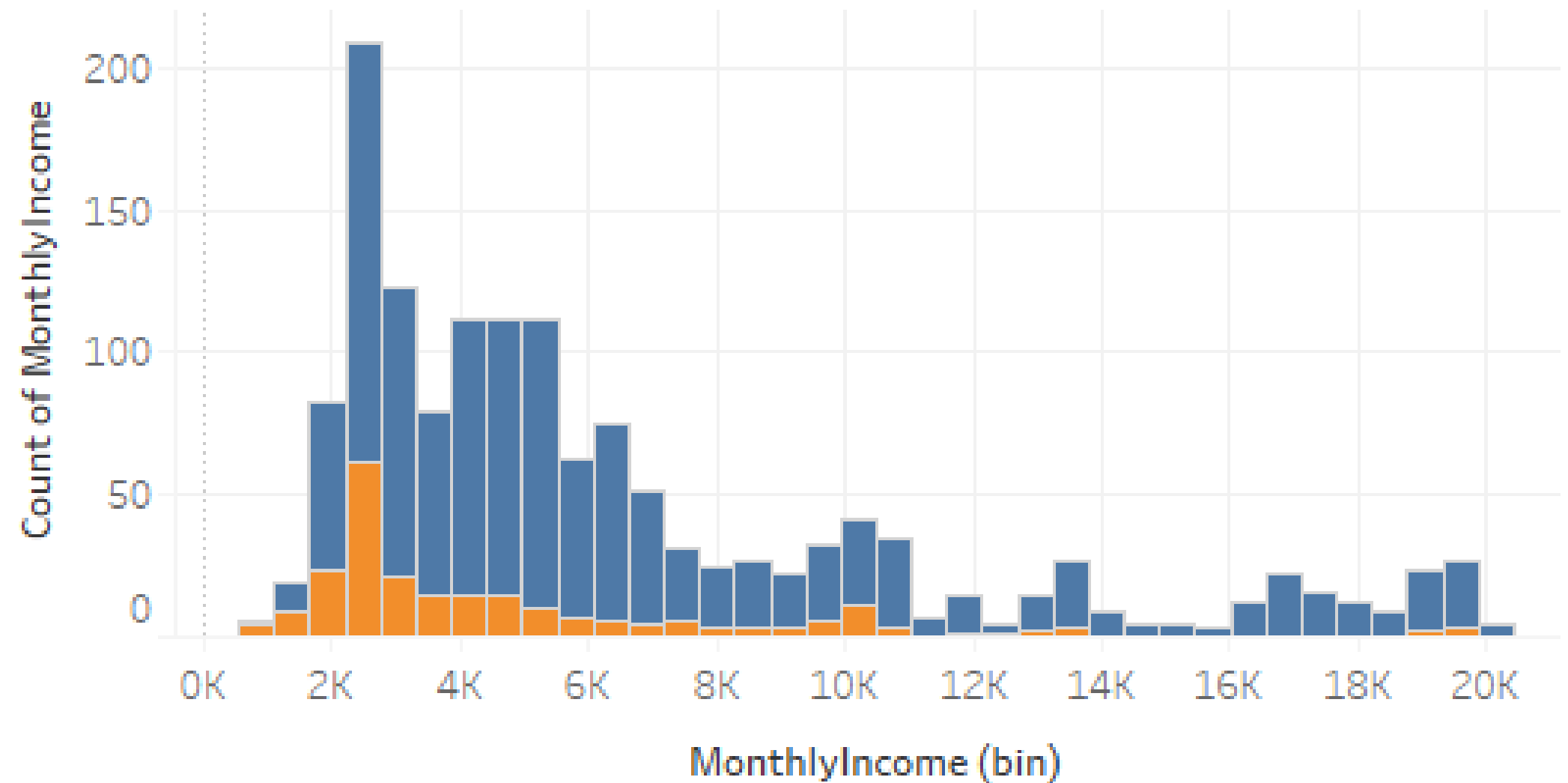
Monthly Income

Monthly Income vs Attrition



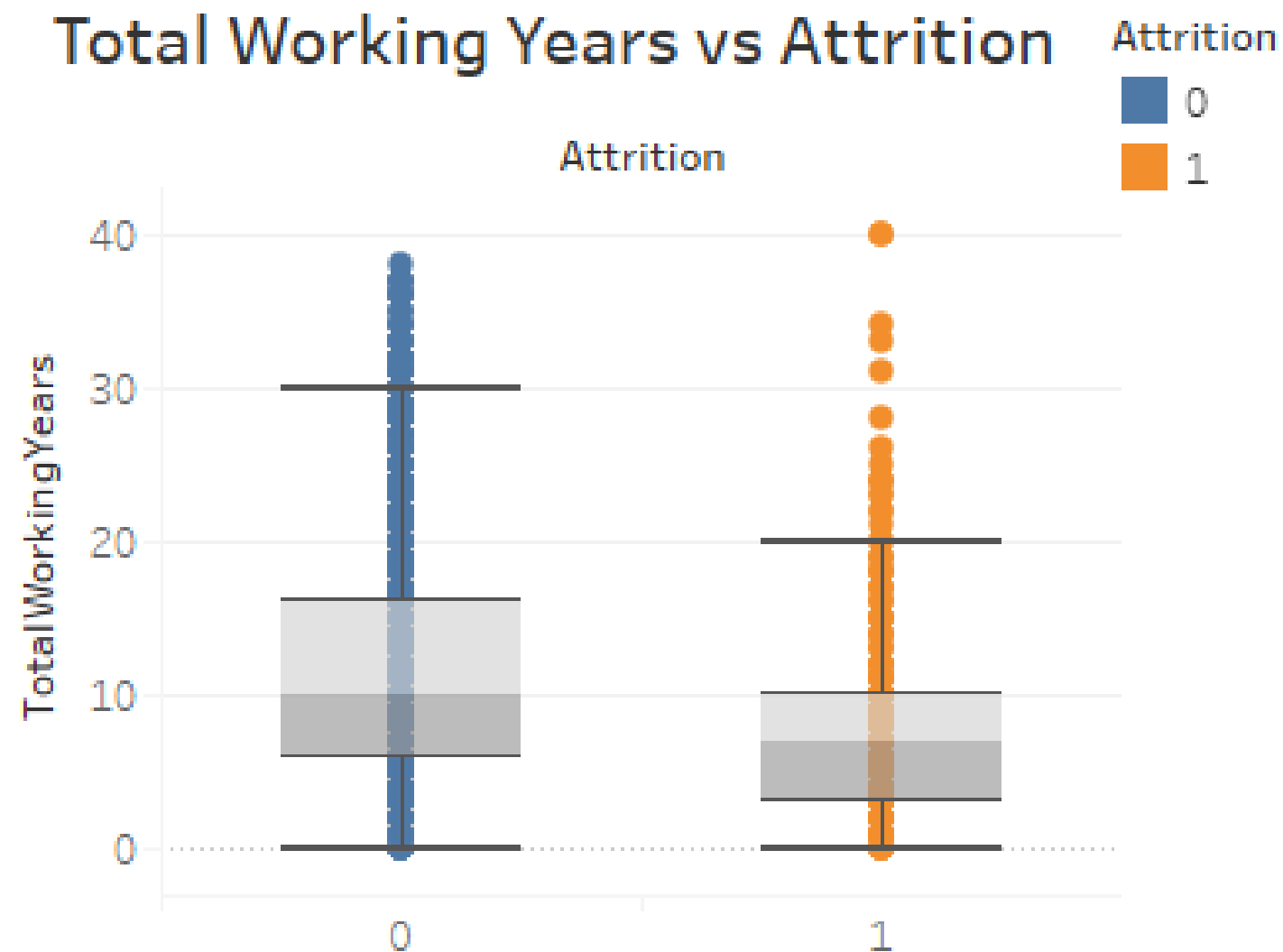
- **median** 0 = 5000 1 = 3202
- **mean** 0 = 6832 1 = 4787

