INDIAN DATA CLUB

THE GREAT PIZZA ANALYTICS CHALLENGE

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⋆ *Company Overview — The Great Pizza*

The Great Pizza is a growing pizza chain that serves fresh, affordable pizzas across multiple outlets.
The company wants to use data to understand sales, customer behavior, and store performance.
As the data analyst, our role is to explore the pizza sales database and turn raw data into useful insights.

IDC_Pizza

⋆ Project Overview

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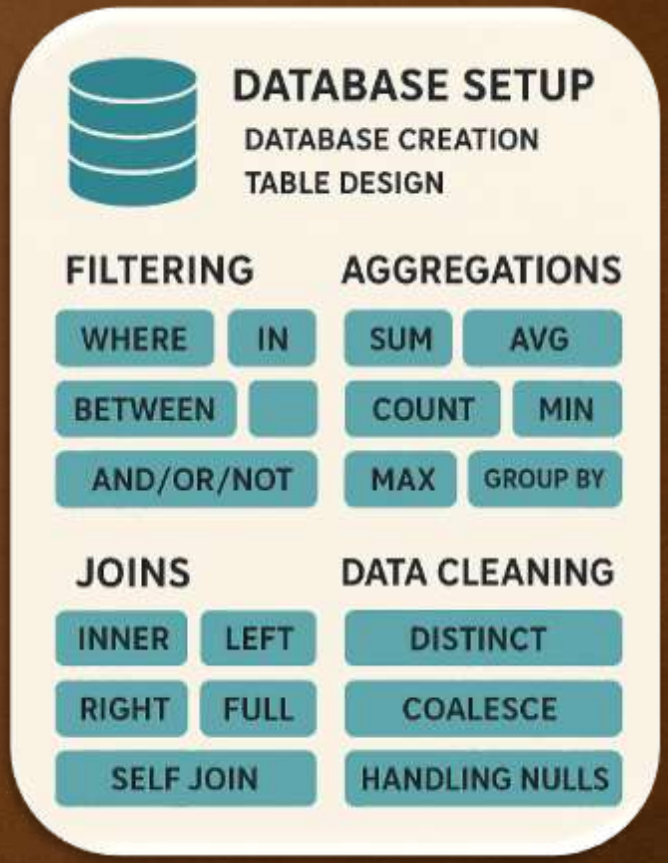
This project uses key SQL concepts to analyze The Great Pizza's sales data.

<u>The topics applied include:</u>

- **Database setup:** database creation & table design
- **Filtering:** WHERE, IN, BETWEEN, LIKE, AND/OR/NOT
- **Aggregations:** SUM, AVG, COUNT, MIN, MAX, GROUP BY, HAVING
- **Joins:** INNER, LEFT, RIGHT, FULL, SELF JOIN
- **Data cleaning:** DISTINCT, COALESCE, handling NULLs



IDC Pizza Dataset Overview

Dataset Source

- Dataset used: **IDC Pizza Sales Dataset**
- Available as part of **Indian Data Club - SQL Challenge**

Dataset Includes

- **Order details** (order ID, date, time)
- **Pizza information** (type, size, price)
- **Pizza categories** (Veg, Non-Veg, Classic, Gourmet)
- **Order item details** (pizza ordered and quantity)

