Shashidhar M
Data Science & Analytics Intern @ Psyliq
Task:HR Data Analytics
Technology used:Microsoft PowerBI

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

Its as shown below:

EmployeeI	Age	Attrition	BusinessTr	Departmei	DistanceFr	Education	Educationl	EmployeeC	EmployeeI	Gender	JobLevel	JobRole	MaritalSta	MonthlyIn	NumComp	Over18	PercentSal	StandardH	StockOptic	TotalWork	TrainingTi	YearsAtCo	Ye
1	51	No	Travel_Rai	Sales	6	2	Life Scienc	1	1	Female	1	Healthcare	Married	131160	1	Y	11	8	0	1	6	1	
2	31	Yes	Travel_Fre	Research &	10	1	Life Scienc	1	2	Female	1	Research S	Single	41890	0	Y	23	8	1	6	3	5	
3	32	No	Travel_Fre	Research &	17	4	Other	1	3	Male	4	Sales Exec	Married	193280	1	Y	15	8	3	5	2	5	
4	38	No	Non-Trave	Research &	2	5	Life Scienc	1	4	Male	3	Human Re	Married	83210	3	Y	11	8	3	13	5	8	
5	32	No	Travel_Rai	Research &	10	1	Medical	1	5	Male	1	Sales Exec	Single	23420	4	Y	12	8	2	9	2	6	
6	46	No	Travel_Rai	Research &	8	3	Life Scienc	1	6	Female	4	Research I	Married	40710	3	Y	13	8	0	28	5	7	
12	31	No	Travel_Rai	Research &	1	3	Life Scienc	1	9	Male	3	Laboratory	Married	20440	0	Y	21	8	0	10	2	9	
14	45	No	Travel_Rai	Research &	17	2	Medical	1	11	Male	2	Laboratory	Married	79910	0	Y	13	8	2	21	2	20	
16	36	No	Travel_Rai	Research &	28	1	Life Scienc	1	12	Male	1	Laboratory	Married	33770	0	Y	12	8	2	16	2	15	
18	55	No	Travel_Rai	Research &	14	4	Life Scienc	1	13	Female	1	Sales Exec	Single	55380	0	Y	17	8	0	37	2	36	
19	47	Yes	Non-Trave	Research &	1	1	Medical	1	14	Male	1	Research S	Married	57620	1	Y	11	8	2	10	4	10	
22	37	No	Travel_Rai	Research &	1	3	Life Scienc	1	16	Male	2	Healthcare	Married	53460	4	Y	11	8	0	7	2	5	
24	37	No	Non-Trave	Research &	1	3	Medical	1	18	Male	2	Sales Exec	Divorced	41270	2	Y	13	8	1	15	2	5	
26	35	No	Travel_Rai	Sales	7	4	Life Scienc	1	19	Male	1	Sales Repr	Divorced	24380	7	Y	16	8	0	10	5	7	
28	38	No	Travel_Rai	Research &	8	3	Life Scienc	1	20	Female	1	Manager	Divorced	68700	1	Y	11	8	1	8	5	8	
30	50	No	Travel_Rai	Sales	8	4	Life Scienc	1	22	Male	1	Research S	Divorced	96670	3	Y	23	8	0	28	2	10	
33	53	No	Travel_Rai	Research &	11	4	Life Scienc	1	23	Female	2	Research S	Married	21480	3	Y	11	8	0	21	2	5	
34	42	No	Travel_Rai	Research &	4	4	Life Scienc	1	24	Male	1	Manufactu	Married	89260	1	Y	14	8	0	NA	4	20	
37	55	No	Travel_Rai	Research &	1	4	Other	1	26	Female	1	Research S	Married	67990	3	Y	11	8	0	12	2	10	
40	37	No	Travel_Rai	Sales	5	1	Marketing	1	28	Male	1	Research S	Single	27050	1	Y	11	8	0	17	2	17	
41	44	Yes	Travel_Fre	Research &	1	2	Medical	1	29	Male	2	Research S	Divorced	103330	3	Y	14	8	1	19	2	1	
42	38	No	Travel_Rai	Sales	2	3	Marketing	1	30	Female	1	Manager	Divorced	44480	9	Y	12	8	0	10	3	2	
47	49	No	Travel_Fre	Research &	1	1	Medical	1	33	Female	2	Research S	Single	35910	9	Y	13	8	0	22	2	3	
48	36	No	Travel_Rai	Sales	5	3	Technical I	1	34	Male	3	Sales Exec	Single	54050	4	Y	14	8	0	10	2	8	
49	31	No	Travel_Fre	Research &	9	4	Medical	1	35	Male	1	Sales Exec	Divorced	46840	1	Y	16	8	1	2	4	2	
51	37	No	Travel_Fre	Sales	9	1	Marketing	1	37	Male	1	Laboratory	Married	15140	1	Y	14	8	0	4	3	4	