Monthly Income vs Attrition Histogram



- we can see that Distribution is slightly right skewed . mean & median Income for employees that left the company is lower than the one that stayed.
- That concludes that people with less monthly income are more likely to leave the company.

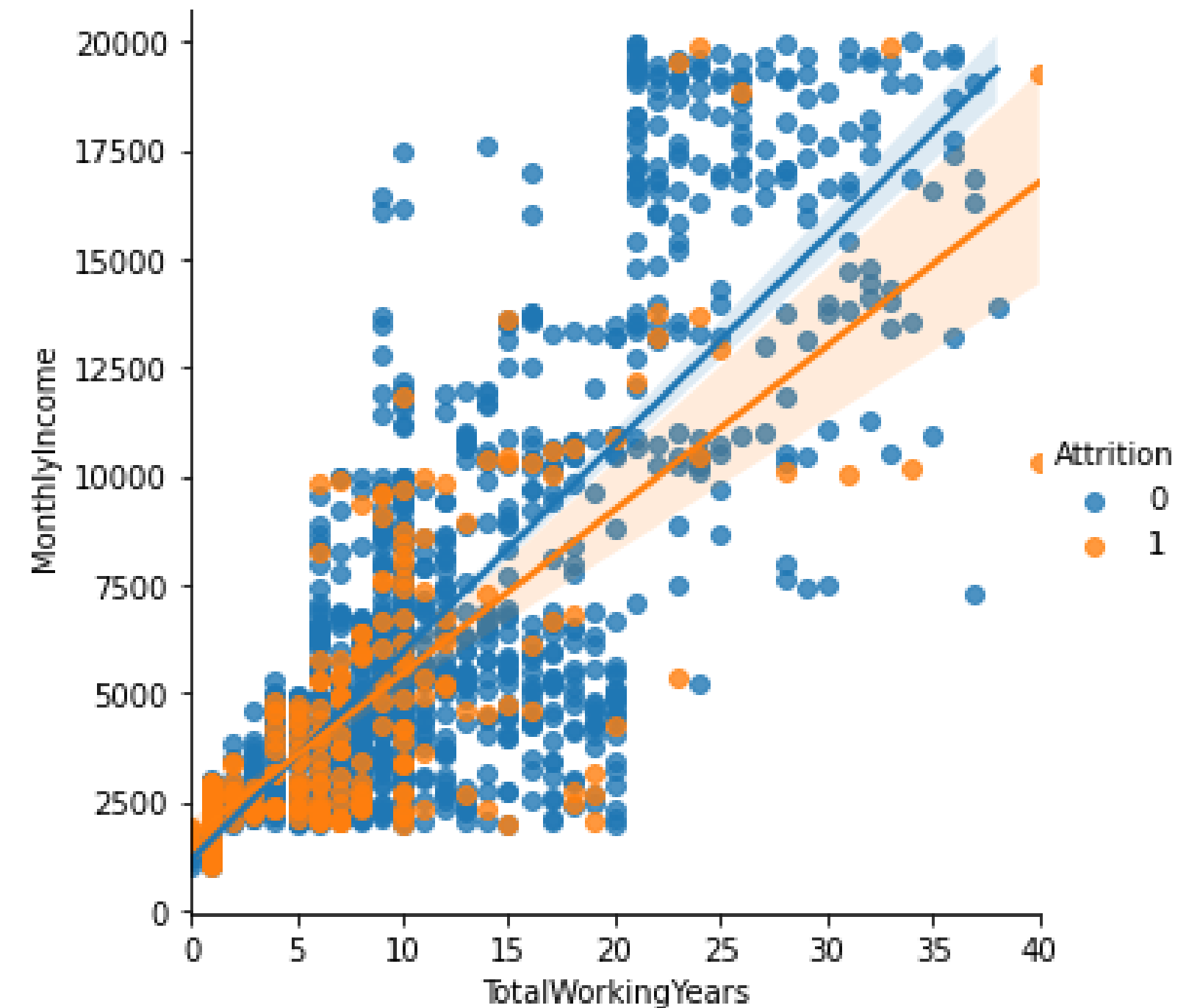
Total Working Years



- **median 0 = 10** **1 = 7**
- **mean 0 = 11** **1 = 8**
- we can see that Distribution is slightly right skewed mean & median for TotalWorking Years that left the company is lower than the one that stayed.
- That concludes that people with less TotalWorkingYears are more likely to leave the company. But difference is not as much as we saw with Monthly income vs Attrition

Multivariate Analysis

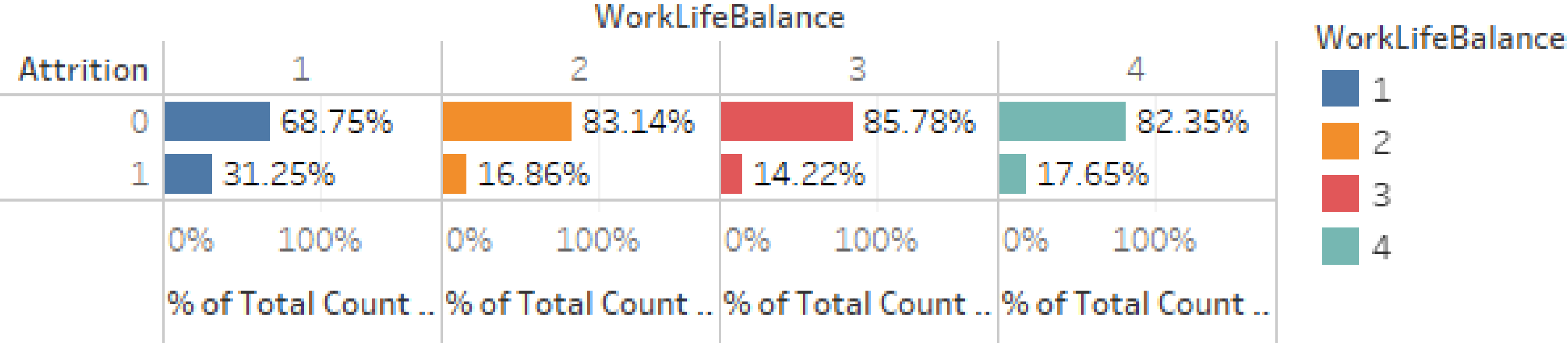
Monthly Income vs Total working Years over attrition.



