

PREDICTING EMPLOYEE ATTRITION

PART 01



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Credit: Jacob W.



Employee Attrition?

When employees leave a company, either by resigning, retiring, or for other personal reasons

**16% - 213 %
of employee's salary**

is the cost of replacing an employee which include recruitment, training, and the lost productivity during the transition period

Center for American Progress

**Loss of
Knowledge**

Reduce the efficiency and quality of work, slowing down progress on projects

McKinsey & Company

**Disruption to
Team Dynamics**

The absence of a familiar colleague or leader can reduce team cohesion create a ripple effect, causing other employees to become disengaged

Gallup

OBJECTIVES

01.

Identify Visual Patterns and Use Predictive Modeling to Gain Insights on Employee Attrition



02.

Use Insights to Make Strategic Decisions for Improving Retention



Our Client **Atlas Labs**



01.

What they do

Provide fleet connectivity solutions like **GPS tracking, mobile dispatch, in-vehicle tech, and vehicle WiFi**.

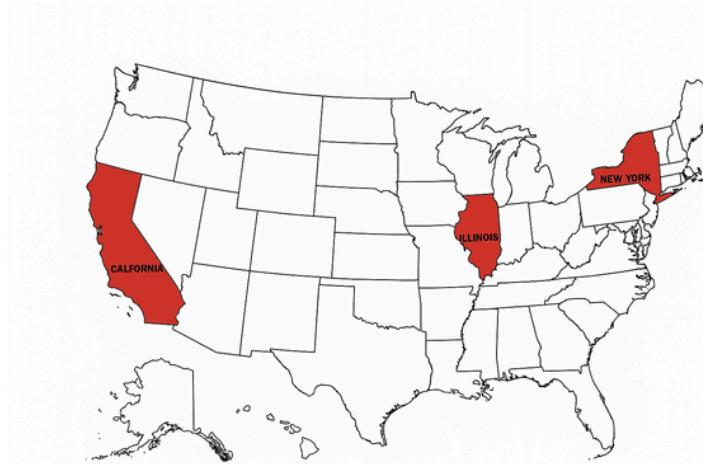
02.

Who they serve

Industries with mobile teams—**emergency services, transportation, and delivery**



Over 1000 Employees



Established in 3 states

Has 3 Departments

- Technology
- Sales
- Human Resources

STEM , HR and Business

Diverse Workforce

About the Database

01. Employee Table

Employee information such as demographics, department, role, compensation, and tenure-related data

02. Performance Table

tracks employee's satisfaction, training, work-life balance, and performance ratings



Data Preprocessing

Aggregation

Aggregated the Performance Table by selecting only the most recent review record for each employee.

Merging Tables

using the primary key–foreign key relationship based on Employee ID, we merged the two tables into a single dataset

Removing Variables

removed the redundant variables such as first name , last name , employee id , performance id , hire date , review date

Outliers

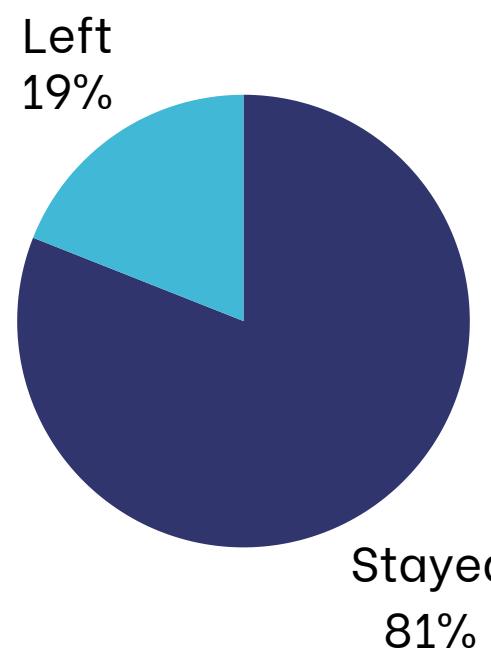
Outliers were kept as they may provide **valuable insights**

Simplifying Categories

- Grouped satisfaction scores into: Low, Medium, High
- Combined education levels into: STEM , Business and HR