2. Pivot table to summarize the average Monthly Income by Job Role

- Avg monthly income by job role

Row Labels	Average of MonthlyIncome
Healthcare Representative	60983.74046
Human Resources	58528.07692
Laboratory Technician	66314.05405
Manager	63395.88235
Manufacturing Director	69183.72414
Research Director	65473.125
Research Scientist	64975.68493
Sales Executive	65186.68712
Sales Representative	65370.96386
(blank)	
Grand Total	65029.31293

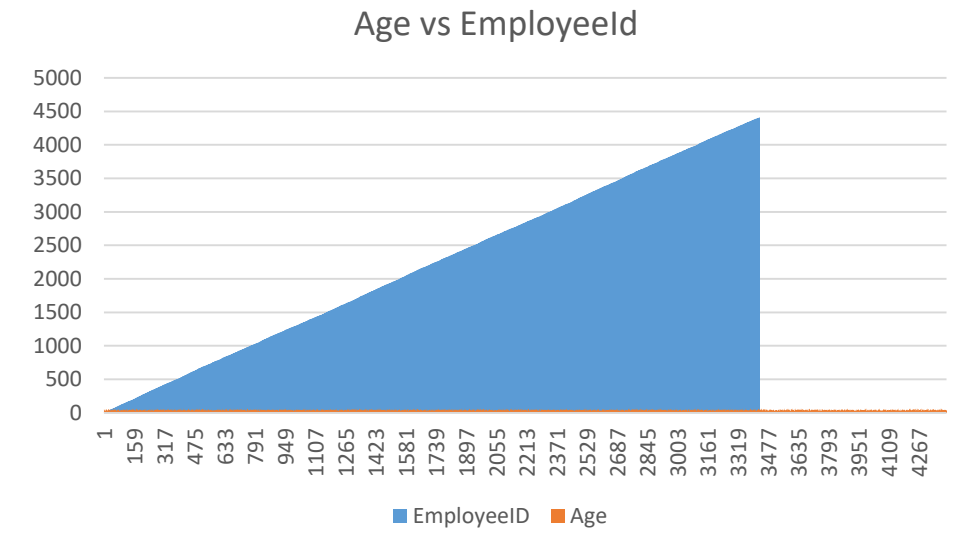
3. Apply conditional formatting to highlight employees with Monthly Income above the company's average income.

- This is conditionally formatted data.

