

PRESENTATION

IBM HR ANALYTICS EMPLOYEE ATTRITION
& PERFORMANCE DATASET

PROJECT PRESENTATION

19 DECEMBER, 2025

DESCRIPTION ABOUT DATA

This is a IBM HR Analytics Employee Attrition & Performance dataset. This dataset contains IBM employee information, including personal details, job roles, salary, work experience, and satisfaction levels. It helps understand employee work patterns, experience, and performance within the company.

PROCESS

- First we can checked the information of the dataset regarding their feature,datatype and null value.
- Checked the unique features
- Checked duplicates for the features.
- EDA-In this process we segemented and segregated the features and framed questions.
- After segmentation we grouped the questions accordingly, we visualizad for better understanding.

WORKFLOW OF DATA ANALYSIS

- 1.COLLECTION OF DATA
- 2.UNDERSTANDING DATA AND BUSINESS PROBLEM
- 3.DATA CLEANING
- 4.DATA TRANSFORMATION
- 5.EXPLORATORY DATA ANALYSIS
- 6.DATA VISUALIZATION
- 7.PRESENT FINAL INSIGHTS

SYNTAX

- data.info()
- data.isnull()
- data.unique()
- data.duplicated().sum()

1. COLLECTION OF DATA

- Collected this data from kaggle by checking their rows, columns and null values.
- Downloaded in CSV format .

2. UNDERSTANDING DATA AND BUSINESS PROBLEM

- The dataset includes employee personal details like age, gender, marital status, and education.
- It contains job information such as department, role, level, and involvement.
- Working conditions like overtime, business travel, and distance from home are included.
- Salary details cover income, pay rates, salary hikes, and stock options.
- Employee experience includes years of service, promotions, and past companies worked.
- It also shows performance, satisfaction levels, work-life balance, and employee counts.
- **Business Problem:**
 - To identify the key factors influencing employee attrition and satisfaction in order to improve retention and workforce planning.

3. DATA CLEANING

- Checked for null values No null values # dfname.isnull()
- Checked for duplicates for employee number No duplicates # dfname.duplicated.sum()
- Checked for unique features each has it's own unique # dfname.unique()
- Checked rows and columns ROWS-1470 COLUMNS-35
- Reviewed column names and data types

4. DATA TRANSFORMATION

- Dataset prepared for analysis.
- Features made easier to understand and compare.
- Ready for visualization and further analysis.



4. EXPLORATORY DATA ANALYSIS

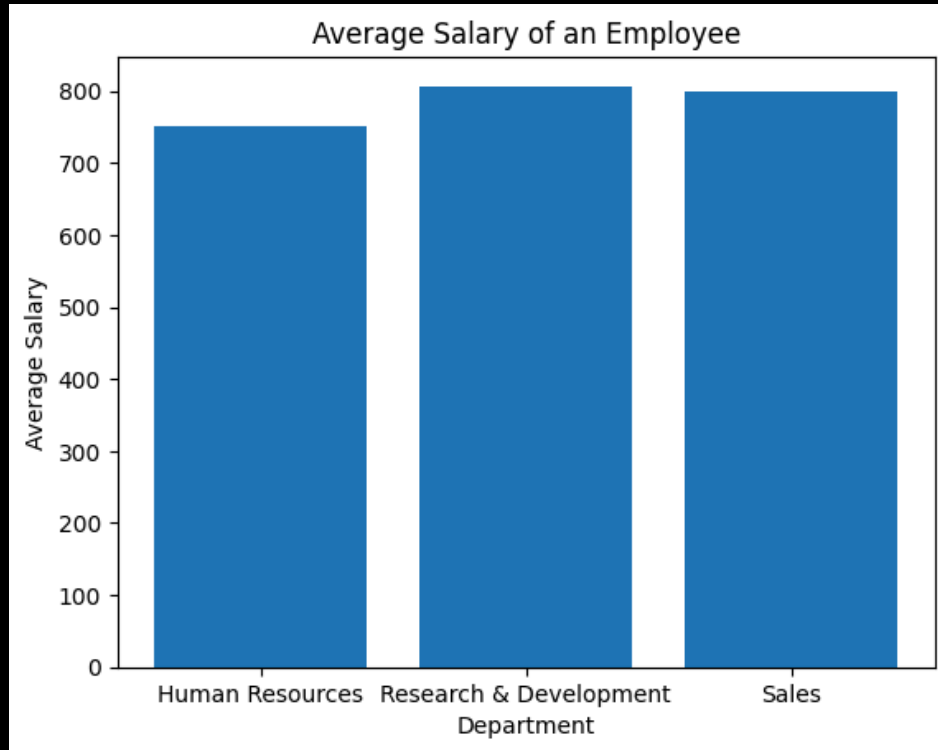
- To understand data patterns & trends.
- To identify factors influencing employee attrition.

