



INSIGHTS INTO TARGET'S BRAZILIAN OPERATIONS

ABOUT TARGET

- Target Corporation is an American retail corporation headquartered in Minneapolis, Minnesota. It is the seventh largest retailer in the United States. The company is one of the largest American-owned private employers in the United States.
- As of 2023, Target operates 1,948 stores throughout the United States, and is ranked No. 32 on the 2022 [Fortune 500](#) list of the largest U.S. corporations by total revenue.
- This business case is about Target trends in Brazil.

DATASET

- 'Target SQL' contains data about the Target customers, geo location, orders, order items, order reviews, products, sellers and payments.
- String, Integer, Timestamp and Float are the datatypes used across the dataset.

```
1 select distinct(data_type) from `targetsql-387116.Target_sql.INFORMATION_SCHEMA.COLUMNS` ;
2
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH	PREVIEW
Row	data_type					
1	STRING					
2	INT64					
3	TIMESTAMP					
4	FLOAT64					

- The dataset covers the time period from September 4, 2016 to October 17, 2018 comprising a total of 99,441 orders out of which 96478 orders were successfully delivered and 625 orders were cancelled.

```
3 select order_status,count(*) as count from `targetsql-387116.Target_sql.orders` group by order_status;
4
```

Query results

JOB INFORMATION		RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH	PREVIEW
Row	order_status	count				
1	created	5				
2	shipped	1107				
3	approved	2				
4	canceled	625				
5	invoiced	314				
6	delivered	96478				
7	processing	301				
8	unavailable	609				

- During the given period, customers from various cities and states of Brazil placed orders. The cities with the **highest** number of customer orders were **Sao Paulo**, followed by **Rio de Janeiro** and **Minas Gerais**, respectively.

```

10 SELECT distinct(customer_city), customer_state from `targetsql-387116.Target_sql.customers` where customer_id in (select customer_id from
11 `targetsql-387116.Target_sql.orders` where order_purchase_timestamp between '2016-09-04 21:15:19 UTC' and '2018-10-17 17:30:18 UTC');
12

```

Query results [SAVE RESULTS](#) [EXPLORE DATA](#)

JOB INFORMATION RESULTS JSON EXECUTION DETAILS EXECUTION GRAPH [PREVIEW](#)

Row	customer_city	customer_state
1	acu	RN
2	ico	CE
3	ipe	RS
4	ipu	CE
5	ita	SC
6	itu	SP
7	jau	SP
8	luz	MG
9	poa	SP

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IN-DEPTH EXPLORATION

- From the image below it is observed that there was a significant surge in the number of orders received by Target from 2016 to 2017 i.e. **164 times the orders from 2016**, with a noticeable increase. Subsequently, there was a more modest rise in orders from 2017 to 2018.

