Power BI - HR Analysis

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POWER BI HR-ANALYSIS

Introduction

In today's competitive business environment, effective Human Resource (HR) management is crucial for organizational success. Analyzing HR data can provide valuable insights into workforce dynamics, employee performance, and overall organizational health.High turnover rates can lead to increased costs associated with recruitment and training, loss of institutional knowledge, and decreased morale among remaining employees. This project aims to leverage Power BI, a powerful data visualization tool, to analyze HR data related to employee attrition and uncover the key factors contributing to employees leaving the company.

Objectives

The primary objective of this project is to transform raw HR data into meaningful insights through interactive and visually appealing dashboards.By doing so, we aim to identify key factors contributing to employee turnover and provide actionable insights to help the organization improve retention strategies.Key areas of analysis will include demographic factors, job roles, tenure, performance ratings, and other relevant metrics.

Tools and Methodology

Tools

· **Power BI**: A robust data visualization tool from Microsoft that will be used to create interactive dashboards and reports.

· **HR Datasets**: Contains information about employee demographics, job roles, tenure, performance ratings, and attrition details.

Methodology

· **Data Collection and Preparation**:

- Gather and compile HR data from internal sources.
- Clean the dataset to ensure accuracy and handle any missing or inconsistent data.

· **Data Modeling**:

- Structure the data to facilitate efficient analysis. This may involve creating relationships between different data tables and ensuring the data is in a usable format.

· **Visualization Design**:

- Develop interactive dashboards in Power BI to represent key metrics such as attrition rate, demographic breakdown, tenure, performance ratings, and identified reasons for leaving.

· **Analysis and Interpretation**:

- Analyze the visualized data to identify patterns and trends.
- Highlight key factors that correlate with higher attrition rates.

· **Reporting and Recommendations**:

- Summarize findings in comprehensive reports.
- Provide actionable recommendations based on the insights derived from the analysis.

Data Overview

The dataset consists of 1480 entries with 38 columns, including:

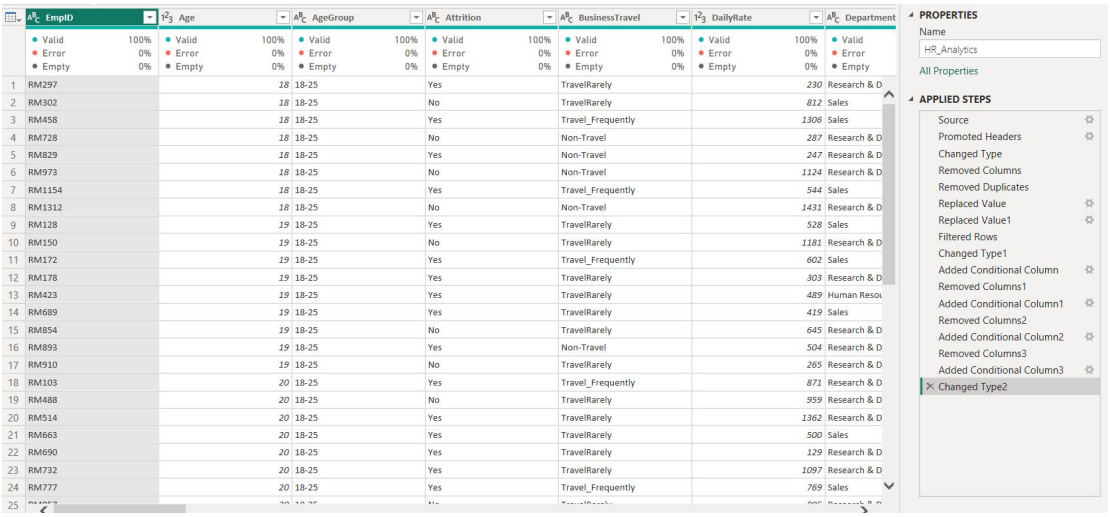
- **Employee Information**: EmpID, Age, Gender, Department, JobRole, etc.
- **Job Details**: JobLevel, JobSatisfaction, PerformanceRating, etc.
- **Compensation**: MonthlyIncome, SalarySlab, etc.
- **Attrition Information**: Attrition status (Yes/No).
- **Work-life Balance**: WorkLifeBalance, OverTime, etc.

