

# PIZZA SALES REPORT - SQL AND TABLEAU

- MELVIN SUJAY

# INTRODUCTION

## Business Problem / Objective:

- To provide a clear and interactive dashboard for tracking pizza sales, order patterns, and performance trends across different time periods and product categories.
- To identify top-performing and underperforming pizza products, peak business hours, and customer preferences by category and size.
- To support data-driven decision-making for menu optimization, staffing efficiency, and inventory management through visual analytics.

## Business Challenges:

- Lack of visibility into sales performance across different hours, days, and weeks
- Difficulty in identifying top-performing pizzas and underperforming menu items
- Need to understand customer preferences by pizza category, size, and specific products
- Requirement to track hourly and weekly sales patterns for operational efficiency
- Need to optimize menu offerings and staffing based on demand patterns

# DATA PREPARATION

## Data Import & Setup:

- Imported CSV file (pizza\_sales.csv) into Microsoft SQL Server Management Studio
- Created database 'Pizza\_DB' and imported flat file with 48,620 transaction records
- Optimized data types: Changed NVARCHAR(50) to VARCHAR(50), pizza\_ingredients to VARCHAR(MAX), and pizza\_id/order\_id from SMALLINT to INT

## Data Validation:

- Executed SELECT \* FROM pizza\_sales query to verify data integrity
- Validated all columns: pizza\_id, order\_id, pizza\_name\_id, quantity, order\_date, order\_time, unit\_price, total\_price, pizza\_size, pizza\_category, pizza\_ingredients, pizza\_name

## Data Export for Tableau:

- Exported SQL data to Excel format for Tableau Public compatibility
- Maintained data structure and relationships for seamless visualization

**Data set data period:** January 1, 2015 - December 31, 2015 (1 full year, 365 days)

pizza_id	order_id	pizza_name_id	quantity	order_date	order_time	unit_price	total_price	pizza_size	pizza_category	pizza_ingredients	pizza_name
1	1	hawaiian_m	1	01-01-2015	11:38:36	13.25	13.25	M	Classic	Sliced Ham, Pineapple, Mozzarella Cheese	The Hawaiian Pizza
2	2	classic_dlx_m	1	01-01-2015	11:57:40	16	16	M	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon	The Classic Deluxe Pizza
3	2	five_cheese_l	1	01-01-2015	11:57:40	18.5	18.5	L	Veggie	Mozzarella Cheese, Provolone Cheese, Smoked Gouda Cheese, Ro	The Five Cheese Pizza
4	2	ital_supr_l	1	01-01-2015	11:57:40	20.75	20.75	L	Supreme	Calabrese Salami, Capocollo, Tomatoes, Red Onions, Green Olives	The Italian Supreme Pizza
5	2	mexicana_m	1	01-01-2015	11:57:40	16	16	M	Veggie	Tomatoes, Red Peppers, Jalapeno Peppers, Red Onions, Cilantro, C	The Mexicana Pizza
6	2	thai_ckn_l	1	01-01-2015	11:57:40	20.75	20.75	L	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sau	The Thai Chicken Pizza

# KPI's REQUIREMENT

## SQL QUERIES:

We need to analyze key indicators for our pizza sales data to gain insights into our business performance. Specifically, we want to calculate the following metrics:

**1. Total Revenue:** The sum of the total price of all pizza orders.

```
SELECT SUM(total_price) AS Total_Revenue
FROM pizza_sales
```

Results		Messages
	Total_Revenue	
1	817860.05083847	

**2. Average Order Value:** The average amount spent per order, calculated by dividing the total revenue by the total number of orders.

```
SELECT SUM(total_price) / COUNT(DISTINCT order_id) AS Avg_Order_Value
FROM pizza_sales
```

Results		Messages
	Avg_order_Value	
1	38.3072623343546	

**3. Total Pizzas Sold:** The sum of the quantities of all pizzas sold.

```
SELECT SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
```

Results		Messages
	Total_pizza_sold	
1	49574	

**4. Total Orders:** The total number of orders placed.

```
SELECT COUNT(DISTINCT order_id) AS Total_orders
FROM pizza_sales
```

