

# Data

## Runners ::

RUNNER_ID	REGISTRATION_DATE
1	01-01-2021
2	03-01-2021
3	08-01-2021
4	15-01-2021

## Customer\_orders ::

ORDER_ID	CUSTOMER_ID	PIZZA_ID	EXCLUSIONS	EXTRAS	ORDER_TIME
1	101	1	null	null	01-01-2020 18:05
2	101	1	null	null	01-01-2020 19:00
3	102	1	null	null	02-01-2020 23:51
3	102	2	null	null	02-01-2020 23:51
4	103	1	4	null	04-01-2020 13:23
4	103	1	4	null	04-01-2020 13:23
4	103	2	4	null	04-01-2020 13:23
5	104	1	null	1	08-01-2020 21:00
6	101	2	null	null	08-01-2020 21:03
7	105	2	null	1	08-01-2020 21:20
8	102	1	null	null	09-01-2020 23:54
9	103	1	4	1,5	10-01-2020 11:22
10	104	1	null	null	11-01-2020 18:34
10	104	1	2,6	1,4	11-01-2020 18:34

## Runner\_Orders ::

ORDER_ID	RUNNER_ID	PICKUP_TIME	DISTANCE	DURATION	CANCELLATION
1	1	01-01-2020 18:15	20km	32 minutes	null
2	1	01-01-2020 19:10	20km	27 minutes	null
3	1	03-01-2020 00:12	13.4km	20 mins	null
4	2	04-01-2020 13:53	23.4	40	null
5	3	08-01-2020 21:10	10	15	null
6	3	null	null	null	Restaurant Cancellation
7	2	08-01-2020 21:30	25km	25mins	null
8	2	10-01-2020 00:15	23.4 km	15 minute	null
9	2	null	null	null	Customer Cancellation
10	1	11-01-2020 18:50	10km	10minutes	null

## Pizza\_Names ::

PIZZA_ID	PIZZA_NAME
1	Meatlovers
2	Vegetarian

## Pizza\_Recipes ::

PIZZA_ID	TOPPINGS
1	1,2,3,4,5,6,8,10
2	4,6,7,9,11,12

## Pizza\_Recipes1 ::

PIZZA_ID	TOPPINGS
1	1
1	2
1	3
1	4
1	5
1	6
1	8
1	10
2	4
2	6
2	7
2	9
2	11
2	12

## Pizza\_Toppings ::

TOPPING_ID	TOPPING_NAME
1	Bacon
2	BBQ Sauce
3	Beef
4	Cheese
5	Chicken
6	Mushrooms
7	Onions
8	Pepperoni
9	Peppers
10	Salami
11	Tomatoes
12	Tomato Sauce

## Pizza Metrics

1. How many pizzas were ordered?

Output :

TOTAL_PIZZA_ORDER
14

2. How many unique customer orders were made?

Output :

TOTAL_UNIQUE_CUSTOMER
5

3. How many successful orders were delivered by each runner?

Output :

RUNNER	TOTAL_ORDERS
1	4
2	3
3	1

4. How many of each type of pizza was delivered?

Output :

PIZZA	TOTAL_PIZZA_DELIVERD
1	10
2	2

5. How many Vegetarian and Meatlovers were ordered by each customer?

Output :

CUSTOMER	PIZZA_ID	PIZZA_NAME	COUNT_ORDERED_PIZZA
101	1	Meatlovers	2
101	2	Vegetarian	1
102	1	Meatlovers	2
102	2	Vegetarian	1
103	1	Meatlovers	3
103	2	Vegetarian	1
104	1	Meatlovers	3
105	2	Vegetarian	1

6. What was the maximum number of pizzas delivered in a single order?

Output :

ORDER_ID	TOTAL_CNT_PIZZA
4	3

7. For each customer, how many delivered pizzas had at least 1 change and how many had no changes?

Output :

CUSTOMER_ID	TOTAL_ORDERS	NO_CHANGES_MADE	EXTRA_CHANGES_MADE
101	3	3	0
102	3	3	0
103	4	3	1
104	3	1	2
105	1	0	1

8. How many pizzas were delivered that had both exclusions and extras?

Output :

ORDERS
9
10

9. What was the total volume of pizzas ordered for each hour of the day?

Output :

DAYS	HOURS	ORDERS
1	18	1
1	19	1
2	23	2
4	13	3
8	21	3
9	23	1
10	11	1
11	18	2

10.What was the volume of orders for each day of the week?