Creating Tables and Importing Data into the Database

IDC_Pizza

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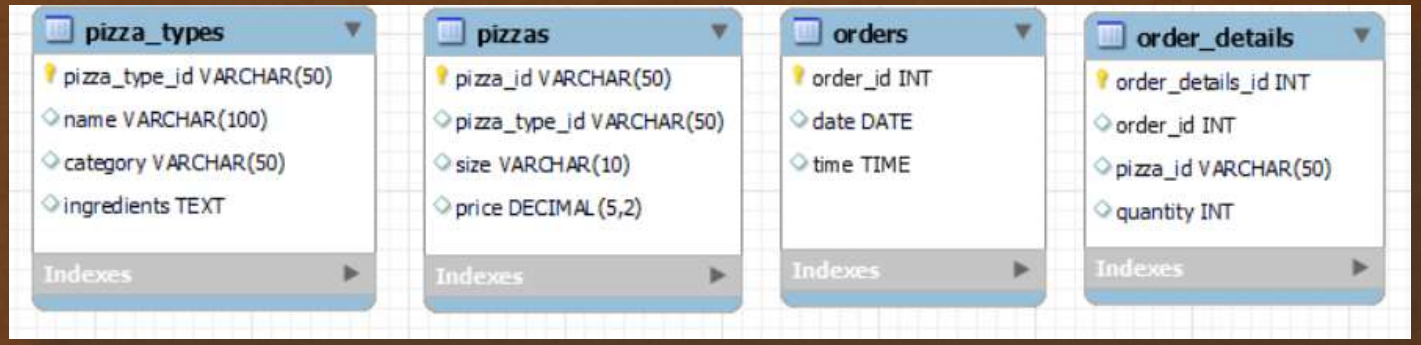
```
-- CREATE DATABASE
CREATE DATABASE IDC_Pizza;
```




```
-- 1. Create the pizza_types table (No Foreign Keys)
CREATE TABLE pizza_types (
pizza_type_id VARCHAR(50) PRIMARY KEY,
name VARCHAR(100),
category VARCHAR(50),
ingredients TEXT
);
SELECT * FROM pizza_types ;
```

pizza_type_id	name	category	ingredients
bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue ...
big_meat	The Big Meat Pizza	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sausage
brie_carre	The Brie Carre Pizza	Supreme	Brie Carre Cheese, Prosciutto, Caramelized Onions, Pears, Thyme, Garlic
calabrese	The Calabrese Pizza	Supreme	'Nduja Salami, Pancetta, Tomatoes, Red Onions, Friggitello Peppers, Garlic
cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese
ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese, Alfredo Sauce
ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garlic, Pesto Sauce
classic_dlx	The Classic Deluxe Pizza	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon
five_cheese	The Five Cheese Pizza	Veggie	Mozzarella Cheese, Provolone Cheese, Smoked Gouda Cheese, Romano Cheese, Blue...
four_cheese	The Four Cheese Pizza	Veggie	Ricotta Cheese, Gorgonzola Piccante Cheese, Mozzarella Cheese, Parmigiano Reggian...
green_garden	The Green Garden Pizza	Veggie	Spinach, Mushrooms, Tomatoes, Green Olives, Feta Cheese

```
-- 2. Create the pizzas table (FK to pizza_types)
CREATE TABLE pizzas (
pizza_id VARCHAR(50) PRIMARY KEY,
pizza_type_id VARCHAR(50) REFERENCES pizza_types(pizza_type_id),
size VARCHAR(10),
price NUMERIC(5, 2)
);
SELECT * FROM pizzas ;
```

pizza_id	pizza_type_id	size	price
bbq_ckn_l	bbq_ckn	L	20.75
bbq_ckn_m	bbq_ckn	M	16.75
bbq_ckn_s	bbq_ckn	S	12.75
big_meat_l	big_meat	L	20.50
big_meat_m	big_meat	M	16.00
big_meat_s	big_meat	S	12.00
brie_carre_s	brie_carre	S	23.65
calabrese_l	calabrese	L	20.25
calabrese_m	calabrese	M	16.25
calabrese_s	calabrese	S	12.25
cali_ckn_l	cali_ckn	L	20.75
cali_ckn_m	cali_ckn	M	16.75
cali_ckn_s	cali_ckn	S	12.75
ckn_alfredo_l	ckn_alfredo	L	20.75

