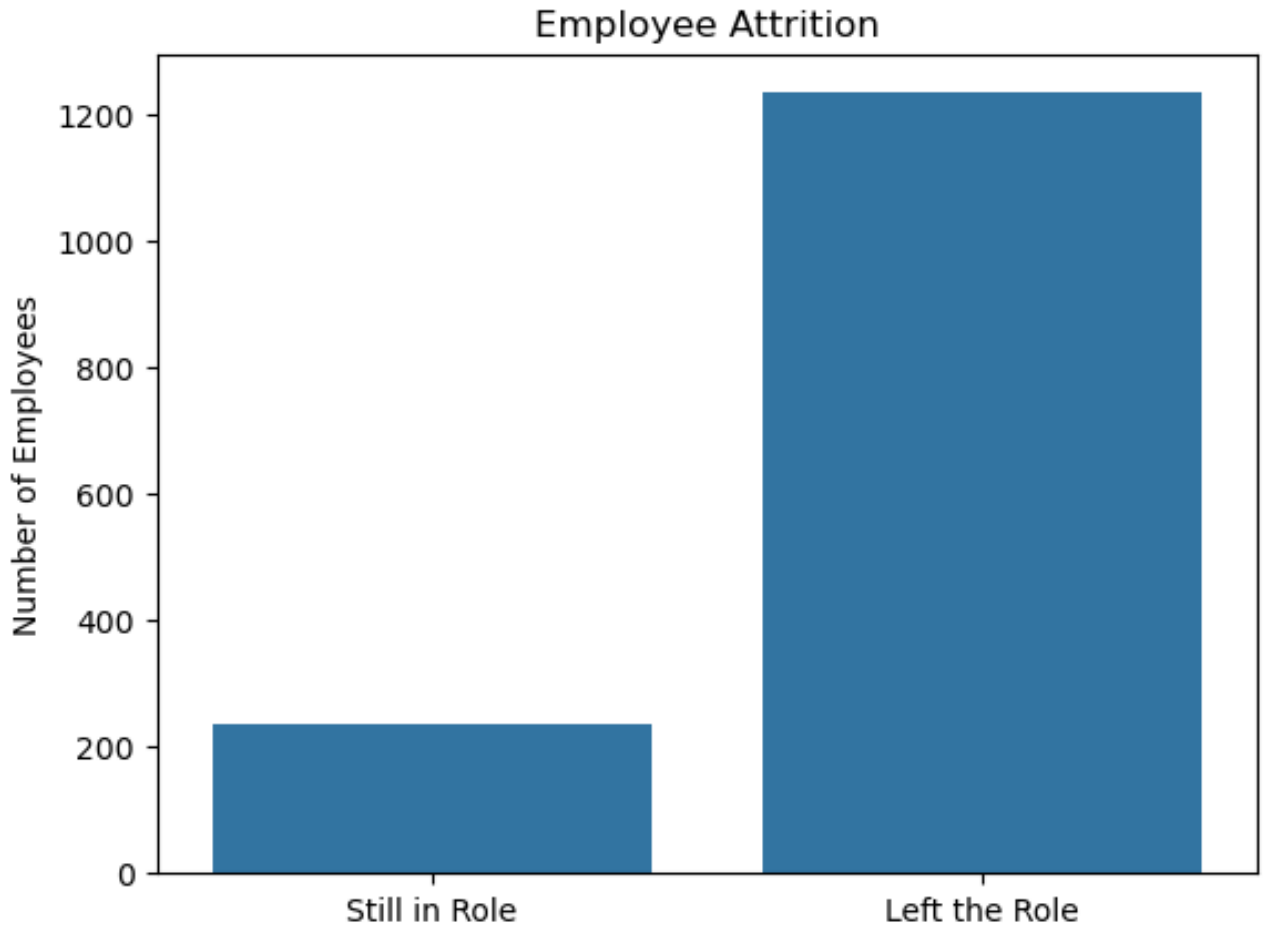
HR Analytics Report on Employee Attrition and Performance

Executive Summary:

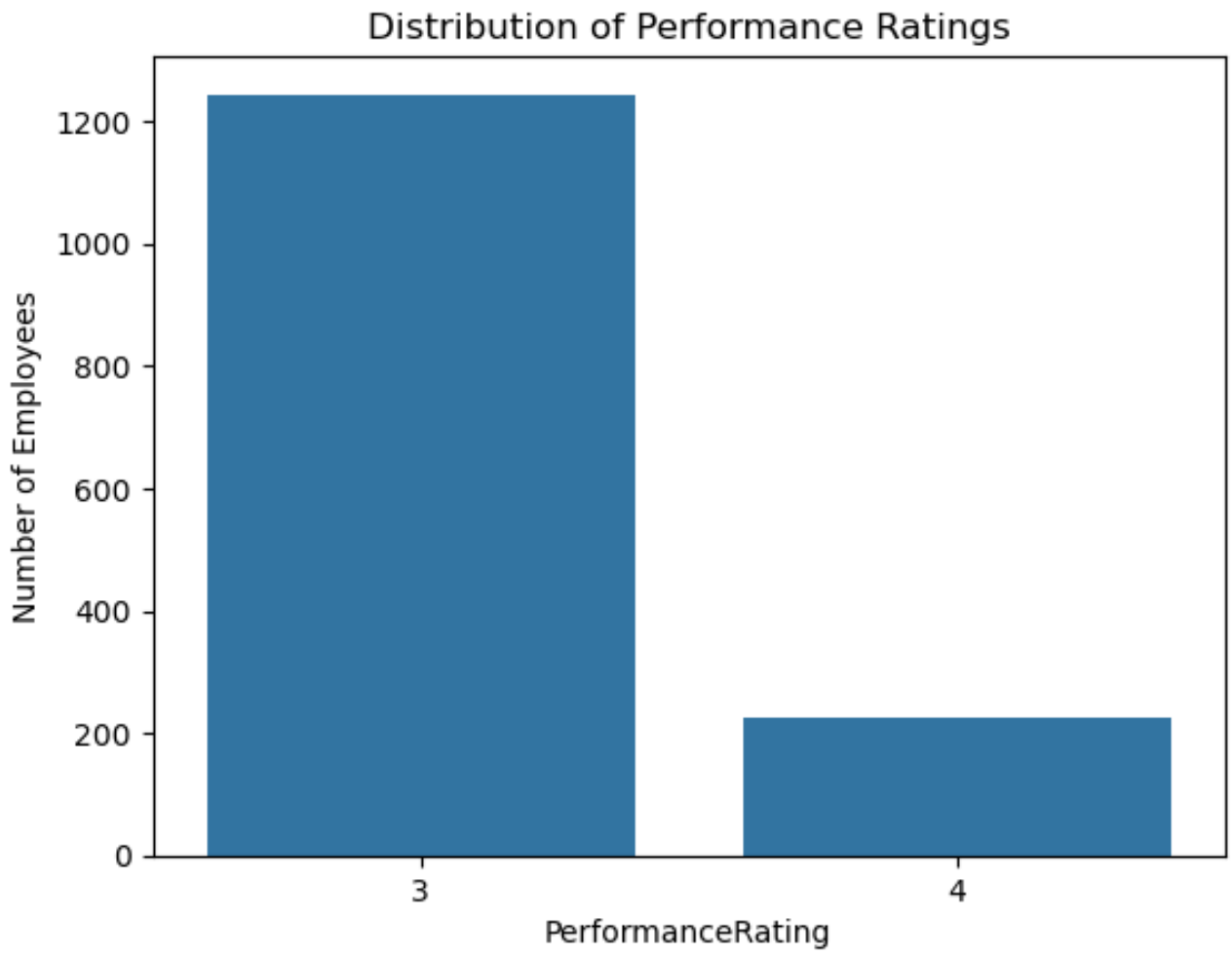
In this report, we present a comprehensive analysis of employee attrition within our organisation, using data on employee performance ratings, attrition patterns, and predictive modelling results to forecast future employee departures. The insights gained from this analysis are intended to support HR decision-making, focusing on understanding attrition trends and implementing strategies to enhance retention.

1. Attrition Rate Overview:



The current **Attrition Rate** within the organisation stands at **16.12%**. This percentage represents the proportion of employees who have left the company over a given time period, providing insight into overall turnover levels. According to **Monster**, the average **UK attrition rate** (or staff turnover rate) is approximately **15%**. However, this figure can vary significantly depending on factors such as industry, company size, and even regional differences. In comparison, our organisation's attrition rate of **16.12%** is slightly above the national average, which may suggest an area of focus for HR in reducing turnover.

Attrition Rate by Performance Rating:



Further breakdown of attrition rates by **Performance Rating** reveals the following patterns:

- **Performance Rating 3**: Attrition Rate of **16.08%**
- **Performance Rating 4**: Attrition Rate of **16.37%**

These figures show that the attrition rate is fairly consistent across different performance levels, with a small increase in attrition for employees with a higher performance rating of **4**. This insight indicates that factors other than performance, such as job satisfaction, company culture, and employee engagement, might be contributing to the overall attrition rates.

2. Predictive Modelling of Employee Attrition:

In an effort to better predict which employees are most at risk of leaving, we developed a **Predictive Attrition Model** using logistic regression. This model was built to forecast employee turnover based on key attributes such as age, job role, distance from home, and more. The model's results provide valuable insights into how effectively we can predict employee departures, as well as areas for improvement.