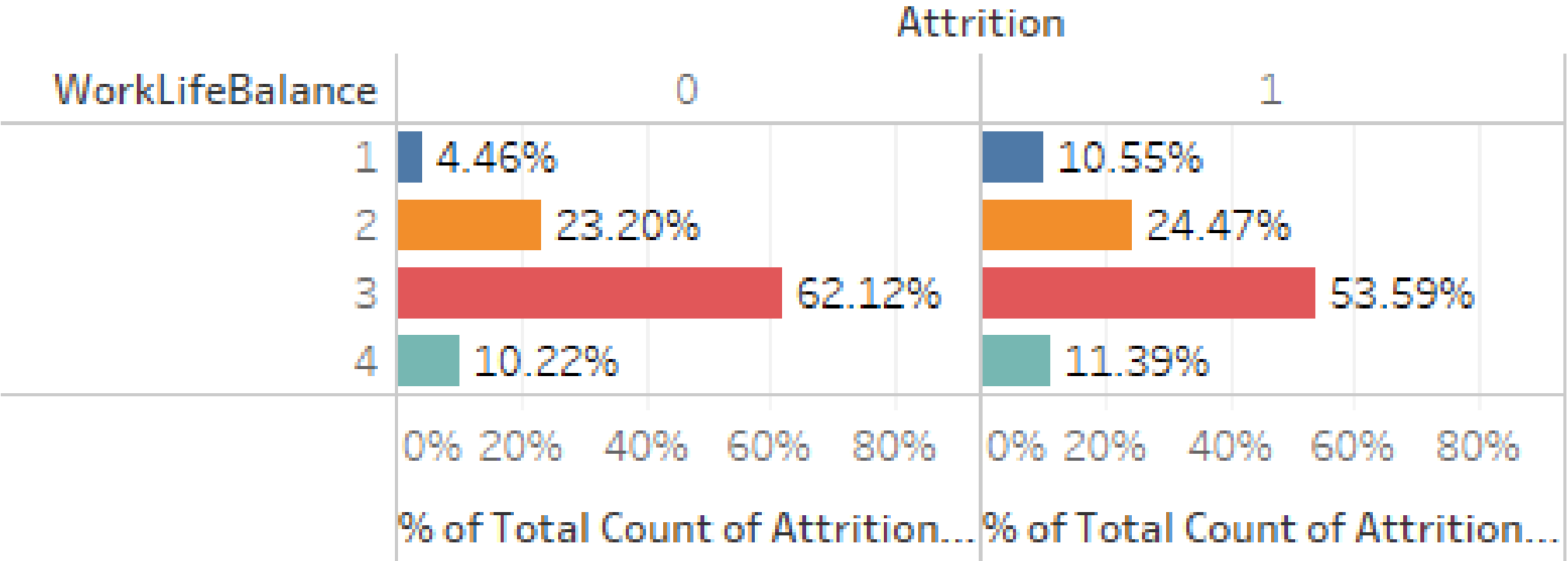
- **People with higher Monthly Income and Higher Total Working Years are more likely to stay as per Multivariate Analysis**

