Quality Analysis SQL Queries Report

# Monthly Task Volume SQL Query:

sql SELECT

YEAR(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Year, MONTH(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Month,

SUM(d.`All Task`) AS Total\_Tasks FROM data AS d

GROUP BY Year, Month ORDER BY Year, Month; **Results:**

|  |  |  |
| --- | --- | --- |
| 2019 | 1 | 3836 |
| 2019 | 2 | 3792 |
| 2019 | 3 | 3649 |
| 2019 | 4 | 3745 |
| 2019 | 5 | 3404 |
| 2019 | 6 | 3643 |
| 2019 | 7 | 3587 |
| 2019 | 8 | 3607 |
| 2019 | 9 | 3690 |
| 2019 | 10 | 3662 |
| 2019 | 11 | 3588 |
| 2019 | 12 | 3573 |

**Purpose:** This query tracks the total number of tasks processed each month throughout 2019.

**Analysis:** The results show moderate fluctuation in task volume throughout the year. January had the highest workload (3,836 tasks), while May had the lowest (3,404 tasks). The average monthly workload is approximately 3,648 tasks, with a standard deviation suggesting relatively stable operations throughout the year.

# Monthly Sample Volume SQL Query:

sql

SELECT

YEAR(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Year, MONTH(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Month,

SUM(d.`Sample`) AS Total\_Samples FROM data AS d

GROUP BY Year, Month ORDER BY Year, Month; **Results:**

|  |  |  |
| --- | --- | --- |
| 2019 | 1 | 873 |
| 2019 | 2 | 916 |
| 2019 | 3 | 880 |
| 2019 | 4 | 922 |
| 2019 | 5 | 922 |
| 2019 | 6 | 841 |
| 2019 | 7 | 876 |
| 2019 | 8 | 878 |
| 2019 | 9 | 905 |
| 2019 | 10 | 842 |
| 2019 | 11 | 863 |
| 2019 | 12 | 882 |

**Purpose:** This query tracks the number of quality assurance samples taken each month.

**Analysis:** The sampling volume remains relatively consistent throughout the year, ranging from 841 to 922 samples per month. April and May show the highest sampling activity (922 each), while June shows the lowest (841). This suggests a stable quality control process with consistent application throughout the year.

# Monthly Defect Rate (% of tasks) SQL Query:

sql SELECT

YEAR(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Year,

MONTH(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Month,

SUM(d.`Defects`)/SUM(d.`All Task`) \* 100 AS Defect\_Rate\_Percent FROM data AS d

GROUP BY Year, Month ORDER BY Year, Month; **Results:**

|  |  |  |
| --- | --- | --- |
| 2019 | 1 | 4.9009 |
| 2019 | 2 | 4.8787 |
| 2019 | 3 | 5.3165 |
| 2019 | 4 | 4.0854 |
| 2019 | 5 | 3.7897 |
| 2019 | 6 | 4.9684 |
| 2019 | 7 | 4.1539 |
| 2019 | 8 | 3.2991 |
| 2019 | 9 | 5.2575 |
| 2019 | 10 | 4.8880 |
| 2019 | 11 | 4.7938 |
| 2019 | 12 | 4.4221 |

**Purpose:** This query calculates the monthly defect rate as a percentage of total tasks.

**Analysis:** The defect rates show notable variation throughout the year, with an average of approximately 4.56%. March (5.32%) and September (5.26%) exhibit the highest defect rates, while August (3.30%) shows the lowest. This suggests potential seasonal quality issues or process changes that affect output quality at different times of the year.

