

HR DATA ANALYSIS PRESENTATION

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DESCRIPTION

During my presentation, I'll be highlighting a HR project I spearheaded at PSYLIQ. This project centers on analyzing employee data regarding marital status, income, and its relationship with age. My aim is to unveil insights crucial for enhancing HR strategies. By investigating how marital status and income intersect with age among our workforce, I intend to offer valuable insights to optimize our HR practices. This presentation emphasizes the importance of data analysis in shaping HR decisions and ultimately improving organizational effectiveness.



PROJECT OBJECTIVES

In this project aimed at enhancing PSYLIQ's hiring strategies, a data-driven approach is adopted. The process begins with an Extract, Transform, Load (ETL) process, where essential hiring data is extracted from PSYLIQ's records, including job roles, salary changes, and employment outcomes. During the transformation phase, the data undergoes standardization and error correction using Power Query in Excel. The subsequent analysis in Power BI focuses on obtaining deep insights through advanced features, examining variables such as departmental performance, marital status, and salary hikes using complex calculations with DAX. The ultimate goal of the project is to provide PSYLIQ's Hiring Department with actionable insights to optimize recruitment processes and effectively attract top talent.



ETL process: Extract essential hiring data from PSYLIQ's records

Transformation: Standardize and correct errors using Power Query in Excel

Analysis: Utilize Power BI for deep insights on departmental performance, marital status, and salary increments

Goal: Provide actionable insights to optimize recruitment processes and attract top talent

PROJECT INSIGHTS

FILTERING EMPLOYEES AGED 30

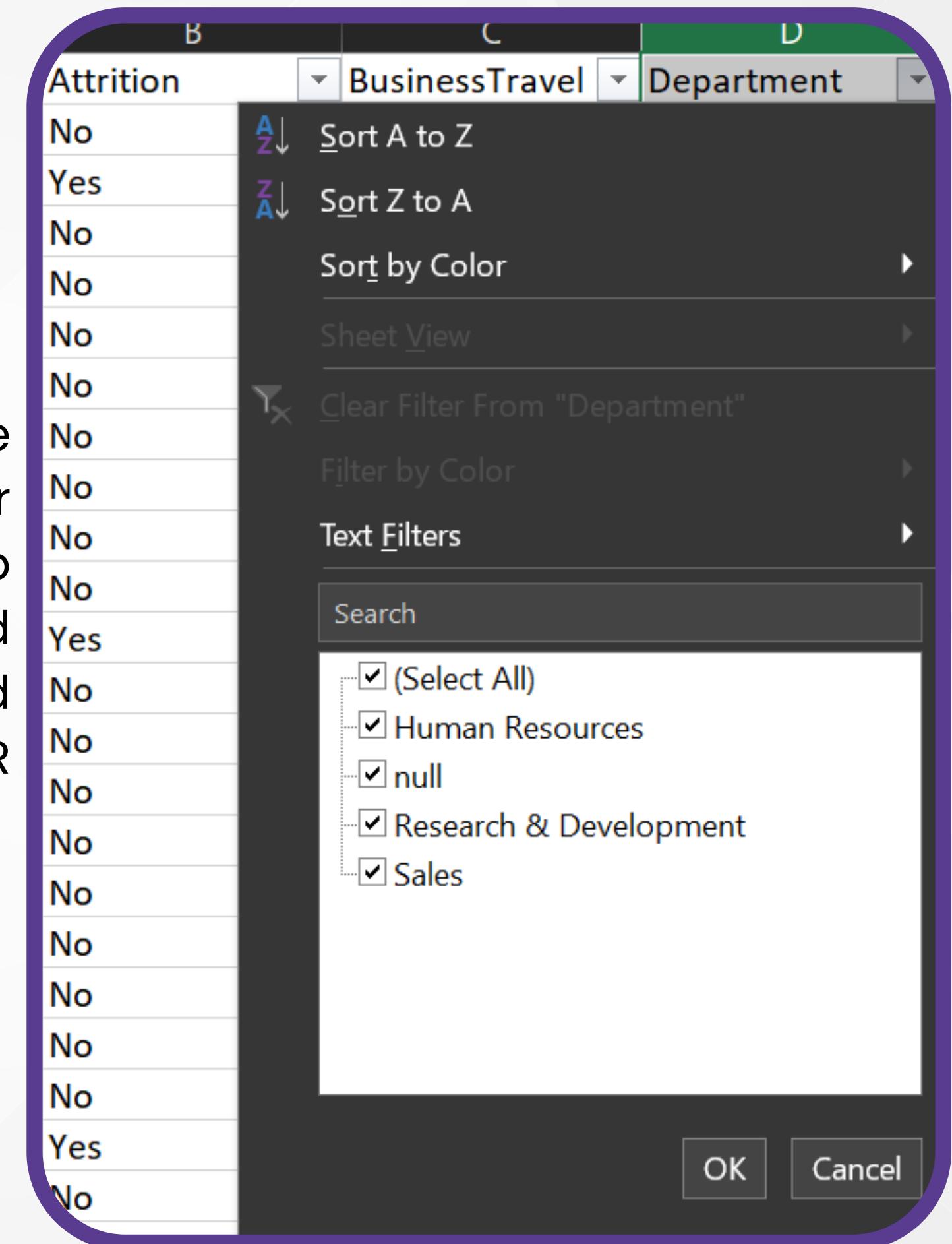
- In Excel, to filter employees aged 30 and above, navigate to the 'Age' column in your dataset.
- Utilize the Data tab or Filter options to set the criteria.
- Apply a filter to the 'Age' column, selecting only values greater than or equal to 30.
- This action refines the displayed data, ensuring subsequent analysis considers only employees meeting this age criterion.
- It's a useful technique for focusing on a specific demographic, aiding analysis related to experienced staff, such as attrition rates or department distribution.



	A	B	C	D	E
1	Age	Attrition	Business	Department	Distance
2	51	No	Travel_Ra	Sales	6
3	31	Yes	Travel_Fre	Research	10
4	32	No	Travel_Fre	Research	17
5	38	No	Non-Trave	Research	2
6	32	No	Travel_Ra	Research	10
7	46	No	Travel_Ra	Research	8
10	31	No	Travel_Ra	Research	1
12	45	No	Travel_Ra	Research	17
13	36	No	Travel_Ra	Research	28
14	55	No	Travel_Ra	Research	14
15	47	Yes	Non-Trave	Research	1
17	37	No	Travel_Ra	Research	1
19	37	No	Non-Trave	Research	1
20	35	No	Travel_Ra	Sales	7
21	38	No	Travel_Ra	Research	8
23	50	No	Travel_Ra	Sales	8
24	53	No	Travel_Ra	Research	11
25	42	No	Travel_Ra	Research	4
27	55	No	Travel_Ra	Research	1
29	37	No	Travel_Ra	Sales	5
30	44	Yes	Travel_Fre	Research	1
31	38	No	Travel_Ra	Sales	2
					Travel_Fre

REMOVING BLANKS AND NULL VALUES FROM THE DATASET

To ensure data integrity for our analysis, we utilize Excel's Filter feature to remove rows with null or empty values. This essential data cleansing step safeguards against potential inaccuracies and readies the dataset for reliable analysis and reporting, thereby supporting informed HR decision-making.



