Users > rahmasaadawy > Downloads > Final_Project > Test5.sql

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enable Actual Plan | Parse | Ena

```sql
-- Create a new database named HR_Analysis_DataBase
CREATE DATABASE HR_Analysis_DataBase

-- Use the newly created database
USE HR_Analysis_DataBase

```

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enable Actual Plan | Parse | Enable SQL

```sql
------------------------------ Week 1: Build Data Model, Data Cleaning and Preprocessing ------------------
-------------------------------------------------------------------------------------------------------------
-- Step 1: Import CSV Files

-- import Employee table
-- Righ click on HR_Analysis_DataBase database >>>> import wizard
-- Convert Data Type (OverTime Column) into  nvarchar(50)
-- Convert Data Type (Attrition) into  nvarchar(50)
select * from Employee

```

Results | Messages

	EmployeeID	FirstName	LastName	Gender	Age	BusinessTravel	Department	DistanceFr
1	001A-8F88	Christy	Jumel	Male	22	Some Travel	Technology	40
2	005C-E0FB	Fin	O'Halleghane	Non-Binary	24	Frequent Traveller	Sales	17
3	00A3-2445	Wyatt	Ziehm	Male	30	Some Travel	Technology	6
4	00B0-F199	Trueman	Jirasek	Male	23	Some Travel	Sales	35
5	00D4-DD53	Joyce	Goor	Female	30	Frequent Traveller	Technology	44

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enable Actual Plan | Parse | Ena

```sql
-- import PerformanceRating table
-- Righ click on HR_Analysis_DataBase database >>>> import wizard
-- Convert Data Type (ReviewData Column) into  nvarchar(50), because an error occured !!
select * from PerformanceRating

-- Re-Converte Data Type (ReviewData Column) into  date !!
SELECT COLUMN_NAME, DATA_TYPE
FROM INFORMATION_SCHEMA.COLUMNS
WHERE TABLE_NAME = 'PerformanceRating'

ALTER TABLE PerformanceRating
ALTER COLUMN ReviewDate DATE;

```

Results | Messages

	PerformanceID	EmployeeID	ReviewDate	EnvironmentSatisfaction	JobSatisfaction	Relatior
1	PR01	79F7-78EC	2013-01-02	5	4	5
2	PR02	B61E-0F26	2013-01-03	5	4	4
3	PR03	F5E3-48BB	2013-01-03	3	4	5
4	PR04	0678-748A	2013-01-04	5	3	2
5	PR05	541F-3E19	2013-01-04	5	2	3

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Ena

```
30   -- import EducationLevel table
31   -- Righ click on HR_Analysis_DataBase database >>>> import wizard
32   select * from EducationLevel
33
```

Results Messages

	EducationLevelID	EducationLevel
1	1	No Formal Qualifications
2	2	High School
3	3	Bachelors
4	4	Masters
5	5	Doctorate

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Ena

```
34   -- import RatingLevel table
35   -- Righ click on HR_Analysis_DataBase database >>>> import wizard
36   select * from RatingLevel
37
```

Results Messages

	RatingID	RatingLevel
1	1	Unacceptable
2	2	Needs Improvement
3	3	Meets Expectation
4	4	Exceeds Expectation
5	5	Above and Beyond

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enal

```
38   -- import SatisfiedLevel table
39   -- Righ click on HR_Analysis_DataBase database >>>> import wizard
40   select * from SatisfiedLevel
41
```

Results Messages

	SatisfactionID	SatisfactionLevel
1	1	Very Dissatisfied
2	2	Dissatisfied
3	3	Neutral
4	4	Satisfied
5	5	Very Satisfied

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan Parse Enal

```sql
---------------------------- Relationships Setup ----------------------------------
-- Ensure the tables have proper primary keys and relationships if available
-- Adding sample relationships based on assumed structure

-- Assuming EmployeeID as Primary Key in Employee table
ALTER TABLE Employee
ADD CONSTRAINT PK_Employee PRIMARY KEY (EmployeeID);

-- Assuming PerformanceRatingID as Primary Key in PerformanceRating table
ALTER TABLE PerformanceRating
ADD CONSTRAINT PK_PerformanceRating PRIMARY KEY (PerformanceID, EmployeeID);

-- Assuming EducatioID as Primary Key in EducationLevel table
ALTER TABLE EducationLevel
ADD CONSTRAINT PK_EducationLevel PRIMARY KEY (EducationLevelID);

-- Assuming RatingLevelID as Primary Key in RatingLevel table
ALTER TABLE RatingLevel
ADD CONSTRAINT PK_RatingLevelID PRIMARY KEY (RatingID);

-- Assuming SatisfactionID as Primary Key in SatisfiedLevel table
ALTER TABLE SatisfiedLevel
ADD CONSTRAINT PK_SatisfiedLevel PRIMARY KEY (SatisfactionID);