Data Splitting

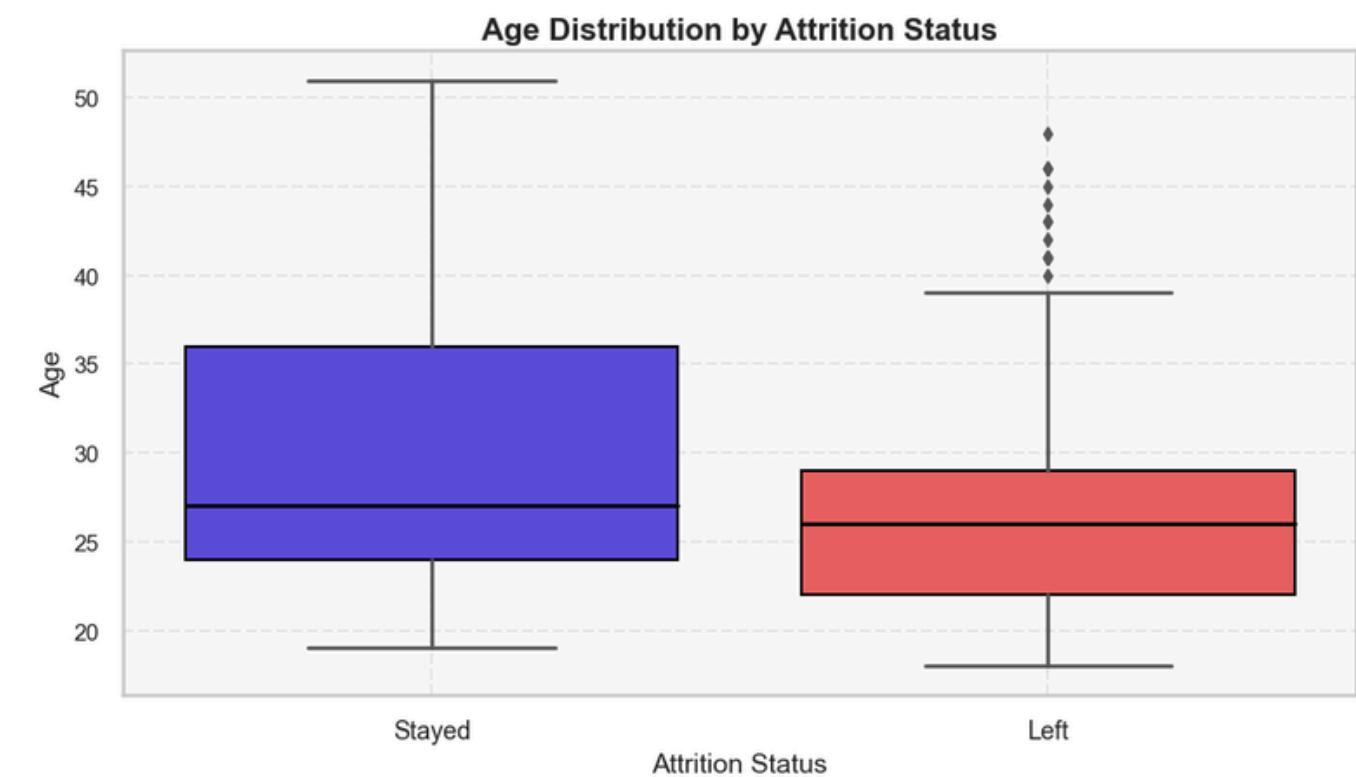
70% -> Training
30% -> Testing



19% of Employees have Left

**Who are they?
Why have they left?**

Significant Young Departure: A Large Portion of Leavers in the Early to Mid-20s



P < 0.05
Mann Whitney U Test

Median age of those who had left and those who are staying in the company are significantly different

75% of those who left are younger than 28

“Younger workers often switch jobs due to a lack of advancement opportunities or misalignment with personal goals”

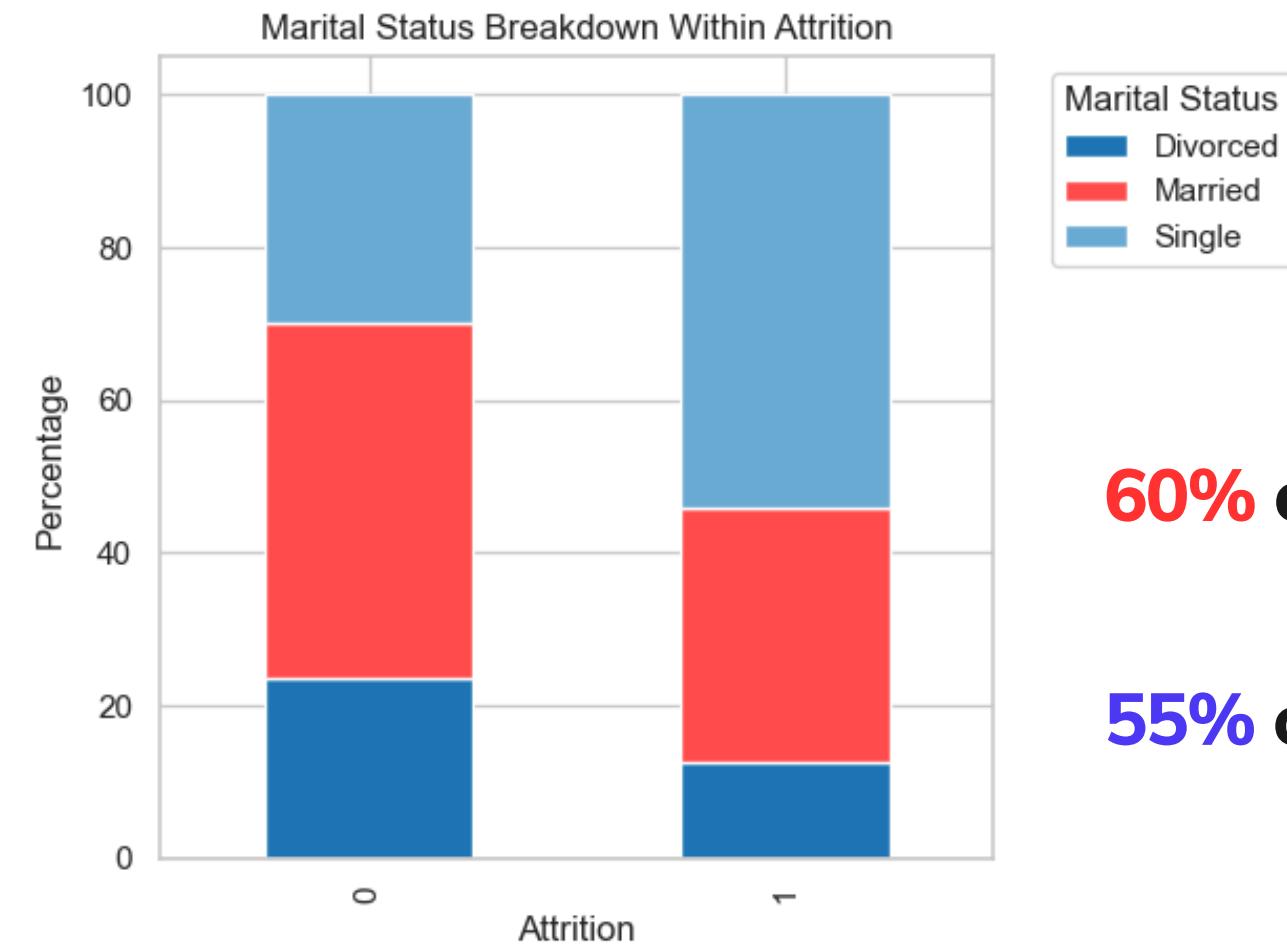
Deloitte’s Global Millennial Survey (2020)