AVERAGE OF MONTHLY INCOME PER JOB ROLE

To ensure data integrity for our analysis, we utilize Excel's Filter feature to remove rows with null or empty values. This essential data cleansing step safeguards against potential inaccuracies and readies the dataset for reliable analysis and reporting, thereby supporting informed HR decision-making.

Job role	Average of Monthly Income
Healthcare Representative	60984
Human Resources	58528
Laboratory Technician	66314
Manager	63396
Manufacturing Director	69184
Research Director	65473
Research Scientist	64976
Sales Executive	65187
Sales Representative	65371
Grand Total	65029



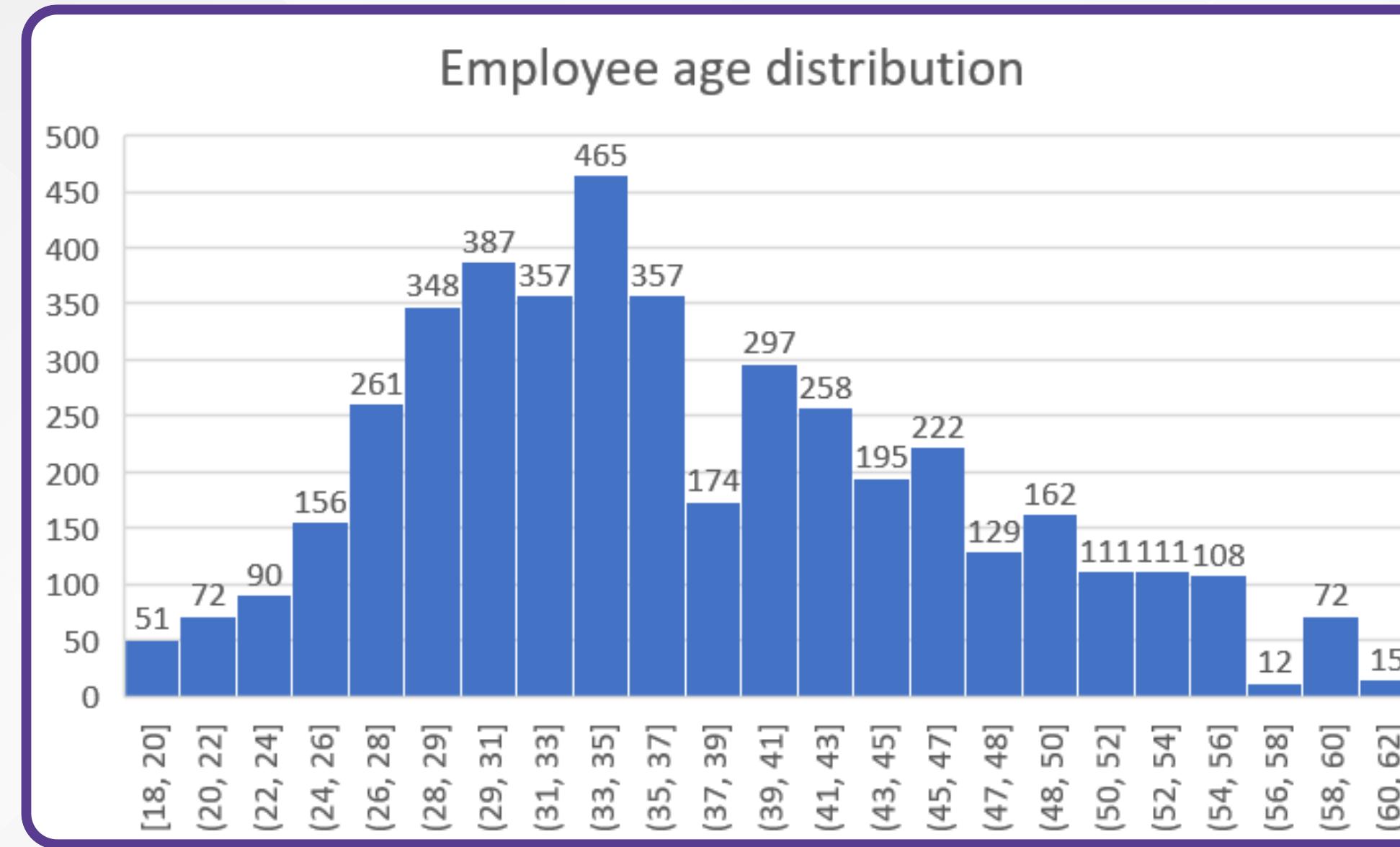
HIGHLIGHTING EMPLOYEES WITH MONTHLY INCOME HIGHER THAN COMPANY AVERAGE

The image displays a column of monthly incomes with highlighted entries, indicating employees who earn above a particular benchmark. This visual tool, achieved through conditional formatting, is essential for quickly identifying high earners and assessing compensation patterns within the company.

N
MonthlyIncome
131160
41890
193280
83210
23420
40710
58130
31430
20440
134640
79910
33770
55380
57620
25920
53460
42130
41270
24380
68700
104470
96670
21480



