



ZOMATO SQL ANALYTICS PROJECT



END-TO-END DATA ANALYSIS ON A FOOD DELIVERY MARKETPLACE

A full relational SQL case study analyzing customer behavior, restaurant performance, cuisines, ratings, and order patterns.

Prepared by: Prince Yadav
Email: princeyadav5018@gmail.com
Year: 2025



PROBLEM STATEMENT

The food delivery platform generates data across multiple systems — restaurants, menu items, orders, customers, cuisines, and ratings.

Right now, this information sits in separate tables, and without proper analysis, it tells the business nothing meaningful.

The core problem for the business is to understand:

- Which restaurants are actually generating revenue

- What food items customers most frequently order

- How demand varies by city and by hour

- Whether ratings influence revenue

- Which customers are loyal

- Which cuisines dominate demand

- Which restaurants are declining in performance

To answer these, the scattered SQL tables must be joined, aggregated, and analyzed to convert raw data into actionable insights.



PROJECT OBJECTIVE

The objective of this project is to build a realistic, analytics-ready SQL database and use it to extract insights that matter to a food-delivery business.

This project aims to:

- Integrate relational tables into a consistent analytical model
- Analyze 1006+ orders to identify revenue leaders and demand patterns
- Explore customer behaviour, repeat orders, and spending distribution
- Study cuisine popularity and city-level variations
- Evaluate restaurant performance using ratings and revenue metrics
- Produce charts and insights that support business decisions
- Deliver an end-to-end SQL case study suitable for portfolio and interviews

This project simulates the analytical responsibilities of a real data analyst at Zomato/Swiggy.



DATA OVERVIEW

█ Restaurants

- 300 restaurants across Indian cities
- Each with name, city, avg_rating, and veg/non-veg indicator

█ Customers

- 500 customers with realistic names, cities, phone numbers

█ Orders

- 400 orders (regenerated with realistic distribution)
- Includes order_time, total_amount, payment_mode, status

█ Order Items

- 1006 order_items linked to orders
- Each with item_id, price, quantity
- Reflecting real mixed-order behaviour

