

Run Cancel Disconnect Change

Database: HR\_Analysis\_DataBase

Esti

```
152 -- First Category
153 -- Employee Demographics & Salary Analysis
154 -- 1.1 Calculate and display the total number of employees
155 SELECT COUNT(DISTINCT EmployeeID) AS TotalEmployees
156 FROM Employee;
157
158 -- 1.2 Count unique employees by gender
159 SELECT
160     Gender,
161     COUNT(DISTINCT EmployeeID) AS UniqueEmployeeCount
162 FROM Employee
163 GROUP BY Gender;
164
```

## Results Messages

	TotalEmployees
1	1470

	Gender	UniqueEmployeeCount
1	Non-Binary	124
2	Prefer Not To Say	20
3	Male	651
4	Female	675

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Database: HR\_Analysis\_DataBase ▾

 Est

```
165  -- 1.3 Count unique employees by department
166  SELECT
167      Department,
168      COUNT(DISTINCT EmployeeID) AS UniqueEmployeeCount
169  FROM Employee
170  GROUP BY Department;
171
```

## Results Messages

	Department ▾	UniqueEmployeeCount ▾
1	Sales	446
2	Human Resources	63
3	Technology	961

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Database: HR\_Analysis\_DataBase ▾

 Est

```
172  -- 1.4 Count unique employees by gender within each department
173  SELECT
174      Department,
175      Gender,
176      COUNT(DISTINCT EmployeeID) AS UniqueEmployeeCount
177  FROM Employee
178  GROUP BY Department, Gender
179  ORDER BY Department, Gender;
180
```

## Results Messages

	Department ▾	Gender ▾	UniqueEmployeeCount ▾
1	Human Resources	Female	33
2	Human Resources	Male	24
3	Human Resources	Non-Binary	5
4	Human Resources	Prefer Not To Say	1
5	Sales	Female	204
6	Sales	Male	204
7	Sales	Non-Binary	35
8	Sales	Prefer Not To Say	3
9	Technology	Female	438
10	Technology	Male	423
11	Technology	Non-Binary	84
12	Technology	Prefer Not To Say	16

```

181  -- 1.5 Count unique employees by education level
182  SELECT
183      el.EducationLevel,
184      COUNT(DISTINCT e.EmployeeID) AS UniqueEmployeeCount
185  FROM Employee e
186  JOIN EducationLevel el ON e.Education = el.EducationLevelID
187  GROUP BY el.EducationLevel
188  ORDER BY el.EducationLevel;
189
190  -- 1.6 Count unique employees by job role
191  SELECT
192      JobRole,
193      COUNT(DISTINCT EmployeeID) AS UniqueEmployeeCount
194  FROM Employee
195  GROUP BY JobRole
196  ORDER BY JobRole;
197
    
```

## Results

## Messages

	EducationLevel ▾	UniqueEmployeeCount ▾
1	Bachelors	572
2	Doctorate	48
3	High School	282
4	Masters	398
5	No Formal Qualifications	170

	JobRole ▾	UniqueEmployeeCount ▾
1	Analytics Manager	52
2	Data Scientist	261
3	Engineering Manager	75
4	HR Business Partner	7
5	HR Executive	28
6	HR Manager	4
7	Machine Learning Engineer	146
8	Manager	37
9	Recruiter	24
10	Sales Executive	327
11	Sales Representative	83
12	Senior Software Engineer	132
13	Software Engineer	294

```

198  -- 2. How does the average salary vary by education level?
199  SELECT el.EducationLevel,
200         AVG(CAST(e.Salary AS DECIMAL(18,2))) AS AverageSalary
201  FROM Employee e
202  JOIN EducationLevel el ON e.Education = el.EducationLevelID
203  GROUP BY el.EducationLevel;
204
205  -- 3. Is there a gender pay gap across different job roles and departments?
206  -- 3. (A) Count the unique number of employees per JobRole
207  SELECT JobRole, COUNT(DISTINCT EmployeeID) AS UniqueEmployeeCount
208  FROM Employee
209  GROUP BY JobRole;
210
211  -- 3. (B) Calculate the average salary based on unique employees per JobRole
212  SELECT e.JobRole,
213         CAST(AVG(CAST(e.Salary AS DECIMAL(18, 6))) AS DECIMAL(18, 6)) AS AverageSalary -- Ensure Salary is treated as decimal
214  FROM (SELECT DISTINCT EmployeeID, JobRole, Salary FROM Employee) e
215  GROUP BY e.JobRole;
216

