RESTAURANT SALES & ORDER ANALYSIS DASHBOARD

(Metabase + PostgreSQL)

Project Overview and Objective

This project presents a comprehensive analytical overview of the restaurant's sales and order patterns using data hosted in **Supabase** and visualized through **Metabase**, powered by **PostgreSQL queries**. The aim is to transform raw transactional data into actionable insights that inform key business decisions across sales performance, product performance and time based insights for better revenue optimization for future.

The analysis focuses on breaking down and understanding **what sells, when it sells, and how it contributes** to the restaurant's overall performance. The dashboard provides a multi-dimensional view of sales data, uncovering trends across **time**, **product categories**, **price segments**, **and customer ordering patterns**.

Key objectives of the project include:

- Analyzing the **breadth of the restaurant menu**, including unique food items and their categorization.
- Tracking revenue and order volume at both product and category levels.
- Identifying **top-performing and underperforming items**, both in terms of order frequency and revenue generation.
- Exploring temporal sales trends, such as daily and hourly order patterns, running totals, and moving averages.
- Understanding the **contribution of different price segments** to overall revenue.
- Highlighting customer footfall patterns and order trends across time slots (morning, noon, evening, night).
- Establishing a basis for ranking and forecasting, including future sales estimations and performance comparisons.

By leveraging data-driven insights, this analysis equips restaurant stakeholders a deeper understanding of restaurant performance through real-time, data-backed insights. It serves as a strategic tool for monitoring operational trends, enhancing product offerings and supporting evidence-based decision-making across marketing, inventory, resource and menu planning efforts.





Summary

Time Based Insights

Product Performance

159,218
TOTAL SALES

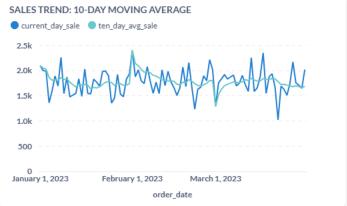
53,073
MONTHLY AVERAGE SALE

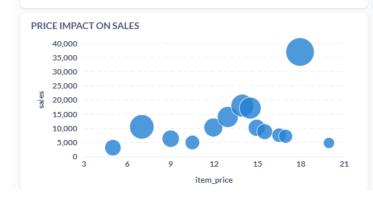
1,769
AVERAGE DAILY SALES

MoM Sales Growth

54,611 March 1, 2023 ↑ 7.52% • vs. February 1, 2023









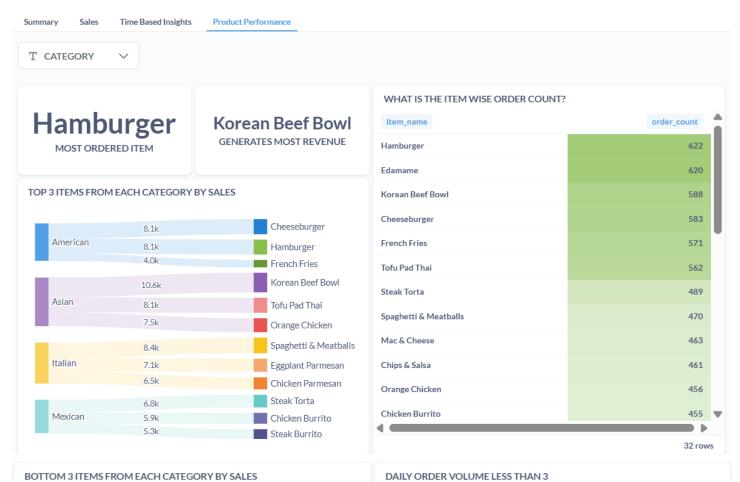
current_month	previous_month	percentage_change
53,817		
50,790	53,817	-5.62
54,611	50,790	7.52