```

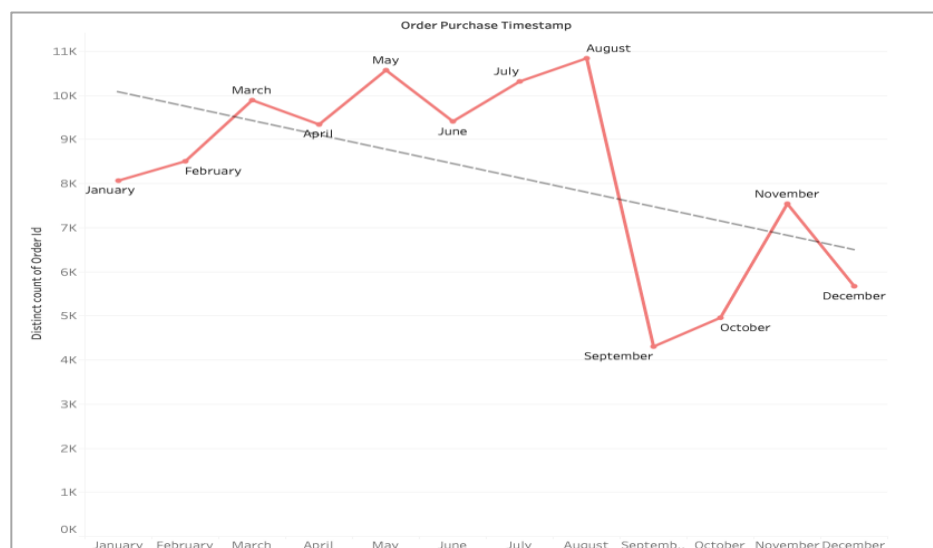
9
10 select distinct(EXTRACT(YEAR FROM order_purchase_timestamp)),count(order_id) as orders_count from `targetsql-387116.Target_sql.orders` group by EXTRACT
11 (YEAR FROM order_purchase_timestamp);

```

Query results [SAVE RESULTS](#) [EXPLORE DATA](#)

JOB INFORMATION RESULTS JSON EXECUTION DETAILS EXECUTION GRAPH [PREVIEW](#)

Row	fo_	orders_count
1	2016	329
2	2017	45101
3	2018	54011



- Among the seasonal months, August, May, July, and March stood out with a higher volume of orders. Among them, **August emerged as the month with the highest number of orders**, recording an impressive total of 10,843 orders i.e; **11% of total orders** over the span of three years.
- In contrast, **September** is regarded as an **off-seasonal month**, accounting for merely **4.3% of the total orders** received over the three-year period.
- Over all there is a **consistent downward trend** observed from the start of the year in January to the end of the year in December, indicating a gradual decrease in orders received.
- From the below picture it is observed that the most probable time for customers to place orders on Target is during the afternoon hours, indicating a **higher likelihood of order activity during afternoon** and least activity during dawn.

```

26 select case
27   WHEN (EXTRACT(HOUR FROM order_purchase_timestamp))>=0
28   AND EXTRACT(HOUR FROM order_purchase_timestamp)<6) then "DAWN"
29   when (EXTRACT(HOUR FROM order_purchase_timestamp))>=6
30   and EXTRACT(HOUR FROM order_purchase_timestamp)<12) then "MORNING"
31   when (EXTRACT(HOUR FROM order_purchase_timestamp))>=12
32   and EXTRACT(HOUR FROM order_purchase_timestamp)<18) then "AFTERNOON"
33   when (EXTRACT(HOUR FROM order_purchase_timestamp))>=18
34   and EXTRACT(HOUR FROM order_purchase_timestamp)<24) then "NIGHT"
35 end

```

Query results

JOB INFORMATION	RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH	PREVIEW
Row	partOfDay	countOfOrders			
1	MORNING	22240			
2	DAWN	4740			
3	AFTERNOON	38361			
4	NIGHT	34100			

EVOLUTION OF E-COMMERCE ORDERS IN THE BRAZIL REGION

- Month on month order by state