█ Menu Items

- ~904 menu_items
- 2–4 items per restaurant

Veg/non-veg tagging

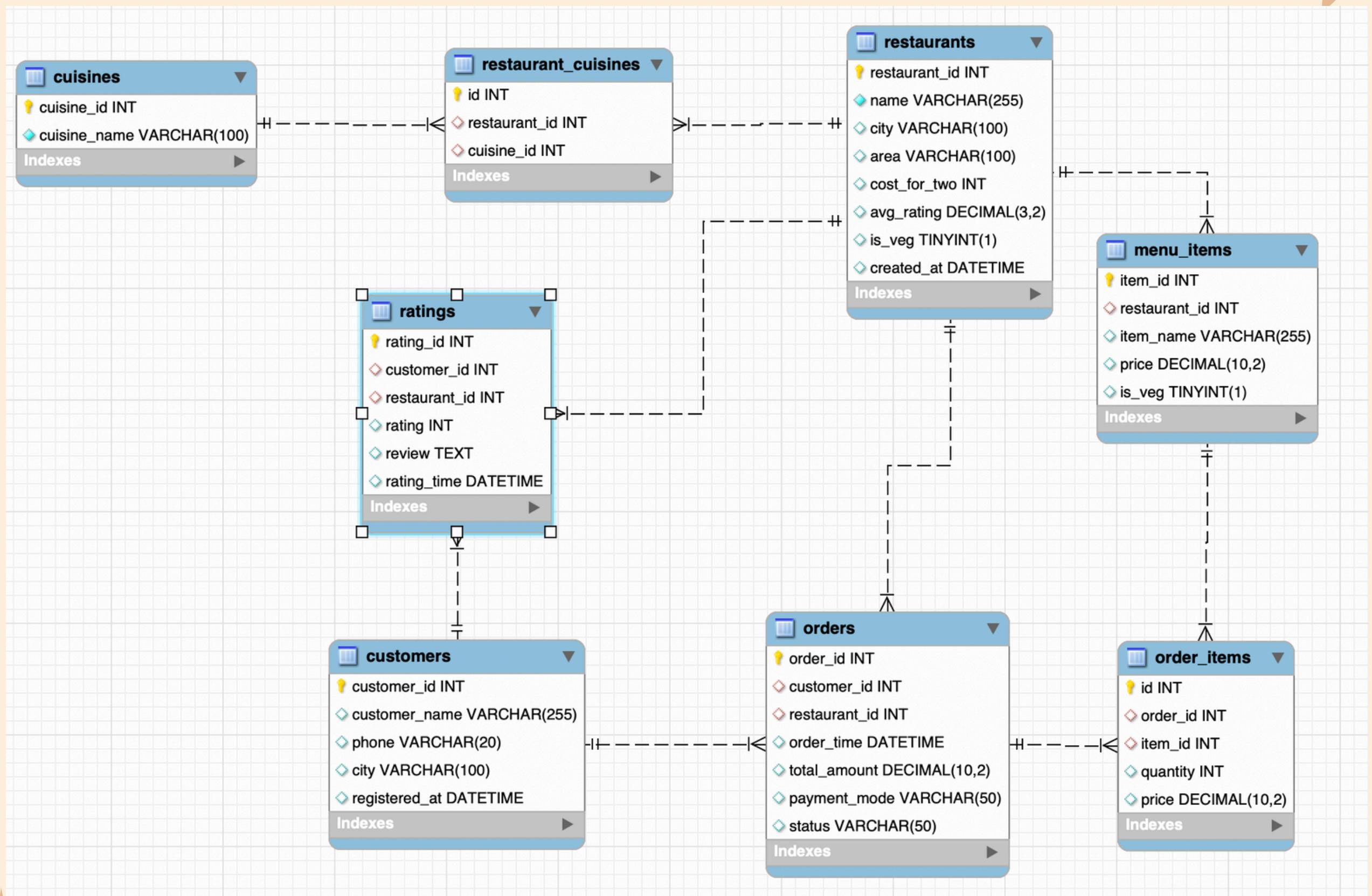
█ Restaurant–Cuisines

- 600 mappings
- Each restaurant mapped to 2 cuisines

█ Ratings

- 350 ratings with review text and timestamps

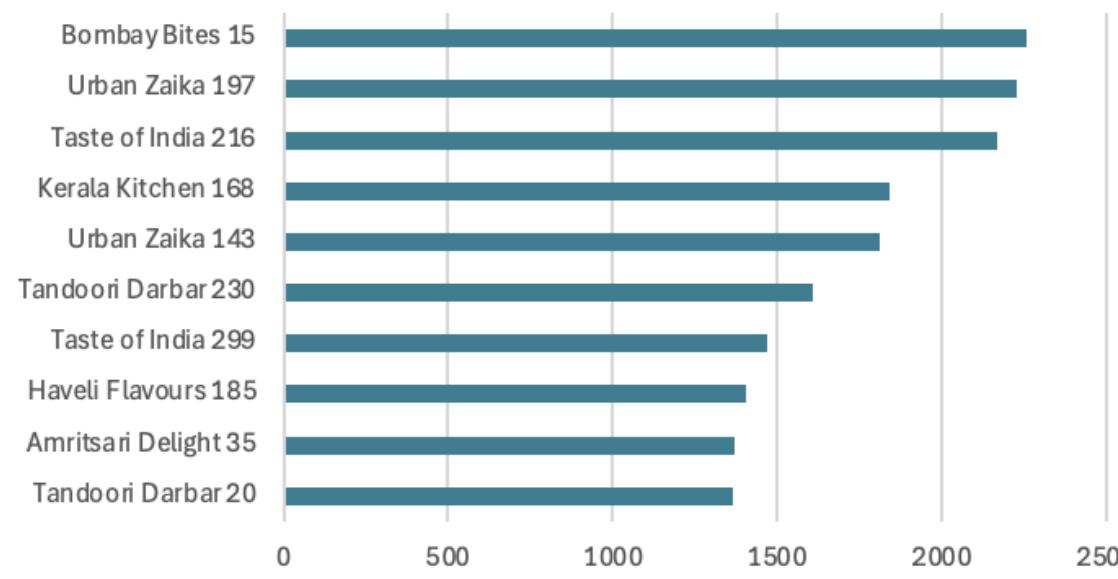
EER Diagram



1. Which restaurants generate the highest revenue?

```
1
2  -- Top 10 revenue-generating restaurants
3 • SELECT
4    r.restaurant_id,
5    r.name AS restaurant_name,
6    r.city,
7    SUM(o.total_amount) AS total_revenue,
8    COUNT(order_id) AS total_orders,
9    ROUND(AVG(r.avg_rating), 2) AS avg_rating  -- AVG() used to comply with GROUP BY; value is already constant per restaurant.
10
11 FROM
12   restaurants AS r
13   JOIN
14     orders AS o ON r.restaurant_id = o.restaurant_id
15 WHERE
16   o.status = 'Delivered' -- only count valid completed orders
17 GROUP BY r.name , r.city , r.restaurant_id
18 ORDER BY total_revenue DESC
19 LIMIT 10;      -- show top 10
20
21
```

