



Human Resources Retention Strategy

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This Presentation will be successful if...

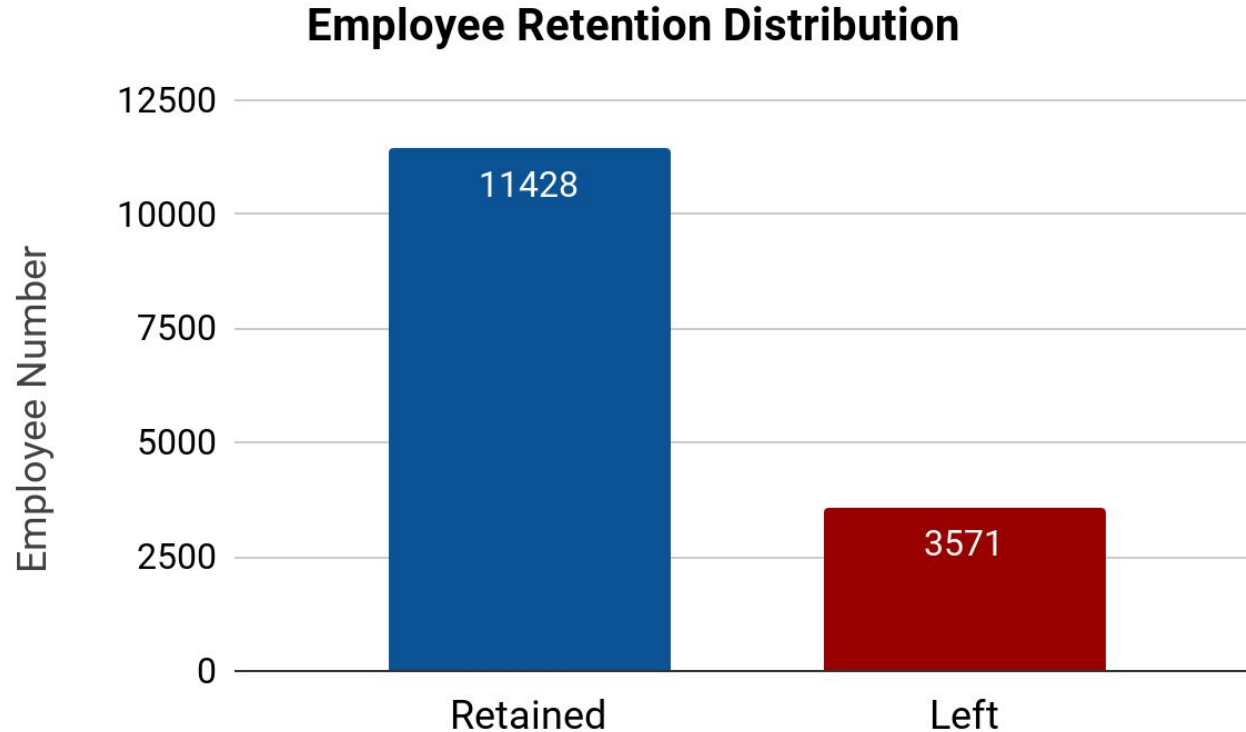
You gain an understanding of the retention risk
groups in your company and what to do to address
the concerns of each group



Outline

1. Current Retention
 2. Risk Groups and Factors
 3. Test Case
 4. Summary and
Recommendations
- 

24% of Employees Left The Company



Institutional Loss Is Significant

Total Work Hours Lost:

740,694

Total Years of Experience Lost:

13,843

Total Number of Project Experience Lost:

13,768

Methodology

1. Use Agglomerative Clustering to split employees into subgroups for further analysis
2. Build Adaboost Classifiers for each group, and then identify the major risk factors for each
3. Run through an employee test case



