HR Analytics Case Study
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Background – HR Analytics Case Study

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. Since the attrition level is too high, the management wants to use predictive modelling to bring it down.

Hence, the objectives of the analysis are to:

- Help company XYZ identify current employees that are very likely to leave
- Recommend ways for company XYZ to decrease its attrition level in the future

The analysis is divided into three parts:

- Data Understanding – Source of data, patterns in the data
- Predictive modelling of attrition
- Recommending ways for company XYZ to decrease its level of attrition

- **Data Understanding – Source of data, patterns in the data**
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Data Understanding – 4 broad sources of data

The data received for the analysis can be divided into 4 broad categories -

- General Data – General data, acquired from HR
- Employee Survey Data – Data collected from yearly employee survey
- Manager Survey Data – Data collected from yearly manager survey
- Biometric Data – Daily in and out times for each employee, collected using biometric attendance machines

General Data
Age
Attrition (Yes/No)
Department
Education Field

Manager Survey Data
Job Involvement
Performance Rating

Employee Survey Data
Environment Satisfaction
Job Satisfaction
Work Life Balance

Biometric Data
In Time
Out Time

- Data Understanding – sources of the data, meaning of the data
- **Predictive modelling of attrition**
- Recommending ways for company XYZ to decrease its level of attrition

Predicting Attrition – Overall Accuracy of 77%

A total of 24 variables, collected from 4 sources were used to predict the probability of an employee leaving the company in the next year, using a logistic regression model

- Logistic Regression Model* is able to correctly identify 77% of employees that were likely to churn
- It is also able to identify employees that are not likely to churn, with 77% accuracy

KS Statistic falls in 3rd decile (top 30%)

- Hence, it would be beneficial to target 30% of your employees most likely to leave, and work on making them stay.
- Targeting fewer employees (top 20% or top 10%) will not identify enough employees likely to leave
- Targeting more employees (top 40% or top 50%) will be inefficient

*With cutoff probability 0.194

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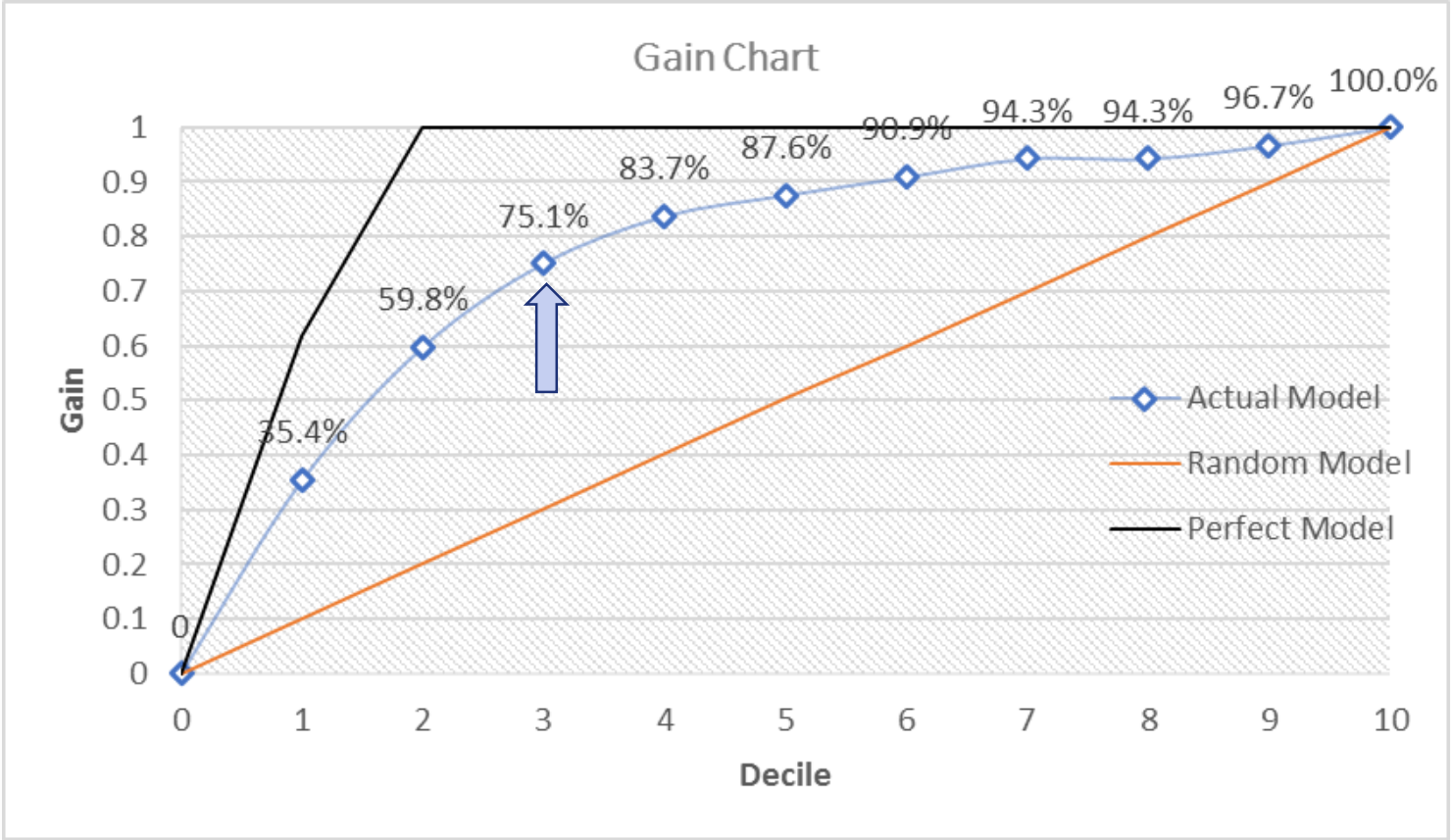
Predicting Attrition – Model is able to capture 75% of employees likely to leave