Top Revenue Restaurants



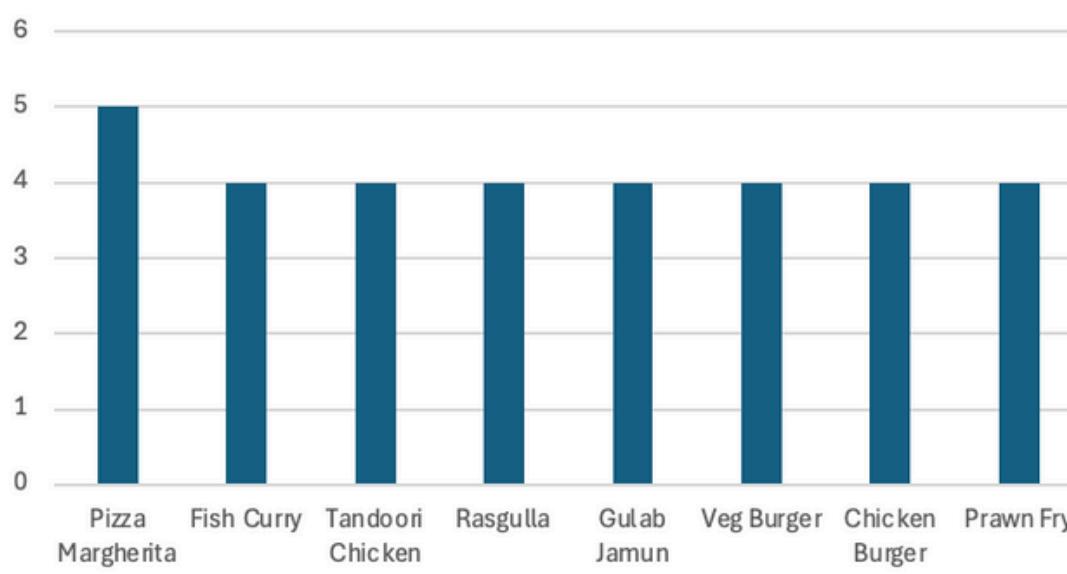
Output-

restaurant_id	restaurant_name	city	total_revenue	total_orders	avg_rating	
15	Bombay Bites 15	Kolkata	2259.00	2	3.54	
197	Urban Zaika 197	Hyderabad	2227.00	2	4.57	
216	Taste of India 216	Hyderabad	2168.00	2	4.68	
168	Kerala Kitchen 168	Chennai	1842.00	2	4.00	
143	Urban Zaika 143	Mumbai	1810.00	2	4.72	
230	Tandoori Darbar 230	Delhi	1608.00	2	3.99	
299	Taste of India 299	Mumbai	1469.00	2	4.78	
185	Haveli Flavours 185	Hyderabad	1405.00	3	4.52	
35	Amritsari Delight 35	Pune	1372.00	2	4.03	
20	Tandoori Darbar 20	Kolkata	1367.00	3	3.95	

2. What are the most ordered menu items across the platform?

```
1
2    -- Most frequently ordered menu items across the platform
3
4 • SELECT
5        m.item_name, -- name of menu item
6        COUNT(o.item_id) AS order_count, -- how many time it appeared in order
7        SUM(o.quantity) AS total_quantity -- total item order
8    FROM
9        menu_items AS m
10       JOIN
11        order_items AS o ON m.item_id = o.item_id
12    GROUP BY m.item_id , m.item_name
13    ORDER BY order_count DESC
14    LIMIT 10; -- top 10 order appeared
15
```

Most Ordered Item

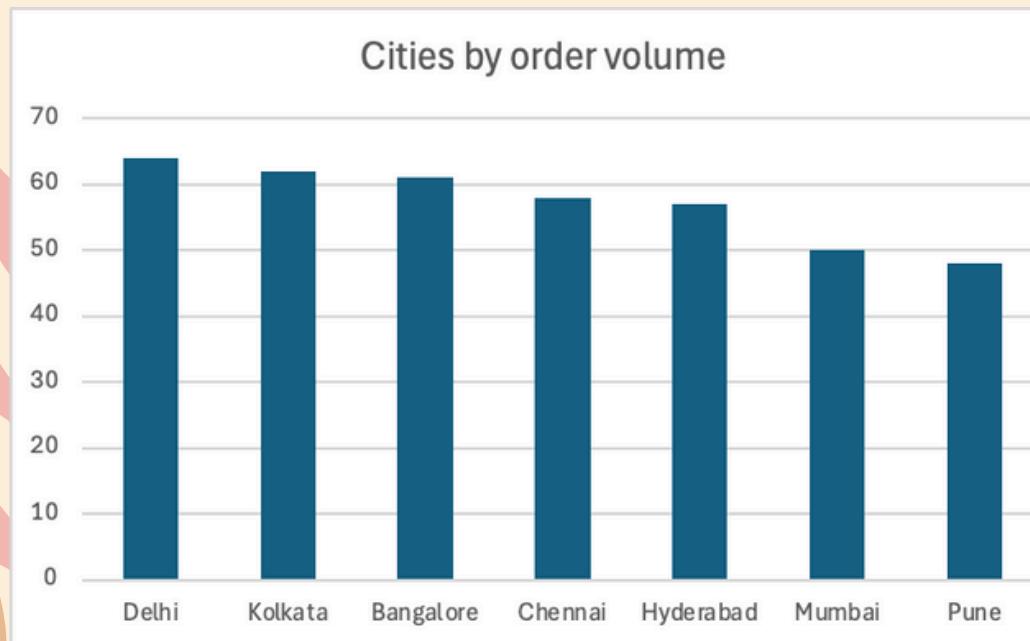


Output-

item_name	order_count	total_quant...
Pizza Margherita	5	12
Rasgulla	4	11
Chicken Burger	4	12
Fish Curry	4	11
Gulab Jamun	4	10
Chicken Burger	4	12
Veg Burger	4	10
Prawn Fry	4	11
Tandoori Chicken	4	10
Fish Curry	4	12

