

HR DATA ANALYSIS USING EXCEL & POWER BI



1. Using Excel, how would you filter the dataset to only show employees aged 30 and above?

Age	Attrition	BusinessTravel	Department	DistanceFromHome	Education	EducationField	EmployeeCount	EmployeeID	Gender	JobLevel	JobRole	MaritalStatus	MonthlyIncome
51	No	Travel_Rarely	Sales	6	2	Life Sciences	1	1	Female	1	Healthcare Representative	Married	131160
31	Yes	Travel_Frequently	Research & Development	10	1	Life Sciences	1	2	Female	1	Research Scientist	Single	41890
32	No	Travel_Frequently	Research & Development	17	4	Other	1	3	Male	4	Sales Executive	Married	193280
38	No	Non-Travel	Research & Development	2	5	Life Sciences	1	4	Male	3	Human Resources	Married	83210
32	No	Travel_Rarely	Research & Development	10	1	Medical	1	5	Male	1	Sales Executive	Single	23420
46	No	Travel_Rarely	Research & Development	8	3	Life Sciences	1	6	Female	4	Research Director	Married	40710
31	No	Travel_Rarely	Research & Development	1	3	Life Sciences	1	9	Male	3	Laboratory Technician	Married	20440
45	No	Travel_Rarely	Research & Development	17	2	Medical	1	11	Male	2	Laboratory Technician	Married	79910
36	No	Travel_Rarely	Research & Development	28	1	Life Sciences	1	12	Male	1	Laboratory Technician	Married	33770
55	No	Travel_Rarely	Research & Development	14	4	Life Sciences	1	13	Female	1	Sales Executive	Single	55380
47	Yes	Non-Travel	Research & Development	1	1	Medical	1	14	Male	1	Research Scientist	Married	57620
37	No	Travel_Rarely	Research & Development	1	3	Life Sciences	1	16	Male	2	Healthcare Representative	Married	53460
37	No	Non-Travel	Research & Development	1	3	Medical	1	18	Male	2	Sales Executive	Divorced	41270
35	No	Travel_Rarely	Sales	7	4	Life Sciences	1	19	Male	1	Sales Representative	Divorced	24380
38	No	Travel_Rarely	Research & Development	8	3	Life Sciences	1	20	Female	1	Manager	Divorced	68700
50	No	Travel_Rarely	Sales	8	4	Life Sciences	1	22	Male	1	Research Scientist	Divorced	96670
53	No	Travel_Rarely	Research & Development	11	4	Life Sciences	1	23	Female	2	Research Scientist	Married	21480
42	No	Travel_Rarely	Research & Development	4	4	Life Sciences	1	24	Male	1	Manufacturing Director	Married	89260
55	No	Travel_Rarely	Research & Development	1	4	Other	1	26	Female	1	Research Scientist	Married	67990
37	No	Travel_Rarely	Sales	5	1	Marketing	1	28	Male	1	Research Scientist	Single	27050
44	Yes	Travel_Frequently	Research & Development	1	2	Medical	1	29	Female	2	Research Scientist	Divorced	103330
38	No	Travel_Rarely	Sales	2	3	Marketing	1	30	Female	1	Manager	Divorced	44480
49	No	Travel_Frequently	Research & Development	1	1	Medical	1	33	Female	2	Research Scientist	Single	35910
36	No	Travel_Rarely	Sales	5	3	Technical Degree	1	34	Male	3	Sales Executive	Single	54050
31	No	Travel_Frequently	Research & Development	9	4	Medical	1	35	Male	1	Sales Executive	Divorced	46840
37	No	Travel_Frequently	Sales	9	1	Marketing	1	37	Male	1	Laboratory Technician	Married	15140
42	No	Travel_Frequently	Sales	2	2	Marketing	1	38	Male	3	Research Director	Married	29560
35	No	Travel_Rarely	Sales	20	2	Life Sciences	1	40	Male	1	Laboratory Technician	Married	51540