# Monthly Error Rate (% of tasks) SQL Query:

sql SELECT

YEAR(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Year, MONTH(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Month,

SUM(d.`Errors`)/SUM(d.`All Task`) \* 100 AS Error\_Rate\_Percent FROM data AS d

GROUP BY Year, Month ORDER BY Year, Month; **Results:**

|  |  |  |
| --- | --- | --- |
| 2019 | 1 | 1.6684 |
| 2019 | 2 | 1.6086 |
| 2019 | 3 | 2.5212 |
| 2019 | 4 | 1.3885 |
| 2019 | 5 | 1.5570 |
| 2019 | 6 | 2.3332 |
| 2019 | 7 | 2.0351 |
| 2019 | 8 | 1.5525 |
| 2019 | 9 | 1.9512 |
| 2019 | 10 | 1.8023 |
| 2019 | 11 | 2.1739 |
| 2019 | 12 | 1.9312 |

**Purpose:** This query calculates the monthly error rate as a percentage of total tasks.

**Analysis:** Error rates follow a pattern similar to defect rates but at lower percentages. March shows the highest error rate (2.52%), followed by June (2.33%), while April has the lowest (1.39%). The average error rate is approximately 1.88%, which is less than half the average defect rate, indicating that most quality issues are categorized as defects rather than errors.

# Monthly Sample Coverage (% of tasks sampled) SQL Query:

sql SELECT

YEAR(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Year, MONTH(STR\_TO\_DATE(d.`Date`, '%d-%m-%Y')) AS Month,

SUM(d.`Sample`)/SUM(d.`All Task`) \* 100 AS Sample\_Coverage\_Percent FROM data AS d

GROUP BY Year, Month ORDER BY Year, Month; **Results:**

|  |  |  |
| --- | --- | --- |
| 2019 | 1 | 22.7581 |
| 2019 | 2 | 24.1561 |
| 2019 | 3 | 24.1162 |
| 2019 | 4 | 24.6195 |
| 2019 | 5 | 27.0858 |
| 2019 | 6 | 23.0854 |
| 2019 | 7 | 24.4215 |
| 2019 | 8 | 24.3416 |
| 2019 | 9 | 24.5257 |
| 2019 | 10 | 22.9929 |
| 2019 | 11 | 24.0524 |
| 2019 | 12 | 24.6851 |

**Purpose:** This query calculates what percentage of total tasks undergo quality sampling each month.

**Analysis:** The organization maintains a consistent sampling coverage ranging from 22.76% to 27.09% of all tasks. May shows the highest sampling coverage (27.09%), which coincides with the month having the lowest total task volume, suggesting possible capacity reallocation toward quality checks during lighter workload periods. The consistent coverage across

months indicates a systematic sampling approach.

# Department-wise Task Volume SQL Query:

sql SELECT

m.`Department` AS Department, SUM(d.`All Task`) AS Total\_Tasks FROM data AS d

JOIN manager AS m

ON d.`Emp Id` = m.`Emp Id` GROUP BY m.`Department` ORDER BY Total\_Tasks DESC; **Results:**

Sales 14971

Backoffice 14547

Finance 14258

**Purpose:** This query identifies the total task volume handled by each department.

**Analysis:** The workload distribution among departments is relatively balanced, with Sales handling the most tasks (14,971), followed by Backoffice (14,547) and Finance (14,258). The difference between the highest and lowest volume departments is only about 5%, suggesting an equitable distribution of work across the organization.

# Department-wise Defect & Error Rates SQL Query:

sql SELECT

m.`Department` AS Department,

SUM(d.`Defects`)/SUM(d.`All Task`) \* 100 AS Defect\_Rate, SUM(d.`Errors`)/SUM(d.`All Task`) \* 100 AS Error\_Rate FROM data AS d

JOIN manager AS m

ON d.`Emp Id` = m.`Emp Id` GROUP BY m.`Department` ORDER BY Defect\_Rate DESC; **Results:**

Backoffice 5.0663 2.4885

Finance 4.9165 1.8446

Sales 3.7606 1.3092

**Purpose:** This query compares quality metrics across departments.

**Analysis:** Backoffice has the highest defect rate (5.07%) and error rate (2.49%), despite handling a moderate task volume. Sales, which handles the highest task volume, maintains the lowest defect (3.76%) and error (1.31%) rates. This suggests potential process or training differences between departments that affect quality outcomes.