CUMULATIVE DAILY R	EVENUE	
order_date	current_day_sale	running_total_sale
January 1, 2023	2,092	2,092
January 2, 2023	1,995	4,087
January 3, 2023	1,984	6,071
January 4, 2023	1,357	7,428
January 5, 2023	1,590	9,018
January 6, 2023	1,888	10,906
January 7, 2023	1,691	12,597
January 8, 2023	2,258	14,855
1		
		90 rows

RESTAURANT DASHBOARD

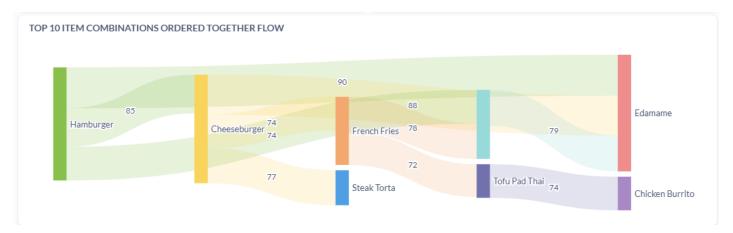
day_name	10 AM	11 AM	12 PM	1PM	2 PM	3 PM	4PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM
Sunday	0	93	268	312	158	127	125	209	178	130	105	44	
Monday	0	95	300	244	108	94	142	220	219	202	167	143	
Tuesday	0	65	150	155	135	126	159	172	206	222	184	134	
Wednesday	0	84	146	149	142	119	187	186	168	125	117	74	
Thursday	3	112	257	231	134	102	162	202	185	135	69	67	
Friday	0	85	284	277	155	101	166	201	151	148	139	73	
Saturday	2	96	267	207	136	82	113	180	200	123	108	73	





OTTOM 3 ITEMS FI	ROM EACH CATEGOR	Y BY SALES
	3.2k	Mac & Cheese
American	2.5k	Veggie Burger
	2.3k	Hot Dog
	4.2k	California Roll
Asian	3.1k	Edamame
	1.8k	Potstickers
	4.8k	Shrimp Scampi
Italian	3.6k	Fettuccine Alfredo
	3.2k	Cheese Lasagna
	2.4k	Cheese Quesadillas
Mexican	2.1k	Chips & Guacamole
	1.5k	Chicken Tacos

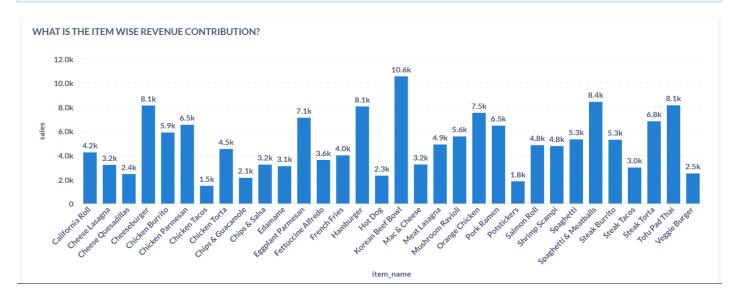
menu_item_id	item_name	order_count	order_per_day
103	Hot Dog	257	2.86
104	Veggie Burger	238	2.64
114	Potstickers	205	2.28
115	Chicken Tacos	123	1.37
116	Steak Tacos	214	2.38
121	Cheese Quesadillas	233	2.59
123	Chips & Guacamole	237	2.63
126	Fettuccine Alfredo	249	2.77
128	Cheese Lasagna	207	2.3
130	Shrimp Scampi	239	2.66
			10 rows