3. Which cities show the highest order volume?

```
1  -- Order volume by city
2
3 * SELECT
4      r.city,
5      COUNT(order_id) AS total_order -- number of order in cities
6  FROM
7      restaurants AS r
8      JOIN
9      orders AS o ON r.restaurant_id = o.restaurant_id
10     GROUP BY r.city -- each row by city
11     ORDER BY total_order DESC; -- highest ordering city first
12
```



Output--

city	total_order
Delhi	64
Kolkata	62
Bangalore	61
Chennai	58
Hyderabad	57
Mumbai	50
Pune	48

4. Who are the top 10 highest-spending customers?

```
1      -- Top customers ranked by total spending
2
3
4 •  SELECT
5      c.customer_id,
6      c.customer_name,
7      SUM(o.total_amount) AS total_spend, -- total money spent
8      COUNT(order_id) AS total_order -- number of order placed
9  FROM
10     customers AS c
11     JOIN
12     orders AS o ON c.customer_id = o.customer_id
13  WHERE
14      o.status = 'Delivered' -- only count successful orders
15  GROUP BY c.customer_id , c.customer_name
16  ORDER BY total_spend DESC
17  LIMIT 10;  -- top 10
18
```



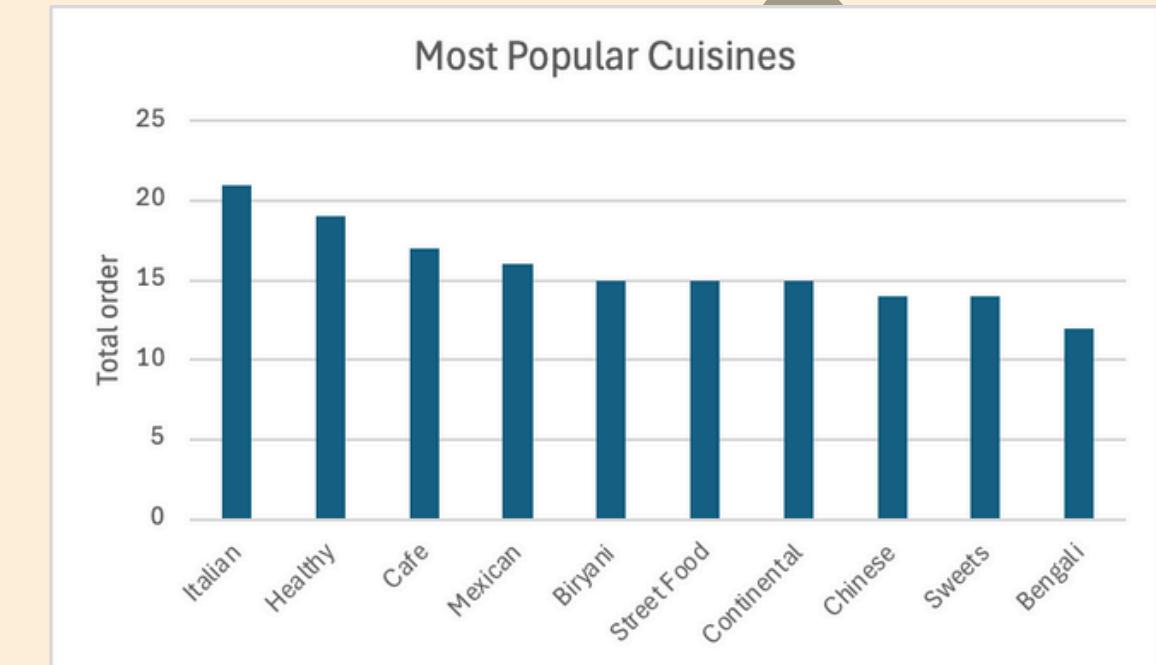
Output-

customer_id	customer_name	total_spe...	total_order
266	Aarav Nair	2027.00	2
176	Krish Reddy	1983.00	2
404	Navya Malhotra	1981.00	2
473	Myra Verma	1923.00	2
381	Myra Singh	1922.00	2
7	Dhruv Verma	1839.00	2
432	Vivaan Jha	1823.00	2
141	Krish Patel	1691.00	2
364	Krish Mehta	1568.00	2
346	Diya Bedi	1493.00	2

