Target Business Case Study

Target Brazil E-Commerce Case Study

Project Overview

Analyzed 100,000+ e-commerce orders from Target Brazil (2016–2018) to uncover operational insights across order processing, pricing, payments, freight, customer behavior, and delivery performance.

Objectivess

As a data analyst at Target, the goal was to extract actionable insights from a multi-table dataset and recommend improvements in logistics, pricing, and customer experience.

Dataset Summary

- Source: Google Drive Folder
- Format: 8 CSV files
- Tables: orders, order_items, customers, sellers, payments, reviews, products, geolocation

🔍 Key Explorations & Insights

🧭 Exploratory Analysis

- Identified data types and structure across all tables
- Mapped customer distribution by city and state
- Extracted order time range and seasonal patterns

📈 Order Trends

- Analyzed yearly and monthly growth in order volume
- Segmented order times into Dawn, Morning, Afternoon, Night
- Tracked monthly order counts per state

💰 Economic Impact

- Calculated % increase in payment value from Jan–Aug (2017 vs 2018)
- Aggregated total & average order price and freight by state

🚚 Delivery Performance

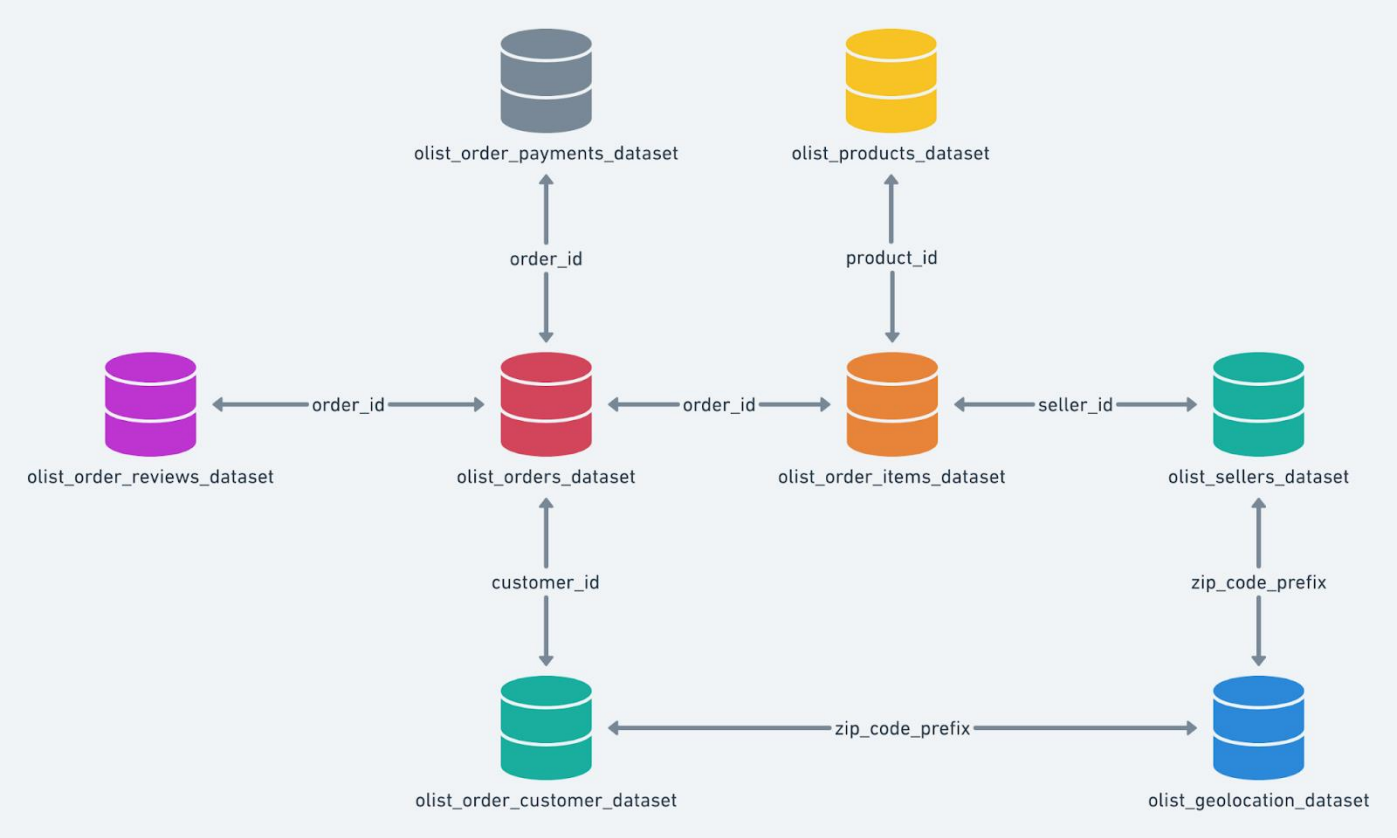
- Computed delivery time and deviation from estimated delivery
- Ranked states by:
- Highest/lowest average freight cost
- Fastest/slowest delivery time
- Most efficient delivery vs estimated date