ANK ITEMS BAS	ED ON REVENUE			TOP 10 ITEMS OR	DERED TOGETHER	
menu_item_id	item_name	sales	item_rank	item_1	item_2	times_ordered_together
109	Korean Beef Bowl	10,555	1	Hamburger	Edamame	90
125	Spaghetti & Meatballs	8,437	2	Cheeseburger	Edamame	88
108	Tofu Pad Thai	8,149	3	Hamburger	Cheeseburger	85
102	Cheeseburger	8,133	4	Korean Beef Bowl	Edamame	79
101	Hamburger	8,055	5	French Fries	Korean Beef Bowl	78
107	Orange Chicken	7,524	6	Cheeseburger	Steak Torta	77
132	Eggplant Parmesan	7,119	7	Hamburger	Korean Beef Bowl	74
120	Steak Torta	6,822	8	Tofu Pad Thai	Chicken Burrito	74
131	Chicken Parmesan	6,534	9	Cheeseburger	French Fries	74
110	Pork Ramen	6,462	10	French Fries	Tofu Pad Thai	72
117	Chicken Burrito	5,892	11	,		
			32 rows			10 rov

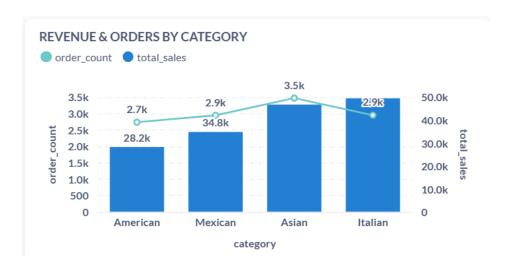
ITEM WISE REVENUE CONTRIBUTION

```
SELECT
    menu_items.item_name,
    ROUND(SUM(menu_items.price),0) AS TOTAL_SALES
FROM menu_items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY menu_items.item_name;
```



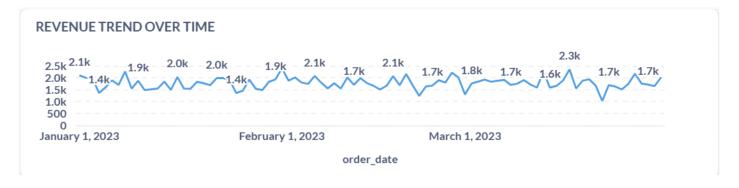
REVENUE AND ORDERS BY CATEGORY

SELECT
 menu_items.category,
 COUNT(order_details.order_id) AS ORDER_COUNT,
 ROUND(SUM(menu_items.price),0) AS TOTAL_SALES
FROM menu_items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1;



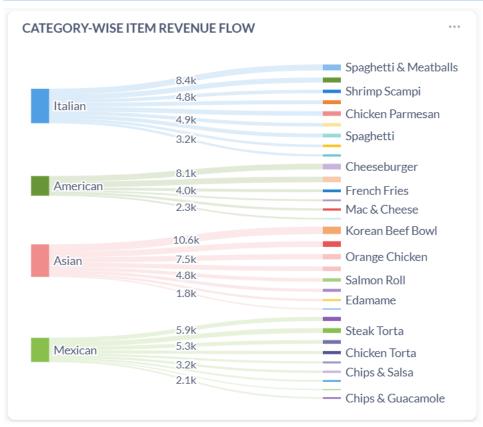
REVENUE TREND OVER TIME

```
SELECT
    order_details.order_date,
    ROUND(SUM(menu_items.price),0) AS TOTAL_SALES
FROM order_details
LEFT JOIN menu_items ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1;
```



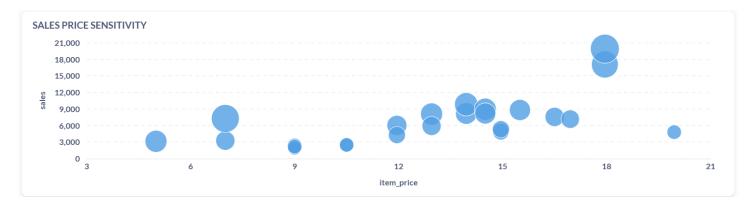
CATEGORY-WISE ITEM REVENUE FLOW

```
SELECT
    menu_items.category,
    menu_items.item_name,
    ROUND(SUM(menu_items.price),0) AS TOTAL_SALES
FROM menu_items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1, 2;
```