- Model is able to identify 75% of the employees likely to leave in the first 3 deciles



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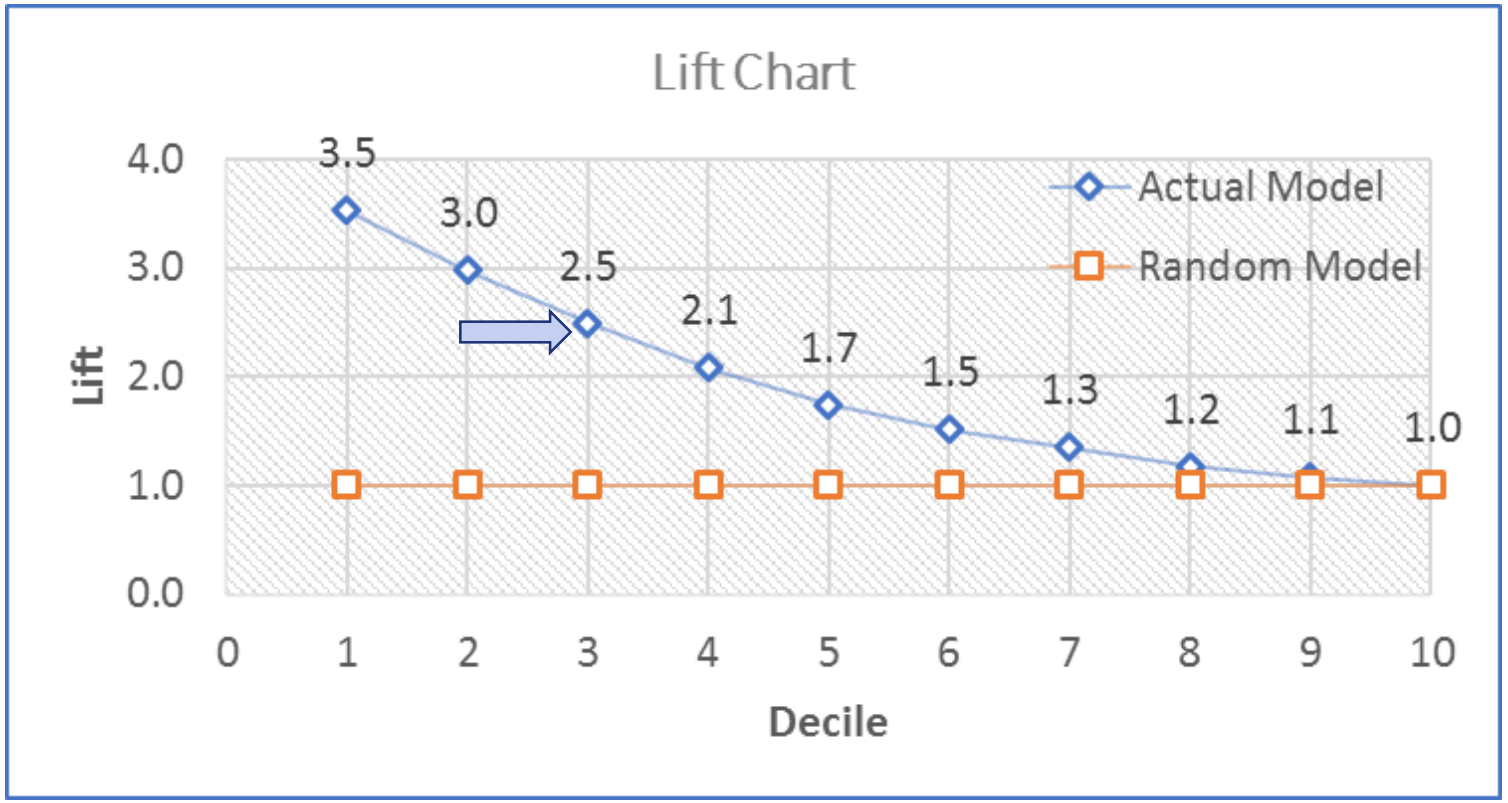
Predicting Attrition – Model performs 2.5 times better than a random reach out

