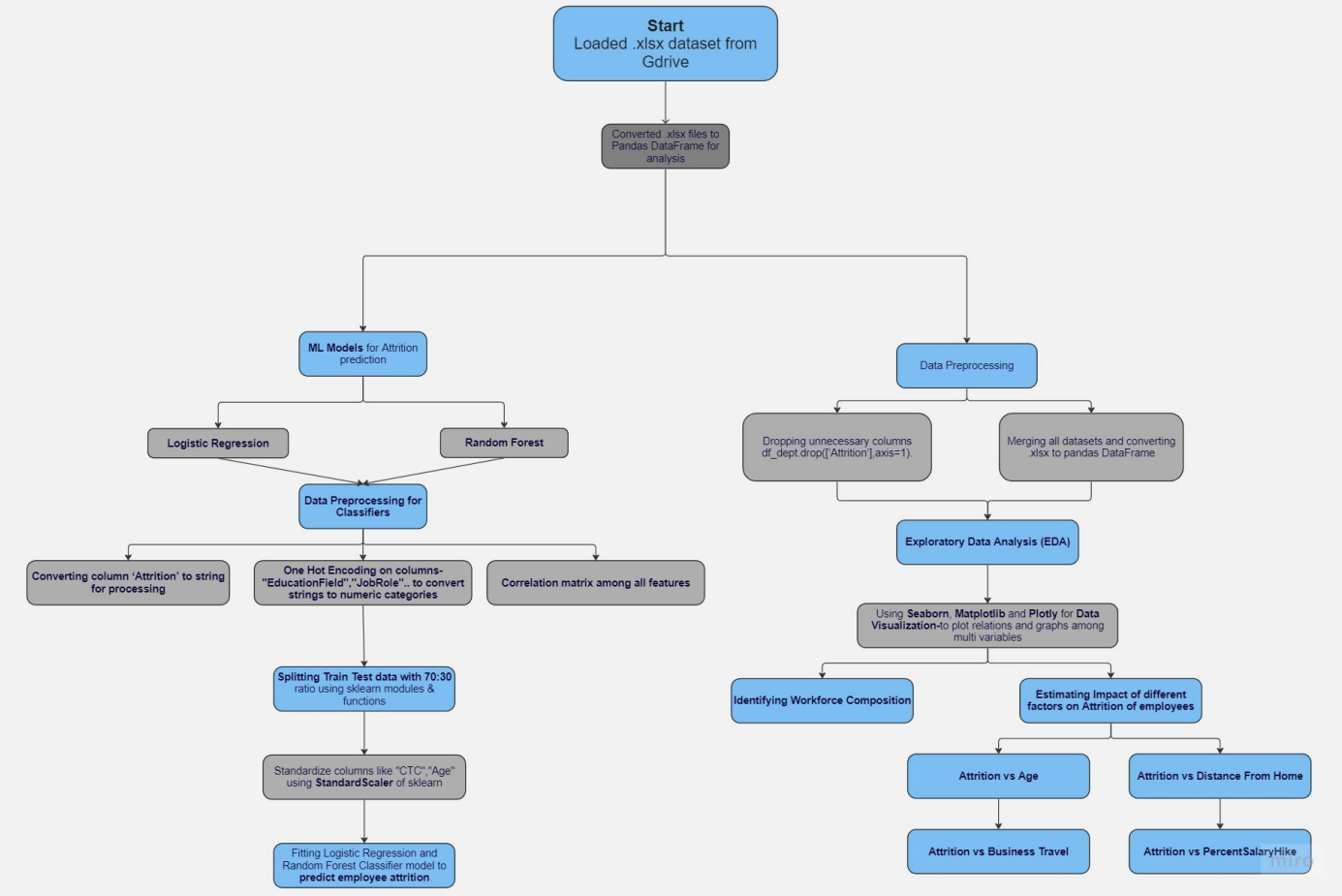
µ-lytics
Analytics Case Competition



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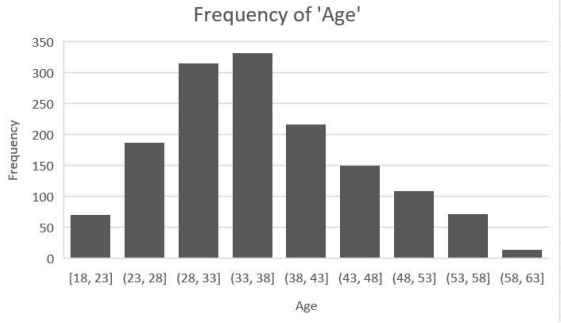
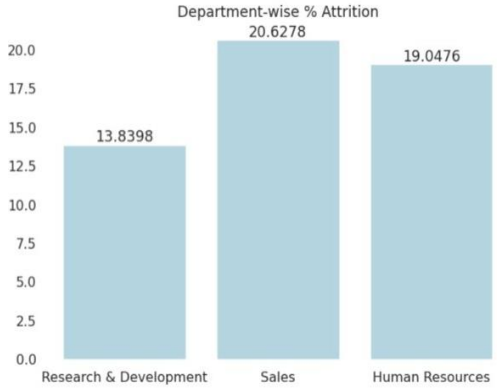
Composition of employees and targeted parameter: Attrition



Attrition is the departure of employees from the organization for any reason (voluntary or involuntary)

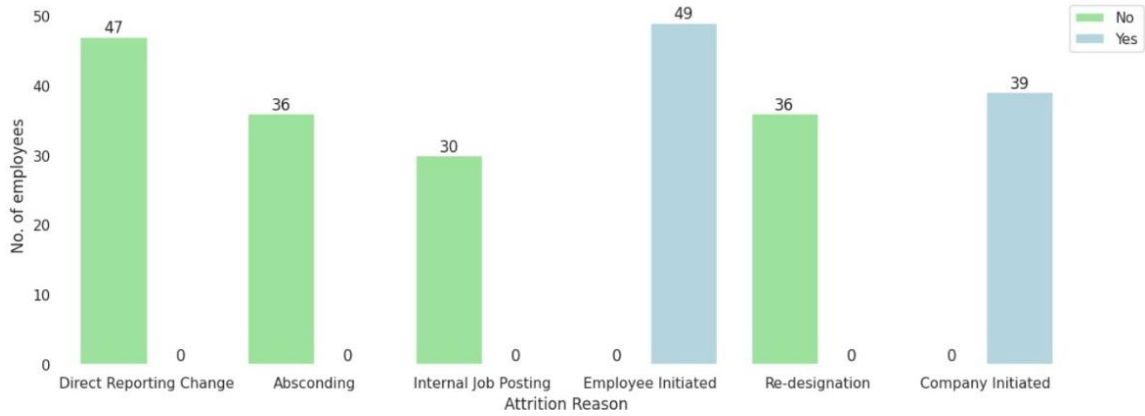


Sales department has the highest Attrition of 20% followed by HR and least 13% of R&D department