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```sql
-- 3. Create the orders table (No Foreign Keys)
CREATE TABLE orders (
order_id INT PRIMARY KEY,
date DATE,
time TIME
);
SELECT * FROM orders ;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Cont

order_id	date	time
1	2015-01-01	11:38:36
2	2015-01-01	11:57:40
3	2015-01-01	12:12:28
4	2015-01-01	12:16:31
5	2015-01-01	12:21:30
6	2015-01-01	12:29:36
7	2015-01-01	12:50:37
8	2015-01-01	12:51:37
9	2015-01-01	12:52:01
10	2015-01-01	13:00:15
11	2015-01-01	13:02:59
12	2015-01-01	13:04:41
13	2015-01-01	13:11:55
14	2015-01-01	13:14:19
15	2015-01-01	13:33:00

```sql
-- 4. Create the order_details table (FK to orders and pizzas)
CREATE TABLE order_details (
order_details_id INT PRIMARY KEY,
order_id INT REFERENCES orders(order_id),
pizza_id VARCHAR(50) REFERENCES pizzas(pizza_id),
quantity INT
);
SELECT * FROM order_details ;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Fetch rows:

order_details_id	order_id	pizza_id	quantity
1	1	hawaiian_m	1
2	2	classic_dlx_m	1
3	2	five_cheese_l	1
4	2	ital_supr_l	1
5	2	mexicana_m	1
6	2	thai_ckn_l	1
7	3	ital_supr_m	1
8	3	prsc_argla_l	1
9	4	ital_supr_m	1
10	5	ital_supr_m	1
11	6	bbq_ckn_s	1
12	6	the_greek_s	1
13	7	spinach_sup...	1
14	8	spinach_sup...	1

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The analysis is organized into three phases:

Phase 1: Foundation & Inspection

Phase 2: Filtering & Exploration

Phase 3: Sales Performance

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Phase 1: Foundation & Inspection

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1. List all unique pizza categories (`DISTINCT`).

```
SELECT
    DISTINCT category AS pizza_categories
FROM pizza_types;
```

pizza_categories
Chicken
Classic
Supreme
Veggie

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Phase 1: Foundation & Inspection

INDIAN DATA CLUB

2. Display `pizza_type_id`, `name`, and ingredients, replacing NULL ingredients with `"Missing Data"`. Show first 5 rows.

```sql
SELECT
    pizza_type_id,
    name,
    COALESCE(ingredients,'Missing Data') AS ingredients
FROM pizza_types
LIMIT 5 ;
```

pizza_type_id	name	ingredients
bbq_ckn	The Barbecue Chicken Pizza	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue Sauce
big_meat	The Big Meat Pizza	Bacon, Pepperoni, Italian Sausage, Chorizo Sausage
brie_carre	The Brie Carre Pizza	Brie Carre Cheese, Prosciutto, Caramelized Onions, Pears, Thyme, Garlic
calabrese	The Calabrese Pizza	'Nduja Salami, Pancetta, Tomatoes, Red Onions, Friggitello Peppers, Garlic
cali_ckn	The California Chicken Pizza	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese

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Phase 1: Foundation & Inspection

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3. Check for pizzas missing a price (`IS NULL`).

```
SELECT
    *
FROM pizzas
WHERE price IS NULL;
```

pizza_id	pizza_type_id	size	price
NULL	NULL	NULL	NULL

Pizzas

Name	Price
Margherita	?

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Phase 2: Filtering & Exploration

INDIAN DATA CLUB

1. Orders placed on ``'2015-01-01'' (`SELECT` + `WHERE`).

```sql
SELECT
    *
FROM orders
WHERE date = "2015-01-01" ;
```

order_id	date	time
1	2015-01-01	11:38:36
2	2015-01-01	11:57:40
3	2015-01-01	12:12:28
4	2015-01-01	12:16:31
5	2015-01-01	12:21:30
6	2015-01-01	12:29:36
7	2015-01-01	12:50:37
8	2015-01-01	12:51:37
9	2015-01-01	12:52:01
10	2015-01-01	13:00:15
11	2015-01-01	13:02:59
12	2015-01-01	13:04:41
13	2015-01-01	13:11:55
14	2015-01-01	13:14:19
15	2015-01-01	13:33:00
16	2015-01-01	13:34:07
17	2015-01-01	13:53:00
18	2015-01-01	13:57:08
19	2015-01-01	13:59:09

ers 1 ×

IDC_Pizza

Phase 2: Filtering & Exploration

INDIAN DATA CLUB

2. List pizzas with `price` descending.