- Using the model offers a “lift” of 2.5 for the 3rd decile



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- Data Understanding – sources of the data, meaning of the data
- Predictive modelling of attrition
- **Recommending ways for company XYZ to decrease its level of attrition**

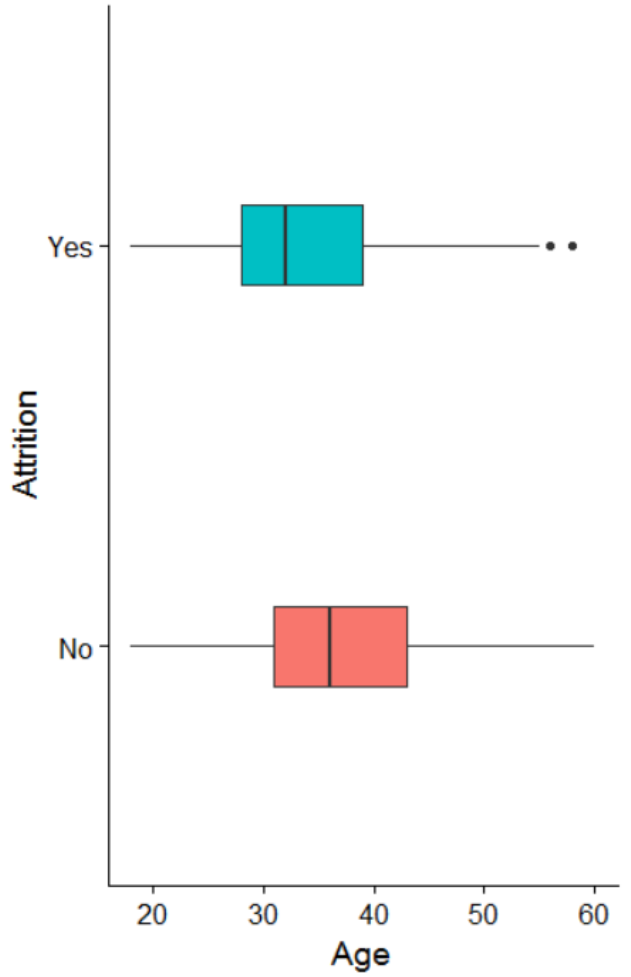
Recommendations – What factors make employees stay/leave? (1/4)