2. Create a pivot table to summarize the average Monthly Income by Job Role.

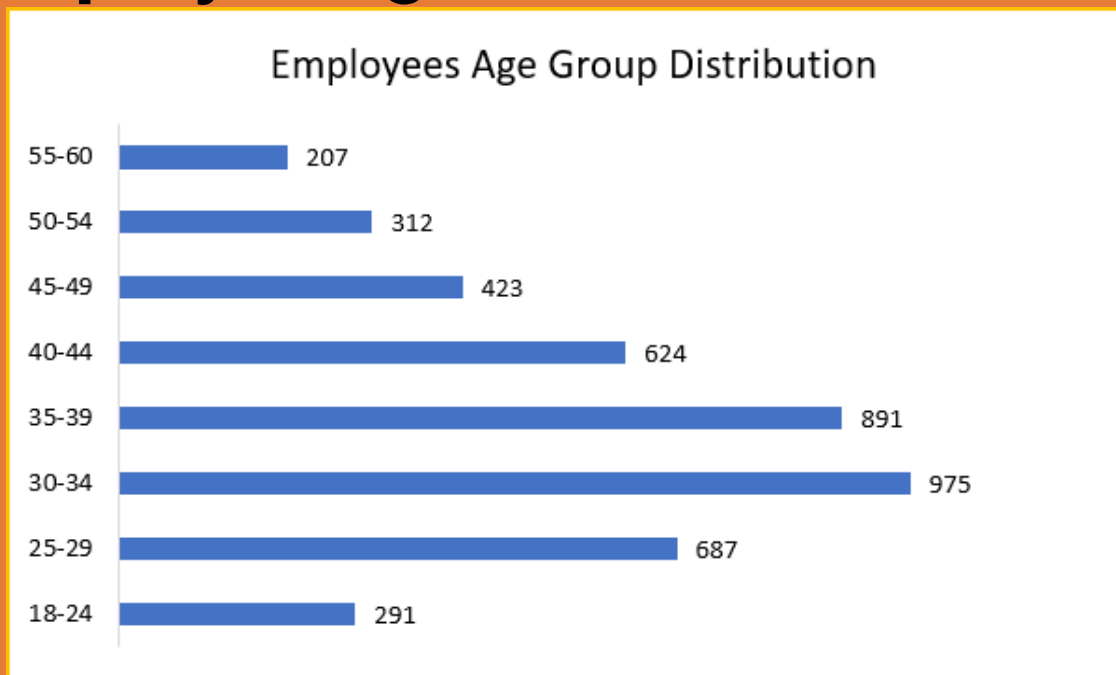
Job Role	Average Monthly Income
Healthcare Representative	60983.74
Human Resources	58528.08
Laboratory Technician	66314.05
Manager	63395.88
Manufacturing Director	69183.72
Research Director	65473.13
Research Scientist	64975.68
Sales Executive	65186.69
Sales Representative	65370.96
Grand Total	65029.31



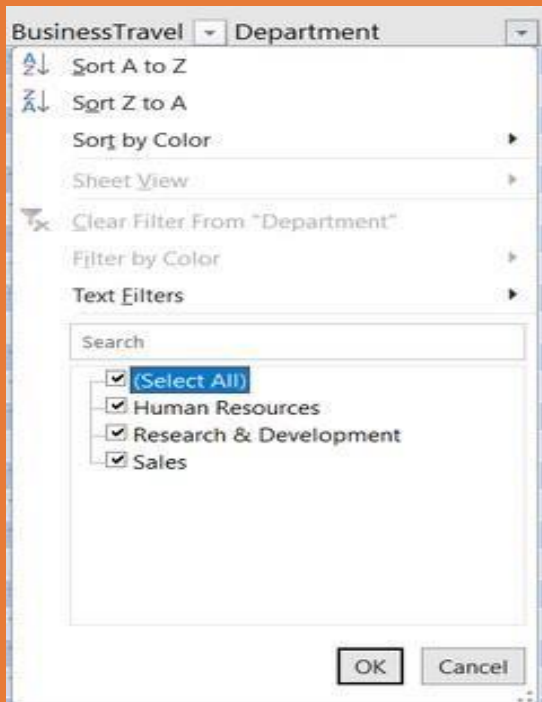
3. Apply conditional formatting to highlight employees with Monthly Income above the company's average income.