```

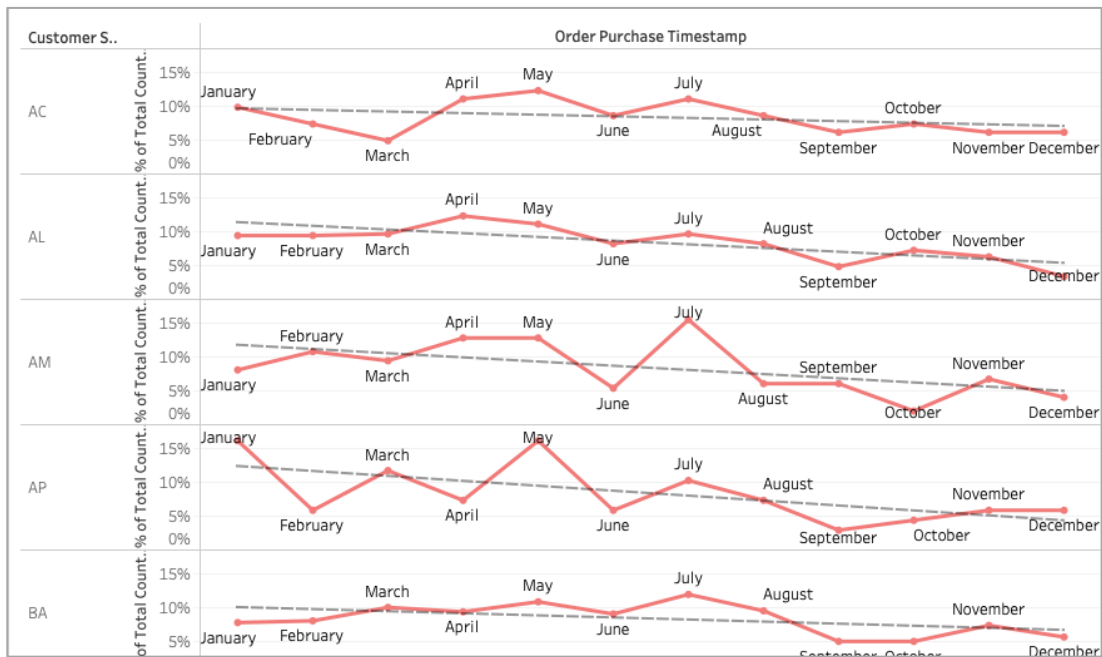
31 select *, next_month_orders-curr_month_orders as mom_orders from (select customer_state, month, curr_month_orders, lead(curr_month_orders) over
32   (partition by customer_state order by customer_state asc, month asc) as next_month_orders from (select c.customer_state, EXTRACT(MONTH FROM o.
order_purchase_timestamp) as month, count(order_id) as curr_month_orders from `targetsql-387116.Target_sql_orders` o join `targetsql-387116.Target_sql_
customers` c on o.customer_id=c.customer_id group by month, c.customer_state order by c.customer_state, month )t)p

```

Query results

JOB INFORMATION	RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH	PREVIEW
Row	customer_state	month	curr_month_orders	next_month_orders	mom_orders
1	AC	1	8	6	-2
2	AC	2	6	4	-2
3	AC	3	4	9	5
4	AC	4	9	10	1
5	AC	5	10	7	-3
6	AC	6	7	9	2
7	AC	7	9	7	-2
8	AC	8	7	5	-2
9	AC	9	5	6	1
10	AC	10	6	5	-1
11	AC	11	5	5	0
12	AC	12	5	null	null
13	AL	1	39	39	0
14	AL	2	30	30	0

- It has been observed that in the state of **Amazonas(AM)**, there is a remarkable **month-on-month increase of 187.5%** in orders from June to July. Similarly, in **Ampa(AL)**, there is a significant **120%** increase in orders from April to May. These findings highlight substantial growth in order volumes during those specific periods in the respective regions.



- The cities with the **highest** number of customers are **Sao Paulo(SP)** with **41746** customers, followed by **Rio de Janeiro(RJ)** and **Minas Gerais(MG)**, respectively and **Roraima(RR)** with lowest **46** customers.

Row	customer_state	cust_count
1	SP	41746
2	RJ	12852
3	MG	11635
4	RS	5466
5	PR	5045
6	SC	3637
7	BA	3380
8	DF	2140
9	ES	2033
10	GO	2020
11	PE	1652
12	CE	1336
13	PA	975
14	MT	907

IMPACT ON ECONOMY

- Below is the image showing percentage increase in cost of orders from 2017 to 2018 only including months from Jan to Aug. Based on the observations, it is noteworthy that the month of **January**

exhibited the highest percentage increase in the cost of orders compared to the previous year (2017 to 2018). On the other hand, August experienced the lowest percentage increase in the cost of orders during the same period. These findings highlight the substantial variation in cost fluctuations throughout the analysed months, with January showing the most significant increase and August reflecting the least increase in order costs.

