

HR_ANALYTICS REPORT

Data Analysis using Excel, Power BI, SQL & Tableau

“Comprehensive HR Analytics Report – Data Analysis using Excel, Power BI, SQL & Tableau”

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It is about putting effort
and ideas into action.

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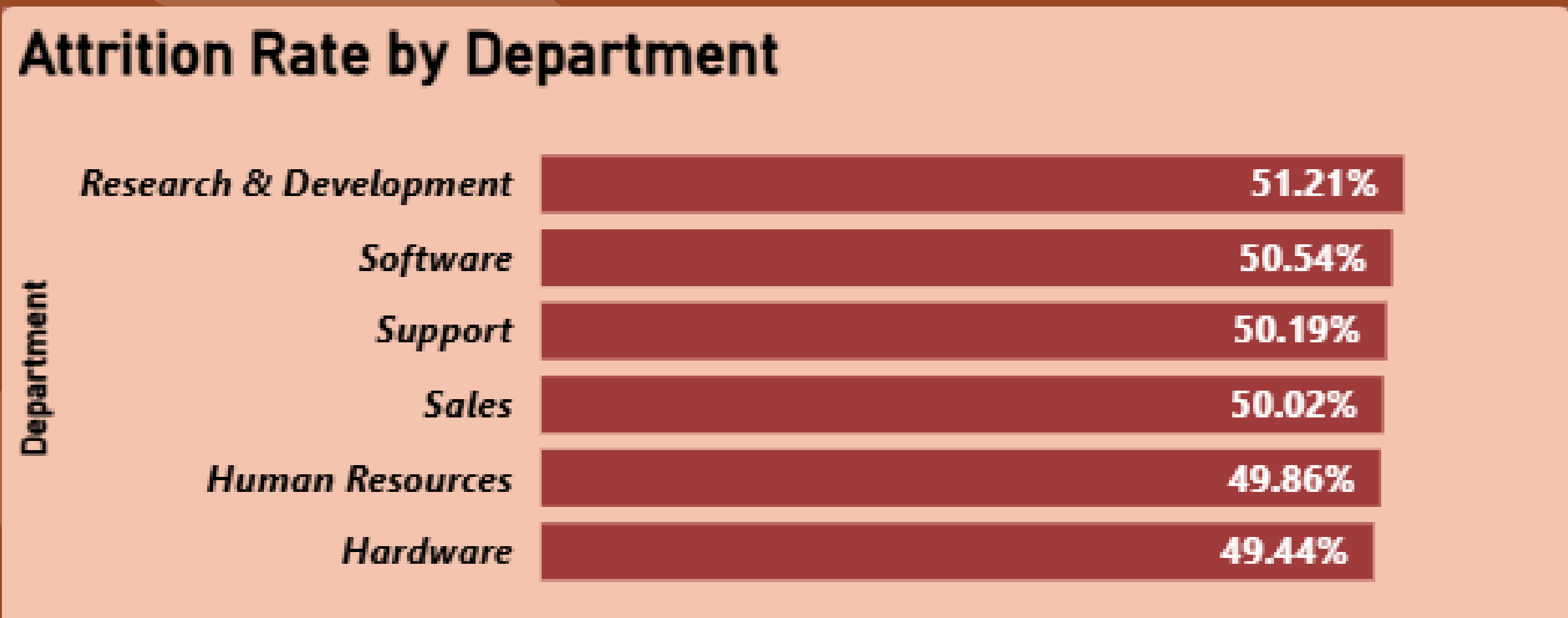
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KPI's 1: Attrition rate for all Departments



Observation

- Research & Development (51.21%) shows the highest attrition, suggesting possible issues like workload pressure or lack of career growth
- Software (50.54%) and Support (50.19%) also have above-average attrition, pointing toward employee dissatisfaction or limited advancement
- Human Resources (49.86%) and Hardware (49.44%) have the lowest attrition, which might indicate better employee engagement or job stability
- The average attrition rate across all departments is around 50%, indicating a high turnover in the organization
- The difference between highest and lowest attrition is minor ($\approx 1.7\%$), implying that attrition is a company-wide concern rather than limited to a specific department

