

Analyzing Trends and Contributing Factors in Employee Attrition

Student Name: Vishakanan Sivarajah

Student ID: 23090811

Table of Contents

1. Dataset	3
2. Analyze of Employee Attrition Insights	4

Table of Figures

Figure 1: Numerical Summary Table	3
Figure 2: Statics Table.....	3
Figure 3 :Density Plot [Age Attrition & Number of Dependents Attrition].....	4
Figure 4: Density Plot [Monthly Income Number of Promotions]	5
Figure 5 : Line Plot [Attrition Rate Year at Company: Influence of Job Level & Leadership Opportunities.]	6
Figure 6 : Job Level Analysis Table.....	6
Figure 7: Histogram [Attrition Remote Work & Distance from Home].....	7
Figure 8: Remote work Analysis Table.....	7

1. Dataset

The chosen dataset [Employee Attrition Classification](#) , is a simulated dataset with 74,498 samples intended for attrition analysis and prediction. The dataset includes 22 factors that contribute to attrition and offers valuable insights for identifying the attrition rate of employees in companies. The dataset's numerical characteristics are highlighted in Figure 1, with the other features being categorical.

Feature	Stayed (Avg)	Left (Avg)	Difference
Age	39.05	37.64	-1.42
Years at Company	16.3	14.8	-1.5
Monthly Income	7303.56	7269.12	-34.45
Number of Promotions	0.91	0.75	-0.17
Distance from Home	47.57	52.57	5.0
Company Tenure	56.17	54.97	-1.2
Number of Dependents	1.75	1.56	-0.18

Figure 1: Numerical variables Summary Table

	Age	Years at Company	Monthly Income	Number of Promotions	Distance from Home	Company Tenure
count	14900.0	14900.0	14900.0	14900.0	14900.0	14900.0
mean	38.39	15.59	7287.31	0.83	49.93	55.6
std	12.1	11.13	2156.74	1.0	28.7	25.35
min	18.0	1.0	1226.0	0.0	1.0	2.0
25%	28.0	7.0	5633.75	0.0	25.0	36.0
50%	38.0	13.0	7332.0	1.0	50.0	56.0
75%	49.0	23.0	8852.0	2.0	75.0	75.0
max	59.0	51.0	15063.0	4.0	99.0	127.0

Figure 2:Numerical Variables Statics Table.

2. Analyze of Employee Attrition Insights

In today's competitive business environment, employee attrition is a significant issue that impacts the stability and growth of companies. Numerous factors impact employee attrition, giving HR practitioners important information to tackle company issues.

There are notable age related tendencies in the density plot that compares age and the number of dependents with attrition. The average attrition density for employees between the ages of 18 and 32 is 0.025, which indicates that attrition rates are greater in this younger age group as they look for career possibilities. Employees between the ages of 35 and 60, had lower attrition densities, which suggests greater stability and dedication to their positions. Dependents are also important; employees who have more than three dependents are more likely to remain with the organization. Employees with no dependents had the highest attrition density (0.5), highlighting the significance of personal obligations when making long-term job decisions.