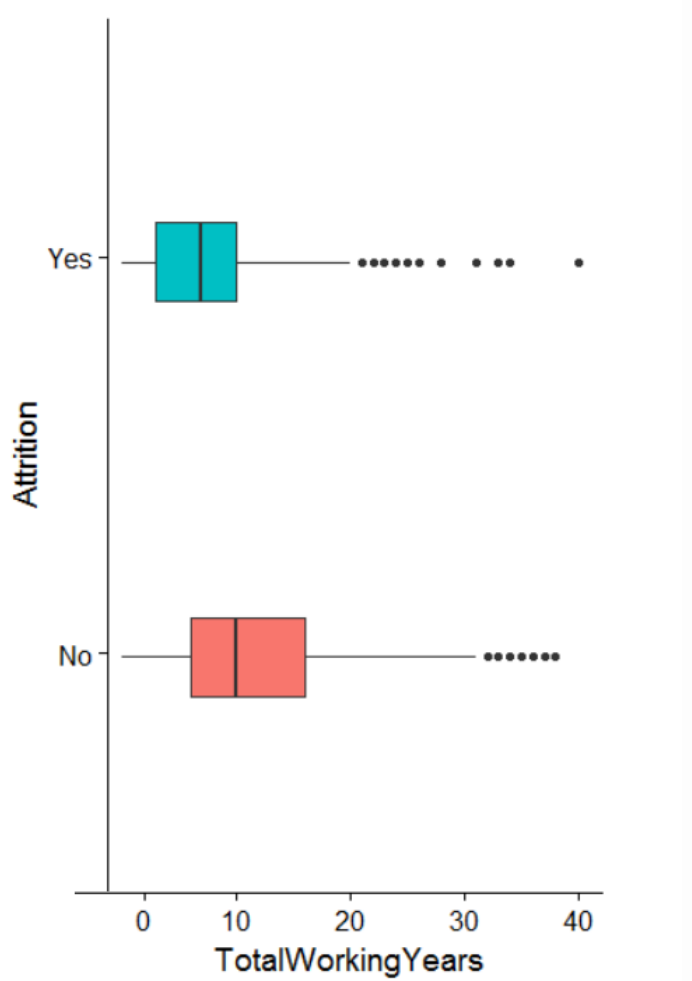
Age

- Employees aged 36 years and above are more likely to stay*
- Employees aged 32 years and below are more likely to leave*

Experience

- Employees that have worked for a total of 10 years or more are more likely to stay*
- Employees that have worked for a total of 7 years or less are more likely to leave*





*Coefficients of the variables Age and TotalWorkingYears are significant. Among attritions, median age = 32 and median exp. = 7. Among non-attritions, median age = 36 and median exp. = 10

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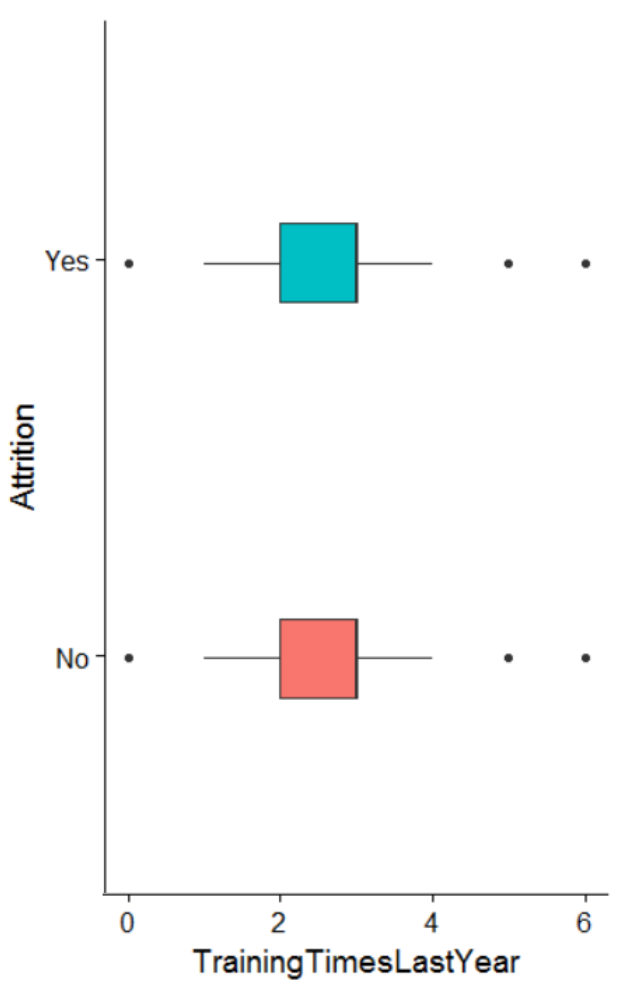
Recommendations – What factors make employees stay/leave? (2/4)