- Gender composition consists of **60% male** workers and **40% female** workers
- Department wise composition consists of 65.4% from R&D, 4.3% from HR, and 30.3% from sales department

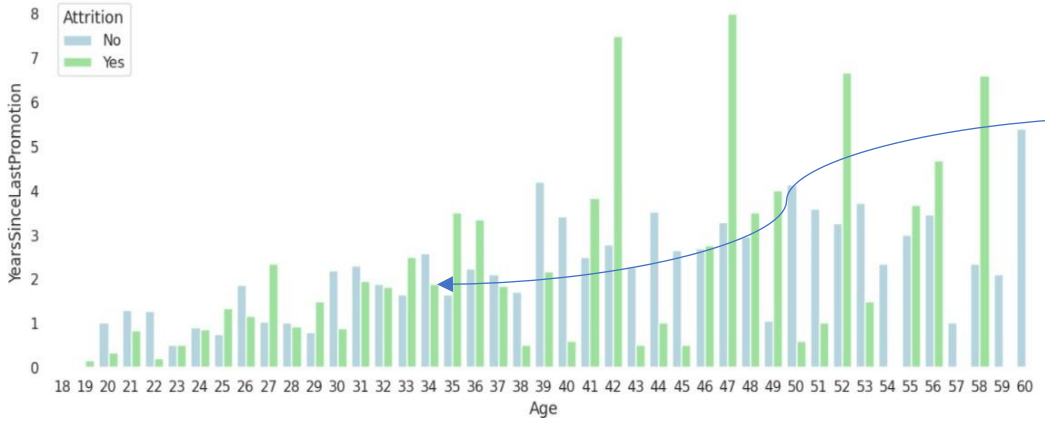
Our focus will be to reduce attrition, because high attrition will lead to the following problems:

- Loss of potential resource to company
- High cost of hiring process
- Cost of providing training to new recruits
- Loss of experience and thereby innovative ideas brought by an experienced person



