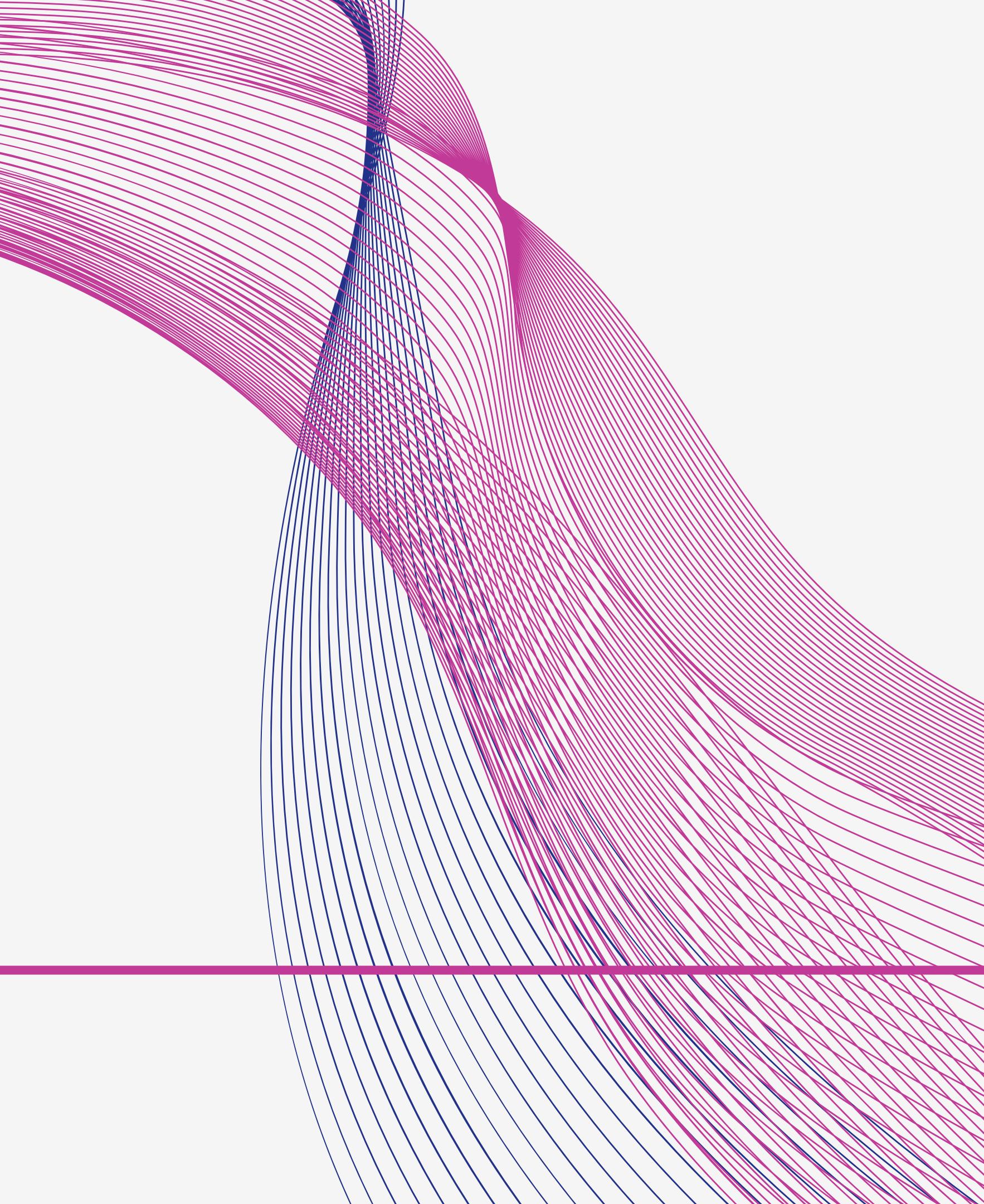


Human Resource Data ANALYSIS

Using SQL



INTRODUCTION

In today's data-driven world, effective analysis of human resources (HR) data is crucial for making informed decisions that drive organizational success. This presentation aims to demonstrate how SQL queries can be a powerful tool in extracting, manipulating, and interpreting HR data to uncover valuable insights.

Agenda

To transform raw HR data into actionable insights using SQL queries. By the end of this presentation, you'll have a solid understanding of how to leverage SQL for efficient HR data analysis, enabling better decision-making and strategic planning in your organization.

Total No. of Employees in our Dataset

SQL QUERY

```
-- Total number of employees in the dataset.  
SELECT COUNT(*) AS total_employees  
FROM general;
```

OUTPUT

total_employees
abc Filter...
4410

- There are 4410 employees in our dataset.