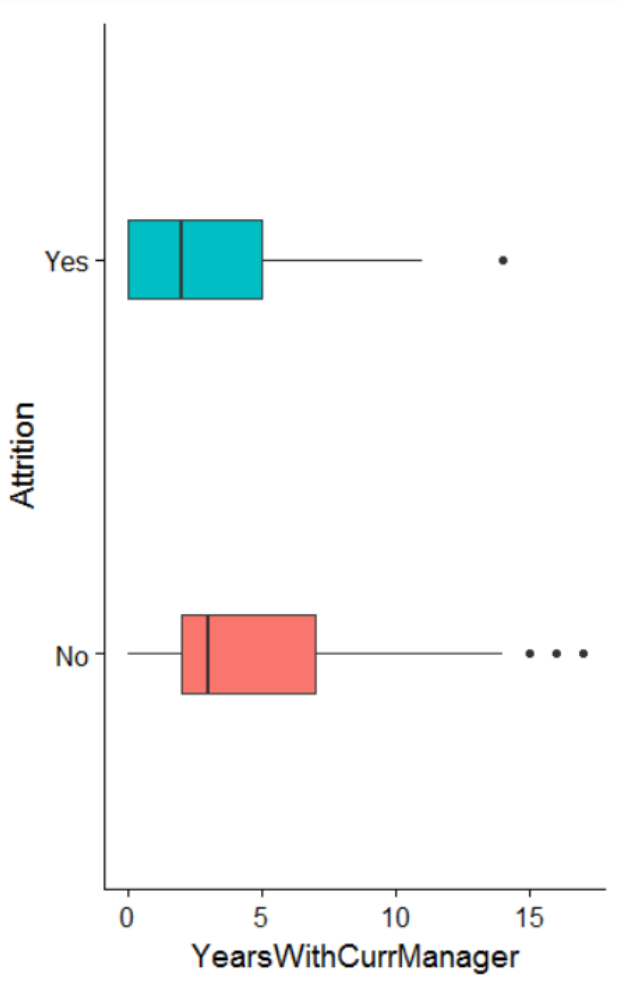
Training

- Employees that got 3 or more training sessions last year are more likely to stay*
- Employees that got 2 or fewer training sessions last year are more likely to leave*

Years with Current Manager

- Employees that have spent 3 years or more under the same manager are more likely to stay*
- Employees that have spent 2 years or less under the same manager are more likely to leave*





*Coefficients of the variables TrainingTimesLastYear and YearsWithCurrManager are significant. Rest of the data is based on means/medians etc.