SEGMENTATION ANALYSIS

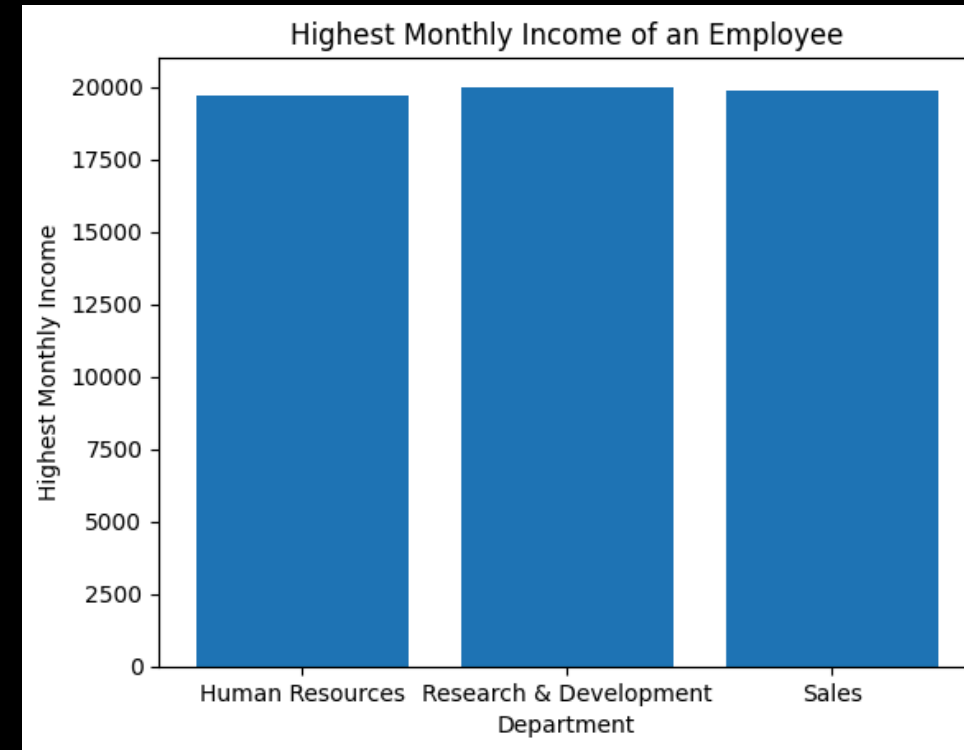
- INCOME BASED ANALYSIS
- BEHAVIORAL & SATISFACTION ANALYSIS
- EXPERIENCED BASED ANALYSIS
- WORKED BASED ANALYSIS



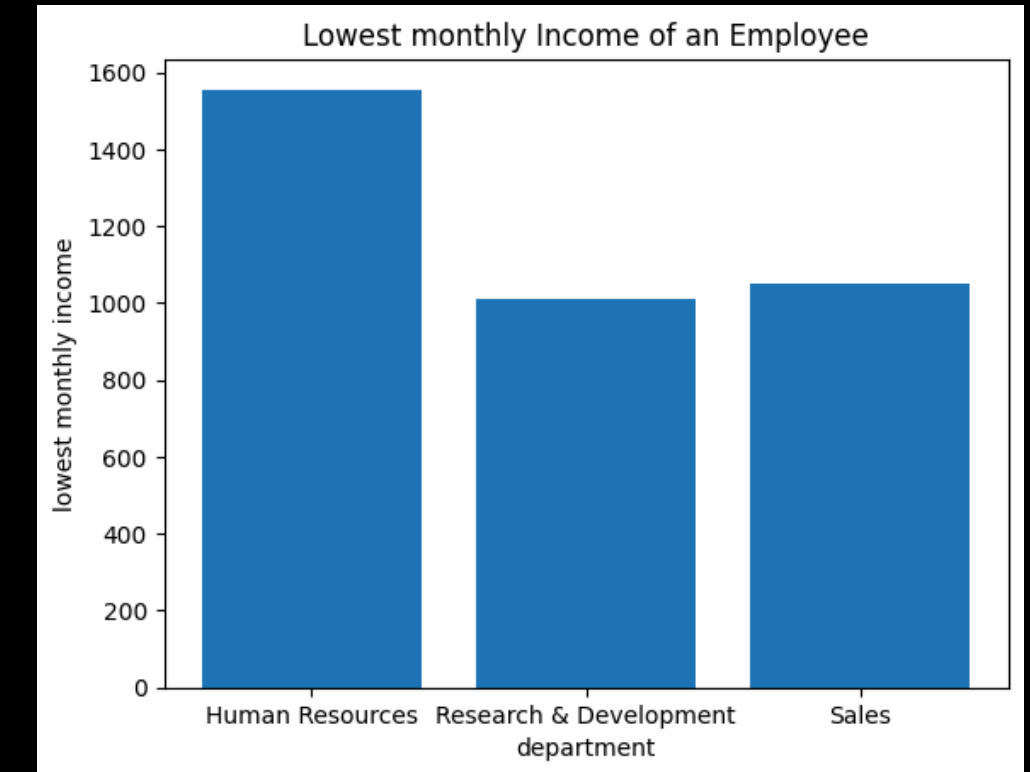
INCOME BASED ANALYSIS



Average salary is highest in Research & Development at about 805, followed by Sales at about 800 and Human Resources at about 750



