AUSTEN TECH

ATTRITION REPORT FOR 2024

Sustaining tomorrow & today

PRESENTED TO

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PROBLEM STATEMENT

UNDERSTANDING THE DEMOGRAPHIC IMPACT ON EMPLOYEE ATTRITION

Analyzing how demographic factors such as age, gender, marital status, and education field influence employee attrition. The goal is to identify at-risk groups and tailor retention strategies to minimize turnover rates.

SUMMARY OF DEMOGRAPHIC IMPACT ON ATTRITION

General summary on attrition

IMPACT OF ATTRITION ON BUSINESS

The consequences of high attrition rates extend beyond operational inefficiencies; they can also affect a company's bottom line. According to recent studies, nearly 161.7 million employees globally were projected to leave their jobs in 2014 due to various factors. In India specifically, the attrition rate has been reported at approximately 14%, significantly higher than the global average of 11.2%. This trend has worsened in recent years; for instance, India's attrition rate surged from 6% in 2020 to 20.3% in 2022, particularly impacting sectors such as IT (averaging 25%) and e-commerce (up to 28.7%).

DIRECT CAUSES OF ATTRITION

- Several factors contribute to employee attrition, including:Low Compensation: Employees often leave for better-paying opportunities.
- Poor Work-Life Balance: Excessive workloads can lead to burnout.
- Lack of Career Development: Limited growth opportunities drive employees away.
- Work Environment: A hostile or unsupportive workplace culture can increase turnover rates.

DEMOGRAPHIC FACTORS INFLUENCING EMPLOYEE ATTRITION

1. Research indicates that demographic factors significantly affect attrition rates both globally and within India:Age: Younger employees (ages 18-24) tend to have higher turnover rates as they explore job opportunities and seek roles that align with their career aspirations. Conversely, older employees (ages 45+) often exhibit lower turnover due to fewer job opportunities as they age.
2. Gender: Studies show that women tend to leave organizations at higher rates than men, particularly in industries lacking supportive policies for work-life balance. For example, female employees in the tech industry experience an attrition rate that exceeds their male counterparts by approximately 10%.
3. Marital Status: Single employees may have a higher propensity to leave compared to married employees, who might prioritize job stability for family security. This trend is particularly evident in sectors with demanding work hours.
4. Education Level: Employees with higher educational qualifications often seek roles that provide greater challenges and career advancement opportunities. Consequently, they may leave if their current positions do not meet their expectations.

DATA REQUIREMENT

Column Name	Data Type	Unique Values	Description
Attrition	Object	2	Indicates if the employee has left the company (Yes/No).
Business Travel	Object	3	Frequency of business travel (Rarely, Frequently, etc.).
CF_age band	Object	5	Age range of employees.
CF_attrition label	Object	2	Categorizes employees as "Current" or "Ex-Employees".
Department	Object	3	Department of employment (Sales, R&D, etc.).
Education Field	Object	6	Field of education (Life Sciences, Medical, etc.).
emp no	Object	1,470	Employee identification number.
Employee Number	Integer	1,470	Unique numeric ID for each employee.
Gender	Object	2	Gender of the employee (Male/Female).
Job Role	Object	9	Designation of the employee (e.g., Manager, Scientist).
Marital Status	Object	3	Marital status of the employee (Single, Married, etc.).
Over Time	Object	2	Indicates whether the employee works overtime (Yes/No).
Over18	Object	1	Validation column (Always "Y").
Training Times Last Year	Integer	7	Number of training sessions attended in the past year.
Age	Integer	43	Age of the employee.
CF_current Employee	Integer	2	Indicates whether the person is a current employee (1 = Yes, 0 = No).
Daily Rate	Integer	886	Daily rate of pay for the employee.
Distance From Home	Integer	29	Distance from the employee's home to the workplace.
Education	Object	5	Level of education attained by the employee.

