

# Executive Summary

## Employee Retention Modeling Results

### ISSUE / PROBLEM

Salifort Motors has a problem with employee retention. The HR department has collected a large amount of data and is interested in understanding how to further employee satisfaction so as to ensure high productivity employees stay at the company.

### RESPONSE

The dataset as a column called 'left' indicating whether employees left the company, so we can use supervised machine learning techniques to find out which other features would help ensure employee retention.

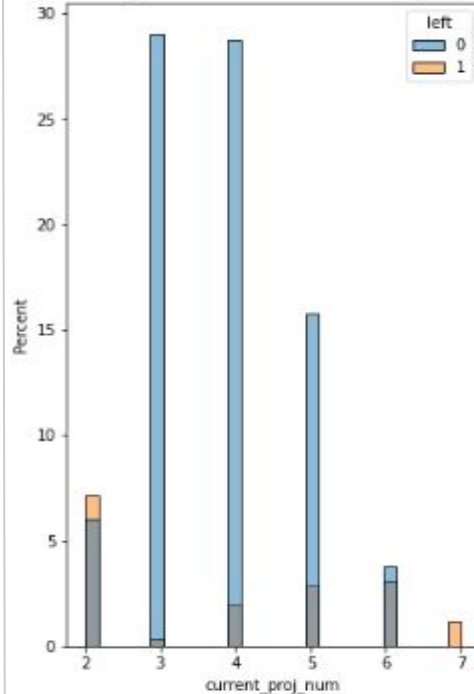
We proceeded with a logistic regression model, but it performed poorly.

Consequently, we created a random forest model which had a much stronger predictive performance.

### IMPACT

The model's predictive performance had .83 recall and .91 AUC scores. The feature importance analysis showed the most predictive features were satisfaction, number of current projects, and average monthly hours. We conducted additional analysis to understand what predicted high satisfaction

Histogram of Number of Current Projects

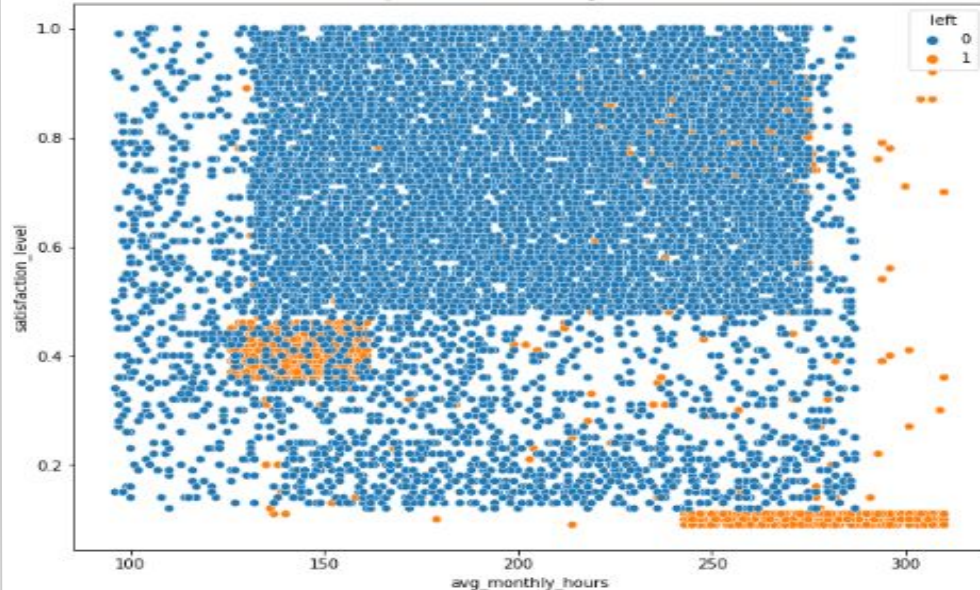


precision	recall	accuracy	f1	auc
0.966408	0.831111	0.968123	0.893668	0.91278

The current projects histograms shows a massive increase in the proportion of employees that leave when increased from 5 projects to 6 or 7.

The scatter plot shows that above 240 average monthly hours sees a significant drop in satisfaction and increase in proportion of employees leaving.

Scatterplot of Satisfaction by Hours Worked



### KEY INSIGHTS

We consistently identified two significant groups of departing employees as shown by the 2 orange rectangles in the scatterplot. Employees with grewer work hours (<165) also exhibited low evaluation scores so retention efforts should not be focused on this group. To retain high productivity employees we recommend:

1. Reduce average monthly hours to 240
2. Limit current projects to 5

Although these changes will lower productivity, the overall cost savings from reduced turnover should be considered.