5. What cuisines are most popular based on order volume?

```
1
2      -- Most popular cuisines by order volume
3
4 •  SELECT
5          c.cuisine_name, -- type of cuisine
6          COUNT(order_id) AS total_order
7
8      FROM
9          orders AS o
10         JOIN
11             restaurants AS r ON o.restaurant_id = r.restaurant_id
12         JOIN
13             restaurant_cuisines AS rc ON r.restaurant_id = rc.restaurant_id
14         JOIN
15             cuisines AS c ON rc.cuisine_id = c.cuisine_id
16
17     WHERE
18         o.status = 'Delivered' -- only successful orders
19     GROUP BY c.cuisine_name
20     ORDER BY total_order DESC
21     LIMIT 10;    -- top 10
```

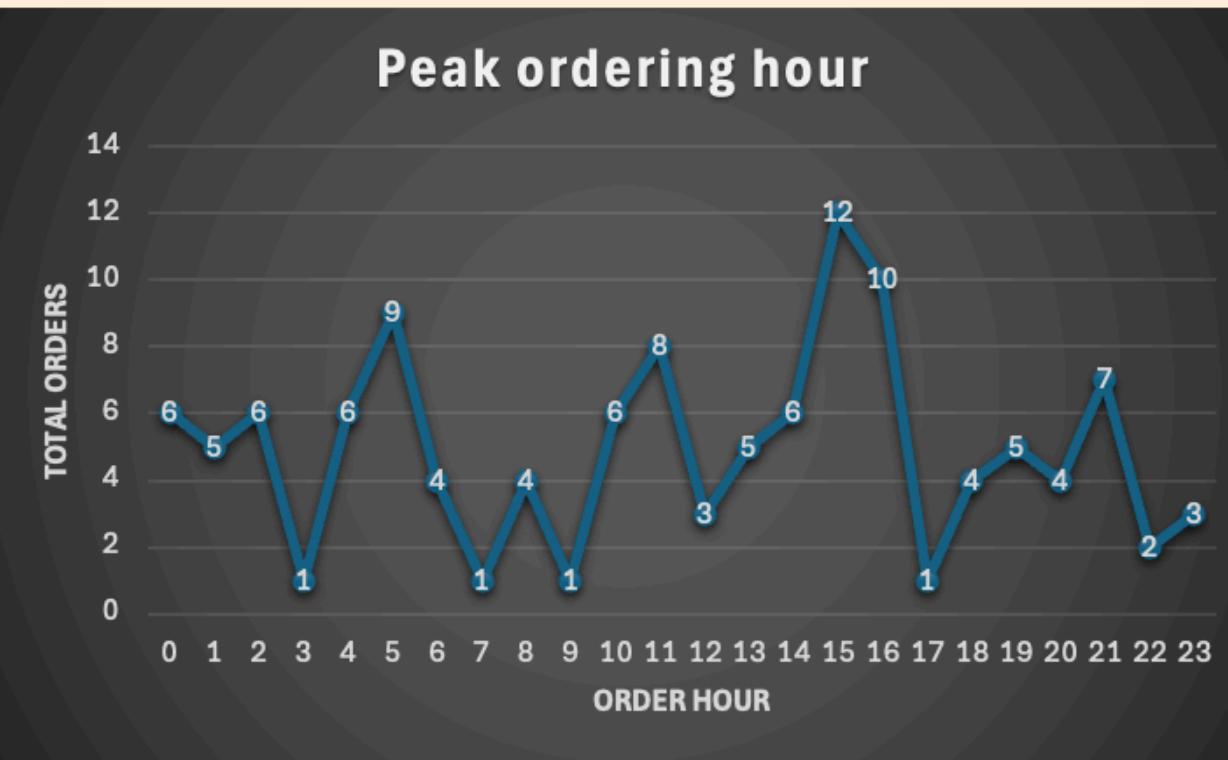
Output-



cuisine_name	total_order
Italian	21
Healthy	19
Cafe	17
Mexican	16
Continental	15
Street Food	15
Biryani	15
Sweets	14
Chinese	14
Bengali	12

6. What hours of the day see the highest number of orders?

```
1
2    -- Peak ordering hours across the platform
3
4 • SELECT
5        HOUR(order_time) AS order_hour, -- hour of the day (0-23)
6        COUNT(order_id) AS total_orders
7 FROM
8     orders
9 WHERE
10       status = 'Delivered' -- only include completed orders
11 GROUP BY order_hour
12 ORDER BY total_orders DESC;
13
```