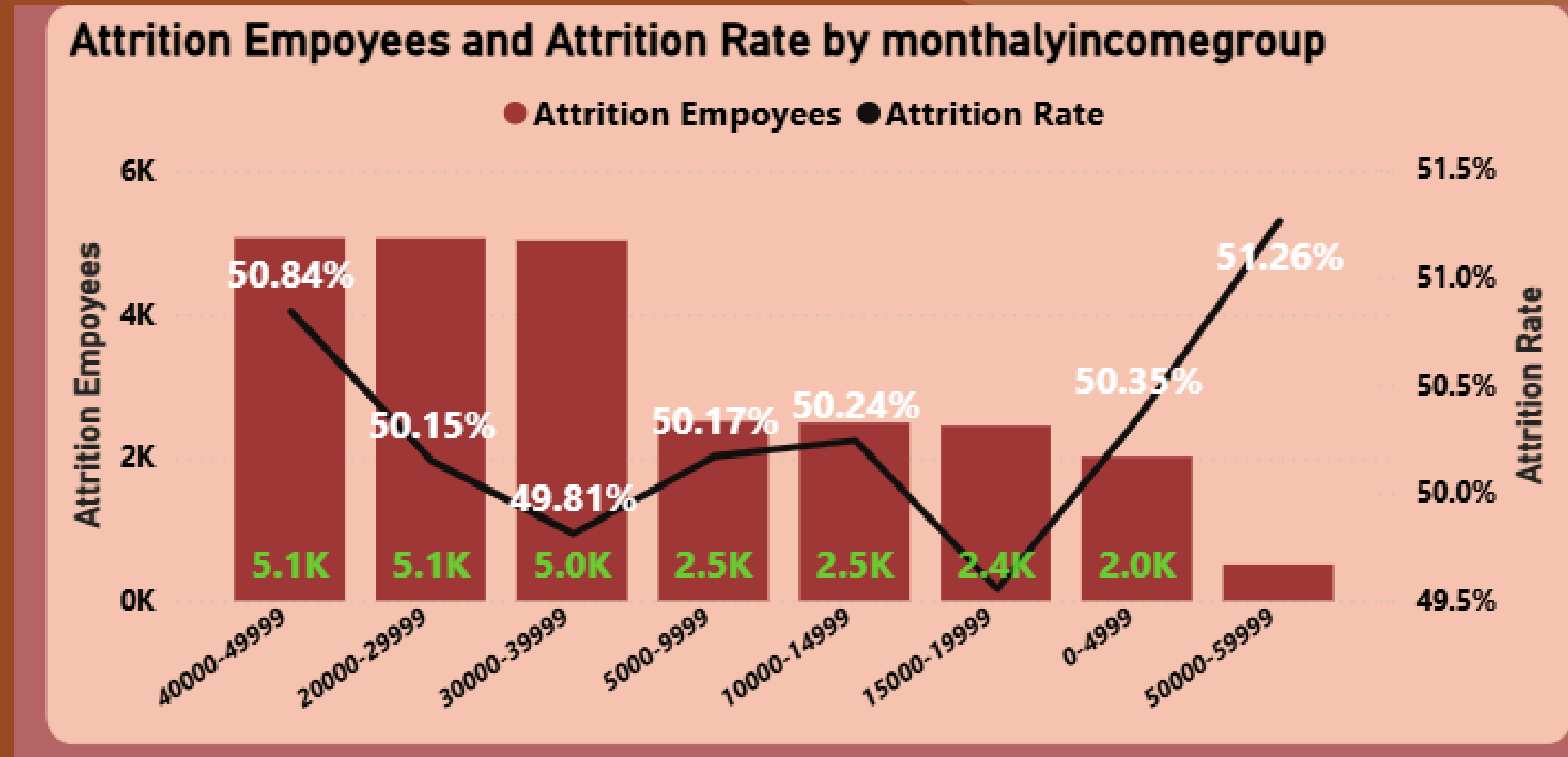
KPI's 2: Average Hourly rate of Male Research Scientist



Observation

- The average hourly rate for male employees working as Research Scientists is ₹114
- This indicates that Research Scientist roles are moderately compensated, reflecting a mid-level pay grade in the organization
- A deeper comparison across genders and roles could reveal whether pay equity exists within the company

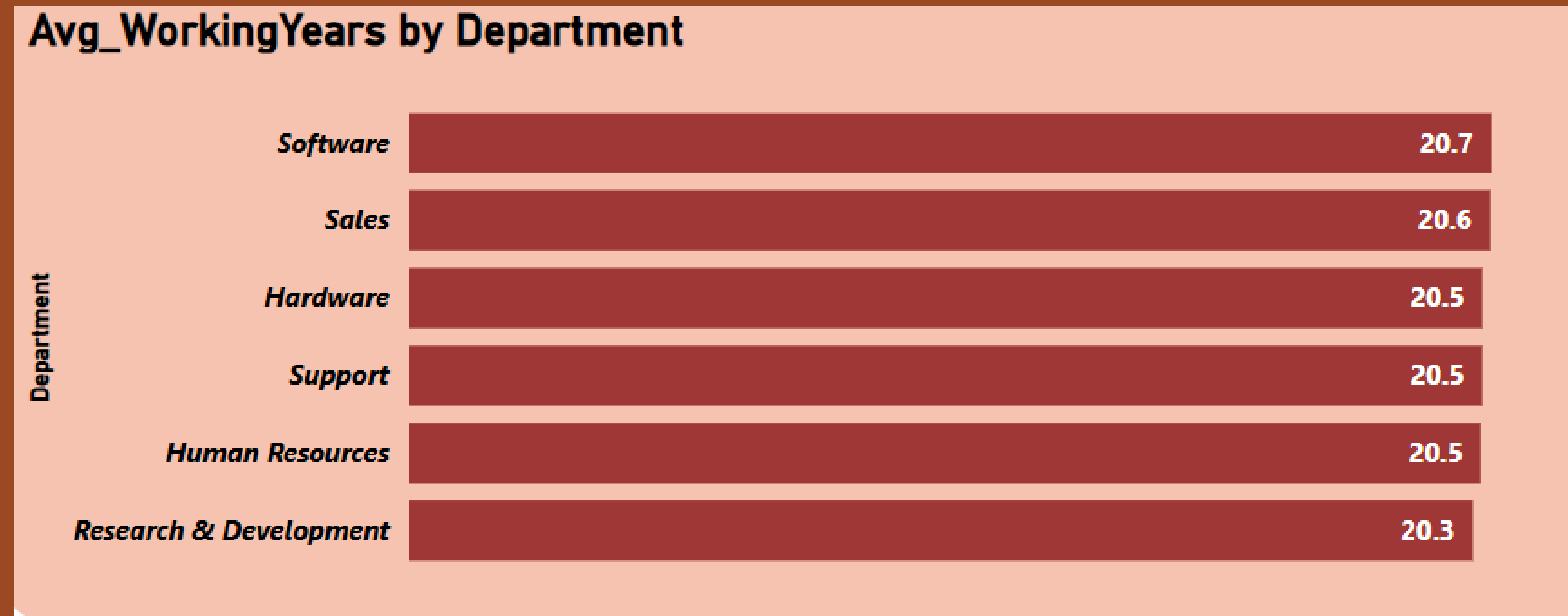
KPI's 3: Attrition rate Vs Monthly income stats