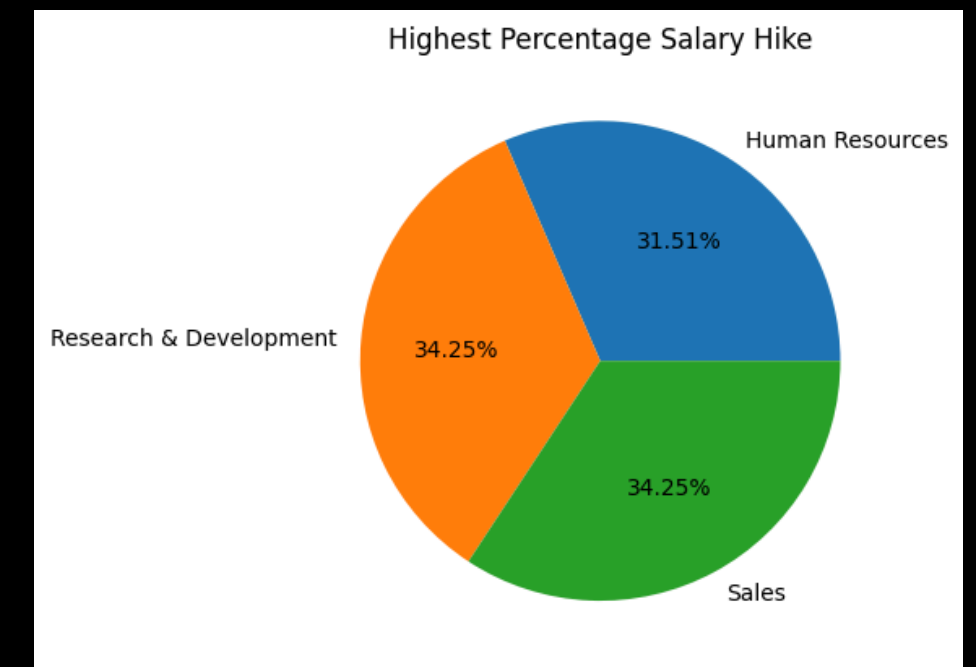
The highest monthly income is similar across departments, with Research & Development at about 20000, Sales at about 19800, and Human Resources at about 19700.



The lowest monthly income is highest in Human Resources at about 1550, compared to Sales at about 1050 and Research & Development at about 1000.

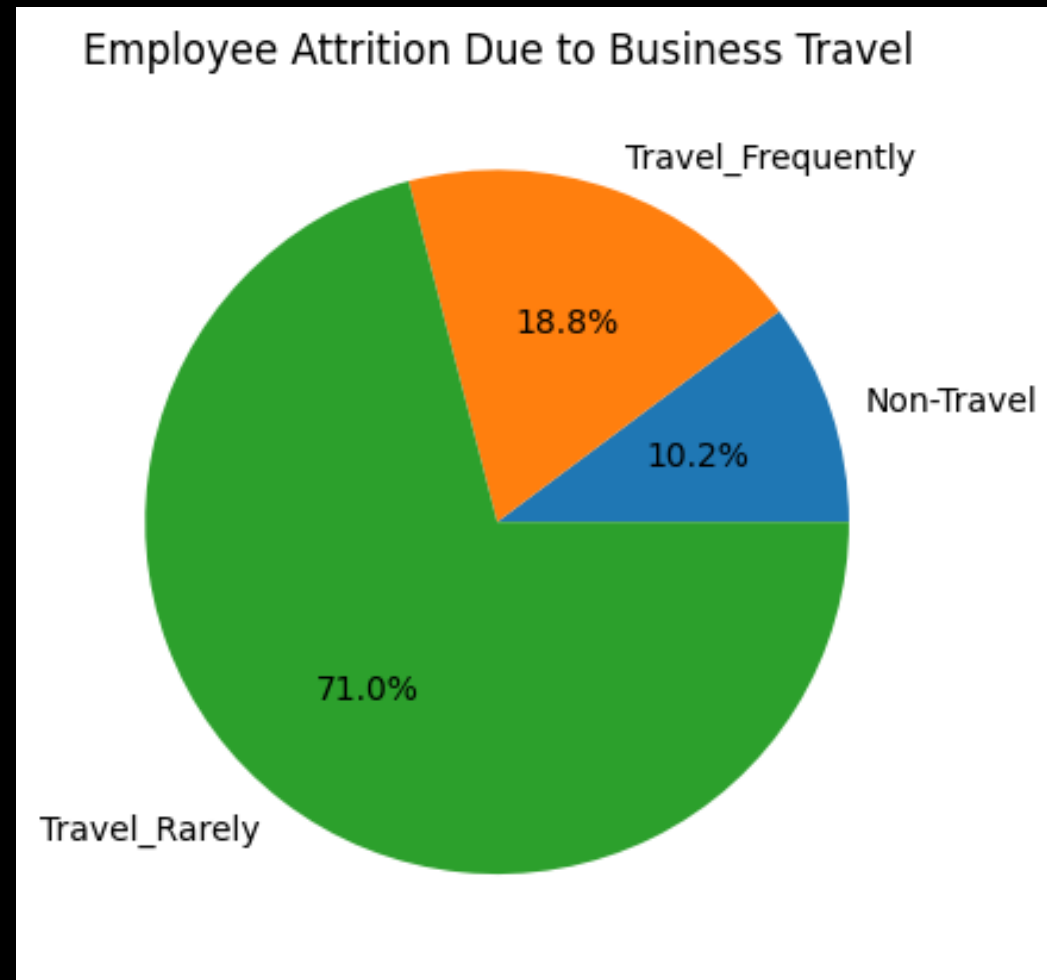


The lowest percentage salary hike is equal across all departments at 33.33 percent.