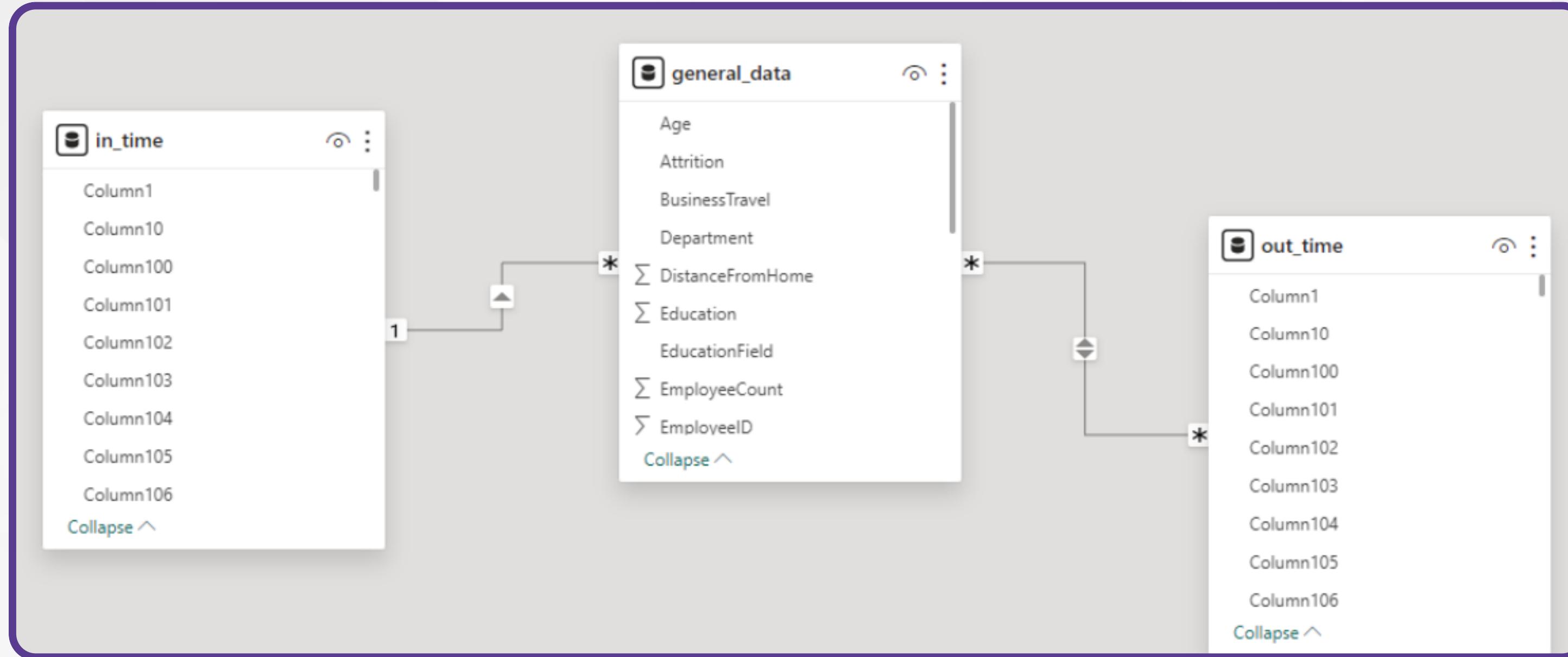
HIGHLIGHTING EMPLOYEES WITH MONTHLY INCOME HIGHER THAN COMPANY AVERAGE



The "Employee Age Distribution" graph shows a bell-shaped curve indicating a concentration of mid-career employees. This suggests a mature workforce, impacting recruitment and succession planning.



INTEGRATION OF EMPLOYEE AND TIME TRACKING DATA: ESTABLISHING RELATIONSHIPS IN POWER BI



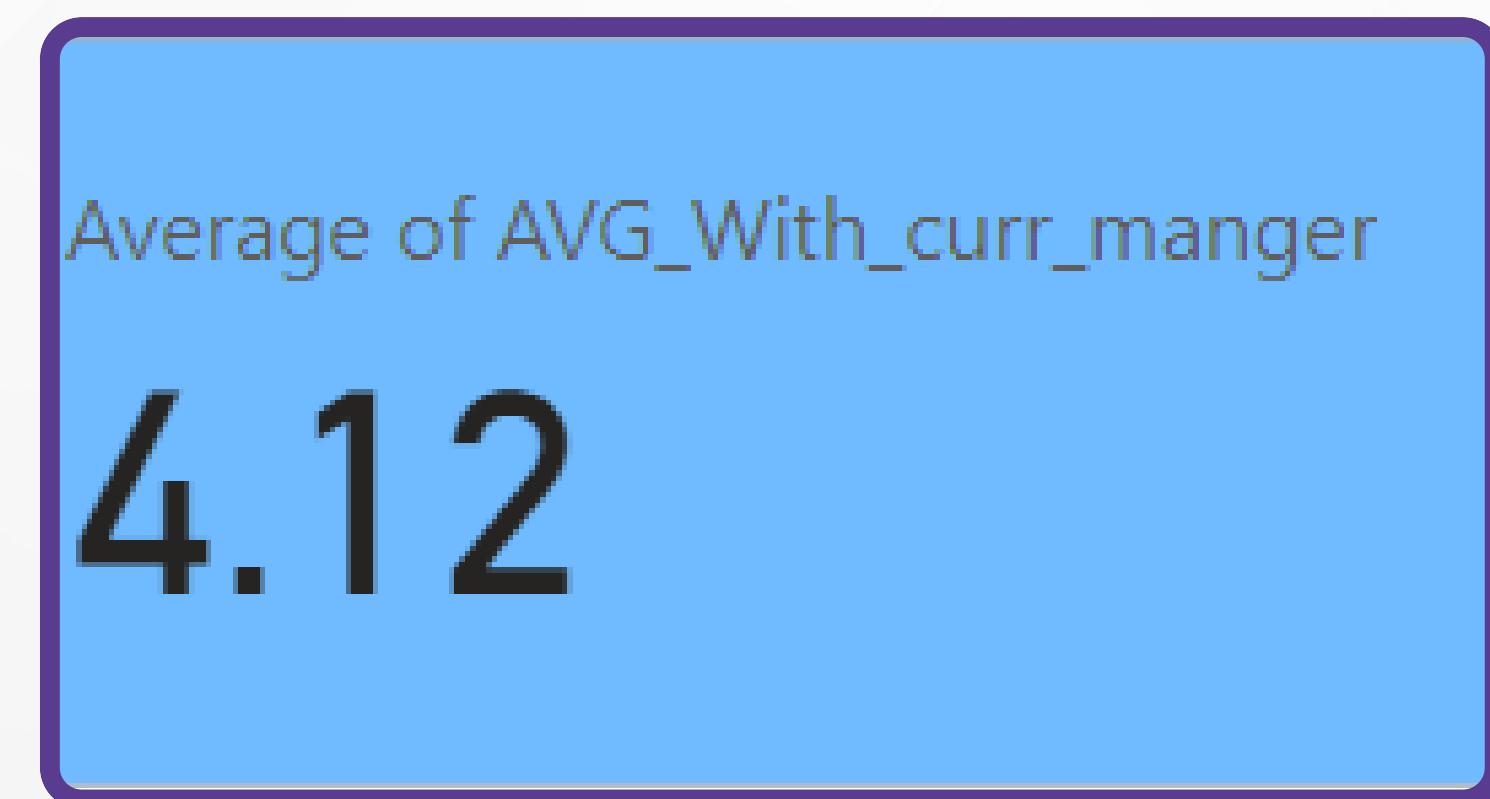
The Power BI relationship model connects 'EmployeeID' across 'general_data', 'in_time', and 'out_time' tables, facilitating the merging of employee information with time tracking data for analysis.



