

# HR Analytics Dashboard

## Problem Statement:-

### KPI's Requirement

The HR's department is responsible for monitoring and managing various aspects of employee data to ensure the organisation maintains a healthy workforce. However, there is lack of clear performance indicators to track and analyse key HR metrics. Therefore, there is a need to design and implement a set of KPI's to address the following points:

#### 1. Employee Count:

The HR department lacks visibility into the total number of employees, making it challenging to assess workforce size and plan for future growth or downsizing effectively.

#### 2. Attrition Count:

The organisation lacks a standardized method to track employee attrition, resulting in incomplete and unreliable data on the number of employees who have left the organisation.

#### 3. Attrition Rate:

Without a clear measure of attrition rate, the organisation can not assess the overall turnover level or compare it with industry benchmarks, hindering the ability to gauge employee satisfaction and engagement.

#### 4. Active Employees:

The organisation lacks a mechanism to differentiate between active and inactive employees, leading to difficulties in accurately assessing the current workforce's productivity and capacity.

#### 5. Average Age:

The HR department lacks visibility into the average age of employees, making it difficult to evaluate workforce demographics, succession planning, and the organisation's ability to attract and retain younger talent.

## **Chart's Requirement:**

### **Attrition By Gender:**

The HR department faces challenges in understanding the attrition patterns based on gender, making it difficult to identify any gender-related disparities and implement targeted retention strategies.

### **Department-wise Attrition:**

The HR department lacks visualisation to showcase attrition rates across different departments. This hinders their ability to identify departments with higher attrition rates and address any underlying issues or concerns effectively.

### **Number of Employees by Age Group:**

The HR department requires visual representation to analyse the distribution of employees across various age groups. This helps in assessing workforce demographics, identifying any age-related gaps or imbalances, and implementing targeted HR policies or programs.

### **Job Satisfaction Rating:**

The HR department lacks visualisation to represent job satisfaction ratings, hindering their ability to measure employee engagement and overall job satisfaction levels effectively.

### **Education Field-wise Attrition:**

The HR department requires visual representation to analyse attrition rates based on education fields. This helps identify specific educational backgrounds that may be associated with higher attrition, enabling the organisation to tailor retention strategies accordingly.

### **Attrition Rate by Gender for different Age Groups:**

The HR department lacks visualisation that display attrition rates based on gender and different age groups. This makes it challenging to identify any age and gender-related attrition trends, preventing the organisation from implementing targeted retention strategies for specific employee segments.

**Data:-** Glance of Raw data which we got:-

	A	B	C	D	E	F	G
1	emp_no	gender	marital_status	age_band	age	department	education
2	10001	Female	Single	35 - 44	41	Sales	Associates Degree
3	10002		Married	45 - 54	49	R&D	High School
4	10003	Male	Single	35 - 44	37	R&D	Associates Degree
5	10004	Female	Married	25 - 34		R&D	Master's Degree
6	10005	Male	Married	25 - 34	27	R&D	High School
7	10006	Male	Single	25 - 34	32	R&D	Associates Degree
8	10007	Female	Married	>55	59	R&D	Bachelor's Degree
9	10008	Male	Divorced	25 - 34	30	R&D	High School
10	10009	Male	Single	35 - 44	38	R&D	#NAME?
11	10010	Male	Married	35 - 44	36	R&D	Bachelor's Degree
12	10011	Male	Married	35 - 44	35	R&D	Bachelor's Degree
13	10012		Single	25 - 34	29	R&D	Associates Degree
14	10013	Male	Divorced	25 - 34	31	R&D	High School
15	10014		Divorced	25 - 34	34	R&D	Associates Degree
16	10015	Male	Single	25 - 34		R&D	Bachelor's Degree
17	10016	Female	Divorced	25 - 34	29	R&D	Master's Degree
18	10017	Male	Divorced	25 - 34	32	R&D	Associates Degree
19	10018	Male	Divorced	<25	22	R&D	Associates Degree
20	10019	Female	Married	45 - 54	53	Sales	#NAME?
21	10020	Male	Single	35 - 44	38	R&D	Bachelor's Degree
22	10021	Female	Divorced	<25	24	R&D	Associates Degree
23	10022		Single	35 - 44	36	Sales	Master's Degree
24	10023	Female	Single	25 - 34		R&D	Master's Degree
25	10024	Male	Single	Under 25	21	R&D	Associates Degree
26	10025	Male	Single	25 - 34	34	R&D	High School
27	10026	Female	Divorced	45 - 54	53	R&D	Bachelor's Degree
28	10027	Female	Single	25 - 34	32	R&D	High School
29	10028	Male	Married	35 - 44	42	Sales	Master's Degree
30	10029	Female	Married	35 - 44	44	R&D	Master's Degree
31	10030	Female	Single	45 - 54	46	Sales	Master's Degree
32	10031	Male	Single	25 - 34	33	R&D	Bachelor's Degree
33	10032		Married	35 - 44	44	R&D	Master's Degree
34	10033	Male	Single	25 - 34	30	R&D	Associates Degree
35	10034	Male	Married	35 - 44	39	Sales	#NAME?
36	10035	Male	Married	<25	24	R&D	Bachelor's Degree

H	I	J	K	L	M	J
education_field	job_role	business_travel	attrition	attrition_label	job_satisfaction	
Life Sciences	Sales Executive	Travel_Rarely	Yes	Ex-Employees	4	
Life Sciences	Research Scientist	Travel_Frequently	No	Current Employees	2	
Other	Laboratory Tech	Travel_Rarely	Yes	Ex-Employees	3	
Life Sciences	Research Scientist	Travel_Frequently	No	Current Employees	3	
Medical	Laboratory Tech	Travel_Rarely	No	Current Employees	2	
Life Sciences	Laboratory Tech	Travel_Frequently	No	Current Employees	4	
Medical	Laboratory Tech	Travel_Rarely	No	Current Employees	1	
Life Sciences	Laboratory Tech	Travel_Rarely	No	Current Employees	3	
Life Sciences	Manufacturing	Travel_Frequently	No	Current Employees	3	
Medical	Healthcare Rep	Travel_Rarely	No	Current Employees	3	
Medical	Laboratory Tech	Travel_Rarely	No	Current Employees	2	
Life Sciences	Laboratory Tech	Travel_Rarely	No	Current Employees	3	
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	3	
Medical	Laboratory Tech	Travel_Rarely	No	Current Employees	4	
Life Sciences	Laboratory Tech	Travel_Rarely	Yes	Ex-Employees	3	
Life Sciences	Manufacturing	Travel_Rarely	No	Current Employees	1	
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	2	
Medical	Laboratory Tech	Non-Travel	No	Current Employees	4	
Life Sciences	Manager	Travel_Rarely	No	Current Employees	4	
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	4	
Other	Manufacturing	Non-Travel	No	Current Employees	3	
Life Sciences	Sales Representative	Travel_Rarely	Yes	Ex-Employees	1	
Life Sciences	Research Director	Travel_Rarely	No	Current Employees	2	
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	4	
Medical	Research Scientist	Travel_Rarely	Yes	Ex-Employees	1	
Other	Manager	Travel_Rarely	No	Current Employees	3	
Life Sciences	Research Scientist	Travel_Frequently	Yes	Ex-Employees	1	
Marketing	Sales Executive	Travel_Rarely	No	Current Employees	2	
Medical	Healthcare Rep	Travel_Rarely	No	Current Employees	4	
Marketing	Manager	Travel_Rarely	No	Current Employees	1	
Medical	Laboratory Tech	Travel_Rarely	No	Current Employees	4	
Other	Healthcare Rep	Travel_Rarely	No	Current Employees	4	
Medical	Laboratory Tech	Travel_Rarely	No	Current Employees	3	
Technical Degree	Sales Representative	Travel_Rarely	Yes	Ex-Employees	4	
Medical	Research Scientist	Travel_Rarely	Yes	Ex-Employees	4	

	A	B	C	D	E	F	G
1	emp_no	gender	marital_status	age_band	age	department	education
36	10035	Male	Married	<25	24	R&D	Bachelor's Degree
37	10036	Female	Divorced	35 - 44	43	R&D	Associates Degree
38	10037	Male	Married	45 - 54	50	Sales	Associates Degree
39	10038	Female	Married	35 - 44	35	Sales	Bachelor's Degree
40	10039	Female	Married	35 - 44	36	R&D	Master's Degree
41	10040	Female	Married	25 - 34	33	Sales	Bachelor's Degree
42	10041	Male	Divorced	35 - 44	35	R&D	Associates Degree
43	10042	Female	Divorced	25 - 34	27	R&D	Master's Degree
44	10043	Male	Single	25 - 34		R&D	Bachelor's Degree
45	10044	Male	Single	25 - 34	27	Sales	Bachelor's Degree
46	10045	Female	Single	25 - 34	30	R&D	Associates Degree
47	10046	Female	Married	35 - 44	41	R&D	Bachelor's Degree
48	10047	Male	Single	25 - 34	34	Sales	Master's Degree
49	10048	Male	Married	35 - 44	37	R&D	Associates Degree
50	10049	Male	Single	45 - 54	46	Sales	Master's Degree
51	10050	Male	Married	35 - 44	35	R&D	High School
52	10051	Male	Single	45 - 54	48	R&D	Associates Degree
53	10052	Male	Single	25 - 34	28	R&D	Master's Degree
54	10053	Female	Divorced	35 - 44	44	Sales	Doctoral Degree
55	10054	Male	Married	35 - 44	35	R&D	Associates Degree
56	10055	Female	Married	25 - 34	26	Sales	Bachelor's Degree
57	10056	Female	Single	25 - 34	33	R&D	Associates Degree
58	10057	Male	Married	35 - 44	35	Sales	#NAME?
59	10058	Female	Married	35 - 44	35	R&D	Master's Degree
60	10059	Male	Divorced	25 - 34	31	R&D	Master's Degree
61	10060	Male	Divorced	35 - 44		R&D	Master's Degree
62	10061	Male	Married	25 - 34	32	R&D	Bachelor's Degree
63	10062	Female	Single	35 - 44	38	R&D	Doctoral Degree
64	10063	Female	Divorced	45 - 54	50	R&D	Associates Degree
65	10064	Female	Single	>55	59	Sales	Bachelor's Degree
66	10065	Female	Divorced	35 - 44	36	R&D	Bachelor's Degree
67	10066	Female	Divorced	>55	55	R&D	Bachelor's Degree
68	10067	Male	Single	35 - 44	36	R&D	Bachelor's Degree
69	10068	Male	Divorced	45 - 54	45	R&D	Bachelor's Degree
70	10069	Male	Married	35 - 44	35	R&D	Bachelor's Degree
71	10070	Male	Married	35 - 44	36	R&D	Bachelor's Degree

H	I	J	K	L	M
education_field	job_role	business_travel	attrition	attrition_label	job_satisfaction
Medical	Research Scientist	Travel_Rarely	Yes	Ex-Employees	4
Medical	Research Scientist	Travel_Rarely	No	Current Employees	3
Marketing	Sales Representative	Travel_Rarely	Yes	Ex-Employees	3
Marketing	Sales Representative	Travel_Rarely	No	Current Employees	4
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	1
Life Sciences	Sales Executive	Travel_Frequently	No	Current Employees	1
Other	Laboratory Technician	Travel_Rarely	No	Current Employees	4
Life Sciences	Laboratory Technician	Travel_Rarely	No	Current Employees	1
Life Sciences	Laboratory Technician	Travel_Rarely	Yes	Ex-Employees	3
Life Sciences	Sales Executive	Travel_Frequently	No	Current Employees	3
Medical	Laboratory Technician	Travel_Frequently	No	Current Employees	4
Technical Degree	Research Director	Travel_Rarely	Yes	Ex-Employees	3
Marketing	Sales Executive	Non-Travel	No	Current Employees	3
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	2
Marketing	Sales Executive	Travel_Frequently	No	Current Employees	4
Life Sciences	Laboratory Technician	Travel_Rarely	No	Current Employees	4
Life Sciences	Laboratory Technician	Travel_Rarely	Yes	Ex-Employees	3
Technical Degree	Laboratory Technician	Travel_Rarely	Yes	Ex-Employees	3
Marketing	Sales Executive	Travel_Rarely	No	Current Employees	1
Medical	Healthcare Representative	Non-Travel	No	Current Employees	1
Marketing	Sales Executive	Travel_Rarely	No	Current Employees	4
Life Sciences	Research Director	Travel_Frequently	No	Current Employees	4
Life Sciences	Sales Executive	Travel_Frequently	No	Current Employees	1
Medical	Laboratory Technician	Travel_Rarely	No	Current Employees	1
Life Sciences	Laboratory Technician	Travel_Rarely	No	Current Employees	4
Life Sciences	Manufacturing Director	Travel_Rarely	No	Current Employees	3
Medical	Manufacturing Director	Travel_Rarely	No	Current Employees	4
Life Sciences	Laboratory Technician	Travel_Frequently	No	Current Employees	4
Medical	Research Director	Travel_Rarely	No	Current Employees	3
Life Sciences	Sales Executive	Travel_Rarely	No	Current Employees	1
Technical Degree	Healthcare Representative	Travel_Rarely	No	Current Employees	3
Medical	Manager	Travel_Rarely	No	Current Employees	3
Life Sciences	Manufacturing Director	Travel_Frequently	No	Current Employees	2
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	1
Medical	Research Scientist	Travel_Frequently	No	Current Employees	1
Medical	Research Scientist	Travel_Rarely	Yes	Ex-Employees	3