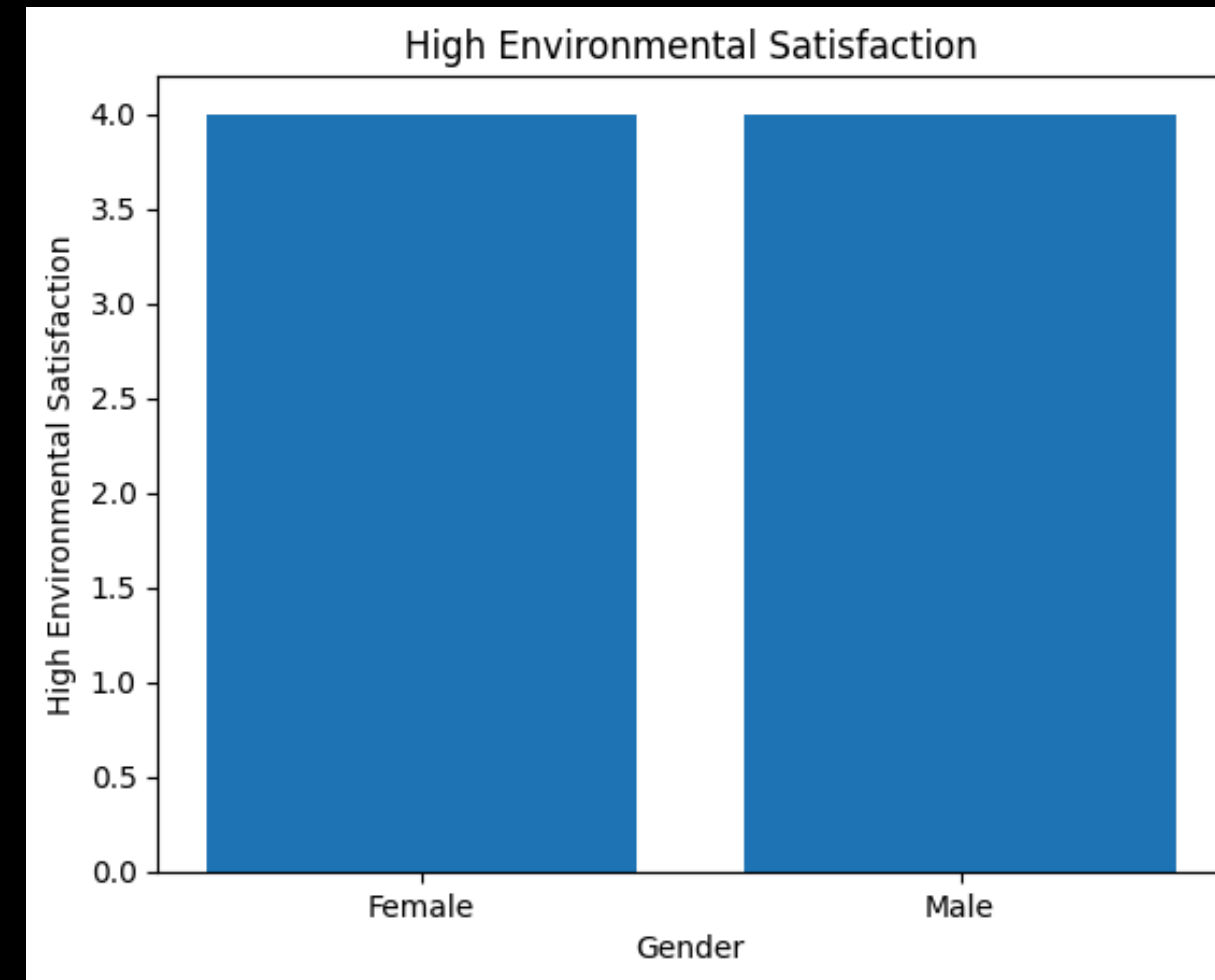


The highest percentage salary hike is 34.25 percent in Research & Development and Sales, while Human Resources has 31.51 percent.