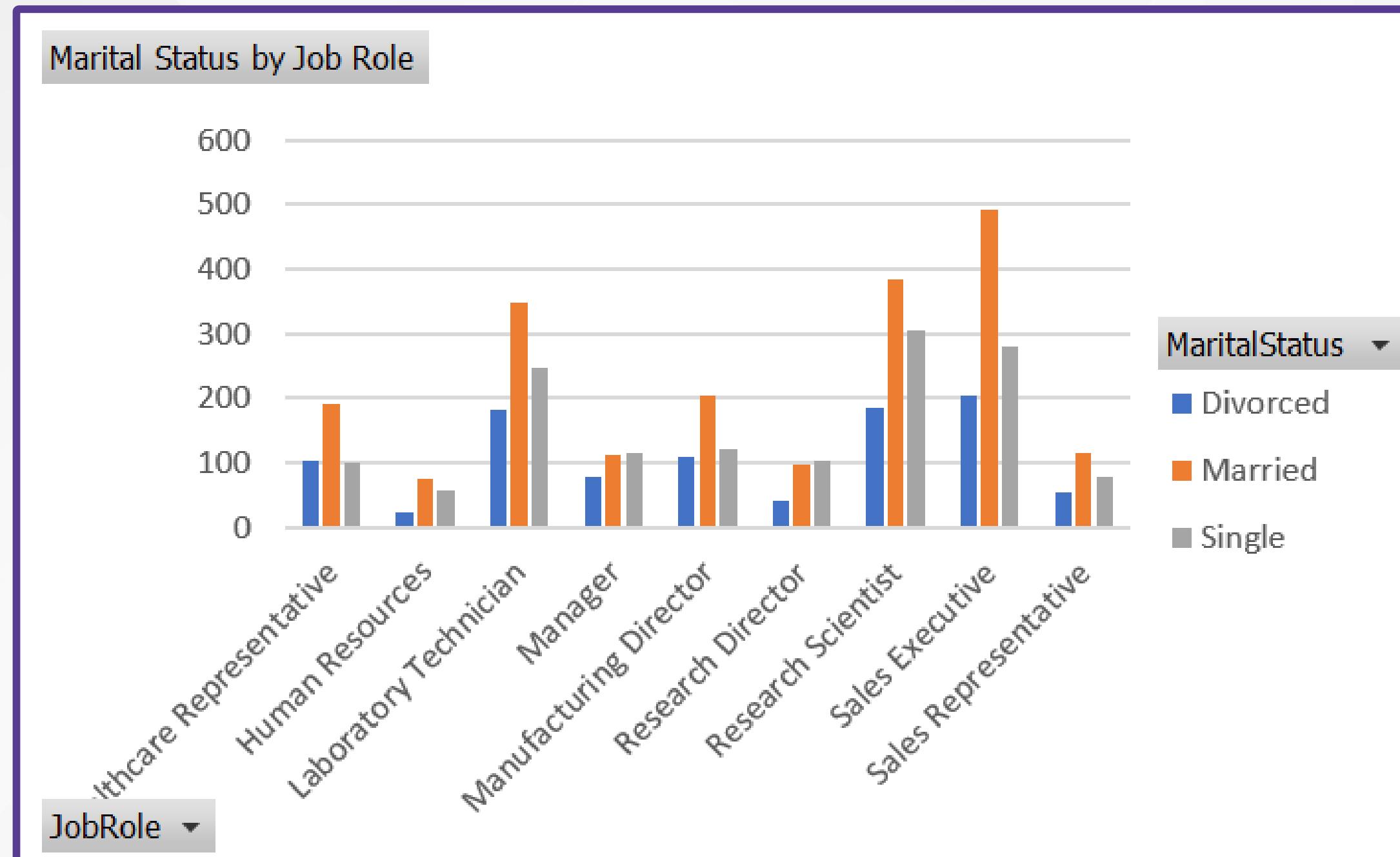
CALCULATING AVERAGE TENURE WITH CURRENT MANAGER: A DAX FORMULA IN POWER BI

ture	Formatting	Properties
1 <code>AVG_WITH_CURRENT_MANAGER = AVERAGE(general_data[YearsWithCurrManager])</code>		

In Power BI, a DAX formula calculates the average years employees have been with their current manager. The result, showcased in a card visual, reveals an average tenure of 4.12 years under their current manager.



MARITAL STATUS DISTRIBUTION ACROSS DEPARTMENTS: HR INSIGHTS FOR TAILORING BENEFITS.



The visualization presents a breakdown of employees by marital status—Divorced, Married, Single—across departments like Healthcare, HR, and Research. This snapshot offers HR valuable insights into the demographic composition of the workforce, aiding in the customization of benefits and support programs.



IDENTIFYING HIGH-INCOME, HIGH-SATISFACTION EMPLOYEES: A DUAL ANALYSIS

The tables display employees' monthly income alongside their job satisfaction ratings. We're pinpointing individuals with above-average income and high job satisfaction. 'High income' refers to earnings surpassing the average displayed in the first image, while 'high job satisfaction' is denoted by the highest rating on the scale shown in the second image.

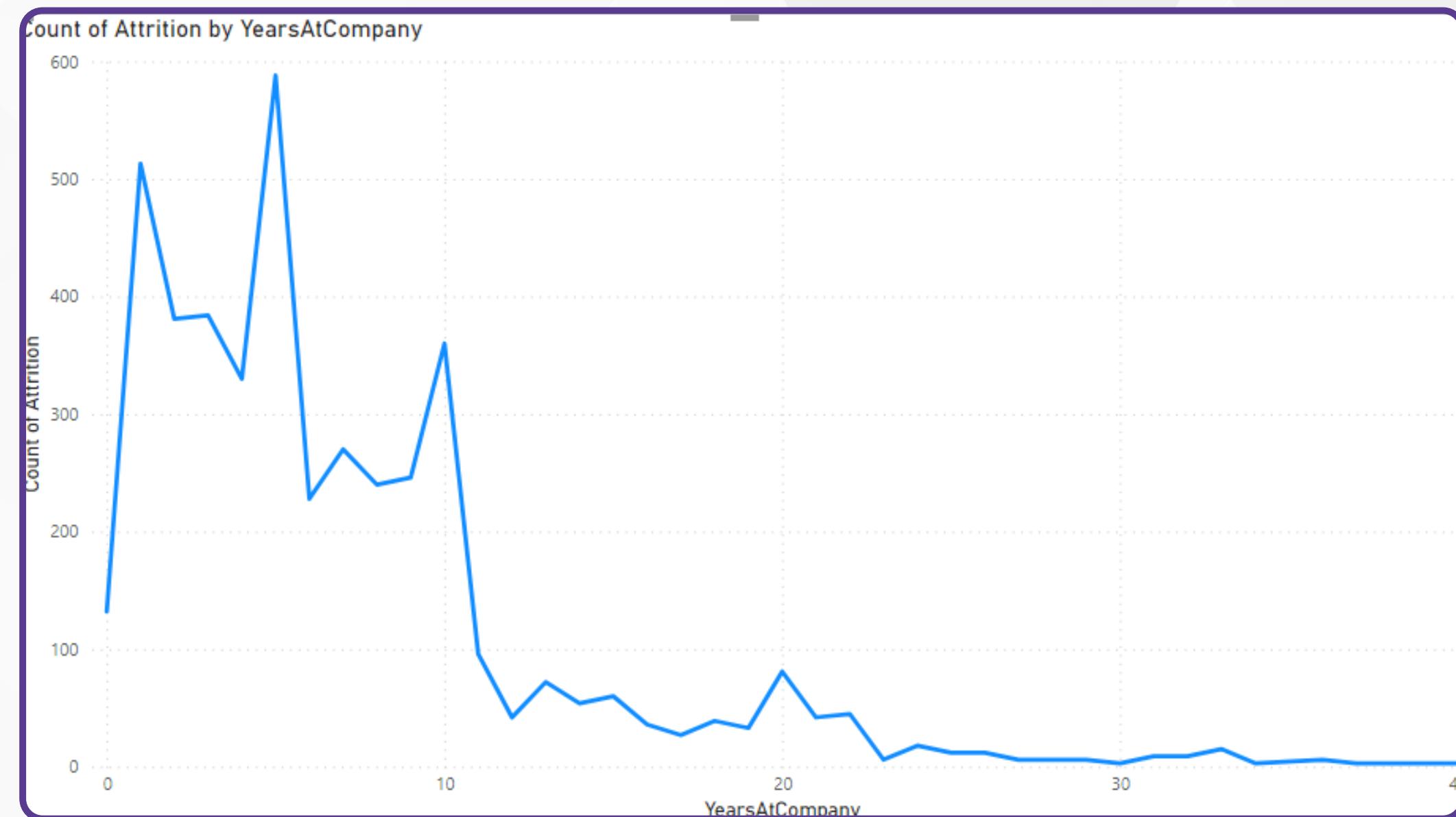
MonthlyIncome
131160
41890
193280
83210
23420
40710
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31430
20440
134640
79910
33770
55380
57620
25920
53460
42130
41270
24380
68700
104470
96670
21480
89260
65130
67990
162910