Cluster Groups

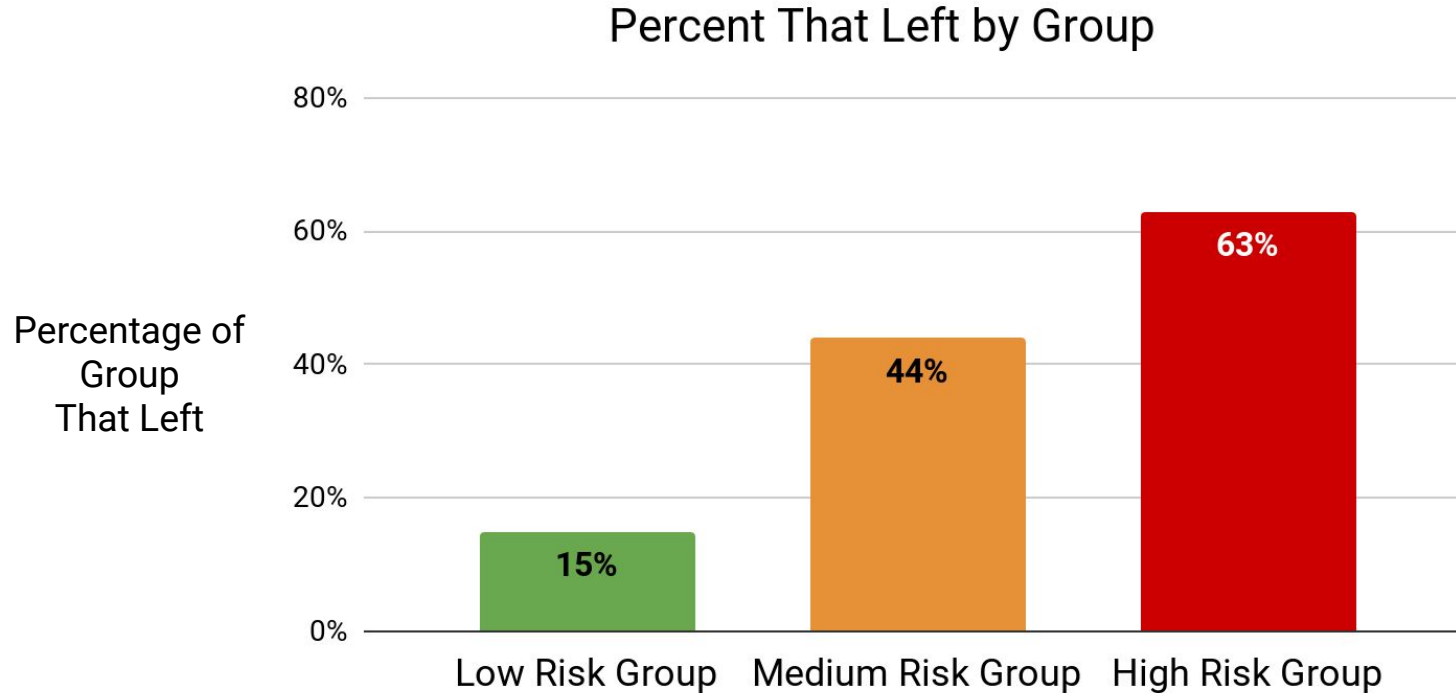


Group 1: Low Risk

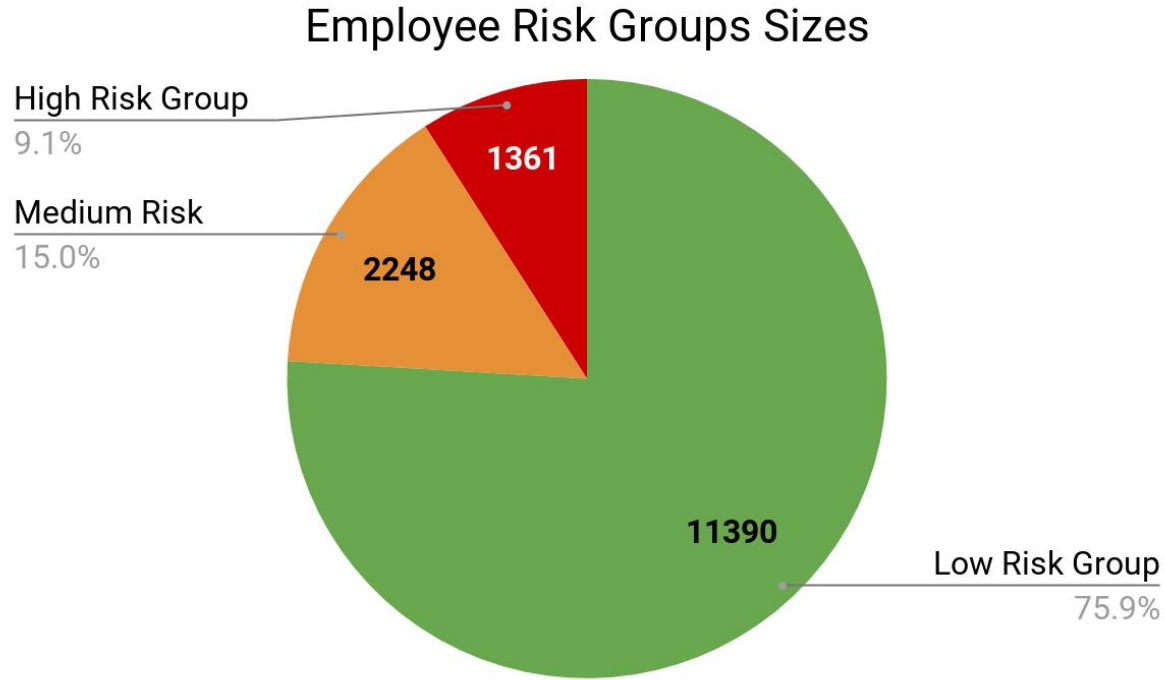
Group 2: Medium Risk

Group 3: High Risk

Clusters Naturally Group By Risk Level



Most Employees Are In Low Risk Group





Low Risk Group

Low Risk Group Skews New/Unused

N = 11390	Low Risk	Average
Years at Company	3	3.5
Monthly Hours	190	202
Last Evaluation	0.68	0.72
Projects	3	3.80
Satisfaction	0.67	0.61

Underutilized Workers May Leave

Top Factors for **Low** Risk Group Leaving:

1. Low Satisfaction (<0.67)
2. Low Number of Projects (<3)
3. Low Monthly Hours (<190)

Model Correctly Identified Those Who Left:

97% Of The Time! (1650 Workers)



Medium Risk Group



Medium Risk Group Skews Unhappy/Overused

N = 2248	Medium Risk	Average
Years at Company	4.4	3.5
Monthly Hours	233	202
Last Evaluation	0.77	0.72
Projects	5.2	3.80
Satisfaction	0.20	0.61

Overworked Workers May Leave

Top Factors for **Medium** Risk Group Leaving:

1. Low Satisfaction (<0.2)
2. High Monthly Hours (>233)
3. High Number of Projects (>5)

Model Correctly Identified Those Who Left:

97% Of The Time! (959 Workers)



High Risk Group

High Risk Group Skews Loyal/Proficient

N = 1361	High Risk	Average
Years at Company	6.2	3.5
Monthly Hours	235	202
Last Evaluation	0.86	0.72
Projects	4.4	3.80
Satisfaction	0.80	0.61

Overburdened Loyal Workers May Leave

Top Factors For **High** Risk Group Leaving:

1. Low Satisfaction (<0.7)
2. High Monthly Hours (>235)
3. High Number of Projects (>4)

Model Correctly Identified Those Who Left:

98% Of The Time! (840 Workers)



Test Case

Employee Johnny Is Predicted to Leave...

Top Factors for Johnny (**High Risk Group**):

Years At Company	6
Monthly Hours	273
Salary	Low
Last Evaluation	0.7
Number of Projects	3
Satisfaction Level	0.57

What do we do with him?