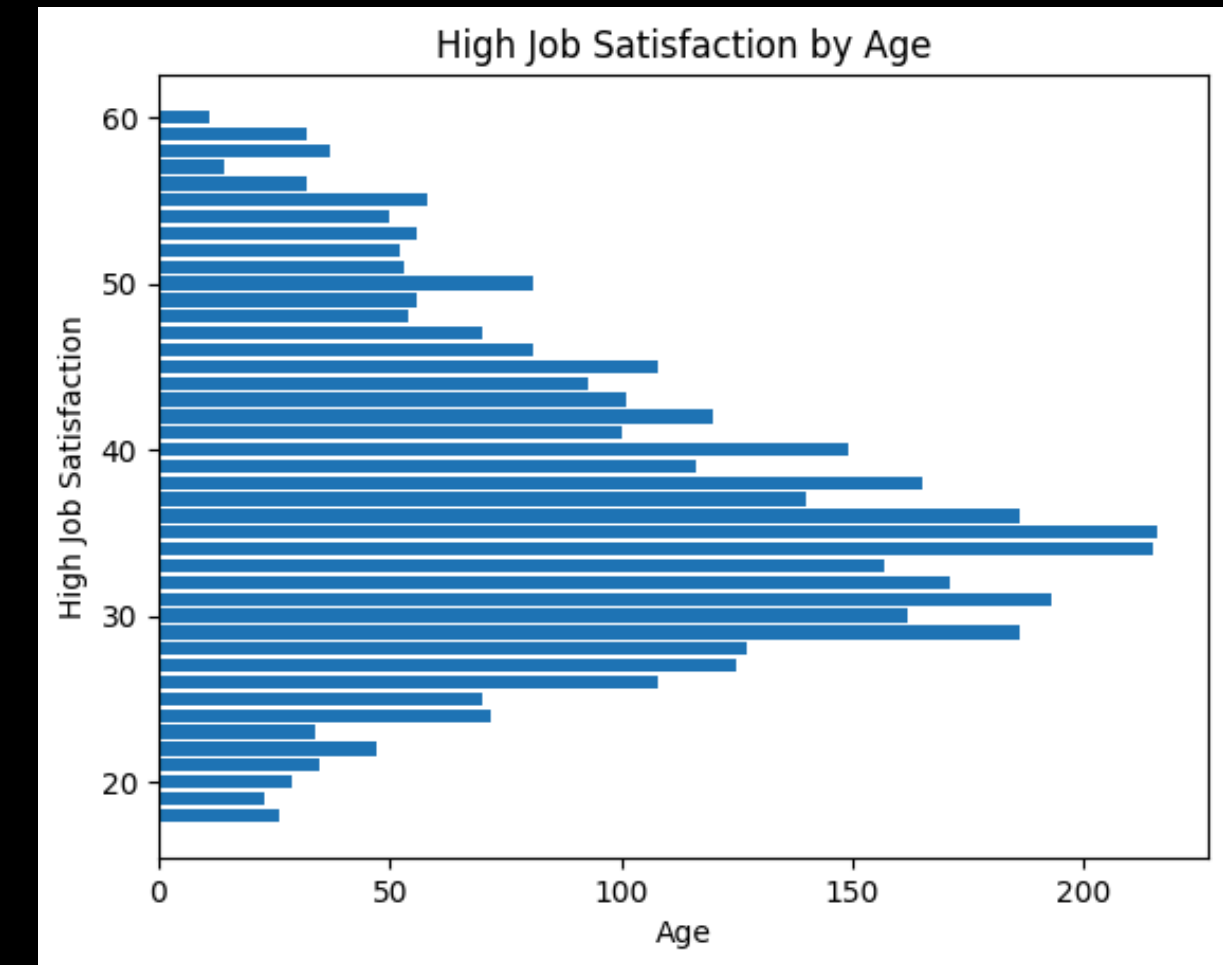
BEHAVIORAL & SATISFACTION ANALYSIS



Employee attrition is highest among employees who travel rarely at 71.0 percent, followed by travel frequently at 18.8 percent, and non-travel employees at 10.2 percent.