JobSatisfaction
4
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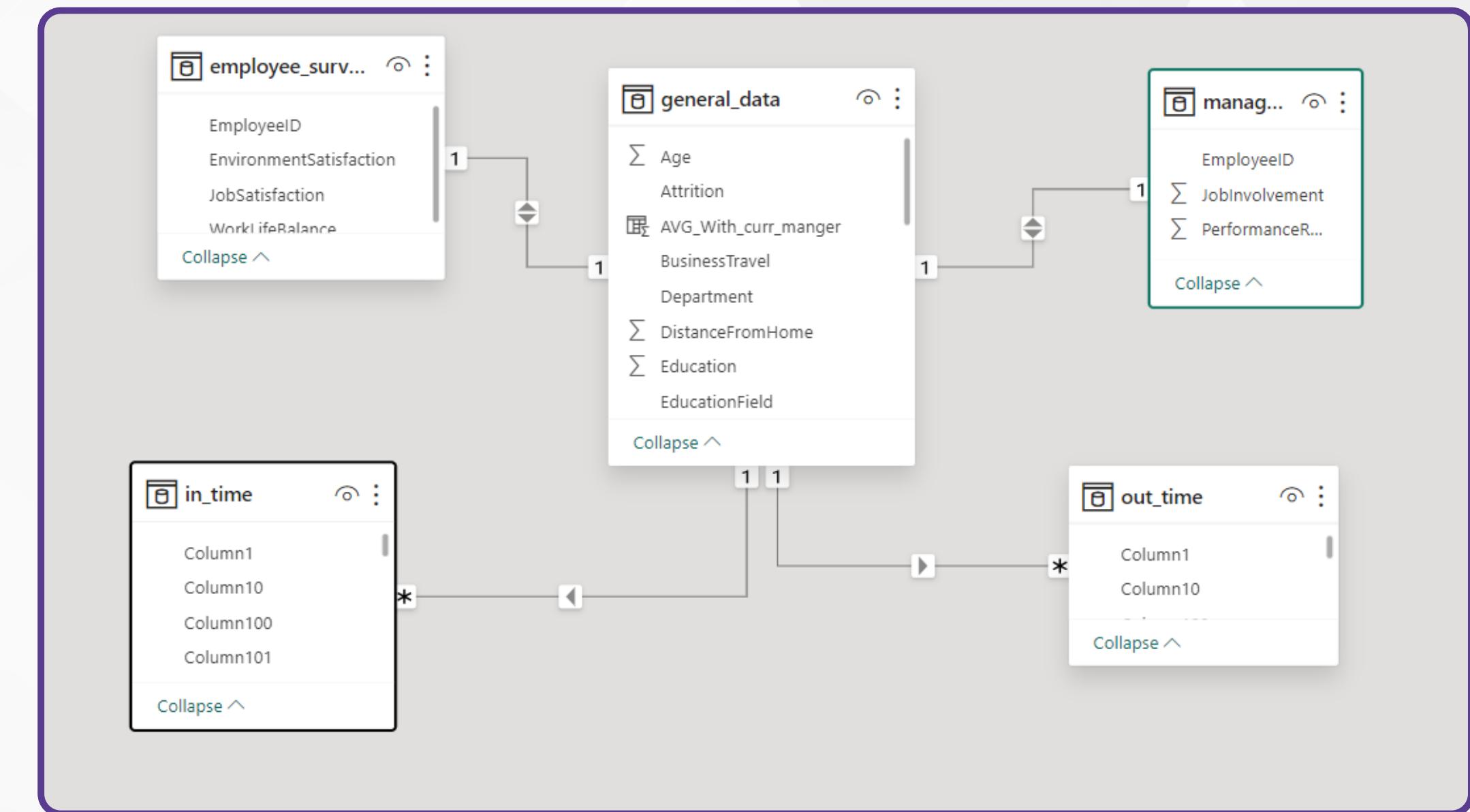
EMPLOYEE ATTRITION TRENDS OVER TIME: POWER BI ANALYSIS

The graph shows a sharp increase in attrition during the first 10 years followed by a decline. This suggests that many employees leave early on but then stay longer, possibly due to improved job satisfaction or retention efforts.



