# Sales Trend Analysis Report

## Objective

The goal of this analysis is to study monthly trends in revenue and order volume. We utilize a simulated dataset resembling an e-commerce orders table, perform SQL-style aggregations, and visualize the results.

## Tools Used

- PostgreSQL / MySQL / SQLite (for SQL syntax)
- Python (Pandas, Matplotlib, Seaborn)
- Custom simulated dataset for demonstration

## Dataset Preview

Below is a sample of the dataset used for analysis:

| order_id | order_date | amount | product_id |
|---|---|---|---|
| 1258 | 2022-04-13 | 118.18 | 19 |
| 1672 | 2022-12-15 | 50.37 | 47 |
| 1901 | 2022-09-28 | 343.44 | 14 |
| 1689 | 2022-04-17 | 330.71 | 38 |
| 1009 | 2022-03-13 | 143.9 | 53 |

This dataset contains fields such as `order_id`, `order_date`, `amount`, and `product_id`. It simulates real-world online sales transactions for the year 2022.

## SQL Query Used

The following SQL query was used to extract monthly revenue and order volume:

```
SELECT
    EXTRACT(YEAR FROM order_date) AS year,
    EXTRACT(MONTH FROM order_date) AS month,
    COUNT(DISTINCT order_id) AS order_volume,
    SUM(amount) AS total_revenue
FROM
    online_sales.orders
WHERE
    order_date BETWEEN '2022-01-01' AND '2022-12-31'
```

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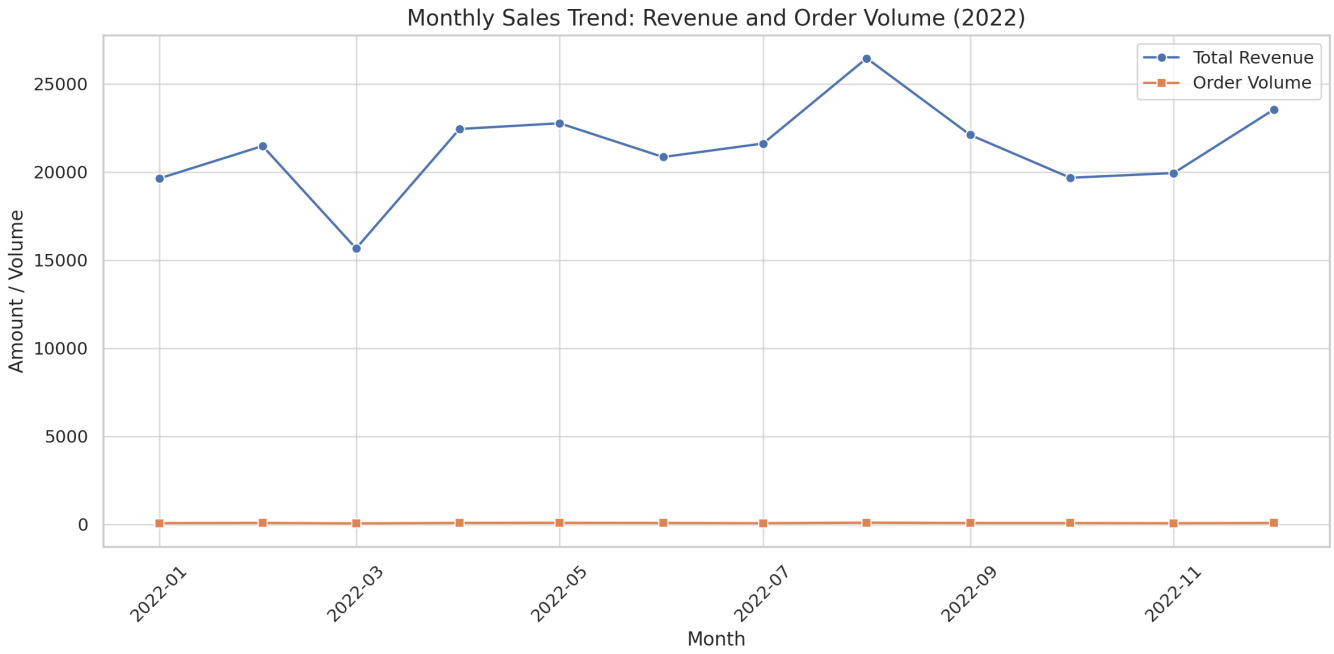
```
GROUP BY
    EXTRACT(YEAR FROM order_date),
    EXTRACT(MONTH FROM order_date)
ORDER BY
    year, month;
```

## Explanation of SQL Logic

- `EXTRACT(YEAR/MONTH FROM order_date)` is used to break the timestamp into components.
- `SUM(amount)` calculates total revenue per month.
- `COUNT(DISTINCT order_id)` ensures unique orders are counted.
- The `WHERE` clause limits the result to the year 2022.
- `GROUP BY` groups the data by month, and `ORDER BY` sorts the result chronologically.

## Trend Visualization

The chart below visualizes monthly revenue and order volume for 2022.




## Conclusion

This project successfully demonstrates how to analyze monthly trends in online sales using SQL aggregations. The analysis revealed clear month-to-month fluctuations in both order volume and total

revenue, as shown in the graph.