```

40 with CTE as
41 (select p.payment_value , FORMAT_DATETIME("%B", o.order_purchase_timestamp) as months,extract(YEAR from o.order_purchase_timestamp) as years from
   'targetsql-387116.Target_sql.orders' o join 'targetsql-387116.Target_sql.order_items' oi on o.order_id=oi.order_id join 'targetsql-387116.Target_sql.
   payments' p on p.order_id=oi.order_id ),
42 payment_2017 as(select round(sum(payment_value),2) as sum_payments,months from CTE
43 where years = 2017 group by months order by months limit 8),
44 payment_2018 as(select round(sum(payment_value),2) as sum_payments,months from CTE
45 where years = 2018 group by months order by months limit 8)
46 select p17.months, round((p18.sum_payments-p17.sum_payments)/p17.sum_payments)*100,2) as percent_increase_in_cost from payment_2017 p17 join
   payment_2018 p18 on p17.months=p18.months order by p17.months;
--

```

Query results

SAVE RESULTS EXPLORE DATA

Row	months	percent_increase_in_cost
1	January	650.01
2	February	279.52
3	April	196.01
4	March	180.02
5	June	115.99
6	July	83.33
7	August	41.32

- Sao Paulo (SP)** stands out with the **highest sum of price and least freight values**, suggesting that it is the state with the highest number of orders. Conversely, **Roraima (RR)** has the lowest sum of price and high freight values, indicating it has the **lowest number of orders**. Interestingly, states with lower freight values tend to have a higher number of orders. For instance, Sao Paulo (SP) has an average freight value of 15.15, while Roraima (RR) with a higher freight value of 42.98 has the lowest number of orders. This **suggests an opportunity to potentially decrease freight values in less-developed states and consequently increase the number of orders**. By addressing the freight cost disparity, there is a potential to enhance business growth and stimulate more orders from economically disadvantaged regions.