Observation

- Employees earning between ₹40,000–₹49,999 and ₹50,000–₹59,999 show the highest attrition rates (50.84% and 51.26%), respectively
- Those in the mid-income ranges (₹20,000–₹39,999) have slightly lower attrition (≈50%), suggesting relatively more job stability
- Interestingly, the lowest income group (₹0–₹4,999) also shows a rise in attrition (50.35%), indicating dissatisfaction at both income extremes
- This trend suggests that income alone doesn't prevent attrition — other factors like career growth, job satisfaction, and work-life balance also play key roles

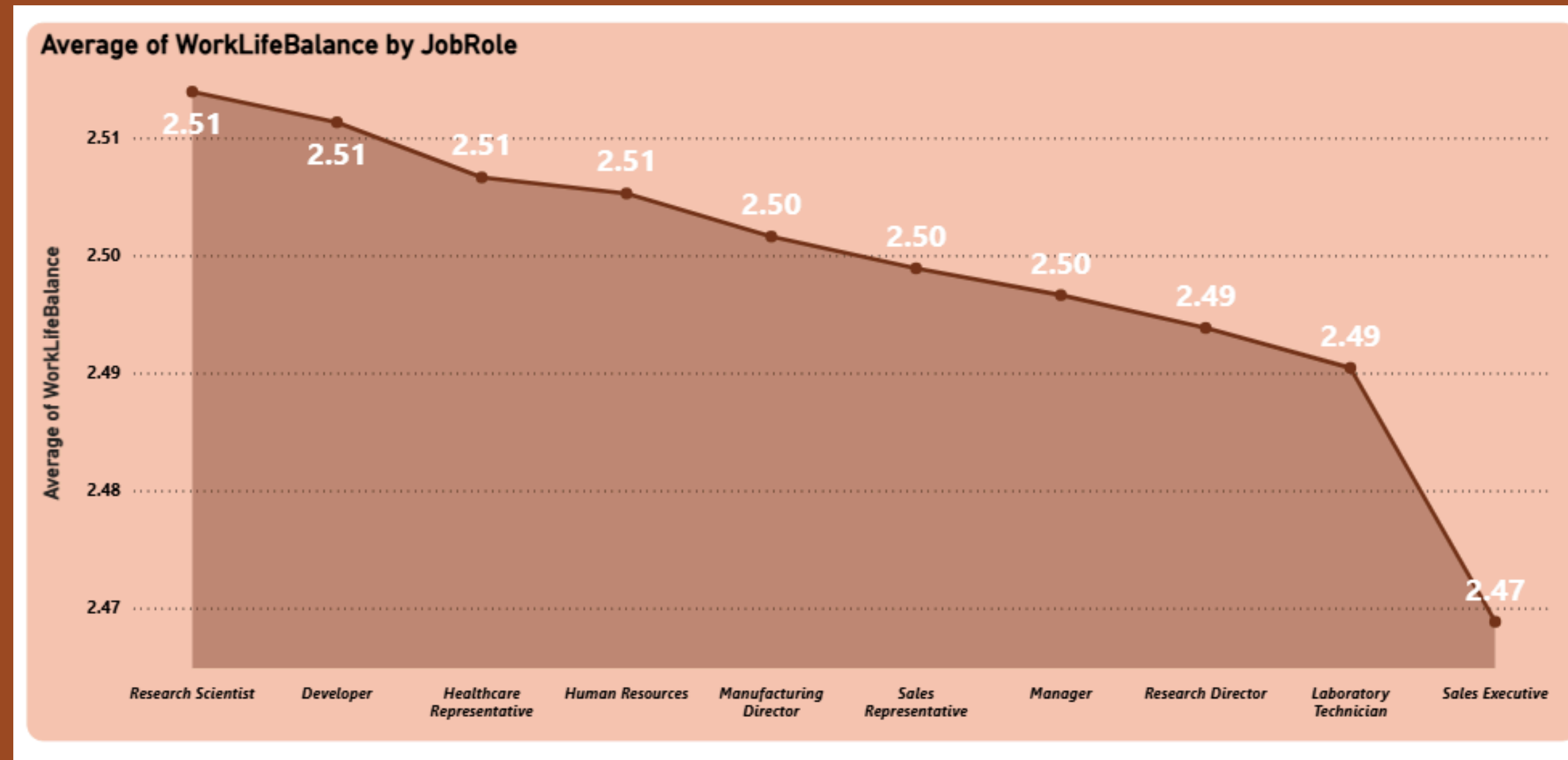
KPI's 4: Average working years for each Department