	A	B	C	D	E	F	G
1	emp_no	gender	marital_status	age_band	age	department	education
72	10071	Female	Single	>55	59	Sales	High School
73	10072	Male	Married	25 - 34	29	R&D	Bachelor's Degree
74	10073	Male	Single	25 - 34	31	R&D	Master's Degree
75	10074	Male	Married	25 - 34	R&D		Bachelor's Degree
76	10075	Female	Married	35 - 44	36	R&D	Bachelor's Degree
77	10076	Female	Single	25 - 34	31	R&D	Master's Degree
78	10077	Male	Single	35 - 44	35	Sales	Master's Degree
79	10078	Male	Married	45 - 54	45	R&D	#NAME?
80	10079	Male	Single	35 - 44	37	R&D	Master's Degree
81	10080	Male	Divorced	45 - 54	46	HR	Associates Degree
82	10081	Male	Married	25 - 34	30	R&D	High School
83	10082	Male	Single	35 - 44	35	R&D	Bachelor's Degree
84	10083	Male	Married	Over 55	55	Sales	Associates Degree
85	10084	Female	Divorced	35 - 44	38	R&D	Bachelor's Degree
86	10085	Male	Married	25 - 34	R&D		Associates Degree
87	10086	Male	Single	Over 55	56	R&D	Bachelor's Degree
88	10087	Male	Divorced	Under 25	23	Sales	High School
89	10088	Male	Married	45 - 54	51	R&D	Master's Degree
90	10089	Male	Married	25 - 34	30	R&D	#NAME?
91	10090	Male	Single	45 - 54	46	Sales	Associates Degree
92	10091	Male	Married	35 - 44	40	R&D	Master's Degree
93	10092	Male	Single	45 - 54	51	Sales	Master's Degree
94	10093	Female	Divorced	25 - 34	30	Sales	Associates Degree
95	10094	Male	Married	45 - 54	46	R&D	Bachelor's Degree
96	10095	Male	Single	25 - 34	32	Sales	Master's Degree
97	10096	Female	Married	45 - 54	54	R&D	Master's Degree
98	10097	Female	Married	Under 25	24	Sales	Associates Degree
99	10098	Male	Married	25 - 34	28	Sales	Bachelor's Degree
100	10099	Male	Single	Over 55	58	Sales	Master's Degree
101	10100	Male	Married	35 - 44	44	R&D	Bachelor's Degree
102	10101	Male	Divorced	35 - 44	37	HR	Master's Degree
103	10102	Male	Single	25 - 34	R&D		High School
104	10103	Female	Single	Under 25	20	R&D	Bachelor's Degree
105	10104	Female	Single	25 - 34	34	R&D	Master's Degree
106	10105	Male	Divorced	35 - 44	37	R&D	Associates Degree
107	10106	Female	Married	Over 55	59	HR	Master's Degree

H	I	J	K	L	M	J
education_field	job_role	business_travel	attrition	attrition_label	job_satisfaction	
Life Sciences	Sales Executive	Travel_Frequently	No	Current Employees	3	
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	2	
Medical	Research Scientist	Travel_Rarely	No	Current Employees	2	
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	2	
Life Sciences	Laboratory Technician	Travel_Rarely	No	Current Employees	4	
Life Sciences	Manufacturing Worker	Travel_Rarely	No	Current Employees	4	
Marketing	Sales Executive	Travel_Rarely	No	Current Employees	1	
Other	Research Director	Travel_Rarely	No	Current Employees	1	
Medical	Research Director	Travel_Rarely	No	Current Employees	3	
Medical	Human Resources	Travel_Rarely	No	Current Employees	2	
Life Sciences	Laboratory Technician	Travel_Rarely	No	Current Employees	4	
Medical	Research Scientist	Travel_Rarely	No	Current Employees	3	
Life Sciences	Sales Executive	Travel_Rarely	No	Current Employees	4	
Medical	Research Scientist	Non-Travel	No	Current Employees	4	
Medical	Manufacturing Worker	Travel_Rarely	No	Current Employees	2	
Life Sciences	Manufacturing Worker	Travel_Rarely	No	Current Employees	4	
Technical Degree	Sales Representative	Travel_Rarely	No	Current Employees	1	
Life Sciences	Laboratory Technician	Travel_Rarely	No	Current Employees	4	
Life Sciences	Healthcare Representative	Travel_Rarely	No	Current Employees	4	
Medical	Sales Executive	Travel_Rarely	Yes	Ex-Employees	4	
Life Sciences	Healthcare Representative	Travel_Frequently	No	Current Employees	2	
Marketing	Sales Executive	Travel_Rarely	No	Current Employees	4	
Medical	Sales Executive	Travel_Rarely	No	Current Employees	2	
Medical	Healthcare Representative	Travel_Frequently	No	Current Employees	1	
Medical	Sales Executive	Travel_Rarely	No	Current Employees	3	
Technical Degree	Research Director	Travel_Rarely	No	Current Employees	3	
Other	Sales Executive	Travel_Rarely	No	Current Employees	3	
Medical	Sales Executive	Non-Travel	No	Current Employees	3	
Medical	Sales Executive	Travel_Rarely	No	Current Employees	3	
Medical	Laboratory Technician	Non-Travel	No	Current Employees	2	
Human Resources	Human Resources	Travel_Rarely	Yes	Ex-Employees	1	
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	1	
Life Sciences	Laboratory Technician	Travel_Frequently	Yes	Ex-Employees	4	
Other	Research Scientist	Travel_Rarely	No	Current Employees	3	
Life Sciences	Healthcare Representative	Non-Travel	No	Current Employees	4	
Human Resources	Manager	Non-Travel	No	Current Employees	4	
Human Resources	Manager	Non-Travel	No	Current Employees	2	

	A	B	C	D	E	F	G
1	emp_no	gender	marital_status	age_band	age	department	education
108	10107	Female	Married	45 - 54	50	R&D	Bachelor's Degree
109	10108	Male	Single	25 - 34	25	Sales	Bachelor's Degree
110	10109	Male	Married	25 - 34	25	R&D	High School
111	10110	Female	Single	<25	22	R&D	Bachelor's Degree
112	10111	Female	Single	45 - 54	51	R&D	Master's Degree
113	10112	Male	Single	25 - 34	34	R&D	Bachelor's Degree
114	10113	Female	Single	45 - 54	54	HR	Bachelor's Degree
115	10114	Male	Married	<25	24	R&D	High School
116	10115	Female	Divorced	25 - 34	34	R&D	Master's Degree
117	10116		Single	35 - 44	37	Sales	Bachelor's Degree
118	10117	Female	Single	25 - 34	34	R&D	Bachelor's Degree
119	10118	Female	Married	35 - 44	36	Sales	Associates Degree
120	10119	Female	Divorced	35 - 44	36	R&D	Associates Degree
121	10120	Male	Married	35 - 44	43	Sales	Associates Degree
122	10121	Male	Divorced	25 - 34		R&D	Bachelor's Degree
123	10122	Male	Married	25 - 34	33	Sales	Associates Degree
124	10123	Female	Married	Over 55	56	R&D	Master's Degree
125	10124	Male	Single	45 - 54	51	R&D	Bachelor's Degree
126	10125	Male	Married	25 - 34	31	Sales	Master's Degree
127	10126	Female	Married	25 - 34	26	R&D	Bachelor's Degree
128	10127	Female	Married	Over 55	58	R&D	Master's Degree
129	10128	Male	Single	Under 25	19	Sales	High School
130	10129	Male	Married	Under 25	22	R&D	High School
131	10130	Female	Married	45 - 54		R&D	Master's Degree
132	10131	Female	Single	35 - 44	43	R&D	#NAME?
133	10132	Female	Single	45 - 54	50	Sales	Bachelor's Degree
134	10133	Female	Married	25 - 34		Sales	Bachelor's Degree
135	10134	Male	Divorced	35 - 44	41	Sales	High School
136	10135	Female	Married	25 - 34	26	HR	High School
137	10136	Male	Divorced	35 - 44	36	R&D	Associates Degree
138	10137	Male	Single	45 - 54		R&D	Master's Degree
139	10138	Female	Married	35 - 44	39	Sales	Master's Degree
140	10139	Male	Married	25 - 34	25	Sales	Bachelor's Degree
141	10140	Male	Married	25 - 34	30	HR	Bachelor's Degree
142	10141	Female	Single	25 - 34	32	R&D	Bachelor's Degree
143	10142	Male	Single	45 - 54	45	R&D	Bachelor's Degree

H	I	J	K	L	M	N
education_field	job_role	business_travel	attrition	attrition_label	job_satisfaction	.
Life Sciences	Research Director	Travel_Frequently	No	Current Employees	4	2
Marketing	Sales Executive	Travel_Rarely	Yes	Ex-Employees	3	3
Medical	Research Scientist	Travel_Rarely	No	Current Employees	4	4
Medical	Laboratory Techni	Travel_Rarely	No	Current Employees	4	4
Medical	Healthcare Repre	Travel_Frequently	No	Current Employees	1	1
Life Sciences	Laboratory Techni	Travel_Frequently	Yes	Ex-Employees	3	3
Human Resources	Manager	Non-Travel	No	Current Employees	4	4
Life Sciences	Laboratory Techni	Travel_Rarely	No	Current Employees	3	3
Life Sciences	Research Scientist	Travel_Rarely	No	Current Employees	2	2
Life Sciences	Sales Executive	Travel_Rarely	No	Current Employees	4	4
Medical	Manager	Travel_Rarely	No	Current Employees	1	1
Technical Degree	Sales Executive	Travel_Frequently	No	Current Employees	4	4
Life Sciences	Laboratory Techni	Travel_Rarely	No	Current Employees	4	4
Life Sciences	Manager	Travel_Frequently	No	Current Employees	4	4
Life Sciences	Research Scientist	Travel_Frequently	No	Current Employees	3	3
Marketing	Sales Executive	Non-Travel	No	Current Employees	2	2
Life Sciences	Research Scientist	Travel_Rarely	Yes	Ex-Employees	2	2
Life Sciences	Research Director	Travel_Rarely	No	Current Employees	3	3
Life Sciences	Sales Executive	Travel_Rarely	Yes	Ex-Employees	3	3
Other	Research Scientist	Travel_Rarely	No	Current Employees	2	2
Medical	Healthcare Repre	Travel_Rarely	Yes	Ex-Employees	4	4
Marketing	Sales Representat	Travel_Rarely	Yes	Ex-Employees	3	3
Technical Degree	Laboratory Techni	Travel_Rarely	No	Current Employees	4	4
Medical	Manufacturing Di	Travel_Rarely	No	Current Employees	1	1
Medical	Research Scientist	Travel_Frequently	No	Current Employees	3	3
Marketing	Sales Executive	Travel_Frequently	No	Current Employees	4	4
Life Sciences	Sales Executive	Travel_Rarely	Yes	Ex-Employees	3	3
Life Sciences	Sales Executive	Travel_Rarely	No	Current Employees	3	3
Life Sciences	Human Resources	Travel_Rarely	No	Current Employees	3	3
Medical	Manufacturing Di	Travel_Rarely	No	Current Employees	2	2
Life Sciences	Manufacturing Di	Travel_Frequently	Yes	Ex-Employees	4	4
Life Sciences	Sales Executive	Travel_Rarely	No	Current Employees	3	3
Life Sciences	Sales Executive	Travel_Rarely	No	Current Employees	3	3
Human Resources	Human Resources	Travel_Rarely	No	Current Employees	4	4
Medical	Laboratory Techni	Travel_Rarely	Yes	Ex-Employees	1	1
Medical	Research Scientist	Travel_Rarely	No	Current Employees	4	4

## **Data Preprocessing and cleaning:-**

Lets have glance of data preprocessing and data cleaning

On observing data and our requirements we selected these columns for cleaning and preprocessing:-

**Gender:**- Some empty cells are there . We impute them with highest frequency in gender column.

Value Imputed:- Highest frequency in gender column :- ♂Male

**Formula used:**

=IF(C5<>"",C5,IF(MAX(COUNTIF(\$C\$2:\$C\$1471,"Female"),COUNTIF(\$C\$2:\$C\$1471,"Male")))=COUNTIF(\$C\$2:\$C\$1471,"Female"),"Female","Male"))

B	C
gender(Cleaned)	gender
Female	Female
Male	
Male	Male
Female	Female
Male	Male
Male	Male
Female	Female
Male	Male
Male	
Male	Male
Male	Male
Female	Female
Male	Male
Male	Male
Female	Female
Male	Male
Female	Female
Male	Male
Female	Female
Male	Male
Male	Male
Female	Female
Female	Female
Male	Male
Male	
Male	Male
Male	Male

**Age\_band:-** Greater than and smaller than symbol is used which is not fit for presentation needs and some values are Under 25 and some <25 , Over 55 and >55.