EmployeeI	Age	Attrition	BusinessTr	Departmei	DistanceFr	Education	EducationI	EmployeeC	EmployeeI	Gender	JobLevel	JobRole	MaritalSta	MonthlyIn	NumComp	Over18	PercentSal	StandardH	StockOptic	TotalWork	TrainingTir	YearsAt
1	51	No	Travel_Rai	Sales	6	2	Life Scienc	1	1	Female	1	Healthcare	Married	131160	1	Y	11	8	0	1	6	
2	31	Yes	Travel_Fre	Research &	10	1	Life Scienc	1	2	Female	1	Research S	Single	41890	0	Y	23	8	1	6	3	
3	32	No	Travel_Fre	Research &	17	4	Other	1	3	Male	4	Sales Exec	Married	193280	1	Y	15	8	3	5	2	
4	38	No	Non-Trave	Research &	2	5	Life Scienc	1	4	Male	3	Human Re	Married	83210	3	Y	11	8	3	13	5	
5	32	No	Travel_Rai	Research &	10	1	Medical	1	5	Male	1	Sales Exec	Single	23420	4	Y	12	8	2	9	2	
6	46	No	Travel_Rai	Research &	8	3	Life Scienc	1	6	Female	4	Research I	Married	40710	3	Y	13	8	0	28	5	
9	28	Yes	Travel_Rai	Research &	11	2	Medical	1	7	Male	2	Sales Exec	Single	58130	2	Y	20	8	1	5	2	
11	29	No	Travel_Rai	Research &	18	3	Life Scienc	1	8	Male	2	Sales Exec	Married	31430	2	Y	22	8	3	10	2	
12	31	No	Travel_Rai	Research &	1	3	Life Scienc	1	9	Male	3	Laboraton	Married	20440	0	Y	21	8	0	10	2	
13	25	No	Non-Trave	Research &	7	4	Medical	1	10	Female	4	Laboraton	Divorced	134640	1	Y	13	8	1	6	2	
14	45	No	Travel_Rai	Research &	17	2	Medical	1	11	Male	2	Laboraton	Married	79910	0	Y	13	8	2	21	2	
16	36	No	Travel_Rai	Research &	28	1	Life Scienc	1	12	Male	1	Laboraton	Married	33770	0	Y	12	8	2	16	2	
18	55	No	Travel_Rai	Research &	14	4	Life Scienc	1	13	Female	1	Sales Exec	Single	55380	0	Y	17	8	0	37	2	
19	47	Yes	Non-Trave	Research &	1	1	Medical	1	14	Male	1	Research S	Married	57620	1	Y	11	8	2	10	4	
20	28	No	Travel_Rai	Research &	1	3	Life Scienc	1	15	Male	1	Manufactu	Married	25920	1	Y	14	8	0	5	2	
22	37	No	Travel_Rai	Research &	1	3	Life Scienc	1	16	Male	2	Healthcare	Married	53460	4	Y	11	8	0	7	2	
23	21	No	Travel_Rai	Research &	3	2	Life Scienc	1	17	Male	1	Laboraton	Single	42130	1	Y	12	8	3	3	3	
24	37	No	Non-Trave	Research &	1	3	Medical	1	18	Male	2	Sales Exec	Divorced	41270	2	Y	13	8	1	15	2	
26	35	No	Travel_Rai	Sales	7	4	Life Scienc	1	19	Male	1	Sales Repr	Divorced	24380	7	Y	16	8	0	10	5	
28	38	No	Travel_Rai	Research &	8	3	Life Scienc	1	20	Female	1	Manager	Divorced	68700	1	Y	11	8	1	8	5	
29	26	No	Travel_Fre	Research &	1	4	Other	1	21	Male	2	Laboraton	Divorced	104470	1	Y	18	8	0	6	3	
30	50	No	Travel_Rai	Sales	8	4	Life Scienc	1	22	Male	1	Research S	Divorced	96670	3	Y	23	8	0	28	2	
33	53	No	Travel_Rai	Research &	11	4	Life Scienc	1	23	Female	2	Research S	Married	21480	3	Y	11	8	0	21	2	
34	42	No	Travel_Rai	Research &	4	4	Life Scienc	1	24	Male	1	Manufactu	Married	89260	1	Y	14	8	0	NA	4	
35	29	No	Travel_Fre	Research &	16	4	Medical	1	25	Male	1	Laboraton	Single	65130	1	Y	11	8	1	10	2	
37	55	No	Travel_Rai	Research &	1	4	Other	1	26	Female	1	Research S	Married	67990	3	Y	11	8	0	12	2	