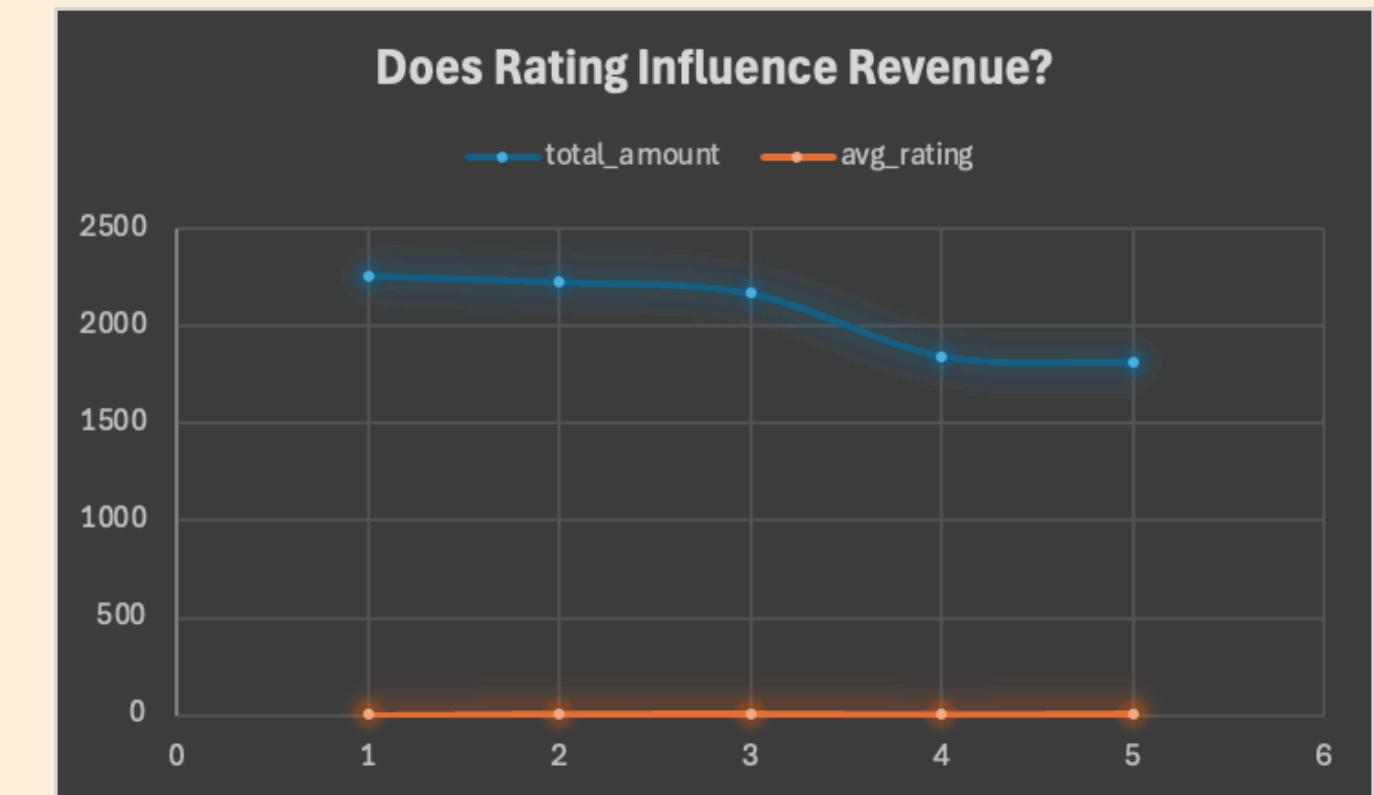


Output-

order_hour	total_orders
15	12
16	10
5	9
11	8
21	7
10	6
4	6
14	6
2	6
0	6
19	5
1	5
13	5
20	4
8	4
6	4
18	4
23	3
12	3
22	2
3	1
17	1
7	1
9	1

7. Do high-rated restaurants earn more revenue than low-rated ones?

```
2  -- Does a higher rating correlate with higher revenue?  
3  
4 • SELECT  
5   r.name, -- restaurant name  
6   CASE  
7     WHEN avg_rating >= 4.5 THEN 'Excellent (4.5 - 5.0)'  
8     WHEN avg_rating >= 4.0 THEN 'Good (4.0 - 4.4)'  
9     WHEN avg_rating >= 3.5 THEN 'Average (3.5 - 3.9)'  
10    ELSE 'Low (< 3.5)'  
11  END rating_band,          -- rating groups  
12  SUM(o.total_amount) AS total_amount,  
13  ROUND(AVG(r.avg_rating), 2) AS avg_rating  
14 FROM  
15   restaurants AS r  
16   JOIN  
17     orders AS o ON r.restaurant_id = o.restaurant_id  
18 WHERE  
19   o.status = 'Delivered'  -- only successful orders  
20 GROUP BY r.name , rating_band  
21 ORDER BY total_amount DESC  
22 LIMIT 5;                -- top 5
```



Output-

name	rating_band	total_amou...	avg_rating
Bombay Bites 15	Average (3.5 - 3.9)	2259.00	3.54
Urban Zaika 197	Excellent (4.5 - 5.0)	2227.00	4.57
Taste of India 216	Excellent (4.5 - 5.0)	2168.00	4.68
Kerala Kitchen 168	Good (4.0 - 4.4)	1842.00	4.00
Urban Zaika 143	Excellent (4.5 - 5.0)	1810.00	4.72