Significance

Understanding why employees leave the company is crucial for several reasons:

- **Improved Retention**: Identifying the primary reasons for attrition enables HR to implement targeted interventions to retain valuable employees.
- **Cost Savings**: Reducing turnover rates can lead to significant cost savings related to hiring and training new employees.
- **Enhanced Employee Engagement**: Addressing the factors leading to attrition can improve overall employee satisfaction and engagement.
- **Strategic Workforce Planning**: Insights from attrition analysis can inform strategic decisions around workforce planning and development.

Find and correct errors

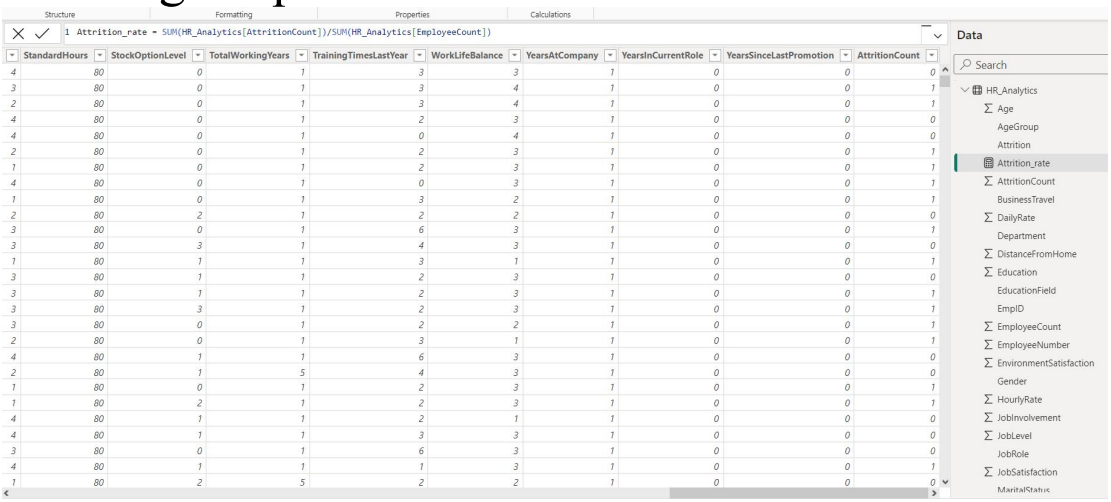


	EmpID	Age	AgeGroup	Attrition	BusinessTravel	DailyRate	Department
	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid Error
1	RM297	18	18-25	Yes	TravelRarely	230	Research & D
2	RM302	18	18-25	No	TravelRarely	812	Sales
3	RM458	18	18-25	Yes	Travel_Frequently	1306	Sales
4	RM728	18	18-25	No	Non-Travel	287	Research & D
5	RM829	18	18-25	Yes	Non-Travel	247	Research & D
6	RM973	18	18-25	No	Non-Travel	1124	Research & D
7	RM1154	18	18-25	Yes	Travel_Frequently	544	Sales
8	RM1312	18	18-25	No	Non-Travel	1431	Research & D
9	RM128	19	18-25	Yes	TravelRarely	528	Sales
10	RM150	19	18-25	No	TravelRarely	1181	Research & D
11	RM172	19	18-25	Yes	Travel_Frequently	602	Sales
12	RM178	19	18-25	Yes	TravelRarely	303	Research & D
13	RM423	19	18-25	Yes	TravelRarely	489	Human Resou
14	RM689	19	18-25	Yes	TravelRarely	419	Sales
15	RM854	19	18-25	No	TravelRarely	645	Research & D
16	RM893	19	18-25	Yes	Non-Travel	504	Research & D
17	RM910	19	18-25	No	TravelRarely	265	Research & D
18	RM103	20	18-25	Yes	Travel_Frequently	871	Research & D
19	RM488	20	18-25	No	TravelRarely	959	Research & D
20	RM514	20	18-25	Yes	TravelRarely	1362	Research & D
21	RM663	20	18-25	Yes	TravelRarely	500	Sales
22	RM690	20	18-25	Yes	TravelRarely	129	Research & D
23	RM732	20	18-25	Yes	TravelRarely	1097	Research & D
24	RM777	20	18-25	Yes	Travel_Frequently	769	Sales