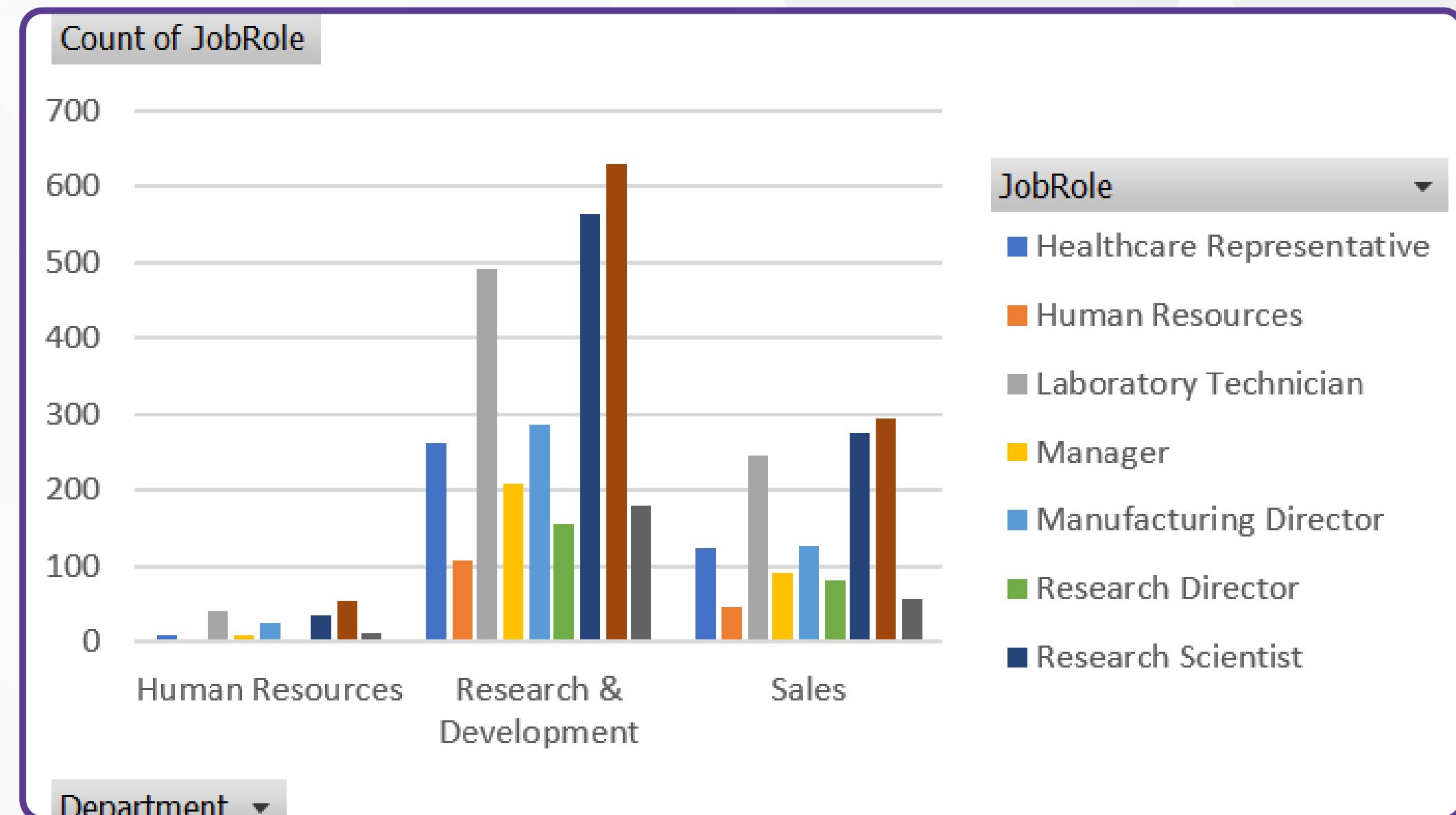
BUILDING A STAR SCHEMA FOR DATASET OPTIMIZATION AND BENEFITS

Creating a star schema involves identifying key data components like departments, employees, and time, which become dimension tables, and measurable data like sales, which becomes the fact table. Break down dimension tables into focused tables, such as Department or Employee, with specific details. Connect dimension tables to the fact table using unique identifiers, simplifying data views for streamlined reporting and analysis, ultimately enhancing comprehension and efficiency.

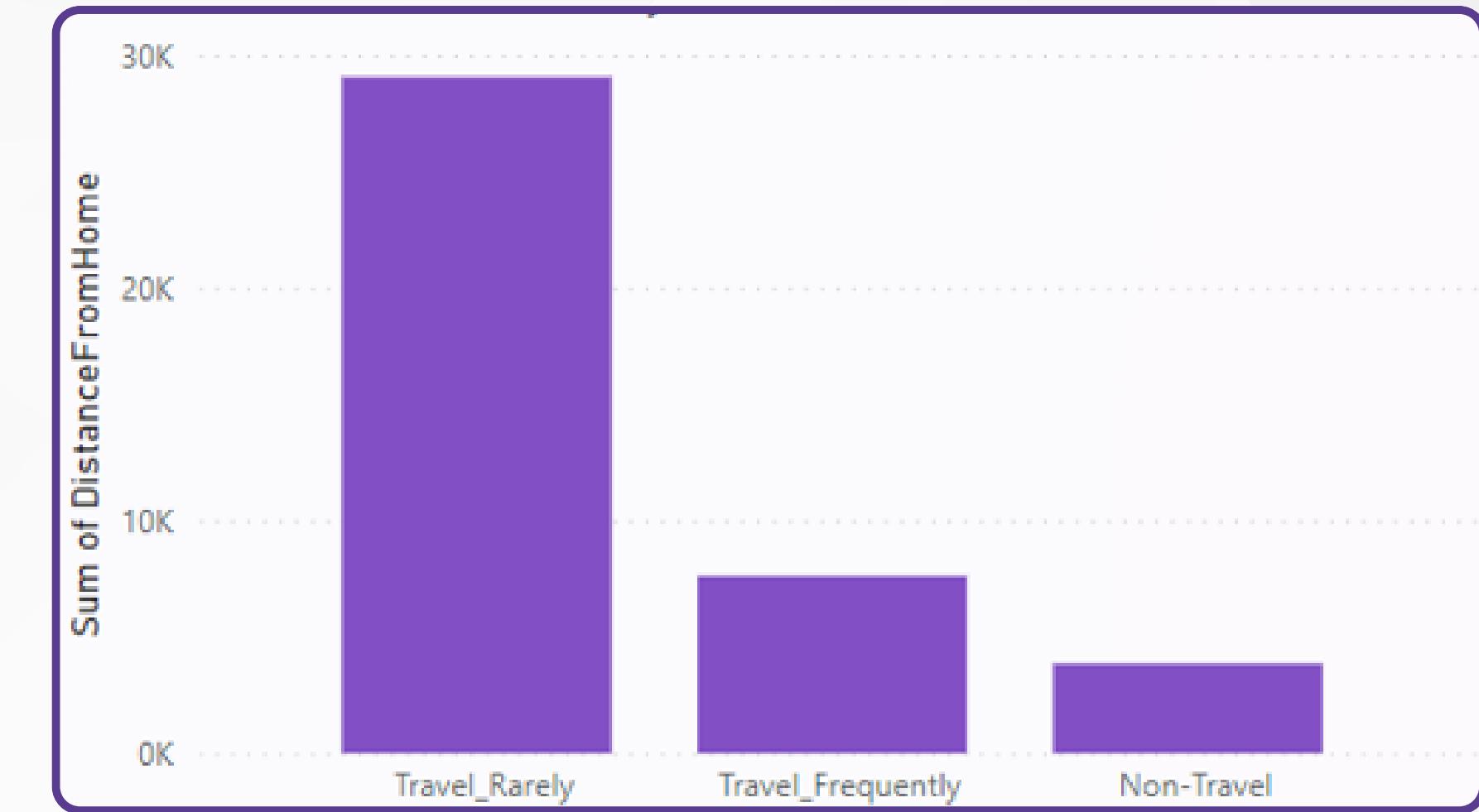
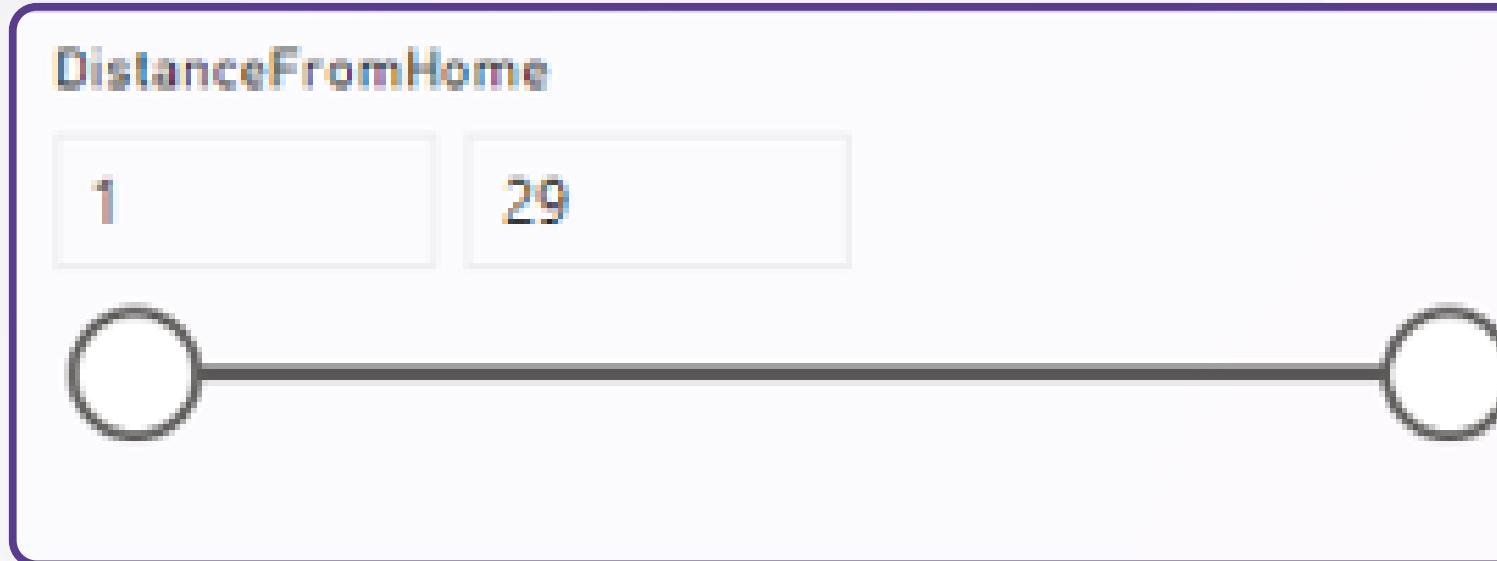