Replace <25 with Under 25 and >55 with Over 55

**Formula Used:-** Use simply find and replace option at column age\_band.

E	F
age_band(cleaned)	age_band
35 - 44	35 - 44
45 - 54	45 - 54
35 - 44	35 - 44
25 - 34	25 - 34
25 - 34	25 - 34
25 - 34	25 - 34
Over 55	>55
25 - 34	25 - 34
35 - 44	35 - 44
35 - 44	35 - 44
35 - 44	35 - 44
25 - 34	25 - 34
25 - 34	25 - 34
25 - 34	25 - 34
25 - 34	25 - 34
25 - 34	25 - 34
Under 25	<25
45 - 54	45 - 54
35 - 44	35 - 44
Under 25	<25
35 - 44	35 - 44
25 - 34	25 - 34
Under 25	Under 25
25 - 34	25 - 34
45 - 54	45 - 54
25 - 34	25 - 34
35 - 44	35 - 44
35 - 44	35 - 44
45 - 54	45 - 54
25 - 34	25 - 34
35 - 44	35 - 44
25 - 34	25 - 34
35 - 44	35 - 44

**Age:-** Some values are missing in age column . To reduce **data loss** , we will do imputation of average age , where age value is empty.

Value Imputed : -36

**Formula Used:-** =IF(H3<>"",H3,MEDIAN(\$H\$2:\$H\$1417))

G	H
age(cleaned)	age
41	41
49	49
37	37
36	
27	27
32	32
59	59
30	30
38	38
36	36
35	35
29	29
31	31
34	34
36	
29	29
32	32
22	22
53	53
38	38
24	24
36	36
36	
21	21
34	34
53	53
32	32
42	42
44	44
46	46
33	33
44	44
30	30
39	39
24	24

**Education:-** Got some null values in education column . Fill it with highest frequency value in that education column.

First change null values as empty cell (semi cleaned)  
Then impute them with highest frequency value(cleaned)

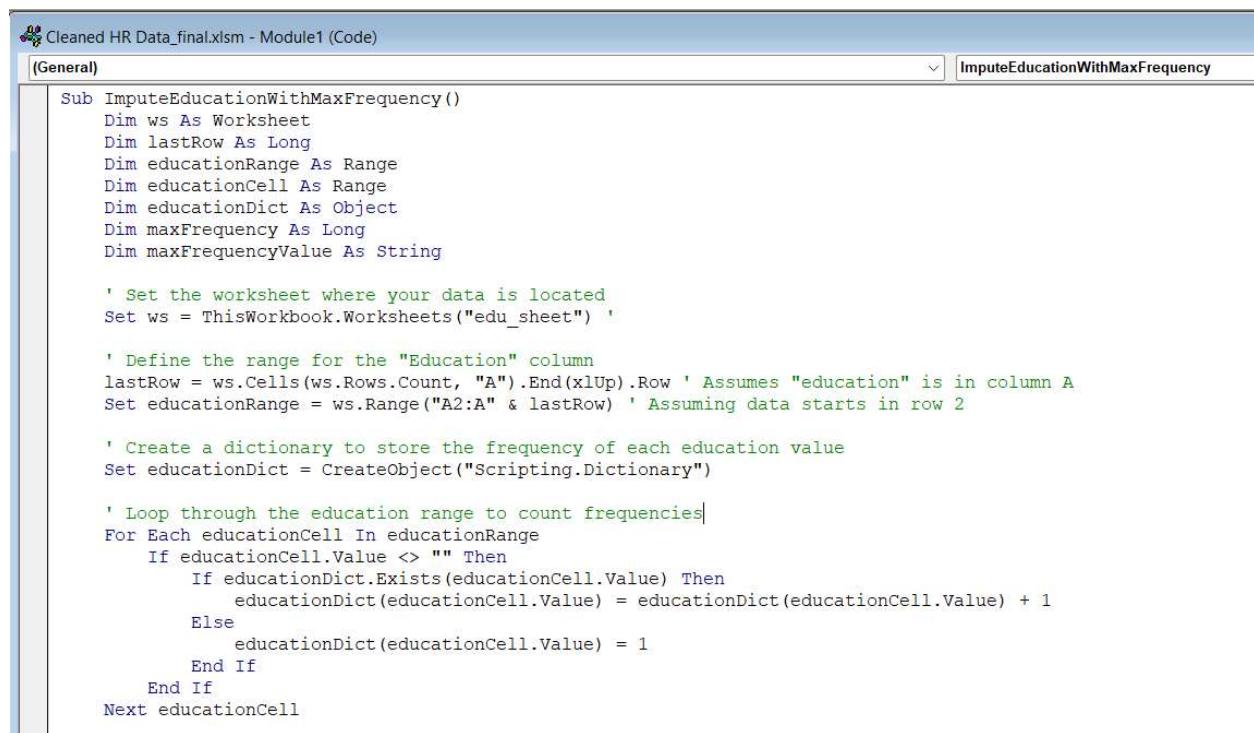
Value Imputed:- Bachelor's Degree

**Formula Used:-**

For semi cleaned:- =IFERROR(L3,"")

For total cleaned: - We use **VBA code** to impute it .

First we make different sheet “**edu\_sheet**” in which we paste semi-cleaned education column at column A . and after imputation we copy that imputed column and paste it in data processing and cleaning sheet/tab.



```
Sub ImputeEducationWithMaxFrequency()
    Dim ws As Worksheet
    Dim lastRow As Long
    Dim educationRange As Range
    Dim educationCell As Range
    Dim educationDict As Object
    Dim maxFrequency As Long
    Dim maxFrequencyValue As String

    ' Set the worksheet where your data is located
    Set ws = ThisWorkbook.Worksheets("edu_sheet")

    ' Define the range for the "Education" column
    lastRow = ws.Cells(ws.Rows.Count, "A").End(xlUp).Row ' Assumes "education" is in column A
    Set educationRange = ws.Range("A2:A" & lastRow) ' Assuming data starts in row 2

    ' Create a dictionary to store the frequency of each education value
    Set educationDict = CreateObject("Scripting.Dictionary")

    ' Loop through the education range to count frequencies
    For Each educationCell In educationRange
        If educationCell.Value <> "" Then
            If educationDict.Exists(educationCell.Value) Then
                educationDict(educationCell.Value) = educationDict(educationCell.Value) + 1
            Else
                educationDict(educationCell.Value) = 1
            End If
        End If
    Next educationCell

    ' Find the maximum frequency
    maxFrequency = educationDict.Count
    maxFrequencyValue = educationDict.Keys(1)

    ' Loop through the education range again to fill null values
    For Each educationCell In educationRange
        If educationCell.Value = "" Then
            educationCell.Value = maxFrequencyValue
        End If
    Next educationCell
End Sub
```

```
' Find the education value with the maximum frequency
maxFrequency = 0
For Each Key In educationDict.Keys
    If educationDict(Key) > maxFrequency Then
        maxFrequency = educationDict(Key)
        maxFrequencyValue = Key
    End If
Next Key

' Loop through the education range and impute with max frequency value
For Each educationCell In educationRange
    If educationCell.Value = "" Then
        educationCell.Value = maxFrequencyValue
    End If
Next educationCell

' Clean up
Set educationDict = Nothing
End Sub
```

	A	B	C	D
1	<b>education</b>		<b>result</b>	
2	Associates Degree		Bachelor's Degree	
3	High School			
4	Associates Degree			
5	Master's Degree			
6	High School			
7	Associates Degree			
8	Bachelor's Degree			
9	High School			
10	Bachelor's Degree			
11	Bachelor's Degree			
12	Bachelor's Degree			
13	Associates Degree			
14	High School			
15	Associates Degree			
16	Bachelor's Degree			
17	Master's Degree			
18	Associates Degree			
19	Associates Degree			
20	Bachelor's Degree			
21	Bachelor's Degree			
22	Associates Degree			
23	Master's Degree			
24	Master's Degree			
25	Associates Degree			
26	High School			
27	Bachelor's Degree			
28	High School			
29	Master's Degree			
30	Master's Degree			

&lt;

&gt;

...

Data Cleaning &amp; Processing

Raw\_Data

edu\_sheet

J	K	L
education(cleaned)	education(semi clean)	education
Associates Degree	Associates Degree	Associates Degree
High School	High School	High School
Associates Degree	Associates Degree	Associates Degree
Master's Degree	Master's Degree	Master's Degree
High School	High School	High School
Associates Degree	Associates Degree	Associates Degree
Bachelor's Degree	Bachelor's Degree	Bachelor's Degree
High School	High School	High School
Bachelor's Degree		#NAME?
Bachelor's Degree	Bachelor's Degree	Bachelor's Degree
Bachelor's Degree	Bachelor's Degree	Bachelor's Degree
Associates Degree	Associates Degree	Associates Degree
High School	High School	High School
Associates Degree	Associates Degree	Associates Degree
Bachelor's Degree	Bachelor's Degree	Bachelor's Degree
Master's Degree	Master's Degree	Master's Degree
Associates Degree	Associates Degree	Associates Degree
Associates Degree	Associates Degree	Associates Degree
Bachelor's Degree		#NAME?
Bachelor's Degree	Bachelor's Degree	Bachelor's Degree
Associates Degree	Associates Degree	Associates Degree
Master's Degree	Master's Degree	Master's Degree
Master's Degree	Master's Degree	Master's Degree
Associates Degree	Associates Degree	Associates Degree
High School	High School	High School
Bachelor's Degree	Bachelor's Degree	Bachelor's Degree
High School	High School	High School
Master's Degree	Master's Degree	Master's Degree
Master's Degree	Master's Degree	Master's Degree
Master's Degree	Master's Degree	Master's Degree
Bachelor's Degree	Bachelor's Degree	Bachelor's Degree
Master's Degree	Master's Degree	Master's Degree
Associates Degree	Associates Degree	Associates Degree
Bachelor's Degree		#NAME?

## Column Addition:-

**Employee\_count**:- This column is added to count the no. of employees

**Formula Used**:-  $=IF(A2<>"",1,0)$

**Active Employee**:- This column is added to count active employee , assigning 1 corresponding to "Yes" at attrition and 0 corresponding to "NO"

**Formula Used**:-  $=IF(P2= "Yes",0,1)$  (here P2 corresponds to attrition column)

S	T	U
employee_count	Job Satisfaction	active_employee
1	4	0
1	2	1
1	3	0
1	3	1
1	2	1
1	4	1
1	1	1
1	3	1
1	3	1
1	2	1
1	3	1
1	3	1
1	4	1
1	3	0
1	1	1
1	2	1
1	4	1
1	4	1
1	3	1
1	1	0
1	2	1
1	4	1
1	1	0
1	3	1
1	1	0
1	2	1
1	4	1
1	1	1
1	4	1
1	4	1
1	3	1
1	4	0
1	4	0

## Summary of Data Processing and Cleaning

COLUMN NAME	IMPUTED/REPLACE /ADD
gender	Male
age_band	<25, Under 25
	>55, Over 55
age	36
education	VBA , Bachelor's Degree
employee_count	Column Add
active_employee	Column Add

C

**OPERATION APPLIED(Sheet\_Name = Data Cleaning & Processsing)(Table Name = Data\_table)**

IF(C2<>"",C2,IF(MAX(COUNTIF(\$C\$2:\$C\$1471,"Female"),COUNTIF(\$C\$2:\$C\$1471,"Male"))=COUNTIF(\$C\$2:\$C\$1471,"Female"),"Female","Male"))

Find & Replace in column age

Find & Replace in column age

IF(H3<>"",H3,MEDIAN(\$H\$2:\$H\$1417))

[VBA code Link](#)

IF(A2 <>"",1,0) , Column A = Employee\_Id

IF(P2= "Yes",0,1) , Column P = Attrition

## Final Cleaned Data

Lets have glance over final cleaned Data:-

A	B	C	D	E	F	G
emp_no	gender	marital_status	age_band	age	department	education
10001	Female	Single	35 - 44	41	Sales	Associates Degree
10002	Male	Married	45 - 54	49	R&D	High School
10003	Male	Single	35 - 44	37	R&D	Associates Degree
10004	Female	Married	25 - 34	36	R&D	Master's Degree
10005	Male	Married	25 - 34	27	R&D	High School
10006	Male	Single	25 - 34	32	R&D	Associates Degree
10007	Female	Married	Over 55	59	R&D	Bachelor's Degree
10008	Male	Divorced	25 - 34	30	R&D	High School
10009	Male	Single	35 - 44	38	R&D	Bachelor's Degree
10010	Male	Married	35 - 44	36	R&D	Bachelor's Degree
10011	Male	Married	35 - 44	35	R&D	Bachelor's Degree
10012	Male	Single	25 - 34	29	R&D	Associates Degree
10013	Male	Divorced	25 - 34	31	R&D	High School
10014	Male	Divorced	25 - 34	34	R&D	Associates Degree
10015	Male	Single	25 - 34	36	R&D	Bachelor's Degree
10016	Female	Divorced	25 - 34	29	R&D	Master's Degree
10017	Male	Divorced	25 - 34	32	R&D	Associates Degree
10018	Male	Divorced	Under 25	22	R&D	Associates Degree
10019	Female	Married	45 - 54	53	Sales	Bachelor's Degree
10020	Male	Single	35 - 44	38	R&D	Bachelor's Degree
10021	Female	Divorced	Under 25	24	R&D	Associates Degree
10022	Male	Single	35 - 44	36	Sales	Master's Degree
10023	Female	Single	25 - 34	36	R&D	Master's Degree
10024	Male	Single	Under 25	21	R&D	Associates Degree
10025	Male	Single	25 - 34	34	R&D	High School
10026	Female	Divorced	45 - 54	53	R&D	Bachelor's Degree
10027	Female	Single	25 - 34	32	R&D	High School
10028	Male	Married	35 - 44	42	Sales	Master's Degree
10029	Female	Married	35 - 44	44	R&D	Master's Degree
10030	Female	Single	45 - 54	46	Sales	Master's Degree
10031	Male	Single	25 - 34	33	R&D	Bachelor's Degree
10032	Male	Married	35 - 44	44	R&D	Master's Degree
10033	Male	Single	25 - 34	30	R&D	Associates Degree
10034	Male	Married	35 - 44	39	Sales	Bachelor's Degree