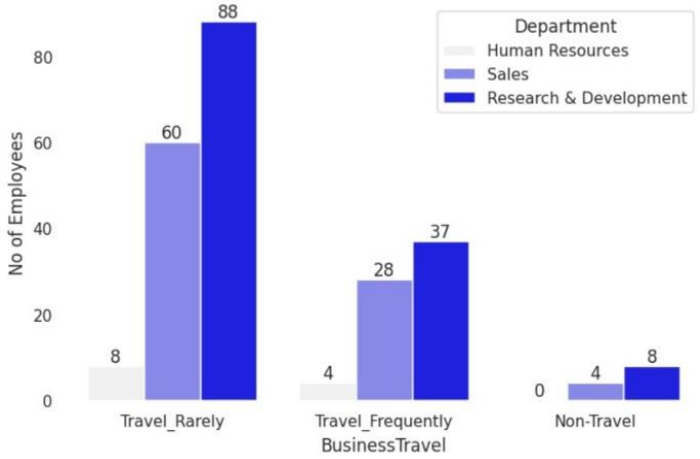
Attrition where it is Employee/Company initiated is regretted by employees that might have been loyal to the company, thus preventive methods of identifying such attrition initiations to increase retention of quality employees

Effect of promotions, Business Travels and Competitive Salary | Strategies to be implemented

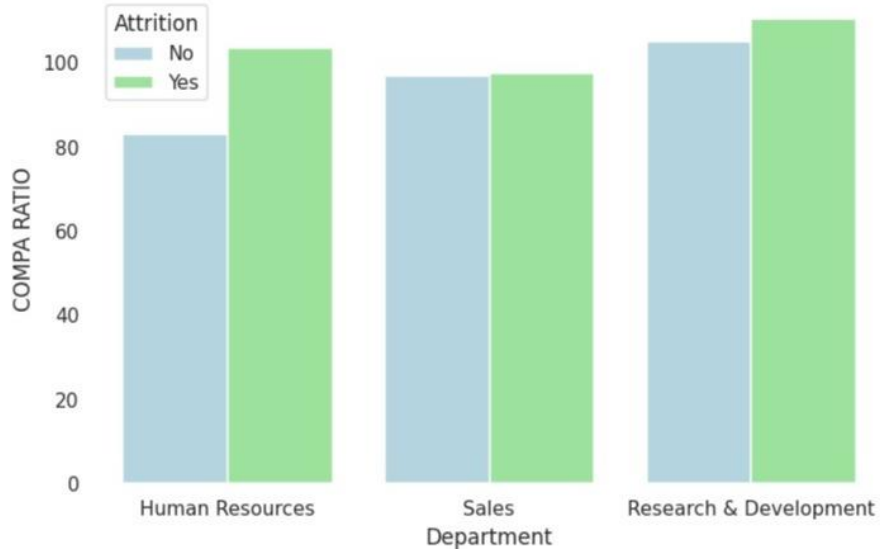


Age group 28-33 employees with long years with no promotion tend to leave, similar trend can be seen in employees aged 42 and above.

- **Newer employees need faster promotions** to keep them satisfied with their Job. 28-33 age group **only wait for an average of 1-2 years since their last promotion before leaving companies**, so "**Proxy Promotion**" to give them a sense of achievement might be able to increase retention at this fragile employee age group.
- Employees with 6+ years without promotion tend to leave the company.
- Methods to **incentivize working years** with better ways of **travel to office, stock options, promotions, and CTC hikes** will improve the retention of employees

