# Analysing Employee Salaries Using MySQL: A Data-Driven Approach

**INTRODUCTION:**

Organizations worldwide strive to optimize employee satisfaction and resource allocation while maintaining competitive salary structures. A data-driven approach can provide valuable insights into trends, disparities, and patterns in employee salaries, aiding decision-making for HR and management teams. This project focuses on leveraging MySQL to analyze employee salary data, uncovering insights into salary distribution, department-level salary trends, gender pay disparities, and correlations between employee performance metrics and compensation.

By creating and executing SQL queries, this project demonstrates how databases can be utilized for advanced salary analysis to assist organizations in achieving equitable and competitive compensation practices.

**OBJECTIVES:**

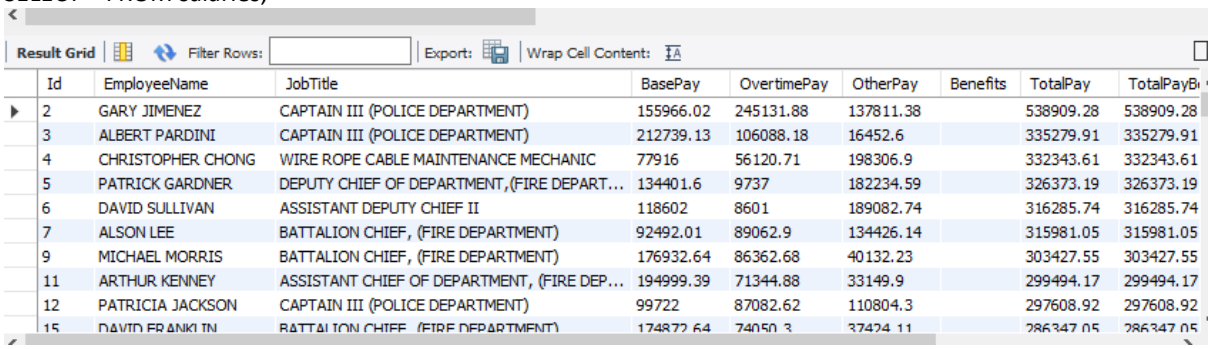
- To perform detailed analysis on employee salary data using MySQL queries.
- To identify patterns and trends in salary distribution across departments, job titles, and experience levels.
- To examine potential pay gaps and provide insights into gender equality and fairness.
- To assist in decision-making for HR and management teams by presenting actionable recommendations based on data-driven evidence.

**REQUIREMENTS:**

We've framed a list of tasks to perform over the database using MySQL. This helps us to study more about the dataset.

**#1. Show all columns and rows in the table.**

SELECT * FROM salaries;

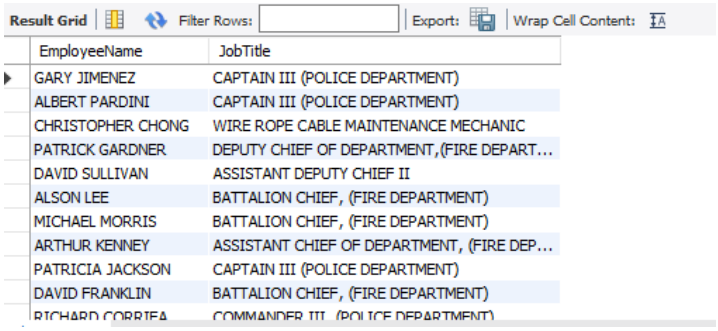


Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| Id | EmployeeName | JobTitle | BasePay | OvertimePay | OtherPay | Benefits | TotalPay | TotalPayB |
|---|---|---|---|---|---|---|---|---|
| 2 | GARY JIMENEZ | CAPTAIN III (POLICE DEPARTMENT) | 155966.02 | 245131.88 | 137811.38 | | 538909.28 | 538909.28 |
| 3 | ALBERT PARDINI | CAPTAIN III (POLICE DEPARTMENT) | 212739.13 | 106088.18 | 16452.6 | | 335279.91 | 335279.91 |
| 4 | CHRISTOPHER CHONG | WIRE ROPE CABLE MAINTENANCE MECHANIC | 77916 | 56120.71 | 198306.9 | | 332343.61 | 332343.61 |
| 5 | PATRICK GARDNER | DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... | 134401.6 | 9737 | 182234.59 | | 326373.19 | 326373.19 |
| 6 | DAVID SULLIVAN | ASSISTANT DEPUTY CHIEF II | 118602 | 8601 | 189082.74 | | 316285.74 | 316285.74 |
| 7 | ALSON LEE | BATTALION CHIEF, (FIRE DEPARTMENT) | 92492.01 | 89062.9 | 134426.14 | | 315981.05 | 315981.05 |
| 9 | MICHAEL MORRIS | BATTALION CHIEF, (FIRE DEPARTMENT) | 176932.64 | 86362.68 | 40132.23 | | 303427.55 | 303427.55 |
| 11 | ARTHUR KENNEY | ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... | 194999.39 | 71344.88 | 33149.9 | | 299494.17 | 299494.17 |
| 12 | PATRICIA JACKSON | CAPTAIN III (POLICE DEPARTMENT) | 99722 | 87082.62 | 110804.3 | | 297608.92 | 297608.92 |
| 15 | DAVID FRANKLIN | BATTALION CHIEF, (FIRE DEPARTMENT) | 174872.64 | 74050.3 | 37424.11 | | 286347.05 | 286347.05 |