H	I	J	K	L	M	N	O
education_field	job_role	business_travel	employee_count	attrition	attrition_label	job_satisfaction	active_employee
Life Sciences	Sales Executive	Travel_Rarely		1 Yes	Ex-Employees	4	0
Life Sciences	Research Scientist	Travel_Frequently		1 No	Current Employee	2	1
Other	Laboratory Tech	Travel_Rarely		1 Yes	Ex-Employees	3	0
Life Sciences	Research Scientist	Travel_Frequently		1 No	Current Employee	3	1
Medical	Laboratory Tech	Travel_Rarely		1 No	Current Employee	2	1
Life Sciences	Laboratory Tech	Travel_Frequently		1 No	Current Employee	4	1
Medical	Laboratory Tech	Travel_Rarely		1 No	Current Employee	1	1
Life Sciences	Laboratory Tech	Travel_Rarely		1 No	Current Employee	3	1
Life Sciences	Manufacturing D	Travel_Frequently		1 No	Current Employee	3	1
Medical	Healthcare Rep	Travel_Rarely		1 No	Current Employee	3	1
Medical	Laboratory Tech	Travel_Rarely		1 No	Current Employee	2	1
Life Sciences	Laboratory Tech	Travel_Rarely		1 No	Current Employee	3	1
Life Sciences	Research Scientist	Travel_Rarely		1 No	Current Employee	3	1
Medical	Laboratory Tech	Travel_Rarely		1 No	Current Employee	4	1
Life Sciences	Laboratory Tech	Travel_Rarely		1 Yes	Ex-Employees	3	0
Life Sciences	Manufacturing D	Travel_Rarely		1 No	Current Employee	1	1
Life Sciences	Research Scientist	Travel_Rarely		1 No	Current Employee	2	1
Medical	Laboratory Tech	Non-Travel		1 No	Current Employee	4	1
Life Sciences	Manager	Travel_Rarely		1 No	Current Employee	4	1
Life Sciences	Research Scientist	Travel_Rarely		1 No	Current Employee	4	1
Other	Manufacturing D	Non-Travel		1 No	Current Employee	3	1
Life Sciences	Sales Represen	Travel_Rarely		1 Yes	Ex-Employees	1	0
Life Sciences	Research Director	Travel_Rarely		1 No	Current Employee	2	1
Life Sciences	Research Scientist	Travel_Rarely		1 No	Current Employee	4	1
Medical	Research Scientist	Travel_Rarely		1 Yes	Ex-Employees	1	0
Other	Manager	Travel_Rarely		1 No	Current Employee	3	1
Life Sciences	Research Scientist	Travel_Frequently		1 Yes	Ex-Employees	1	0
Marketing	Sales Executive	Travel_Rarely		1 No	Current Employee	2	1
Medical	Healthcare Rep	Travel_Rarely		1 No	Current Employee	4	1
Marketing	Manager	Travel_Rarely		1 No	Current Employee	1	1
Medical	Laboratory Tech	Travel_Rarely		1 No	Current Employee	4	1
Other	Healthcare Rep	Travel_Rarely		1 No	Current Employee	4	1
Medical	Laboratory Tech	Travel_Rarely		1 No	Current Employee	3	1
Technical Degree	Sales Represen	Travel_Rarely		1 Yes	Ex-Employees	4	0

	emp_no	gender	marital_status	age_band	age	department	education
36	10035	Male	Married	Under 25	24	R&D	Bachelor's Degree
37	10036	Female	Divorced	35 - 44	43	R&D	Associates Degree
38	10037	Male	Married	45 - 54	50	Sales	Associates Degree
39	10038	Female	Married	35 - 44	35	Sales	Bachelor's Degree
40	10039	Female	Married	35 - 44	36	R&D	Master's Degree
41	10040	Female	Married	25 - 34	33	Sales	Bachelor's Degree
42	10041	Male	Divorced	35 - 44	35	R&D	Associates Degree
43	10042	Female	Divorced	25 - 34	27	R&D	Master's Degree
44	10043	Male	Single	25 - 34	36	R&D	Bachelor's Degree
45	10044	Male	Single	25 - 34	27	Sales	Bachelor's Degree
46	10045	Female	Single	25 - 34	30	R&D	Associates Degree
47	10046	Female	Married	35 - 44	41	R&D	Bachelor's Degree
48	10047	Male	Single	25 - 34	34	Sales	Master's Degree
49	10048	Male	Married	35 - 44	37	R&D	Associates Degree
50	10049	Male	Single	45 - 54	46	Sales	Master's Degree
51	10050	Male	Married	35 - 44	35	R&D	High School
52	10051	Male	Single	45 - 54	48	R&D	Associates Degree
53	10052	Male	Single	25 - 34	28	R&D	Master's Degree
54	10053	Female	Divorced	35 - 44	44	Sales	Doctoral Degree
55	10054	Male	Married	35 - 44	35	R&D	Associates Degree
56	10055	Female	Married	25 - 34	26	Sales	Bachelor's Degree
57	10056	Female	Single	25 - 34	33	R&D	Associates Degree
58	10057	Male	Married	35 - 44	35	Sales	Bachelor's Degree
59	10058	Female	Married	35 - 44	35	R&D	Master's Degree
60	10059	Male	Divorced	25 - 34	31	R&D	Master's Degree
61	10060	Male	Divorced	35 - 44	36	R&D	Master's Degree
62	10061	Male	Married	25 - 34	32	R&D	Bachelor's Degree
63	10062	Female	Single	35 - 44	38	R&D	Doctoral Degree
64	10063	Female	Divorced	45 - 54	50	R&D	Associates Degree
65	10064	Female	Single	Over 55	59	Sales	Bachelor's Degree
66	10065	Female	Divorced	35 - 44	36	R&D	Bachelor's Degree
67	10066	Female	Divorced	Over 55	55	R&D	Bachelor's Degree
68	10067	Male	Single	35 - 44	36	R&D	Bachelor's Degree
69	10068	Male	Divorced	45 - 54	45	R&D	Bachelor's Degree
70	10069	Male	Married	35 - 44	35	R&D	Bachelor's Degree

education_field	job_role	business_travel	employee_count	attrition	attrition_label	job_satisfaction	active_employee
Medical	Research Scientist	Travel_Rarely	1	Yes	Ex-Employees	4	0
Medical	Research Scientist	Travel_Rarely	1	No	Current Employee	3	1
Marketing	Sales Representative	Travel_Rarely	1	Yes	Ex-Employees	3	0
Marketing	Sales Representative	Travel_Rarely	1	No	Current Employee	4	1
Life Sciences	Research Scientist	Travel_Rarely	1	No	Current Employee	1	1
Life Sciences	Sales Executive	Travel_Frequently	1	No	Current Employee	1	1
Other	Laboratory Technician	Travel_Rarely	1	No	Current Employee	4	1
Life Sciences	Laboratory Technician	Travel_Rarely	1	No	Current Employee	1	1
Life Sciences	Laboratory Technician	Travel_Rarely	1	Yes	Ex-Employees	3	0
Life Sciences	Sales Executive	Travel_Frequently	1	No	Current Employee	3	1
Medical	Laboratory Technician	Travel_Frequently	1	No	Current Employee	4	1
Technical Degree	Research Director	Travel_Rarely	1	Yes	Ex-Employees	3	0
Marketing	Sales Executive	Non-Travel	1	No	Current Employee	3	1
Life Sciences	Research Scientist	Travel_Rarely	1	No	Current Employee	2	1
Marketing	Sales Executive	Travel_Frequently	1	No	Current Employee	4	1
Life Sciences	Laboratory Technician	Travel_Rarely	1	No	Current Employee	4	1
Life Sciences	Laboratory Technician	Travel_Rarely	1	Yes	Ex-Employees	3	0
Technical Degree	Laboratory Technician	Travel_Rarely	1	Yes	Ex-Employees	3	0
Marketing	Sales Executive	Travel_Rarely	1	No	Current Employee	1	1
Medical	Healthcare Representative	Non-Travel	1	No	Current Employee	1	1
Marketing	Sales Executive	Travel_Rarely	1	No	Current Employee	4	1
Life Sciences	Research Director	Travel_Frequently	1	No	Current Employee	4	1
Life Sciences	Sales Executive	Travel_Frequently	1	No	Current Employee	1	1
Medical	Laboratory Technician	Travel_Rarely	1	No	Current Employee	1	1
Life Sciences	Laboratory Technician	Travel_Rarely	1	No	Current Employee	4	1
Life Sciences	Manufacturing Worker	Travel_Rarely	1	No	Current Employee	3	1
Medical	Manufacturing Worker	Travel_Rarely	1	No	Current Employee	4	1
Life Sciences	Laboratory Technician	Travel_Frequently	1	No	Current Employee	4	1
Medical	Research Director	Travel_Rarely	1	No	Current Employee	3	1
Life Sciences	Sales Executive	Travel_Rarely	1	No	Current Employee	1	1
Technical Degree	Healthcare Representative	Travel_Rarely	1	No	Current Employee	3	1
Medical	Manager	Travel_Rarely	1	No	Current Employee	3	1
Life Sciences	Manufacturing Worker	Travel_Frequently	1	No	Current Employee	2	1
Life Sciences	Research Scientist	Travel_Rarely	1	No	Current Employee	1	1
Medical	Research Scientist	Travel_Frequently	1	No	Current Employee	1	1

	emp_no	gender	marital_status	age_band	age	department	education
71	10070	Male	Married	35 - 44	36	R&D	Bachelor's Degree
72	10071	Female	Single	Over 55	59	Sales	High School
73	10072	Male	Married	25 - 34	29	R&D	Bachelor's Degree
74	10073	Male	Single	25 - 34	31	R&D	Master's Degree
75	10074	Male	Married	25 - 34	36	R&D	Bachelor's Degree
76	10075	Female	Married	35 - 44	36	R&D	Bachelor's Degree
77	10076	Female	Single	25 - 34	31	R&D	Master's Degree
78	10077	Male	Single	35 - 44	35	Sales	Master's Degree
79	10078	Male	Married	45 - 54	45	R&D	Bachelor's Degree
80	10079	Male	Single	35 - 44	37	R&D	Master's Degree
81	10080	Male	Divorced	45 - 54	46	HR	Associates Degree
82	10081	Male	Married	25 - 34	30	R&D	High School
83	10082	Male	Single	35 - 44	35	R&D	Bachelor's Degree
84	10083	Male	Married	Over 55	55	Sales	Associates Degree
85	10084	Female	Divorced	35 - 44	38	R&D	Bachelor's Degree
86	10085	Male	Married	25 - 34	36	R&D	Associates Degree
87	10086	Male	Single	Over 55	56	R&D	Bachelor's Degree
88	10087	Male	Divorced	Under 25	23	Sales	High School
89	10088	Male	Married	45 - 54	51	R&D	Master's Degree
90	10089	Male	Married	25 - 34	30	R&D	Bachelor's Degree
91	10090	Male	Single	45 - 54	46	Sales	Associates Degree
92	10091	Male	Married	35 - 44	40	R&D	Master's Degree
93	10092	Male	Single	45 - 54	51	Sales	Master's Degree
94	10093	Female	Divorced	25 - 34	30	Sales	Associates Degree
95	10094	Male	Married	45 - 54	46	R&D	Bachelor's Degree
96	10095	Male	Single	25 - 34	32	Sales	Master's Degree
97	10096	Female	Married	45 - 54	54	R&D	Master's Degree
98	10097	Female	Married	Under 25	24	Sales	Associates Degree
99	10098	Male	Married	25 - 34	28	Sales	Bachelor's Degree
100	10099	Male	Single	Over 55	58	Sales	Master's Degree
101	10100	Male	Married	35 - 44	44	R&D	Bachelor's Degree
102	10101	Male	Divorced	35 - 44	37	HR	Master's Degree
103	10102	Male	Single	25 - 34	36	R&D	High School
104	10103	Female	Single	Under 25	20	R&D	Bachelor's Degree
105	10104	Female	Single	25 - 34	34	R&D	Master's Degree