💳 Payment Analysis

- Monthly breakdown of payment types used
- Distribution of orders by installment count

🛠️ Tools & Skills Used

- SQL and BigQuery
- Data cleaning & transformation
- Time-series analysis
- Geo-mapping & state-level aggregation
- Business storytelling with data



Details:

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1. Import the dataset and do the usual exploratory analysis steps like checking the structure & characteristics of the dataset:

1.1 Data type of all columns in all the table.

customers | Query | Open in | Share | Copy | Snapshot | Delete | Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	Data Policies
customer_id	STRING	NULLABLE	-	-	-	-	-
customer_unique_id	STRING	NULLABLE	-	-	-	-	-
customer_zip_code_prefix	INTEGER	NULLABLE	-	-	-	-	-
customer_city	STRING	NULLABLE	-	-	-	-	-
customer_state	STRING	NULLABLE	-	-	-	-	-

geolocation | Query | Open in | Share | Copy | Snapshot | Delete | Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	D
geolocation_zip_code_prefix	INTEGER	NULLABLE	-	-	-	-	-
geolocation_lat	FLOAT	NULLABLE	-	-	-	-	-
geolocation_lng	FLOAT	NULLABLE	-	-	-	-	-
geolocation_city	STRING	NULLABLE	-	-	-	-	-
geolocation_state	STRING	NULLABLE	-	-	-	-	-

order_items | Query | Open in | Share | Copy | Snapshot | Delete | Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	Data Polici
order_id	STRING	NULLABLE	-	-	-	-	-
order_item_id	INTEGER	NULLABLE	-	-	-	-	-
product_id	STRING	NULLABLE	-	-	-	-	-
seller_id	STRING	NULLABLE	-	-	-	-	-
shipping_limit_date	TIMESTAMP	NULLABLE	-	-	-	-	-
price	FLOAT	NULLABLE	-	-	-	-	-
freight_value	FLOAT	NULLABLE	-	-	-	-	-

order_reviews

Query | Open in | Share | Copy | Snapshot | Delete | Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	Dat
review_id	STRING	NULLABLE	-	-	-	-	-
order_id	STRING	NULLABLE	-	-	-	-	-
review_score	INTEGER	NULLABLE	-	-	-	-	-
review_comment_title	STRING	NULLABLE	-	-	-	-	-
review_creation_date	TIMESTAMP	NULLABLE	-	-	-	-	-
review_answer_timestamp	TIMESTAMP	NULLABLE	-	-	-	-	-

orders

Query | Open in | Share | Copy | Snapshot | Delete | Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags
order_id	STRING	NULLABLE	-	-	-	-
customer_id	STRING	NULLABLE	-	-	-	-
order_status	STRING	NULLABLE	-	-	-	-
order_purchase_timestamp	TIMESTAMP	NULLABLE	-	-	-	-
order_approved_at	TIMESTAMP	NULLABLE	-	-	-	-
order_delivered_carrier_date	TIMESTAMP	NULLABLE	-	-	-	-
order_delivered_customer_date	TIMESTAMP	NULLABLE	-	-	-	-
order_estimated_delivery_date	TIMESTAMP	NULLABLE	-	-	-	-

payments

Query | Open in | Share | Copy | Snapshot | Delete | Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	Data Policies
order_id	STRING	NULLABLE	-	-	-	-	-
payment_sequential	INTEGER	NULLABLE	-	-	-	-	-
payment_type	STRING	NULLABLE	-	-	-	-	-
payment_installments	INTEGER	NULLABLE	-	-	-	-	-
payment_value	FLOAT	NULLABLE	-	-	-	-	-

products Query Open in Share Copy Snapshot Delete Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	Data Poli
product_id	STRING	NULLABLE	-	-	-	-	-
product category	STRING	NULLABLE	-	-	-	-	-
product_name_length	INTEGER	NULLABLE	-	-	-	-	-
product_description_length	INTEGER	NULLABLE	-	-	-	-	-
product_photos_qty	INTEGER	NULLABLE	-	-	-	-	-
product_weight_g	INTEGER	NULLABLE	-	-	-	-	-
product_length_cm	INTEGER	NULLABLE	-	-	-	-	-
product_height_cm	INTEGER	NULLABLE	-	-	-	-	-
product_width_cm	INTEGER	NULLABLE	-	-	-	-	-

sellers Query Open in Share Copy Snapshot Delete Export

Schema | Details | Preview | Table Explorer Preview | Insights | Lineage | Data Profile | Data Quality