```
SELECT
    *
FROM pizzas
ORDER BY price DESC;
```

pizza_id	pizza_type_id	size	price
the_greek_xxl	the_greek	XXL	35.95
the_greek_xl	the_greek	XL	25.50
brie_carre_s	brie_carre	S	23.65
ital_veggie_l	ital_veggie	L	21.00
bbq_ckn_l	bbq_ckn	L	20.75
soppressata_l	soppressata	L	20.75
southw_ckn_l	southw_ckn	L	20.75
spicy_ital_l	spicy_ital	L	20.75
peppr_salami_l	peppr_salami	L	20.75
spin_pesto_l	spin_pesto	L	20.75
thai_ckn_l	thai_ckn	L	20.75
ckn_pesto_l	ckn_pesto	L	20.75
spinach_supr_l	spinach_supr	L	20.75
cali_ckn_l	cali_ckn	L	20.75
prsc_argla_l	prsc_argla	L	20.75
ital_supr_l	ital_supr	L	20.75
ckn_alfredo_l	ckn_alfredo	L	20.75
napolitana_l	napolitana	L	20.50
classic_dlx_l	classic_dlx	L	20.50

Phase 2: Filtering & Exploration

3. Pizzas sold in sizes ``'L'`` or ``'XL''``.

```
SELECT
    *
FROM pizzas
WHERE size IN ('L' ,'XL') ;
```

pizza_id	pizza_type_id	size	price
bbq_ckn_l	bbq_ckn	L	20.75
big_meat_l	big_meat	L	20.50
calabrese_l	calabrese	L	20.25
cali_ckn_l	cali_ckn	L	20.75
ckn_alfredo_l	ckn_alfredo	L	20.75
ckn_pesto_l	ckn_pesto	L	20.75
classic_dlx_l	classic_dlx	L	20.50
five_cheese_l	five_cheese	L	18.50
four_cheese_l	four_cheese	L	17.95
green_garden_l	green_garden	L	20.25
hawaiian_l	hawaiian	L	16.50
ital_cpclo_l	ital_cpclo	L	20.50
ital_supr_l	ital_supr	L	20.75
ital_veggie_l	ital_veggie	L	21.00
mediterraneo_l	mediterraneo	L	20.25
mexicana_l	mexicana	L	20.25
napolitana_l	napolitana	L	20.50
pep_msh_pep_l	pep_msh_pep	L	17.50
pepperoni_l	pepperoni	L	15.25
peppr_salami_l	peppr_salami	L	20.75
prsc_argla_l	prsc_argla	L	20.75

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Phase 2: Filtering & Exploration

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4. Pizzas priced between $15.00 and $17.00.

```
SELECT
    *
FROM pizzas
WHERE price BETWEEN 15.00 AND 17.00 ;
```

pizza_id	pizza_type_id	size	price
bbq_ckn_m	bbq_ckn	M	16.75
big_meat_m	big_meat	M	16.00
calabrese_m	calabrese	M	16.25
cali_ckn_m	cali_ckn	M	16.75
ckn_alfredo_m	ckn_alfredo	M	16.75
ckn_pesto_m	ckn_pesto	M	16.75
classic_dlx_m	classic_dlx	M	16.00
five_cheese_m	five_cheese	M	15.50
green_garden_m	green_garden	M	16.00
hawaiian_l	hawaiian	L	16.50
ital_cpclo_m	ital_cpclo	M	16.00
ital_supr_m	ital_supr	M	16.50
ital_veggie_m	ital_veggie	M	16.75
mediterraneo_m	mediterraneo	M	16.00
mexicana_m	mexicana	M	16.00
napolitana_m	napolitana	M	16.00
pepperoni_l	pepperoni	L	15.25
peppr_salami_m	peppr_salami	M	16.50
prsc_argla_m	prsc_argla	M	16.50
sicilian_m	sicilian	M	16.25
soppressata_m	soppressata	M	16.50

IDC_Pizza

Phase 2: Filtering & Exploration

INDIAN DATA CLUB

5. Pizzas with `"Chicken"` in the name.