education	education_field	job_role	business_travel	employee_count	attrition	attrition_label	job_satisfaction	active_employee
Bachelor's Degree	Medical	Research Scientist	Travel_Rarely	1	Yes	Ex-Employees	3	0
High School	Life Sciences	Sales Executive	Travel_Frequently	1	No	Current Employee	3	1
Bachelor's Degree	Life Sciences	Research Scientist	Travel_Rarely	1	No	Current Employee	2	1
Master's Degree	Medical	Research Scientist	Travel_Rarely	1	No	Current Employee	2	1
Bachelor's Degree	Life Sciences	Research Scientist	Travel_Rarely	1	No	Current Employee	2	1
Bachelor's Degree	Life Sciences	Laboratory Tech	Travel_Rarely	1	No	Current Employee	4	1
Master's Degree	Life Sciences	Manufacturing D	Travel_Rarely	1	No	Current Employee	4	1
Master's Degree	Marketing	Sales Executive	Travel_Rarely	1	No	Current Employee	1	1
Bachelor's Degree	Other	Research Director	Travel_Rarely	1	No	Current Employee	1	1
Master's Degree	Medical	Research Director	Travel_Rarely	1	No	Current Employee	3	1
Associates Degree	Medical	Human Resource	Travel_Rarely	1	No	Current Employee	2	1
High School	Life Sciences	Laboratory Tech	Travel_Rarely	1	No	Current Employee	4	1
Bachelor's Degree	Medical	Research Scientist	Travel_Rarely	1	No	Current Employee	3	1
Associates Degree	Life Sciences	Sales Executive	Travel_Rarely	1	No	Current Employee	4	1
Bachelor's Degree	Medical	Research Scientist	Non_Travel	1	No	Current Employee	4	1
Associates Degree	Medical	Manufacturing D	Travel_Rarely	1	No	Current Employee	2	1
Bachelor's Degree	Life Sciences	Manufacturing D	Travel_Rarely	1	No	Current Employee	4	1
High School	Technical Degree	Sales Representative	Travel_Rarely	1	No	Current Employee	1	1
Master's Degree	Life Sciences	Laboratory Tech	Travel_Rarely	1	No	Current Employee	4	1
Bachelor's Degree	Life Sciences	Healthcare Rep	Travel_Rarely	1	No	Current Employee	4	1
Associates Degree	Medical	Sales Executive	Travel_Rarely	1	Yes	Ex-Employees	4	0
Master's Degree	Life Sciences	Healthcare Rep	Travel_Frequently	1	No	Current Employee	2	1
Master's Degree	Marketing	Sales Executive	Travel_Rarely	1	No	Current Employee	4	1
Associates Degree	Medical	Sales Executive	Travel_Rarely	1	No	Current Employee	2	1
Bachelor's Degree	Medical	Healthcare Rep	Travel_Frequently	1	No	Current Employee	1	1
Master's Degree	Medical	Sales Executive	Travel_Rarely	1	No	Current Employee	3	1
Master's Degree	Technical Degree	Research Director	Travel_Rarely	1	No	Current Employee	3	1
Associates Degree	Other	Sales Executive	Travel_Rarely	1	No	Current Employee	3	1
Bachelor's Degree	Medical	Sales Executive	Non_Travel	1	No	Current Employee	3	1
Master's Degree	Medical	Sales Executive	Travel_Rarely	1	No	Current Employee	3	1
Bachelor's Degree	Medical	Laboratory Tech	Non_Travel	1	No	Current Employee	2	1
Master's Degree	Human Resources	Human Resource	Travel_Rarely	1	Yes	Ex-Employees	1	0
High School	Life Sciences	Research Scientist	Travel_Rarely	1	No	Current Employee	1	1
Bachelor's Degree	Life Sciences	Laboratory Tech	Travel_Frequently	1	Yes	Ex-Employees	4	0
Master's Degree	Other	Research Scientist	Travel_Rarely	1	No	Current Employee	3	1

	emp_no	gender	marital_status	age_band	age	department	education
106	10105	Male	Divorced	35 - 44	37	R&D	Associates Degree
107	10106	Female	Married	Over 55	59	HR	Master's Degree
108	10107	Female	Married	45 - 54	50	R&D	Bachelor's Degree
109	10108	Male	Single	25 - 34	25	Sales	Bachelor's Degree
110	10109	Male	Married	25 - 34	25	R&D	High School
111	10110	Female	Single	Under 25	22	R&D	Bachelor's Degree
112	10111	Female	Single	45 - 54	51	R&D	Master's Degree
113	10112	Male	Single	25 - 34	34	R&D	Bachelor's Degree
114	10113	Female	Single	45 - 54	54	HR	Bachelor's Degree
115	10114	Male	Married	Under 25	24	R&D	High School
116	10115	Female	Divorced	25 - 34	34	R&D	Master's Degree
117	10116	Male	Single	35 - 44	37	Sales	Bachelor's Degree
118	10117	Female	Single	25 - 34	34	R&D	Bachelor's Degree
119	10118	Female	Married	35 - 44	36	Sales	Associates Degree
120	10119	Female	Divorced	35 - 44	36	R&D	Associates Degree
121	10120	Male	Married	35 - 44	43	Sales	Associates Degree
122	10121	Male	Divorced	25 - 34	36	R&D	Bachelor's Degree
123	10122	Male	Married	25 - 34	33	Sales	Associates Degree
124	10123	Female	Married	Over 55	56	R&D	Master's Degree
125	10124	Male	Single	45 - 54	51	R&D	Bachelor's Degree
126	10125	Male	Married	25 - 34	31	Sales	Master's Degree
127	10126	Female	Married	25 - 34	26	R&D	Bachelor's Degree
128	10127	Female	Married	Over 55	58	R&D	Master's Degree
129	10128	Male	Single	Under 25	19	Sales	High School
130	10129	Male	Married	Under 25	22	R&D	High School
131	10130	Female	Married	45 - 54	36	R&D	Master's Degree
132	10131	Female	Single	35 - 44	43	R&D	Bachelor's Degree
133	10132	Female	Single	45 - 54	50	Sales	Bachelor's Degree
134	10133	Female	Married	25 - 34	36	Sales	Bachelor's Degree
135	10134	Male	Divorced	35 - 44	41	Sales	High School
136	10135	Female	Married	25 - 34	26	HR	High School
137	10136	Male	Divorced	35 - 44	36	R&D	Associates Degree
138	10137	Male	Single	45 - 54	36	R&D	Master's Degree
139	10138	Female	Married	35 - 44	39	Sales	Master's Degree
140	10139	Male	Married	25 - 34	25	Sales	Bachelor's Degree

education_field	job_role	business_travel	employee_count	attrition	attrition_label	job_satisfaction	active_employee
Life Sciences	Healthcare Repre	Non-Travel	1	No	Current Employee	4	1
Human Resources	Manager	Non-Travel	1	No	Current Employee	4	1
Life Sciences	Research Director	Travel_Frequently	1	No	Current Employee	2	1
Marketing	Sales Executive	Travel_Rarely	1	Yes	Ex-Employees	3	0
Medical	Research Scientist	Travel_Rarely	1	No	Current Employee	4	1
Medical	Laboratory Tech	Travel_Rarely	1	No	Current Employee	4	1
Medical	Healthcare Repre	Travel_Frequently	1	No	Current Employee	1	1
Life Sciences	Laboratory Tech	Travel_Frequently	1	Yes	Ex-Employees	3	0
Human Resources	Manager	Non-Travel	1	No	Current Employee	4	1
Life Sciences	Laboratory Tech	Travel_Rarely	1	No	Current Employee	3	1
Life Sciences	Research Scientist	Travel_Rarely	1	No	Current Employee	2	1
Life Sciences	Sales Executive	Travel_Rarely	1	No	Current Employee	4	1
Medical	Manager	Travel_Rarely	1	No	Current Employee	1	1
Technical Degree	Sales Executive	Travel_Frequently	1	No	Current Employee	4	1
Life Sciences	Laboratory Tech	Travel_Rarely	1	No	Current Employee	4	1
Life Sciences	Manager	Travel_Frequently	1	No	Current Employee	4	1
Life Sciences	Research Scientist	Travel_Frequently	1	No	Current Employee	3	1
Marketing	Sales Executive	Non-Travel	1	No	Current Employee	2	1
Life Sciences	Research Scientist	Travel_Rarely	1	Yes	Ex-Employees	2	0
Life Sciences	Research Director	Travel_Rarely	1	No	Current Employee	3	1
Life Sciences	Sales Executive	Travel_Rarely	1	Yes	Ex-Employees	3	0
Other	Research Scientist	Travel_Rarely	1	No	Current Employee	2	1
Medical	Healthcare Repre	Travel_Rarely	1	Yes	Ex-Employees	4	0
Marketing	Sales Representa	Travel_Rarely	1	Yes	Ex-Employees	3	0
Technical Degree	Laboratory Tech	Travel_Rarely	1	No	Current Employee	4	1
Medical	Manufacturing D	Travel_Rarely	1	No	Current Employee	1	1
Medical	Research Scientist	Travel_Frequently	1	No	Current Employee	3	1
Marketing	Sales Executive	Travel_Frequently	1	No	Current Employee	4	1
Life Sciences	Sales Executive	Travel_Rarely	1	Yes	Ex-Employees	3	0
Life Sciences	Sales Executive	Travel_Rarely	1	No	Current Employee	3	1
Life Sciences	Human Resource	Travel_Rarely	1	No	Current Employee	3	1
Medical	Manufacturing D	Travel_Rarely	1	No	Current Employee	2	1
Life Sciences	Manufacturing D	Travel_Frequently	1	Yes	Ex-Employees	4	0
Life Sciences	Sales Executive	Travel_Rarely	1	No	Current Employee	3	1
Life Sciences	Sales Executive	Travel_Rarely	1	No	Current Employee	3	1

**Size of data(cleaned) = 1471 X 39**

## Dashboards:-

We will create dashboard using 3 different software:-

1. Tableau
2. Power BI
3. Excel

We will also do sql check on Tableau and Power BI dashboard.

### Tableau Dashboard:-

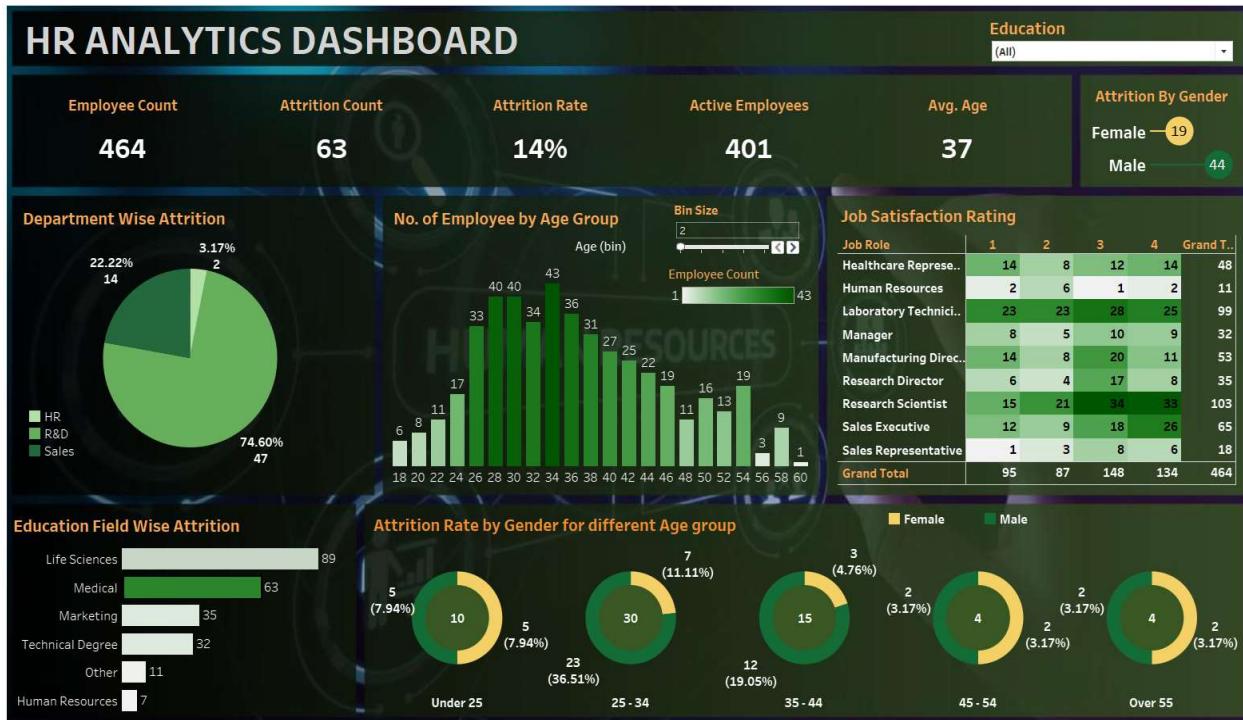


Tableau Dashboard

**Dashboard Summary:-** This Dashboard contain following features:

#### KPIs:

- **Employee Count**:- Total Number of employees in the organisation.
- **Attrition Count**:- The number of employees who have left the organisation.
- **Attrition Rate**:- The percentage of employees who have left in a given period.
- **Active Employees**:- The number of employees currently employed.
- **Average Age**:- The average age of employees in the organisation.