Confusion Matrix:

The **Confusion Matrix** for the model's predictions is as follows:

- **250 employees** were correctly predicted to stay (True Negatives).
- **5 employees** were incorrectly predicted to stay, when they actually left (False Positives).
- **15 employees** who actually left were incorrectly predicted to stay (False Negatives).
- **24 employees** who actually left were correctly predicted to leave (True Positives).

While the model is successful at predicting employees who will stay, it struggles to predict those who will leave, as seen in the **15 false negatives**. These missed predictions represent employees at risk of leaving that the model did not flag.

Model Performance:

The **classification report** provides a detailed assessment of the model's performance:

Metric	Precision	Recall	F1-Score	Support
Class 0 (Staying)	0.94	0.98	0.96	255
Class 1 (Leaving)	0.83	0.62	0.71	39
Overall Accuracy			0.93	294
Macro Average	0.89	0.80	0.83	294
Weighted Average	0.93	0.93	0.93	294

- **Precision (Class 0, Staying)**: **94%** – Out of all the employees predicted to stay, 94% of the predictions were correct.
- **Recall (Class 0, Staying)**: **98%** – 98% of employees who actually stayed were correctly identified by the model.
- **Precision (Class 1, Leaving)**: **83%** – Of the employees predicted to leave, 83% were correctly predicted.
- **Recall (Class 1, Leaving)**: **62%** – 62% of employees who actually left were correctly identified by the model. This relatively low recall suggests that the model is missing a significant portion of employees who are likely to leave.

Model Performance Summary:

- **Accuracy**: The model has an overall **accuracy** of **93%**, meaning it correctly predicted whether employees would stay or leave 93% of the time.
- **Macro Average**: The macro-average precision, recall, and F1-score (0.89, 0.80, and 0.83, respectively) indicate that, on average, the model is doing reasonably well, though there's room for improvement, particularly in predicting attrition (Class 1).
- **Weighted Average**: The weighted average metrics (0.93 for precision, recall, and F1-score) indicate that the model performs well when accounting for the class imbalance, where employees staying outnumber those leaving.

3. Key Insights and Recommendations:

1. **Attrition Trends and Employee Performance:** The relatively **similar attrition rates** across different performance levels (3 and 4) suggest that **performance alone** does not

appear to be a significant predictor of employee turnover. This highlights the importance of exploring **other factors** such as work culture, management quality, career development opportunities, and job satisfaction as key contributors to employee decisions to leave. HR should further investigate these areas to understand what is driving turnover.

2. **Improving the Predictive Model for Attrition:** Although the model achieves **93% accuracy**, the relatively **low recall for Class 1 (Employees Leaving)** indicates that it misses a significant portion of employees who actually leave (38% of employees who left were not predicted). This could be improved by the following additional analysis:

    - **Adjusting the Classification Threshold**: We can tweak the decision threshold to increase recall, ensuring more employees at risk of leaving are identified.
    - **Applying Class Weights**: By giving higher weight to the minority class (employees leaving), the model may become more sensitive to identifying employees who are likely to leave.
    - **Feature Engineering**: Including additional features such as employee engagement scores, feedback from surveys, or compensation data could improve model accuracy.

3. **Retention Strategies:** The analysis indicates that **performance ratings** do not significantly impact the likelihood of attrition. Therefore, HR should consider other interventions, such as:

    - **Employee Engagement**: Focus on improving employee engagement through more meaningful feedback, recognition, and opportunities for growth.
    - **Career Development**: Offer clear career progression and professional development programs to keep employees satisfied and reduce their intent to leave.
    - **Work-life Balance**: Prioritise work-life balance initiatives, which could be a key factor influencing employee retention, especially for high-performing individuals who may feel burnout if expectations are too high.

4. **Actionable Steps Based on Model Output:**

    - Leverage the model to **identify high-risk employees** and develop targeted retention strategies, such as personalised development plans, mentoring, or compensation adjustments.
    - Continuously monitor employee **engagement levels** and satisfaction scores to detect early signs of disengagement, especially for employees predicted to stay but potentially at risk.
    - Explore **exit interview data** for common themes, especially for employees with lower performance ratings, to see if there are external factors contributing to their decision to leave.

Conclusion:

This analysis provides both a **snapshot** of current employee attrition and a **predictive model** for identifying potential future departures. While the organisation's attrition rate of **16.12%** is slightly above the UK average of **15%**, the model provides an opportunity to intervene and reduce turnover. Focusing on improving the recall of employees who are likely to leave, as well as addressing factors such as employee engagement, work-life balance, and career development, will be key to reducing attrition and enhancing overall retention in the future.

By leveraging these insights, HR can take a more proactive approach to reduce turnover, improve employee satisfaction, and foster a more engaged and committed workforce.