**#2. Show only the EmployeeName and Jobtitle columns.**

SELECT EmployeeName, JobTitle
FROM salaries;



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| EmployeeName | JobTitle |
|---|---|
| GARY JIMENEZ | CAPTAIN III (POLICE DEPARTMENT) |
| ALBERT PARDINI | CAPTAIN III (POLICE DEPARTMENT) |
| CHRISTOPHER CHONG | WIRE ROPE CABLE MAINTENANCE MECHANIC |
| PATRICK GARDNER | DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... |
| DAVID SULLIVAN | ASSISTANT DEPUTY CHIEF II |
| ALSON LEE | BATTALION CHIEF, (FIRE DEPARTMENT) |
| MICHAEL MORRIS | BATTALION CHIEF, (FIRE DEPARTMENT) |
| ARTHUR KENNEY | ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... |
| PATRICIA JACKSON | CAPTAIN III (POLICE DEPARTMENT) |
| DAVID FRANKLIN | BATTALION CHIEF, (FIRE DEPARTMENT) |
| RICHARD CORRIEA | COMMANDER III, (POLICE DEPARTMENT) |

**#3. Show the number of employees in the table.**

```
SELECT COUNT(*) AS emp_count
FROM salaries;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| emp_count |
|---|
| 892 |

**#4. Show the unique job titles**

```
SELECT DISTINCT JobTitle FROM salaries;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| JobTitle |
|---|
| CAPTAIN III (POLICE DEPARTMENT) |
| WIRE ROPE CABLE MAINTENANCE MECHANIC |
| DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... |
| ASSISTANT DEPUTY CHIEF II |
| BATTALION CHIEF, (FIRE DEPARTMENT) |
| ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... |
| COMMANDER III, (POLICE DEPARTMENT) |
| CAPTAIN, EMERGENCYCY MEDICAL SERVICES |
| ASSISTANT MEDICAL EXAMINER |
| CAPTAIN, FIRE SUPPRESSION |

**#5. Show the unique job title and overtime pay for all employees with overtime pay greater than 50000.**

```
SELECT DISTINCT JobTitle, OvertimePay
FROM salaries
WHERE OvertimePay > 50000
ORDER BY OvertimePay DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| JobTitle | OvertimePay |
|---|---|
| CAPTAIN III (POLICE DEPARTMENT) | 245131.88 |
| ELECTRONIC MAINTENANCE TECHNICIAN | 139102.95 |
| TRANSIT SUPERVISOR | 135159.38 |
| TRANSIT SUPERVISOR | 126778.88 |
| TRANSIT SUPERVISOR | 126725.82 |
| TRANSIT SUPERVISOR | 119951.72 |
| ELECTRICAL TRANSIT SYSTEM MECHANIC | 119407.7 |
| CAPTAIN, EMERGENCYCY MEDICAL SERVICES | 119397.26 |
| ELECTRICAL TRANSIT MECHANIC, ASSISTANT ... | 118949.93 |
| ELECTRICAL TRANSIT SYSTEM MECHANIC | 115239.98 |

TRANSIT SUPERVISOR

**#6. Show the average base pay for all employees.**

```
SELECT AVG(BasePay) FROM salaries;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| AVG(BasePay) |
|---|
| 122787.46753811666 |

