

# Segmentation and Attrition Prediction of Employees in Organizations

2-SP02-32-023

This problem situation was written by Julio César Borja Medina (julio.cesar.borja@tec.mx), with the purpose of serving as discussion material in classrooms, it is not intended to illustrate good or bad management practices. The story on this document is based on different people's experiences; some data has been modified at the request of the people and institutions involved.

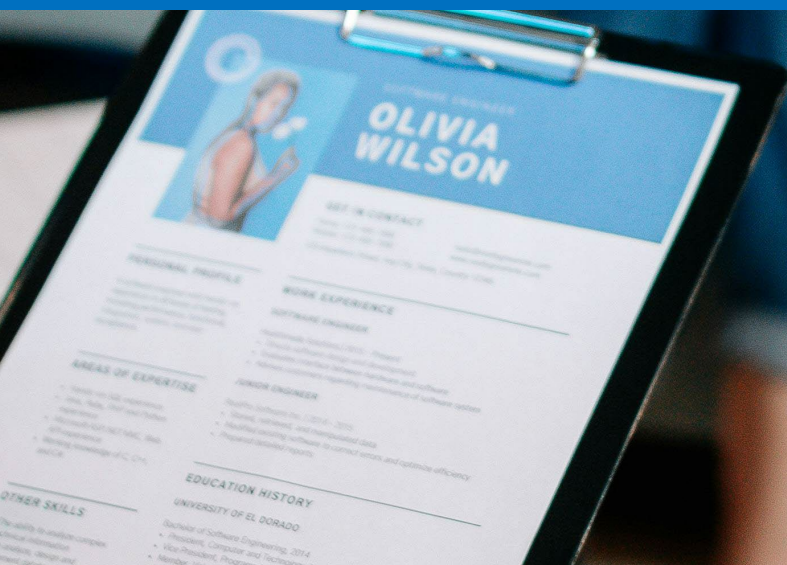
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Publication Date: July 29, 2025.  
Last Review: July 29, 2025.



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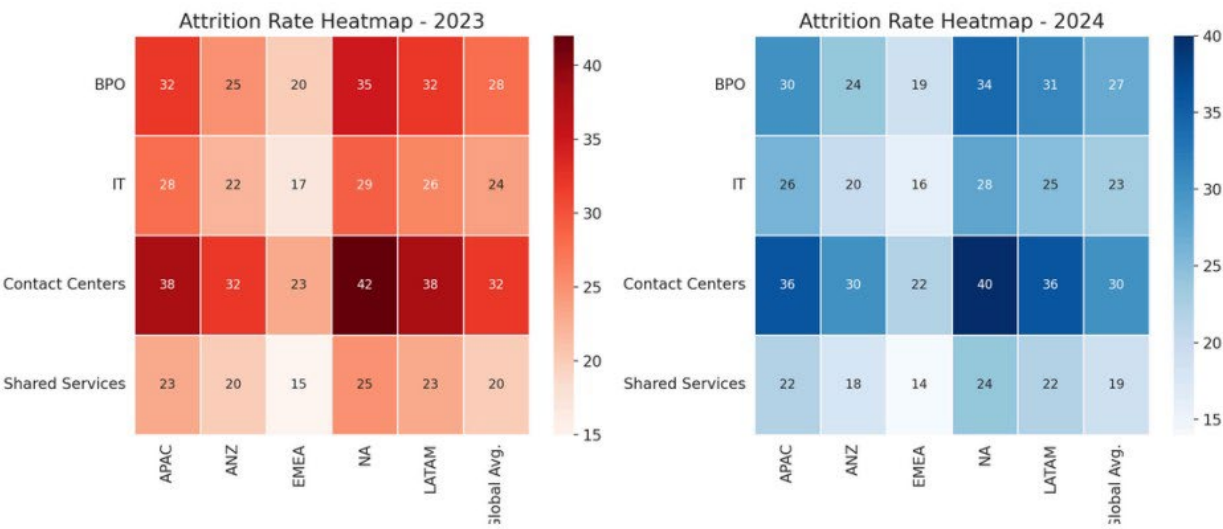
Introduction

In today’s competitive environment, talent retention is key to the growth and sustainability of companies. Employee attrition, meaning employees leaving the company due to resignations, retirements, or other reasons, creates significant challenges for companies in Mexico. Operations, work environment, and competitiveness are affected when skilled personnel are lost.