Filter Enter property name or value

Field name	Type	Mode	Key	Collation	Default Value	Policy Tags	Data Policies	D
seller_id	STRING	NULLABLE	-	-	-	-	-	-
seller_zip_code_prefix	INTEGER	NULLABLE	-	-	-	-	-	-
seller_city	STRING	NULLABLE	-	-	-	-	-	-
seller_state	STRING	NULLABLE	-	-	-	-	-	-

```
1  select count(*) from `TARGET_SQL.customers`
```

Query completed

Query results

Job information | Results | Visualization | JSON | Execution details | Execution graph

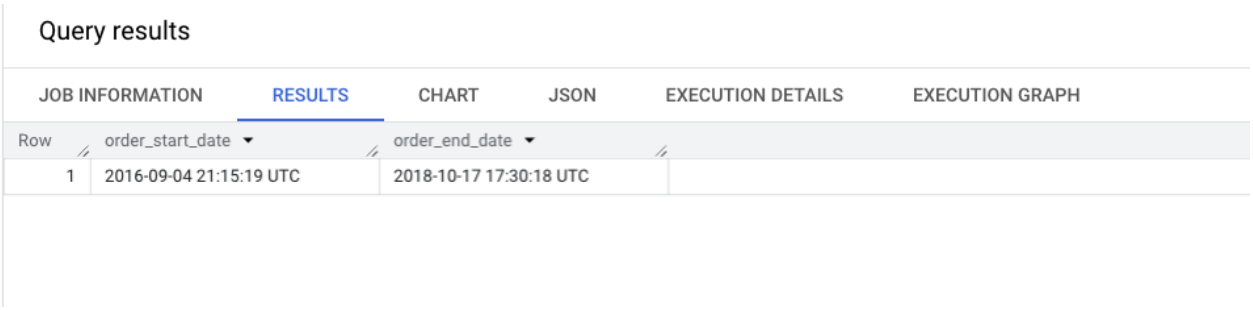
Row	f0_
1	99441

Insights:

Here 1Lakh customer records used for analysis

1.2. Time range between which the orders were placed.

```
SELECT MIN(order_purchase_timestamp) AS order_start_date,
       MAX(order_purchase_timestamp) AS order_end_date,
FROM `TARGET_SQL.orders`
```



Insights:

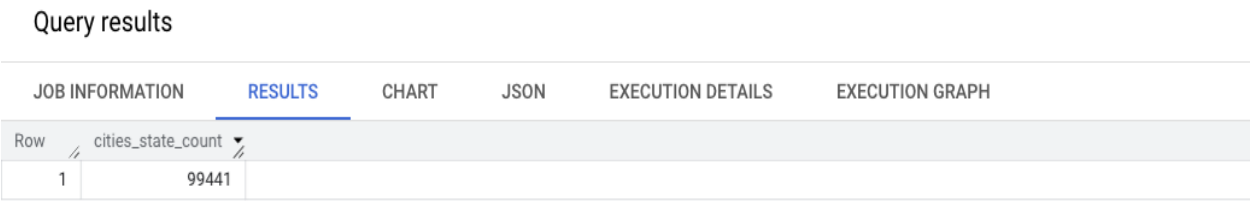
Start date = 04-09-2016

End date = 17-10-2018

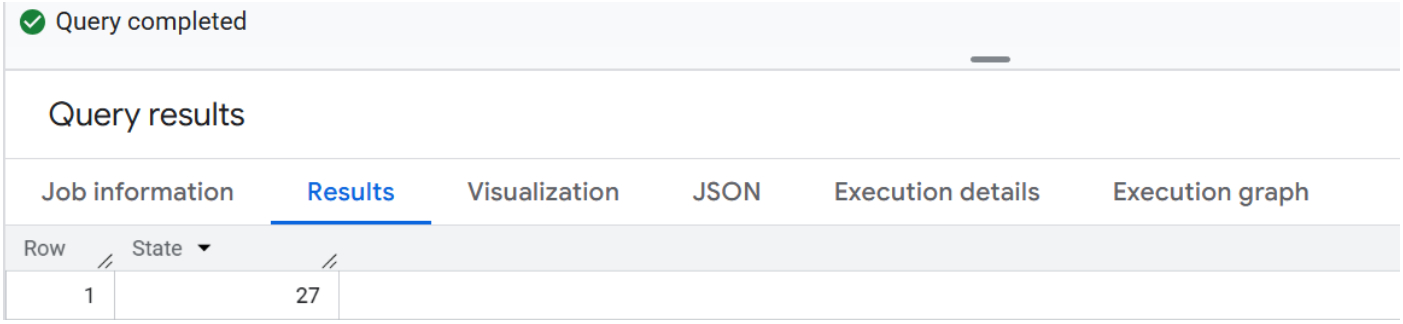
Time Period = 2 years, 7months, 14days

1.3. Count the number of Cities & States of customers who ordered during the given period.

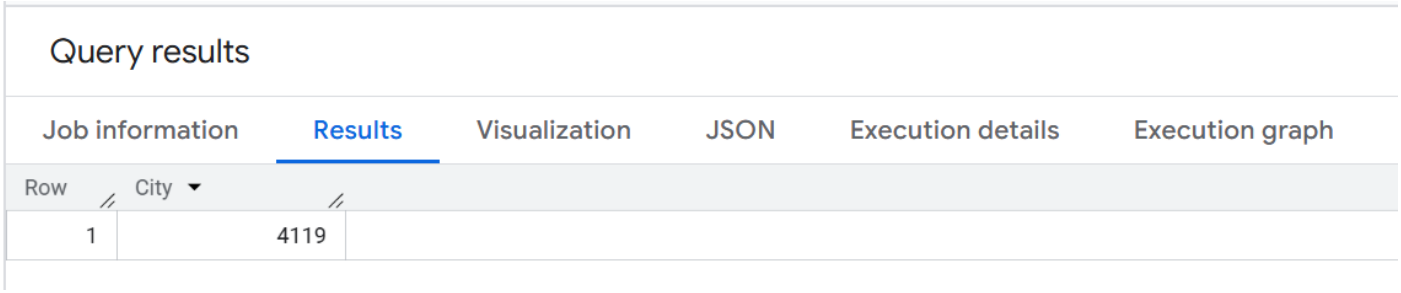
```
WITH min_max_dates AS (
  SELECT
    MIN(order_purchase_timestamp) AS min_date,
    MAX(order_purchase_timestamp) AS max_date
  FROM `TARGET_SQL.orders`
)
SELECT COUNT(DISTINCT cust.customer_id) AS cities_state_count
FROM `TARGET_SQL.customers` AS cust
JOIN `TARGET_SQL.orders` AS ord
ON cust.customer_id = ord.customer_id
JOIN min_max_dates AS dates
ON ord.order_purchase_timestamp BETWEEN dates.min_date AND dates.max_date;
```




```
select count(*) as State
from (select distinct customer_state, count(customer_state)  from `TARGET_SQL.customers`
group by customer_state)
```




```
select count(*) as City
from (select distinct customer_city, count(customer_city)  from `TARGET_SQL.customers`
group by customer_city)
```



Insights:

There were total 99441 customers from which order is placed

Total unique state: 27

Total unique city: 4119

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2. In-depth Exploration:

2.1. Is there a growing trend in the no. of orders placed over the past years?

```
WITH order_data AS (
  SELECT
     order_id,
     order_purchase_timestamp,
     FORMAT_DATETIME('%Y-%m', order_purchase_timestamp) AS past_years
  FROM `TARGET_SQL.orders`
)
SELECT
  past_years,
  COUNT(*) AS order_month_count,
  COUNT(*)-LAG(COUNT(*)) OVER(ORDER BY past_years) AS growth_trend
FROM order_data
GROUP BY past_years
ORDER BY past_years
LIMIT 10
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	past_years	order_month_count	growth_trend
1	2016-09	4	null
2	2016-10	324	320
3	2016-12	1	-323
4	2017-01	800	799
5	2017-02	1780	980
6	2017-03	2682	902
7	2017-04	2404	-278
8	2017-05	3700	1296
9	2017-06	3245	-455
10	2017-07	4026	781

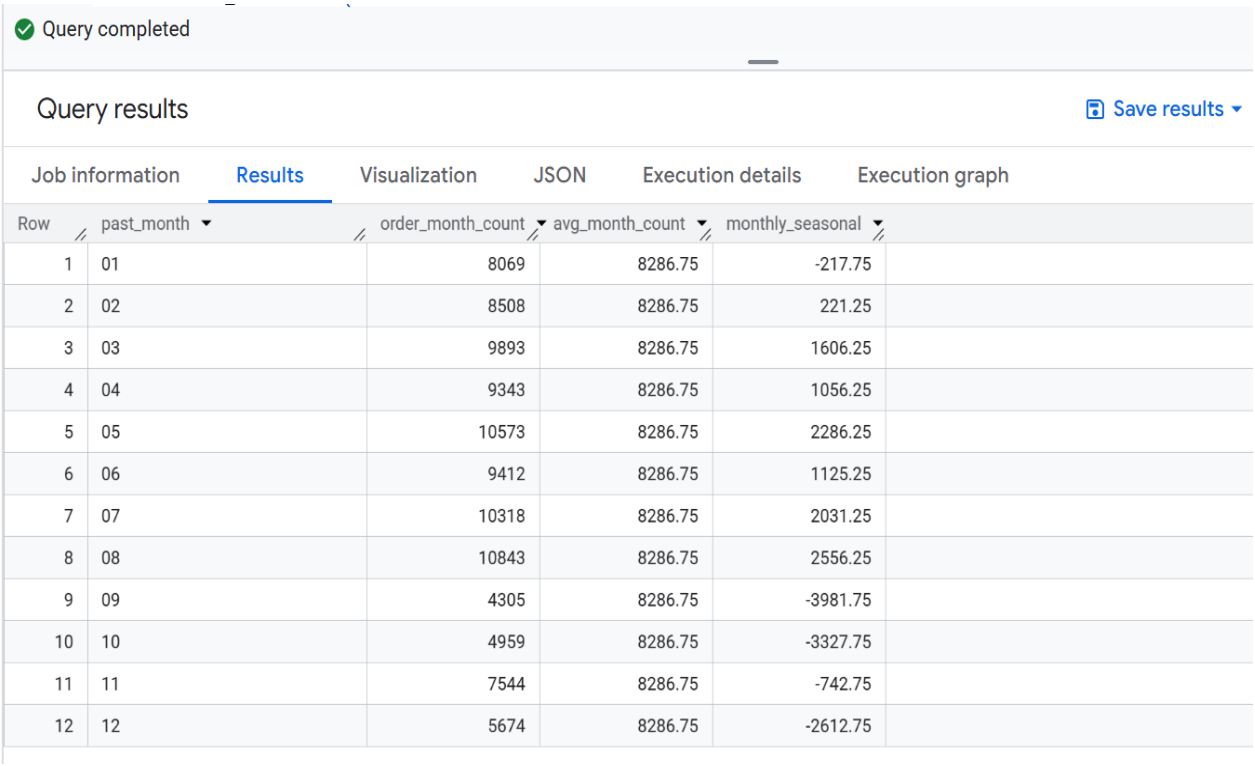
Insights:

We can clearly see that there is a growing trend in the growth_tred column

Highest order month = May-2017

2.2. Can we see some kind of monthly seasonality in terms of the no. of orders being placed?