8. Which restaurants have declining ratings over time?

```
1      -- Identify restaurants whose ratings drop over time
2 • WITH rating_trend AS (
3     SELECT
4         rt.restaurant_id,
5             r.name AS restaurant_name,
6             rt.rating,
7             rt.rating_time,
8
9             LAG(rt.rating) OVER (
10                 PARTITION BY rt.restaurant_id
11                 ORDER BY rt.rating_time
12             ) AS prev_rating
13     FROM ratings rt
14     JOIN restaurants r
15         ON rt.restaurant_id = r.restaurant_id
16 )
17
18     SELECT
19         restaurant_id,
20         restaurant_name,
21         COUNT(*) AS decline_count    -- how many times the rating decreased
22     FROM rating_trend
23     WHERE prev_rating IS NOT NULL    -- ignore the first rating of each restaurant
24         AND rating < prev_rating    -- drop detected
25     GROUP BY restaurant_id, restaurant_name
26     ORDER BY decline_count DESC;    -- worst performers first
27
28
```



restaurant_id	restaurant_name	decline_cou...
26	Amritsari Delight 26	2
265	Haveli Flavours 265	2
180	Southern Spice 180	2
59	Kerala Kitchen 59	2
4	Taste of India 4	1
295	Amritsari Delight 295	1
25	Kerala Kitchen 25	1
21	Nawabi Dastarkhwan 21	1
30	Kerala Kitchen 30	1
47	Curry Point 47	1
20	Tandoori Darbar 20	1
72	Punjabi Rasoi 72	1
75	Amritsari Delight 75	1
88	Nawabi Dastarkhwan 88	1
92	Haveli Flavours 92	1
103	Haveli Flavours 103	1
109	Kerala Kitchen 109	1
112	Biryani House 112	1
119	Masala Square 119	1
121	Kerala Kitchen 121	1
123	Masala Square 123	1
125	Southern Spice 125	1
126	Taste of India 126	1
135	Kerala Kitchen 135	1
139	Kerala Kitchen 139	1
141	Urban Zaika 141	1
143	Urban Zaika 143	1
151	Masala Square 151	1
154	Bombay Bites 154	1
165	Royal Kitchen 165	1
172	Tandoori Darbar 172	1
18	Royal Kitchen 18	1
183	Southern Spice 183	1
190	Tandoori Darbar 190	1
204	Nawabi Dastarkhwan 2...	1
209	Spice Junction 209	1
210	Nawabi Dastarkhwan 2...	1
213	Haveli Flavours 213	1
218	Bombay Bites 218	1
226	Royal Kitchen 226	1
236	Tandoori Darbar 236	1
253	Biryani House 253	1
13	Tandoori Darbar 13	1
266	Spice Junction 266	1

Output-

9. Which customers show repeat behaviour (loyal customers)?

```
1
2      -- Identify loyal customers based on repeat orders
3
4 •  SELECT
5      c.customer_id,
6      c.customer_name,
7      COUNT(o.order_id) AS total_order -- number of orders delivered
8  FROM
9      customers AS c
10     JOIN
11         orders AS o ON c.customer_id = o.customer_id
12  WHERE
13      o.status = 'Delivered'
14  GROUP BY c.customer_id , c.customer_name
15  HAVING COUNT(o.order_id) >= 2 -- threshold for loyalty
16  ORDER BY total_order DESC; -- most loyal customer first
17
```

Output-

customer_id	customer_name	total_order
346	Diya Bedi	2
7	Dhruv Verma	2
478	Aarya Rathod	2
266	Aarav Nair	2
141	Krish Patel	2
387	Anaya Jha	2
375	Riya Rathod	2
404	Navya Malhotra	2
364	Krish Mehta	2
176	Krish Reddy	2
491	Arjun Verma	2
381	Myra Singh	2
457	Anaya Desai	2
473	Myra Verma	2
432	Vivaan Jha	2

10. Which restaurants have the highest average order value (AOV)?

```
1
2      -- Restaurants ranked by highest Average Order Value (AOV)
3
4 •  SELECT
5
6      r.name AS restaurant_name,
7      r.city,
8      SUM(o.total_amount) AS total_revenue,
9      COUNT(o.order_id) AS total_orders,
10     ROUND(SUM(o.total_amount) / COUNT(o.order_id),
11           2) AS avg_order_value -- AOV
12
13    FROM
14        restaurants AS r
15        JOIN
16        orders AS o ON r.restaurant_id = o.restaurant_id
17
18    WHERE
19        o.status = 'Delivered'
20    GROUP BY r.name , r.city
21    HAVING total_orders > 0
22    ORDER BY avg_order_value DESC;
```