```

54
55 select c.customer_state,round(sum(oi.price),2) as sum_price, round(sum(oi.freight_value),2) as sum_freight_value,round(AVG(oi.price),2) as avg_price,
   round(AVG(oi.freight_value),2) as avg_freight_value from 'targetsql-387116.Target_sql.orders' o join 'targetsql-387116.Target_sql.customers' c on o.
   customer_id=c.customer_id join 'targetsql-387116.Target_sql.order_items' oi on o.order_id=oi.order_id group by c.customer_state order by
56 c.customer_state;
57

```

Query results

SAVE RESULTS EXPLORE DATA

Row	customer_state	sum_price	sum_freight_value	avg_price	avg_freight_value
1	SP	5202955.05	718723.07	109.65	15.15
2	RJ	1824092.67	305589.31	125.12	20.96
3	MG	1585308.03	270853.46	120.75	20.63
4	RS	750304.02	135522.74	120.34	21.74
5	PR	683083.76	117851.68	119.0	20.53
6	SC	520553.34	89660.26	124.65	21.47
7	BA	511349.99	100156.68	134.6	26.36
8	DF	302603.94	50625.5	125.77	21.04
9	GO	294591.95	53114.98	126.27	22.77
10	ES	275037.31	49764.6	121.91	22.06

ANALYSIS ON SALES,FREIGHT AND DELIVERY TIME

- Below are the tables showing top 5 states with highest and lowest average freight value. **Paraíba (PB)** exhibits the **highest average freight value**, implying that this state tends to have relatively higher shipping costs on average. On the other hand, **Sao Paulo (SP)** demonstrates the **lowest freight value**, indicating comparatively lower shipping costs in this state. This disparity in freight

values between Paraíba and Sao Paulo suggests potential opportunities for optimization in shipping costs. By examining the factors contributing to the higher freight values in Paraíba and **identifying strategies to reduce them, it may be possible to enhance cost efficiency and encourage increased order activity in the state.** Similarly, the lower freight values in Sao Paulo could be leveraged as a competitive advantage to attract more orders.

customer_state ▼	avg_freight ▼	customer_state ▼	avg_freight ▼
PB	43.09	SP	15.11
RR	43.09	PR	20.47
RO	41.33	MG	20.63
AC	40.05	RJ	20.91
PI	39.12	DF	21.07

- Below are the tables showing top 5 states with highest and lowest average time to delivery. **Roraima (RR) exhibits the highest average number of days to delivery**, indicating that orders shipped to this state typically take longer to reach their destinations compared to other regions. Conversely, **Sao Paulo (SP) boasts the lowest average number of days to delivery**, suggesting faster shipping times within this state. This disparity in delivery times between Roraima and Sao Paulo highlights an opportunity for improvement in the logistics and transportation infrastructure in Roraima. By addressing the factors contributing to the longer delivery times in Roraima and **implementing strategies to streamline the delivery process, it may be possible to enhance customer satisfaction and expedite order fulfilment.** In contrast, the efficient delivery times in Sao Paulo can serve as a competitive advantage, attracting more customers and reinforcing customer loyalty in the region.

customer_state ▼	ay	avg_days_delivered	customer_state ▼	avg_days_delivered
RR		27.83	SP	8.26
AP		27.75	PR	11.48
AM		25.96	MG	11.52
AL		23.99	DF	12.5
PA		23.3	SC	14.52