SALES PRICE SENSITIVITY

```
SELECT
    menu_items.price AS ITEM_PRICE,
    COUNT(order_details.order_id) AS ORDER_COUNT,
    ROUND(SUM(menu_items.price),0) AS SALES
FROM menu_items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1
ORDER BY 1;
```



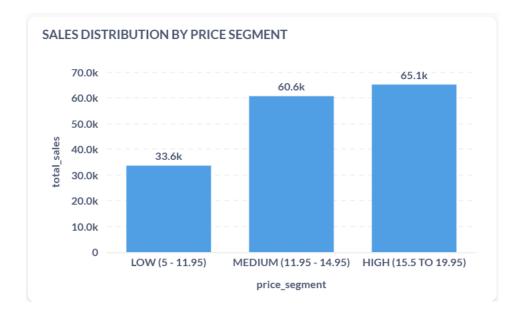
MONTHLY SALES ACCUMULATION

SELECT
 TO_CHAR(order_details.order_date,'MONTH') as MONTH_NAME,
 ROUND(SUM(menu_items.price),0) AS TOTAL_SALES
FROM order_details
LEFT JOIN menu_items ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1, EXTRACT(MONTH FROM order_details.order_date)
ORDER BY EXTRACT(MONTH FROM order_details.order_date);



SALES DISTRIBUTION BY PRICE SEGMENT

```
WITH PRICE SEGMMENTATION AS (
SELECT
    menu item id,
    item name,
    price,
    NTILE(3) OVER (ORDER BY price ASC) AS price_bucket
FROM menu items
ORDER BY price ASC
)
SELECT
     CASE
           WHEN price bucket = 1 THEN 'LOW (5 - 11.95)'
           WHEN price bucket = 2 THEN 'MEDIUM (11.95 - 14.95)'
           WHEN price bucket = 3 THEN 'HIGH (15.5 TO 19.95)'
     END AS PRICE_SEGMENT,
     ROUND(SUM(menu items.price),0) AS TOTAL SALES
FROM order details
JOIN menu_items ON order_details.item_id = menu_items.menu_item_id
JOIN PRICE SEGMMENTATION ON menu items.menu item id =
PRICE SEGMMENTATION.menu item id
GROUP BY PRICE SEGMENT, price bucket
ORDER BY price bucket;
```



PRICE IMPACT ON SALES

```
SELECT
    menu_items.price AS ITEM_PRICE,
    COUNT(order_details.order_id) AS ORDER_COUNT,
    ROUND(SUM(menu_items.price),0) AS SALES
FROM menu_items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1
ORDER BY 1;
```



SALES TREND: 10-DAY MOVING AVERAGE

```
SELECT
    order_details.order_date,
    ROUND(SUM(menu_items.price),0) AS CURRENT_DAY_SALE,
    AVG(ROUND(SUM(menu_items.price),0)) OVER (PARTITION BY EXTRACT(MONTH FROM order_date) ORDER BY order_details.order_date
    ROWS BETWEEN 9 PRECEDING AND CURRENT ROW
    ) AS TEN_DAY_AVG_SALE
FROM order_details
LEFT JOIN menu_items ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1
ORDER BY order_details.order_date;
```



CUMULATIVE DAILY REVENUE

```
SELECT
    order_details.order_date,
    ROUND(SUM(menu_items.price),0) AS CURRENT_DAY_SALE,
    SUM(ROUND(SUM(menu_items.price),0)) OVER (PARTITION BY EXTRACT(MONTH FROM order_date) ORDER BY order_details.order_date
    ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW
    ) AS RUNNING_TOTAL_SALE
FROM order_details
LEFT JOIN menu_items ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1
ORDER BY order_details.order_date;
```