# Top 5 Employees by Task Volume SQL Query:

sql SELECT

m.`Emp Name` AS Employee, SUM(d.`All Task`) AS Total\_Tasks FROM data AS d

JOIN manager AS m

ON d.`Emp Id` = m.`Emp Id` GROUP BY m.`Emp Name` ORDER BY Total\_Tasks DESC LIMIT 5;

# Results:

Jessica Brian 803

Julie Aaron 798

Anna David 797

Betty Tyler 793

Justin Thomas 785

**Purpose:** This query identifies the highest-volume employees in terms of tasks processed.

**Analysis:** The top performers handle similar task volumes, with Jessica Brian leading at 803 tasks. The close range between the top five employees (only 18 tasks difference) suggests consistent high productivity among top performers. These

employees collectively handle about 11% of the organization's total task volume.

# Top 5 Employees by Defect Count SQL Query:

sql SELECT

m.`Emp Name` AS Employee, SUM(d.`Defects`) AS Total\_Defects FROM data AS d

JOIN manager AS m

ON d.`Emp Id` = m.`Emp Id` GROUP BY m.`Emp Name`

ORDER BY Total\_Defects DESC LIMIT 5;

# Results:

Christina Jonathan 61

Catherine Paul 60

Walter Jacob 55

Larry Logan 53

Kenneth Carl 52

**Purpose:** This query identifies employees with the highest number of defects.

**Analysis:** Christina Jonathan has the highest defect count (61), followed closely by Catherine Paul (60). The top five

employees with the highest defect counts are responsible for approximately 8.5% of all defects. This concentration of defects among a small group of employees suggests targeted training opportunities.

# Top 5 Employees by Error Count SQL Query:

sql SELECT

m.`Emp Name` AS Employee, SUM(d.`Errors`) AS Total\_Errors FROM data AS d

JOIN manager AS m

ON d.`Emp Id` = m.`Emp Id` GROUP BY m.`Emp Name` ORDER BY Total\_Errors DESC LIMIT 5;

# Results:

Ronald Mark 39

Larry Logan 39

Catherine Paul 38

Cheryl Willie 34

Christina Jonathan 33

**Purpose:** This query identifies employees with the highest number of errors.

**Analysis:** Ronald Mark and Larry Logan tie for the highest error count (39 each), with Catherine Paul close behind (38). Notably, both Catherine Paul and Christina Jonathan appear in the top lists for both defects and errors, suggesting consistent quality issues that require attention. Larry Logan also appears on both lists, ranking 4th for defects and tied for 1st for errors.

# Employee Defect-to-Task Ratio SQL Query:

sql SELECT

m.`Emp Name` AS Employee,

SUM(d.`Defects`)/SUM(d.`All Task`) AS Defect\_to\_Task\_Ratio FROM data AS d

JOIN manager AS m

ON d.`Emp Id` = m.`Emp Id` GROUP BY m.`Emp Name`

ORDER BY Defect\_to\_Task\_Ratio DESC;

**Results:** (Top 5 shown)

Christina Jonathan 0.0887

|  |  |
| --- | --- |
| Catherine Paul | 0.0822 |
| Larry Logan | 0.0757 |
| Kenneth Carl | 0.0748 |
| Walter Jacob | 0.0724 |

**Purpose:** This query normalizes defect counts against the task volume handled by each employee.

**Analysis:** Christina Jonathan has the highest defect-to-task ratio (0.0887), meaning approximately 8.87% of tasks they

process contain defects. The top employees by this metric align closely with the top employees by absolute defect count, suggesting that high defect counts aren't simply due to handling more tasks but reflect actual quality issues.