Output :

WEEK	DAY	TOTAL_ORDERS
1	1	2
1	2	2
1	4	3
2	8	3
2	9	1
2	10	1
2	11	2

## Runner and Customer Experience

1. How many runners signed up for each 1 week period? (i.e. week starts 2021-01-01)

Output :

WEEK	RUNNER
1	2
2	3

2. What was the average time in minutes it took for each runner to arrive at the Pizza Runner HQ to pickup the order?

Output :

RUNNER_ID	AVG_TIME_IN_MIN
1	15.33
2	23.4
3	10

3. What was the average distance travelled for each customer?

Output :

CUSTOMER_ID	AVG_DISTANCE_COVERED
101	20
102	16.73
103	23.4
104	10
105	25

4. What was the difference between the longest and shortest delivery times for all orders?

Output :

MIN_DURATION	MAX_DURATION	DIFFERENCE
10	40	30

5. What was the average speed for each runner for each delivery and do you notice any trend for these values?

Output :

RUNNER_ID	AVG_SPEED
1	0.785
2	0.866
3	0.67

6. What is the successful delivery percentage for each runner?

Output :

RUNNER_ID	CNT_ORDER	TOTAL_ORDER_CNT	SUCCESSFULL_DELIVERY_PER
1	4	10	40
2	3	10	30
3	1	10	10



# Ingredient Optimisation

1. What are the standard ingredients for each pizza?

Output :

PIZZA_NAME	TOPPING_NAME
Meatlovers	Bacon
Meatlovers	BBQ Sauce
Meatlovers	Beef
Meatlovers	Cheese
Meatlovers	Mushrooms
Meatlovers	Salami
Meatlovers	Pepperoni
Meatlovers	Chicken
Vegetarian	Onions
Vegetarian	Tomatoes
Vegetarian	Mushrooms
Vegetarian	Tomato Sauce
Vegetarian	Peppers
Vegetarian	Cheese

2. What was the most commonly added extra?

Output :

MOST_ORDERED_EXTRAS
Bacon

3. What was the most common exclusion?

Output :

MOST_EXCLUDED_TOPPING
Cheese

4. Generate an order item for each record in the customers\_orders table in the format of one of the following:

- Meat Lovers
- Meat Lovers - Exclude Beef
- Meat Lovers - Extra Bacon
- Meat Lovers - Exclude Cheese, Bacon - Extra Mushroom, Peppers

Output :

ORDER_ID	ORDER_ITEM
1	Meatlovers
2	Meatlovers
3	Meatlovers
3	Vegetarian
4	Meatlovers - Exclude Cheese
4	Meatlovers - Exclude Cheese
4	Vegetarian - Exclude Cheese
5	Meatlovers - Extra Bacon
7	Vegetarian - Extra Bacon
8	Meatlovers
10	Meatlovers
10	Meatlovers - Exclude BBQ Sauce,Mushrooms - Extra Bacon,Cheese

5. Generate an alphabetically ordered comma separated ingredient list for each pizza order from the customer\_orders table and add a 2x in front of any relevant ingredients
- For example: "Meat Lovers: 2xBacon, Beef, ... , Salami"

Output :

ORDER_ID	ORDER_ITEM
1	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
2	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
3	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
3	Vegetarian : 2xCheese,Mushrooms,Onions,Peppers,Tomatoes, Tomato Sauce
4	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
4	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
4	Vegetarian : 2xCheese,Mushrooms,Onions,Peppers,Tomatoes, Tomato Sauce
5	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
7	Vegetarian : 2xCheese,Mushrooms,Onions,Peppers,Tomatoes, Tomato Sauce
8	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
10	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami
10	Meatlovers : 2xBacon,BBQ Sauce,Beef,Cheese,Chicken,Mushrooms,Pepperoni,Salami

6. What is the total quantity of each ingredient used in all delivered pizzas sorted by most frequent first?

Output :

INGREDIENT	QUANTITY
Cheese	13
Bacon	12
Mushrooms	12
Pepperoni	9
Chicken	9
BBQ Sauce	9
Salami	9
Beef	9
Peppers	3
Tomato Sauce	3
Tomatoes	3
Onions	3

## Pricing and Ratings

1. If a Meat Lovers pizza costs \$12 and Vegetarian costs \$10 and there were no charges for changes - how much money has Pizza Runner made so far if there are no delivery fees?

Output :

RUNNER	TOTAL_EARN
1	70
2	56
3	12

2. What if there was an additional \$1 charge for any pizza extras?
  - o Add cheese is \$1 extra

Output :

RUNNER	TOTAL_EARN
1	72
2	57
3	13

3. The Pizza Runner team now wants to add an additional ratings system that allows customers to rate their runner, how would you design an additional table for this new dataset - generate a schema for this new table and insert your own data for ratings for each successful customer order between 1 to 5.