Density Plots Comparing Age vs Attrition & Number of Dependents vs Attrition

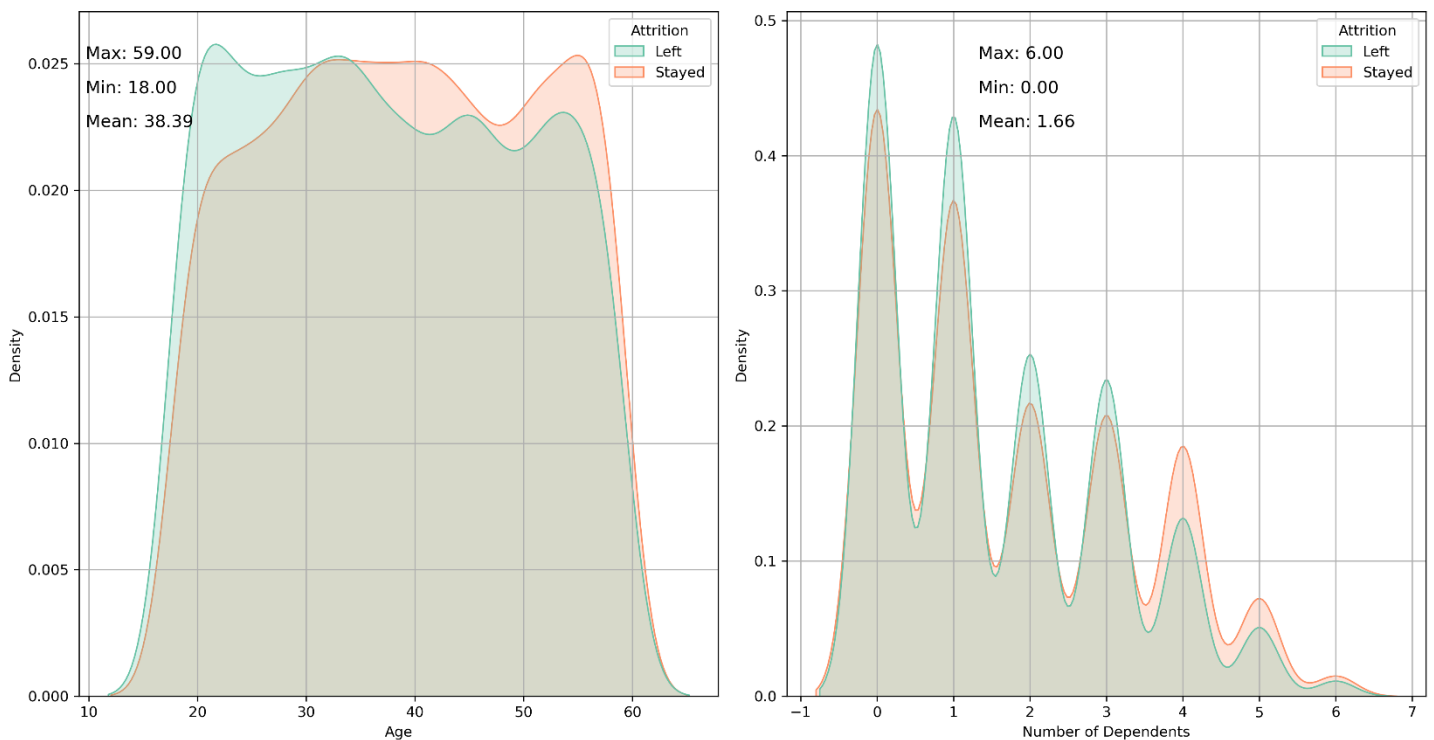


Figure 3 :Density Plot [Age | Attrition & Number of Dependents | Attrition]

Further supporting this is the fact that employees with no promotions have a greater attrition density, as seen by the monthly income density plot against the number of promotions. This research emphasizes how professional advancement is in influencing employees' decisions to stay or quit. Remarkably, workers who receive three or four promotions are more likely to remain with the organization. The remaining and departing groups' monthly incomes, which range from 6000 to 90000, are the same, indicating that promotions are more important than income alone in lowering attrition rates.