**#7. Show the top10 highest paid employees.**

```
SELECT EmployeeName, TotalPay
FROM salaries
ORDER BY TotalPay DESC
LIMIT 10;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

| EmployeeName | TotalPay |
|---|---|
| GARY JIMENEZ | 538909.28 |
| ALBERT PARDINI | 335279.91 |
| CHRISTOPHER CHONG | 332343.61 |
| PATRICK GARDNER | 326373.19 |
| DAVID SULLIVAN | 316285.74 |
| ALSON LEE | 315981.05 |
| MICHAEL MORRIS | 303427.55 |
| ARTHUR KENNEY | 299494.17 |
| PATRICIA JACKSON | 297608.92 |
| DAVID FRANKLIN | 286347.05 |

**#8. Show the average of basePay, OvertimePay and OtherPay for each employee.**

```
SELECT EmployeeName, (BasePay + OvertimePay + OtherPay)/3 AS Average_pay
FROM salaries;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| EmployeeName | Average_pay |
|---|---|
| GARY JIMENEZ | 179636.42666666667 |
| ALBERT PARDINI | 111759.96999999999 |
| CHRISTOPHER CHONG | 110781.20333333332 |
| PATRICK GARDNER | 108791.06333333334 |
| DAVID SULLIVAN | 105428.58 |
| ALSON LEE | 105327.01666666666 |
| MICHAEL MORRIS | 101142.51666666666 |
| ARTHUR KENNEY | 99831.39000000001 |
| PATRICIA JACKSON | 99202.97333333333 |
| DAVID FRANKLIN | 95449.01666666666 |

**#9. Show all employees who have the word "Manager" in their job title.**

```
SELECT JobTitle FROM salaries
WHERE Jobtitle LIKE '%Manager%';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| JobTitle |
|---|
| NURSE MANAGER |
| NURSE MANAGER |
| NURSE MANAGER |
| NURSE MANAGER |
| NURSE MANAGER |
| NURSE MANAGER |

**#10. Show all the job title where job title is not equal to manager.**

```
SELECT EmployeeName, JobTitle
FROM salaries
WHERE JobTitle != 'Manager';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| EmployeeName | JobTitle |
|---|---|
| GARY JIMENEZ | CAPTAIN III (POLICE DEPARTMENT) |
| ALBERT PARDINI | II (POLICE DEPARTMENT) |
| CHRISTOPHER CHONG | WIRE ROPE CABLE MAINTENANCE MECHANIC |
| PATRICK GARDNER | DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... |
| DAVID SULLIVAN | ASSISTANT DEPUTY CHIEF II |
| ALSON LEE | BATTALION CHIEF, (FIRE DEPARTMENT) |
| MICHAEL MORRIS | BATTALION CHIEF, (FIRE DEPARTMENT) |
| ARTHUR KENNEY | ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... |
| PATRICIA JACKSON | CAPTAIN III (POLICE DEPARTMENT) |
| DAVID FRANKLIN | BATTALION CHIEF, (FIRE DEPARTMENT) |

**#11. Show all the employees with a total pay between 50,000 and 70,000**

```
SELECT EmployeeName, TotalPay
FROM salaries
WHERE TotalPay >= 300000 AND TotalPay < 500000
ORDER BY EmployeeName;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| EmployeeName | TotalPay |
|---|---|
| ALBERT PARDINI | 335279.91 |
| ALSON LEE | 315981.05 |
| CHRISTOPHER CHONG | 332343.61 |
| DAVID SULLIVAN | 316285.74 |
| MICHAEL MORRIS | 303427.55 |
| PATRICK GARDNER | 326373.19 |

**# 12. Show all employees with a base pay greater than 50,000 or total pay greater than 100,000**

```
SELECT * FROM salaries
WHERE BasePay > 50000 OR TotalPay > 100000;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| Id | EmployeeName | JobTitle | BasePay | OvertimePay | OtherPay | Benefits | TotalPay | TotalPayB |
|---|---|---|---|---|---|---|---|---|
| 2 | GARY JIMENEZ | CAPTAIN III (POLICE DEPARTMENT) | 155966.02 | 245131.88 | 137811.38 | | 538909.28 | 538909.28 |
| 3 | ALBERT PARDINI | CAPTAIN III (POLICE DEPARTMENT) | 212739.13 | 106088.18 | 16452.6 | | 335279.91 | 335279.91 |
| 4 | CHRISTOPHER CHONG | WIRE ROPE CABLE MAINTENANCE MECHANIC | 77916 | 56120.71 | 198306.9 | | 332343.61 | 332343.61 |
| 5 | PATRICK GARDNER | DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... | 134401.6 | 9737 | 182234.59 | | 326373.19 | 326373.19 |
| 6 | DAVID SULLIVAN | ASSISTANT DEPUTY CHIEF II | 118602 | 8601 | 189082.74 | | 316285.74 | 316285.74 |
| 7 | ALSON LEE | BATTALION CHIEF, (FIRE DEPARTMENT) | 92492.01 | 89062.9 | 134426.14 | | 315981.05 | 315981.05 |
| 9 | MICHAEL MORRIS | BATTALION CHIEF, (FIRE DEPARTMENT) | 176932.64 | 86362.68 | 40132.23 | | 303427.55 | 303427.55 |
| 11 | ARTHUR KENNEY | ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... | 194999.39 | 71344.88 | 33149.9 | | 299494.17 | 299494.17 |
| 12 | PATRICIA JACKSON | CAPTAIN III (POLICE DEPARTMENT) | 99722 | 87082.62 | 110804.3 | | 297608.92 | 297608.92 |