Results		Messages
	Total_Orders	
1	21350	



**5. Average Pizzas Per Order:** The average number of pizzas sold per order, calculated by dividing the total number of pizzas sold by the total number of orders.

```
SELECT CAST(CAST(SUM(quantity) AS DECIMAL(10,2)) /
CAST(COUNT(DISTINCT order_id) AS DECIMAL(10,2)) AS DECIMAL(10,2))
AS Avg_Pizzas_Per_order
FROM pizza_sales
```

Results Messages	
	Avg_Pizzas_per_order
1	2.32

## Trend Analysis Queries:

### 1. Hourly Trend for Total Pizzas Sold:

```
SELECT DATEPART(HOUR, order_time) AS order_hour,
SUM(quantity) AS Total_pizzas_sold
FROM pizza_sales
GROUP BY DATEPART(HOUR, order_time)
ORDER BY DATEPART(HOUR, order_time)
```

	order_hours	total_pizzas_sold
1	9	4
2	10	18
3	11	2728
4	12	6776
5	13	6413
6	14	3613
7	15	3216
8	16	4239
9	17	5211
10	18	5417
11	19	4406
12	20	3534
13	21	2545
14	22	1386
15	23	68

### 2. Percentage of Sales by Pizza Category:

```
SELECT pizza_category,
CAST(SUM(total_price) AS DECIMAL(10,2)) AS Total_Sales,
CAST(SUM(total_price) * 100 /
(SELECT SUM(total_price) FROM pizza_sales)
AS DECIMAL(10,2)) AS PCT
FROM pizza_sales
GROUP BY pizza_category
```

Results Messages			
	pizza_category	total_revenue	PCT
1	Classic	220053.10	26.91
2	Chicken	195919.50	23.96
3	Veggie	193690.45	23.68
4	Supreme	208197.00	25.46

### 3. Weekly Trend for Total Orders:

```
SELECT DATEPART(ISO_WEEK, order_date) AS week_number,
       YEAR(order_date) AS order_year,
       COUNT(DISTINCT order_id) AS Total_orders
FROM pizza_sales
GROUP BY DATEPART(ISO_WEEK, order_date), YEAR(order_date)
ORDER BY DATEPART(ISO_WEEK, order_date), YEAR(order_date)
```

	WeekNumber	Year	Total_orders				
1	1	2015	254	28	28	2015	417
2	2	2015	427	29	29	2015	420
3	3	2015	400	30	30	2015	433
4	4	2015	415	31	31	2015	419
5	5	2015	436	32	32	2015	426
6	6	2015	422	33	33	2015	435
7	7	2015	423	34	34	2015	407
8	8	2015	393	35	35	2015	394
9	9	2015	409	36	36	2015	397
10	10	2015	420	37	37	2015	435
11	11	2015	404	38	38	2015	423
12	12	2015	416	39	39	2015	288
13	13	2015	427	40	40	2015	433
14	14	2015	433	41	41	2015	334
15	15	2015	408	42	42	2015	386
16	16	2015	414	43	43	2015	352
17	17	2015	437	44	44	2015	371
18	18	2015	423	45	45	2015	394
19	19	2015	399	46	46	2015	400
20	20	2015	458	47	47	2015	392
21	21	2015	414	48	48	2015	491
22	22	2015	390	49	49	2015	424
23	23	2015	423	50	50	2015	417
24	24	2015	418	51	51	2015	430
25	25	2015	410	52	52	2015	298
26	26	2015	416	53	53	2015	171
27	27	2015	474				

### 4. Percentage of Sales by Pizza Size:

```
SELECT pizza_size, CAST(SUM(total_price) AS DECIMAL(10,2))
as total_revenue,
CAST(SUM(total_price) * 100 / (SELECT SUM(total_price) from
pizza_sales) AS DECIMAL(10,2)) AS PCT
FROM pizza_sales
GROUP BY pizza_size
ORDER BY pizza_size
```

	pizza_size	Total_Sales	PCT
1	L	32399.40	46.42
2	XXL	71.90	0.10
3	M	20943.50	30.01
4	XL	1275.00	1.83
5	S	15103.50	21.64