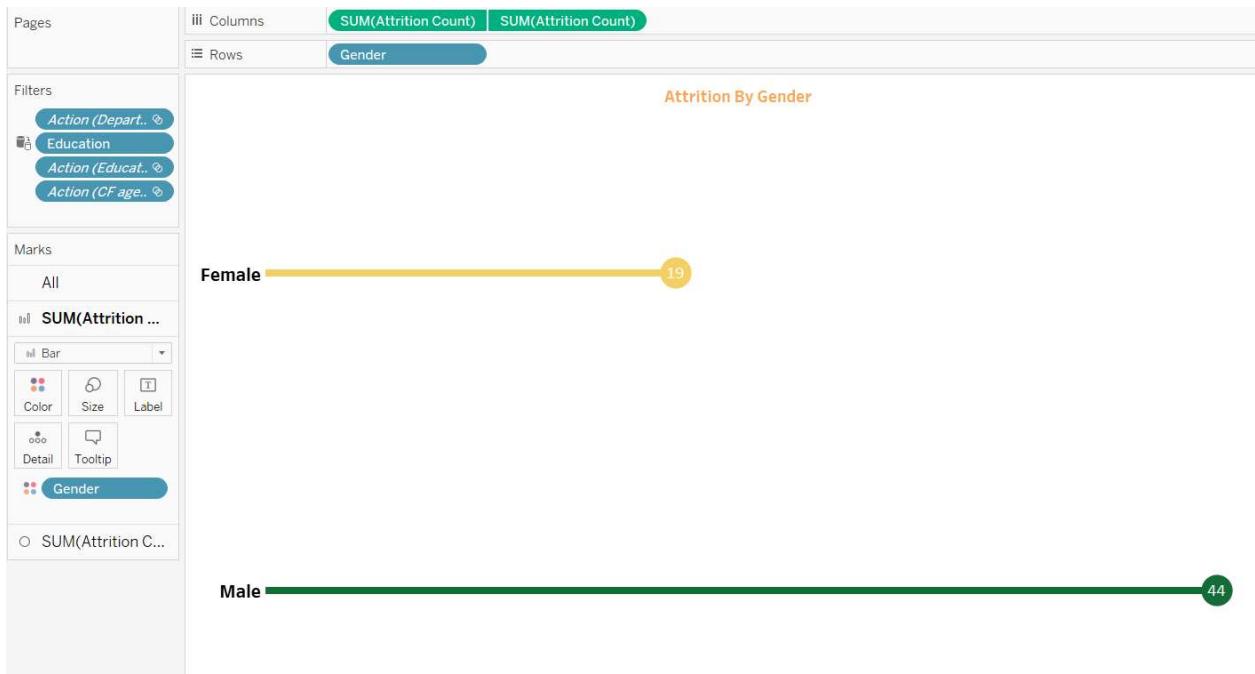
#### Charts:

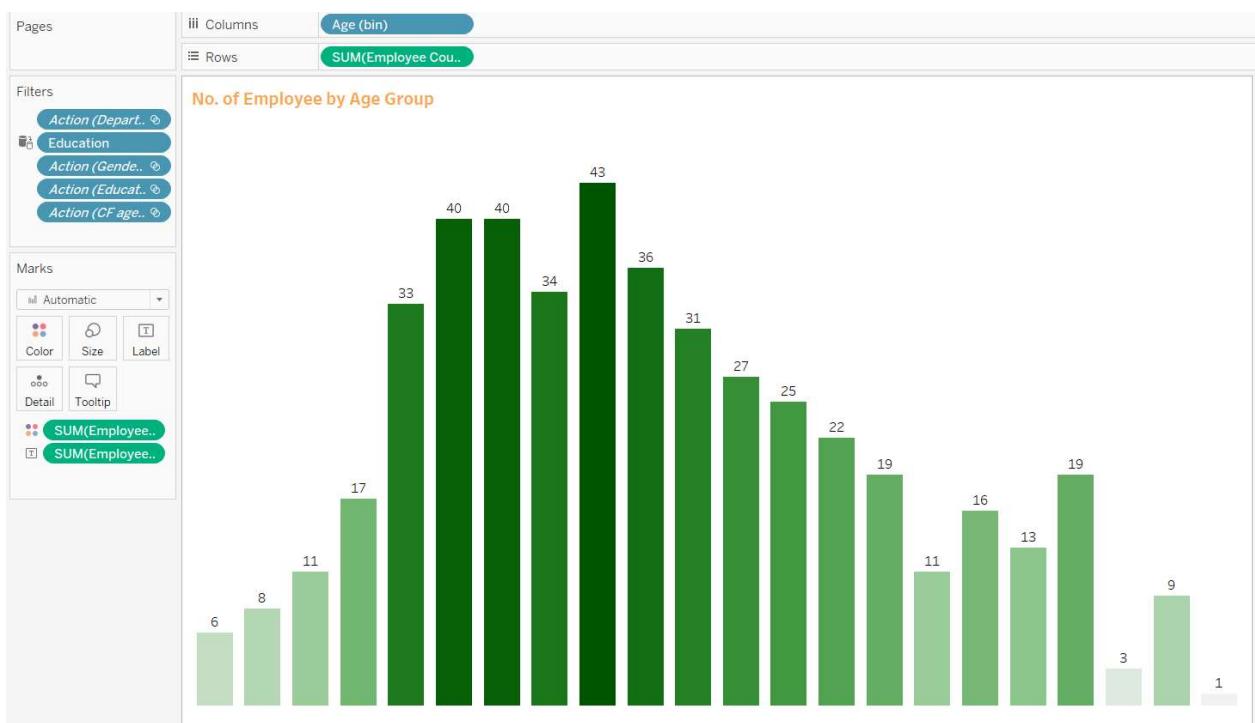
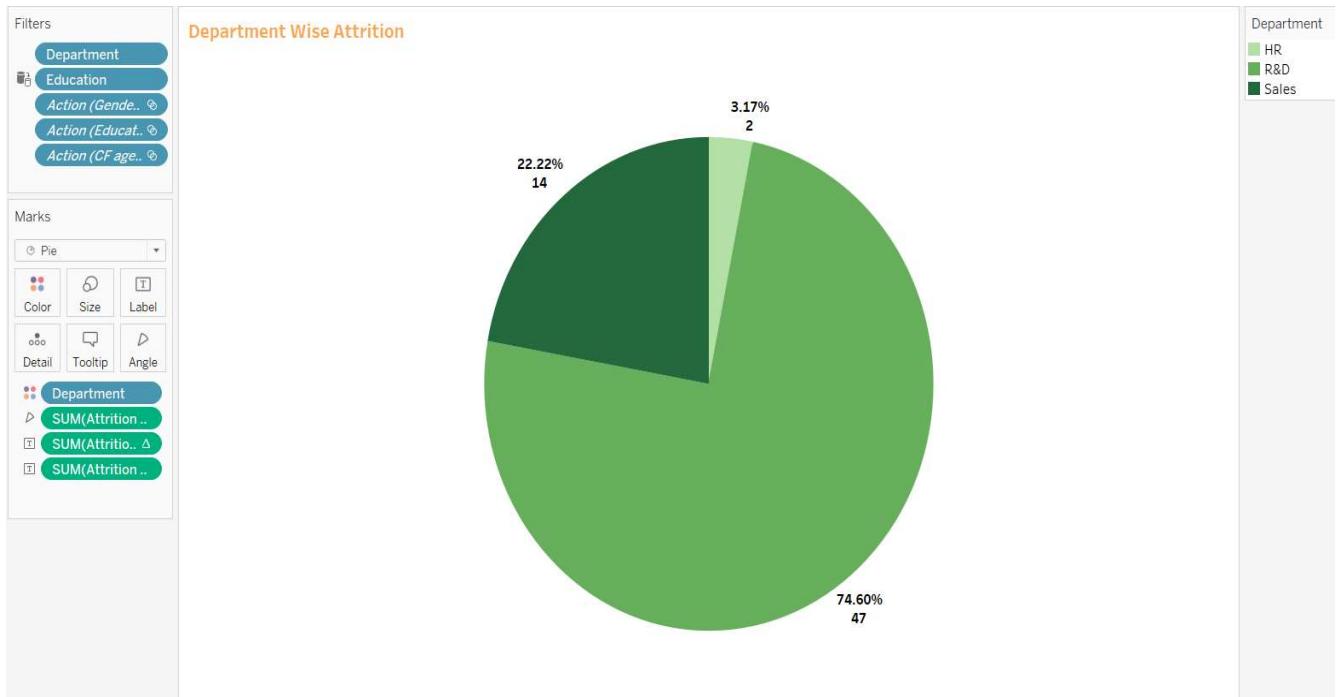
- **Attrition By Gender**:- A **lolly pop(bar)** chart showing attrition count by gender.
- **Department -wise Attrition**:- A **pie chart** displaying attrition count by department.
- **Number of Employees by Age Group**:- A **histogram** showing distribution of employees by age groups.
- **Job satisfaction rating**:- A **guage chart** displaying job satisfaction ratings.
- **Education Field-wise attrition**:- A **bar chart** showing attrition count by education field.
- **Attrition Rate by Gender by Different Age groups**:- Series of **Doughnut charts** displaying attrition rates by gender and different age groups.

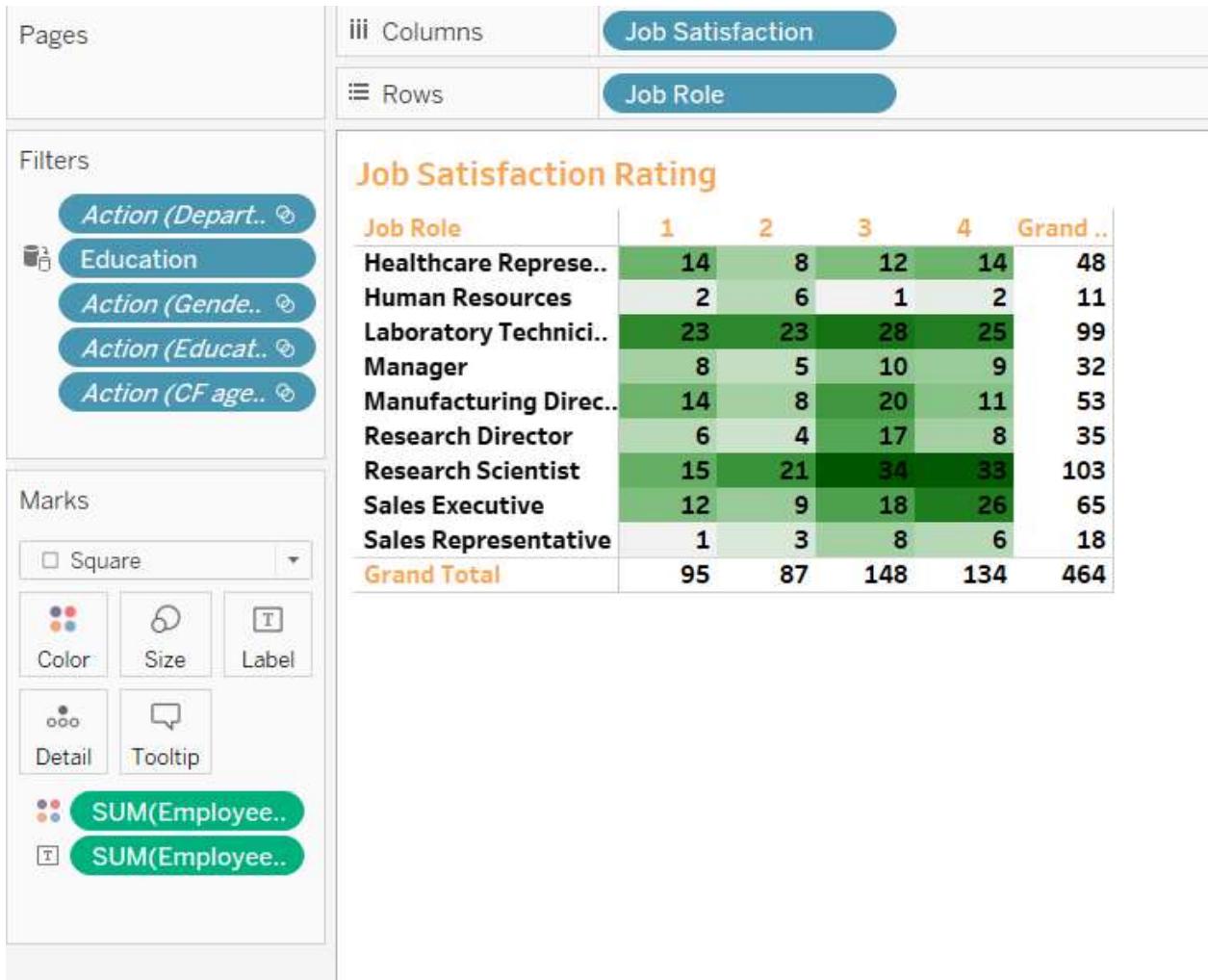
#### Filters:

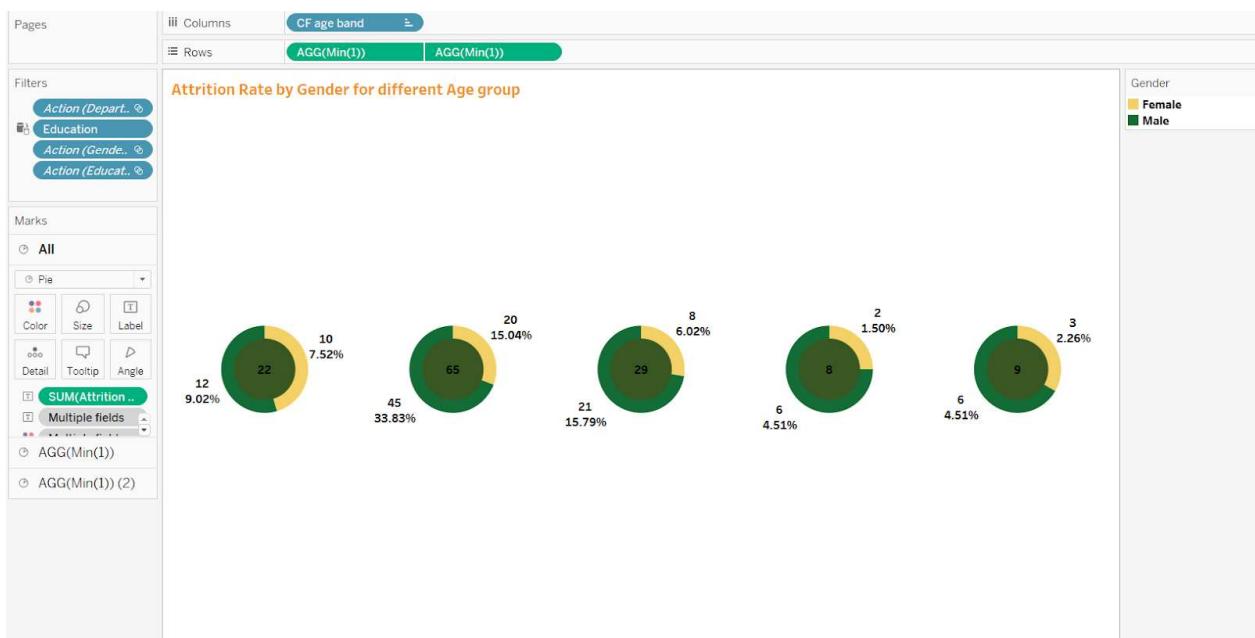
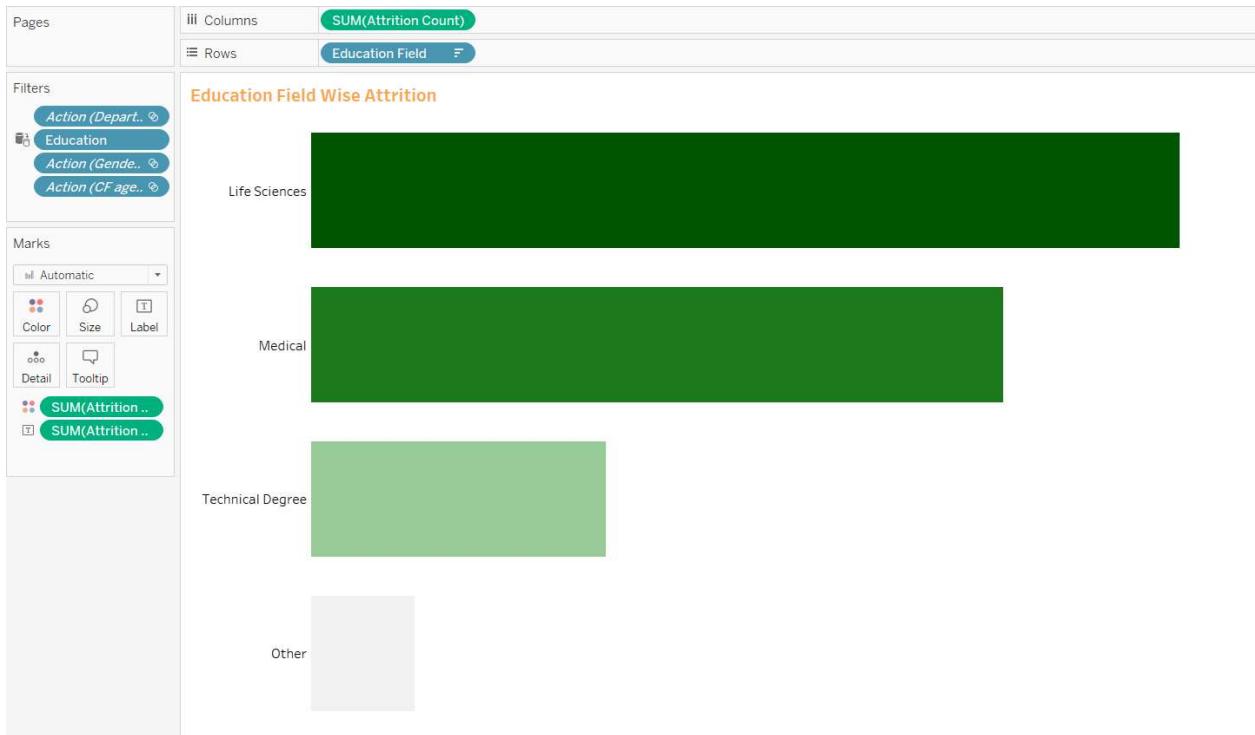
**Education filter**:- Allow user to select particular education i.e. Bachelor's Degree etc.

Glance of Tableau sheets which is used to make tableau dashboard:-









After creating dashboard lets do sql check and make sql test report on this dashboard.

**SQL queries:-**

## **TESTING TABLEAU REPORT IN SQL**

```
-----*****-----Creating Table -----*****  
  
create table hrdata  
(  
    emp_no int8 PRIMARY KEY,  
    gender varchar(50) NOT NULL,  
    marital_status varchar(50),  
    age_band varchar(50),  
    age int8,  
    department varchar(50),  
    education varchar(50),  
    education_field varchar(50),  
    job_role varchar(50),  
    business_travel varchar(50),  
    employee_count int8,  
    attrition varchar(50),  
    attrition_label varchar(50),  
    job_satisfaction int8,  
    active_employee int8  
)  
  
-----*****-----Importing Data-----*****  
  
COPY hrdata from 'C:\Users\lenovo\Downloads\hrdata.csv' DELIMITER ',' CSV HEADER;
```

```
-----***** Employee Count-----*****  
  
Select sum(employee_count) from hrdata  
  
-----*** With Filter  
  
---* Education  
  
select sum(employee_count) from hrdata  
where education = 'High School'  
  
---* Department Filter  
  
select sum(employee_count) from hrdata  
where department = 'R&D'  
  
---* Education field  
  
Select sum(employee_count) as employee_count from hrdata  
where education_field = 'Medical'  
  
-----***** Attrition count----- *****  
  
Select count(attrition) from hrdata  
where attrition = 'Yes'  
  
---* With filter  
  
Select count(attrition) from hrdata
```

```
where attrition = 'Yes' and education = 'Doctoral Degree'

-----*****Attrition Rate*****-----

---*** Without filter

Select round(((select count(attrition) from hrdata where attrition =
'Yes')/sum(employee_count))*100,0)as Attrition_Rate from hrdata

---*** With filter

Select round(((select count(attrition) from hrdata where attrition =
'Yes' and department = 'Sales')/sum(employee_count))*100,0)as
Attrition_Rate from hrdata

where department = 'Sales'

-----*****Active Employees*****-----

Select sum(employee_count)-(select count(attrition) from hrdata where
attrition = 'Yes') as Active_Employees from hrdata

---* With Filter

Select sum(employee_count)-(select count(attrition) from hrdata where
attrition = 'Yes' and gender = 'Male') as Active_Employees from hrdata

where gender = 'Male'
```

```
-----*****-----Average Age -----*****  
Select round(avg(age),0) as Average_age from hrdata  
  
---** With Filter  
  
Select round(avg(age),0) as Average_age from hrdata  
where gender = 'Female'  
  
-----*****----- Attrition By Gender -----*****  
Select gender,count(attrition) from hrdata where attrition = 'Yes'  
group by gender  
order by count(attrition) DESC  
  
---** With filter  
  
---* Education  
  
Select gender,count(attrition) from hrdata where attrition = 'Yes' and  
education = 'High School'  
group by gender  
order by count(attrition) DESC
```

```
----- Department Wise Attrition -----*****  
  
select department,count(attrition)as Attrition_count,  
  
round((cast(count(attrition)as numeric) /(select count(attrition) from  
hrdata where attrition = 'Yes') )*100,2)as  
Attrition_Percentage_Department_Wise  
  
from hrdata  
  
where attrition = 'Yes'  
  
group by department  
  
order by count(attrition)  
  
-----* With Filter  
  
---*Gender  
  
select department,count(attrition)as Attrition_count,  
  
round((cast(count(attrition)as numeric) /(select count(attrition) from  
hrdata where attrition = 'Yes' and Gender = 'Female') )*100,2)as  
Attrition_Percentage_Department_Wise  
  
from hrdata  
  
where attrition = 'Yes' and gender = 'Female'  
  
group by department  
  
order by count(attrition) desc  
  
----- No.of Employees by Age Group -----*****  
  
select age,sum(employee_count) from hrdata  
  
group by age
```

```
order by age

---** With filter

---* department

select age,sum(employee_count) from hrdata
where department = 'R&D'

group by age

order by age

-----*****-----Education Wise Attrition----- *****
select education_field, count(attrition) from hrdata
where attrition = 'Yes'
group by education_field
order by count(attrition) desc

---** With Filter

---*department

select education_field, count(attrition) from hrdata
where attrition = 'Yes' and department = 'Sales'
group by education_field
order by count(attrition) desc
```

```
-----*****Attrition Rate by Gender for different Age Group-----*****  
  
select age_band,gender,count(attrition),  
round((cast(count(attrition) as numeric)/(select count(attrition) from  
hrdata where attrition = 'Yes'))*100,2) as percentage_attrition_  
from hrdata  
where attrition = 'Yes'  
group by age_band,gender  
order by count(attrition) desc  
  
-----*****JOB Satisfaction Rating-----*****  
  
CREATE EXTENSION IF NOT EXISTS tablefunc;  
  
Select *  
from crosstab(  
'SELECT job_role,job_satisfaction,sum(employee_count)  
From hrdata  
group by job_role , job_satisfaction  
order by job_role,job_satisfaction')  
as ct(job_role varchar(50),one numeric, two numeric,three numeric,four  
numeric)  
order by job_role
```

**SQL Test document in this Tableau Dashboard:-**

## Test Document

<b>Client Name</b>	XYZ_Analytics
<b>Report Name</b>	HR Analytics Dashboard
<b>Developer Name</b>	-----
<b>Tester Name</b>	-----
<b>Project Manager</b>	-----
<b>Development Tool</b>	Tableau Desktop

Test No.	Sheet Name	Query	Test Result	QA Remark
1	KPI- Employee Count	select sum(employee_count) as Employee_Count from hrdata;	Pass	Exact match
2	KPI- Attrition Count	select count(attrition) from hrdata where attrition='Yes';	Pass	Exact match
3	KPI- Attrition Rate	select round (((select count(attrition) from hrdata where attrition='Yes')/sum(employee_count)) * 100,0) from hrdata;	Pass	Exact match
4	KPI- Active Employee	select sum(employee_count) - (select count(attrition) from hrdata where attrition='Yes') from hrdata;	Pass	Exact match
5	KPI- Average Age	select round(avg(age),0) from hrdata;	Pass	Exact match

6	Attrition by Gender	<pre>select gender, count(attrition) as attrition_count from hrdata where attrition='Yes' group by gender order by count(attrition) desc;</pre>	Pass	Exact match
7	Department wise Attrition	<pre>select department, count(attrition), round((cast (count(attrition) as numeric) / (select count(attrition) from hrdata where attrition= 'Yes')) * 100, 2) as pct from hrdata where attrition='Yes' group by department order by count(attrition) desc;</pre>	Pass	Exact match
8	No of Employee by Age Group	<pre>SELECT age, sum(employee_count) AS employee_count FROM hrdata GROUP BY age order by age;</pre>	Pass	Exact match
9	Education Field wise Attrition	<pre>select education_field, count(attrition) as attrition_count from hrdata where attrition='Yes' group by education_field order by count(attrition) desc;</pre>	Pass	Exact match
10	Attrition Rate by Gender for different Age group	<pre>select age_band, gender, count(attrition) as attrition, round((cast(count(attrition) as numeric) / (select count(attrition) from hrdata where attrition = 'Yes')) * 100,2) as pct from hrdata</pre>	Pass	Exact match

		where attrition = 'Yes' group by age_band, gender order by count(attrition) desc		
11	Job Satisfaction Rating	<pre>SELECT * FROM crosstab('SELECT job_role, job_satisfaction, sum(employee_count) FROM hrdata GROUP BY job_role, job_satisfaction ORDER BY job_role, job_satisfaction' ) AS ct(job_role varchar(50), one numeric, two numeric, three numeric, four numeric) ORDER BY job_role;</pre>	Pass	Exact match

### Test Result:

<b>Total Tests</b>	11
<b>Pass</b>	11
<b>Fail</b>	00
<b>Blocked</b>	00
<b>Not Executed</b>	00

## Power BI Dashboard:-



Power BI Dashboard

**Dashboard Summary:-** This Dashboard contain following features:

### KPIs:

- Employee Count:-** Total Number of employees in the organisation.
- Attrition Count:-** The number of employees who have left the organisation.
- Attrition Rate:-** The percentage of employees who have left in a given period.
- Active Employees:-** The number of employees currently employed.
- Average Age:-** The average age of employees in the organisation.