What Shapes these Personal Goals ?



Personal Goals
highlighted by Marital
Status in Attrition

Significant Single Departure: Notable Proportion of Departing Employees are Single



P < 0.05
Chi-Squared Test
for Independence

statistically significant
association between
marital status and
Attrition

60% of those who left are Single

55% of those who stay are Married

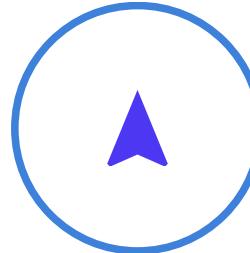
“Younger, unmarried employees tend to prioritize career mobility and skill development, while those with families prioritize job security and stability”

SHRM (Society for Human Resource Management)

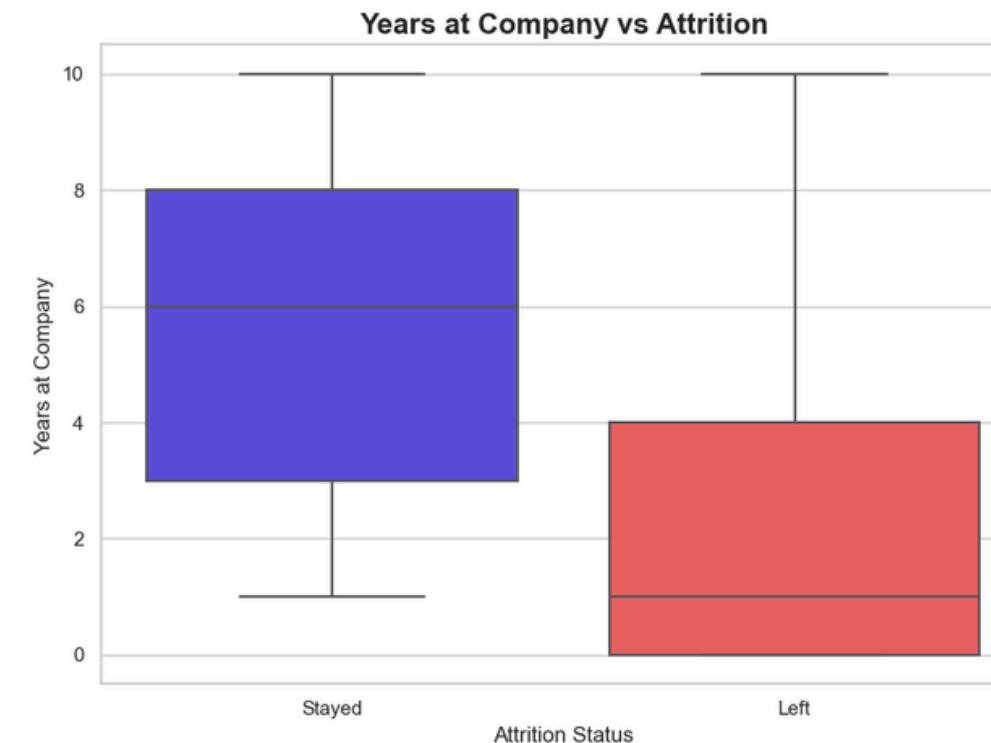
If mobility is a priority for these individuals, are they staying long enough to grow within the company—or are they moving on before they can grow?



Do employees tend to build long-term careers here, or do they leave quickly?