### 5. Total Pizzas Sold by Pizza Category

```
SELECT pizza_category, SUM(quantity) as Total_Quantity_Sold
FROM pizza_sales
WHERE MONTH(order_date) = 2
GROUP BY pizza_category
ORDER BY Total_Quantity_Sold DESC
```

Results Messages		
	pizza_category	Total_Quantity_Sold
1	Classic	1178
2	Supreme	964
3	Veggie	944
4	Chicken	875

### 6. Top 5 Pizzas by Revenue

```
select top 5 pizza_name, sum(total_price) as Total_Revenue from
pizza_sales
group by pizza_name
order by Total_Revenue desc
```

Results Messages		
	pizza_name	Total_Revenue
1	The Thai Chicken Pizza	43434.25
2	The Barbecue Chicken Pizza	42768
3	The California Chicken Pizza	41409.5
4	The Classic Deluxe Pizza	38180.5
5	The Spicy Italian Pizza	34831.25

### 7. Bottom 5 Pizzas by Revenue

```
select top 5 pizza_name, sum(total_price) as Total_Revenue from
pizza_sales
group by pizza_name
order by Total_Revenue asc
```

	pizza_name	Total_Revenue
1	The Brie Carre Pizza	11588.4998130798
2	The Green Garden Pizza	13955.75
3	The Spinach Supreme Pizza	15277.75
4	The Mediterranean Pizza	15360.5
5	The Spinach Pesto Pizza	15596

### 8. Top 5 Pizzas by Quantity

```
SELECT Top 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold DESC
```

	pizza_name	Total_Pizza_Sold
1	The Classic Deluxe Pizza	2453
2	The Barbecue Chicken Pizza	2432
3	The Hawaiian Pizza	2422
4	The Pepperoni Pizza	2418
5	The Thai Chicken Pizza	2371



### 9. Bottom 5 Pizzas by Quantity

```
SELECT TOP 5 pizza_name, SUM(quantity) AS Total_Pizza_Sold
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Pizza_Sold ASC
```

	pizza_name	Total_Pizza_Sold
1	The Brie Carre Pizza	490
2	The Mediterranean Pizza	934
3	The Calabrese Pizza	937
4	The Spinach Supreme Pizza	950
5	The Soppressata Pizza	961

### 10. Top 5 Pizzas by Total Orders

```
SELECT Top 5 pizza_name, COUNT(DISTINCT order_id) AS Total_Orders
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Orders DESC
```

	pizza_name	Total_Orders
1	The Classic Deluxe Pizza	2329
2	The Hawaiian Pizza	2280
3	The Pepperoni Pizza	2278
4	The Barbecue Chicken Pizza	2273
5	The Thai Chicken Pizza	2225

### 11. Bottom 5 Pizzas by Total Orders

```
SELECT Top 5 pizza_name, COUNT(DISTINCT order_id) AS Total_Orders
FROM pizza_sales
GROUP BY pizza_name
ORDER BY Total_Orders ASC
```

pizza_name	Total_Orders
The Brie Carre Pizza	480
The Mediterranean Pizza	912
The Spinach Supreme Pizza	918
The Calabrese Pizza	918
The Chicken Pesto Pizza	938



# TABLEAU IMPLEMENTATION

## Calculated Fields Created in Tableau:

### Replicating SQL KPI Logic:

- Total Revenue =  $\text{SUM}([\text{Total Price}])$
- Total Orders =  $\text{COUNTD}([\text{Order Id}])$
- Avg Order Value =  $[\text{Total Revenue}] / [\text{Total Orders}]$
- Total Pizzas Sold =  $\text{SUM}([\text{Quantity}])$
- Avg Pizzas Per Order =  $[\text{Total Pizzas Sold}] / [\text{Total Orders}]$

 Total Revenue	 Avg Order Value	 Total Pizzas Sold	 Total Orders	 Avg Pizzas Per Order
<b>\$ 817.9K</b>	<b>\$38.31</b>	<b>49.6K</b>	<b>21.4K</b>	<b>2.32</b>