```
WITH order_data AS (
  SELECT
    FORMAT_DATETIME('%m', order_purchase_timestamp) AS past_month,
    COUNT(order_id) AS order_month_count
  FROM `TARGET_SQL.orders`
  GROUP BY past_month
)
SELECT
  past_month,
  AVG(order_month_count) OVER() AS avg_month_count,
  order_month_count - ROUND(AVG(order_month_count) OVER(), 2) AS monthly_seasonal
FROM order_data
ORDER BY past_month
```



Row	past_month	order_month_count	avg_month_count	monthly_seasonal
1	01	8069	8286.75	-217.75
2	02	8508	8286.75	221.25
3	03	9893	8286.75	1606.25
4	04	9343	8286.75	1056.25
5	05	10573	8286.75	2286.25
6	06	9412	8286.75	1125.25
7	07	10318	8286.75	2031.25
8	08	10843	8286.75	2556.25
9	09	4305	8286.75	-3981.75
10	10	4959	8286.75	-3327.75
11	11	7544	8286.75	-742.75
12	12	5674	8286.75	-2612.75

Insights:

Here we can cleary see the number of orders are more in March which is in summer till July. Company needs to enguage customer on other months by providing offers on winter cloths and other products.

2.3. During what time of the day, do the Brazilian customers mostly place their orders? (Dawn, Morning, Afternoon or Night)

- **0-6 hrs : Dawn**
- **7-12 hrs : Mornings**
- **13-18 hrs : Afternoon**
- **19-23 hrs : Night**

```
SELECT order_purchase_timezone, count(order_purchase_timezone) FROM (
SELECT order_purchase_timestamp,
CASE
 WHEN extract(hour FROM order_purchase_timestamp) between 0 and 6 THEN 'Dawan'
 WHEN extract(hour FROM order_purchase_timestamp) between 7 and 12 THEN 'Mornings'
 WHEN extract(hour FROM order_purchase_timestamp) between 13 and 18 THEN 'Afternoon'
 ELSE 'Night'
END AS order_purchase_timezone
FROM `TARGET_SQL.orders`)
GROUP BY order_purchase_timezone
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	order_purchase_timezone	f0_
1	Mornings	27733
2	Dawan	5242
3	Afternoon	38135
4	Night	28331

Insights:

Here the time slots are:

Dawan: 12am-6am, Morning: 7am-12pm, Afternoon: 1pm-6pm, Night:7pm-11pm

During afternoon most people are awake and we can recommend more advertisements during this period to enguage the customers.

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3. Evolution of E-commerce orders in the Brazil region:

3.1. Get the month on month no. of orders placed in each state.

```
SELECT geo.geolocation_state,
  extract(month FROM  ord.order_purchase_timestamp) AS order_month,
  count(ord.order_id) AS month_on_month
FROM `TARGET_SQL.geolocation` AS geo
JOIN `TARGET_SQL.customers` AS cust
 ON geo.geolocation_zip_code_prefix = cust.customer_zip_code_prefix
JOIN `TARGET_SQL.orders` AS ord
 ON  cust.customer_id = ord.customer_id
GROUP BY geo.geolocation_state, order_month
order by geo.geolocation_state, order_month
limit 15
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	geolocation_state	order_month	month_on_month
1	AC	1	694
2	AC	2	515
3	AC	3	516
4	AC	4	789
5	AC	5	1161
6	AC	6	563
7	AC	7	937
8	AC	8	1060
9	AC	9	161
10	AC	10	535
11	AC	11	368
12	AC	12	389
13	AL	1	3645
14	AL	2	2902
15	AL	3	5279

Insights:

Most of the orders are from AL state, company needs to find the reasons for why number of orders more in AL state and implement same stratagy on other state.

3.2. How are the customers distributed across all the states?