All the Unique Job Roles in Company

SQL QUERY

```
SELECT DISTINCT jobrole AS unique_jobroles  
FROM general;
```

OUTPUT

unique_jobroles
abc Filter...
Manager
Research Scientist
Healthcare Representative
Human Resources
Laboratory Technician
Manufacturing Director
Sales Representative
Sales Executive
Research Director

Average age of an Employee in our company

SQL QUERY

```
SELECT ROUND(AVG(age), 2) as emp_average_age  
FROM general;
```

OUTPUT

emp_average_age
a c Filter...
36.92

- The average age of an employee in our company is 36.92 years.

Employees who have worked for more than 5 years in the company

SQL QUERY

```
SELECT "Emp Name" as emp_name, age, yearsatcompany  
FROM general  
WHERE yearsatcompany>5  
ORDER BY emp_name;
```

- 2082 out of 4410 employees have worked of more than 5 years in the company i.e. almost half of the total employees.

emp_name	age	yearsatcompany
AARON DOSS	46	10
ABBY ABINANTI	24	6
ABDUL KHADIR	37	14
ADAM CHOY	42	21
ADETOKUNBO AJIKE	32	6
ADINE VARAH	31	10
ADRIAN PAYNE	45	19
ADRIANE MAJLESI	36	15
ADRIANNE TONG	33	10
ADRIANO CASTRO	35	7
ADRIENNE PON	39	21
AGUSTIN LARUE	31	9
AL GARZA	30	10
ALAN HARVEY	32	13
ALAN HOM	32	14

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OUTPUT

No. of Employees in each department

SQL QUERY

```
SELECT department, COUNT(*) as emp_count  
FROM general  
GROUP BY department  
ORDER BY emp_count;
```

OUTPUT

department	emp_count
abc Filter...	abc Filter...
Human Resources	189
Sales	1338
Research & Development	2883

- There are 3 departments in our dataset.
- We have the most no. of employees in the Research & Development department.

Highly satisfied employees

SQL QUERY

```
SELECT "Emp Name" as employees_with_high_job_satisfaction  
FROM general AS g  
LEFT JOIN empsurvey AS e  
ON g.employeeid = e.employeeid  
WHERE e.jobsatisfaction in ('3', '4');
```

- 2690 out of 4410 employees are highly satisfied with their job i.e. more than half of the total employees .

employees_with_high_job_satisfaction
ALBERTO PEDRUZO
RENEE MARQUARDT
DENNIS HERRERA
NATHAN HARDY
KIRSTEN BARASH
DENNIS SUTTER
DONALD FIELDS
LUIS HERRERA
GEORGE FOURAS
MARTIN LALOR JR
OLLIE BANKS
BURK DELVENTHAL
THOMAS HARVEY
MARTIN BELTRAN
ROBERT TAI
CHRISTOPHER HAZEN
PIERRE FRANCOIS

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OUTPUT

Highest monthly income

SQL QUERY

```
SELECT "Emp Name", monthlyincome AS highest_monthly_income  
FROM general  
WHERE monthlyincome = (SELECT max(monthlyincome)  
| | | | | FROM general);
```

OUTPUT

Emp Name	highest_monthly_income
abc Filter...	abc Filter...
KEVIN LABANOWSKI	199990
DAVID KUCIA	199990
LAWRENCE LAU	199990

- There are 3 employees having maximum salary of \$199990/month.

Employees who travel rarely for business purposes

SQL QUERY

```
SELECT "Emp Name" AS emp_name  
FROM general  
WHERE businesstravel = 'Travel_Rarely';
```

- 70% of total employees travel rarely for business purposes.

emp_name
ALBERTO PEDRUZO
HARVEY ELWIN
LEON WHITE
DENNIS HERRERA
DONALD BRYANT
NATHAN HARDY
KIRSTEN BARASH
DENNIS SUTTER
JOHN BROWN
DONALD FIELDS
LUIS HERRERA
GEORGE FOURAS
GRAD GREEN
DARCY KELLER
ALEXANDER CHEN
OLLIE BANKS
BURK DELVENTHAL

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OUTPUT

Marital Status Categories

SQL QUERY

```
SELECT DISTINCT MaritalStatus  
FROM general;
```

OUTPUT

maritalstatus
abc Filter...
Married
Divorced
Single

There are 3 types of marital status:
Single
Married
Divorced

Employees with 3 years of Work Exp

SQL QUERY

```
SELECT employeeid,  
       "Emp Name" AS emp_with3yrs_WorkEx,  
       jobrole  
  FROM general  
 WHERE yearsatcompany = 3  
 GROUP BY jobrole, "Emp Name", employeeid  
 ORDER BY employeeid;
```