**#13. Show all employees with a total pay benefits value between 125000 and 150000 and a job title containing the word "Director"**

```
SELECT * FROM salaries
WHERE TotalPayBenefits BETWEEN 150000 AND 175000;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| Id | EmployeeName | JobTitle | BasePay | OvertimePay | OtherPay | Benefits | TotalPay | TotalPayBenefits |
|---|---|---|---|---|---|---|---|---|
| 836 | JEFFREY AMDAHL | PILOT OF FIRE BOATS | 140546.87 | 25277.42 | 9109.48 | | 174933.77 | 174933.77 |
| 837 | SIMON WONG | TRANSIT SUPERVISOR | 88429.53 | 81671.14 | 4813 | | 174913.67 | 174913.67 |
| 841 | FRANCO CALZOLAI | CAPTAIN, FIRE SUPPRESSION | 140010.95 | 25514.06 | 9247.6 | | 174772.61 | 174772.61 |
| 842 | KURT BRUNEMAN | LIEUTENANT III (POLICE DEPARTMENT) | 146514.88 | 8310.25 | 19890.14 | | 174715.27 | 174715.27 |
| 843 | ROMEO ARRIAZA | TRAIN CONTROLLER | 104298.68 | 61148.44 | 9245.66 | | 174692.78 | 174692.78 |
| 844 | JAMES AHERNE | SERGEANT III (POLICE DEPARTMENT) | 130457.94 | 37331.4 | 6880.43 | | 174669.77 | 174669.77 |
| 845 | DAVID MONTEVERDI | FIREFIGHTER | 110638.66 | 42866.54 | 21139.67 | | 174644.87 | 174644.87 |
| 846 | LISA FRAZER | SERGEANT III (POLICE DEPARTMENT) | 130481.59 | 4353.57 | 39809.66 | | 174644.82 | 174644.82 |

**#14. Show all employees ordered by their total pay benefits in descending order.**

```
SELECT * FROM salaries
ORDER BY TotalPayBenefits DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| Id | EmployeeName | JobTitle | BasePay | OvertimePay | OtherPay | Benefits | TotalPay | TotalPayB |
|---|---|---|---|---|---|---|---|---|
| 2 | GARY JIMENEZ | CAPTAIN III (POLICE DEPARTMENT) | 155966.02 | 245131.88 | 137811.38 | | 538909.28 | 538909.28 |
| 3 | ALBERT PARDINI | CAPTAIN III (POLICE DEPARTMENT) | 212739.13 | 106088.18 | 16452.6 | | 335279.91 | 335279.91 |
| 4 | CHRISTOPHER CHONG | WIRE ROPE CABLE MAINTENANCE MECHANIC | 77916 | 56120.71 | 198306.9 | | 332343.61 | 332343.61 |
| 5 | PATRICK GARDNER | DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... | 134401.6 | 9737 | 182234.59 | | 326373.19 | 326373.19 |
| 6 | DAVID SULLIVAN | ASSISTANT DEPUTY CHIEF II | 118602 | 8601 | 189082.74 | | 316285.74 | 316285.74 |
| 7 | ALSON LEE | BATTALION CHIEF, (FIRE DEPARTMENT) | 92492.01 | 89062.9 | 134426.14 | | 315981.05 | 315981.05 |
| 9 | MICHAEL MORRIS | BATTALION CHIEF, (FIRE DEPARTMENT) | 176932.64 | 86362.68 | 40132.23 | | 303427.55 | 303427.55 |
| 11 | ARTHUR KENNEY | ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... | 194999.39 | 71344.88 | 33149.9 | | 299494.17 | 299494.17 |