ORDER TREND BY HOUR AND DAY

```
SELECT
    TO CHAR(order date, 'Day') AS DAY NAME,
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 10) AS "10 AM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 11) AS "11 AM'
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 12) AS "12 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 13) AS "1 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 14) AS "2 PM"
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 15) AS "3 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 16) AS "4 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 17) AS "5 PM"
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 18) AS "6 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 19) AS "7 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 20) AS "8 PM"
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 21) AS "9 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 22) AS "10 PM",
    COUNT(*) FILTER (WHERE EXTRACT(HOUR FROM order time) = 23) AS "11 PM"
FROM order details
GROUP BY day name, EXTRACT(DOW FROM order date)
ORDER BY EXTRACT(DOW FROM order date);
```

HOURLY ORE	DER PATTERI	N											
day_name	10 AM	11 AM	12 PM	1PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM
Sunday	0	93	268	312	158	127	125	209	178	130	105	44	25
Monday	0	95	300	244	108	94	142	220	219	202	167	143	76
Tuesday	0	65	150	155	135	126	159	172	206	222	184	134	71
Wednesday	0	84	146	149	142	119	187	186	168	125	117	74	34
Thursday	3	112	257	231	134	102	162	202	185	135	69	67	30
Friday	0	85	284	277	155	101	166	201	151	148	139	73	42
Saturday	2	96	267	207	136	82	113	180	200	123	108	73	31

ORDER GENERATION ACROSS DIFFERENT TIME SLOTS

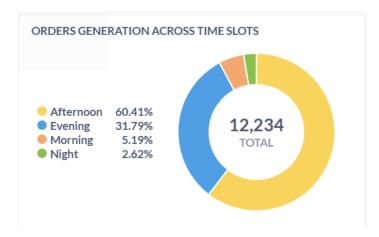
```
CASE

WHEN EXTRACT(HOUR FROM order_time) BETWEEN 6 AND 11 THEN 'Morning'
WHEN EXTRACT(HOUR FROM order_time) BETWEEN 12 AND 17 THEN

'Afternoon'

WHEN EXTRACT(HOUR FROM order_time) BETWEEN 18 AND 21 THEN 'Evening'
ELSE 'Night'
END AS TIME_SLOT,
COUNT(*) AS ORDER_COUNT

FROM order_details
GROUP BY TIME SLOT:
```

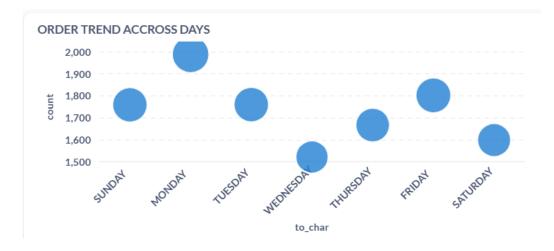


HOURLY ORDER TREND



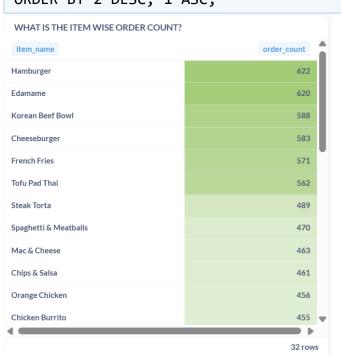
ORDER TREND ACROSS DAYS

```
SELECT
    TO_CHAR(order_time, 'HH12 AM') AS hour_label,
    COUNT(*) AS order_count
FROM order_details
GROUP BY hour_label
ORDER BY MIN(EXTRACT(HOUR FROM order_time));
```



ITEM WISE ORDER COUNT

SELECT
 menu_items.item_name,
 COUNT(order_details.item_id) AS ORDER_COUNT
FROM menu_items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1
ORDER BY 2 DESC, 1 ASC;