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

- This is the graph

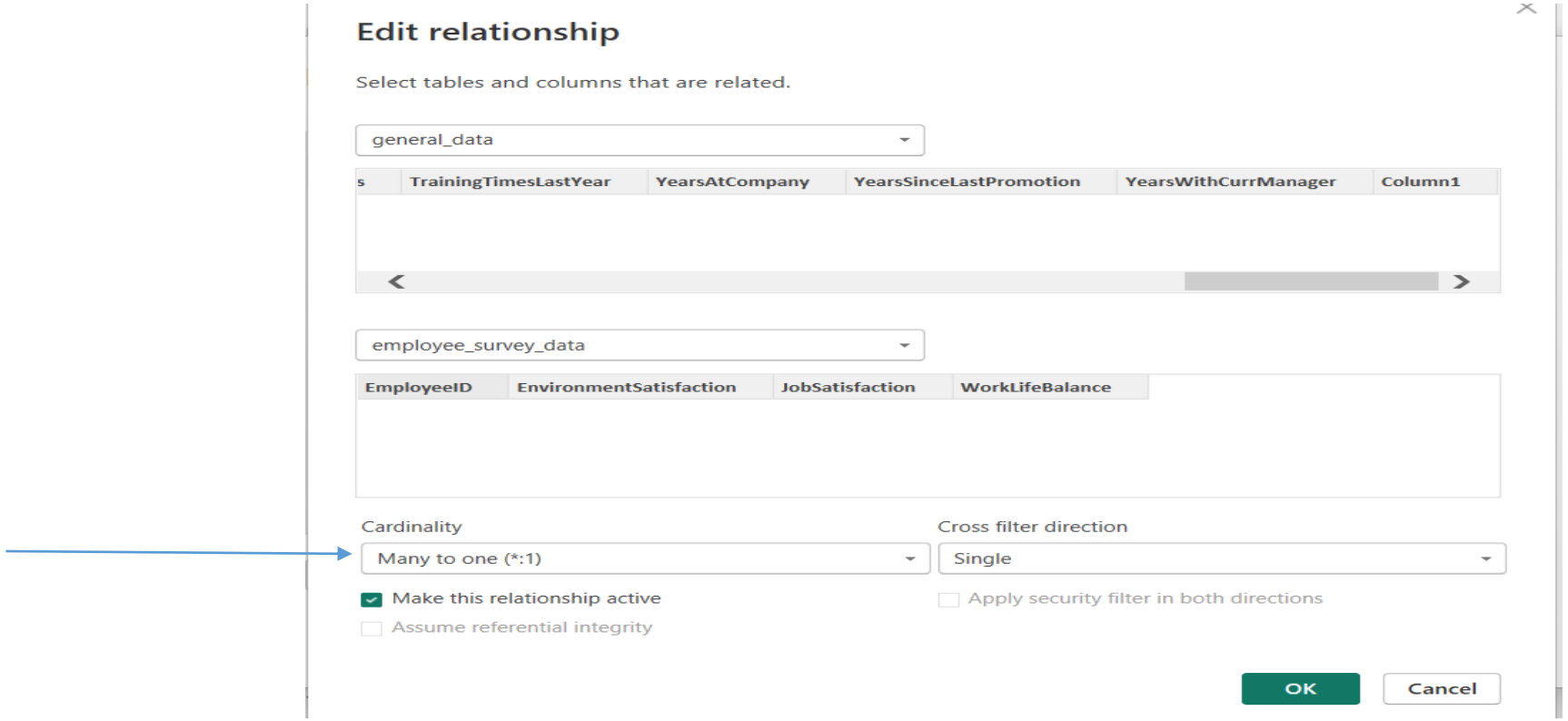


5. Identify and clean any missing or inconsistent data in the "Department" column.

- **There is no Missing or inconsistent data in the “Department column”.**

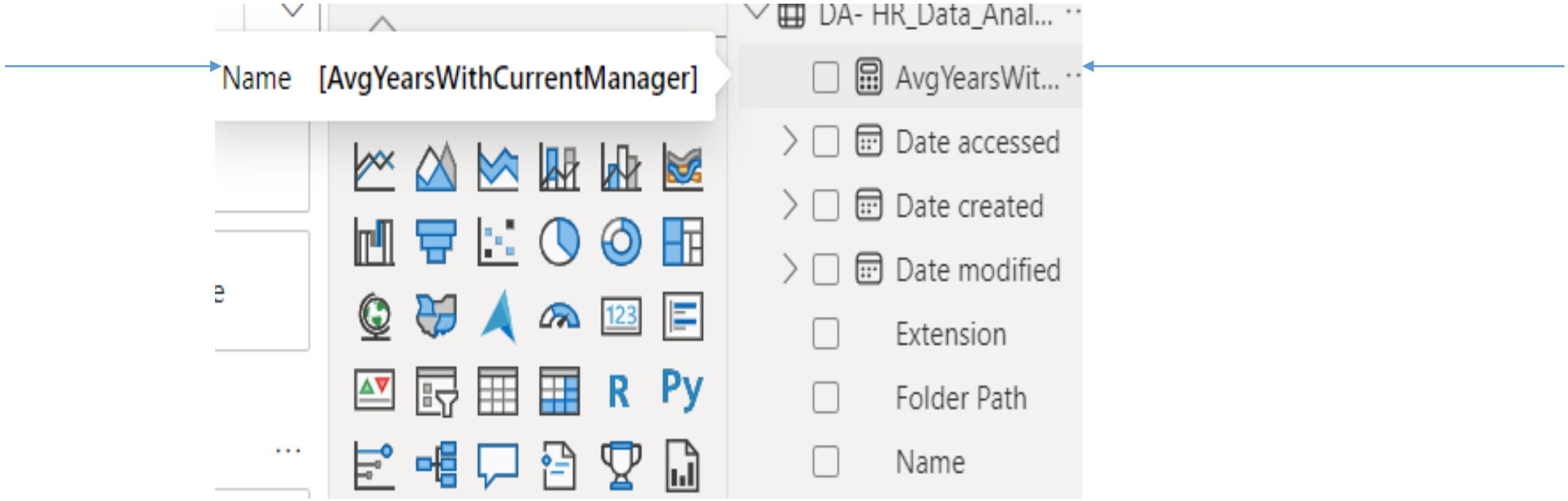
6. In Power BI, establish a relationship between the "EmployeeID" in the employee data and the "EmployeeID" in the time tracking data.