Observation

- The Software department has the highest average working years (20.7 years), indicating higher employee retention and satisfaction
- Sales follows closely at 20.6 years, suggesting that employees in client-facing roles also tend to stay long-term
- Departments like Hardware, Support, and HR show consistent averages around 20.5 years, representing a stable workforce
- The Research & Development (R&D) department, though slightly lower at 20.3 years, still shows strong tenure, reflecting experience and domain knowledge

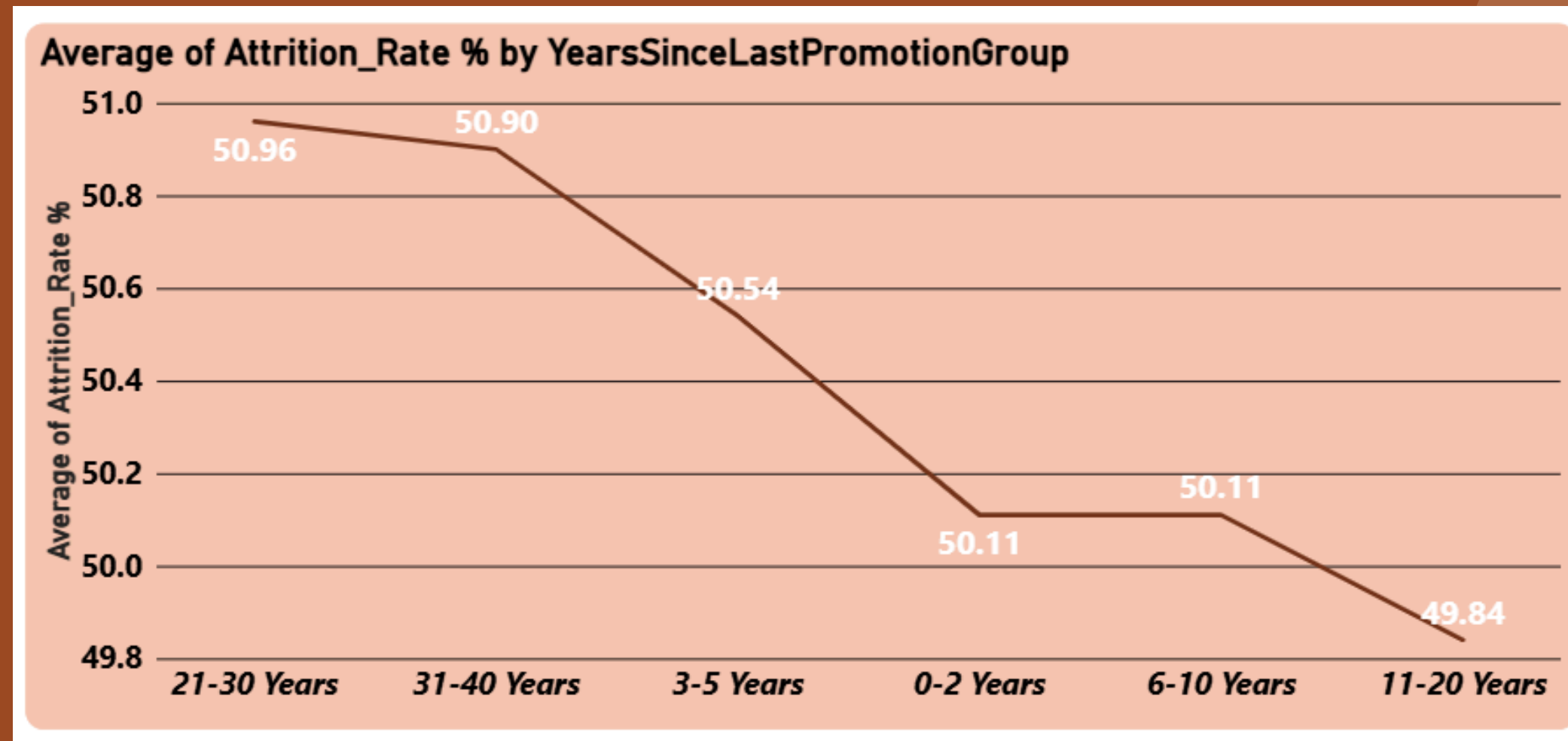
KPI's 5: Job Role Vs Work life balance



Observation

- The Research Scientist and Developer roles have the highest work-life balance score of 2.51, indicating a relatively better equilibrium between professional and personal life.
- Healthcare Representatives and Human Resources employees also show stable satisfaction levels at around 2.51, implying moderate balance.
- However, Sales Executives have the lowest work-life balance score (2.47) — suggesting that sales roles might involve longer working hours or higher job stress.
- Overall, work-life balance scores range narrowly from 2.47 to 2.51, reflecting a consistent yet improvable environment across job roles.