Work Life Balance

Attrition | Work life Balance

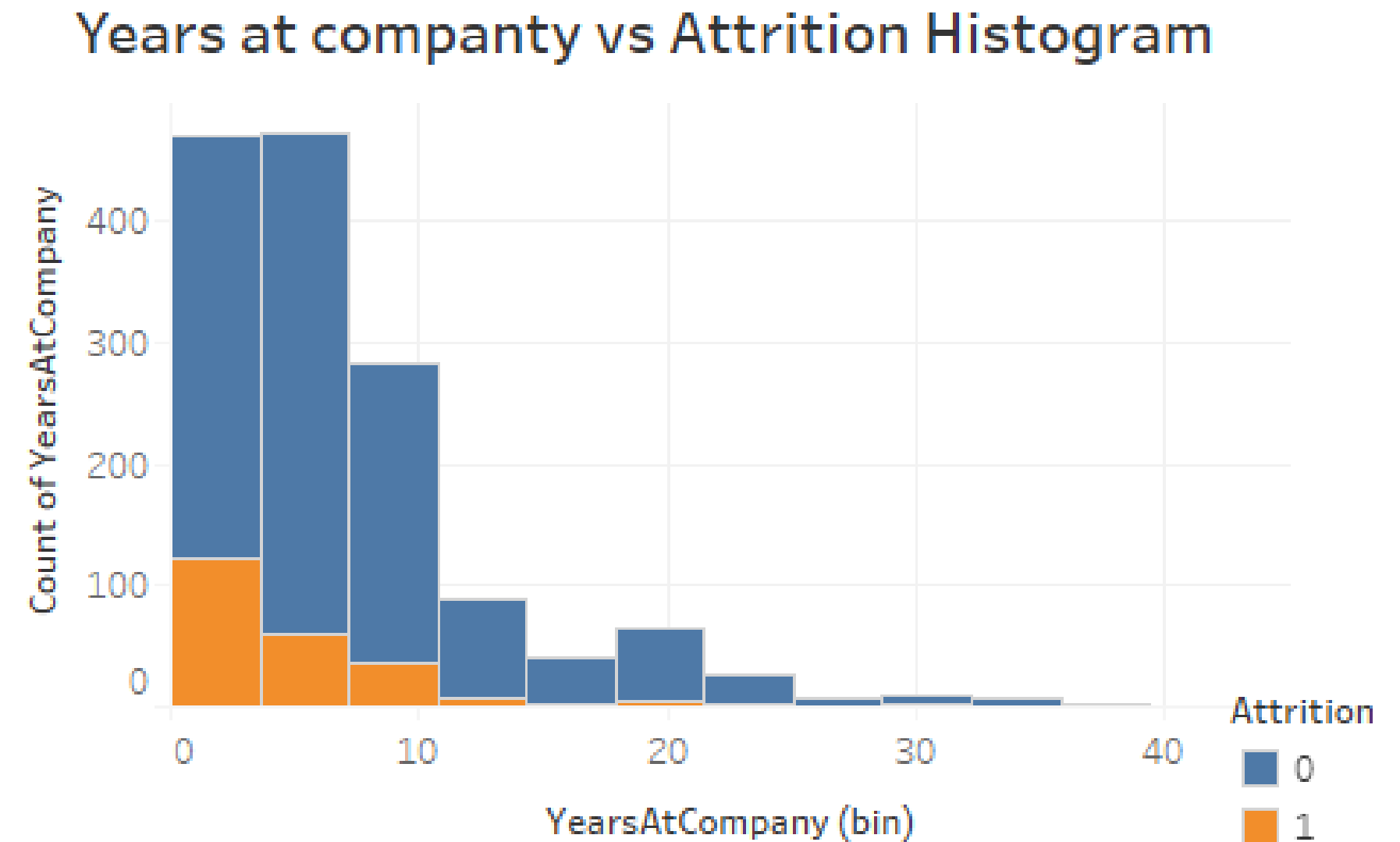
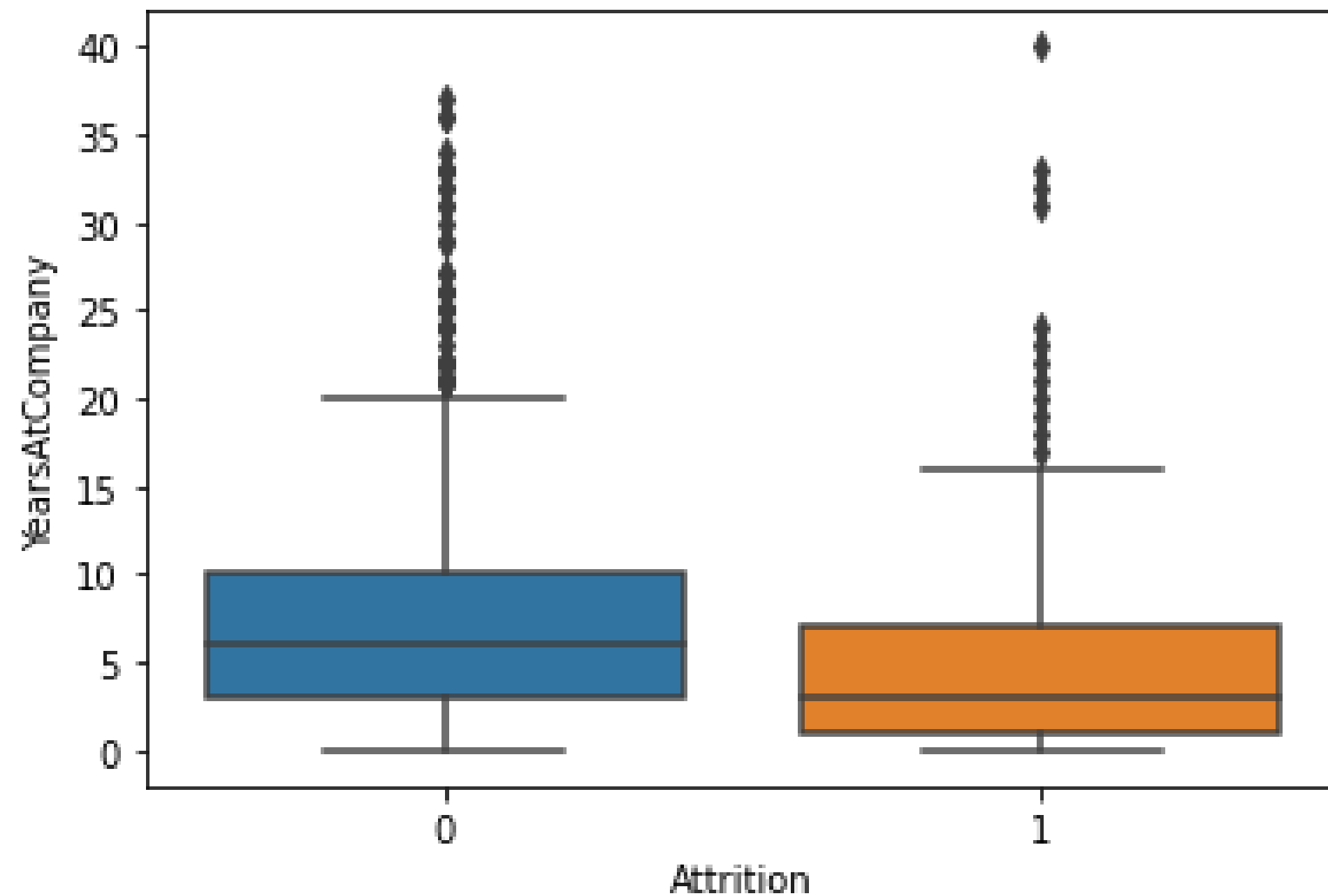


Work life Balace | Attrition



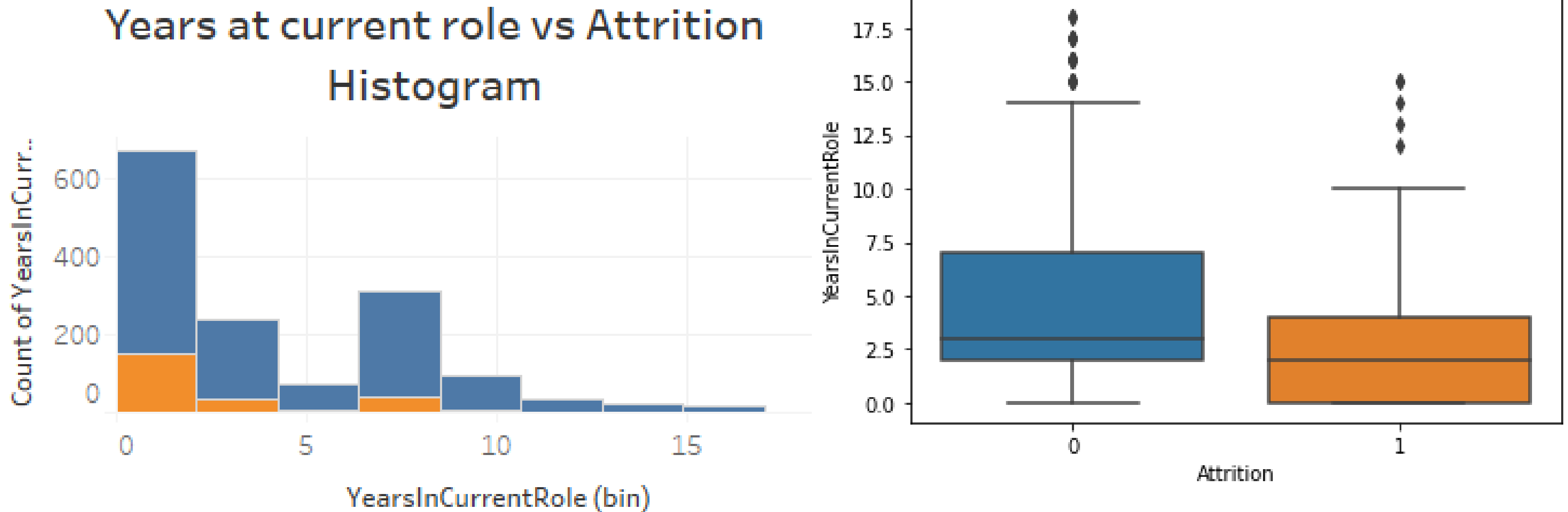
- We can not see clear trends here as, when Work Life Balance gets better from (1 to 4) People leaves and stay at almost same rate.