```

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan Parse Enal

```sql
-- Establishing Relationships
-- Merging Primary Tables
-- Merge Employee table and PerformanceRating table using EmployeeID
SELECT e.*, p.*
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID;

-- Merging Secondary Tables
-- Merge with Education Level (mapping EducationLevelID to Education)
SELECT e.*, p.*, el.EducationLevel
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID;

-- Merge with Satisfaction Level (mapping EnvironmentSatisfaction to SatisfactionID)
SELECT e.*, p.*, el.EducationLevel, sl.SatisfactionLevel
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
LEFT JOIN SatisfiedLevel sl ON p.EnvironmentSatisfaction = sl.SatisfactionID;

-- Merge with Rating Level (mapping ManagerRating to RatingLevelID)
SELECT e.*, p.*, el.EducationLevel, sl.SatisfactionLevel, rl.RatingLevel
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
LEFT JOIN SatisfiedLevel sl ON p.EnvironmentSatisfaction = sl.SatisfactionID
LEFT JOIN RatingLevel rl ON p.ManagerRating = rl.RatingID;

---------------------- Ending of Week 1: Build Data Model, Data Cleaning and Preprocessing
```

Users > rahmasaadawy > Downloads > Final_Project > Test5.sql

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enable Actual Plan | Parse | Ena

```
96  ------------------------------ Week 2: Analysis Questions Phase ------------------------------------
97  ----------------------------------------------------------------------------------------------------
98  -- First Categoty
99  -- Employee Demographics & Salary Analysis
100 -- 1. What is the distribution of employees by education level, job role, and department?
101 SELECT
102 el.EducationLevel, e.JobRole, e.Department,
103     COUNT(*) AS EmployeeCount
104 FROM Employee e
105 LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
106 GROUP BY el.EducationLevel, e.JobRole, e.Department;
107
```

Results Messages

	EducationLevel	JobRole	Department	EmployeeCount
1	Bachelors	Analytics Manager	Technology	22
2	Bachelors	Data Scientist	Technology	104
3	Bachelors	Engineering Manager	Technology	29
4	Bachelors	HR Business Partner	Human Resources	4
5	Bachelors	HR Executive	Human Resources	13
6	Bachelors	HR Manager	Human Resources	1
7	Bachelors	Machine Learning Engineer	Technology	54
8	Bachelors	Manager	Sales	14
9	Bachelors	Recruiter	Human Resources	9
10	Bachelors	Sales Executive	Sales	120
11	Bachelors	Sales Representative	Sales	32
12	Bachelors	Senior Software Engineer	Technology	48
13	Bachelors	Software Engineer	Technology	122
14	Doctorate	Analytics Manager	Technology	2
15	Doctorate	Data Scientist	Technology	5
16	Doctorate	Engineering Manager	Technology	7
17	Doctorate	HR Executive	Human Resources	3
18	Doctorate	Machine Learning Engineer	Technology	5
19	Doctorate	Manager	Sales	3
20	Doctorate	Sales Executive	Sales	12
21	Doctorate	Senior Software Engineer	Technology	3
22	Doctorate	Software Engineer	Technology	8
23	High School	Analytics Manager	Technology	9
24	High School	Data Scientist	Technology	58
25	High School	Engineering Manager	Technology	12
26	High School	HR Business Partner	Human Resources	1
27	High School	HR Executive	Human Resources	6
28	High School	Machine Learning Engineer	Technology	34
29	High School	Manager	Sales	6
30	High School	Recruiter	Human Resources	6
31	High School	Sales Executive	Sales	66
32	High School	Sales Representative	Sales	15
33	High School	Senior Software Engineer	Technology	22
34	High School	Software Engineer	Technology	47
35	Masters	Analytics Manager	Technology	13
36	Masters	Data Scientist	Technology	59
37	Masters	Engineering Manager	Technology	20
38	Masters	HR Business Partner	Human Resources	2
39	Masters	HR Executive	Human Resources	5
40	Masters	HR Manager	Human Resources	3
41	Masters	Machine Learning Engineer	Technology	38
42	Masters	Manager	Sales	11
43	Masters	Recruiter	Human Resources	5
44	Masters	Sales Executive	Sales	101
45	Masters	Sales Executive	Technology	1
46	Masters	Sales Representative	Sales	16
47	Masters	Senior Software Engineer	Technology	44
48	Masters	Software Engineer	Technology	80
49	No Formal Qualifications	Analytics Manager	Technology	6
50	No Formal Qualifications	Data Scientist	Technology	35
51	No Formal Qualifications	Engineering Manager	Technology	7
52	No Formal Qualifications	HR Executive	Human Resources	1
53	No Formal Qualifications	Machine Learning Engineer	Technology	15
54	No Formal Qualifications	Manager	Sales	3
55	No Formal Qualifications	Recruiter	Human Resources	4
56	No Formal Qualifications	Sales Executive	Sales	27
57	No Formal Qualifications	Sales Representative	Sales	20
58	No Formal Qualifications	Senior Software Engineer	Technology	15
59	No Formal Qualifications	Software Engineer	Technology	37