KPI's 6: Attrition rate Vs Year since last promotion relation



Observation / Insight:

- Employees who were promoted within the last 0–2 years show an average attrition rate of 50.11%, indicating moderate turnover.
- The highest attrition (50.96%) is seen among employees with 21–30 years since their last promotion — likely due to career stagnation or retirement planning
- Attrition rate gradually declines after longer durations (down to 49.84% for 11–20 years group), suggesting that senior or long-tenured employees are more stable
- Overall, there's a slight negative trend — meaning that recent promotions don't drastically affect retention, but long gaps may influence motivation and increase attrition risk

EXCEL DASHBOARD



POWER BI DASHBOARD

HR Analytics Dashboard

Female

Male

Hide All



Brife detail



Show All



Total Employees

50K

Attrition Employees

25K

Average Age

38.97

Average Income

26.02K

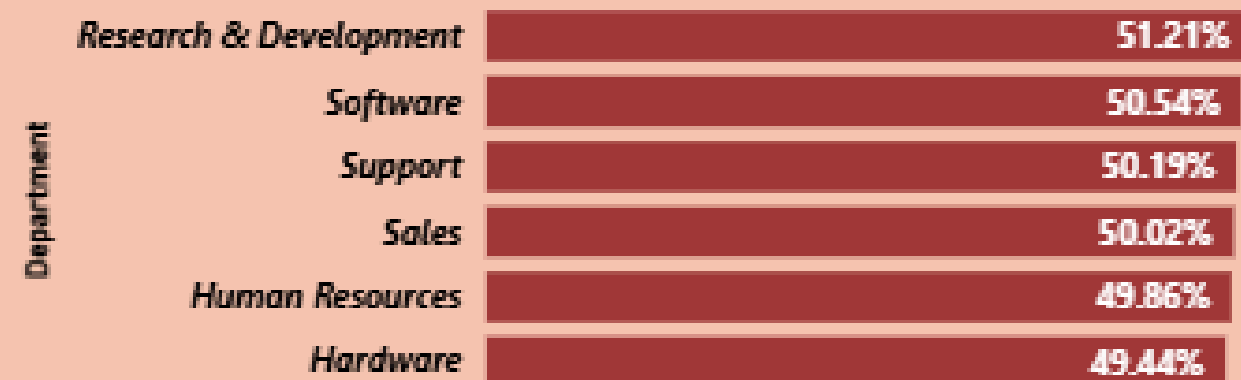
MaleCount

25059

Female Count

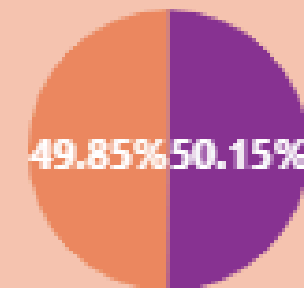
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Attrition Rate by Department