Years At Company



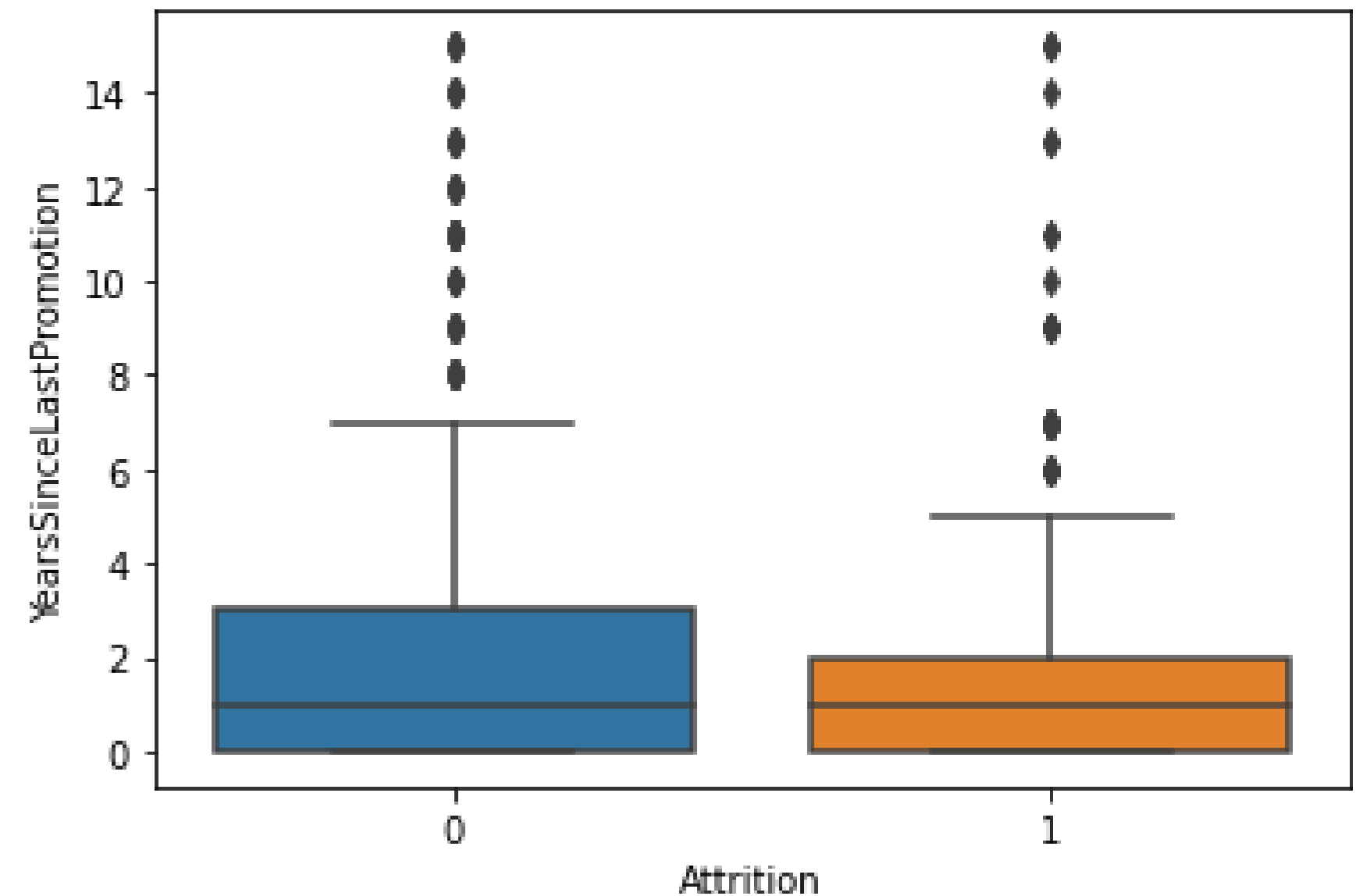
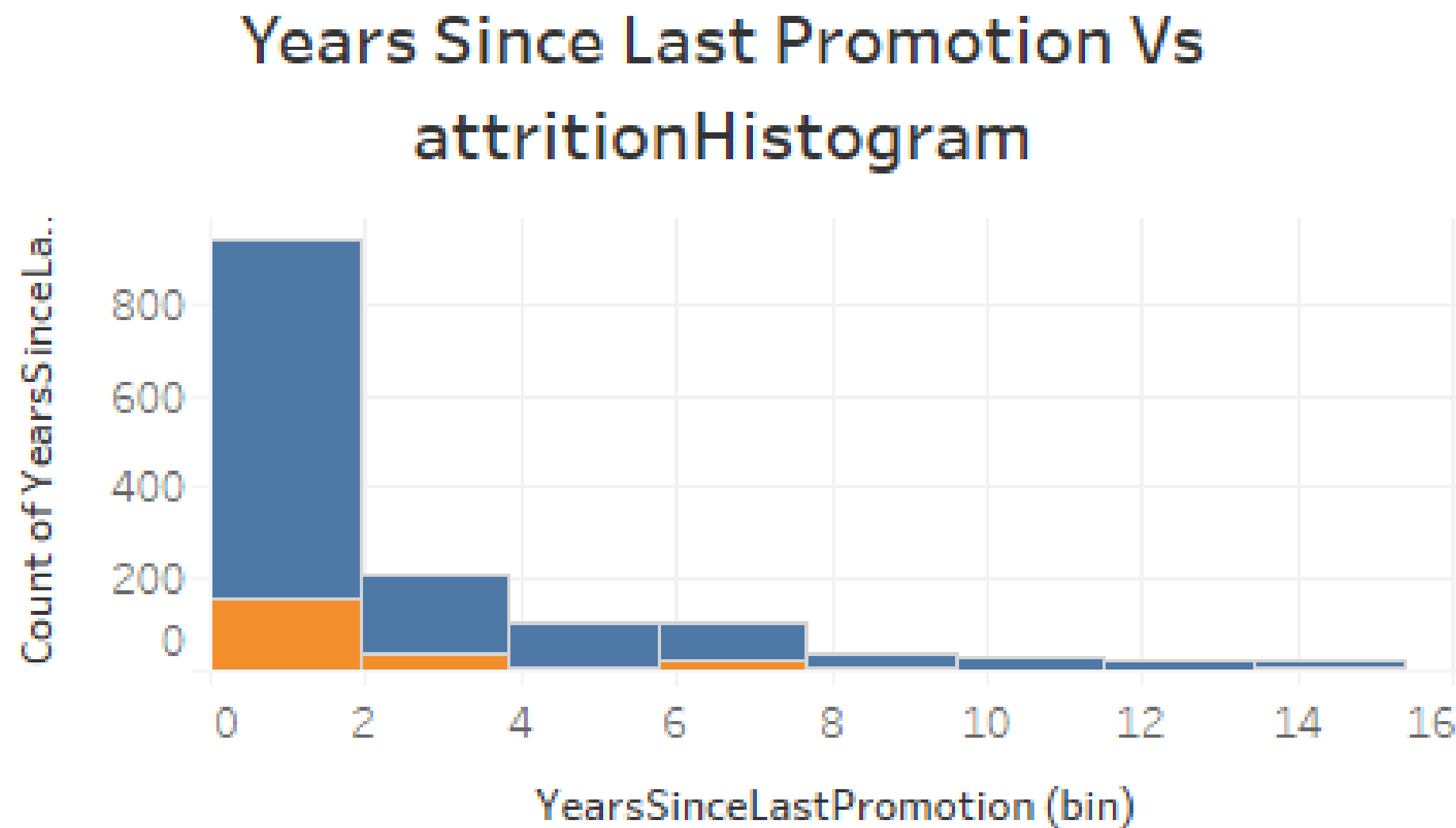
- We can see a trends hear that most of attrition happens when people are new to company, majorly in forst 1-2 years, post that Attrition is constant as stayand stay increases further as number of years increase .