Research (Harikumar et al., 2022) points out that high attrition is especially harmful because human talent is the core of any organization. People leave for several reasons: better opportunities, career changes, studies, and lack of motivation, among others. Also influential are the lack of trust in supervisors, unfair treatment, lack of development opportunities, discrimination, and boredom, especially among young workers.

A global study by GWFM (2024) shows that this problem needs urgent attention. Their report states that the average attrition rate dipped a little in 2024 compared to 2023, but sectors like Contact Centers still have high rates everywhere. This means attrition is not just a local issue, it happens worldwide, especially in industries that need skilled workers. The figure below shows how this varies by region and service type, pointing out the need for retention plans based on reliable data.

Figure 1. Attrition Rate Heatmap.



Source. GWFM, 2024.

Description

An analyst is part of the team investigating why employees are leaving *SoftAzt*, a software company in Mexico with 4,500 workers. Over the last year, more people have left the company: the turnover rate rose from 10% to 14%, a fact that worries management as important employees like senior developers, software architects, and team leaders are leaving.

The goal of the analysis is to discover the causes behind these departures, especially in key positions, so the company can make better decisions and prevent further losses.

To achieve this, data analysis and predictive models will be applied to identify employees who are at higher risk of leaving. The results must be clear and easy to understand for executives; they want to see charts that effectively represent the problem.

So far, no clear pattern has emerged: some employees with good performance and high salaries have left, while others with lower performance have remained. It is believed that job satisfaction, work-life balance, growth opportunities, and company culture are influencing turnover, but the exact mechanisms remain unclear.

María González, head of Human Resources, has granted access to a database containing 35 types of employee information, such as personal data, salary, performance, satisfaction surveys, and records of employee exits. Due to the size and complexity of the dataset, specialized techniques are required to analyze the information and extract useful conclusions.

The company plans to hire 500 more people in the next year, so understanding the factors behind attrition is critical to avoid repeating the same turnover issues with incoming employees.

**Image.** The company plans to hire 500 more people in the next year.



**Source.** Pexels, 2025.

## Expected Results

As part of the Human Resources department led by María González, a comprehensive analysis will be conducted to predict and prevent employee attrition. This process includes reviewing and cleaning the data, exploring variables to understand patterns, preparing, and transforming data for analysis, creating profiles of different employee segments, and constructing and validating predictive attrition models. The results of this work will support better decision-making in areas such as promotions, project assignments, wellness programs, and compensation. Finally, all findings will be integrated into a clear and concise report with simple visualizations, enabling the board to understand employee profiles, attrition patterns, and actionable opportunities to improve retention strategies.

SEE Database [HERE](#).

### Note on Dataset Origin and Use:

This dataset originates from IBM's original employee attrition and performance dataset, used exclusively for academic and research purposes. IBM is acknowledged as the data owner. Use and distribution are permitted solely for educational activities and non-commercial purposes, respecting the confidentiality and terms of the original dataset.

## References

GWFM. (2024). *Industry Attrition Report: 2024 Trends & 2025 Forecast*. Global Workforce Management. <https://globalwfm.com/wp-content/uploads/2024/07/GWFM-Industry-Report-on-Attrition-Trends-1.pdf>

Harikumar, P., Hari Leela, V., Patil, S., Rashmi, B. H., Jain, V., & Ray, S. (2022). *Attrition in software companies: Reason and measures*. *Materials Today: Proceedings*, 51(1), 528–531. <https://doi.org/10.1016/j.matpr.2021.05.596>