BusinessTravel	Department	DistanceFromHome	Education	EducationField	EmployeeCount	EmployeeID	Gender	JobLevel	JobRole	MaritalStatus	MonthlyIncome	NumCompaniesWorked
Travel_Rarely	Sales	6	2	Life Sciences	1	1	Female	1	Healthcare Representative	Married	131160	
Travel_Frequently	Research & Development	10	1	Life Sciences	1	2	Female	1	Research Scientist	Single	41890	
Travel_Frequently	Research & Development	17	4	Other	1	3	Male	4	Sales Executive	Married	193280	
Non-Travel	Research & Development	2	5	Life Sciences	1	4	Male	3	Human Resources	Married	83210	
Travel_Rarely	Research & Development	10	1	Medical	1	5	Male	1	Sales Executive	Single	23420	
Travel_Rarely	Research & Development	8	3	Life Sciences	1	6	Female	4	Research Director	Married	40710	
Travel_Rarely	Research & Development	11	2	Medical	1	7	Male	2	Sales Executive	Single	58130	
Travel_Rarely	Research & Development	18	3	Life Sciences	1	8	Male	2	Sales Executive	Married	31430	
Travel_Rarely	Research & Development	1	3	Life Sciences	1	9	Male	3	Laboratory Technician	Married	20440	
Non-Travel	Research & Development	7	4	Medical	1	10	Female	4	Laboratory Technician	Divorced	134640	
Travel_Rarely	Research & Development	17	2	Medical	1	11	Male	2	Laboratory Technician	Married	79910	
Travel_Rarely	Research & Development	28	1	Life Sciences	1	12	Male	1	Laboratory Technician	Married	33770	
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Non-Travel	Research & Development	1	1	Medical	1	14	Male	1	Research Scientist	Married	57620	
Travel_Rarely	Research & Development	1	3	Life Sciences	1	15	Male	1	Manufacturing Director	Married	25920	
Travel_Rarely	Research & Development	1	3	Life Sciences	1	16	Male	2	Healthcare Representative	Married	53460	
Travel_Rarely	Research & Development	3	2	Life Sciences	1	17	Male	1	Laboratory Technician	Single	42130	
Non-Travel	Research & Development	1	3	Medical	1	18	Male	2	Sales Executive	Divorced	41270	
Travel_Rarely	Sales	7	4	Life Sciences	1	19	Male	1	Sales Representative	Divorced	24380	
Travel_Rarely	Research & Development	8	3	Life Sciences	1	20	Female	1	Manager	Divorced	68700	
Travel_Frequently	Research & Development	1	4	Other	1	21	Male	2	Laboratory Technician	Divorced	104470	
Travel_Rarely	Sales	8	4	Life Sciences	1	22	Male	1	Research Scientist	Divorced	96670	
Travel_Rarely	Research & Development	11	4	Life Sciences	1	23	Female	2	Research Scientist	Married	21480	
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Travel_Frequently	Research & Development	16	4	Medical	1	25	Male	1	Laboratory Technician	Single	65130	
Travel_Rarely	Research & Development	1	4	Other	1	26	Female	1	Research Scientist	Married	67990	
Travel_Frequently	Research & Development	9	3	Life Sciences	1	27	Female	1	Manager	Married	162910	
Travel_Rarely	Sales	5	1	Marketing	1	28	Male	1	Research Scientist	Single	27050	