```

Results Messages

	EducationLevel	AverageSalary
1	Bachelors	115405.430069
2	Doctorate	154268.791666
3	High School	105180.535460
4	Masters	117641.057788
5	No Formal Qualifications	94983.482352

	JobRole	UniqueEmployeeCount
1	HR Business Partner	7
2	Machine Learning Engineer	146
3	Recruiter	24
4	Sales Representative	83
5	HR Executive	28
6	Manager	37
7	Analytics Manager	52
8	Sales Executive	327
9	Data Scientist	261
10	Engineering Manager	75
11	Senior Software Engineer	132
12	Software Engineer	294
13	HR Manager	4

	JobRole	AverageSalary
1	HR Business Partner	314002.428571
2	Machine Learning Engineer	130164.616438
3	Recruiter	37647.500000
4	Sales Representative	40656.421686
5	HR Executive	94362.321428
6	Manager	317531.054054
7	Analytics Manager	346484.230769
8	Sales Executive	117195.538226
9	Data Scientist	56079.494252
10	Engineering Manager	286258.506666
11	Senior Software Engineer	126161.295454
12	Software Engineer	51967.051020
13	HR Manager	449330.750000

```

217 -- 4. What is the salary distribution based on years of experience?
218 -- Calculate the promotion rate by JobRole, similar to the Python code
219 SELECT e.JobRole,
220         COUNT(DISTINCT CASE WHEN e.YearsSinceLastPromotion = 0 THEN e.EmployeeID END) AS PromotedEmployeeCount,
221         COUNT(DISTINCT e.EmployeeID) AS TotalEmployeeCount,
222         (COUNT(DISTINCT CASE WHEN e.YearsSinceLastPromotion = 0 THEN e.EmployeeID END) * 100.0 /
223          COUNT(DISTINCT e.EmployeeID)) AS PromotionRate
224 FROM Employee e
225 GROUP BY e.JobRole
226 ORDER BY PromotionRate DESC;
227
228 -- 5 Calculate the average salary by department for unique employees?
229 SELECT e.Department,
230        CAST(AVG(CAST(e.Salary AS DECIMAL(18, 6))) AS DECIMAL(18, 6)) AS AverageSalary
231 FROM Employee e
232 GROUP BY e.Department
233 ORDER BY AverageSalary DESC;
234

```

## Results Messages

	JobRole ▼	PromotedEmployeeCount ▼	TotalEmployeeCount ▼	PromotionRate ▼
1	Recruiter	9	24	37.500000000000
2	Sales Representative	29	83	34.939759036144
3	HR Business Partner	2	7	28.571428571428
4	Machine Learning Engineer	33	146	22.602739726027
5	HR Executive	6	28	21.428571428571
6	Sales Executive	69	327	21.100917431192
7	Software Engineer	62	294	21.088435374149
8	Data Scientist	55	261	21.072796934865
9	Senior Software Engineer	17	132	12.878787878787
10	Engineering Manager	9	75	12.000000000000