- We can see that it has many-to-one relationship



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

- The column has been created using DAX

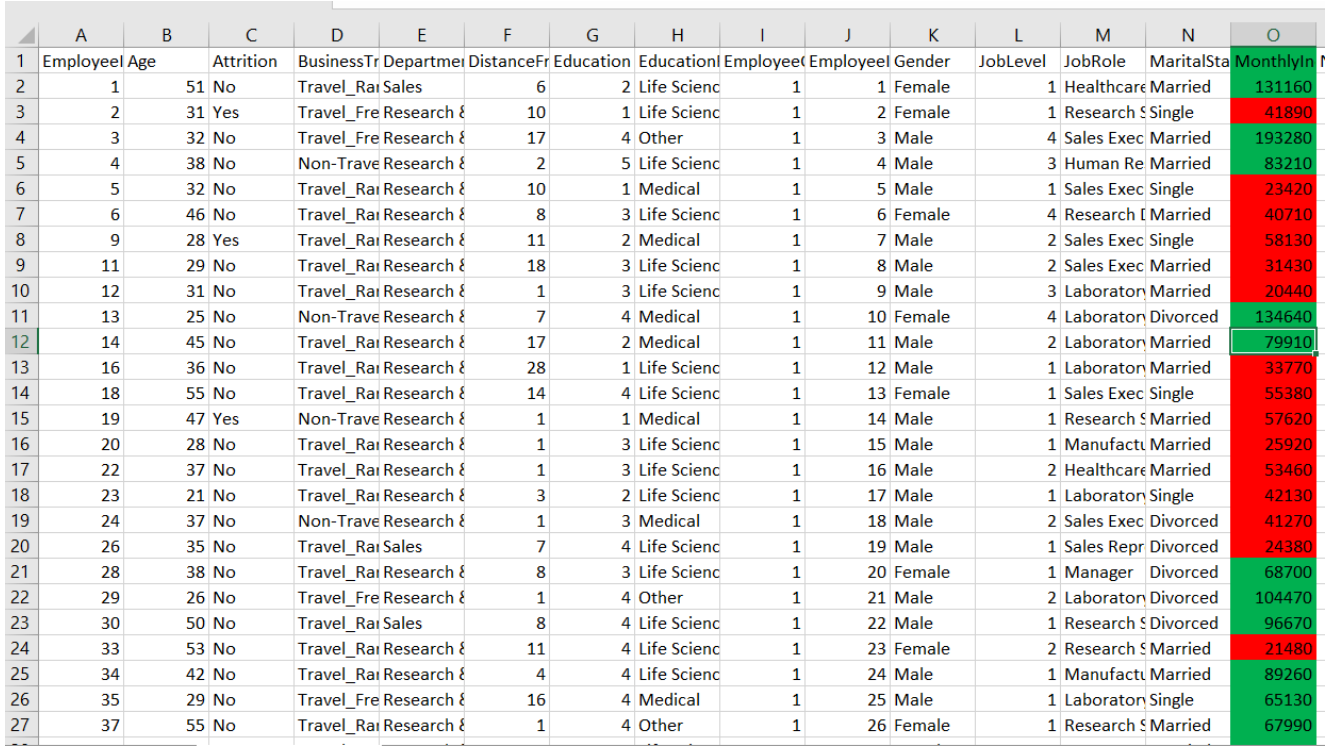


8. Using Excel, create a pivot table that displays the count of employees in each Marital Status category, segmented by Department

- This is hw it looks

Marital status	Count of Employee
Divorced	768
Married	1569
Single	1095
(blank)	
Grand Total	**3432**