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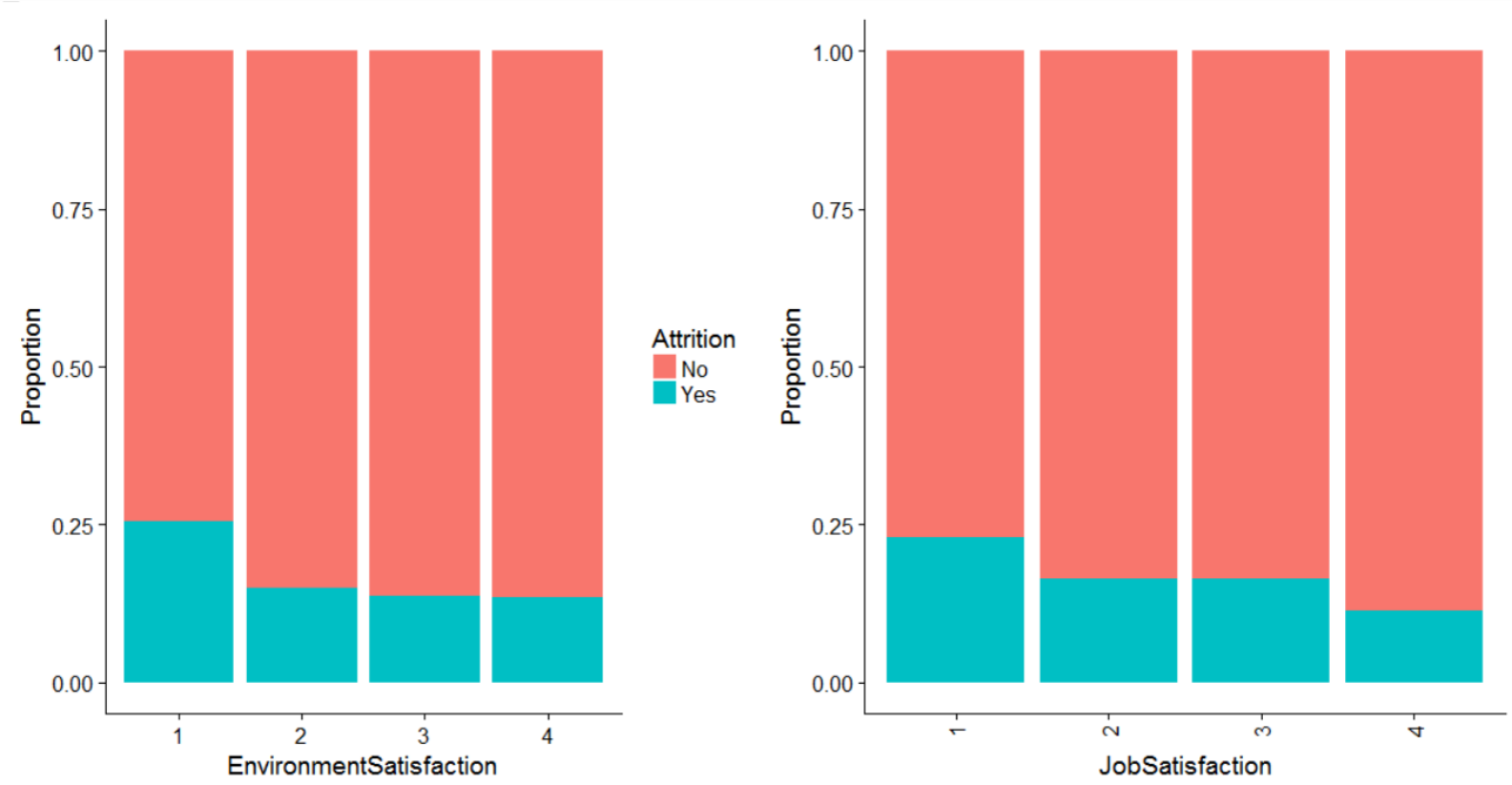
Recommendations – What factors make employees stay/leave? (3/4)

Job Satisfaction

- Employees that have medium, high or very high levels of job satisfaction, are more likely to stay*
- Employees that have low levels of job satisfaction, are more likely to leave*

Environment Satisfaction

- Employees that have medium, high or very high levels of environment satisfaction, are more likely to stay*
- Employees that have low levels of environment satisfaction, are more likely to leave*



*Coefficients of the variables JobSatisfaction and EnvironmentSatisfaction are significant. Employees were asked to report their job satisfaction and work environment satisfaction levels in a survey.