	Department ▼	AverageSalary ▼
1	Human Resources	119698.809523
2	Sales	119117.609865
3	Technology	109655.122788

```

235  -- Second Category
236  -- Employee Satisfaction & Engagement
237  -- 6. What is the average satisfaction level across different job roles?
238  SELECT e.JobRole,
239         ROUND(AVG(CAST(p.JobSatisfaction AS DECIMAL(10, 2))), 6) AS AverageSatisfaction,
240         CASE
241             WHEN AVG(p.JobSatisfaction) = 1 THEN 'Very Dissatisfied'
242             WHEN AVG(p.JobSatisfaction) = 2 THEN 'Dissatisfied'
243             WHEN AVG(p.JobSatisfaction) = 3 THEN 'Neutral'
244             WHEN AVG(p.JobSatisfaction) = 4 THEN 'Satisfied'
245             WHEN AVG(p.JobSatisfaction) = 5 THEN 'Very Satisfied'
246             ELSE 'Unknown'
247         END AS SatisfactionLevel
248  FROM Employee e
249  JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
250  JOIN SatisfiedLevel sl ON p.JobSatisfaction = sl.SatisfactionID
251  GROUP BY e.JobRole;
252

```

## Results Messages

	JobRole ▼	AverageSatisfaction ▼	SatisfactionLevel ▼
1	HR Business Partner	3.347826	Neutral
2	Machine Learning Engineer	3.453405	Neutral
3	Recruiter	3.469798	Neutral
4	Sales Representative	3.378323	Neutral
5	HR Executive	3.434782	Neutral
6	Manager	3.435714	Neutral
7	Analytics Manager	3.418269	Neutral
8	Sales Executive	3.435897	Neutral
9	Data Scientist	3.457352	Neutral
10	Engineering Manager	3.526490	Neutral
11	Senior Software Engineer	3.356275	Neutral
12	Software Engineer	3.413043	Neutral
13	HR Manager	3.250000	Neutral

```

253  -- 7 Calculate average salary by satisfaction level for unique employees
254  WITH UniqueEmployees AS (
255      SELECT E.EmployeeID,
256             (SELECT TOP 1 PR.JobSatisfaction
257              FROM PerformanceRating PR
258              WHERE PR.EmployeeID = E.EmployeeID
259              ORDER BY PR.EmployeeID) AS JobSatisfaction,
260             (SELECT TOP 1 E2.Salary
261              FROM Employee E2
262              WHERE E2.EmployeeID = E.EmployeeID
263              ORDER BY E2.EmployeeID) AS Salary
264      FROM Employee E
265      GROUP BY E.EmployeeID
266  )
267  SELECT JobSatisfaction, AVG(Salary * 1.0) AS AverageSalary
268  FROM UniqueEmployees
269  WHERE JobSatisfaction IS NOT NULL
270  GROUP BY JobSatisfaction
271  ORDER BY JobSatisfaction;
272
273  -- 8. Do employees with higher education levels report higher satisfaction?
274  SELECT el.EducationLevel,
275         ROUND(AVG(CAST(p.JobSatisfaction AS DECIMAL(10, 2))), 6) AS AverageSatisfaction
276  FROM Employee e
277  JOIN EducationLevel el ON e.Education = el.EducationLevelID
278  JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
279  GROUP BY el.EducationLevel;
280

```

**Results**    Messages

	JobSatisfaction ▾	AverageSalary ▾
1	1	120500.333333
2	2	116695.341463
3	3	104914.106312
4	4	113217.044444
5	5	120707.823717

	EducationLevel ▾	AverageSatisfaction ▾
1	High School	3.460399
2	Doctorate	3.298578
3	No Formal Qualifications	3.377380
4	Bachelors	3.440015
5	Masters	3.435146



```

281 -- 9. Which departments have the most satisfied and least satisfied employees?
282 SELECT e.Department,
283        ROUND(AVG(CAST(p.JobSatisfaction AS DECIMAL(10, 2))), 6) AS AverageSatisfaction
284 FROM Employee e
285 JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
286 GROUP BY e.Department;
287
288 -- 10. Does job role impact satisfaction level?
289 SELECT e.JobRole,
290        ROUND(AVG(CAST(p.JobSatisfaction AS DECIMAL(10, 2))), 6) AS AverageSatisfaction,
291        CASE
292            WHEN AVG(p.JobSatisfaction) = 1 THEN 'Very Dissatisfied'
293            WHEN AVG(p.JobSatisfaction) = 2 THEN 'Dissatisfied'
294            WHEN AVG(p.JobSatisfaction) = 3 THEN 'Neutral'
295            WHEN AVG(p.JobSatisfaction) = 4 THEN 'Satisfied'
296            WHEN AVG(p.JobSatisfaction) = 5 THEN 'Very Satisfied'
297            ELSE NULL
298        END AS AverageSatisfaction
299 FROM Employee e
300 JOIN PerformanceRating p ON e.EmployeeID = p.EmployeeID
301 JOIN SatisfiedLevel sl ON p.JobSatisfaction = sl.SatisfactionID
302 GROUP BY e.JobRole;
303