PROPERTIES
Name
HR_Analytics
All Properties

APPLIED STEPS
Source
Promoted Headers
Changed Type
Removed Columns
Removed Duplicates
Replaced Value
Replaced Value1
Filtered Rows
Changed Type1
Added Conditional Column
Removed Columns1
Added Conditional Column1
Removed Columns2
Added Conditional Column2
Removed Columns3
Added Conditional Column3
Changed Type2

Creating Required Measures



Structure Formatting Properties Calculations

```
1 Attrition_rate = SUM(HR_Analytics[AttritionCount])/SUM(HR_Analytics[EmployeeCount])
```

	StandardHours	StockOptionLevel	TotalWorkingYears	TrainingTimesLastYear	WorkLifeBalance	YearsAtCompany	YearsInCurrentRole	YearsSinceLastPromotion	AttritionCount
4	80	0	1	3	3	1	0	0	0
3	80	0	1	3	4	1	0	0	1
2	80	0	1	3	4	1	0	0	1
4	80	0	1	2	3	1	0	0	0
4	80	0	1	0	4	1	0	0	0
2	80	0	1	2	3	1	0	0	1
1	80	0	1	2	3	1	0	0	1
4	80	0	1	0	3	1	0	0	1
1	80	0	1	3	2	1	0	0	1
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3	80	0	1	6	3	1	0	0	1
3	80	3	1	4	3	1	0	0	0
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3	80	1	1	2	3	1	0	0	0
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3	80	3	1	2	3	1	0	0	1
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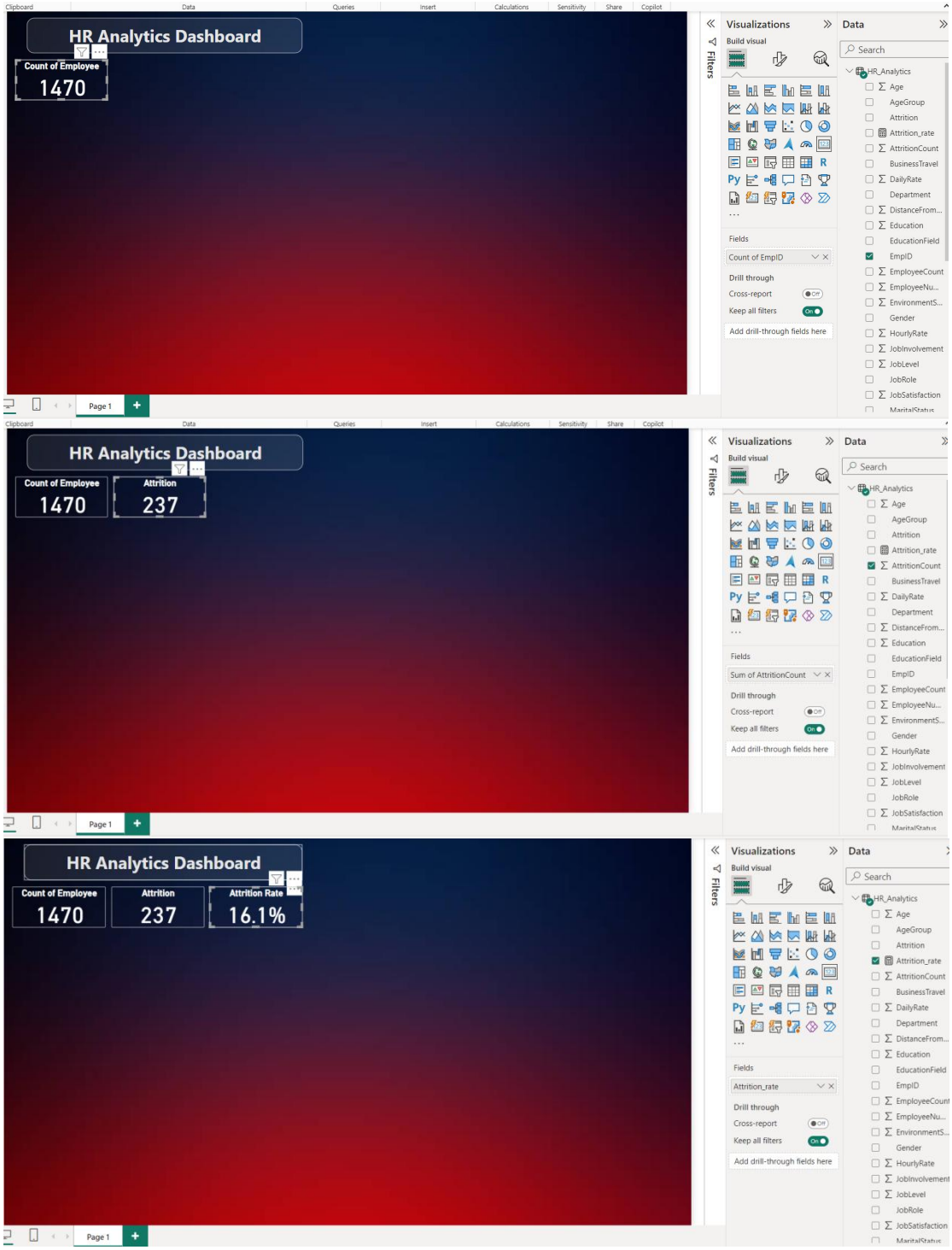
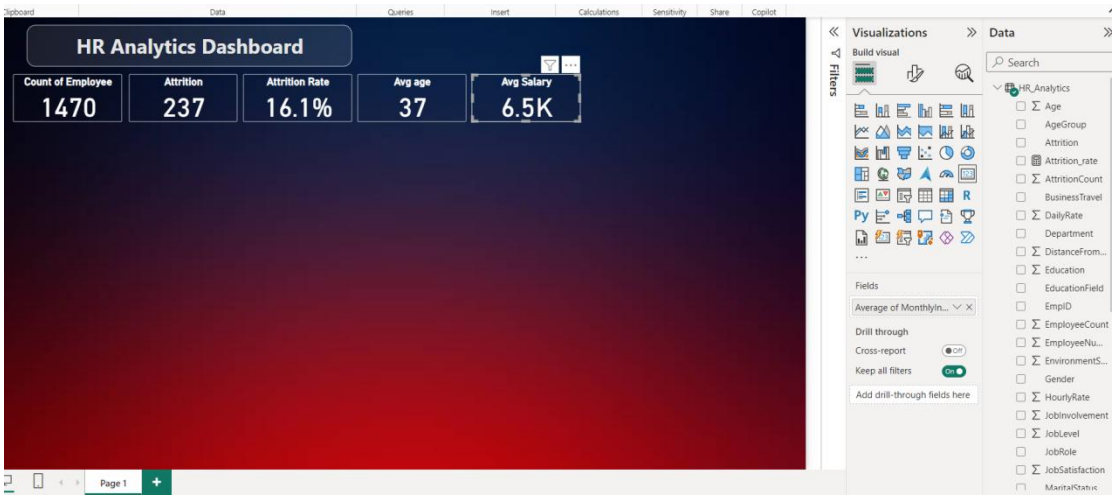
2	80	0	1	3	1	1	0	0	1
4	80	1	1	6	3	1	0	0	0
2	80	1	5	4	3	1	0	0	0
1	80	0	1	2	3	1	0	0	1
1	80	2	1	2	3	1	0	0	1
4	80	1	1	2	1	1	0	0	0
4	80	1	1	3	3	1	0	0	0
3	80	0	1	6	3	1	0	0	0
4	80	1	1	1	3	1	0	0	1
1	80	2	5	2	2	1	0	0	0