```
SELECT
    *
FROM pizza_types
WHERE name LIKE '%Chicken%';
```

pizza_type_id	name	category	ingredients
bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue ...
cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese
ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese, Alfredo Sauce
ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garlic, Pesto Sauce
southw_ckn	The Southwest Chicken Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions, Jalapeno Peppers, Corn, Cilantro, Chi...
thai_ckn	The Thai Chicken Pizza	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce
NULL	NULL	NULL	NULL

Phase 2: Filtering & Exploration

INDIAN DATA CLUB

6. Orders on ``'2015-02-15'`` or placed after 8 PM.

```sql
SELECT
    *
FROM orders
WHERE date = '2015-02-15' OR time > '20:00:00';
```

order_id	date	time
60	2015-01-01	20:05:16
61	2015-01-01	20:08:43
62	2015-01-01	20:50:16
63	2015-01-01	20:51:42
64	2015-01-01	20:52:08
65	2015-01-01	21:16:00
66	2015-01-01	21:47:55
67	2015-01-01	22:03:40
68	2015-01-01	22:07:32
69	2015-01-01	22:12:13
123	2015-01-02	20:12:09
124	2015-01-02	20:12:34
125	2015-01-02	20:31:06
126	2015-01-02	20:53:42
127	2015-01-02	20:58:23
128	2015-01-02	21:05:06
129	2015-01-02	21:13:02
130	2015-01-02	21:14:55
131	2015-01-02	21:33:10

PIZZA ORDER PLACED
2015-02-15
OR TIME AFTER
8:00 O'CLOCK

IDC_Pizza

Phase 3: Sales Performance

INDIAN DATA CLUB

1. Total quantity of pizzas sold (`SUM`).

```
SELECT
    SUM(quantity) AS total_qty_sold
FROM order_details;
```

total_qty_sold
49574

2. Average pizza price (`AVG`).

```
SELECT
    ROUND(AVG(price),1) AS avg_price_pizza
FROM pizzas;
```

avg_price_pizza
16.4

Phase 3: Sales Performance

INDIAN DATA CLUB

3. Total order value per order (`JOIN`, `SUM`, `GROUP BY`).

```sql
SELECT
    o.order_id,
    SUM(p.price * od.quantity) AS total_order_value
FROM orders o
JOIN order_details od
    ON o.order_id = od.order_id
JOIN pizzas p
    ON od.pizza_id = p.pizza_id
GROUP BY o.order_id
ORDER BY o.order_id;
```

order_id	total_order_value
1	13.25
2	92.00
3	37.25
4	16.50
5	16.50
6	24.75
7	12.50
8	12.50
9	143.25
10	41.00
11	73.50
12	70.75
13	20.25
14	12.00
15	63.25
16	50.70
17	184.50
18	20.50
19	40.75
20	30.50
21	20.50

IDC_Pizza

Phase 3: Sales Performance

INDIAN DATA CLUB

4. Total quantity sold per pizza category (`JOIN`, `GROUP BY`)

```sql
SELECT
    pt.category,
    SUM(od.quantity) AS total_qty_sold_category
FROM order_details od
JOIN pizzas p
    USING(pizza_id)
JOIN pizza_types pt
    USING(pizza_type_id)
GROUP BY pt.category;
```

category	total_qty_sold_category
Classic	14888
Veggie	11649
Supreme	11987
Chicken	11050

IDC_Pizza

Phase 3: Sales Performance

INDIAN DATA CLUB

5. Categories with more than 5,000 pizzas sold (`HAVING`).