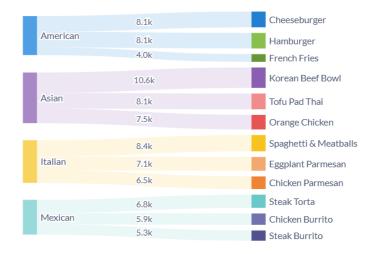




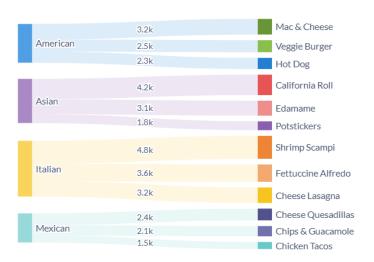
TOP 3 AND BOTTOM 3 ITEMS FROM EACH CATEGORY BY SALES

```
WITH ITEM RANKING AS (
SELECT
     menu items.category,
     menu items.item name,
     ROUND(SUM(menu_items.price),0) AS TOTAL_SALES,
     ROW NUMBER() OVER(PARTITION BY menu items.category ORDER BY
ROUND(SUM(menu items.price),0) DESC) AS ITEM RANK -- JUST USE ASC FOR BOTTOM 3
ITEMS
FROM menu items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1,2
)
SELECT
     category,
     item_name,
     TOTAL SALES
FROM ITEM RANKING
WHERE ITEM RANK <=3;
```

TOP 3 ITEMS FROM EACH CATEGORY BY SALES



BOTTOM 3 ITEMS FROM EACH CATEGORY BY SALES



RANK ITEMS BASED ON SALES (TOP 5 ITEMS HIGHLIGHTED)

```
SELECT
    menu_items.menu_item_id,
    menu_items.item_name,
    ROUND(SUM(menu_items.price),0) AS SALES,
    RANK() OVER (ORDER BY ROUND(SUM(menu_items.price),0) DESC) AS ITEM_RANK
FROM menu_items
LEFT JOIN order_details ON order_details.item_id = menu_items.menu_item_id
GROUP BY 1
ORDER BY 4 ASC;
```

RANK ITEMS BASE	D ON REVENUE		
menu_item_id	item_name	sales	item_rank
109	Korean Beef Bowl	10,555	1
125	Spaghetti & Meatballs	8,437	2
108	Tofu Pad Thai	8,149	3
102	Cheeseburger	8,133	4
101	Hamburger	8,055	5
107	Orange Chicken	7,524	6
132	Eggplant Parmesan	7,119	7
120	Steak Torta	6,822	8
131	Chicken Parmesan	6,534	9
110	Pork Ramen	6,462	10
117	Chicken Burrito	5,892	11
129	Mushroom Ravioli	5,565	12
124	Spaghetti	5,322	13
118	Steak Burrito	5,292	14
127	Meat Lasagna	4,900	15
112	Salmon Roll	4,844	16
130	Shrimp Scampi	4,768	17
119	Chicken Torta	4,529	18
111	California Roll	4,242	19
106	French Fries	3,997	20
126	Fettuccine Alfredo	3,611	21

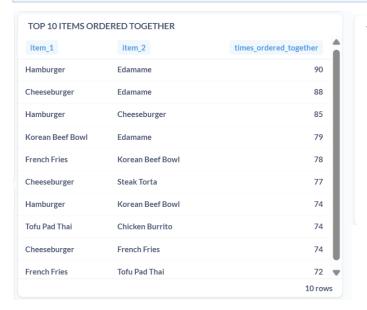
LIST ITEMS WITH ORDER VOLUME LESS THAN 3 PER DAY

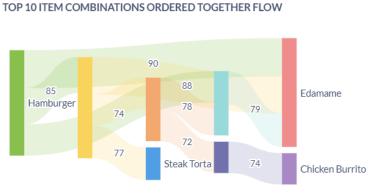
```
WITH DAY_COUNT AS (
SELECT
     COUNT(DISTINCT order date) AS number of days
FROM order details
)
SELECT
     menu items.menu item id,
     menu items.item name,
     COUNT(order_details.item_id) AS ORDER_COUNT,
     COUNT (order details.item id):: DECIMAL / number of dayS AS ORDER PER DAY
FROM menu items
LEFT JOIN order details ON order detailS.item id = menu items.menu item id
CROSS JOIN DAY COUNT
GROUP BY menu items.menu item id, DAY COUNT.number of days
HAVING COUNT(order details.item id):: DECIMAL / number of dayS <3
ORDER BY 1 ASC;
```