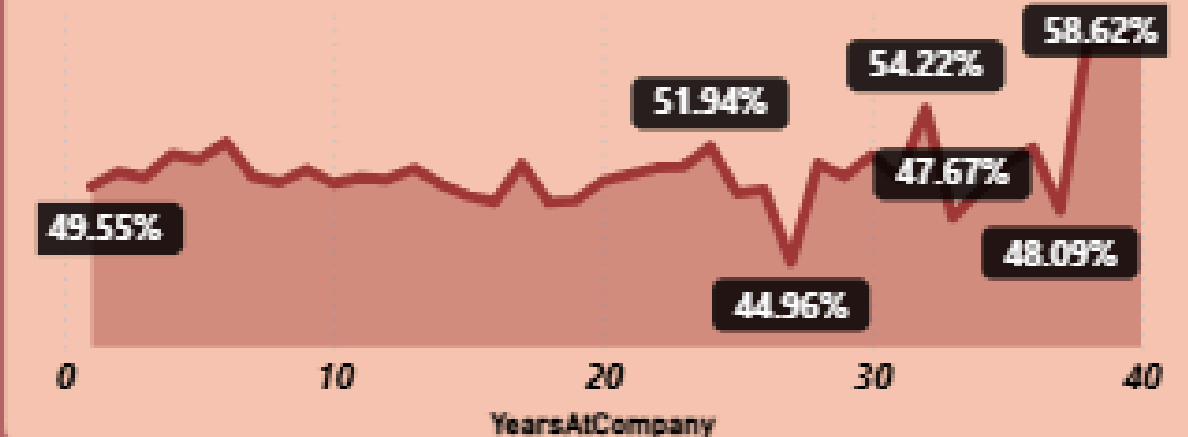


Attrition Rate by Gender

Female Male

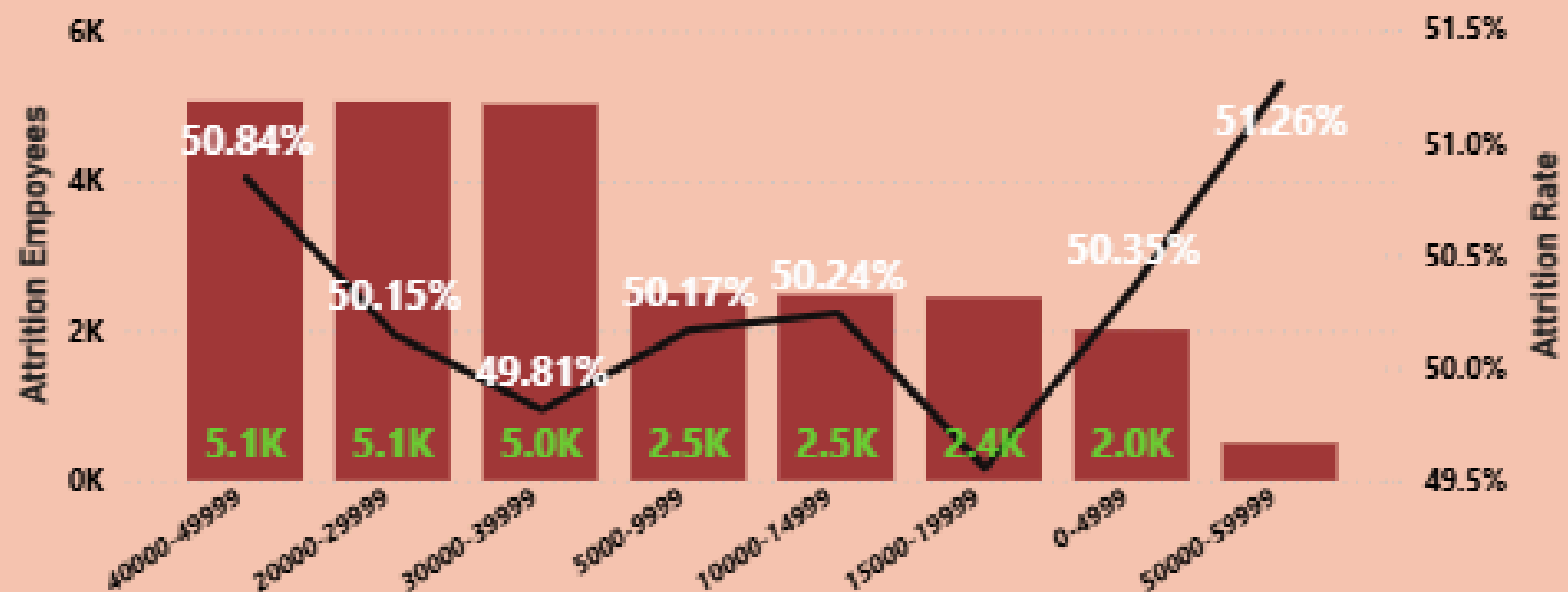


Attrition Rate by YearsAtCompany



Attrition Employees and Attrition Rate by monthalyincomegroup