**#15. Show all job titles with an average base pay of atleast 100,000 and order them by the average base pay in descending order.**

```
SELECT JobTitle, AVG(BasePay) FROM salaries
GROUP BY JobTitle
HAVING AVG(BasePay) >= 100000
ORDER BY AVG(BasePay) DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| JobTitle | AVG(BasePay) |
|---|---|
| ASSISTANT MEDICAL EXAMINER | 257510.515 |
| ANESTHETIST | 191930.0509090909 |
| CAPTAIN, BUREAU OF FIRE PREVENTION AND ... | 187237.53 |
| ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... | 186457.075 |
| COMMANDER III, (POLICE DEPARTMENT) | 186336.39750000002 |
| NURSE MANAGER | 183770.40733333337 |
| DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... | 176666.18 |
| CAPTAIN III (POLICE DEPARTMENT) | 172418.1611764706 |
| CLINICAL NURSE SPECIALIST | 164372 |

**#16. Delete the column.**

```
ALTER TABLE salaries
DROP COLUMN Benefits;
```

| JobTitle | BasePay | OvertimePay | OtherPay | TotalPay | TotalPayBenefits | Year | Agency | Status |
|---|---|---|---|---|---|---|---|---|
| CAPTAIN III (POLICE DEPARTMENT) | 155966.02 | 245131.88 | 137811.38 | 538909.28 | 538909.28 | 2011 | San Francisco | |
| CAPTAIN III (POLICE DEPARTMENT) | 212739.13 | 106088.18 | 16452.6 | 335279.91 | 335279.91 | 2011 | San Francisco | |
| WIRE ROPE CABLE MAINTENANCE MECHANIC | 77916 | 56120.71 | 198306.9 | 332343.61 | 332343.61 | 2011 | San Francisco | |
| DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... | 134401.6 | 9737 | 182234.59 | 326373.19 | 326373.19 | 2011 | San Francisco | |
| ASSISTANT DEPUTY CHIEF II | 118602 | 8601 | 189082.74 | 316285.74 | 316285.74 | 2011 | San Francisco | |
| BATTALION CHIEF, (FIRE DEPARTMENT) | 92492.01 | 89062.9 | 134426.14 | 315981.05 | 315981.05 | 2011 | San Francisco | |
| BATTALION CHIEF, (FIRE DEPARTMENT) | 176932.64 | 86362.68 | 40132.23 | 303427.55 | 303427.55 | 2011 | San Francisco | |
| ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... | 194999.39 | 71344.88 | 33149.9 | 299494.17 | 299494.17 | 2011 | San Francisco | |

**#17. Update the base pay of all employees with the job title containing "Manager" by increasing it by 10%.**

```
UPDATE salaries
SET BasePay = BasePay * 1.1
WHERE JobTitle LIKE "%Manager%";
```

| JobTitle | BasePay | OvertimePay | OtherPay | TotalPay | T |
|---|---|---|---|---|---|
| CAPTAIN III (POLICE DEPARTMENT) | 155966.02 | 245131.88 | 137811.38 | 538909.28 | 53 |
| CAPTAIN III (POLICE DEPARTMENT) | 212739.13 | 106088.18 | 16452.6 | 335279.91 | 33 |
| WIRE ROPE CABLE MAINTENANCE MECHANIC | 77916 | 56120.71 | 198306.9 | 332343.61 | 33 |
| DEPUTY CHIEF OF DEPARTMENT,(FIRE DEPART... | 134401.6 | 9737 | 182234.59 | 326373.19 | 32 |
| ASSISTANT DEPUTY CHIEF II | 118602 | 8601 | 189082.74 | 316285.74 | 31 |
| BATTALION CHIEF, (FIRE DEPARTMENT) | 92492.01 | 89062.9 | 134426.14 | 315981.05 | 31 |
| BATTALION CHIEF, (FIRE DEPARTMENT) | 176932.64 | 86362.68 | 40132.23 | 303427.55 | 30 |
| ASSISTANT CHIEF OF DEPARTMENT, (FIRE DEP... | 194999.39 | 71344.88 | 33149.9 | 299494.17 | 29 |

**#18. Delete all employees who have no Overtime Pay**

```
DELETE FROM salaries
WHERE OvertimePay = 0;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

| COUNT(*) |
|---|
| 0 |

**CONCLUSION**

This MySQL-based salary analysis project demonstrates the power of structured database queries in uncovering valuable insights from employee data. The analysis provided a deeper understanding of salary distribution, highlighted areas requiring attention (e.g., gender pay gaps), and revealed the impact of experience and performance on compensation.

The findings can guide HR teams to implement fairer compensation policies, identify underperforming departments, and ensure competitive salaries to attract and retain talent. Future work could incorporate external benchmarks, inflation adjustments, or predictive modeling to further enhance decision-making.