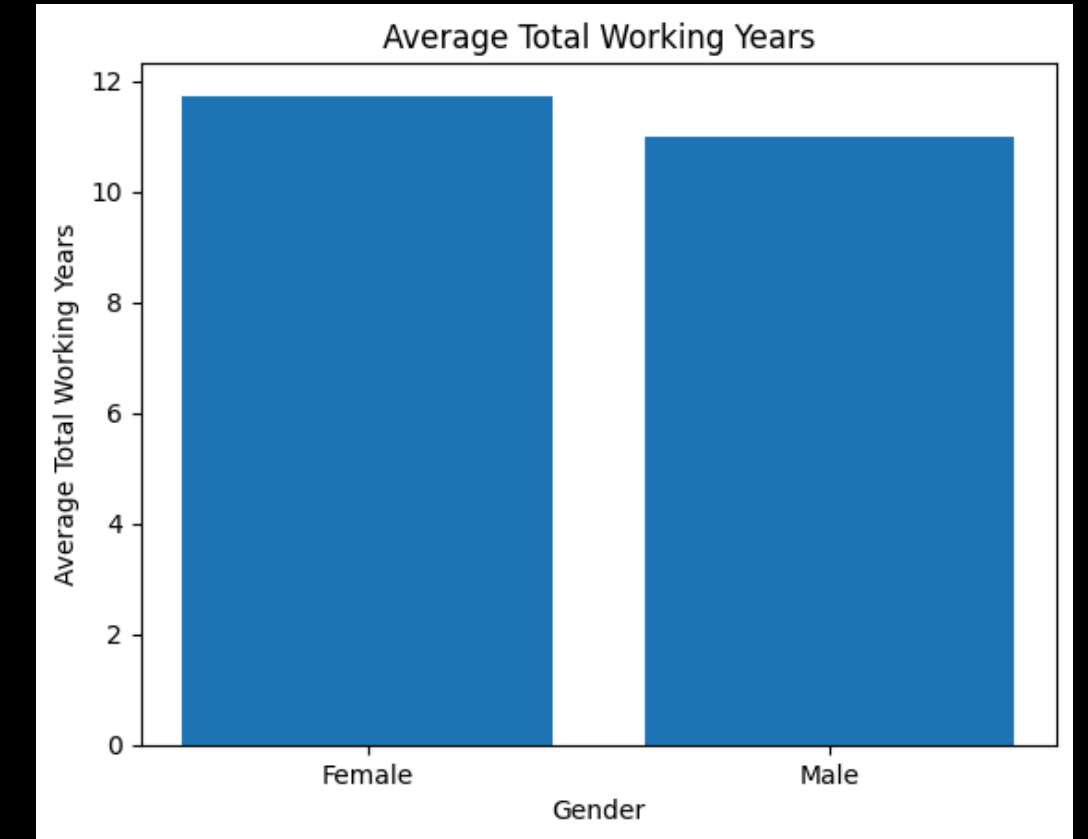
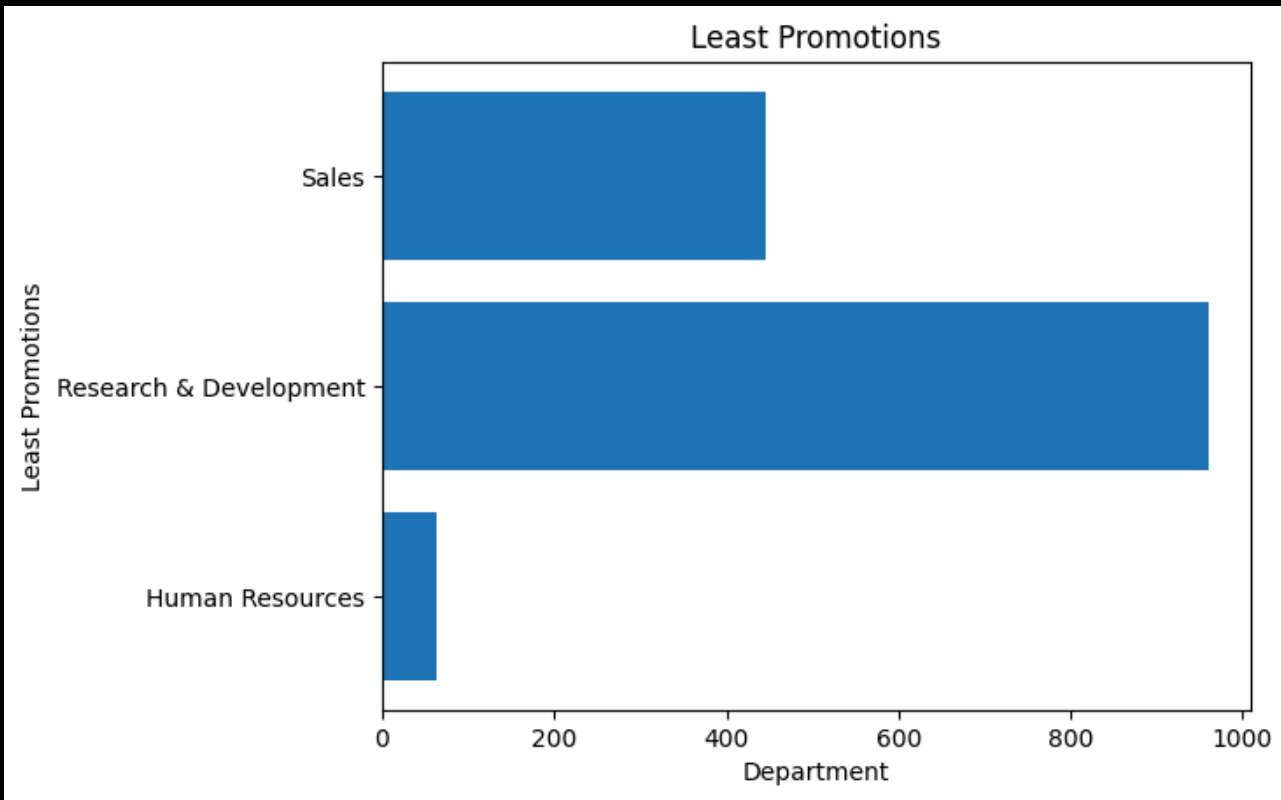


High environmental satisfaction is the same for both genders, with female at 4 and male at 4, showing no gender difference.



- High job satisfaction is most common among employees aged 30 to 40 years, with the peak around 35 years.
- Younger employees below 25 years and older employees above 55 years show comparatively lower job satisfaction levels.