### Charts:

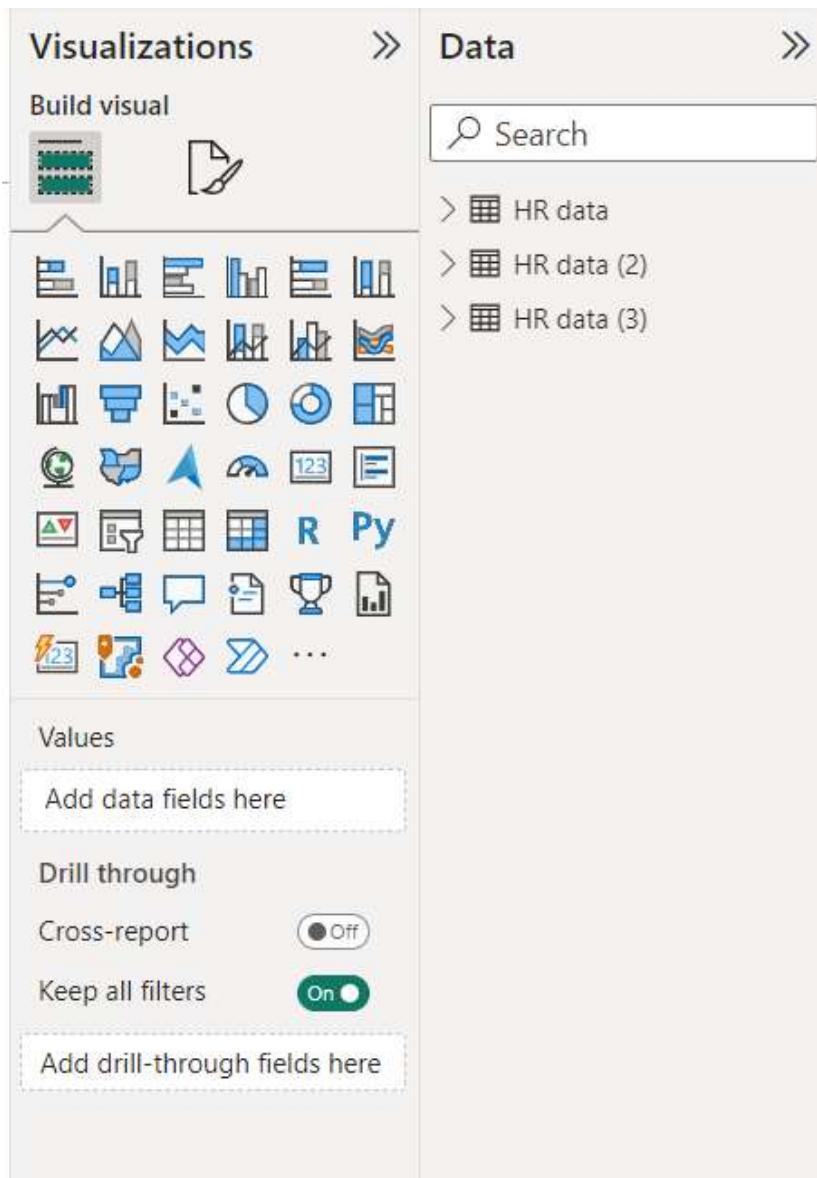
- Department -wise Attrition:-** A **pie chart** displaying attrition count by department.
- Number of Employees by Age Group:-** A **stacked bar chart** showing distribution of employees by age groups and also **gender**.

- **Job satisfaction rating**:- A **guage chart** displaying job satisfaction ratings.
- **Education Field-wise attrition**:- A **bar chart** showing attrition count by education field.
- **Attrition Rate by Gender by Different Age groups**:- Series of **Doughnut charts** displaying attrition rates by gender and different age groups.

#### **Filters:**

**Education filter**:- Allow user to select particular education i.e. Bachelor's Degree etc.

Glance of Power BI dashboard features/sheet:-



Power Bi support direct “build visual” feature so we need not to make bunch of sheets like tableau there.

Here data which we use is “HR data”.

After making dashboard Lets do SQL query check on it.

**SQL queries:-**

## **TESTING POWER BI REPORT IN SQL**

```
-----*****-----Creating Table -----*****  
  
create table hrdata  
(  
    emp_no int8 PRIMARY KEY,  
    gender varchar(50) NOT NULL,  
    marital_status varchar(50),  
    age_band varchar(50),  
    age int8,  
    department varchar(50),  
    education varchar(50),  
    education_field varchar(50),  
    job_role varchar(50),  
    business_travel varchar(50),  
    employee_count int8,  
    attrition varchar(50),  
    attrition_label varchar(50),  
    job_satisfaction int8,  
    active_employee int8  
)  
  
-----*****-----Importing Data-----*****  
  
COPY hrdata from 'C:\Users\lenovo\Downloads\hrdata.csv' DELIMITER ',' CSV HEADER;
```

```
-----***** Employee Count-----*****  
  
Select sum(employee_count) from hrdata  
  
-----*** With Filter  
  
---* Education  
  
select sum(employee_count) from hrdata  
where education = 'High School'  
  
---* Department Filter  
  
select sum(employee_count) from hrdata  
where department = 'R&D'  
  
---* Education field  
  
Select sum(employee_count) as employee_count from hrdata  
where education_field = 'Medical'  
  
-----***** Attrition count----- *****  
  
Select count(attrition) from hrdata  
where attrition = 'Yes'  
  
---* With filter  
  
Select count(attrition) from hrdata
```

```
where attrition = 'Yes' and education = 'Doctoral Degree'

-----*****Attrition Rate*****-----

---*** Without filter

Select round(((select count(attrition) from hrdata where attrition =
'Yes')/sum(employee_count))*100,0)as Attrition_Rate from hrdata

---*** With filter

Select round(((select count(attrition) from hrdata where attrition =
'Yes' and department = 'Sales')/sum(employee_count))*100,0)as
Attrition_Rate from hrdata

where department = 'Sales'

-----*****Active Employees*****-----

Select sum(employee_count)-(select count(attrition) from hrdata where
attrition = 'Yes') as Active_Employees from hrdata

---* With Filter

Select sum(employee_count)-(select count(attrition) from hrdata where
attrition = 'Yes' and gender = 'Male') as Active_Employees from hrdata

where gender = 'Male'
```

```
-----*****-----Average Age -----*****  
Select round(avg(age),0) as Average_age from hrdata  
  
---** With Filter  
  
Select round(avg(age),0) as Average_age from hrdata  
where gender = 'Female'  
  
-----*****----- Attrition By Gender -----*****  
Select gender,count(attrition) from hrdata where attrition = 'Yes'  
group by gender  
order by count(attrition) DESC  
  
---** With filter  
  
---* Education  
  
Select gender,count(attrition) from hrdata where attrition = 'Yes' and  
education = 'High School'  
group by gender  
order by count(attrition) DESC
```

```
----- Department Wise Attrition -----*****  
  
select department,count(attrition)as Attrition_count,  
  
round((cast(count(attrition)as numeric) /(select count(attrition) from  
hrdata where attrition = 'Yes') )*100,2)as  
Attrition_Percentage_Department_Wise  
  
from hrdata  
  
where attrition = 'Yes'  
  
group by department  
  
order by count(attrition)  
  
-----* With Filter  
  
---*Gender  
  
select department,count(attrition)as Attrition_count,  
  
round((cast(count(attrition)as numeric) /(select count(attrition) from  
hrdata where attrition = 'Yes' and Gender = 'Female') )*100,2)as  
Attrition_Percentage_Department_Wise  
  
from hrdata  
  
where attrition = 'Yes' and gender = 'Female'  
  
group by department  
  
order by count(attrition) desc  
  
----- No.of Employees by Age Group -----*****  
  
select age,sum(employee_count) from hrdata  
  
group by age
```

```
order by age

---** With filter

---* department

select age,sum(employee_count) from hrdata
where department = 'R&D'

group by age

order by age

-----*****-----Education Wise Attrition----- *****
select education_field, count(attrition) from hrdata
where attrition = 'Yes'
group by education_field
order by count(attrition) desc

---** With Filter

---*department

select education_field, count(attrition) from hrdata
where attrition = 'Yes' and department = 'Sales'
group by education_field
order by count(attrition) desc
```

```
-----*****Attrition Rate by Gender for different Age Group-----*****  
  
select age_band,gender,count(attrition),  
  
round((cast(count(attrition) as numeric)/(select count(attrition) from  
hrdata where attrition = 'Yes'))*100,2) as percentage_attrition_  
  
from hrdata  
  
where attrition = 'Yes'  
  
group by age_band,gender  
  
order by count(attrition) desc  
  
-----*****JOB Satisfaction Rating-----*****  
  
CREATE EXTENSION IF NOT EXISTS tablefunc;  
  
Select *  
  
from crosstab(  
  
'SELECT job_role,job_satisfaction,sum(employee_count)  
  
From hrdata  
  
group by job_role , job_satisfaction  
  
order by job_role,job_satisfaction')  
  
as ct(job_role varchar(50),one numeric, two numeric,three numeric,four  
numeric)  
  
order by job_role
```

**SQL Test document in this Power BI Dashboard:-**

## TEST DOCUMENT

<b>Client Name</b>	XYZ_Analytics
<b>Report Name</b>	HR Analytics Dashboard
<b>Developer Name</b>	
<b>Tester Name</b>	
<b>Project Manager</b>	
<b>Development Tool</b>	<b>Power BI</b>

<b>Test No.</b>	<b>Sheet Name</b>	<b>Query</b>	<b>Test Result</b>	<b>QA Remark</b>
1	KPI- Employee Count	select sum(employee_count) as Employee_Count from hrdata;	Pass	Exact match
2	KPI- Attrition Count	select count(attrition) from hrdata where attrition='Yes';	Pass	Exact match
3	KPI- Attrition Rate	select round (((select count(attrition) from hrdata where attrition='Yes')/sum(employee_count)) * 100,2) from hrdata;	Pass	Exact match
4	KPI- Active Employee	select sum(hr.employee_count) - (select count(attrition) from hrdata where attrition='Yes') from hrdata;	Pass	Exact match
5	KPI- Average Age	select round(avg(age),0) from hrdata;	Pass	Exact match
6	Attrition by Gender	select gender, count(attrition) as attrition_count from hrdata where attrition='Yes' group by gender	Pass	Exact match

		order by count(attrition) desc;		
7	Department wise Attrition	select department, count(attrition), round((cast (count(attrition) as numeric) / (select count(attrition) from hrdata where attrition= 'Yes')) * 100, 2) as pct from hrdata where attrition='Yes' group by department order by count(attrition) desc;	Pass	Exact match
8	No of Employee by Age Group	select age_band, gender, sum(employee_count) from hrdata group by age_band, gender order by age_band, gender desc	Pass	Exact match
9	Education Field wise Attrition	select education_field, count(attrition) as attrition_count from hrdata where attrition='Yes' group by education_field order by count(attrition) desc;	Pass	Exact match
10	Attrition Rate by Gender for different Age group	select age_band, gender, count(attrition) as attrition, round((cast(count(attrition) as numeric) / (select count(attrition) from hrdata where attrition = 'Yes')) * 100,2) as pct from hrdata where attrition = 'Yes' group by age_band, gender order by age_band desc;	Pass	Exact match
11	Job Satisfaction Rating	SELECT * FROM	Pass	Exact match

	crosstab('SELECT job_role, job_satisfaction, sum(employee_count) FROM hrdata GROUP BY job_role, job_satisfaction ORDER BY job_role, job_satisfaction' ) AS ct(job_role varchar(50), one numeric, two numeric, three numeric, four numeric) ORDER BY job_role;	
--	--	--

### Test Result:

<b>Total Tests</b>	11
<b>Pass</b>	11
<b>Fail</b>	00
<b>Blocked</b>	00
<b>Not Executed</b>	00

---

\*\*\*\*\*