4. Create a bar chart in Excel to visualize the distribution of employee ages.

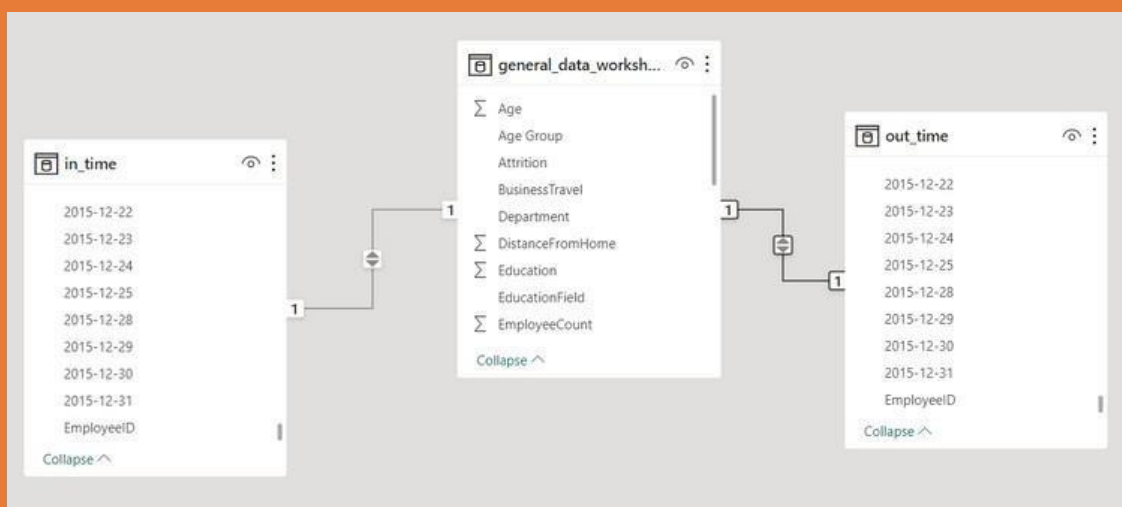


5. Identify and clean any missing or inconsistent data in the "Department" column.



Note:- There is not any missing or inconsistent data in the "Department" Column

6. In Power BI, establish a relationship between the "EmployeeID" in the employee data and the "EmployeeID" in the time tracking data.



7. Using DAX, create a calculated column that calculates the average years an employee has spent with their current manager.

The screenshot shows a data table with the following columns: **YearsWorked**, **Over18**, **PercentSalaryHike**, **StandardHours**, **StockOptionLevel**, **TotalWorkingYears**, **TrainingTimesLastYear**, **YearsAtCompany**, **YearsSinceLastPromotion**, **YearsWithCurrManager**, and **AgeYearwithManager**. The **AgeYearwithManager** column contains the average of the **YearsWithCurrManager** values for each row, calculated using the DAX formula: `AVERAGE(general_data_worksheet[YearsWithCurrManager])`. The table has 4,410 rows in total.

8. Using Excel, create a pivot table that displays the count of employees in each Marital Status category, segmented by Department.

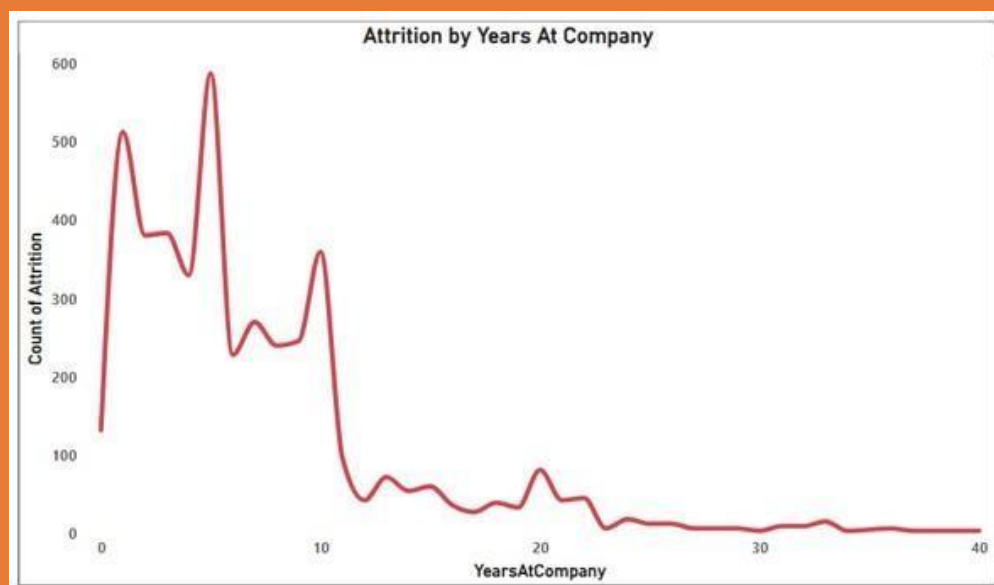
Marital Status By Department		Count of Employees
Human Resources		189
Divorced		21
Married		96
Single		72
Research & Development		2883
Divorced		621
Married		1350
Single		912
Sales		1338
Divorced		339
Married		573
Single		426
Grand Total		4410



9. Apply conditional formatting to highlight employees with both above-average Monthly Income and above-average Job Satisfaction.