Data
Search
HR_Analytics
Age
AgeGroup
Attrition
Attrition_rate
AttritionCount
BusinessTravel
DailyRate
Department
DistanceFromHome
Education
EducationField
EmpID
EmployeeCount
EmployeeNumber
EnvironmentSatisfaction
Gender
HourlyRate
JobInvolvement
JobLevel
JobRole
JobSatisfaction
MaritalStatus

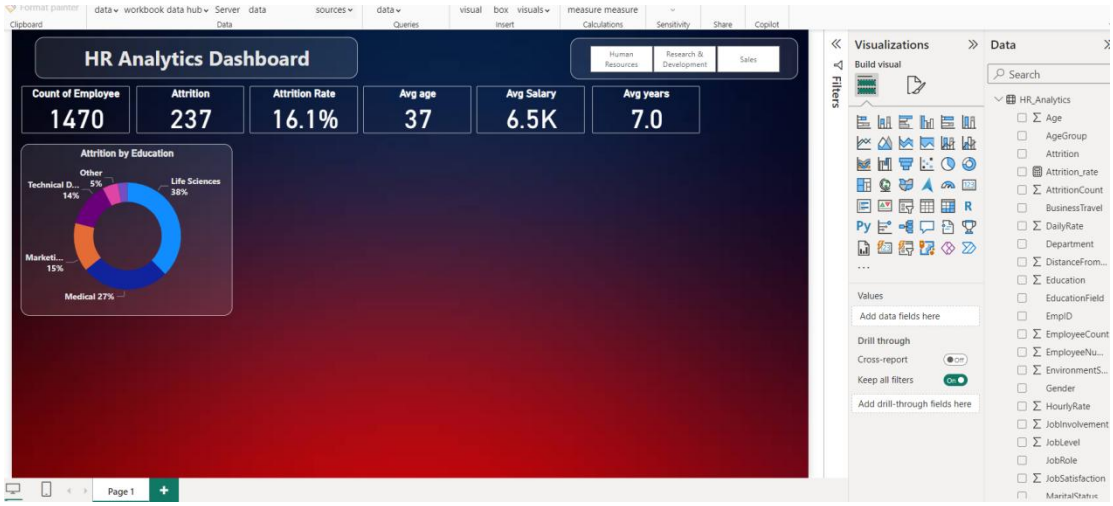
Creating the Dashboard:

1. Creating Relevant Cards:





2.Created a donut chart for attrition by education:



Attrition by Education

- **Life Sciences**: 38%
- **Medical**: 27%
- **Technical Degree**: 15%
- **Marketing**: 14%
- **Other**: 5%

This indicates that employees with life sciences and medical backgrounds have higher attrition rates. Targeted retention strategies may be needed for these groups.

3. Created a stacked column chart for attrition by age:

Attrition by Age

- **26-35 years**: 116 employees
- **18-25 years**: 44 employees
- **36-45 years**: 43 employees
- **46-55 years**: 26 employees
- **55+ years**: 8 employees

The highest attrition is in the 26-35 age group, which suggests younger employees are more likely to leave the company. This could be due to career advancement opportunities, job satisfaction, or other factors.

4.Created a matrix of Job roles and Job satisfaction:

Attrition by Job Role

- **Laboratory Technician**: 62 employees
- **Sales Executive**: 57 employees
- **Research Scientist**: 47 employees
- **Sales Representative**: 33 employees
- **Human Resources**: 12 employees
- **Manager**: 5 employees
- **Manufacturing Director**: 10 employees

Laboratory Technicians and Sales Executives have the highest attrition rates. These roles may require further investigation to understand the root causes of dissatisfaction.