Attrition Employees Attrition Rate



Total_Employees, Total_Attrition and Attrition Rate by Age group

Sum of Total_Employees Sum of Total_Attrition Attrition Rate

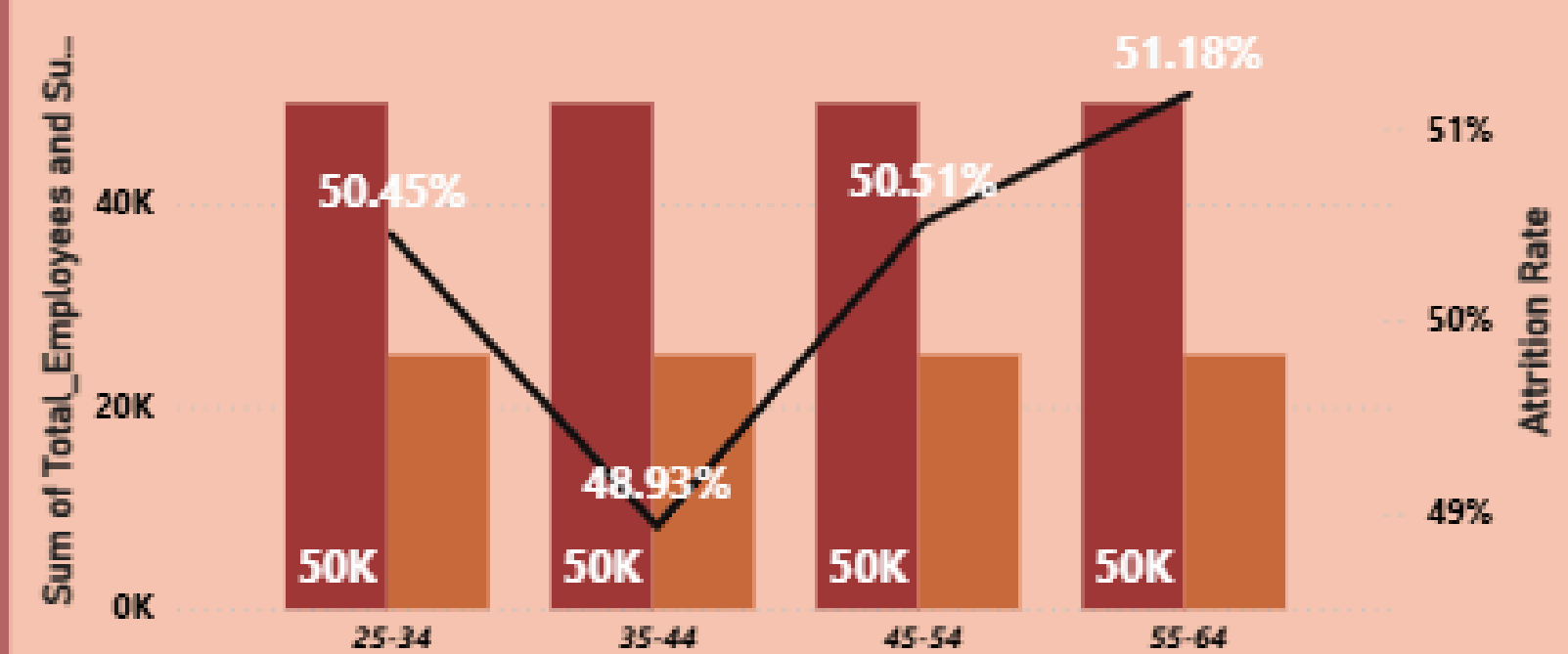
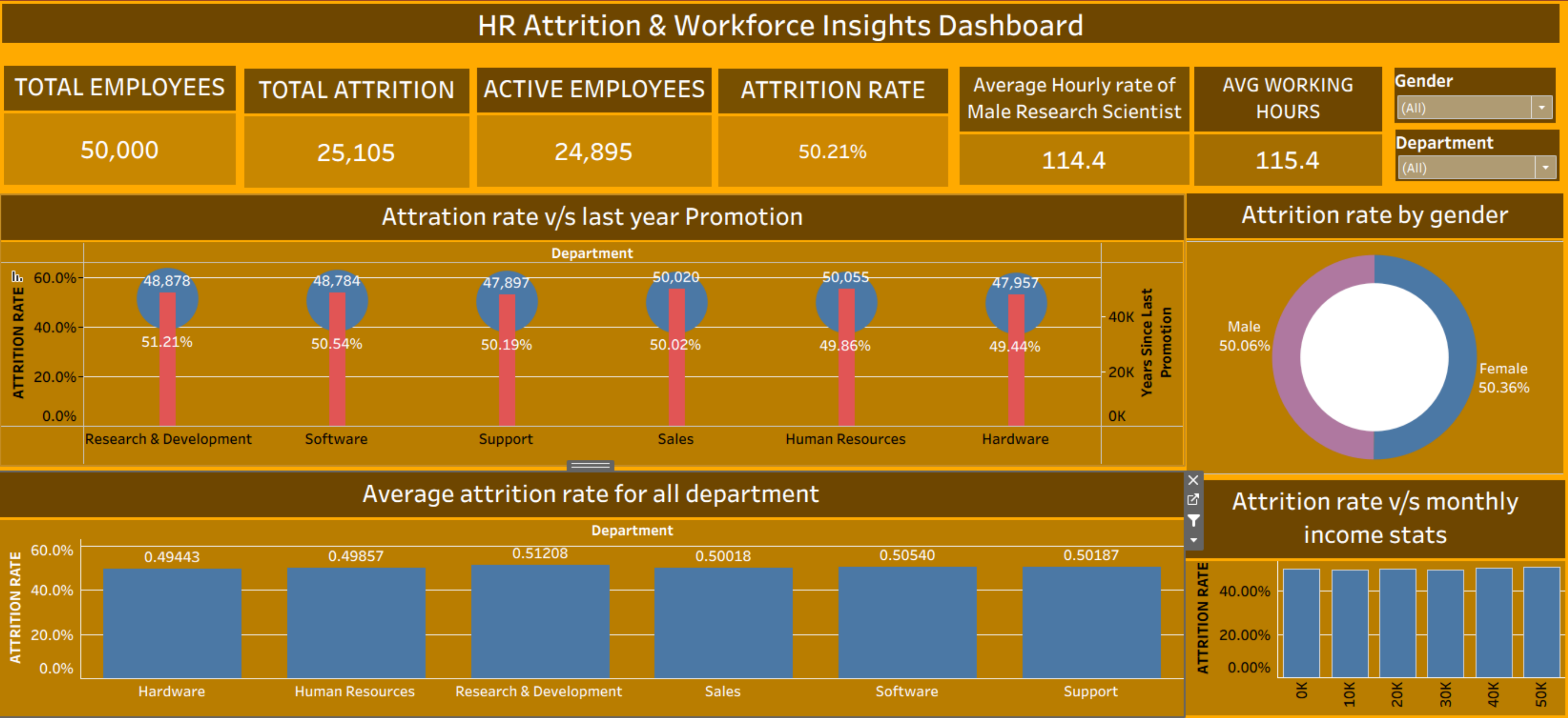