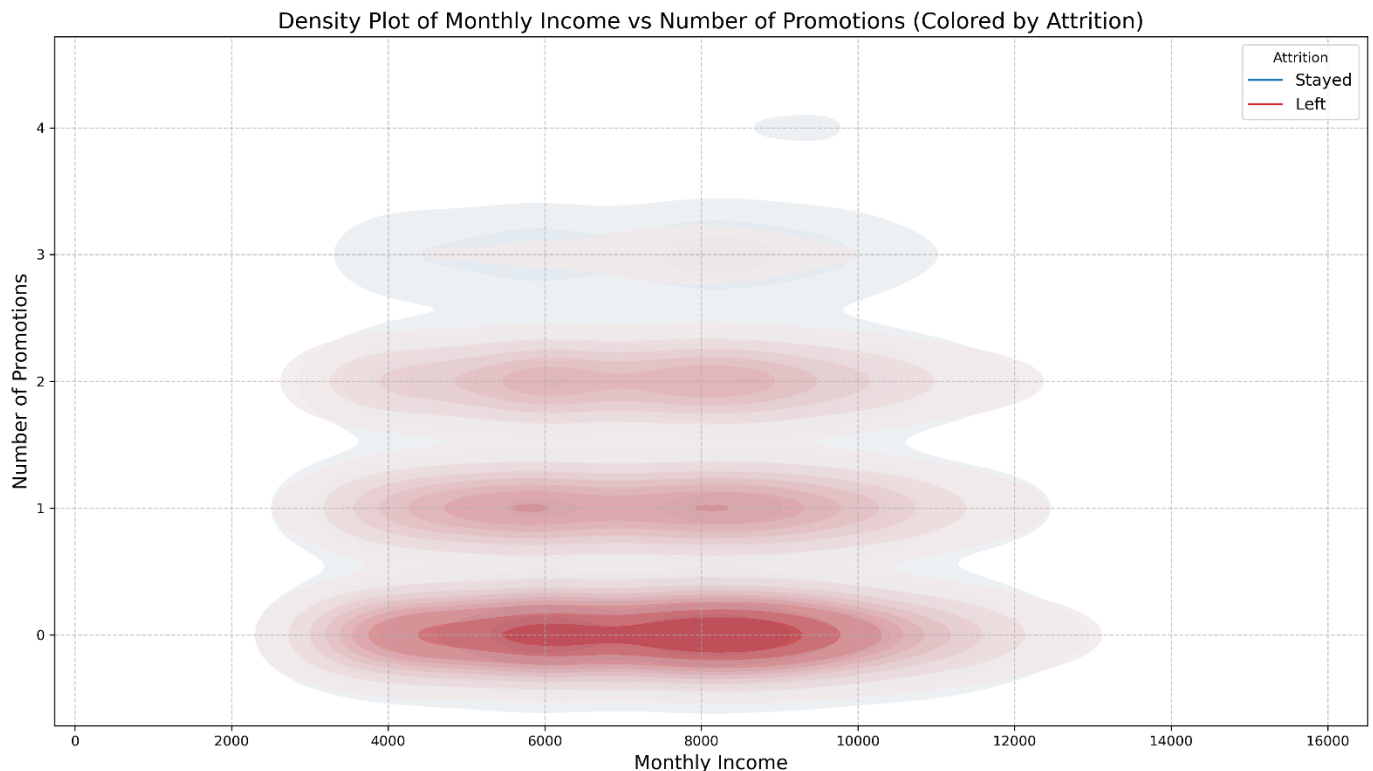


Figure 4: Density Plot [Monthly Income | Number of Promotions]

Extending this study, the attrition rate by job level and company years is plotted as a line graph, which provides insight into the ways in which job responsibilities and tenure affect attrition. After 50 years, entry-level workers exhibit substantial attrition rates, whereas mid- and senior-level workers show lower attrition, and senior-level workers show no attrition at all. It is noteworthy that attrition peaks in the first 10 years, especially in year seven, when workers seek out other possibilities and gain experience. According to this pattern, recruiting senior-level staff might not end up being a cost-effective move in the long run, even when entry-level workers make a substantial contribution in the early going.