Slightly alter **HIS** important factors until he's predicted to stay

Decrease Monthly Hours

273



268

Changes Johnny From **Leave** to **Stay**



Wrap Up

Summary

- Clustered the employees into Low, Medium and High Risk Groups
- Ran a classifier on each group prioritizing identifying employees that left
 - Identified **97%** of those who left (**3450** people)
- Using this we can identify employees likely to leave and what individual factors are most important to them, so that you can address them

Recommendations

- Increase projects (>2) and hours (>190) for Low Risk Group
- Reduce projects (<6) and hours (<230) for Medium Risk Group
- Increase satisfaction (>0.7) and reduce hours (<235) for High Risk Group
- Use our algorithm to decide the best way to retain each employee, as the important factor for each person might be slightly different

Future Work

- Productionize discovery and analysis of what changes are needed to retain all employees
- Attempt to separate the groups in different ways
 - By Department or Time at Company
- Obtain data to increase the salary and time at company precision
- Add a time dimension to chart employee's journey through company

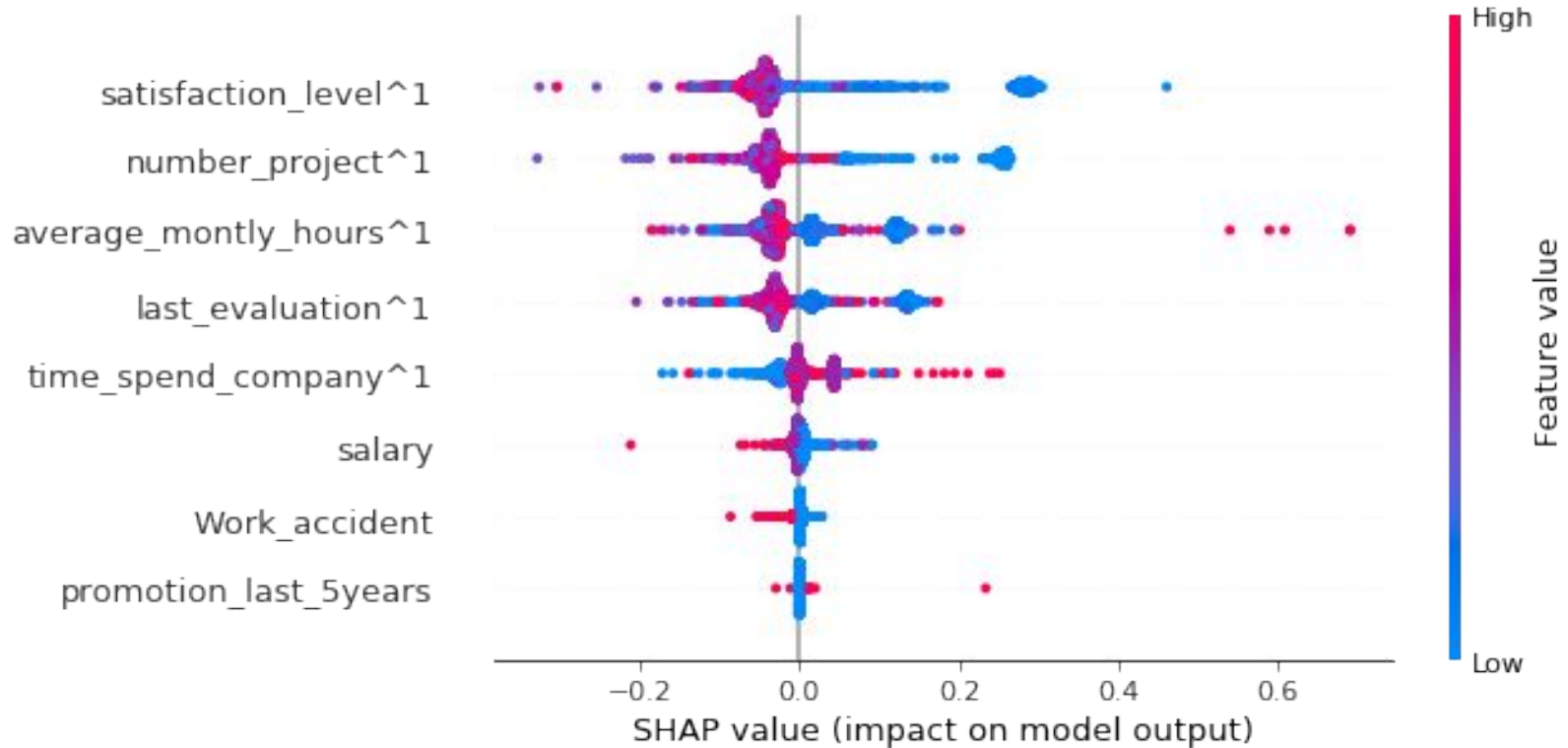


THANK YOU!