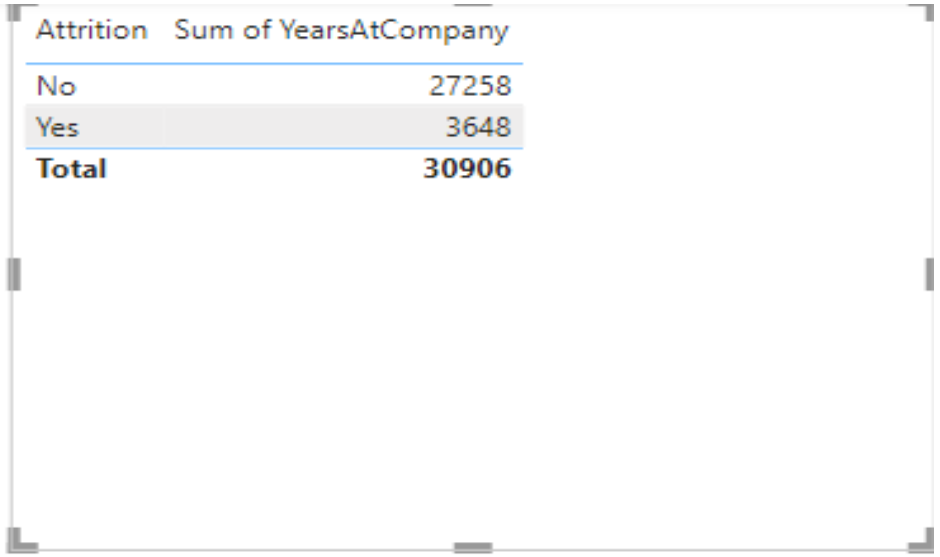
9. Apply conditional formatting to highlight employees with both above-average Monthly Income and above-average Job Satisfaction.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EmployeeI	Age	Attrition	BusinessTr	Departmer	DistanceFr	Education	EducationI	EmployeeC	EmployeeI	Gender	JobLevel	JobRole	MaritalSta	MonthlyIn
2	1	51	No	Travel_Rai	Sales	6	2	Life Scienc	1	1	Female	1	Healthcare	Married	131160
3	2	31	Yes	Travel_Fre	Research &	10	1	Life Scienc	1	2	Female	1	Research S	Single	41890
4	3	32	No	Travel_Fre	Research &	17	4	Other	1	3	Male	4	Sales Exec	Married	193280
5	4	38	No	Non-Trave	Research &	2	5	Life Scienc	1	4	Male	3	Human Re	Married	83210
6	5	32	No	Travel_Rai	Research &	10	1	Medical	1	5	Male	1	Sales Exec	Single	23420
7	6	46	No	Travel_Rai	Research &	8	3	Life Scienc	1	6	Female	4	Research I	Married	40710
8	9	28	Yes	Travel_Rai	Research &	11	2	Medical	1	7	Male	2	Sales Exec	Single	58130
9	11	29	No	Travel_Rai	Research &	18	3	Life Scienc	1	8	Male	2	Sales Exec	Married	31430
10	12	31	No	Travel_Rai	Research &	1	3	Life Scienc	1	9	Male	3	Laboratory	Married	20440
11	13	25	No	Non-Trave	Research &	7	4	Medical	1	10	Female	4	Laboratory	Divorced	134640
12	14	45	No	Travel_Rai	Research &	17	2	Medical	1	11	Male	2	Laboratory	Married	79910
13	16	36	No	Travel_Rai	Research &	28	1	Life Scienc	1	12	Male	1	Laboratory	Married	33770
14	18	55	No	Travel_Rai	Research &	14	4	Life Scienc	1	13	Female	1	Sales Exec	Single	55380
15	19	47	Yes	Non-Trave	Research &	1	1	Medical	1	14	Male	1	Research S	Married	57620
16	20	28	No	Travel_Rai	Research &	1	3	Life Scienc	1	15	Male	1	Manufactu	Married	25920
17	22	37	No	Travel_Rai	Research &	1	3	Life Scienc	1	16	Male	2	Healthcare	Married	53460
18	23	21	No	Travel_Rai	Research &	3	2	Life Scienc	1	17	Male	1	Laboratory	Single	42130
19	24	37	No	Non-Trave	Research &	1	3	Medical	1	18	Male	2	Sales Exec	Divorced	41270
20	26	35	No	Travel_Rai	Sales	7	4	Life Scienc	1	19	Male	1	Sales Repr	Divorced	24380
21	28	38	No	Travel_Rai	Research &	8	3	Life Scienc	1	20	Female	1	Manager	Divorced	68700
22	29	26	No	Travel_Fre	Research &	1	4	Other	1	21	Male	2	Laboratory	Divorced	104470
23	30	50	No	Travel_Rai	Sales	8	4	Life Scienc	1	22	Male	1	Research S	Divorced	96670
24	33	53	No	Travel_Rai	Research &	11	4	Life Scienc	1	23	Female	2	Research S	Married	21480
25	34	42	No	Travel_Rai	Research &	4	4	Life Scienc	1	24	Male	1	Manufactu	Married	89260
26	35	29	No	Travel_Fre	Research &	16	4	Medical	1	25	Male	1	Laboratory	Single	65130
27	37	55	No	Travel_Rai	Research &	1	4	Other	1	26	Female	1	Research S	Married	67990