```

## Results Messages

	Department	AverageSatisfaction
1	Sales	3.422056
2	Human Resources	3.435643
3	Technology	3.434578

	JobRole	AverageSatisfaction	AverageSatisfaction
1	HR Business Partner	3.347826	Neutral
2	Machine Learning Engineer	3.453405	Neutral
3	Recruiter	3.469798	Neutral
4	Sales Representative	3.378323	Neutral
5	HR Executive	3.434782	Neutral
6	Manager	3.435714	Neutral
7	Analytics Manager	3.418269	Neutral
8	Sales Executive	3.435897	Neutral
9	Data Scientist	3.457352	Neutral
10	Engineering Manager	3.526490	Neutral
11	Senior Software Engineer	3.356275	Neutral
12	Software Engineer	3.413043	Neutral
13	HR Manager	3.250000	Neutral



```

304  -- Third Category
305  -- Attrition & Turnover Analysis
306  -- 11. What is the overall employee attrition rate?
307  SELECT
308      e.Attrition,
309      ROUND(COUNT(*) * 100.0 / (SELECT COUNT(*) FROM Employee), 6) AS AttritionRate
310  FROM Employee e
311  GROUP BY e.Attrition
312  ORDER BY Attrition DESC;
313
314  -- 12. Which department has the highest employee turnover?
315  SELECT
316      e.Department,
317      COUNT(*) AS TotalEmployees, -- Count total employees in each department
318      SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees, -- Count employees who left
319      (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate -- Calculate attrition rate as a percentage
320  FROM Employee e
321  GROUP BY e.Department
322  ORDER BY AttritionRate DESC; -- Sort departments by highest attrition rate
323

```

Results
Messages

	Attrition	AttritionRate
1	Yes	16.122449000000
2	No	83.877551000000

	Department	TotalEmployees	AttritionEmployees	AttritionRate
1	Sales	446	92	20.627802690582
2	Human Resources	63	12	19.047619047619
3	Technology	961	133	13.839750260145

```

324 -- 13. Is there a connection between satisfaction level and attrition?
325 SELECT sl.SatisfactionLevel,
326        COUNT(*) AS TotalEmployees,
327        SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees,
328        (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate
329 FROM PerformanceRating p
330 JOIN SatisfiedLevel sl ON p.EnvironmentSatisfaction = sl.SatisfactionID
331 JOIN Employee e ON p.EmployeeID = e.EmployeeID
332 GROUP BY sl.SatisfactionLevel
333 ORDER BY AttritionRate DESC;
334
335 -- 13. Is there a connection between satisfaction level and attrition?
336 WITH LatestPerformance AS (
337     SELECT
338         EmployeeID,
339         EnvironmentSatisfaction,
340         ROW_NUMBER() OVER (PARTITION BY EmployeeID ORDER BY ReviewDate DESC) AS rn
341     FROM PerformanceRating
342 )
343 SELECT
344     sl.SatisfactionLevel,
345     COUNT(DISTINCT e.EmployeeID) AS TotalEmployees,
346     COUNT(DISTINCT CASE WHEN e.Attrition = 'Yes' THEN e.EmployeeID END) AS AttritionEmployees,
347     (COUNT(DISTINCT CASE WHEN e.Attrition = 'Yes' THEN e.EmployeeID END) * 100.0) / COUNT(DISTINCT e.EmployeeID) AS AttritionRate
348 FROM Employee e
349 JOIN LatestPerformance lp ON e.EmployeeID = lp.EmployeeID AND lp.rn = 1
350 JOIN SatisfiedLevel sl ON lp.EnvironmentSatisfaction = sl.SatisfactionID
351 GROUP BY sl.SatisfactionLevel
352 ORDER BY AttritionRate DESC;
353
    
```