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Ena

```
108  -- 2. How does the average salary vary by education level?
109  SELECT el.EducationLevel,
110      AVG(e.Salary) AS AverageSalary
111  FROM Employee e
112  LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
113  GROUP BY el.EducationLevel;
114
```

Results Messages

	EducationLevel	AverageSalary
1	High School	105180
2	Doctorate	154268
3	No Formal Qualifications	94983
4	Bachelors	115405
5	Masters	117641

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enable Actual Plan | Parse | Enab

```
115  -- 3. Is there a gender pay gap across different job roles and departments?
116  SELECT e.JobRole, e.Department, e.Gender,
117      AVG(e.Salary) AS AverageSalary
118  FROM Employee e
119  GROUP BY e.JobRole, e.Department, e.Gender;
120
```

Results | Messages

	JobRole	Department	Gender	AverageSalary
1	Analytics Manager	Technology	Female	337642
2	Analytics Manager	Technology	Male	363572
3	Analytics Manager	Technology	Non-Binary	355047
4	Analytics Manager	Technology	Prefer Not To Say	212850
5	Data Scientist	Technology	Female	60658
6	Data Scientist	Technology	Male	51664
7	Data Scientist	Technology	Non-Binary	52937
8	Data Scientist	Technology	Prefer Not To Say	30462
9	Engineering Manager	Technology	Female	292320
10	Engineering Manager	Technology	Male	278251
11	Engineering Manager	Technology	Non-Binary	284841
12	Engineering Manager	Technology	Prefer Not To Say	289531
13	HR Business Partner	Human Resources	Female	396225
14	HR Business Partner	Human Resources	Male	239875
15	HR Business Partner	Human Resources	Non-Binary	342970
16	HR Executive	Human Resources	Female	95013
17	HR Executive	Human Resources	Male	96922
18	HR Executive	Human Resources	Non-Binary	81936
19	HR Manager	Human Resources	Female	412505
20	HR Manager	Human Resources	Male	486156
21	Machine Learning Engineer	Technology	Female	130900
22	Machine Learning Engineer	Technology	Male	131533
23	Machine Learning Engineer	Technology	Non-Binary	123353
24	Machine Learning Engineer	Technology	Prefer Not To Say	117651
25	Manager	Sales	Female	321184
26	Manager	Sales	Male	320094
27	Manager	Sales	Non-Binary	205622
28	Recruiter	Human Resources	Female	39754
29	Recruiter	Human Resources	Male	34567
30	Recruiter	Human Resources	Prefer Not To Say	30683
31	Sales Executive	Sales	Female	118932
32	Sales Executive	Sales	Male	115355
33	Sales Executive	Sales	Non-Binary	113042
34	Sales Executive	Sales	Prefer Not To Say	94944
35	Sales Executive	Technology	Female	319619
36	Sales Representative	Sales	Female	38875
37	Sales Representative	Sales	Male	42755
38	Sales Representative	Sales	Non-Binary	38180
39	Senior Software Engineer	Technology	Female	131525
40	Senior Software Engineer	Technology	Male	120963
41	Senior Software Engineer	Technology	Non-Binary	120444
42	Senior Software Engineer	Technology	Prefer Not To Say	199718
43	Software Engineer	Technology	Female	53344
44	Software Engineer	Technology	Male	49992
45	Software Engineer	Technology	Non-Binary	54159
46	Software Engineer	Technology	Prefer Not To Say	55152