CREATING DEPARTMENT-TO-JOB ROLE RELATIONSHIPS IN POWER BI

The graph reveals a significant concentration of employees within the Research and Development department, indicating its prominence within the organization. Following closely behind is the Sales department, suggesting a substantial workforce allocation to sales-related activities. Human Resources emerges as the third most populated department, indicating its importance in supporting organizational functions.



PARAMETERIZED QUERIES FOR HOME DISTANCE FILTERING IN POWER BI



To implement parameterized queries for distance-from-home filtering in Power BI, begin by creating a new parameter within Power BI Desktop under the "Home" tab. Ensure that your data query aligns with the filter criteria based on this parameter. After making necessary adjustments in the Query Editor, save your changes. Lastly, incorporate a slicer into your report view, allowing users to interactively filter data using this parameter. This approach enhances user engagement and facilitates more efficient data analysis within Power BI reports.



TOTAL MONTHLY INCOME BY DEPARTMENT FOR EMPLOYEES WITH JOB LEVEL

Job role	1	2	3	4	5	Grand Total
Human Resources	69318	51856	54950	62900	47547	57904
Research & Development	64371	67365	64638	79569	80221	67188
Sales	57955	63629	62394	76781	38553	61384
Grand Total	62677	65506	63545	77941	64698	65029

The pivot table reveals that employees in job level 4 are the highest earners, followed by those in job level 2. This suggests seniority, expertise, and career progression within the organization. It reflects the value placed on experience and talent, informing decisions on compensation and talent development.



TOTAL MONTHLY INCOME BY DEPARTMENT FOR EMPLOYEES WITH JOB LEVEL

To conduct a What-If analysis for a 10% Salary Hike, we began by organizing our data and formulas. Once everything was set up, we located the cell where the Percent Salary Hike is calculated. Then, we navigated to the "Data" tab and selected "What-if Analysis," followed by "Data Table." Inputting the cells containing the original data and the 10% Salary Hike into the designated boxes allowed us to explore the potential impact of this specific salary hike scenario on our data. This analysis provides valuable insights for decision-making and planning, focusing on assessing the effects of adding a 10% increase to employee monthly income.

MonthlyIncome	10% HIKE	New income
131160	10%	144276
41890	10%	46079
193280	10%	212608
83210	10%	91531
23420	10%	25762
40710	10%	44781
58130	10%	63943
31430	10%	34573
20440	10%	22484
134640	10%	148104
79910	10%	87901
33770	10%	37147
55380	10%	60918
57620	10%	63382
25920	10%	28512
53460	10%	58806
42130	10%	46343
41270	10%	45397
24380	10%	26818
68700	10%	75570
104470	10%	114917
96670	10%	106337
211200	10%	232320

HR data analytics Dashboard

Average of Age

36.92

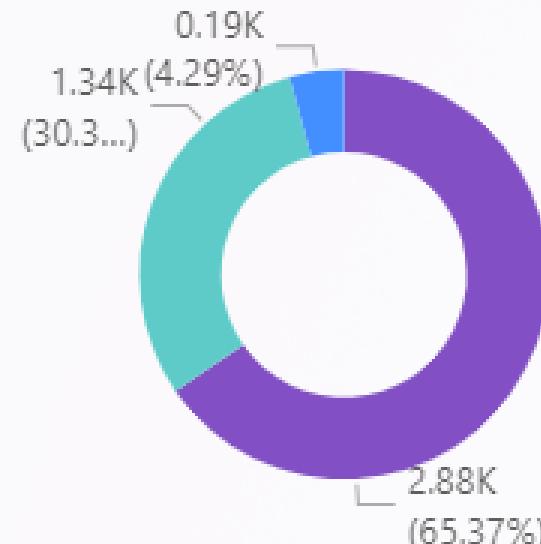
Average of AVG_With_curr_manger

4.12

Department	JobRole
Human Resources	Healthcare Representative
Research & Development	Healthcare Representative
Sales	Healthcare Representative
Human Resources	Human Resources
Research & Development	Human Resources
Sales	Human Resources
Human Resources	Laboratory Technician
Research & Development	Laboratory Technician
Sales	Laboratory Technician

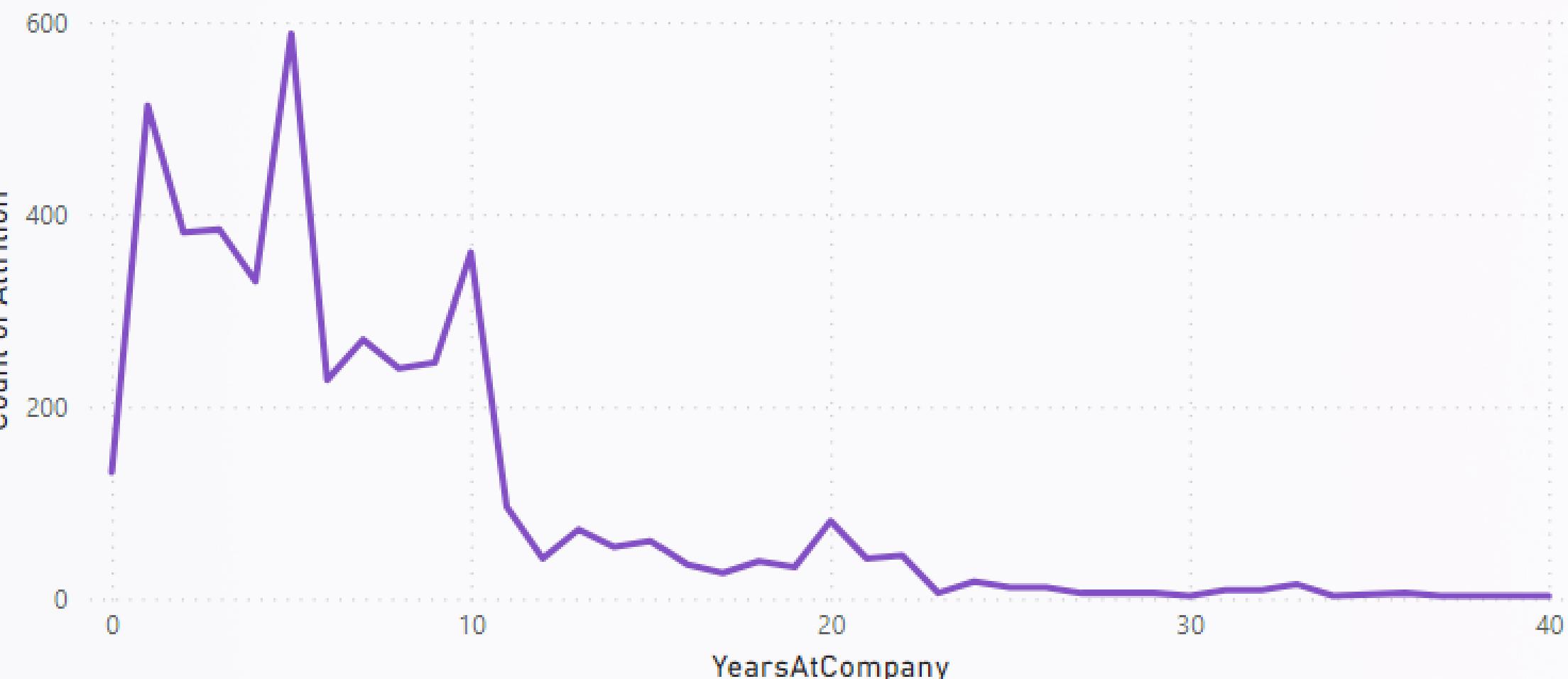
JobRole	Average of MonthlyIncome
Healthcare Representative	60983.74
Human Resources	58528.08
Laboratory Technician	66314.05
Manager	63395.88
Manufacturing Director	69183.72
Research Director	65473.13
Research Scientist	64975.68
Sales Executive	65186.69
Total	65029.31