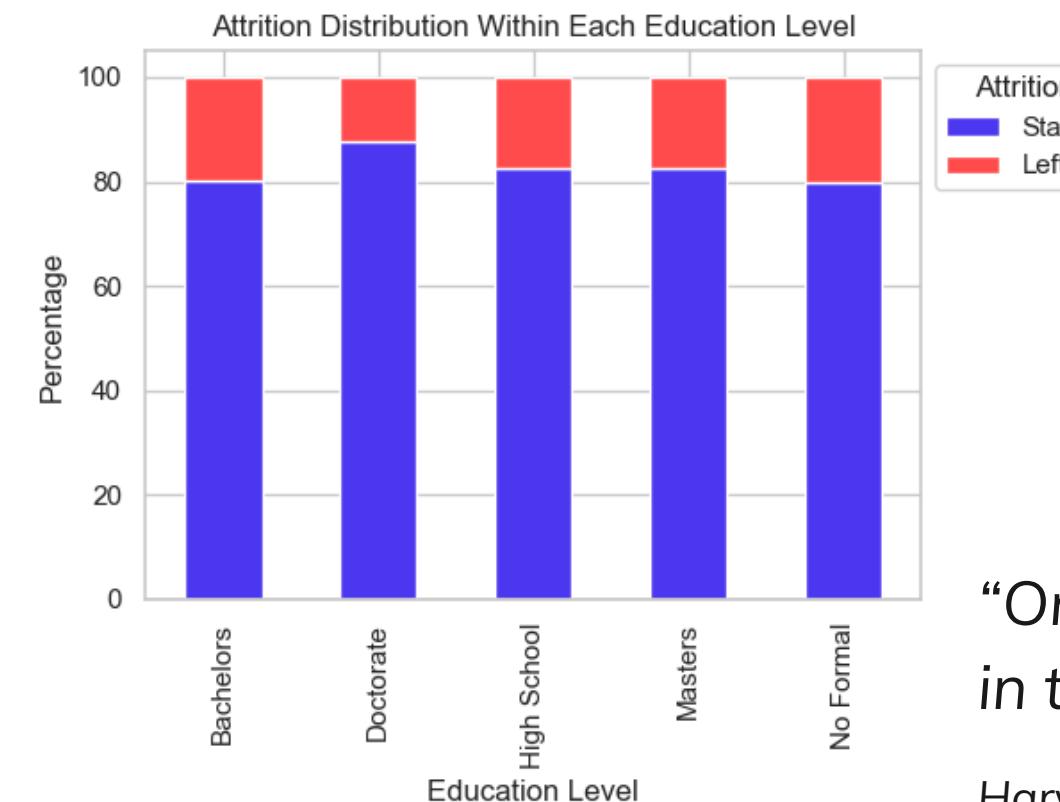
The Short Goodbye: Departing Employees Had Markedly Shorter Tenures



P < 0.05
Mann Whitney U Test

Median tenure of those who had left and those who are staying in the company are significantly different

Most Employees typically **leave** staying just about **an year at the company**



P > 0.05
Chi Squared Test

There is no significant association between Education level and Attrition

Employees **left** at similar rates across **all** education groups

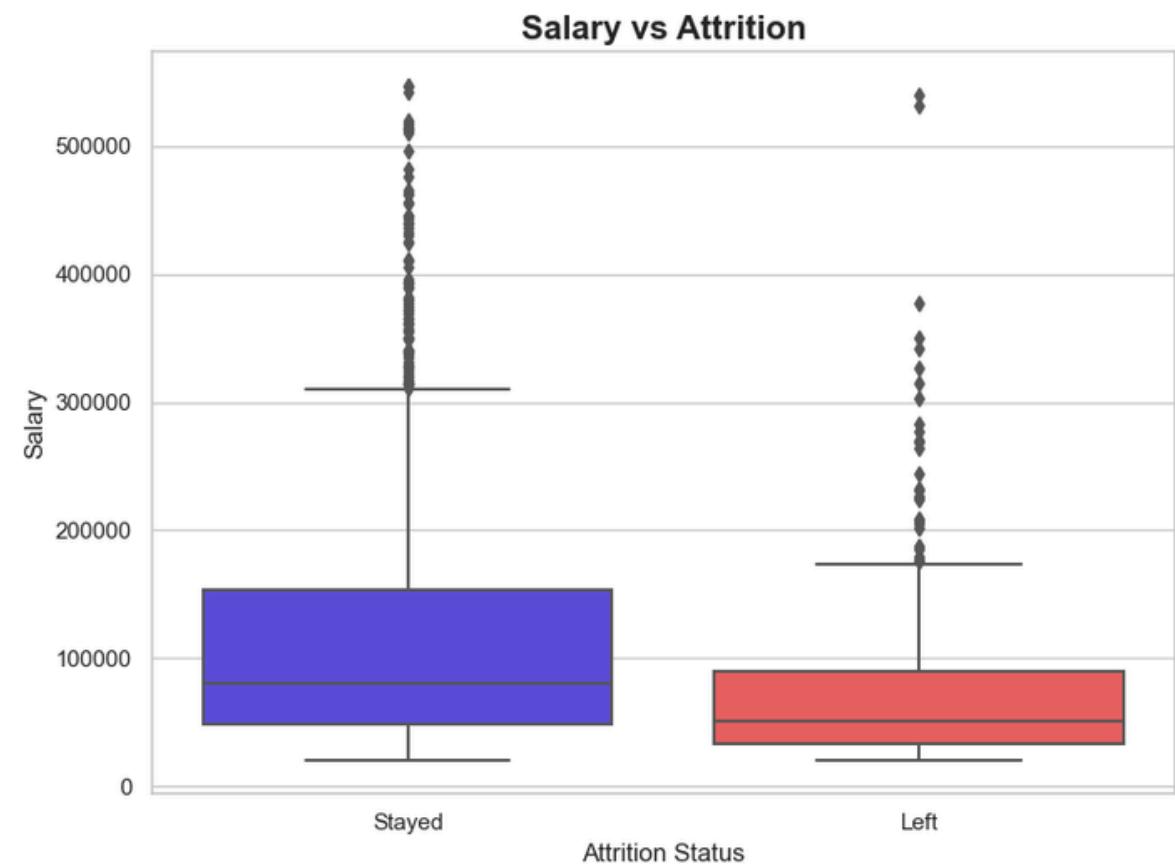
“One of the top reasons employees leave early in their tenure is unmet salary expectations”