TABLEAU DASHBOARD



SQL QUERIES

```
1  -- Average Attrition Rate for All Departments
2 • SELECT
3      Department,
4      ROUND(SUM(CASE WHEN Attrition='Yes' THEN 1 ELSE 0 END) / COUNT(*) * 100, 2) AS Avg_Attrition_Rate
5  FROM hr_combined
6  GROUP BY Department;
```

```
8  -- Average Hourly Rate of Male Research Scientists
9 • SELECT
10     JobRole,
11     Gender,
12     ROUND(AVG(HourlyRate), 2) AS Avg_HourlyRate
13  FROM hr_combined
14  WHERE Gender='Male' AND JobRole='Research Scientist'
15  GROUP BY JobRole, Gender;
```

SQL QUERIES

```
16  -- Attrition Rate vs Monthly Income Stats
17 • SELECT
18     monthalyincomegroup,
19     COUNT(*) AS Total_Employees,
20     SUM(CASE WHEN Attrition='Yes' THEN 1 ELSE 0 END) AS Total_Attrition,
21     ROUND(SUM(CASE WHEN Attrition='Yes' THEN 1 ELSE 0 END)/COUNT(*)*100, 2) AS Attrition_Rate
22 FROM hr_combined
23 GROUP BY monthalyincomegroup
24 ORDER BY monthalyincomegroup;
```

```
26  -- Average Working Years for Each Department
27 • SELECT
28     Department,
29     ROUND(AVG(TotalWorkingYears), 2) AS Avg_WorkingYears
30 FROM hr_combined
31 GROUP BY Department;
```

SQL QUERIES

```
33  -- Job Role vs Work-Life Balance
34  •  SELECT
35      JobRole,
36      ROUND(AVG(WorkLifeBalance), 2) AS Avg_WorkLifeBalance
37  FROM hr_combined
38  GROUP BY JobRole
39  ORDER BY Avg_WorkLifeBalance DESC;
```

```
41  -- Attrition Rate vs Years Since Last Promotion
42  •  SELECT
43      YearsSinceLastPromotionGroup,
44      COUNT(*) AS Total_Employees,
45      SUM(CASE
46          WHEN Attrition = 'Yes' THEN 1
47          ELSE 0
48      END) AS Total_Attrition,
49      ROUND(SUM(CASE
50          WHEN Attrition = 'Yes' THEN 1
51          ELSE 0
52      END) / COUNT(*) * 100,
53      2) AS Attrition_Rate
54  FROM
55      hr_combined
56  GROUP BY YearsSinceLastPromotionGroup
57  ORDER BY YearsSinceLastPromotionGroup;
```


Challenges and How I Overcame Them

Challenge 1: Merging Two HR Datasets

- I had two different HR datasets (Dataset 1 and Dataset 2) which needed to be combined to perform complete analysis.
- The challenge was that both datasets had different structures — some column names didn't match, and a common key column was required for merging. Without a common column, joining data directly was not possible.

Way to Solve:

- I analyzed both datasets to identify common columns like Employee ID. After identifying these, I renamed mismatched columns to maintain consistency.
- Using SQL JOIN and Power Query in Power BI, I successfully merged the datasets into a single clean data model.
- This helped in building dynamic visuals and KPIs across the unified HR data.

Challenge 2: SQL Table Loading Issues

- While importing the datasets into SQL, some column headers didn't match the table schema that I had created earlier.
- This caused errors during data loading and prevented successful table creation.

Way to Solve:

- I reviewed the dataset headers and modified the SQL table schema to ensure correct data type alignment and column naming consistency. Used commands like `Alter table HR_Combined ADD COLUMN Rname Column` to fix mismatches.
- After correction, I reloaded the data successfully and verified it using simple Select queries.

Challenge 3: Data Cleaning

- Some columns contained blank or null values. This affected the accuracy of average calculations and visuals.

Way to Solve:

- Used Power Query Editor to handle missing values by applying filters and deleted the null column. This made all KPIs and charts accurate and reliable.

Challenge 4: Dashboard Interactivity

- Initially, filters and slicers were not dynamically connected across visuals.
- This made it difficult to view gender-wise or department-wise insights interactively.

Way to Solve:

- Added Slicers for Department, Gender, and Education Field.
- Configured visual interactions and also use bookmarks. This made the dashboard fully interactive and easy to analyze.

Conclusion

The HR analytics project provided deep insights into the factors influencing employee attrition and workplace engagement. After analyzing multiple dimensions such as age, department, promotion history, and job satisfaction, the following key findings were observed

Years Since Last Promotion:

- Employees who haven't received a promotion for more than 10 years show the highest attrition rate (50%). This indicates that career stagnation strongly contributes to employee turnover.
- Timely promotions and skill-based career paths can help retain such employees.

Age Group Analysis:

- The 21–30 years age group experiences the maximum attrition rate, suggesting that younger employees are more likely to switch jobs early for better opportunities, growth, and pay packages.

Department-Wise Trends:

- Attrition is comparatively higher in Sales and HR departments, possibly due to job stress, target-driven environments, and limited growth visibility compared to the R&D department, which shows more stability.

Job Satisfaction Correlation:

- A clear negative relationship is observed between job satisfaction and attrition rate — as satisfaction scores rise, attrition rates fall. This emphasizes the importance of employee recognition, fair rewards, and a healthy work-life balance.

Work Environment & Tenure:

- Employees with shorter tenure (0–2 years) tend to leave more frequently, indicating the need for better onboarding and engagement practices during the initial employment phase.

THANKYOU