- 8.7% of employees with 3 years of work experience.

employeeid	emp_with3yrs_workex	jobrole
a <small>b</small> c Filter...	a <small>b</small> c Filter...	a <small>b</small> c Filter...
17	GEORGE FOURAS	Laboratory Technician
31	ROSELYN JEQUINTO	Research Scientist
33	COLLEEN RILEY	Research Scientist
66	ANDREW LOGAN	Sales Executive
72	MICHAEL SIMMONS	Healthcare Representative
80	JOHN GOLDBERG	Sales Representative
93	PATRICIA O'CONNOR	Research Scientist
100	MITCHELL LEE	Manufacturing Director
103	NEREE DASTOUS	Research Scientist
105	LOUIS CASSANEGO	Manager
114	PAUL LEE	Research Director
136	JOHN VAN KOLL	Laboratory Technician
138	BRODERICK TOPPS	Manufacturing Director
161	LINDA ROSS	Healthcare Representative
172	RONALD PRUYN	Laboratory Technician

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OUTPUT

Employees who changed their job roles within the company

SQL QUERY

```
SELECT EmployeeID, "Emp Name",
       CurrentJobRole, PreviousJobRole,
       CurrentJobLevel, PreviousJobLevel
  FROM (
    SELECT EmployeeID, "Emp Name",
           JobRole AS CurrentJobRole, JobLevel AS CurrentJobLevel,
           LAG(JobRole ) OVER(PARTITION BY EmployeeID ORDER BY YearsAtCompany) AS PreviousJobRole,
           LAG(JobLevel) OVER(PARTITION BY EmployeeID ORDER BY YearsAtCompany) AS PreviousJobLevel
      FROM general
  ) AS JobChanges
 WHERE (CurrentJobRole != PreviousJobRole)
   OR (CurrentJobLevel != PreviousJobLevel);
```

OUTPUT

employeeid	Emp Name	currentjobrole	previousjobrole	currentjoblevel	previousjoblevel
a c Filter...					
No data					

Department-wise Average Distance from home

SQL QUERY

```
SELECT department,
       ROUND(AVG(distancefromhome),2) AS avg_distance_from_home
  FROM general
 GROUP BY department
 ORDER BY avg_distance_from_home;
```

OUTPUT

department	avg_distance_from_home
a c Filter...	a c Filter...
Human Resources	8.25
Sales	9.23
Research & Development	9.24

Top 5 Employees with Highest Monthly Income

SQL QUERY

```
WITH top_5_income AS (
    SELECT *,
    ROW_NUMBER() OVER(ORDER BY monthlyincome DESC) AS rn
    FROM general
)
SELECT "Emp Name", MonthlyIncome
FROM top_5_income
WHERE rn<=5;
```

OUTPUT

Emp Name	monthlyincome
KEVIN LABANOWSKI	199990
DAVID KUCIA	199990
LAWRENCE LAU	199990
SHANNON STABILE	199730
NATHAN SZUTU	199730

Percent of Employees who got promoted last year

SQL QUERY

```
SELECT ROUND(100*(
    SELECT COUNT(*)
    FROM general
    WHERE yearssincelastpromotion = 1
)/CAST(COUNT(*) AS numeric), 2) AS percentage_emp_last_year_promotion
FROM general;
```

OUTPUT

percentage_emp_last_year_promotion
a c Filter...
24.29

- Around 24% of employees got promoted last year.

List of Employees with highest and lowest environment satisfaction level

SQL QUERY

```
SELECT g.employeeid, "Emp Name", e.environmentsatisfaction
FROM general AS g
JOIN empsurvey AS e
ON g.employeeid = e.employeeid
WHERE e.environmentsatisfaction IN (
    SELECT MAX(environmentsatisfaction)
    FROM empsurvey
    WHERE environmentsatisfaction != 'NA'
    UNION
    SELECT MIN(environmentsatisfaction)
    FROM empsurvey
);
```

OUTPUT

employeeid	Emp Name	environmentsatisfaction
4	RENEE MARQUARDT	4
5	HARVEY ELWIN	4
7	DENNIS HERRERA	1
8	DONALD BRYANT	1
13	JOHN BROWN	4
14	KATHRYN BALLOU	1
15	DONALD FIELDS	4
17	GEORGE FOURAS	4
18	MARTIN LALOR JR	1
20	DARCY KELLER	1
22	ALEXANDER CHEN	1
27	LORI BORGHI	1
28	ROBERT TAI	4
29	CHRISTOPHER HAZ...	4

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Employees having same job role and marital status