Harvard Business Review



Is it unmet salary expectations driving attrition?

Salary Trends and Employee Retention : Lower Earnings Linked to Higher Attrition, but Salary Alone Isn't Enough

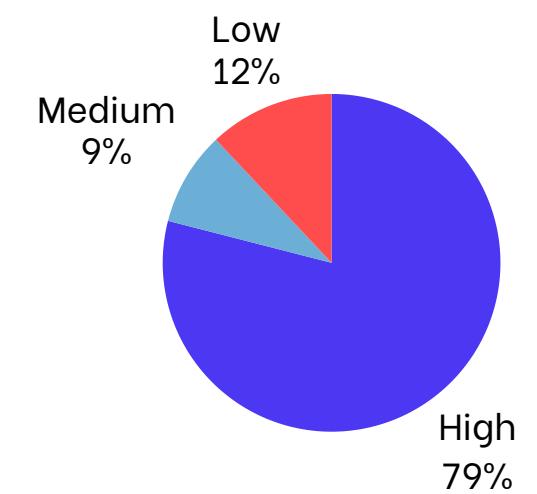


P < 0.05
Mann Whitney U Test

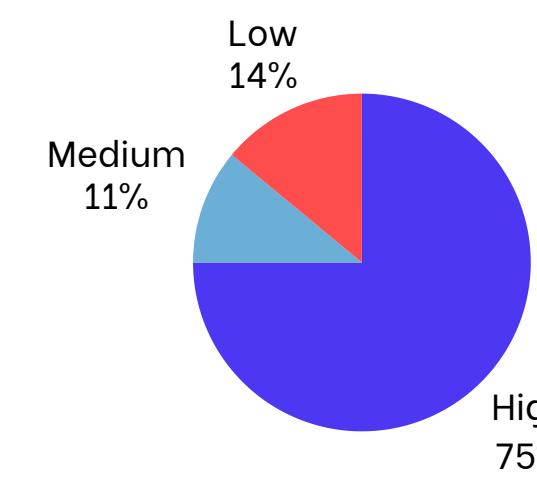
Significant difference in salary between those who stayed and those who left

On Average those who are in the company earn 2x more than those who left

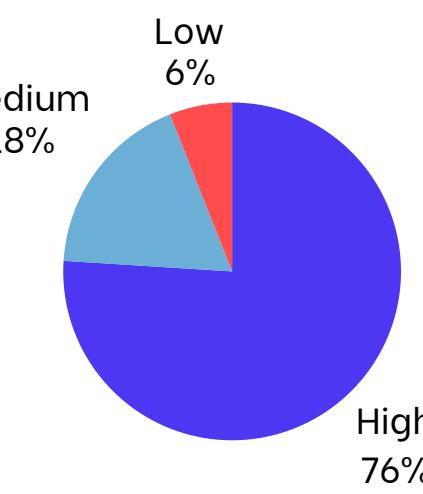
Beyond a certain point, salary stops being a strong motivator for retention