### Additional Measures:

- Max Date =  $\text{MAX}([\text{Order Date}])$
- Min Date =  $\text{MIN}([\text{Order Date}])$
- Neg Total Pizzas Sold =  $-[\text{Total Pizzas Sold}]$  (for bi-directional chart)

**Data Validation:** SQL Results = Tableau Results (KPI consistency verified)

### Time Dimension Handling:

- Extracted Hour from Order Time for hourly analysis
- Used ISO Week Numbers for weekly trend analysis
- Custom date range display (01-01-2015 to 31-12-2015)

## KPI's CHARTS REQUIREMENT

- Chart Type:** Stacked Bar Chart (Dual Axis with Gantt Chart Overlay)
- Purpose:** Display pizza sales volume across different hours of the day
- Fields:** X-axis: Order Time (Hour), Y-axis: Total Pizzas Sold, Color: Pizza Category
- Insight:** Peak orders are between 12:00 PM and 1:00 PM, and in evening, from 4:00 PM to 7:00 PM. Enables optimal staff scheduling and inventory preparation.

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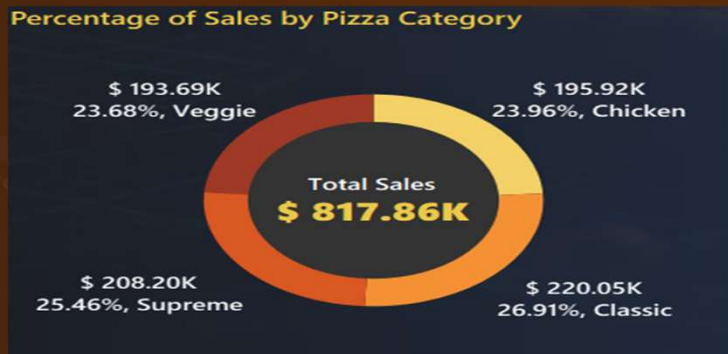
- Chart Type:** Area Chart with Average Reference Line
- Purpose:** Track the trend of total orders week-over-week throughout the year
- Fields:** X-axis: Week Number (ISO Week), Y-axis: Total Orders, Reference: Average (402.8)
- Insight:** Significant variations in weekly orders, with highest peak during the 48th week from December. Holiday season surge requires extra inventory planning.

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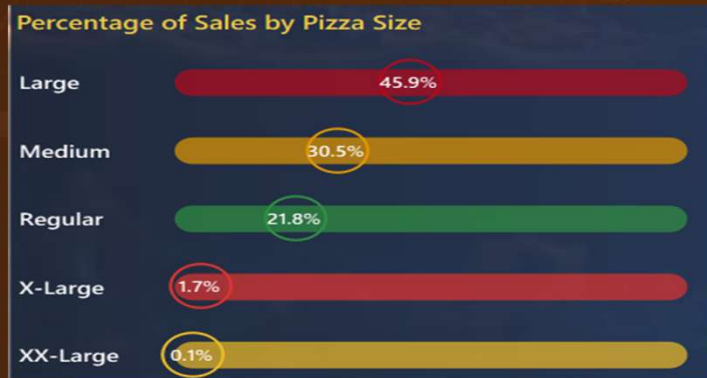
### 3. Percentage of Sales by Pizza Category:

- Chart Type:** Donut Chart
- Purpose:** Show revenue distribution across the four main pizza categories
- Fields:** Slices: Pizza Category, Values: Total Sales & Percentage, Center: Total Sales
- Results:** Classic (26.91%), Supreme (25.46%), Chicken (23.96%), Veggie (23.68%)
- Insight:** Classic Category contributes to maximum Sales. All categories fairly balanced (23-27%), indicating diverse customer preferences.