EXPERIENCED BASED ANALYSIS

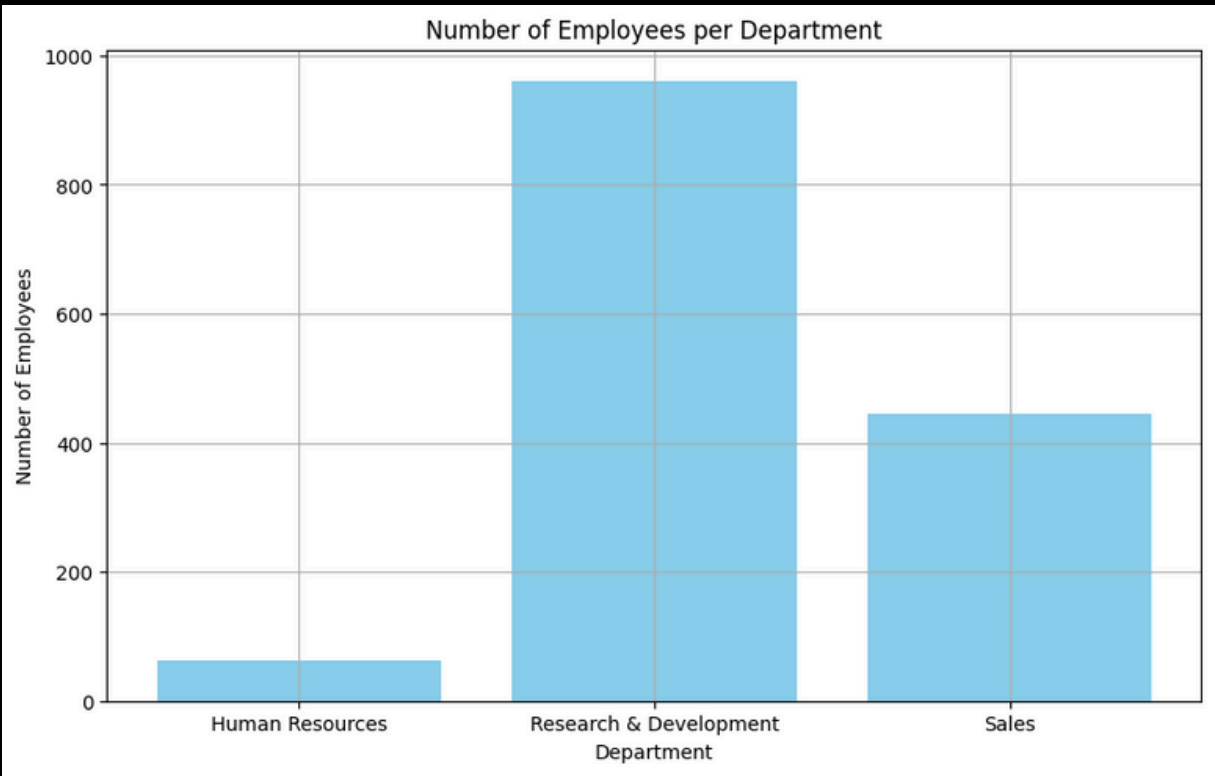
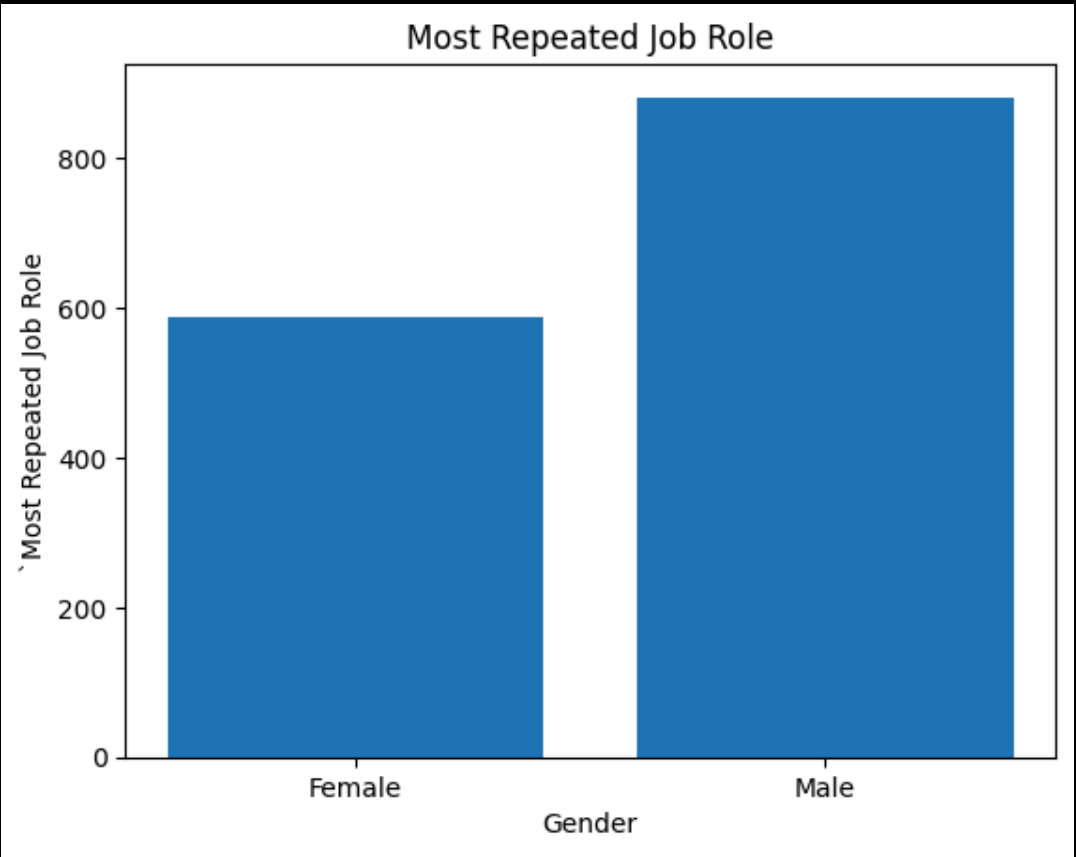
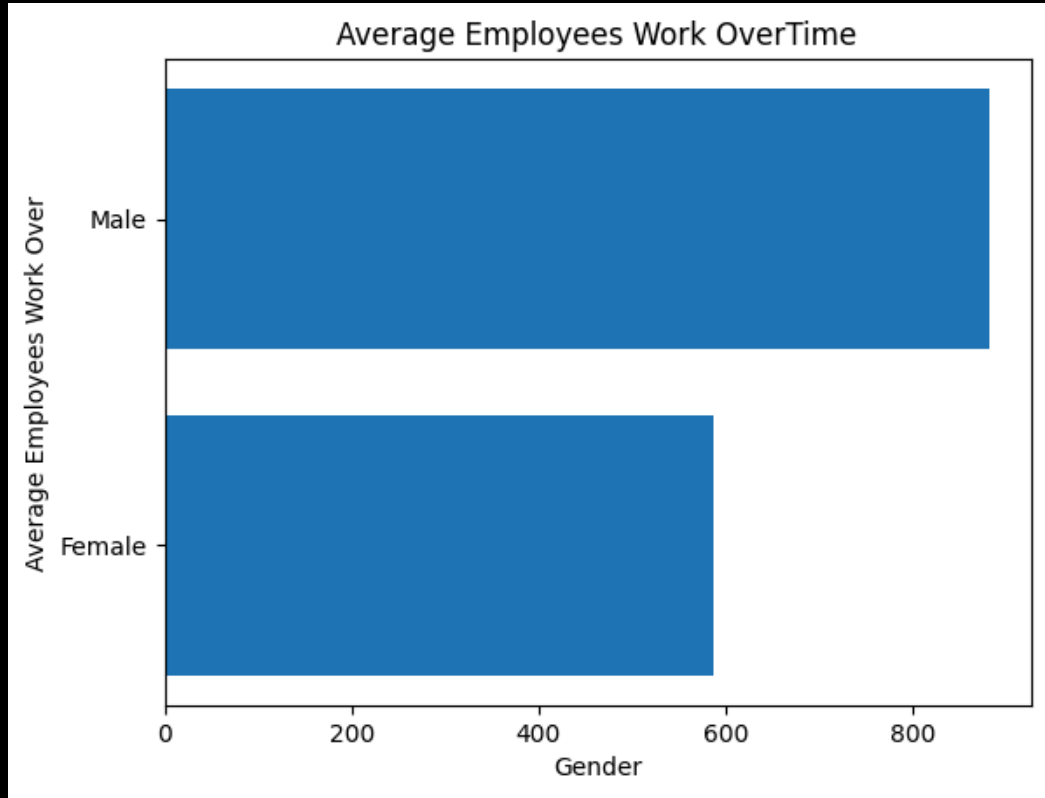