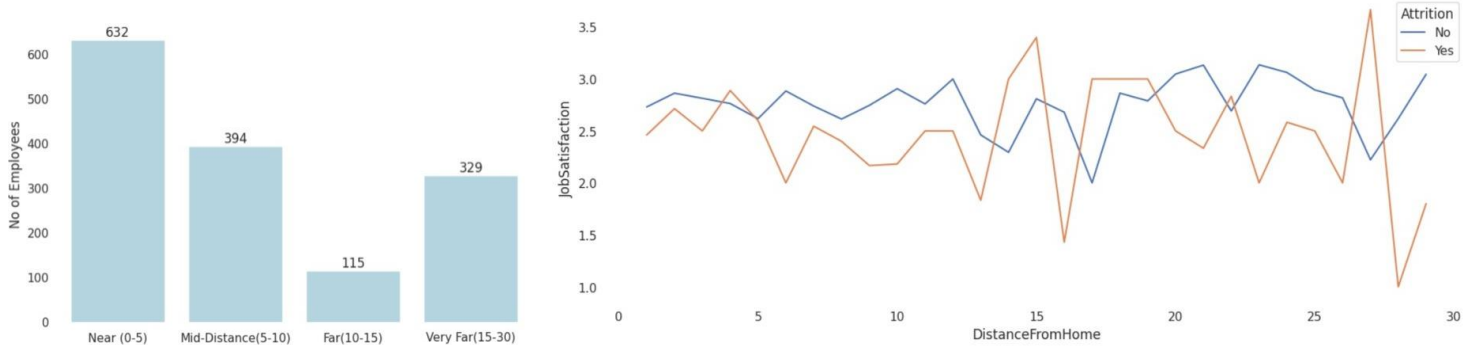


Business Travel impacts the Attrition of employees, 20% of employees who travel rarely in Sales department tend to leave the company.



Sales department has most attrition of 20% while R&D only has attrition of 13% , one of the reasons could be less competitive salary of Sales employees compared to handsomely paid R&D employees

Distance of home from workplace catalyzes attrition, ML models to predict future Attritions

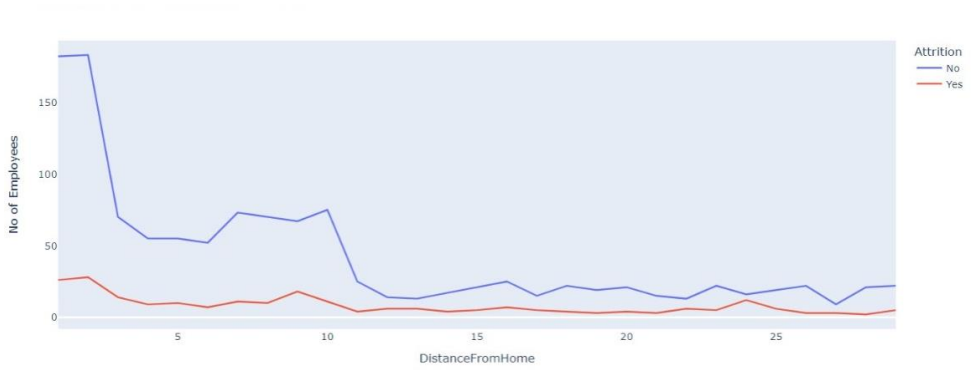


Neglecting cases of outliers in dataset, the graph suggests that employees living far from the office have low job satisfaction which is common among employees' attrition

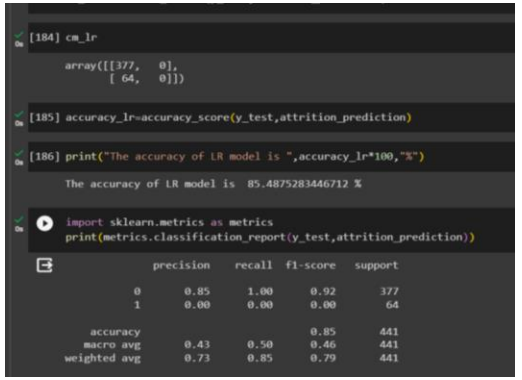
Predicting Attrition with ML models

- **Logistic Regression**
- **Random Forest Classifier**

- One Hot Encoding on columns- "EducationField","JobRole".. to convert strings to numeric categories
- Logistic Regression shows an accuracy of 85% while Random Forest Classifier predicts with an accuracy of 87.8%



As the **distance of home** from the office **increases, the percentage of employees wanting to leave the company increases,** both lineplot coming closer indicate the distance from home causes employees to consider attrition (employee/employer initiated)



```
[184] cm_lr
array([[377,   0],
       [ 64,   0]])

[185] accuracy_lr=accuracy_score(y_test,attrition_prediction)

[186] print("The accuracy of LR model is ",accuracy_lr*100,"%")
The accuracy of LR model is  85.4875283446712 %

import sklearn.metrics as metrics
print(metrics.classification_report(y_test,attrition_prediction))
              precision    recall  f1-score   support

           0       0.85      1.00      0.92       377
           1       0.00      0.00      0.00        64

    accuracy                           0.85       441
   macro avg       0.43      0.50      0.46       441
weighted avg       0.73      0.85      0.79       441
```

Logistic Regression model has an accuracy of 85% in predicting from the available features if an employee will leave

Heatmap of Correlation among features shows that Attrition is affected majorly by:

- **Distance From Home –0.078**
- **Compa Ratio-0.13**
- **Number of Companies worked**
- **Years Since Last Promotion**

Thank You