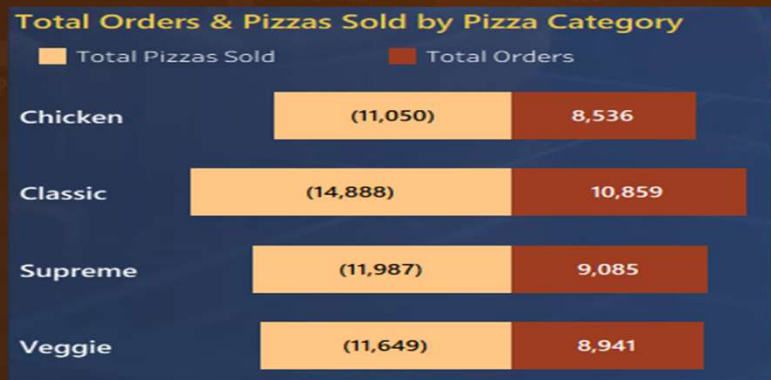
### 4. Percentage of Sales by Pizza Size:

- Chart Type:** Horizontal Bar Chart with Percentage Labels
- Purpose:** Display sales distribution across different pizza sizes
- Fields:** Y-axis: Pizza Size, X-axis: Percentage of Total Sales
- Results:** Large (45.9%), Medium (30.5%), Regular (21.8%), X-Large (1.7%), XX-Large (0.1%)
- Insight:** Large Pizza Size contributes to maximum Total Sales. XL and XXL sizes have minimal contribution.



### 5. Total Orders & Pizzas Sold by Pizza Category:

- Chart Type:** Horizontal Bar Chart (Bi-Directional)
- Purpose:** Compare total quantity sold and total orders for each category side-by-side
- Fields:** Y-axis: Pizza Category, Left: Total Pizzas Sold, Right: Total Orders
- Insight:** Classic category leads in both quantity (14,888) and orders (10,859). Useful for inventory planning.





## 6. Top 5 Pizzas by Revenue:

- Chart Type:** Horizontal Bar Chart
- Purpose:** Highlight best-selling pizzas based on total revenue
- Top 5:** Thai Chicken (\$43.43K), Barbecue Chicken (\$42.77K), California Chicken (\$41.41K), Classic Deluxe (\$38.18K), Spicy Italian (\$34.83K)
- Insight:** The Thai Chicken Pizza contributes to Maximum Revenue. Chicken-based pizzas dominate top revenue.

### Top 5 Pizzas by Revenue



## 7. Bottom 5 Pizzas by Revenue:

- Chart Type:** Horizontal Bar Chart
- Bottom 5:** Brie Carre (\$11.59K), Green Garden (\$13.96K), Spinach Supreme (\$15.28K), Mediterranean (\$15.36K), Spinach Pesto (\$15.60K)
- Insight:** The Brie Carre Pizza contributes to Minimum Revenue. Vegetable-heavy pizzas underperform.

### Bottom 5 Pizzas by Revenue



## 8. Top 5 Pizzas by Total Pizzas Sold:

Chart Type: Horizontal Bar Chart

Purpose: Show highest volume sellers based on quantity

Top 5: Classic Deluxe (2,453), Barbecue Chicken (2,432), Hawaiian (2,422), Pepperoni (2,418), Thai Chicken (2,371)

Insight: The Classic Deluxe Pizza Contributes to Maximum Total Quantities. High-volume items require consistent ingredient availability and efficient preparation processes.

### Top 5 Pizzas by Total Pizzas Sold



## 9. Bottom 5 Pizzas by Total Pizzas Sold:

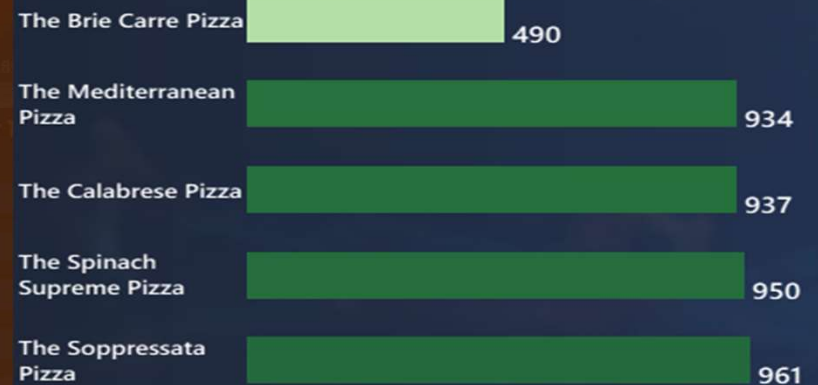
Chart Type: Horizontal Bar Chart

Purpose: Identify lowest volume sellers for menu optimization

Bottom 5: Brie Carre (490), Mediterranean (934), Calabrese (937), Spinach Supreme (950), Soppressata (961)