```
SELECT geo.geolocation_state,count(distinct cust.customer_id) AS no_customers
FROM `TARGET_SQL.geolocation` AS geo
JOIN `TARGET_SQL.customers` AS cust
 ON geo.geolocation_zip_code_prefix = cust.customer_zip_code_prefix
GROUP BY geo.geolocation_state
limit 10
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	geolocation_state	no_customers
1	SE	349
2	AL	412
3	PI	492
4	AP	68
5	AM	148
6	RR	46
7	AC	120
8	RO	256
9	TO	279
10	BA	3371

Insights:

Maximum customer count: BA(~3371), AL(~412)

Company need to concentrate more on other state customer logins

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4. Impact on Economy: Analyze the money movement by e-commerce by looking at order prices, freight and others.

4.1.Get the % increase in the cost of orders from year 2017 to 2018 (include months between Jan to Aug only).

```
WITH monthly_avg_payment AS (
  SELECT
    EXTRACT(YEAR FROM ord.order_purchase_timestamp) AS year_x,
    EXTRACT(MONTH FROM ord.order_purchase_timestamp) AS month_x,
    AVG(pmt.payment_value) AS avg_payment
  FROM `TARGET_SQL.orders` AS ord
  JOIN `TARGET_SQL.payments` AS pmt
    ON ord.order_id = pmt.order_id
```

```
  WHERE EXTRACT(YEAR FROM ord.order_purchase_timestamp) IN (2017, 2018)
    AND EXTRACT(MONTH FROM ord.order_purchase_timestamp) BETWEEN 1 AND 8
  GROUP BY year_x, month_x
)
SELECT
  year_x,
  month_x,
  avg_payment,
  ROUND(
    (avg_payment - LAG(avg_payment) OVER (ORDER BY year_x, month_x)) * 100
    / LAG(avg_payment) OVER (ORDER BY year_x, month_x), 2) AS percentage_increase
FROM monthly_avg_payment
ORDER BY year_x, month_x;
```

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	year_x	month_x	avg_payment	percentage_incre...
1	2017	1	162.9271058823...	null
2	2017	2	154.7762513255...	-5.0
3	2017	3	158.57017976736	2.45
4	2017	4	162.5002061454...	2.48
5	2017	5	150.3343864097...	-7.49
6	2017	6	148.7998777648...	-1.02
7	2017	7	137.2209682649...	-7.78
8	2017	8	148.2189714285...	8.01
9	2018	1	147.4288218960...	-0.53
10	2018	2	142.7593987341...	-3.17
11	2018	3	154.3732854100...	8.14
12	2018	4	161.0189318906...	4.3
13	2018	5	161.7354099509...	0.44
14	2018	6	159.5077893752...	-1.38
15	2018	7	163.9066774243...	2.76
16	2018	8	152.6463601074...	-6.87

Insights:

We can see that % increase in the cost of orders increased from 2017 to 2018

4.2. Calculate the Total & Average value of order price for each state.

```
SELECT
  geo.geolocation_state,
  SUM(pmt.payment_value) AS total_price,
  AVG(pmt.payment_value) AS avg_price
FROM `TARGET_SQL.geolocation` AS geo
JOIN `TARGET_SQL.customers` AS cust
  ON geo.geolocation_zip_code_prefix = cust.customer_zip_code_prefix
JOIN `TARGET_SQL.orders` AS ord
  ON ord.customer_id = cust.customer_id
JOIN `TARGET_SQL.payments` AS pmt
  ON ord.order_id = pmt.order_id
GROUP BY geo.geolocation_state
ORDER BY total_price DESC
LIMIT 10;
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	geolocation_state	total_price	avg_price
1	SP	819324973.1272...	139.1800016902...
2	RJ	516214891.0892...	163.3892353243...
3	MG	468418138.0098...	155.9394130293...
4	RS	131886278.0300...	158.3569008647...
5	PR	101367928.9499...	155.6463115200...
6	SC	96577779.98002...	174.3123905423...
7	BA	74143589.03002...	190.0976312787...
8	ES	51507204.52001...	157.0576229985...
9	MT	27075810.91000...	211.8707522262...
10	GO	24572389.12999...	178.1046716582...

Insights:

We observe the total price and average order price for each state

4.3. Calculate the Total & Average value of order freight for each state.