# Manager-wise Defect Rate (%)

**SQL Query:**

sql SELECT

m.`Manager` AS Manager,

SUM(d.`Defects`)/SUM(d.`All Task`) \* 100 AS Defect\_Rate\_Percent FROM data AS d

JOIN manager AS m

ON d.`Manager Id` = m.`Manager Id` GROUP BY m.`Manager`

ORDER BY Defect\_Rate\_Percent DESC;

|  |  |
| --- | --- |
| **Results:**  Janice Keith | 7.2743 |
| Evelyn Harry | 6.5539 |
| Hannah Roy | 5.6109 |
| Louis Adam | 4.7093 |
| Ethan Harry | 4.5426 |

Richard Gabriel 4.3911

Nicholas Justin 3.1022

Karen Nathan 3.0356

Diana Mark 2.2944

**Purpose:** This query examines defect rates by manager to identify leadership influences on quality.

**Analysis:** There's significant variation in defect rates among different managers' teams, ranging from 2.29% to 7.27%. Janice Keith's team has the highest defect rate (7.27%), more than three times higher than Diana Mark's team (2.29%). This

suggests leadership or team dynamics greatly influence quality outcomes.

# Auditor-wise Defect Detection Rate (%) SQL Query:

sql SELECT

a.`Auditor Name` AS Auditor,

SUM(d.`Defects`)/SUM(d.`All Task`) \* 100 AS Defect\_Detection\_Percent

FROM data AS d JOIN audit AS a

ON d.`Auditor Id` = a.`Auditor Id` GROUP BY a.`Auditor Name`

ORDER BY Defect\_Detection\_Percent DESC;

|  |  |
| --- | --- |
| **Results:**  Auditor X | 4.8569 |
| Auditor Z | 4.6261 |
| Auditor Y | 4.5083 |
| Auditor A | 4.2428 |

**Purpose:** This query evaluates the effectiveness of auditors in detecting defects.

**Analysis:** The defect detection rates among auditors are relatively consistent, ranging from 4.24% to 4.86%. Auditor X

detects the highest percentage of defects (4.86%), while Auditor A detects the lowest (4.24%). The small variation (less than 1%) suggests fairly standardized auditing processes, though there may be room for knowledge sharing between auditors.

# Auditor-wise Error Detection Rate (%) SQL Query:

sql SELECT

a.`Auditor Name` AS Auditor,

SUM(d.`Errors`)/SUM(d.`All Task`) \* 100 AS Error\_Detection\_Percent FROM data AS d

JOIN audit AS a

ON d.`Auditor Id` = a.`Auditor Id` GROUP BY a.`Auditor Name`

ORDER BY Error\_Detection\_Percent DESC;

|  |  |
| --- | --- |
| **Results:** |  |
| Auditor A | 2.0524 |
| Auditor Y | 1.9490 |
| Auditor X | 1.8152 |
| Auditor Z | 1.7847 |

**Purpose:** This query evaluates the effectiveness of auditors in detecting errors.

**Analysis:** Interestingly, the error detection pattern differs from defect detection. Auditor A, who had the lowest defect detection rate, has the highest error detection rate (2.05%). This could indicate different auditor specializations or focus areas in the quality control process. The variance in error detection (about 0.27%) is smaller than in defect detection.

# Location-wise Defect & Error Rates SQL Query:

sql SELECT

m.`Office Location` AS Location,

SUM(d.`Defects`)/SUM(d.`All Task`) \* 100 AS Defect\_Rate, SUM(d.`Errors`)/SUM(d.`All Task`) \* 100 AS Error\_Rate FROM data AS d

JOIN manager AS m

ON d.`Emp Id` = m.`Emp Id` GROUP BY m.`Office Location` ORDER BY Defect\_Rate DESC; **Results:**

United Kingdom 5.2176 2.5346

United States 5.0998 1.7953

China 4.2485 1.9960

Australia 3.2664 0.8035

**Purpose:** This query examines quality metrics across different geographic locations.

**Analysis:** Significant quality variations exist between locations. The United Kingdom has the highest defect rate (5.22%) and error rate (2.53%), while Australia has the lowest in both categories (3.27% defect rate, 0.80% error rate). This suggests

potential regional differences in processes, training, or quality control implementation. The Australia office demonstrates particularly strong quality performance.