Years At Current Role



- We can see trend here that when years in current role increase people start staying and leaves less (Attrition drops from approximately 30% to 6-7% and approximately 90% people starts staying after 3 years and increasing further)

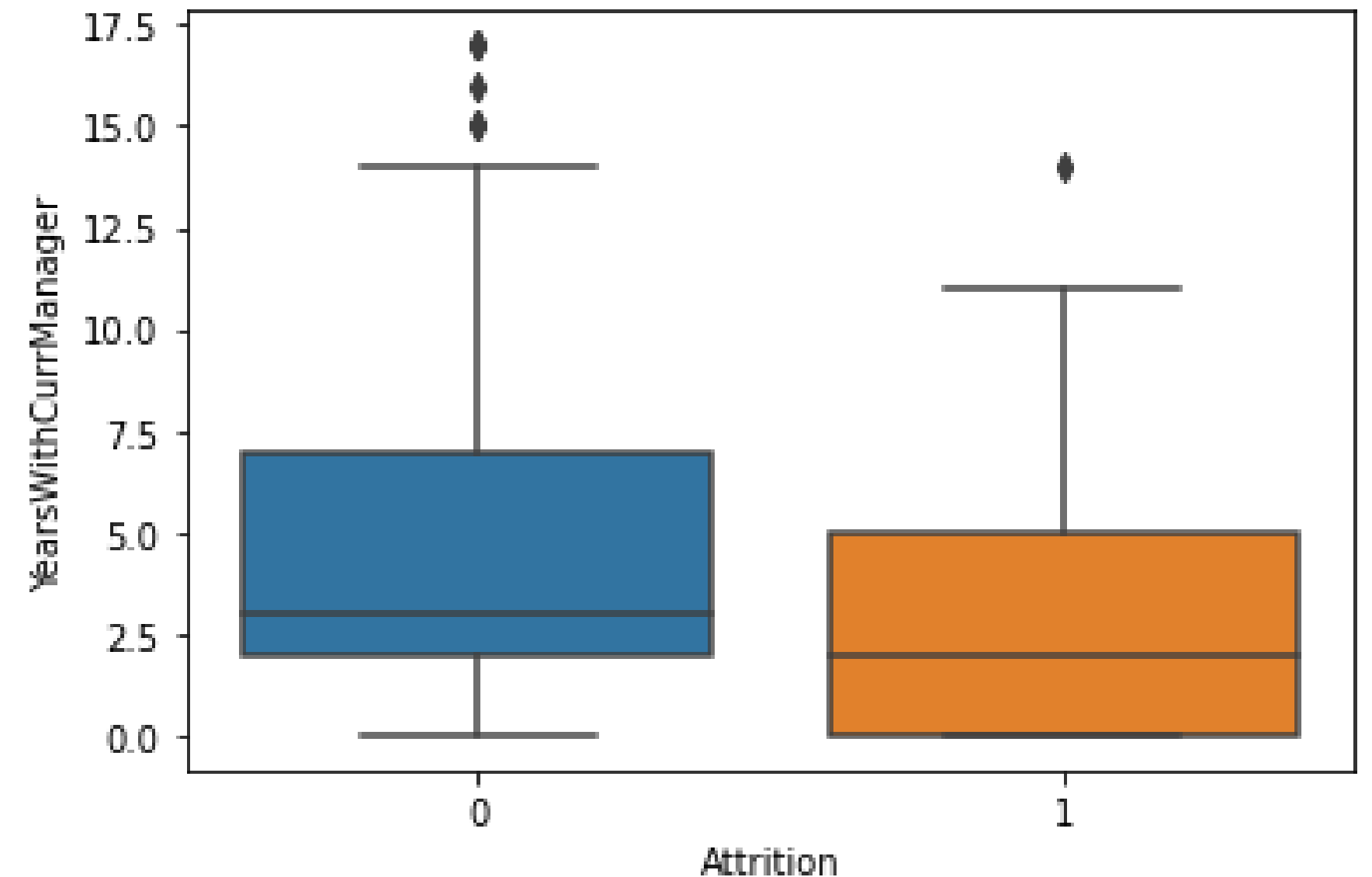
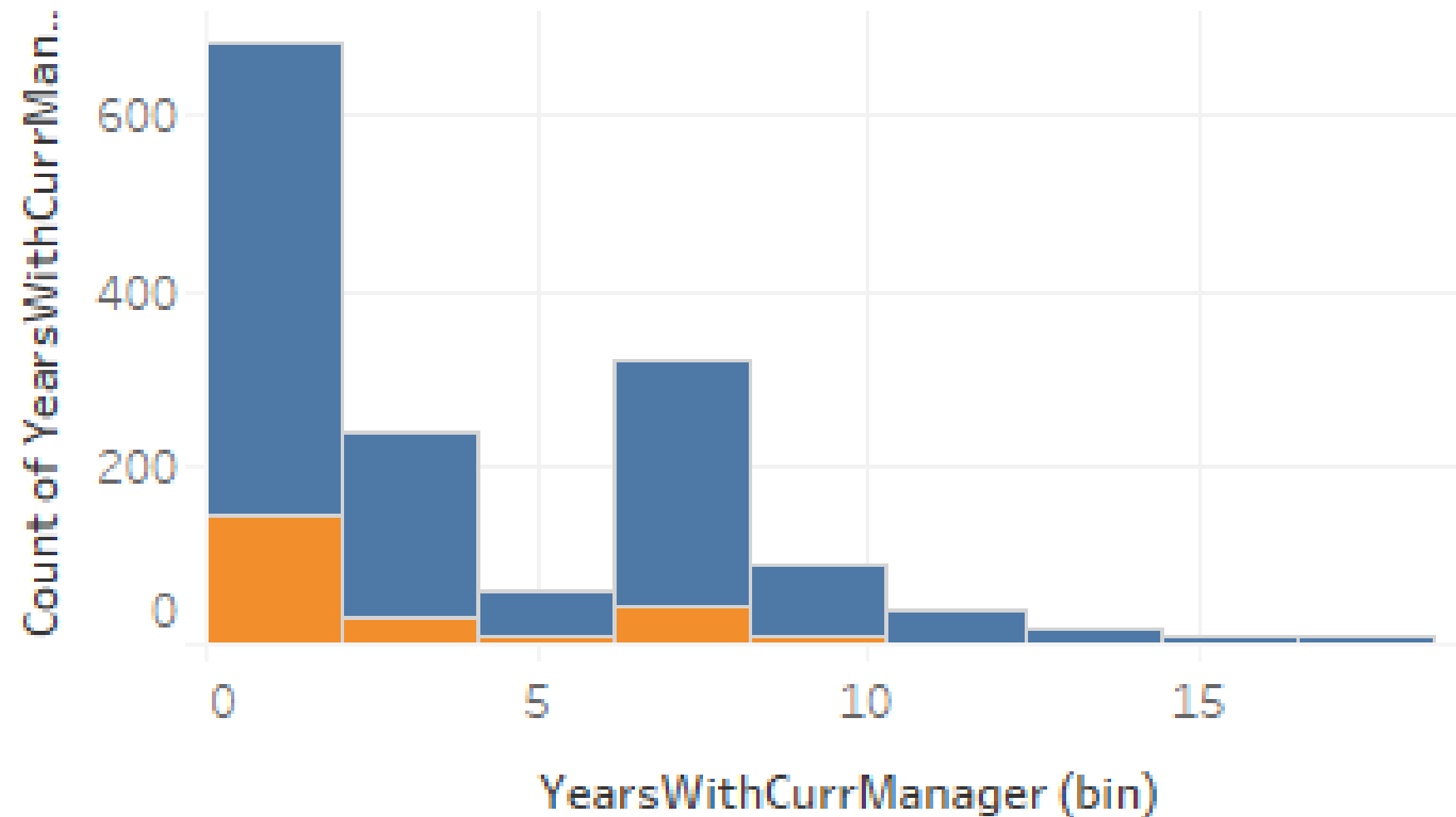
Years Since Last Promotion