Satisfaction with workplace relationships of those who left

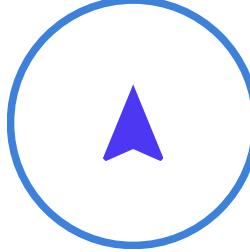


Job Satisfaction of those who left



Manager's ratings on performance of those who left

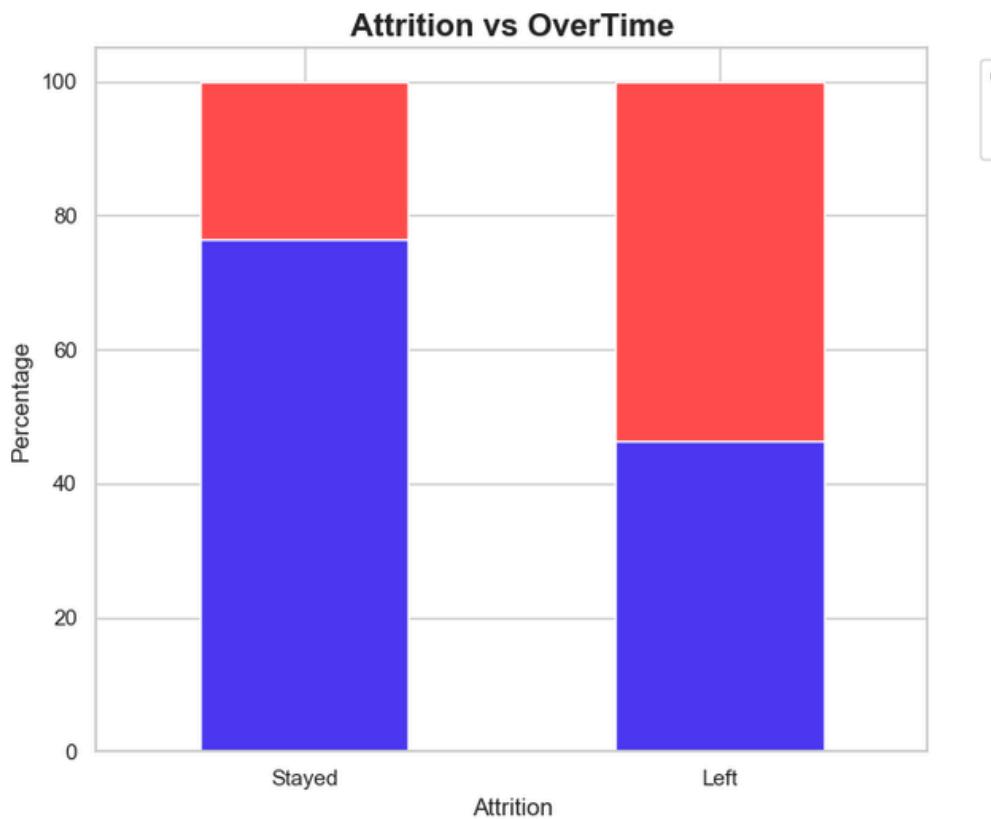


 **High Performers
Are Leaving**
Why?

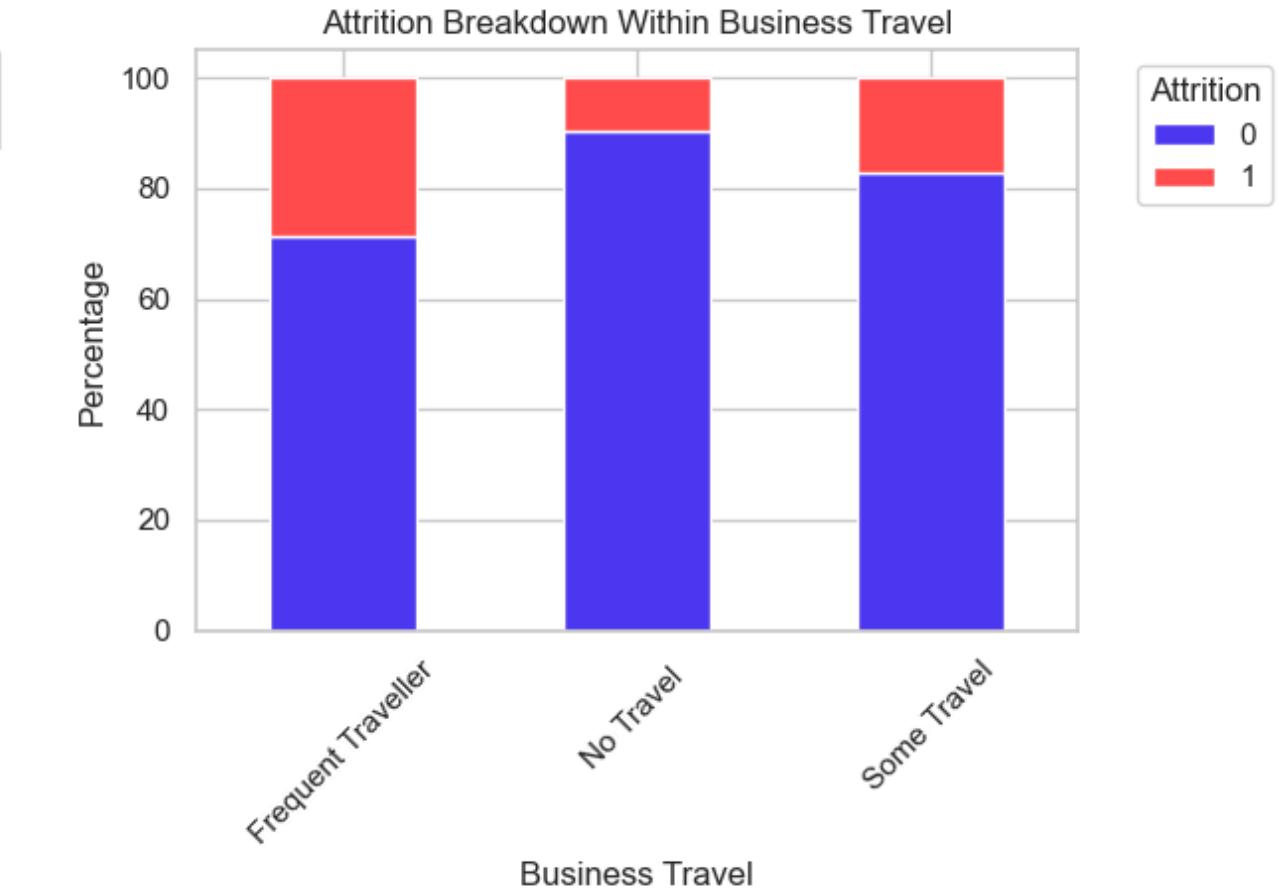
P < 0.05
Chi-Squared Test
for Independence

statistically significant
association between
Overtime , Business
Travel and Attrition

Top performers are leaving despite being satisfied?