EmployeeID	MonthlyIncome	Job Satisfaction
1	131160	4
2	41890	2
3	193280	2
4	83210	4
5	23420	1
6	40710	2
7	58130	3
8	31430	2
9	20440	4
10	134640	1
11	79910	4
12	33770	4
13	55380	1
14	57620	2
15	25920	4
16	53460	4
17	42130	3
18	41270	4
19	24380	2
20	68700	1
21	104470	2

10. In Power BI, create a line chart that visualizes the trend of Employee Attrition over the years.



11. Describe how you would create a star schema for this dataset, explaining the benefits of doing so.



Steps:-

- Normalize the table by dividing it into multiple tables. These tables serve as the main focus point of the star schema.
- Create a dimension table and ensure that all the dimension tables have a primary key and are connected to the foreign key.
- This relationship structure ensures accurate data correlation, enabling Power BI to perform precise analysis and reporting.

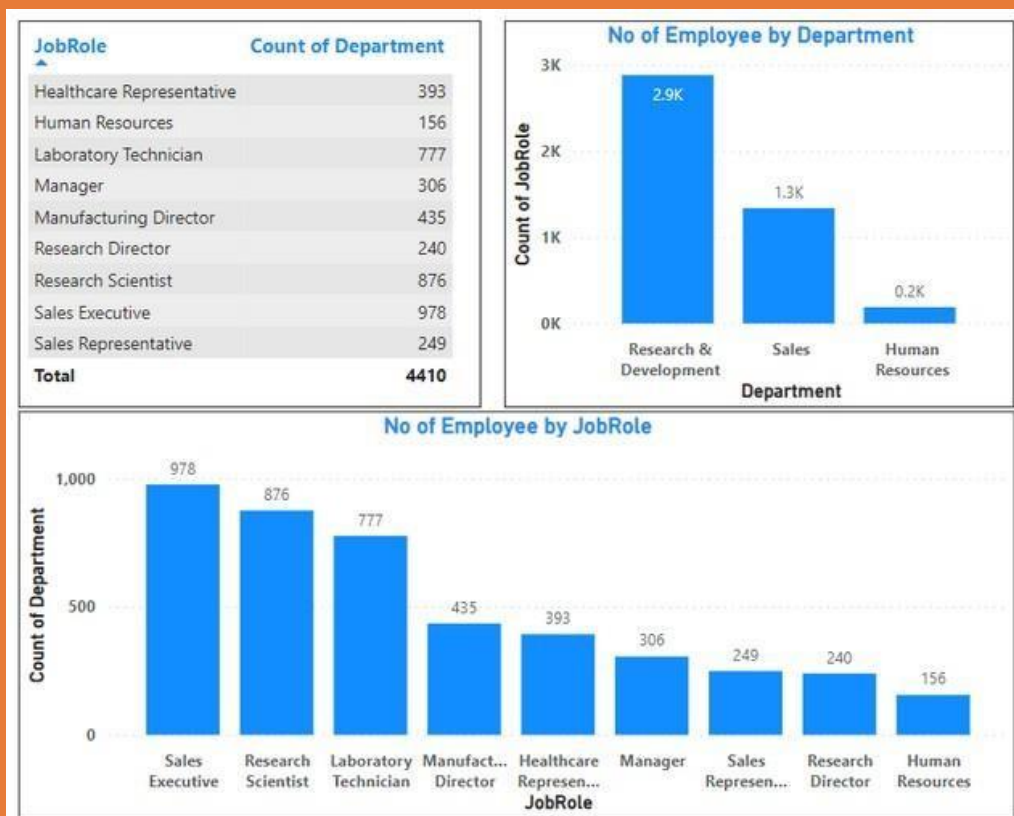
Benefits:-

- Star schema is easy to understand and query, making it an ideal choice for data warehousing and business intelligence applications.
- It is a scalable and flexible solution for data warehousing.
- The denormalized structure of the star schema reduces the need for complex joins, resulting in faster query performance.
- Star schema is widely supported by business intelligence tools, making it easier to integrate.