```
SELECT
    geo.geolocation_state,
    SUM(orditm.freight_value) as total_freight_value,
    AVG(orditm.freight_value) as avg_freight_value
FROM `TARGET_SQL.order_items` AS orditm
JOIN `TARGET_SQL.orders` AS ord
 ON orditm.order_id = ord.order_id
JOIN `TARGET_SQL.customers` AS cust
 ON ord.customer_id = cust.customer_id
JOIN `TARGET_SQL.geolocation` AS geo
 ON cust.customer_zip_code_prefix = geo.geolocation_zip_code_prefix
GROUP BY geo.geolocation_state
LIMIT 10
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	geolocation_state	total_freight_value	avg_freight_value
1	MT	4177068.029999...	28.72475728422...
2	MA	2275191.8599997	38.07533863275...
3	AL	1237356.220000...	33.83250540015...
4	SP	98574572.42980...	15.40996507007...
5	MG	67058347.09041...	20.45899544954...
6	PE	4195977.719998...	32.86555067321...
7	RJ	71966793.75011...	20.89842360439...
8	DF	2214955.550000...	21.01097098246...
9	RS	19910834.35000...	21.52222484648...
10	SE	943582.8300000...	34.67269897846...

Insights:

We observe the total value and average value of order freight for each state

Note:

Freight: goods transported in bulk by truck, train, ship, or aircraft.

5.Analysis based on sales, freight and delivery time.

5.1. Find the no. of days taken to deliver each order from the order's purchase date as delivery time. Also, calculate the difference (in days) between the estimated & actual delivery date of an order. Do this in a single query.(Delivery time)

You can calculate the delivery time and the difference between the estimated & actual delivery date using the given formula:

- **time_to_deliver = order_delivered_customer_date - order_purchase_timestamp**
- **diff_estimated_delivery = order_delivered_customer_date - order_estimated_delivery_date**

```
SELECT
    order_id,
    customer_id,
    date_diff(order_delivered_customer_date, order_purchase_timestamp, day) as time_to_deliver,
    date_diff(order_delivered_customer_date, order_estimated_delivery_date, day) as diff_estimated_delivery
FROM `TARGET_SQL.orders`
WHERE order_delivered_customer_date IS NOT NULL
LIMIT 10;
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	order_id	customer_id	time_to_deliver	diff_estimated_d...
1	770d331c84e5b214bd9dc70a1...	6c57e6119369185e575b36712...	7	-45
2	1950d777989f6a877539f53795...	1bccb206de9f0f25adc6871a1b...	30	12
3	2c45c33d2f9cb8ff8b1c86cc28...	de4caa97afa80c8eeac2ff4c8da...	30	-28
4	dabf2b0e35b423f94618bf965fc...	5cdec0bb8cbdf53ffc8fdc212cd...	7	-44
5	8beb59392e21af5eb9547ae1a9...	bf609b5741f71697f65ce3852c...	10	-41
6	65d1e226dfaeb8cdc42f665422...	70fc57eeae292675927697fe03...	35	-16
7	c158e9806f85a33877bdfd4f60...	25456ee3b0cf84658015e4668...	23	-9
8	b60b53ad0bb7dacacf2989fe27...	2f9902d85fcd930227f711cf47...	12	5
9	c830f223aae08493ebecb52f29...	af626bcc9c27c08077b02e6d3a...	12	-12
10	a8aa2cd070eeac7e4368cae3d...	2c5519c36277c3f69df911c68c...	7	-1

Insights:

We can see the difference between orderd estimated date and delivered date

Company need to concentrate to decrease this difference.

5.2. Find out the top 5 states with the highest & lowest average freight value.(Freight value)

```
WITH freight_value AS(
 SELECT
   geo.geolocation_state as state,
   AVG(orditm.freight_value) as avg_freight_value
FROM `TARGET_SQL.order_items` AS orditm
JOIN `TARGET_SQL.orders` AS ord
ON orditm.order_id = ord.order_id
JOIN `TARGET_SQL.customers` AS cust
ON ord.customer_id = cust.customer_id
JOIN `TARGET_SQL.geolocation` AS geo
ON cust.customer_zip_code_prefix = geo.geolocation_zip_code_prefix
GROUP BY geo.geolocation_state
)
-- HIGHEST
(SELECT *
FROM freight_value
ORDER BY avg_freight_value
LIMIT 5)
UNION ALL
-- Lowest
(SELECT *
FROM freight_value
ORDER BY avg_freight_value DESC
LIMIT 5)
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON

Row	state	avg_freight_value
1	PB	42.77269312387...
2	RR	42.46960182496...
3	PI	39.47732502831...
4	AC	39.09837253960...
5	MA	38.07533863275...
6	SP	15.40996507007...
7	PR	20.14798071500...
8	MG	20.45899544954...
9	RJ	20.89842360439...
10	DF	21.01097098246...