**50% of those who Leave
are working overtime**



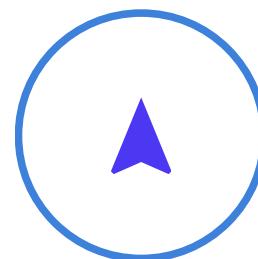
**Attrition is highest amount
frequent business travellers**

“Top performers are more likely to leave when they don’t feel recognized or see a future in the organization”

BM Smarter Workforce Institute



**Even After a Promotion,
Employees May Leave If
They Don't See Future
Growth**

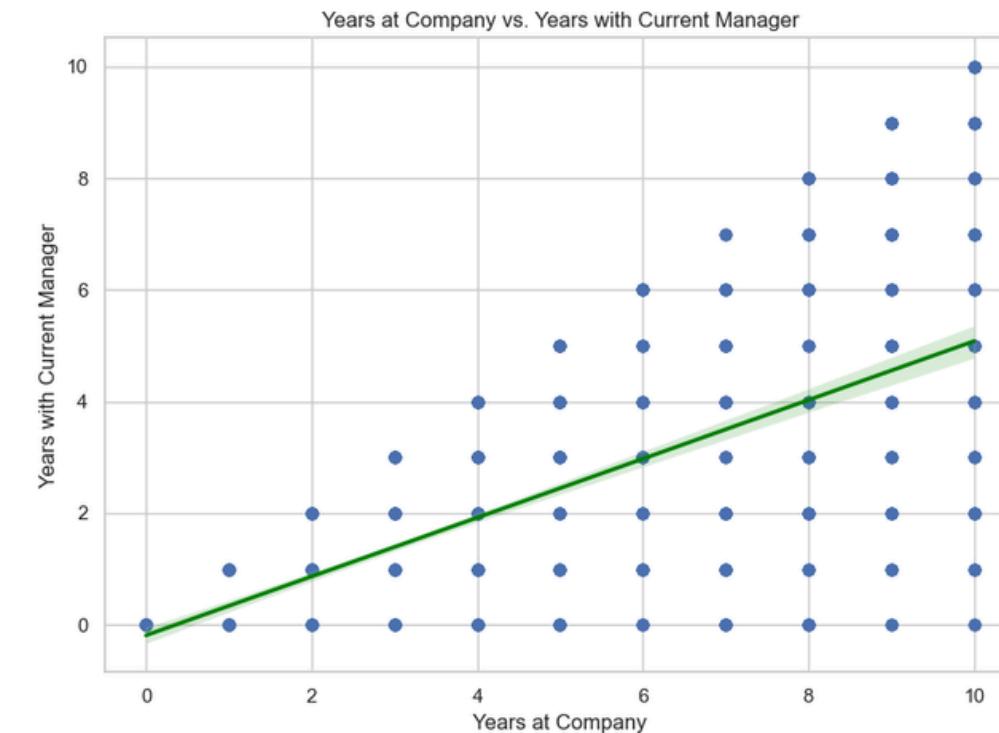
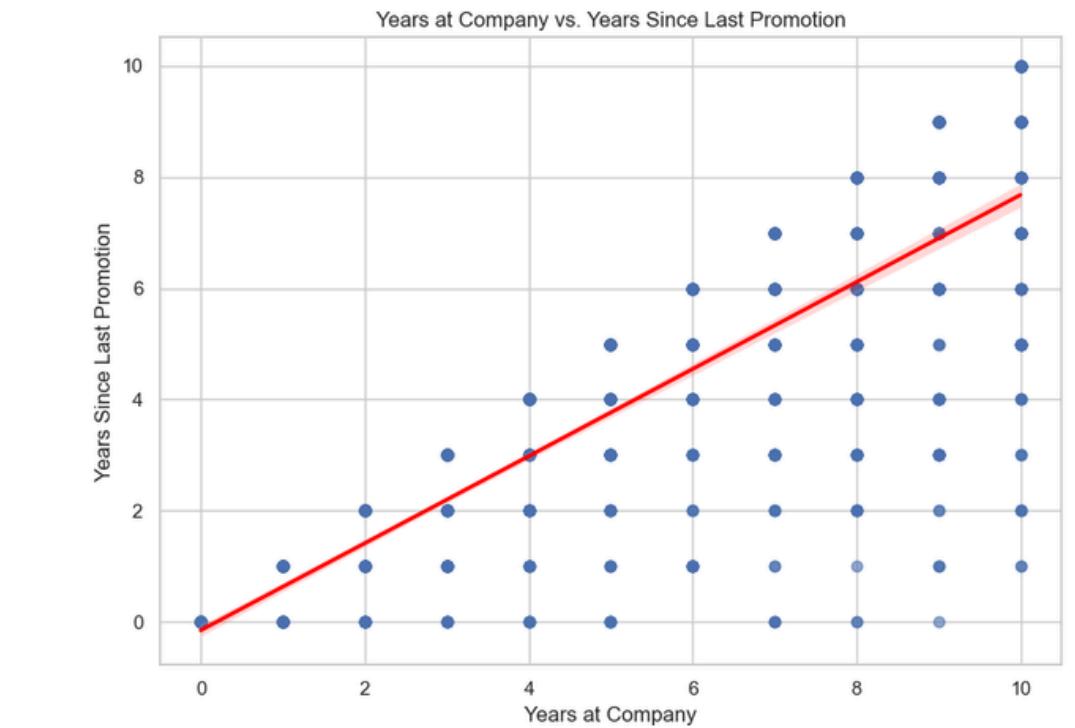
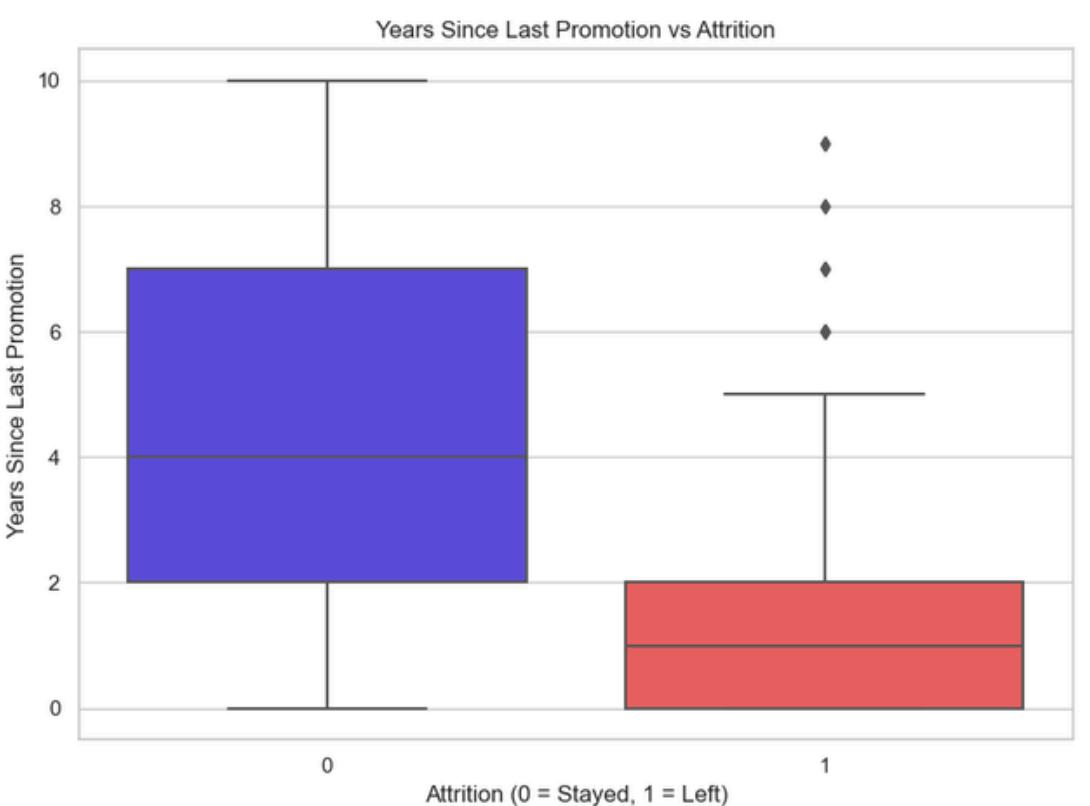


iStock™
Credit: ElenaMist

P = 0.83

Pearson's Correlation
Coefficient

**Employees who have been with
the company for a long time also
tend to have longer gaps since
their last promotion**



P = 0.84

Pearson's Correlation
Coefficient

**Roles don't evolve, managers don't
change, and employees begin to
expect stagnation**

P < 0.05

Mann Whitney U Test

**years since last promotion of those who
had left and those who are staying in the
company are significantly different**

**Employees who left the company tended to
have experienced more recent promotions
compared to those who stayed**

THE PROBLEM AND THE SOLUTION

- Younger, single employees valued career growth over job security, leading many to leave within their first year.
- Salary wasn't the only issue — many had competitive pay, were highly satisfied, and put in extra effort.
- The problem: they saw little long-term growth. Despite promotions, they realized there was no clear path forward, prompting them to leave

01.

The Problem

Long Term Solution

- Build a culture where people can grow, learn, move forward and see a future

Short Term Solution

- Identify employees who are most at risk of leaving, then take steps like **adjusting salary, offering promotions, or easing overtime and travel demands**

How do we know who is at risk — and what will actually work to retain them?

02.

The Solution

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Samudika

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03.

Pasindu

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