Count of Attrition by Department

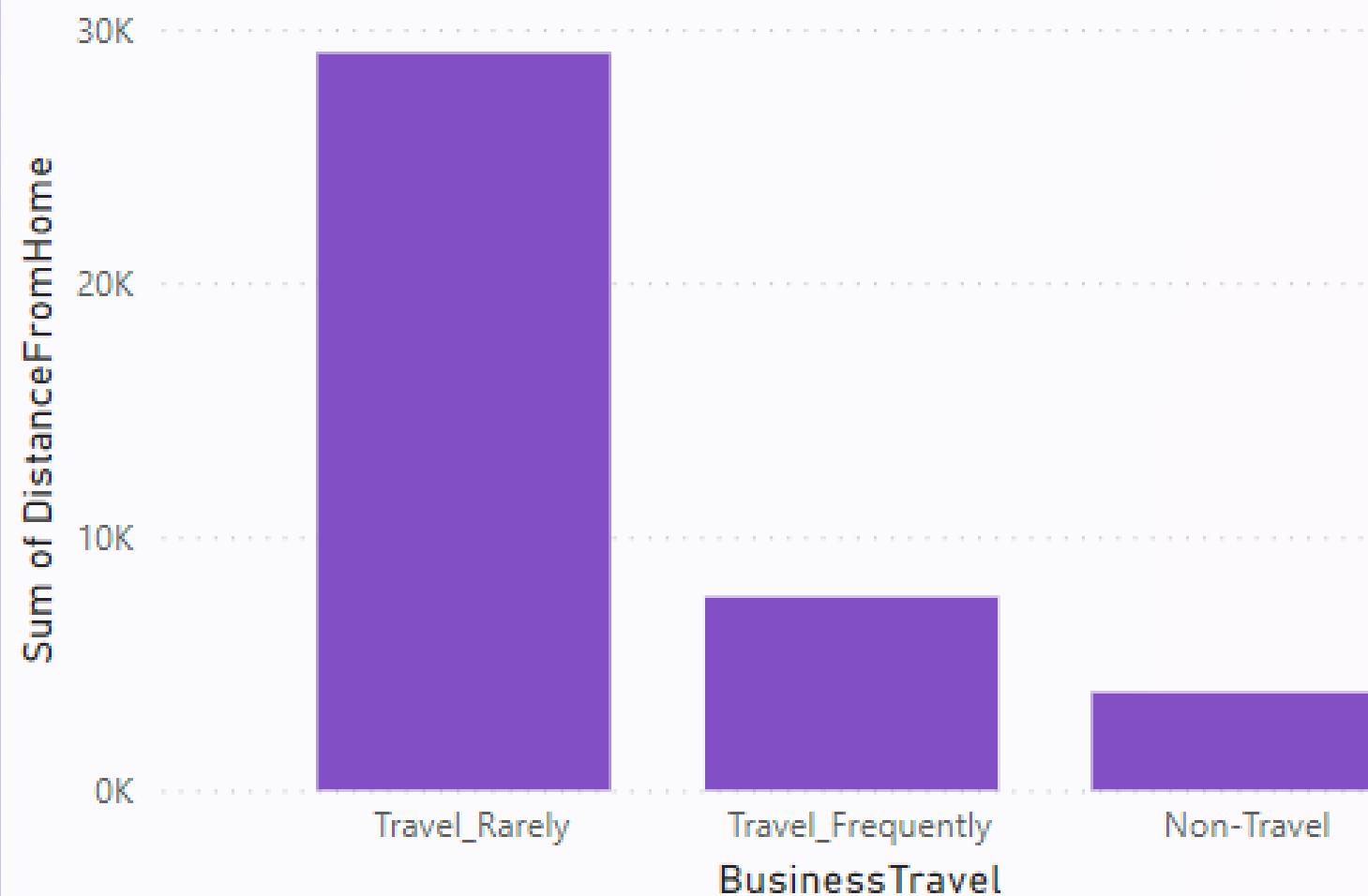


Department	Count of MaritalStatus
Human Resources	1
Research & Development	29
Sales	42
Total	44

Count of Attrition by YearsAtCompany



Sum of DistanceFromHome by BusinessTravel



DATA SCHEMA VERIFICATION AND INCONSISTENCY RESOLUTION

- Schema Verification:
 - Compare data fields with predefined schema.
 - Ensure matching data types, formats, and allowed values.
- Consistency Checks:
 - Identify inconsistencies like missing values, duplicates, or outliers.
 - Detect deviations from expected patterns outlined in the schema.
- Error Handling:
 - Address data inconsistencies using appropriate error-handling mechanisms.
 - Implement data cleansing techniques or validation rules.
- Record Keeping:
 - Maintain records of inconsistencies found and actions taken for future reference.
 - Ensure transparency in data management processes.
- Iterative Improvement:
 - Continuously monitor and refine data validation processes.
 - Maintain data quality and ensure adherence to the predefined schema over time.



CONCLUSION

Employee demographics show peaks in the 34-36 age range and lows in the 58-60 range. The analysis of average monthly income highlights the highest salary for Manufacturing Directors at 183 and the lowest in Human Resources at 528. Marital status examination reveals a prevalence of married employees, with Research and Development having the highest count at 1,350 out of 2,883 employees. Attrition trends show a peak of 588 occurrences over the years. Implementing a star schema and hierarchical drill-downs in Power BI enhances data organization, dynamic filtering, and data exploration. These insights empower HR professionals to optimize workforce management strategies, fostering organizational growth.