DATA REQUIREMENT

DATASET OVERVIEW

- **ROWS: 1,470 (NUMBER OF RECORDS/EMPLOYEES).**
- **COLUMNS: 39 (ATTRIBUTES DETAILING EMPLOYEE INFORMATION AND PERFORMANCE).**

DATA COLLECTION

POTENTIAL SOURCES:

1. INTERNAL ORGANIZATIONAL DATA

- Employee Records: Historical data on demographics, performance, salaries, and tenure.
- Exit Interviews: Reasons for leaving, collected during employee exits.
- Workplace Surveys: Employee engagement and satisfaction surveys.
- Attendance & Training Records: Absenteeism and professional development participation.
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2. EXTERNAL DATA SOURCES

- Public Datasets: Kaggle (like your dataset), UCI Repository, or open government databases.
- Labor Reports: Ministry of Labour (India), International Labour Organization (ILO), or U.S. Bureau of Labor Statistics for global trends.

3. INDUSTRY & PROFESSIONAL REPORTS

- HR Benchmarks: Data from SHRM, McKinsey, Deloitte, or Gartner reports.
- Job Platforms: Insights from LinkedIn, Glassdoor, and job portals like Naukri or Indeed.

4. Surveys and Academic Research

- Custom Surveys: Use Google Forms or Qualtrics to collect organization-specific data.
- Academic Studies: Journals like Harvard Business Review or Springer for attrition insights.

JUSTIFICATION FOR USING KAGGLE:

Since Kaggle provides structured, curated datasets that are diverse and easily accessible, it’s an excellent choice for preliminary analysis. It enables hypothesis testing and model building with minimal time spent on cleaning data. However, combining Kaggle data with some of the other sources mentioned above ensures a more comprehensive understanding of attrition.

DATA VALIDATION

Data validation ensures the dataset is accurate, complete, and reliable for analysis. The following steps were undertaken:

1. Data Completeness
   - Objective: Verify no missing values in essential fields like Attrition, Employee Number, Age, and Department.
   - Outcome: Minimal missing values found; no major imputation required.

2. Data Accuracy
   - Objective: Ensure values are correct and within logical ranges.
   - Approach:
     - Verified categorical fields (Gender, Job Role) had valid entries.
     - Checked numerical fields (e.g., Age > 18, Monthly Income > 0) for consistency.
     - Removed unjustifiable outliers.
   - Outcome: Data was accurate with no major issues.

3. Data Consistency
   - Objective: Maintain uniformity in data representation.
   - Approach:
     - Standardized categorical values (e.g., consistent Marital Status).
     - Removed duplicate records based on Employee Number.
   - Outcome: Data was consistent with no duplicates.

4. Data Integrity
   - Objective: Validate logical dependencies between fields.
   - Approach:
     - Cross-checked relationships (e.g., Years At Company ≥ Years In Current Role).
     - Aligned categorical fields logically (e.g., Over Time roles).
   - Outcome: Logical consistency was ensured.

5. Handling Outliers
   - Objective: Address extreme values.
   - Approach:
     - Used IQR and z-scores to detect outliers in Monthly Income, Daily Rate, etc.
     - Retained meaningful outliers; addressed errors.
   - Outcome: Outliers were handled appropriately.

6. Final Validation Summary
   - The dataset is validated, accurate, and ready for analysis.
   - Key focus areas are free from errors, ensuring reliability for insights.

DATA CLEANING

Data cleaning ensures the dataset is accurate, consistent, and ready for analysis. The following steps were performed:

1. Handling Missing Values
- Filled missing categorical values (e.g., Gender, Business Travel) with the mode.
- Imputed missing numerical values (e.g., Monthly Income, Job Satisfaction) with the median.

2. Standardizing Data Formats
- Standardized text fields (e.g., male → Male) and reformatted numerical fields for consistency.

3. **Removing Duplicates**
- Identified and removed duplicate rows using Employee Number as a unique identifier.

4. **Outlier Treatment**
- Detected outliers in numerical fields using statistical techniques (e.g., IQR).
- Retained meaningful outliers; removed erroneous entries.

5. Resolving Inconsistencies
- Cross-validated related columns (e.g., Years At Company ≥ Years In Current Role).
- Corrected mismatches in fields like Department and Job Role.