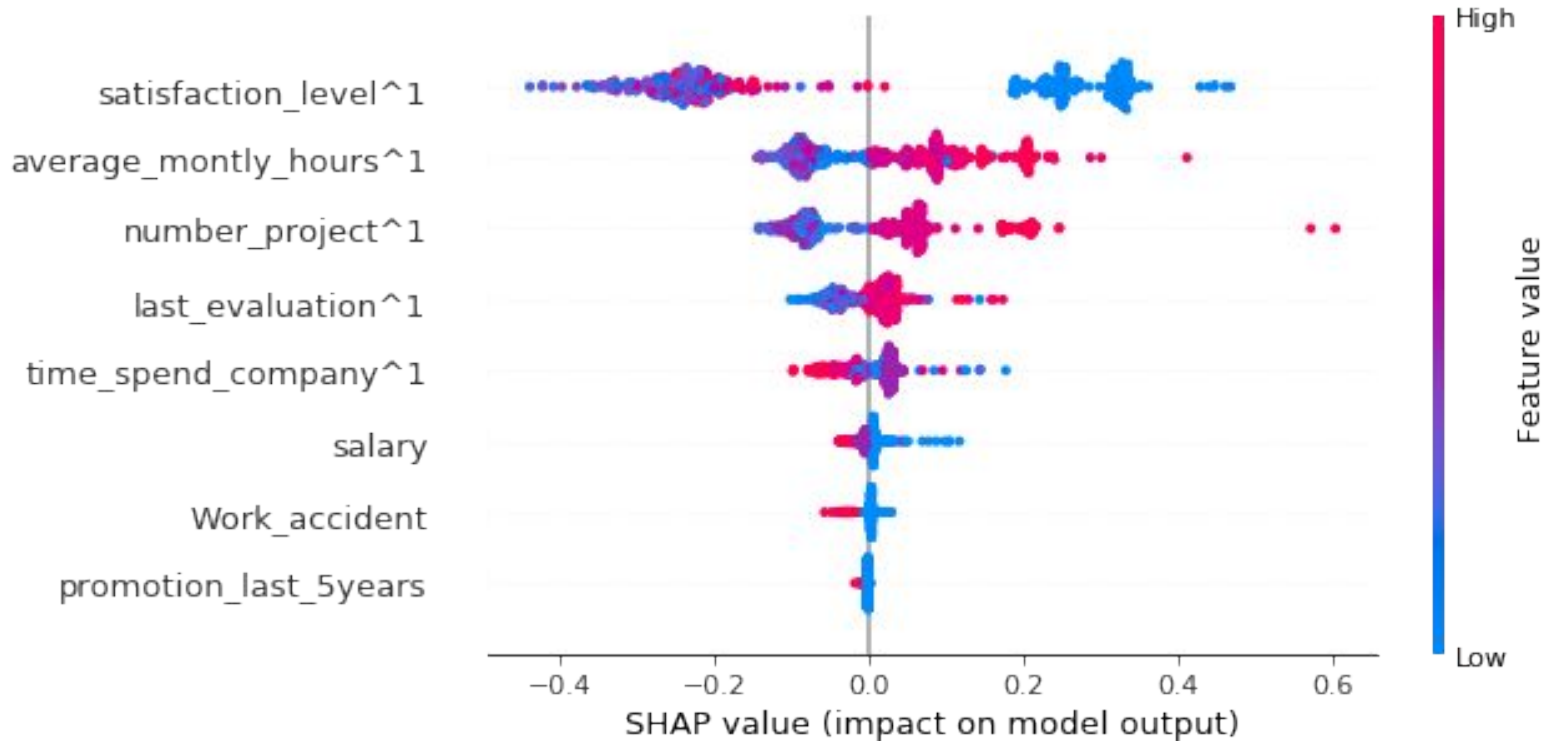


Appendix

Low Risk Shapely Values



Medium Risk Shapely Values



High Risk Shapely Values