DAILY ORDER VO	OLUME LESS THAN 3		
menu_item_id	item_name	order_count	order_per_day
103	Hot Dog	257	2.86
104	Veggie Burger	238	2.64
114	Potstickers	205	2.28
115	Chicken Tacos	123	1.37
116	Steak Tacos	214	2.38
121	Cheese Quesadillas	233	2.59
123	Chips & Guacamole	237	2.63
126	Fettuccine Alfredo	249	2.77
128	Cheese Lasagna	207	2.3
130	Shrimp Scampi	239	2.66

TOP 10 ITEMS ORDERED TOGETHER

```
SELECT
    mi1.item_name AS item_1,
    mi2.item_name AS item_2,
    COUNT(*) AS times_ordered_together
FROM order_details od1
JOIN order_details od2
    ON od1.order_id = od2.order_id
    AND od1.item_id < od2.item_id -- avoids duplicates and self-pairs
JOIN menu_items mi1 ON od1.item_id = mi1.menu_item_id
JOIN menu_items mi2 ON od2.item_id = mi2.menu_item_id
GROUP BY item_1, item_2
ORDER BY times_ordered_together DESC
LIMIT 10;</pre>
```







Item & Category Performance

- There is a clear breakdown of sales by both **item and category**, identifying which products contribute the most to revenue.
- Certain items are ordered significantly more often than others, indicating **customer preference concentration**.
- Categories and items have been effectively ranked, and **Top 3/Bottom 3 items per category** provide actionable granularity.

Revenue Trends Over Time

- The **revenue trend line over time** highlights seasonal or daily fluctuations, useful for identifying **peak** days and slow periods.
- The **10-day moving average** and **daily running total** help smooth out variability and highlight sustained performance trends.

Price Sensitivity & Segment Analysis

- The segmentation of menu items into **Low**, **Medium**, and **High** price buckets reveals that revenue contribution varies by pricing tier.
- Sales by price segment helps identify which price range is performing best critical for menu pricing strategy.

Time-Based Ordering Patterns

- Hourly and daily breakdowns show strong trends in order volumes by time of day and day of the week.
- Most orders seem to cluster in **specific time slots** (e.g., afternoon/evening), informing optimal staffing and promotion timings.
- Time slot segmentation (morning, afternoon, evening, night) gives a useful view of customer dining behavior.

Sales Volume Insights

- Certain items show an average daily order frequency below 3, which may indicate low interest or lack
 of visibility.
- Top 10 item combinations ordered together provide opportunities for bundled promotions.

RECOMMENDATIONS

Optimize Menu Based on Performance

- Consider revising or removing underperforming items (e.g., <3 daily orders).
- Increase promotion or visibility of high-revenue and frequently ordered items.
- Introduce **combo offers** for top item pairs frequently ordered together.

Leverage Time-Based Promotions

- Utilize peak time slots (identified by hour and day) for targeted promotions, discounts, or upselling strategies.
- For slower slots (e.g., morning or late night), explore **time-limited deals** or special menu items to increase traffic.

Refine Pricing Strategy

- Use insights from **price segmentation** to review pricing tiers optimize for segments that generate the most revenue.
- Consider testing price adjustments for medium-performing segments to improve margins or volume.

Support Forecasting and Inventory Planning

- Use **running total and moving average trends** for planning **inventory**, **staffing**, and **procurement** more efficiently.
- Build on the available time-series data to develop a **next-month sales forecast** for operational readiness.

Enable Ongoing Monitoring

- Integrate this dashboard into routine decision-making.
- Set alerts or thresholds in Metabase for sudden spikes/drops in order volume, daily revenue, or low-performing items.