5.Created a stacked bar chart of attrition by salary:

Attrition by Salary

- **Up to $5K**: 163 employees
- **$5K-$10K**: 49 employees
- **$10K-$15K**: 20 employees
- **$15K+**: 5 employees

The majority of attrition is among employees earning up to $5K. This suggests that salary could be a significant factor in employee turnover.

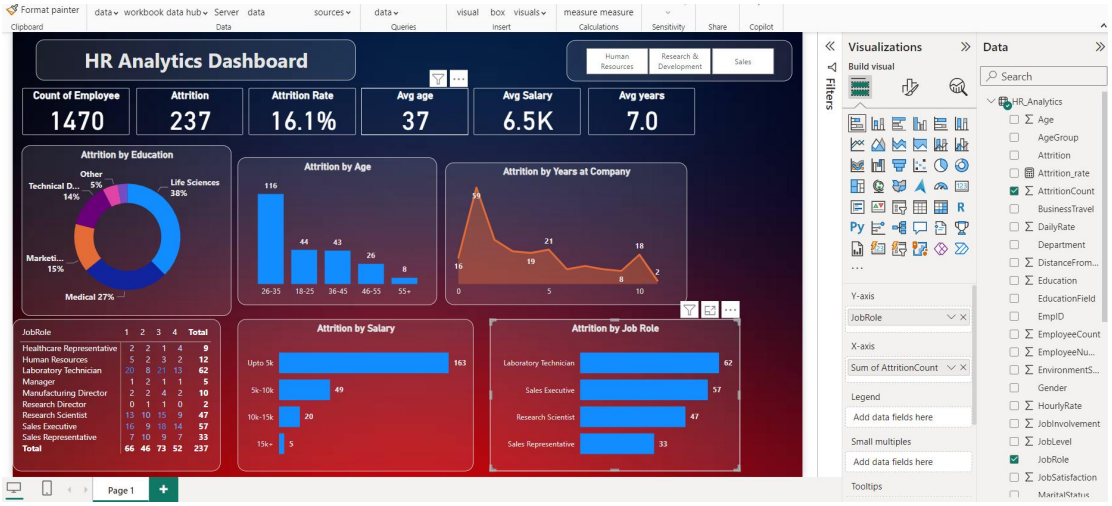
6.Created a area chart of Attrition by Years at company:

Attrition by Years at Company

- **0-1 years**: 59 employees
- **1-2 years**: 21 employees
- **2-3 years**: 18 employees
- **3-4 years**: 19 employees
- **4-5 years**: 8 employees
- **5-6 years**: 16 employees

Attrition is highest among employees with 0-1 year of tenure, indicating challenges with onboarding, role fit, or initial job satisfaction.

7.Created a Stacked bar chart of Attrition by Job Role:



8.Created a Treemap using the category gender and values of Attrition count :

Recommendations:

Targeted Retention Programs:

Develop specific retention strategies for high-risk groups, such as Laboratory Technicians, Sales Executives, and younger employees (26-35 years).

Salary Adjustments:

Consider reviewing salary structures, especially for those earning up to $5K, to improve employee satisfaction and reduce turnover.

Enhanced Onboarding:

Improve the onboarding process to better integrate new employees and reduce early-stage attrition.

Career Development:

Offer clear career advancement opportunities and professional development programs to retain employees seeking growth, particularly those in the 26-35 age group.

Conclusion:

The HR Analytics dashboard reveals a 16.1% attrition rate, with high turnover among younger employees, specific job roles like Laboratory Technicians and Sales Executives, and those earning up to $5K. Key recommendations include developing targeted retention programs, adjusting salary structures, enhancing onboarding processes, and offering career development opportunities. Implementing these strategies can reduce turnover, leading to cost savings and improved employee satisfaction. This project highlights the importance of data-driven decision-making in managing workforce stability.