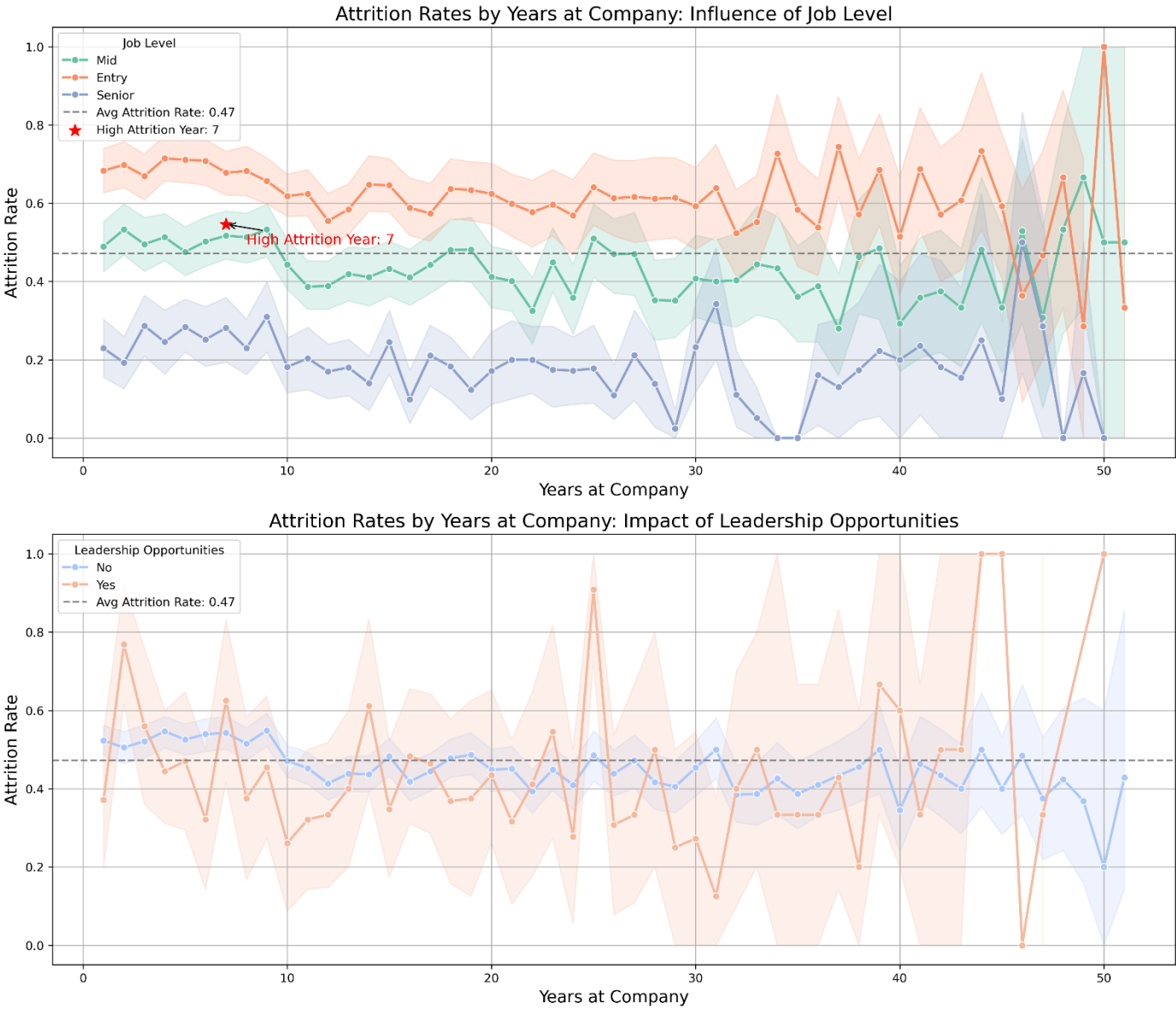


Figure 5 : Line Plot [Attrition Rate | Year at Company: Influence of Job Level & Leadership Opportunities.]

Category	Stayed (%)	Left (%)	Difference (%)
Mid	41.55	37.77	-3.78
Senior	31.1	8.75	-22.35
Entry	27.35	53.48	26.13

Figure 6 : Job Level Analysis Table.

Furthermore, the attrition rate by leadership opportunities and years at the organization shows that employees with leadership chances depart at greater rates, especially during the first ten years, when attrition rates approach 0.8. The fact that those without leadership positions typically remain longer suggests that attrition may be influenced by stress or elevated expectations brought on by leadership positions. With an overall attrition rate of 0.47 over a 50-year period, even individuals in leadership positions show modest attrition rates, indicating over 50% attrition, A significant burden for HR departments.

Finally, employees who go more than fifty miles to work exhibit steadily rising attrition rates, according to attrition by remote work and distance from home. While, remote employees exhibit long-term stability, as seen by their consistently high numbers. This research emphasizes how important is to provide remote or hybrid work options to workers who have long miles to travel or to reevaluate hiring procedures to reduce attrition.

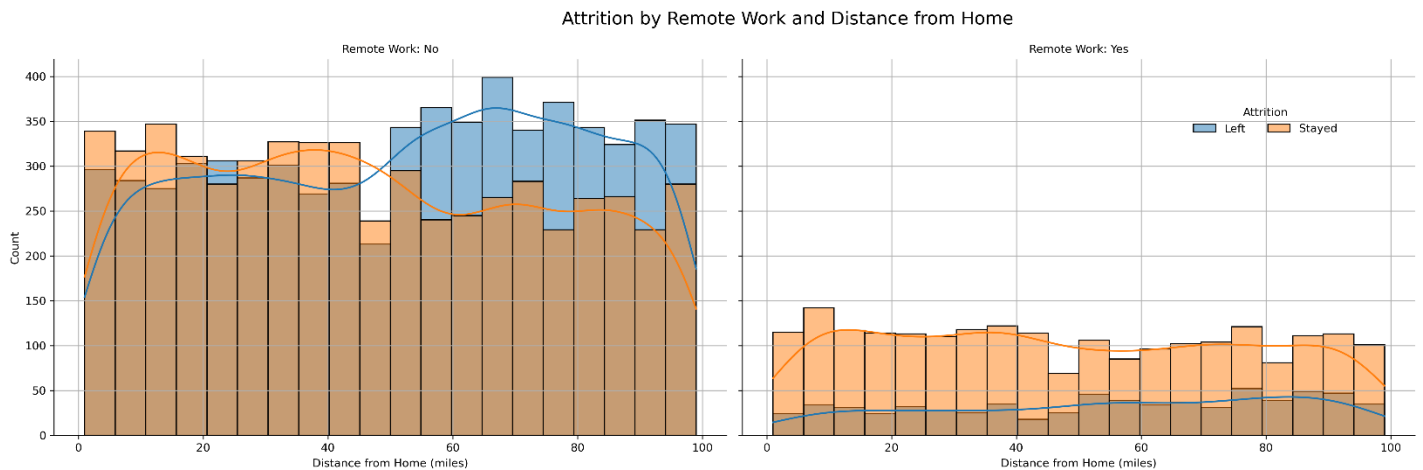


Figure 7: Histogram [Attrition | Remote Work & Distance from Home]

Category	Stayed (%)	Left (%)	Difference (%)
No	72.62	90.26	17.64
Yes	27.38	9.74	-17.64

Figure 8: Remote work Analysis Table

In summary, HR analytics show that attrition may be considerably decreased by addressing leadership support, employment longevity, career promotion, and flexible work modes. HR teams can create data-driven plans to increase retention, promote employee satisfaction, and create a resilient workforce that propels long-term corporate success by utilizing these insights.