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enal

```sql
-- 4. What is the salary distribution based on years of experience?
SELECT e.YearsAtCompany,
    AVG(e.Salary) AS AverageSalary,
    COUNT(*) AS EmployeeCount
FROM Employee e
GROUP BY e.YearsAtCompany;
```

Results | Messages

	YearsAtCompany	AverageSalary	EmployeeCount
1	0	91418	190
2	9	145605	118
3	3	104027	148
4	6	90965	101
5	7	96080	121
6	1	119849	177
7	10	142975	128
8	4	106519	129
9	5	98138	115
10	2	118706	124
11	8	134664	119

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Ena

```sql
-- 5. Which departments have the highest and lowest average salaries?
SELECT e.Department,
    AVG(e.Salary) AS AverageSalary
FROM Employee e
GROUP BY e.Department
ORDER BY AverageSalary DESC;
```

Results | Messages

	Department	AverageSalary
1	Human Resources	119698
2	Sales	119117
3	Technology	109655

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enable Actual

```sql
-- Second Categoty
-- Employee Satisfaction & Engagement
-- 6. What is the average satisfaction level across different job roles?
SELECT e.JobRole,
    AVG(p.JobSatisfaction) AS AverageSatisfaction,
    CASE
        WHEN AVG(p.JobSatisfaction) = 1 THEN 'Very Dissatisfied'
        WHEN AVG(p.JobSatisfaction) = 2 THEN 'Dissatisfied'
        WHEN AVG(p.JobSatisfaction) = 3 THEN 'Neutral'
        WHEN AVG(p.JobSatisfaction) = 4 THEN 'Satisfied'
        WHEN AVG(p.JobSatisfaction) = 5 THEN 'Very Satisfied'
        ELSE 'Unknown'
    END AS SatisfactionLevel
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN SatisfiedLevel sl ON p.JobSatisfaction = sl.SatisfactionID
GROUP BY e.JobRole;

```

Results | Messages

	JobRole	AverageSatisfaction	SatisfactionLevel
1	HR Business Partner	3	Neutral
2	Machine Learning Engineer	3	Neutral
3	Recruiter	3	Neutral
4	Sales Representative	3	Neutral
5	HR Executive	3	Neutral
6	Manager	3	Neutral
7	Analytics Manager	3	Neutral
8	Sales Executive	3	Neutral
9	Data Scientist	3	Neutral
10	Engineering Manager	3	Neutral
11	Senior Software Engineer	3	Neutral
12	Software Engineer	3	Neutral
13	HR Manager	3	Neutral

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enab

```sql
-- 7. Is there a relationship between satisfaction level and salary?
SELECT
    AVG(e.Salary) AS AverageSalary,
    AVG(CASE
            WHEN sl.SatisfactionLevel = 'Very Dissatisfied' THEN 1
            WHEN sl.SatisfactionLevel = 'Dissatisfied' THEN 2
            WHEN sl.SatisfactionLevel = 'Neutral' THEN 3
            WHEN sl.SatisfactionLevel = 'Satisfied' THEN 4
            WHEN sl.SatisfactionLevel = 'Very Satisfied' THEN 5
            ELSE NULL
        END) AS AverageSatisfaction
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN SatisfiedLevel sl ON p.JobSatisfaction = sl.SatisfactionID;

```

Results | Messages

	AverageSalary	AverageSatisfaction
1	110898	3

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Ena

```sql
-- 8. Do employees with higher education levels report higher satisfaction?
SELECT el.EducationLevel,
    AVG(CASE
            WHEN sl.SatisfactionLevel = 'Very Dissatisfied' THEN 1
            WHEN sl.SatisfactionLevel = 'Dissatisfied' THEN 2
            WHEN sl.SatisfactionLevel = 'Neutral' THEN 3
            WHEN sl.SatisfactionLevel = 'Satisfied' THEN 4
            WHEN sl.SatisfactionLevel = 'Very Satisfied' THEN 5
            ELSE NULL
        END) AS AverageSatisfaction
FROM Employee e
LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN SatisfiedLevel sl ON p.JobSatisfaction = sl.SatisfactionID
GROUP BY el.EducationLevel;

```

Results Messages

	EducationLevel	AverageSatisfaction
1	High School	3
2	Doctorate	3
3	No Formal Qualifications	3
4	Bachelors	3
5	Masters	3

