

#Monthly income by department

#Sales: monthly income doesn't significantly affect attrition

#HR: Income matters significantly for attrition among all 3 department, can re evaluate income

ggplot(ibm1) + geom_boxplot(aes(Attrition, MonthlyIncome)) + facet_grid(.~Department)

#Monthly Income by jobrole

#Manufacturing director: Voluntary resignation is higher for those with higher monthly income

ggplot(ibm1) + geom_boxplot(aes(Attrition, MonthlyIncome)) + facet_grid(.~JobRole)

#TrainingTimesLastYear

#0 and 4 training times have higher proportion of voluntary resignation

ggplot(ibm1) + geom_bar(aes(TrainingTimesLastYear, fill = Attrition), position = 'fill')

#Monthly income by Education

#Education 5: Voluntary resignation is higher for those with higher monthly income

ggplot(ibm1) + geom_boxplot(aes(Attrition, MonthlyIncome)) + facet_grid(.~Education)

#OverTime

#Those who worked overtime have much higher chances of voluntary resignation

ggplot(ibm1) + geom_bar(aes(OverTime, fill = Attrition), position = 'fill')

#JobInvolvement

#Very conclusive, steady increase in attrition rate as job involvement level decreases

ggplot(ibm1) + geom_bar(aes(JobInvolvement, fill = Attrition), position = 'fill')

#JobSatisfaction

#Very conclusive, steady increase in voluntary resignation rate as job satisfaction level decreases

ggplot(ibm1) + geom_bar(aes(JobSatisfaction, fill = Attrition), position = 'fill')

#EnvironmentSatisfaction

#Very conclusive, steady increase in voluntary resignation rate as environment satisfaction level decreases

ggplot(ibm1) + geom_bar(aes(EnvironmentSatisfaction, fill = Attrition), position = 'fill')

#RelationshipSatisfaction

#1 and 3 have higher chance of voluntary resignation

ggplot(ibm1) + geom_bar(aes(RelationshipSatisfaction, fill = Attrition), position = 'fill')

#StockOptionLevel

#Those with level 0 and 3 higher chance of voluntary resignation

#Expected for level 0. But why 3?

ggplot(ibm1) + geom_bar(aes(StockOptionLevel, fill = Attrition), position = 'fill')

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#WorkLifeBalance
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#Those with score of 1 have visibly higher voluntary resignation rate
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ggplot(ibm1) + geom_bar(aes(WorkLifeBalance, fill = Attrition), position = 'fill')
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#BusinessTravel
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#Those who travel frequently have higher voluntary resignation rate
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ggplot(ibm1) + geom_bar(aes(BusinessTravel, fill = Attrition), position = 'fill')
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#Employee Source
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#Company website, Jora, Referral have higher voluntary resignation
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#Referral is the most interesting here. Usually expect referrals to be better hires than sourcing from open market. Possibly need more stringent process for evaluating referrals.
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ggplot(ibm1) + geom_bar(aes('Employee Source', fill = Attrition), position = 'fill')
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```
ggplot(ibm1) + geom_bar(aes(EducationField, fill = Attrition), position = 'fill') +  
facet_grid(.~Department)
```

Data that was collected was inconclusive and there were no clear trends present. For example.

Only Education5 who had higher income had a clear distinction of a higher voluntary resignation rate, other variables did not show any clear relation between itself and the voluntary resignation rate.

On the other hand, having data on employee sources only proved to show how referrals, company website and JORA were the top 3 platforms for a high voluntary resignation rate which suggests there may be a need to be more stringent in terms of evaluating people from referrals per se.

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ggplot(ibm1) + geom_bar(aes(AverageTenure, fill = Attrition), position = 'fill')
```