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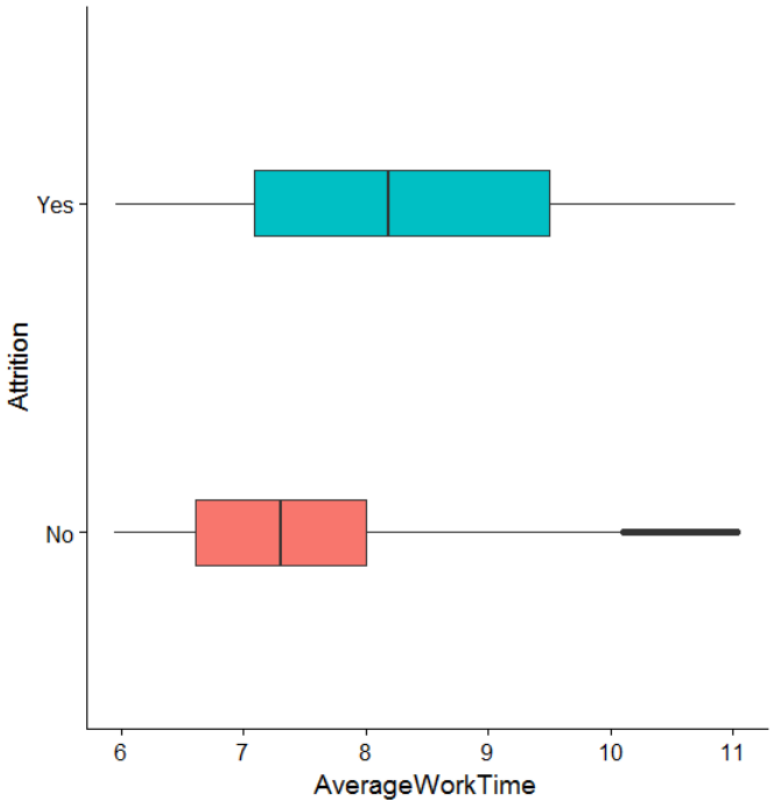
Recommendations – What factors make employees stay/leave? (4/4)

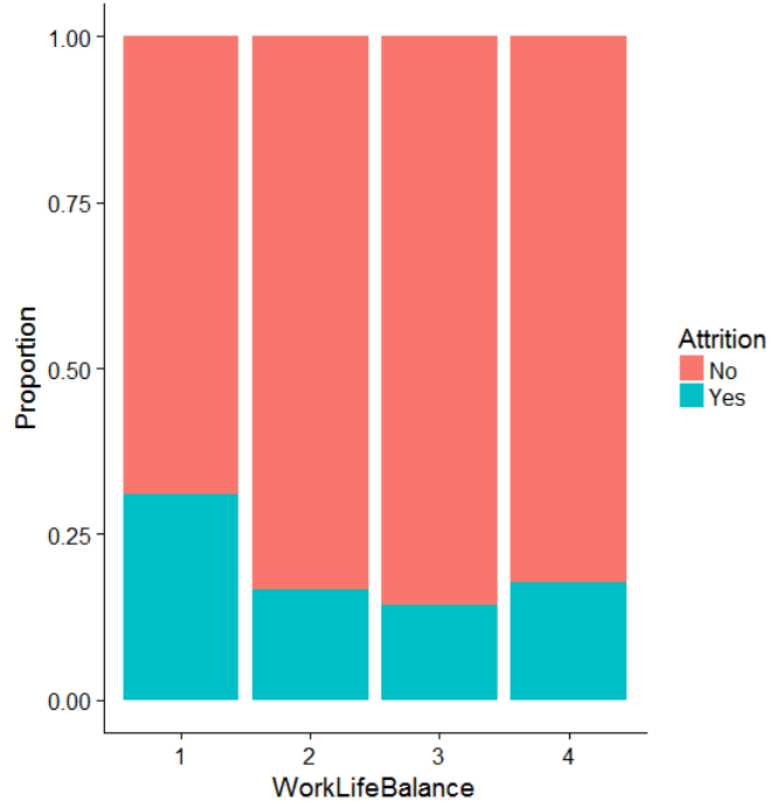
Average Work Hours

- Employees that, on average work for 7.3 hours or less, are more likely to stay*
- Employees that, on average work for 8.2 hours or more, are more likely to leave*



Work Life Balance

- Employees that rated their work life balance as good, better or best, are more likely to stay**
- Employees that rated their work life balance as bad, are more likely to leave**



*Coefficients of the variables AverageWorkTime and WorkLIfeBalance are significant. Average work hours data is based on means/medians etc. Employees were asked to report their level of work life balance in a survey.