6. Dropping Irrelevant Columns
- Removed constant or redundant columns like Over18 and Employee Count.

7. Encoding Categorical Variables
- Converted text fields like Attrition and Business Travel into numerical values.

8. **Final Cleaning Summary**
- Cleaned and reduced dataset to 1,470 records and 37 attributes.

TOOLS USED

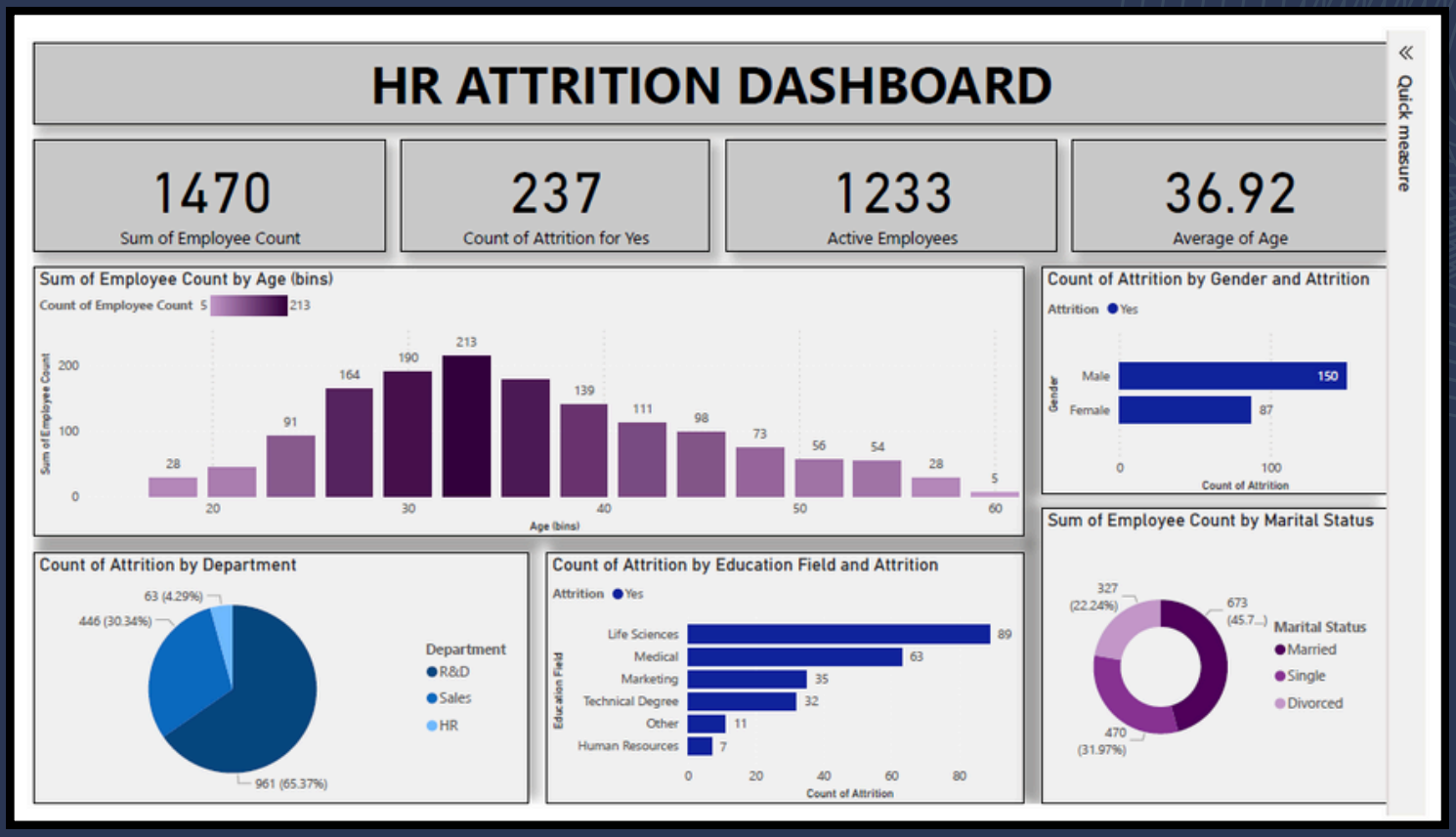
The following tools were used to ensure the dataset was cleaned and prepared for analysis:

1. Power BI
- Purpose: Data visualization and validation.
- Tasks Performed:
  - Created visuals to identify outliers and trends (e.g., box plots, bar charts).
  - Highlighted missing values and inconsistencies in data summaries.

