GREEN DESTINATIONS
REPORT

ABHISHEK KUMAR PATEL

A DATA-DRIVEN APPROACH TO UNDERSTANDING ATTRITION PATTERNS.

Introduction

Briefly explain that the goal is to analyze employee attrition data to identify any patterns based on age, years at the company, and income. State that this report aims to help Green Destinations' HR team understand factors contributing to employee turnover.

Data Description:: -

Green Destinations is a well known travel agency. The HR Director has recently noticed an increase in employees leaving (attrition). She would like to figure out any trends or patterns. She has surveyed the staff of Green Destinations and provided you with the data. She would like to know what the attrition rate is (% of people who have left). She would also like to know if factors like age, years at the company and income play a part in determining if people will leave or not

1.Attrition Rate Calculation

Objective: Calculate the overall attrition rate.

```
[84]: # Calculate the attrition rate
      total_employees = df.shape[0]
      attrition_count = df[df['Attrition'] == 'Yes'].shape[0]
      attrition_rate = (attrition_count / total_employees) * 100
      print('Total Employees:',total_employees)
      print('How much employees who left:', attrition_count)
      print('Attrition Rate:',round(attrition_rate),'%')

      Total Employees: 1470
      How much employees who left: 237
      Attrition Rate: 16 %
```

Interpretation: An attrition rate of 16% means that a certain percentage of employees have left Green Destinations. The total employees in number counts in 1470 and 237 was left now.

2.Descriptive Statistics

Objective: Provide summary statistics for Age, Years at Company, and monthly_income.

```
df[['Age', 'YearsAtCompany', 'MonthlyIncome']].describe()
```

	Age	YearsAtCompany	MonthlyIncome
count	1470.000000	1470.000000	1470.000000
mean	36.923810	7.008163	6502.931293
std	9.135373	6.126525	4707.956783
min	18.000000	0.000000	1009.000000
25%	30.000000	3.000000	2911.000000
50%	36.000000	5.000000	4919.000000
75%	43.000000	9.000000	8379.000000
max	60.000000	40.000000	19999.000000

Interpretation:

Age:

- **Average (Mean):** The mean age of employees provides insights into the demographic profile of the workforce. For instance, if the mean age is 36.92 years, this suggests that the company has a relatively young workforce, which may influence organizational dynamics.
- **Minimum and Maximum:** The minimum and maximum ages reveal the age range within the workforce. A minimum age of 18 and a maximum of 60 shows a diverse age demographic, from entry-level positions to experienced professionals, which can affect team interactions and employee expectations.
- **Standard Deviation:** A standard deviation of 9.14 indicates how spread out employee ages are around the average. A higher standard deviation implies a wide range of ages, indicating diversity that can be beneficial for idea generation but may also lead to different employee needs and preferences.

Years at Company:

- **Average (Mean):** An average tenure of 7.01 years suggests that many employees have been with the company for a significant amount of time, potentially indicating job satisfaction or a strong company culture.
- **Minimum and Maximum:** The minimum of 0 years and maximum of 40 years highlights a mix of new hires and long-tenured employees. This could suggest a steady inflow of new talent while retaining experienced personnel, which is crucial for knowledge transfer and mentorship.
- **Standard Deviation:** A standard deviation of 6.13 indicates variation in tenure, suggesting that while some employees are long-term, there are also many new hires, pointing to a blend of experiences that can influence organizational stability.

Income:

- **Average (Mean):** The mean monthly income of $6502.93 suggests the level of compensation that employees can expect. This figure can be compared with industry benchmarks to evaluate competitiveness.
- **Minimum and Maximum:** A minimum income of $1009 and a maximum of $19,999 illustrates a wide pay range that may correspond to various job roles, levels of experience, and responsibilities within the company. Such disparity can affect employee morale and perceptions of fairness.
- **Standard Deviation:** A standard deviation of $4707.96 indicates that salaries vary significantly, reflecting diverse job functions, seniority levels, and possibly performance-related pay structures.

3. Analysis of Attrition by Age

Objective: Analyze if age influences attrition.

```python
# Calculate the average age of employees who left vs. those who stayed
age_attrition = df.groupby('Attrition')['Age'].mean()

print("Average Age of Employees:")
print(age_attrition)
```

```
Average Age of Employees:
Attrition
No      37.561233
Yes     33.607595
Name: Age, dtype: float64
```

Interpretation:

The analysis indicates a clear difference in average ages between employees who have left and those who have stayed at Green Destinations:

Average Age of Employees Who Stayed: 37.56 years

Average Age of Employees Who Left: 33.61 years

This suggests that younger employees are more likely to leave the company.

Implications:

Career Growth: Younger employees may seek more career advancement opportunities, indicating a potential need for improved development programs.

Retention Strategies: HR should focus on initiatives tailored to younger workers, such as flexible work arrangements and regular feedback mechanisms, to enhance engagement and reduce turnover.

4. Analysis of Attrition by Years at Company

Objective: Investigate if the length of service affects attrition.

```python
# Calculate the average years at the company for employees who left vs. those who
years_at_company_attrition = df.groupby('Attrition')['YearsAtCompany'].mean()

print("Average Years at Company of Employees:")
print(years_at_company_attrition)
```

```
Average Years at Company of Employees:
Attrition
No      7.369019
Yes     5.130802
Name: YearsAtCompany, dtype: float64
```

Interpretation:

The analysis shows that the average tenure for employees who stayed at the company is 7.37 years, while for those who left, it is significantly lower at 5.13 years. This indicates that employees with shorter tenures are more prone to attrition.

The findings suggest that newer employees may encounter challenges that lead them to leave the organization, highlighting a potential gap in onboarding and integration processes. To improve retention, HR should focus on enhancing support and engagement for newer staff members, possibly through mentorship programs and career development initiatives. Addressing the needs of employees in their early years at the company could help reduce turnover and foster a more stable workforce.

5. Analysis of Attrition by Income
Objective: Determine if income plays a role in attrit

```python
# Calculate the average income for employees who left vs. those who stayed
income_attrition = df.groupby('Attrition')['MonthlyIncome'].mean()

print("Average Income of Employees:")
print(income_attrition)
```

```
Average Income of Employees:
Attrition
No     6832.739659
Yes    4787.092827
Name: MonthlyIncome, dtype: float64
```

Interpretation:

Average Monthly Income for Employees Who Stayed: $6,832.74
Average Monthly Income for Employees Who Left: $4,787.09

This significant disparity suggests that employees who remain with the company tend to earn considerably higher salaries compared to those who have left. The lower income among departing employees may imply that compensation plays a crucial role in retention; employees earning less might feel undervalued or may find better-paying opportunities elsewhere.

These findings highlight the importance of competitive compensation in employee satisfaction and retention. To mitigate attrition, especially among lower-earning staff, HR should consider conducting salary reviews and ensuring that compensation packages are competitive within the industry. Additionally, providing opportunities for income growth, such as performance-based raises or promotions, could further enhance employee retention and job satisfaction.