- Top 5 states where delivery is really fast and not so fast compared to estimated date. **Alagoas (AL) demonstrates the lowest difference between the estimated delivery time and the actual delivery time**, indicating that orders in this state are typically delivered close to the initially estimated timeframe. On the other hand, **Acre (AC) exhibits the highest difference between the estimated and actual delivery times**, suggesting that orders in this region often experience significant delays beyond the initial estimates. This discrepancy **highlights an opportunity for improvement in the delivery process in Acre to align the estimated and actual delivery times more closely.**

customer_state ▼	avg_delivery_diff ▼	customer_state ▼	avg_delivery_diff ▼
AL	7.98	AC	20.01
MA	9.11	RO	19.08
SE	9.17	AM	18.98
ES	9.77	AP	17.44
BA	10.12	RR	17.43

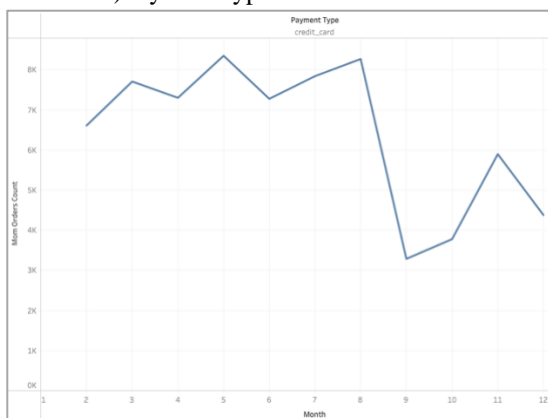
PAYMENT TYPE AND ANALYSIS

- From the below chart 'a' it is observed that the number of orders placed via credit card as the chosen payment method exhibits an interesting trend. There is a **consistent increase in monthly order counts until August**, suggesting a growing preference for credit card payments. However, following August, there is a **notable decline in the number of orders made using credit cards.**

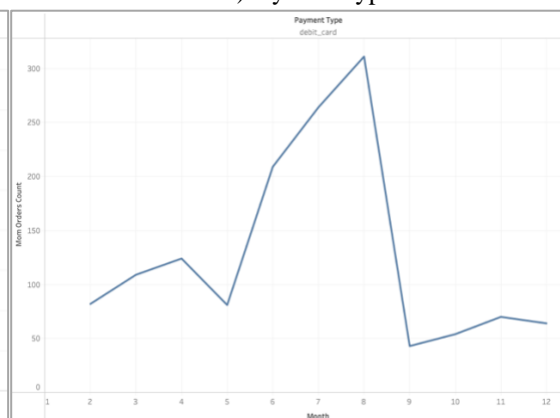
payment_type ▾	month ▾	mom_orders_count ▾
credit_card	1	null
credit_card	2	6609
credit_card	3	7707
credit_card	4	7301
credit_card	5	8350
credit_card	6	7276
credit_card	7	7841
credit_card	8	8269
credit_card	9	3286
credit_card	10	3778
credit_card	11	5897
credit_card	12	4378

- From the below chart 'b' it is observed that there is a substantial increase in the number of orders paid with **debit cards leading up to August**, indicating a growing preference for this payment method. However, **September marks a significant and concerning decline** in the number of orders made using debit cards. Following September, there is a gradual but relatively minor recovery in the order count for debit card payments until the end of the year.
- From the below chart 'c' and 'd' it is observed that there is a notable increase in the number of orders paid with **vouchers and UPI leading up to July**, indicating a growing preference for this payment method. However, starting from July, there is a **decline in the number of orders made using vouchers and UPI, which continues until September**. From **October onward, there is a slight upward trend**, indicating a modest recovery in voucher-based payments.

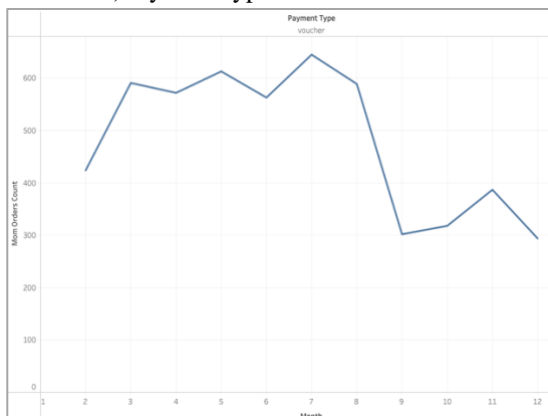
a)PaymentType- CreditCard



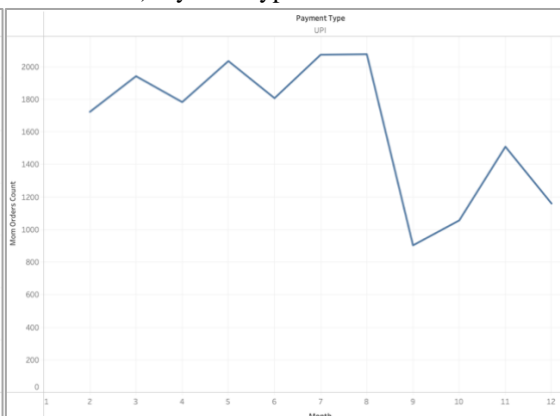
b)PaymentType-DebitCard



c)PaymentType- Voucher



d)PaymentType-UPI



- When considering the count of orders based on the **number of payment installments**, it is observed that the **maximum number of installments available is 24**. Interestingly, the **highest number of orders, by a significant margin, is paid in a single installment**. This is followed by orders paid in 2 installments, and then in 3 installments. This data suggests a **strong preference for one-time payment among customers**, with a substantial drop in the number of orders as the number of installments increases.

```

73
74 select distinct(p.payment_installments),
75 count(o.order_id) over(partition by p.payment_installments order by p.payment_installments) as count_orders
76 from `targetsql-387116.Target_sql.payments` p join `targetsql-387116.Target_sql.orders` o on p.order_id=o.order_id;
77

```

Query results [SAVE RESULTS](#)

JOB INFORMATION	RESULTS	JSON	EXECUTION DETAILS	EXECUTION GRAPH	PREVIEW
Row	payment_installment	count_orders			
1	0	2			
2	1	52546			
3	2	12413			
4	3	10461			
5	4	7098			
6	5	5239			
7	6	3920			
8	7	1626			
9	8	4268			
10	9	644			

Results per page: 50