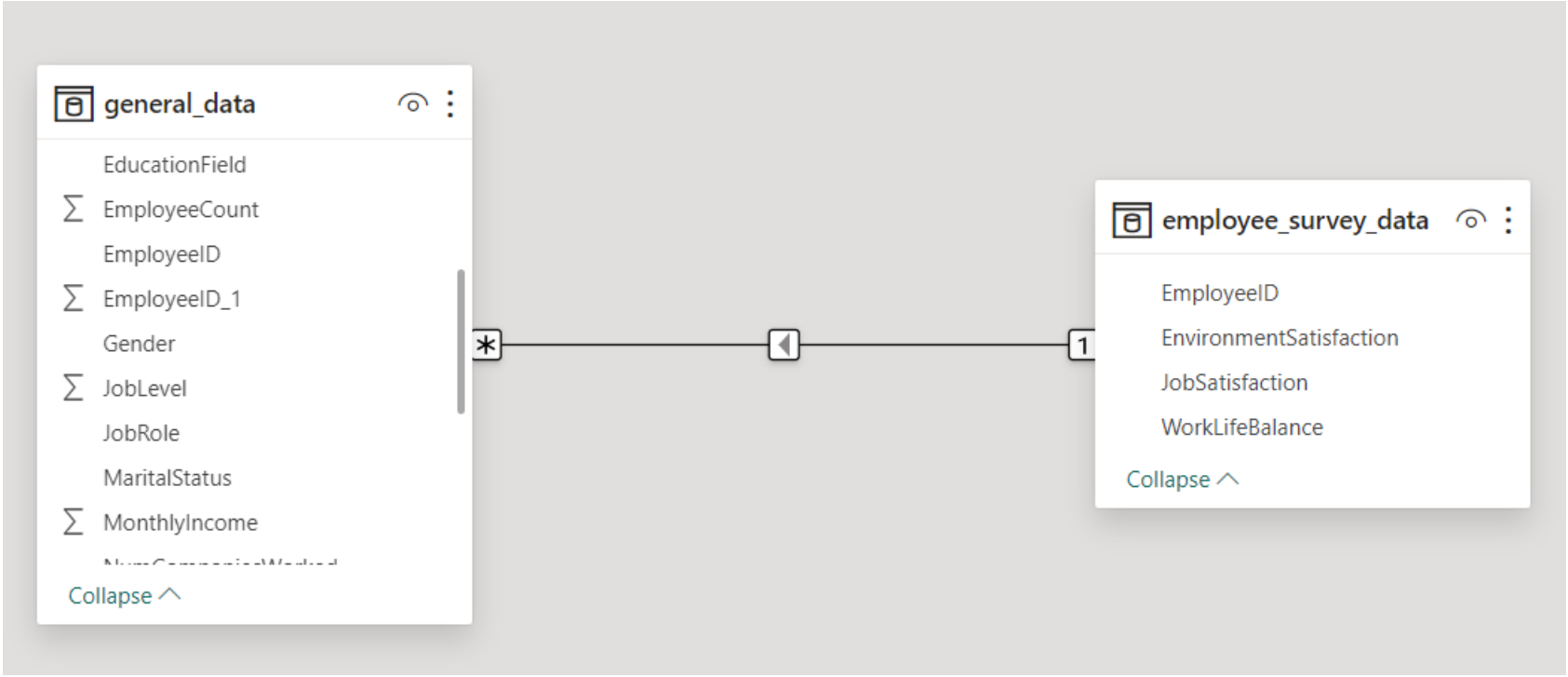
10.In Power BI, create a line chart that visualizes the trend of Employee Attrition over the years

- Here it is:

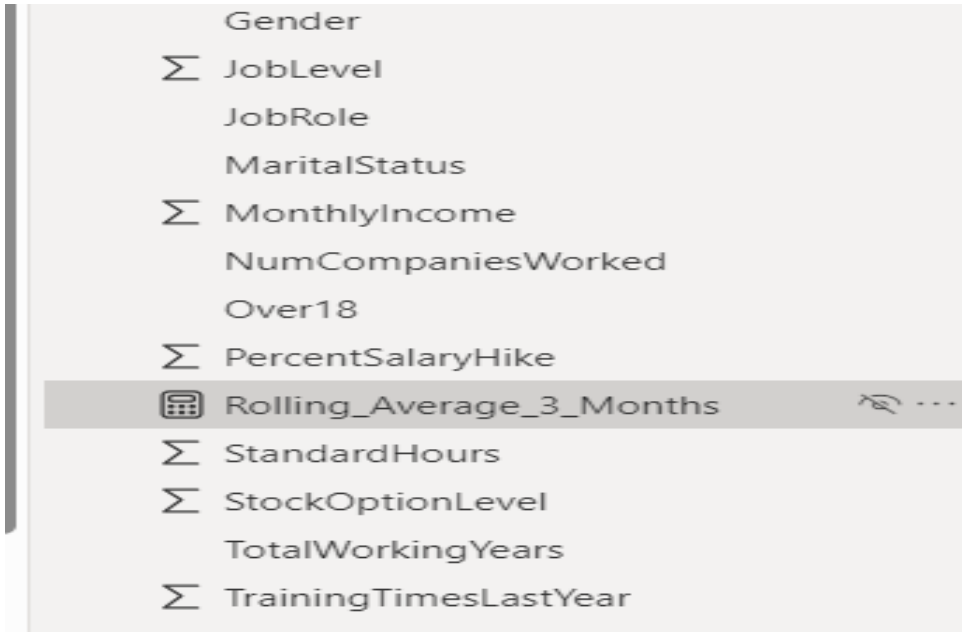


Attrition	Sum of YearsAtCompany
No	27258
Yes	3648
Total	**30906**

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

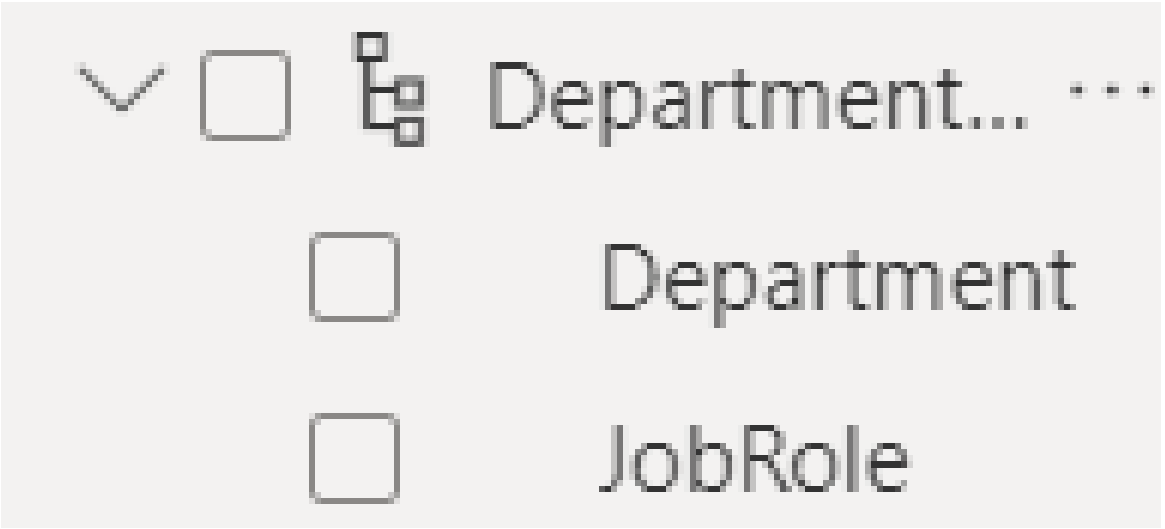


12. Using DAX, calculate the rolling 3-month average of Monthly Income for each employee.



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

- We could see the hierarchy being created



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

- Done in pbix file

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.

Row Labels	Count of MonthlyIncome
Human Resources	60
Research & Development	753
Sales	366
Grand Total	**1179**

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.

Scenario Summary								
		Current Va	basescena	10%increasing				
			Created by	Created by SHASHIDHAR on 15-01-2024				
Changing Cells:								
	T2	11	11	11				
Result Cells:								
	A2	1573920	1573920	1573920				
Notes: Current Values column represents values of changing cells at								
time Scenario Summary Report was created. Changing cells for each								
scenario are highlighted in gray.								

17.If data is not consistent,we can tackle it in following ways

- **Investigate the Source**: Determine the source of the discrepancy and figure out which data is more accurate.
- **Update or Delete Redundant Entries**: If you find redundant entries, consider updating them to match the schema or deleting them if they are not needed.
- **Ensure Data Synchronization**: Make sure that data is synchronized across all database records to prevent future inconsistencies.
- **Use Estimation and Interpolation**: If there are missing data points, you can use estimation and interpolation to fill them in.
- **Remove Outliers**: If the inconsistency is due to outliers in your data set, consider removing them.