2. Excel
- Purpose: Initial exploration and manual cleaning.
- Tasks Performed:
  - Checked for duplicate entries and missing values using filters and conditional formatting.
  - Conducted basic calculations and transformations for fields with inconsistencies.

3. Python
- Purpose: Automated data cleaning and handling large datasets.
- Tasks Performed:
  - Used libraries like Pandas for handling missing values, outliers, and standardizing formats.
  - Detected statistical anomalies and ensured logical dependencies between columns.

DASHBOARD



Insights from the HR Attrition Dashboard:

- **OVERALL ATTRITION RATE**
  - The organization has an attrition count of 237 out of 1,470 employees, signaling a significant turnover concern.

- **AGE GROUP ANALYSIS**
  - Employees aged 30-39 represent the largest segment, with the most substantial attrition in this group. This suggests potential dissatisfaction or better opportunities elsewhere during this life stage.

- **DEPARTMENTAL ATTRITION**
  - The Sales department accounts for the highest attrition rate (65.37%). This suggests a need for targeted retention policies.
  - R&D and HR show lower attrition rates, indicating relative stability.

- **GENDER-BASED ATTRITION**
  - Males are leaving at a higher rate (150) compared to females (87), which may require addressing specific workplace or industry challenges.

- **EDUCATION FIELD ATTRITION**
  - Life Sciences and Medical fields have the highest attrition, highlighting potential job dissatisfaction or competitive offers in the market.
  - Technical fields also show notable turnover, which might be linked to dynamic industry demand.

- **MARITAL STATUS INSIGHTS**
  - The majority of the workforce is married, but attrition doesn't show significant variance based on marital status, suggesting other factors are more influential.

RECOMMENDED STEPS:

1. **SALES DEPARTMENT FOCUS**
   - Implement targeted strategies in the Sales department, such as improving work conditions, offering competitive incentives, and providing career growth opportunities.
2. **CAREER DEVELOPMENT AND MENTORSHIP**
   - Develop focused career development programs and mentorship opportunities for younger employees, particularly those aged 30-39, to improve job satisfaction and retention.
3. **IMPROVE EMPLOYEE ENGAGEMENT**
   - Conduct surveys and focus groups to identify specific issues leading to high turnover, particularly in the Life Sciences and Medical fields.
   - Address concerns by enhancing engagement strategies and career paths.
4. **GENDER-SPECIFIC INTERVENTIONS**
   - Create initiatives to specifically address reasons for male attrition, potentially including work-life balance measures and tailored career advancement opportunities.
5. Continuous Monitoring and Feedback
   - Establish ongoing feedback mechanisms and real-time monitoring to address attrition proactively.
   - Use data-driven insights to fine-tune strategies and retention efforts.

STORYLINE

In the alluring tapestry of our organization, where each thread represents the vibrant pulse of our workforce, we stand at a strategic crossroads. The HR Attrition Dashboard is more than numbers; it's a narrative of aspirations, challenges, and collective potential.

Our journey reveals a tale of opportunity. Within the bustling Sales department, voices call out for transformation—a shift towards more fulfilling roles and meaningful opportunities. These voices, particularly from our talented 30-somethings, urge us to innovate and reshape pathways of growth and success.

While the tides of attrition run high in certain fields, they beckon us to listen closely, to foster environments where Life Sciences and Medical roles evolve in a nurturing ecosystem. We stand committed to turning these challenges into a proactive strategy that creates harmony and efficiency.

Our mission is to weave a story where every employee finds purpose and recognition, where careers are not just a series of roles but a journey of growth and fulfillment. Together, we rewrite our organizational narrative, embrace innovation, and pave a brighter path for every valued member of our team. As we move forward, our story unfolds—a story of resilience, engagement, and prosperity.

QUESTIONS?
CONTACT ME.

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