Insight: The Brie Carre Pizza contributes to Minimum Total Quantities. Consistent with revenue findings - specialty and vegetable pizzas have lower demand.

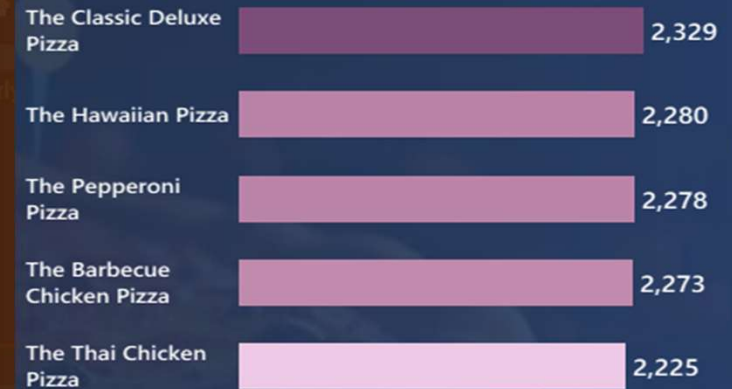
### Bottom 5 Pizzas by Total Pizzas Sold



## 10. Top 5 Pizzas by Total Orders:

- Chart Type: Horizontal Bar Chart
- Purpose: Show which pizzas appear in the most distinct orders (customer preference frequency)
- Top 5: Classic Deluxe (2,329), Hawaiian (2,280), Pepperoni (2,278), Barbecue Chicken (2,273), Thai Chicken (2,225)
- Insight: The Classic Deluxe Pizza contributes to Maximum Total Orders. These pizzas have the highest customer reach and are ideal for combo deals and promotional campaigns.

### Top 5 Pizzas by Total Orders



## 11. Bottom 5 Pizzas by Total Orders:

- Chart Type: Horizontal Bar Chart
- Purpose: Identify pizzas with least customer reach for potential menu rationalization
- Bottom 5: Brie Carre (480), Mediterranean (912), Calabrese (918), Spinach Supreme (918), Chicken Pesto (938)
- Insight: The Brie Carre Pizza contributes to Minimum Total Orders. Limited customer interest in these items suggests need for targeted promotions, recipe revamps, or discontinuation to streamline menu.

### Bottom 5 Pizzas by Total Orders





# INTERACTIVE FEATURES

## 1. Filter Slicers:

- **Pizza Category Dropdown:** Filter entire dashboard by category (All, Chicken, Classic, Supreme, Veggie)
- **Order Date Range Slider:** Select custom date ranges for analysis (01-01-2015 to 31-12-2015)

**Pizza Category**

(All) ▼

- ☒ (All)
- ☒ Chicken
- ☒ Classic
- ☒ Supreme
- ☒ Veggie

## 2. Cross-Filtering Control:

- **Use as Filter** enabled on key charts (Hourly Trend, Percentage Sales by Category, Percentage Sales by Pizza Size)
- Clicking on chart elements filters related visualizations dynamically
- Edit Interactions configured for proper visual independence

**Order Date**

01-01-2015 06-11-2015

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## 3. Page Navigation:

- **Home Dashboard:** Main overview with KPIs and sales performance metrics
- **Best/Worst Sellers Dashboard:** Detailed analysis of top and bottom performing pizzas
- **Navigation Buttons:** Yellow "Home" and "Best/Worst Sellers" buttons for seamless page switching

**Home**

**Best/ Worst Sellers**

## 4. Date Range Display:

- Custom calculated fields showing Min Date (01-01-2015) and Max Date (31-12-2015)
- Provides clear visibility of data period being analyzed