SQL QUERY

```
SELECT e1.employeeid AS empId, e1."Emp Name",
       e1.JobRole,
       e1.MaritalStatus
  FROM general e1
 INNER JOIN general e2 ON e1.employeeid < e2.employeeid
                      AND e1.JobRole = e2.JobRole
                      AND e1.MaritalStatus = e2.MaritalStatus
 GROUP BY empId, e1."Emp Name",
          e1.JobRole, e1.MaritalStatus
 HAVING COUNT(*) > 1
 ORDER BY JobRole, MaritalStatus;
```

OUTPUT

empid	Emp Name	jobrole	maritalstatus
3975	CHRISTOPHER DUN...	Healthcare Representative	Divorced
2876	CHRISTINE MAGAYA...	Healthcare Representative	Divorced
594	RAYMOND MACAULAY	Healthcare Representative	Divorced
147	ANN MANNIX	Healthcare Representative	Divorced
3174	SAMSON ASRAT	Healthcare Representative	Divorced
625	NIELS TANGHERLINI	Healthcare Representative	Divorced
3461	STEVEN HASKELL	Healthcare Representative	Divorced
3565	MICHAEL KENNY	Healthcare Representative	Divorced
941	JAY CLELAND	Healthcare Representative	Divorced
152	RYAN CREAN	Healthcare Representative	Divorced
3946	ALAN DE BELLA	Healthcare Representative	Divorced
4314	WILLIAM MADSEN	Healthcare Representative	Divorced
926	PING WONG	Healthcare Representative	Divorced
161	LINDA ROSS	Healthcare Representative	Divorced
2661	SHELBY CAMPBELL	Healthcare Representative	Divorced

Employees with the highest work experience and performance rating

SQL QUERY

```
SELECT g."Emp Name", m.performancerating, g.totalworkingyears  
FROM general AS g  
LEFT JOIN managersurvey as m  
ON g.employeeid = m.employeeid  
WHERE m.performancerating='4'  
AND g.totalworkingyears = (  
    SELECT MAX(totalworkingyears)  
    FROM general  
    WHERE employeeid IN (  
        SELECT employeeid  
        FROM managersurvey  
        WHERE performancerating = '4'  
    )  
    ORDER BY totalworkingyears DESC;
```

Emp Name	performancerating	totalworkingyears
STEVEN SETO	4	35.0
SHARON LEGENZA	4	35.0
EMILY MURASE	4	35.0

OUTPUT

- There are 3 employees with 35 years of work experience and also the highest performance rating.

Average age and Job satisfaction level of employee based on business travel

SQL QUERY

```
SELECT g.businesstravel, ROUND(AVG(g.age), 2) as avg_age,  
ROUND(AVG(  
    CASE WHEN e.jobsatisfaction IS NULL OR e.jobsatisfaction = 'NA'  
    THEN 0  
    ELSE CAST(e.jobsatisfaction AS NUMERIC)  
    END  
) , 2) AS avg_jobsatisfaction  
FROM general AS g  
LEFT JOIN empsurvey AS e  
ON g.employeeid = e.employeeid  
GROUP BY g.businesstravel;
```

OUTPUT

businesstravel	avg_age	avg_jobsatisfaction
abc Filter...	abc Filter...	abc Filter...
Travel_Frequently	36.45	2.77
Non-Travel	36.62	2.78
Travel_Rarely	37.09	2.69

- Employees who travel rarely have the least job satisfaction on average compared to non-travelers or those who travel frequently.

Most Common education field among employees

SQL QUERY

```
SELECT EducationField AS mostCommon_EducationField,  
       COUNT(*) AS Frequency  
  FROM general  
 GROUP BY educationfield  
 ORDER BY Frequency DESC  
 LIMIT 1;
```

OUTPUT

mostcommon_educationfield	frequency
abc Filter...	abc Filter...
Life Sciences	1818

mostcommon_educationfield	frequency
abc Filter...	abc Filter...
Life Sciences	1818
Medical	1392
Marketing	477
Technical Degree	396
Other	246
Human Resources	81

Same query without limit clause

- Life Sciences is the most common education field among employees.

Employees who worked most for the company but did not get promoted

SQL QUERY

```
SELECT "Emp Name", yearsatcompany, yearssincelastpromotion
FROM general
WHERE yearssincelastpromotion = 0 AND
yearsatcompany = (
    SELECT max(yearsatcompany)
    FROM general
);
```

OUTPUT

Emp Name	yearsatcompany	yearssincelastpromotion
abc Filter...	abc Filter...	abc Filter...

No data

- There are no such employees who have worked for the company longest and haven't had any promotion.

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THANK YOU

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“If you torture the data long enough, it will confess.”

— Ronald Coase