- We can not see any clear trends in Years since Last promotion, means people are leaving and staying irrespective of getting promoted or not.

Years With Current Manager

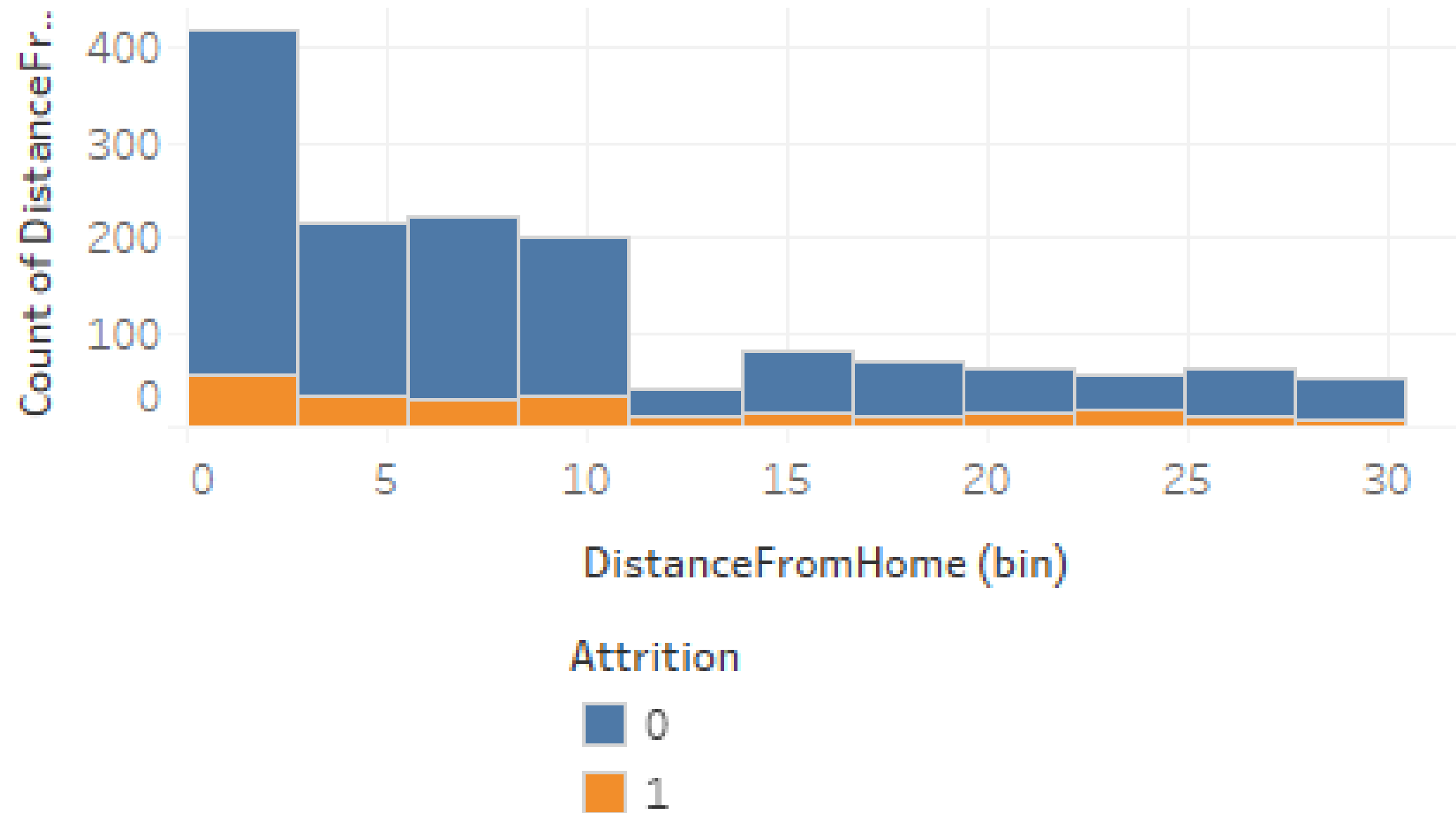
Years with current manager Histogram



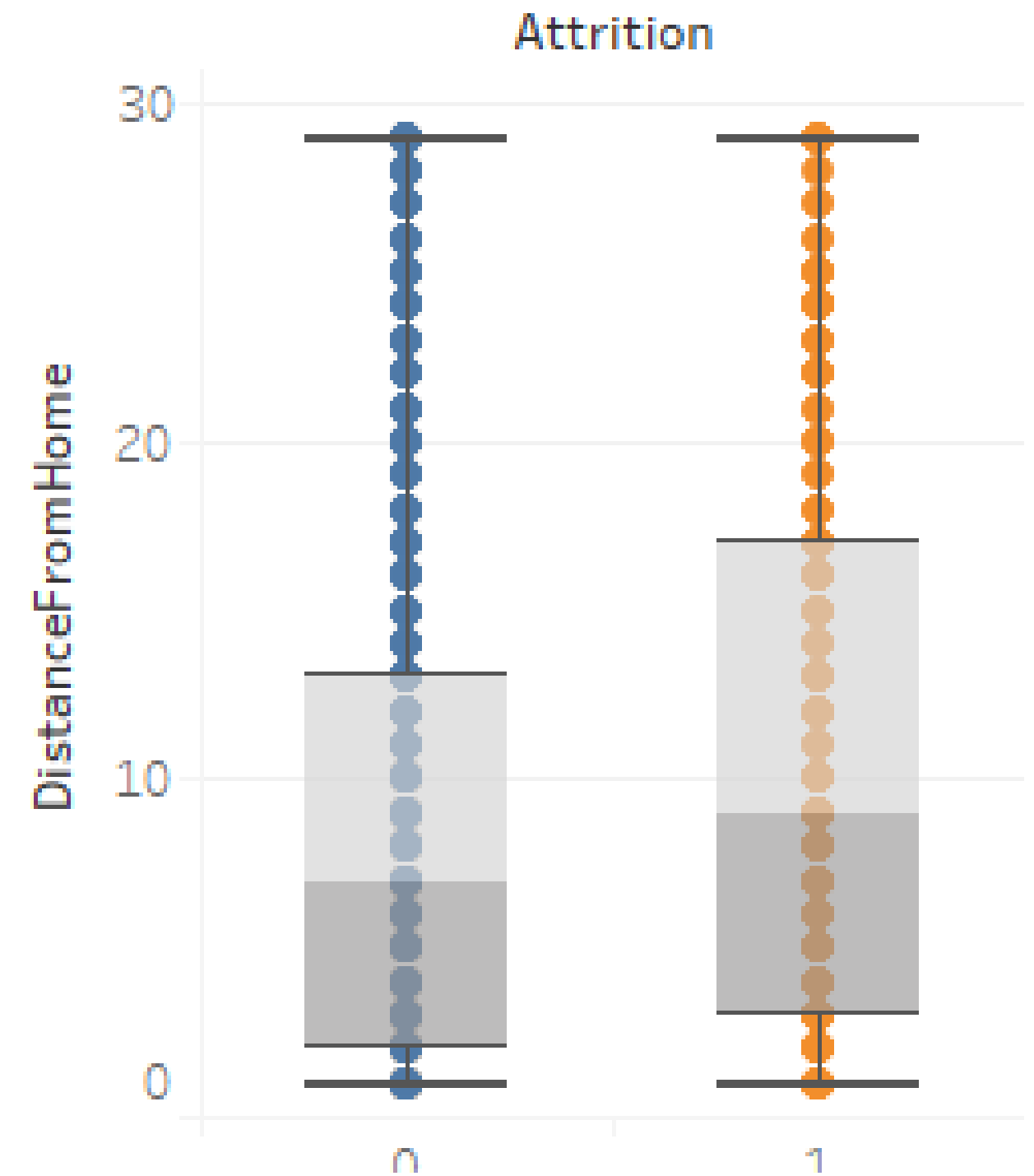
- We can see a trends hear that most of attrition happens when people are new to Manager, majorly in first years, post that Attrition is constant as stay