Output :

CUSTOMER_ID	RUNNER_ID	RATING
101	1	3
101	3	2.8
102	1	2.5
102	2	3.5
103	2	2.5
104	1	3.2
104	3	3.6
105	2	3.8

4. Using your newly generated table - can you join all of the information together to form a table which has the following information for successful deliveries?

- customer\_id
- order\_id
- runner\_id
- rating
- order\_time
- pickup\_time
- Time between order and pickup
- Delivery duration
- Average speed
- Total number of pizzas

Output :

CUSTOMER_ID	ORDER_ID	RUNNER_ID	RATING	ORDER_TIME	PICKUP_TIME	TIME_BETWEEN	DURATION	AVG_SPEED	TOTAL_NO_PIZZAS
101	1	1	3	01-01-2020 18:05	01-01-2020 18:15	10	32	0.63	1
101	2	1	3	01-01-2020 19:00	01-01-2020 19:10	10	27	0.74	1
102	3	1	2.5	02-01-2020 23:51	03-01-2020 00:12	21	20	0.67	2
102	8	2	3.5	09-01-2020 23:54	10-01-2020 00:15	20	15	1.56	1
103	4	2	2.5	04-01-2020 13:23	04-01-2020 13:53	29	40	0.59	3
104	5	3	3.6	08-01-2020 21:00	08-01-2020 21:10	10	15	0.67	1
104	10	1	3.2	11-01-2020 18:34	11-01-2020 18:50	15	10	1	2
105	7	2	3.8	08-01-2020 21:20	08-01-2020 21:30	10	25	1	1

5. If a Meat Lovers pizza was \$12 and Vegetarian \$10 fixed prices with no cost for extras and each runner is paid \$0.30 per kilometre traveled - how much money does Pizza Runner have left over after these deliveries?

Output :

RUNNER	TOTAL_EARN
1	43.96
2	20.42
3	9

## Bonus Questions

If Danny wants to expand his range of pizzas - how would this impact the existing data design? Write an INSERT statement to demonstrate what would happen if a new **Supreme** pizza with all the toppings was added to the Pizza Runner menu?

Output :

PIZZA_ID	PIZZA_NAME
1	Meatlovers
2	Vegetarian
3	Supreme

PIZZA_ID	TOPPINGS
1	1,2,3,4,5,6,8,10
2	4,6,7,9,11,12
3	1,2,3,4,5,6,7,8,9,10,11,12

# Conclusion

This case study has shed light on valuable consumer behaviour trends at Pizza Runner, allowing Danny to make more informed decisions about the prospective growth for his restaurant.

## Key findings:

- **Meatlovers pizza is the most popular among customers**, followed closely by vegetarian pizza. Knowing this helps Danny to prioritise these popular alternatives while also exploring new menu combinations that cater to both meat and meat-free tastes.
- **Peak dining hours:** Customer hunger pangs strike most frequently between 11 AM to 1 PM and 6 PM to 11 PM. Optimizing staff scheduling and inventory levels during these peak periods can ensure smooth operations and efficient service.
- **Delivery zone sweet spot:** The majority of orders originate within 19-20 kilometers, suggesting a well-defined delivery radius. Danny can leverage this data to optimize delivery routes and maintain efficiency.
- **Timely deliveries:** The average delivery time remaining under 30 minutes across varying distances is a testament to Pizza Runner's commitment to swift service. Maintaining this efficiency is crucial for customer satisfaction.
- **Bacon love, cheese not so much:** Bacon emerges as the clear favorite among additional toppings, while cheese finds itself mostly excluded. This presents an opportunity to explore new topping options that complement Meatlovers pizza and cater to a wider range of preferences.
- **Cancellation rate reduction:** A 14% cancellation rate indicates areas for improvement. Identifying reasons behind cancellations, such as menu discrepancies or long wait times, can help Danny address these pain points and reduce cancellations.

With these information at his command, Danny can develop a data-driven strategy to improve customer satisfaction and increase revenue. Here are a few possible courses of action:

- **Streamline the menu:** The menu can be made more appealing by emphasizing Meatlovers and Vegetarian pizzas and adding fresh topping combinations that go well with the tastes of the consumers.
- **Promotions that are targeted:** Orders placed during peak hours or within the designated delivery zone can be encouraged by providing special offers during these times.
- **Redesigned loyalty program:** The loyalty program can be designed to reward customers for returning to preferred pizzas and toppings based on their popularity. Furthermore, addressing the causes of cancellations can encourage patronage.

Through the application of these data-driven tactics, owner may turn Pizza Runner into a customers favourite and secure the company's sustained prosperity in the competitive restaurant sector.