12. Using DAX, calculate the rolling 3-month average of Monthly Income for each employee.

13. Create a hierarchy in Power BI that allows users to drill down from Department to Job Role to further narrow their analysis.



14. How can you set up parameterized queries in Power BI to allow users to filter data based on the Distance from Home column?

Manage Parameters

Name: Distance From Home

Description: Filter data based on distance

☒ Required

Type: Text

Suggested Values: List of values

1	Near By
2	Far
3	Very Far
+	

Default Value: Near By

Current Value: Far

OK Cancel

- Open Power BI Desktop
- Click Get Data
- Select “Blank Query” from “Other” then click “Connect”
- In the Query Editor window click “Manage Parameters” from the ribbon
- Click “New”
- Type a name for the parameter You can also
- write a description Select
- Type as Text
- From “Allowed Values” select “List of Values”.
- Fill the list with some valid values.

Select a “Default Value” and “Current Value” then click OK



15. In Excel, calculate the total Monthly Income for each Department, considering only the employees with a Job Level greater than or equal to 3.

Sum of MonthlyIncome		Column Labels			
Row Labels		Human Resources	Research & Development	Sales	Grand Total
3	₹	16,48,500	₹ 2,81,17,740	₹ 1,17,92,400	₹ 4,15,58,640
4	₹	7,54,800	₹ 1,52,77,290	₹ 87,53,070	₹ 2,47,85,160
5	₹	8,55,840	₹ 1,01,07,870	₹ 24,28,860	₹ 1,33,92,570
Grand Total	₹	32,59,140	₹ 5,35,02,900	₹ 2,29,74,330	₹ 7,97,36,370

16. Explain how to perform a What-If analysis in Excel to understand the impact of a 10% increase in Percent Salary Hike on Monthly Income.

A	B	C	D	E	F	G
Monthly Income	Salary Hike	Hike_amount	New_amount			
131160	10%	13116	144276			
41890	10%	4189	46079			
193280	10%	19328	212608			
83210	10%	8321	91531			
23420	10%	2342	25762			
40710	10%	4071	44781			
58130	10%	5813	63943			
31430	10%	3143	34573			
20440	10%	2044	22484			
134640	10%	13464	148104			
79910	10%	7991	87901			
33770	10%	3377	37147			
55380	10%	5538	60918			
57620	10%	5762	63382			
25920	10%	2592	28512			
53460	10%	5346	58806			
42130	10%	4213	46343			
41270	10%	4127	45397			
24380	10%	2438	26818			
68700	10%	6870	75570			
104470	10%	10447	114917			
96670	10%	9667	106337			
21480	10%	2148	23628			
89260	10%	8926	98186			
65130	10%	6513	71643			
67990	10%	6799	74789			
162910	10%	16291	179201			
27050	10%	2705	29755			
Q-2	Q-4	Q-8	Q-15	general_data_worksheet	Q-16	employee



17. Verify if the data adheres to a predefined schema. What actions would you take if you find inconsistencies?

Data Integrity and Consistency:

- Address inconsistencies in data files, ensuring meticulous data profiling and accurate validation.

Label Correction

- Correct missing columns labels in the data sets.

Improved Data Quality:

- It helps ensure that data meets specific criteria, such as valid values, proper data types, or required fields.

Reduced Integration Issues:

- By validating the data against a predefined schema, you can catch compatibility issues, data mismatches, or inconsistencies early on.

Data Adherence Verification:

- Verify if the dataset aligns with the predefined schema by checking if the actual data meets the expected structure and rules.

→ **THANK YOU!** ←