Least promotions are seen in Research & Development at around 980, followed by Sales at around 450, while Human Resources has the lowest at around 60.

Employees spend the most years with the same manager in Sales at about 4.3 years, followed by Research & Development at about 4.1 years and Human Resources at about 3.7 years.

Average total working years are higher for female employees at about 11.8 years, compared to male employees at about 11.0 years.

WORKED BASED ANALYSIS



Overtime work is higher among male employees at about 900, compared to female employees at about 580.

Research & Development has the highest number of employees at around 960, followed by Sales at around 450, and Human Resources at around 60.

The most repeated job role count is higher among male employees at about 880, compared to female employees at about 590.

7. PRESENT FINAL INSIGHTS

- Employee attrition is highest among employees who travel rarely at 71 percent.
- Sales and Research & Development departments show higher average salaries compared to Human Resources.
- Salary hikes are fairly balanced across departments, with R&D and Sales slightly higher.
- Male employees work more overtime than female employees.
- Research & Development has the largest number of employees, followed by Sales.
- Job and environmental satisfaction are similar across genders.
- Employees aged 30 to 40 years show the highest job satisfaction.
- Sales employees stay longer with the same manager, indicating stable reporting structure.
- Female employees have slightly higher overall work experience than male employees.



THANK YOU

2025 Data Analysis Presentation