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Ena

```sql
-- 9. Which departments have the most satisfied and least satisfied employees?
SELECT e.Department,
    AVG(CASE
            WHEN sl.SatisfactionLevel = 'Very Dissatisfied' THEN 1
            WHEN sl.SatisfactionLevel = 'Dissatisfied' THEN 2
            WHEN sl.SatisfactionLevel = 'Neutral' THEN 3
            WHEN sl.SatisfactionLevel = 'Satisfied' THEN 4
            WHEN sl.SatisfactionLevel = 'Very Satisfied' THEN 5
            ELSE NULL
        END) AS AverageSatisfaction
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN SatisfiedLevel sl ON p.JobSatisfaction = sl.SatisfactionID
GROUP BY e.Department
ORDER BY AverageSatisfaction DESC;

```

Results Messages

	Department	AverageSatisfaction
1	Sales	3
2	Human Resources	3
3	Technology	3

Run | Cancel | Disconnect | Change | Database: HR_Analysis_DataBase | Estimated Plan | Enal

```sql
-- 10. Does job role impact satisfaction level?
SELECT e.JobRole,
    AVG(CASE
            WHEN sl.SatisfactionLevel = 'Very Dissatisfied' THEN 1
            WHEN sl.SatisfactionLevel = 'Dissatisfied' THEN 2
            WHEN sl.SatisfactionLevel = 'Neutral' THEN 3
            WHEN sl.SatisfactionLevel = 'Satisfied' THEN 4
            WHEN sl.SatisfactionLevel = 'Very Satisfied' THEN 5
            ELSE NULL
        END) AS AverageSatisfaction
FROM Employee e
LEFT JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
LEFT JOIN SatisfiedLevel sl ON p.JobSatisfaction = sl.SatisfactionID
GROUP BY e.JobRole;

```

Results Messages

	JobRole	AverageSatisfaction
1	HR Business Partner	3
2	Machine Learning Engineer	3
3	Recruiter	3
4	Sales Representative	3
5	HR Executive	3
6	Manager	3
7	Analytics Manager	3
8	Sales Executive	3
9	Data Scientist	3
10	Engineering Manager	3
11	Senior Software Engineer	3
12	Software Engineer	3
13	HR Manager	3

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan Pars

```sql
-- Third Categoty
-- Attrition & Turnover Analysis
-- 11. What is the overall employee attrition rate?
SELECT
    COUNT(*) AS TotalEmployees,
    SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees,
    (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate
FROM Employee e;

```

Results Messages

	TotalEmployees	AttritionEmployees	AttritionRate
1	1470	237	16.122448979591

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan P

```sql
-- 12. Which department has the highest employee turnover?
SELECT TOP 1
    e.Department,
    COUNT(*) AS TotalEmployees,
    SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees,
    (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate
FROM Employee e
GROUP BY e.Department
ORDER BY AttritionRate DESC;

```

Results Messages

	Department	TotalEmployees	AttritionEmployees	AttritionRate
1	Sales	446	92	20.627802690582

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan Pa

```sql
-- 13. Is there a connection between satisfaction level and attrition?
SELECT sl.SatisfactionLevel,
    COUNT(*) AS TotalEmployees,
    SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees,
    (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate
FROM PerformanceRating p
LEFT JOIN SatisfiedLevel sl ON p.EnvironmentSatisfaction = sl.SatisfactionID
LEFT JOIN Employee e ON p.EmployeeID = e.EmployeeID
GROUP BY sl.SatisfactionLevel
ORDER BY AttritionRate DESC;

```

Results Messages

	SatisfactionLevel	TotalEmployees	AttritionEmployees	AttritionRate
1	Neutral	2211	776	35.097241067390
2	Very Satisfied	2046	700	34.213098729227
3	Satisfied	2175	706	32.459770114942
4	Dissatisfied	141	44	31.205673758865
5	Very Dissatisfied	136	35	25.735294117647

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan Par

```sql
-- 14. Do employees with higher education levels have lower attrition rates?
SELECT el.EducationLevel,
    COUNT(*) AS TotalEmployees,
    SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees,
    (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate
FROM Employee e
LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
GROUP BY el.EducationLevel
ORDER BY AttritionRate ASC;
```

Results Messages

	EducationLevel	TotalEmployees	AttritionEmployees	AttritionRate
1	Doctorate	48	5	10.416666666666
2	Masters	398	58	14.572864321608
3	High School	282	44	15.602836879432
4	Bachelors	572	99	17.307692307692
5	No Formal Qualifications	170	31	18.235294117647