## 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

	SatisfactionLevel	TotalEmployees	AttritionEmployees	AttritionRate
1	Dissatisfied	62	16	25.806451612903
2	Very Dissatisfied	51	11	21.568627450980
3	Very Satisfied	343	66	19.241982507288
4	Neutral	431	82	19.025522041763
5	Satisfied	393	62	15.776081424936

```

354 -- 14. Do employees with higher education levels have lower attrition rates?
355 SELECT el.EducationLevel,
356        COUNT(*) AS TotalEmployees,
357        SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees,
358        (SUM(CASE WHEN e.Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(*) AS AttritionRate
359 FROM Employee e
360 LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
361 GROUP BY el.EducationLevel
362 ORDER BY AttritionRate ASC;
363
364 -- 15. How does tenure (years at company) impact attrition?
365 WITH EmployeeTenure AS (
366     SELECT
367         e.EmployeeID,
368         e.YearsAtCompany, -- Use the original YearsAtCompany value instead of recalculating it
369         e.Attrition,
370         ROW_NUMBER() OVER (PARTITION BY e.EmployeeID ORDER BY e.HireDate ASC) AS rn
371     FROM Employee e
372 )
373 -- Step 2: Calculate attrition rate based on unique employees
374 SELECT
375     YearsAtCompany,
376     COUNT(EmployeeID) AS TotalEmployees, -- Count total unique employees per tenure
377     SUM(CASE WHEN Attrition = 'Yes' THEN 1 ELSE 0 END) AS AttritionEmployees, -- Count employees who left
378     (SUM(CASE WHEN Attrition = 'Yes' THEN 1 ELSE 0 END) * 100.0) / COUNT(EmployeeID) AS AttritionRate -- Calculate attrition rate (%)
379 FROM EmployeeTenure
380 WHERE rn = 1 -- Select only the first record for each employee
381 GROUP BY YearsAtCompany
382 ORDER BY YearsAtCompany ASC;
383

```

## Results Messages

	EducationLevel	TotalEmployees	AttritionEmployees	AttritionRate
1	Doctorate	48	5	10.416666666666666
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

	YearsAtCompany	TotalEmployees	AttritionEmployees	AttritionRate
1	0	190	60	31.578947368421
2	1	177	61	34.463276836158
3	2	124	25	20.161290322580
4	3	148	24	16.216216216216
5	4	129	15	11.627906976744
6	5	115	20	17.391304347826
7	6	101	11	10.891089108910
8	7	121	9	7.438016528925
9	8	119	6	5.042016806722
10	9	118	5	4.237288135593
11	10	128	1	0.781250000000

```

384  -- Fourth Category
385  -- Promotion & Career Growth
386  -- 16. How long does it take, on average, for employees to receive a promotion?
387  SELECT
388      CAST(AVG(CAST(e.YearsSinceLastPromotion AS DECIMAL(18, 6))) AS DECIMAL(18, 6)) AS AveragePromotionTime
389  FROM Employee e;
390
391  -- 17. Is there a correlation between education level and promotion frequency?
392  SELECT
393      el.EducationLevel,
394      AVG(CAST(e.YearsSinceLastPromotion AS FLOAT)) AS AvgYearsSinceLastPromotion -- Calculate the average time to promotion
395  FROM Employee e
396  LEFT JOIN EducationLevel el ON e.Education = el.EducationLevelID
397  GROUP BY el.EducationLevel
398  ORDER BY AvgYearsSinceLastPromotion ASC;
399
400  -- 18. Which departments promote employees the fastest and the slowest?
401  SELECT e.Department,
402      CAST(AVG(CAST(e.YearsSinceLastPromotion AS DECIMAL(18, 6))) AS DECIMAL(18, 6)) AS AveragePromotionTime
403  FROM Employee e
404  GROUP BY e.Department
405  ORDER BY AveragePromotionTime ASC; -- Fastest promotion first
406
  