Distance From Home

Distance from home Histogram



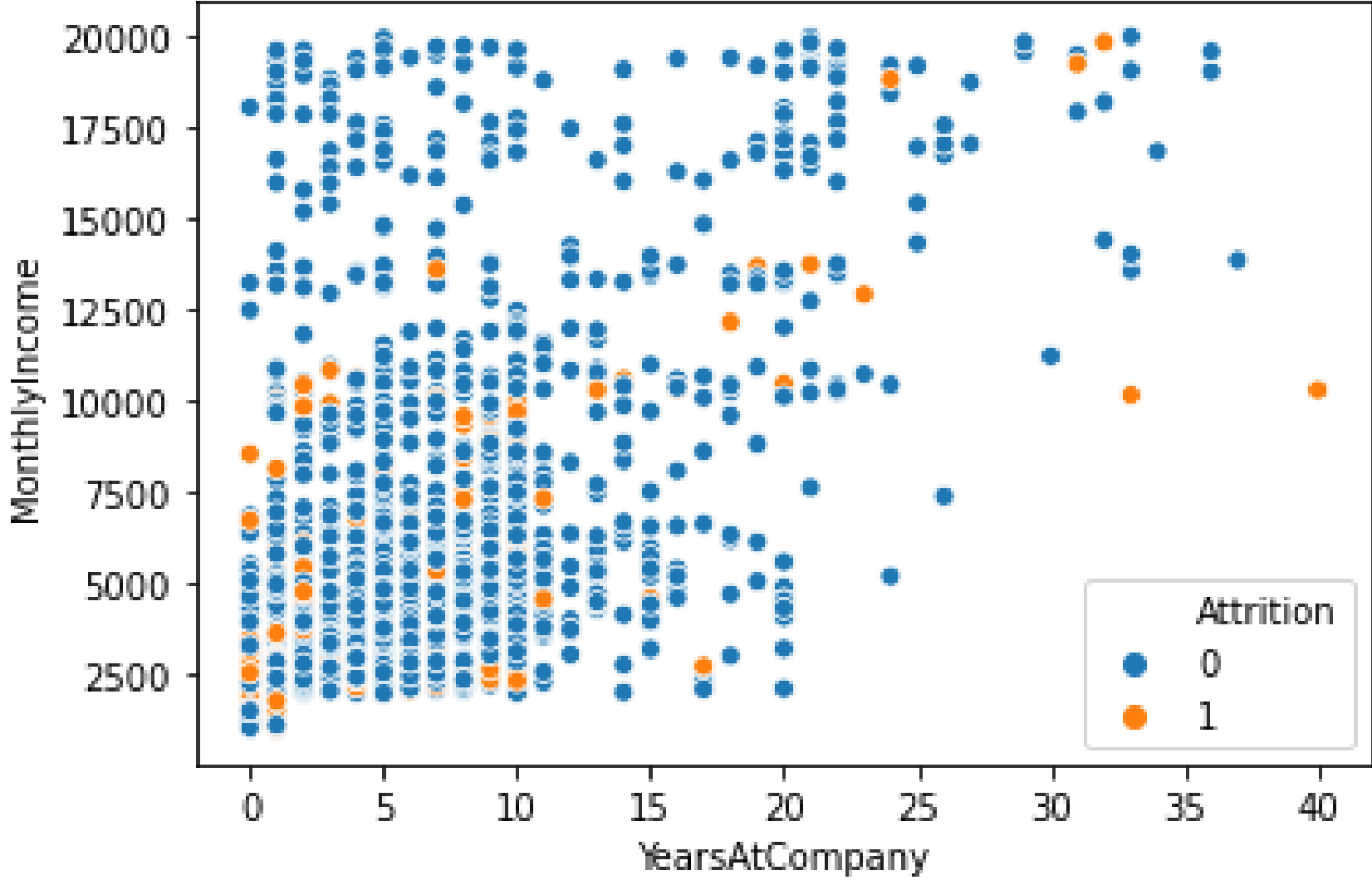
Distance from home



- We can not see any clear trends in Distance from Home, means people are leaving and staying irrespective of distance from home.

Multivariate Analysis

Years at Company vs Monthly income over attrition.



Years at Company vs Years since last promotion over attrition.