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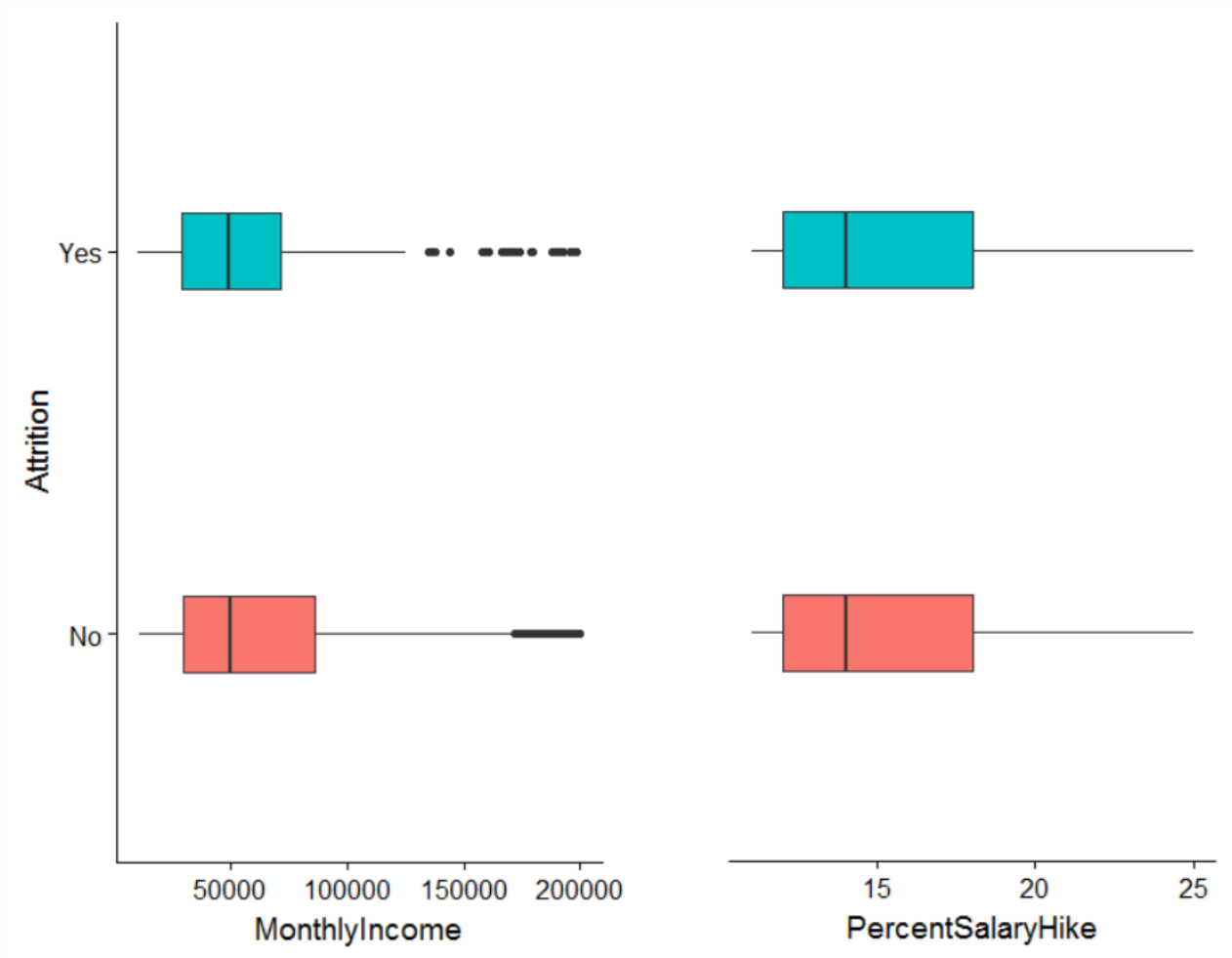
Recommendations – Factors that surprisingly don't affect attrition

- Monthly Income and Percent Salary Hike do not affect attrition*



*Coefficients of these variables are not significant

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Recommendations

Current employees:

- Work life balance should be improved
- Work environment should be improved
- The manager of an employee should not be changed very often
- Employees should be provided relevant training regularly, especially for its younger employees

Future employees (changes in hiring process):

- The company should follow either one of the strategies given below –
  - Hire older people with decent work experience
  - Hire young people and train them appropriately
- It could also opt for a combination of the two