Output-

restaurant_name	city	total_revenue	total_orders	avg_order_value
Urban Zaika 39	Kolkata	1192.00	1	1192.00
Curry Point 158	Kolkata	1187.00	1	1187.00
Amritsari Delight 120	Kolkata	1186.00	1	1186.00
Royal Kitchen 270	Hyderabad	1176.00	1	1176.00
Spice Junction 16	Chennai	1170.00	1	1170.00
Amritsari Delight 176	Kolkata	1163.00	1	1163.00
Biryani House 53	Mumbai	1155.00	1	1155.00
Bombay Bites 15	Kolkata	2259.00	2	1129.50
Taste of India 8	Bangalore	1129.00	1	1129.00
Tandoori Darbar 169	Delhi	1119.00	1	1119.00
Amritsari Delight 298	Delhi	1116.00	1	1116.00
Urban Zaika 197	Hyderabad	2227.00	2	1113.50
Kerala Kitchen 107	Kolkata	1102.00	1	1102.00
Punjabi Rasoi 56	Chennai	1102.00	1	1102.00
Taste of India 192	Chennai	1100.00	1	1100.00
Taste of India 216	Hyderabad	2168.00	2	1084.00
Haveli Flavours 178	Pune	1073.00	1	1073.00
Bombay Bites 296	Hyderabad	1070.00	1	1070.00
Masala Square 150	Pune	1054.00	1	1054.00
Tandoori Darbar 162	Bangalore	1051.00	1	1051.00
Tandoori Darbar 80	Pune	1048.00	1	1048.00
Biryani House 244	Bangalore	1041.00	1	1041.00
Spice Junction 28	Bangalore	1038.00	1	1038.00
Southern Spice 238	Bangalore	1013.00	1	1013.00
Nawabi Dastarkhw...	Mumbai	1013.00	1	1013.00
Southern Spice 258	Bangalore	950.00	1	950.00
Amritsari Delight 26	Bangalore	944.00	1	944.00
Masala Square 62	Pune	943.00	1	943.00
Bombay Bites 34	Delhi	932.00	1	932.00
Haveli Flavours 7	Pune	927.00	1	927.00
Kerala Kitchen 168	Chennai	1842.00	2	921.00
Urban Zaika 143	Mumbai	1810.00	2	905.00
Urban Zaika 248	Chennai	896.00	1	896.00
Southern Spice 40	Chennai	888.00	1	888.00
Bombay Bites 292	Hyderabad	883.00	1	883.00
Spice Junction 51	Hyderabad	868.00	1	868.00
Taste of India 4	Delhi	834.00	1	834.00
Tandoori Darbar 117	Bangalore	818.00	1	818.00
Punjabi Rasoi 193	Delhi	816.00	1	816.00
Tandoori Darbar 230	Delhi	1608.00	2	804.00
Tandoori Darbar 87	Mumbai	802.00	1	802.00
Curry Point 63	Kolkata	760.00	1	760.00
Royal Kitchen 165	Kolkata	753.00	1	753.00
Punjabi Rasoi 89	Hyderabad	752.00	1	752.00
Royal Kitchen 84	Mumbai	736.00	1	736.00



FINAL RECOMMENDATIONS

1. Strengthen Partnerships With High-Performing Restaurants

- Top revenue restaurants maintain strong order flow despite the small dataset.
- These restaurants should be prioritized for promotional partnerships, visibility boosts, and featured listings.

2. Expand Supply for High-Demand Cuisines

- Certain cuisines consistently dominate delivered orders (based on your Q5).
- Onboard more restaurants offering these cuisines to reduce competition load and improve availability.

3. Improve Performance of Low-Rated but High-Volume Restaurants

- Some restaurants show high order volume but weak or declining ratings (Q7 & Q8).
- Recommend quality audits, faster delivery coordination, and menu improvement strategies.

4. Optimize Delivery Fleet for Peak Ordering Hours

- Ordering peaks within specific hours (Q6).
- Allocate the highest delivery capacity between those hours to reduce delays and cancellations.

5. Build Loyalty Programs for Repeat Customers

- A segment of customers shows repeat purchase behavior (Q9).
- Personalized offers, loyalty points, or re-engagement campaigns can increase their lifetime value.

6. Promote High AOV Restaurants Strategically

- High AOV restaurants contribute significant revenue per order (Q10).
- Recommend targeted premium campaigns or bundled offers to maintain customer conversion.

CONCLUSION

This SQL project reconstructed a complete food-delivery ecosystem using eight interconnected tables, reflecting real operational entities such as restaurants, customers, orders, menu items, cuisines, and ratings. Through structured querying, KPI extraction, and visual analysis, the project uncovered meaningful insights into restaurant performance, customer behavior, cuisine preferences, rating dynamics, and order-time patterns.

The analysis reveals:

- Clear revenue and order leaders among restaurants
- Strong demand patterns centered around specific cuisines
- Predictable peak-hour ordering behavior
- A relationship between restaurant ratings and revenue
- Distinct segments of loyal, high-value customers
- AOV variation helping identify premium vs. volume-driven restaurants

These insights lead to actionable recommendations for strengthening restaurant partnerships, improving customer retention, optimizing delivery operations, and enhancing overall marketplace performance.

The project demonstrates the full workflow of a data analyst – from data modeling and SQL querying to insight generation and business-oriented interpretation – making it a strong showcase of analytical and technical skill.