```

Results Messages

	AveragePromotionTime
1	3.440816

	EducationLevel	AvgYearsSinceLastPromotion
1	Masters	3.1231155778894473
2	Bachelors	3.3933566433566433
3	No Formal Qualifications	3.5823529411764707
4	Doctorate	3.6875
5	High School	3.858156028368794

	Department	AveragePromotionTime
1	Sales	3.260089
2	Human Resources	3.285714
3	Technology	3.534859

```

407 -- 19. What percentage of satisfied employees receive promotions?
408 -- 19.1. Select the first job satisfaction rating for each employee
409 WITH FirstSatisfaction AS (
410     SELECT
411         e.EmployeeID,
412         pr.JobSatisfaction,
413         e.YearsSinceLastPromotion,
414         ROW_NUMBER() OVER (PARTITION BY e.EmployeeID ORDER BY e.YearsSinceLastPromotion ASC) AS row_num
415     FROM Employee e
416     JOIN PerformanceRating pr ON e.EmployeeID = pr.EmployeeID
417 )
418 -- 19.2. Calculate the total number of employees and the number of promoted employees by job satisfaction level
419 , PromotionStats AS (
420     SELECT
421         JobSatisfaction,
422         COUNT(DISTINCT EmployeeID) AS TotalEmployees, -- Ensure each employee is counted only once
423         COUNT(DISTINCT CASE WHEN YearsSinceLastPromotion = 0 THEN EmployeeID END) AS PromotedEmployees
424     FROM FirstSatisfaction
425     WHERE row_num = 1 -- Select only the first record per employee
426     GROUP BY JobSatisfaction
427 )
428 -- 19.3. Compute the promotion percentage by job satisfaction level
429 SELECT
430     JobSatisfaction,
431     TotalEmployees,
432     PromotedEmployees,
433     (PromotedEmployees * 100.0) / NULLIF(TotalEmployees, 0) AS PromotionPercentage
434 FROM PromotionStats
435 ORDER BY JobSatisfaction;
436

```

## Results Messages

	JobSatisfaction ▼	TotalEmployees ▼	PromotedEmployees ▼	PromotionPercentage ▼
1	1	40	6	15.000000000000
2	2	332	33	9.939759036144
3	3	335	48	14.328358208955
4	4	302	37	12.251655629139
5	5	271	35	12.915129151291

```

437 -- 20. Does gender impact promotion opportunities?
438 WITH UniqueEmployees AS (
439     SELECT
440         e.EmployeeID,
441         e.Gender,
442         e.YearsSinceLastPromotion
443     FROM Employee e
444     -- Ensure each employee appears only once based on first promotion date
445     WHERE e.YearsSinceLastPromotion = (
446         SELECT MIN(e2.YearsSinceLastPromotion)
447         FROM Employee e2
448         WHERE e2.EmployeeID = e.EmployeeID
449     )
450 )
451 SELECT
452     Gender,
453     COUNT(CASE WHEN YearsSinceLastPromotion = 0 THEN 1 END) AS PromotionFrequency,
454     COUNT(*) AS TotalEmployees,
455     (COUNT(CASE WHEN YearsSinceLastPromotion = 0 THEN 1 END) * 100.0) / COUNT(*) AS PromotionRate
456 FROM UniqueEmployees
457 GROUP BY Gender
458 ORDER BY PromotionRate DESC;
459

```

## Results Messages

	Gender	PromotionFrequency	TotalEmployees	PromotionRate
1	Prefer Not To Say	6	20	30.000000000000
2	Male	139	651	21.351766513056
3	Female	133	675	19.703703703703
4	Non-Binary	23	124	18.548387096774