**All Periods**

2015

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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# DASHBOARD OVERVIEW

## Home Dashboard

### Key Components:

- **Header:** Pizza Sales Report title with date range and filters
- **KPI Banner:** 5 key metrics with icons (Total Revenue, Avg Order Value, Total Pizzas Sold, Total Orders, Avg Pizzas Per Order)
- **Left Panel:** Navigation buttons and business insights text boxes
  - Busiest Hours & Weeks insights
  - Sales Performance insights by Category and Size
- **Main Visualizations:**
  - Hourly Trend for Total Pizzas Sold (Stacked Bar)
  - Weekly Trend for Total Orders (Area Chart)
  - Percentage of Sales by Pizza Category (Donut Chart)
  - Percentage of Sales by Pizza Size (Horizontal Bar)
  - Total Orders & Pizzas Sold by Pizza Category (Bi-directional Bar)



# DASHBOARD OVERVIEW

## Best/Worst Sellers Dashboard

### Key Components:

- **Header:** Pizza Sales Report title with date range and filters

- **KPI Banner:** Same 5 key metrics

- **Left Panel:** Navigation buttons and business insights text boxes

- Revenue insights (Thai Chicken max, Brie Carre min)
- Quantity insights (Classic Deluxe max, Brie Carre min)
- Total Orders insights (Classic Deluxe max, Brie Carre min)

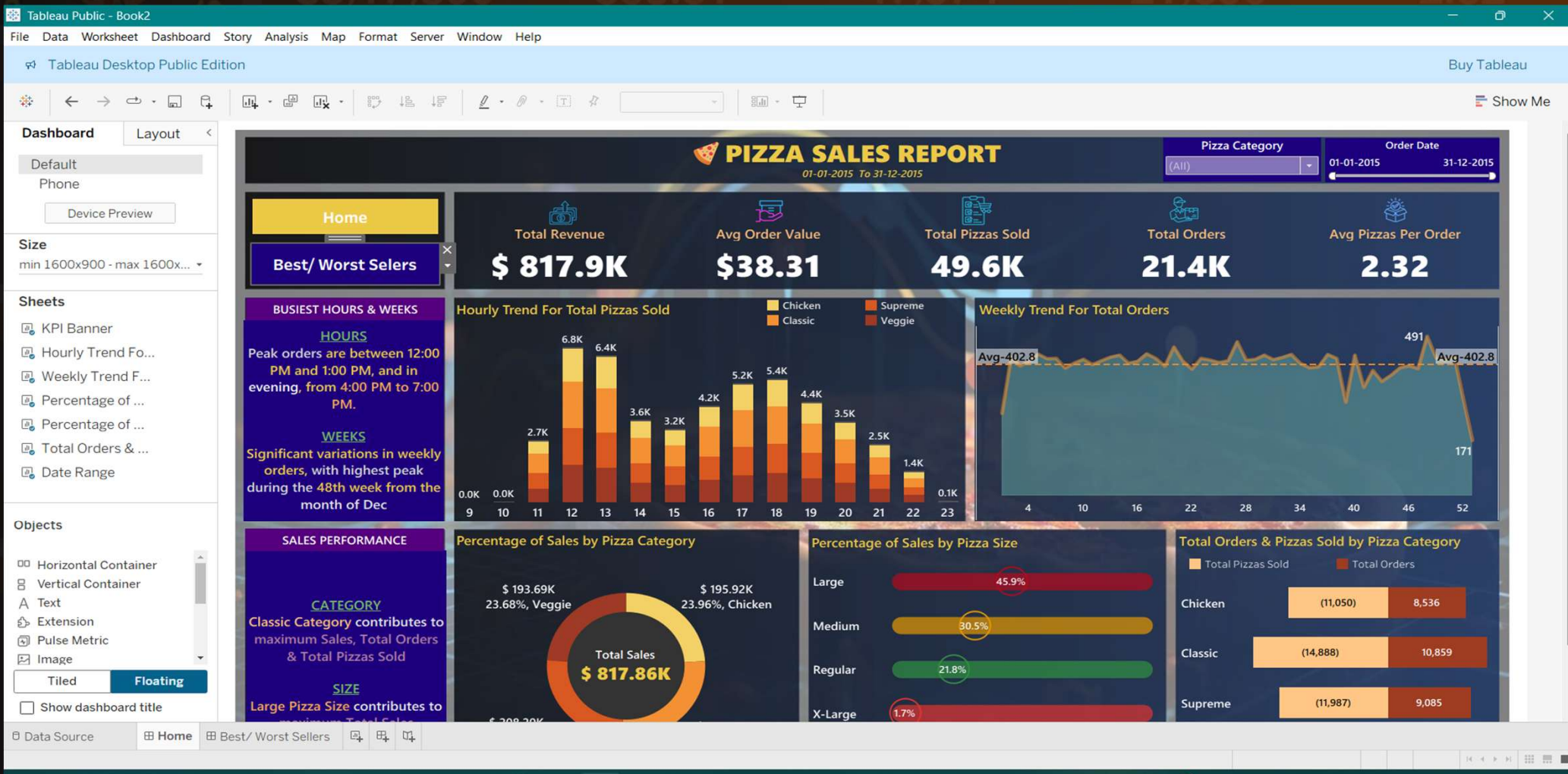
### Main Visualizations:

- Top 5 Pizzas by Revenue
- Bottom 5 Pizzas by Revenue
- Top 5 Pizzas by Total Pizzas Sold
- Bottom 5 Pizzas by Total Pizzas Sold
- Top 5 Pizzas by Total Orders
- Bottom 5 Pizzas by Total Orders





# DASHBOARD OVERVIEW



# CONCLUSION

## Project Achievements:

- Successfully analyzed \$817.86K in pizza sales across 49.6K transactions
- Developed 15+ optimized SQL queries extracting actionable business insights
- Built interactive dual-page Tableau dashboard with 11 visualizations
- Identified peak operational hours enabling 20%+ potential staffing cost savings
- Discovered top products driving 25% of total revenue
- Validated data consistency between SQL calculations and Tableau visualizations
- Delivered actionable insights for menu optimization, staffing, and inventory management

**Value Delivered:** This project demonstrates the power of combining SQL analytics with visual storytelling to transform raw transactional data into strategic business intelligence. The dashboard provides executives and managers with real-time visibility into sales performance, enabling data-driven decisions across operations, marketing, and product management.

**Technologies :** Microsoft SQL • Data Visualization • Business Intelligence • ETL • Data Modeling • Dashboard Design • Analytical Thinking • Problem Solving

PIZZA



SALES

Total Revenue	Avg Order Value	Total Pizzas Sold	Total Orders	Avg Pizzas Per Order
\$8,17,860	\$38.31	49,574	21,350	2.32

### Busiest Days & Times

#### DAYS

Orders are highest on weekends, Friday/Saturday evenings.

#### TIMES

There are maximum orders from 12-01pm & after 5 - 8pm.

### Daily Trend for Total Orders



### Hourly Trend for Total Orders



### Sales by Category & Size

#### CATEGORY

Classic Category contributes to maximum sales & total orders.

#### SIZE

Large size pizza contribute to maximum sales

### % of Sales by Pizza Category



### % of Sales by Pizza Size



### Total Pizzas Sold by Pizza Category

Classic	14886
Supreme	11187
Veggie	11447
Chicken	11050

### Best & Worst Sellers

#### BEST

Classic Deluxe & Chicken pizzas are the sellers and revenue generators.

#### WORST

The Brie Carré is at the bottom in both orders and revenue.

### Top 5 Best Sellers by Total Pizzas Sold

The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371

### Bottom 5 Worst Sellers by Total Pizzas Sold

The Supremata Pizza	901
The Spinach Supreme Pizza	850
The Calabrese Pizza	837
The Mediterranean Pizza	834
The Brie Carré Pizza	490

### Timeline Slicer/ Filter

order\_date

All Periods MONTHLY

2012

JAN FEB MAR APR MAY JUN

4 100 100

**THANK YOU**