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan Par

```sql
-- 15. How does tenure (years at company) impact attrition?
SELECT
    CASE
        WHEN DATEDIFF(YEAR, e.HireDate, GETDATE()) BETWEEN 0 AND 1 THEN '0-1 Year'
        WHEN DATEDIFF(YEAR, e.HireDate, GETDATE()) BETWEEN 2 AND 3 THEN '2-3 Years'
        WHEN DATEDIFF(YEAR, e.HireDate, GETDATE()) BETWEEN 4 AND 5 THEN '4-5 Years'
        ELSE '5+ Years'
    END AS TenureRange,
    COUNT(*) AS TotalEmployees,
    SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees,
    (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate
FROM Employee e
GROUP BY
    CASE
        WHEN DATEDIFF(YEAR, e.HireDate, GETDATE()) BETWEEN 0 AND 1 THEN '0-1 Year'
        WHEN DATEDIFF(YEAR, e.HireDate, GETDATE()) BETWEEN 2 AND 3 THEN '2-3 Years'
        WHEN DATEDIFF(YEAR, e.HireDate, GETDATE()) BETWEEN 4 AND 5 THEN '4-5 Years'
        ELSE '5+ Years'
    END
ORDER BY TenureRange;
```

Results Messages

	TenureRange	TotalEmployees	AttritionEmployees	AttritionRate
1	2-3 Years	155	25	16.129032258064
2	4-5 Years	264	49	18.560606060606
3	5+ Years	1051	163	15.509039010466

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enab

```sql
-- Fourth Category
-- Promotion & Career Growth
-- 16. How long does it take, on average, for employees to receive a promotion?
SELECT
    AVG(e.YearsSinceLastPromotion) AS AveragePromotionTime
FROM Employee e;

```

Results Messages

	AveragePromotionTime
1	3

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Ac

```sql
-- 17. Is there a correlation between education level and promotion frequency?
SELECT el.EducationLevel,
    COUNT(CASE WHEN e.YearsSinceLastPromotion < 1 THEN 1 END) AS PromotionFrequency
FROM Employee e
LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
GROUP BY el.EducationLevel
ORDER BY PromotionFrequency DESC;

```

Results Messages

	EducationLevel	PromotionFrequency
1	Bachelors	119
2	Masters	97
3	High School	46
4	No Formal Qualifications	31
5	Doctorate	8

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Pla

```sql
-- 18. Which departments promote employees the fastest and the slowest?
SELECT e.Department,
    AVG(e.YearsSinceLastPromotion) AS AveragePromotionTime
FROM Employee e
GROUP BY e.Department
ORDER BY AveragePromotionTime ASC;  -- Fastest promotion first

```

Results Messages

	Department	AveragePromotionTime
1	Sales	3
2	Human Resources	3
3	Technology	3

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actual Plan Parse Enable SQLCMD To Notel

```sql
-- 19. What percentage of satisfied employees receive promotions?
WITH MedianSatisfaction AS (
    -- Calculate the Median of JobSatisfaction using PERCENTILE_CONT
    SELECT
        PERCENTILE_CONT(0.5) WITHIN GROUP (ORDER BY JobSatisfaction) OVER () AS MedianJobSatisfaction
    FROM PerformanceRating
)
SELECT
    -- Calculate the percentage of satisfied employees who received promotions
    (COUNT(CASE WHEN pr.JobSatisfaction > ms.MedianJobSatisfaction AND e.YearsSinceLastPromotion = 0 THEN 1 END) * 100.0) /
    COUNT(CASE WHEN pr.JobSatisfaction > ms.MedianJobSatisfaction THEN 1 END) AS PromotionPercentage
FROM Employee e
LEFT JOIN PerformanceRating pr ON e.EmployeeID = pr.EmployeeID
CROSS JOIN MedianSatisfaction ms;

```

Results Messages

	PromotionPercentage
1	18.039336201598

Run Cancel Disconnect Change | Database: HR_Analysis_DataBase | Estimated Plan Enable Actu

```sql
-- 20. Does gender impact promotion opportunities?
SELECT

    e.Gender,
    COUNT(CASE WHEN e.YearsSinceLastPromotion = 0 THEN 1 END) AS PromotionFrequency
FROM Employee e
GROUP BY e.Gender
ORDER BY PromotionFrequency DESC;

```

Results Messages

	Gender	PromotionFrequency
1	Male	139
2	Female	133
3	Non-Binary	23
4	Prefer Not To Say	6