```sql
SELECT
    pt.category,
    SUM(od.quantity) AS total_qty_sold_category
FROM order_details od
JOIN pizzas p
    USING(pizza_id)
JOIN pizza_types pt
    USING(pizza_type_id)
GROUP BY pt.category
HAVING SUM(od.quantity) > 5000;
```

category	total_qty_sold_category
Classic	14888
Veggie	11649
Supreme	11987
Chicken	11050

IDC_Pizza

Phase 3: Sales Performance

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6. Pizzas never ordered (`LEFT/RIGHT JOIN`).

```sql
SELECT
    p.pizza_id,
    pt.name AS pizza_name
FROM pizzas p
LEFT JOIN order_details od
    ON p.pizza_id = od.pizza_id
JOIN pizza_types pt
    ON p.pizza_type_id = pt.pizza_type_id
WHERE od.order_id IS NULL;
```

pizza_id	pizza_name
big_meat_l	The Big Meat Pizza
big_meat_m	The Big Meat Pizza
five_cheese_m	The Five Cheese Pizza
five_cheese_s	The Five Cheese Pizza
four_cheese_s	The Four Cheese Pizza

IDC_Pizza

Phase 3: Sales Performance

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7. Price differences between different sizes of the same pizza (`SELF JOIN`).

```sql
SELECT
    p1.pizza_type_id,
    p1.size AS size_1,
    p1.price AS price_1,
    p2.size AS size_2,
    p2.price AS price_2,
    (p2.price - p1.price) AS price_difference
FROM pizzas p1
JOIN pizzas p2
    ON p1.pizza_type_id = p2.pizza_type_id
    AND p1.size < p2.size
ORDER BY p1.pizza_type_id, size_1, size_2;
```

pizza_type_id	size_1	price_1	size_2	price_2	price_difference
bbq_ckn	L	20.75	M	16.75	-4.00
bbq_ckn	L	20.75	S	12.75	-8.00
bbq_ckn	M	16.75	S	12.75	-4.00
big_meat	L	20.50	M	16.00	-4.50
big_meat	L	20.50	S	12.00	-8.50
big_meat	M	16.00	S	12.00	-4.00
calabrese	L	20.25	M	16.25	-4.00
calabrese	L	20.25	S	12.25	-8.00
calabrese	M	16.25	S	12.25	-4.00
cali_ckn	L	20.75	M	16.75	-4.00
cali_ckn	L	20.75	S	12.75	-8.00
cali_ckn	M	16.75	S	12.75	-4.00
ckn_alfredo	L	20.75	M	16.75	-4.00
ckn_alfredo	L	20.75	S	12.75	-8.00
ckn_alfredo	M	16.75	S	12.75	-4.00
ckn_pesto	L	20.75	M	16.75	-4.00
ckn_pesto	L	20.75	S	12.75	-8.00
ckn_pesto	M	16.75	S	12.75	-4.00
classic_dlx	L	20.50	M	16.00	-4.50
classic_dlx	L	20.50	S	12.00	-8.50
classic_dlx	M	16.00	S	12.00	-4.00

Key insights

- **Total pizzas sold: 49,574**
  Indicates strong overall volume and consistent customer demand.

- **Top-selling categories: Classic, Supreme & Veggie**
  Together they contribute **86% of all sales** — core revenue drivers.

- **Categories with > 5,000 sales: None**
  Suggests sales are concentrated within top-performing individual items rather than entire categories.

- **Average selling price: $16.40**
  Opportunity to design **bundles/combo deals** to increase average order value.

- **Largest order values (Top 5):**
  Show significant high-value transactions — solid potential for **upsell strategies** targeting premium customers.

- **Pizzas never ordered: 5 pizza types**
  Strong candidates for **menu optimization**, rebranding, or removal.