Insights:

We observe that:

Maximum avg freight value = PB and RR (~42 units)

Minimum avg freight value = RJ and DF (~21 units)

5.3.Find out the top 5 states with the highest & lowest average delivery time.(Delivery time)

```
WITH high_low as (
SELECT
   geo.geolocation_state as state,
   AVG(DATE_DIFF(ord.order_estimated_delivery_date, ord.order_delivered_customer_date, day)) as diff_estimated_delivery
FROM `TARGET_SQL.orders` AS ord
JOIN `TARGET_SQL.customers` AS cust
ON ord.customer_id = cust.customer_id
JOIN `TARGET_SQL.geolocation` AS geo
ON cust.customer_zip_code_prefix = geo.geolocation_zip_code_prefix
GROUP BY geo.geolocation_state
)

(SELECT state, diff_estimated_delivery
FROM high_low
ORDER BY diff_estimated_delivery DESC
LIMIT 5)
UNION ALL
(SELECT state, diff_estimated_delivery
FROM high_low
ORDER BY diff_estimated_delivery ASC
LIMIT 5)
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON

Row	state	diff_estimated_d...
1	AL	8.200633858614...
2	SE	8.485723897228...
3	MA	8.842814664110...
4	CE	9.720130879345...
5	ES	9.855011626562...
6	RR	20.42037861915...
7	AM	20.13265119678...
8	RO	18.65209721677...
9	AC	18.46145667198...
10	AP	18.18257781491...

Insights:

We observed that:

Minimum delivery time = AL and SQ(~8.2days)

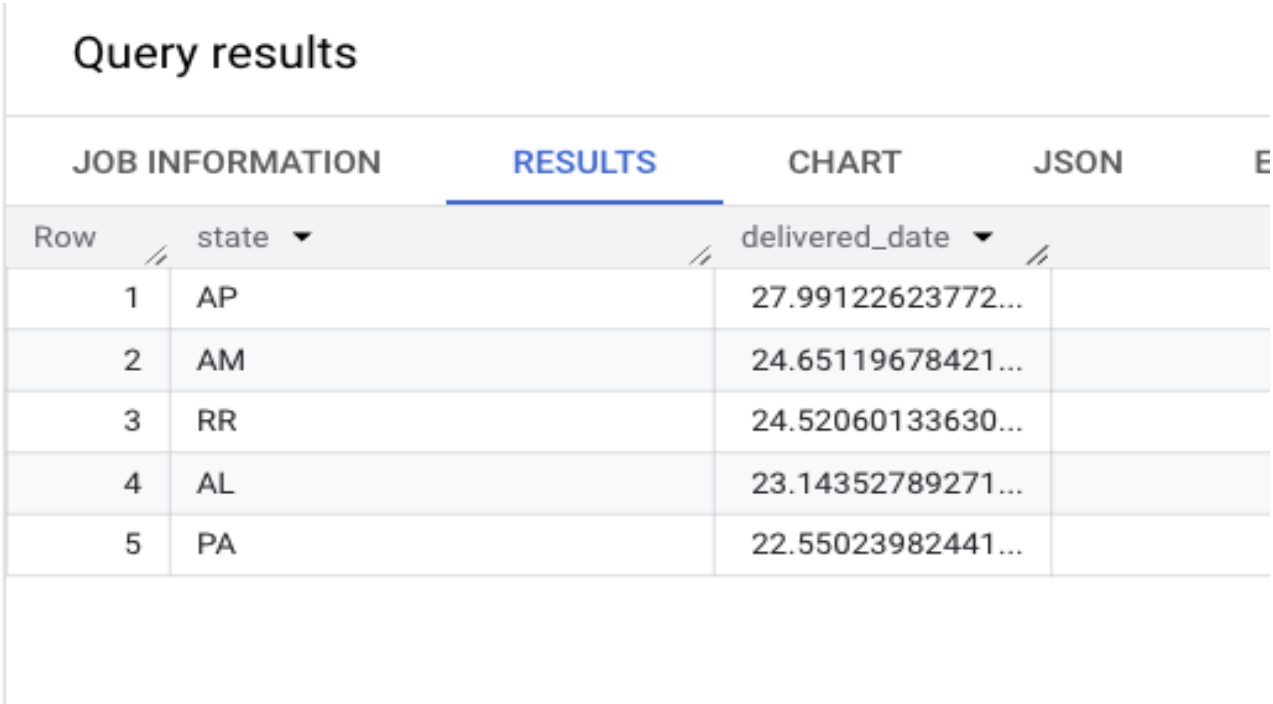
Maximum delivery time = AC and AP(~20.4)

5.4. Find out the top 5 states where the order delivery is really fast as compared to the estimated date of delivery.

You can use the difference between the averages of actual & estimated delivery date to figure out how fast the delivery was for each state.

```
with top_five as (
SELECT
   geo.geolocation_state as state,
   AVG(DATE_DIFF(ord.order_estimated_delivery_date, ord.order_purchase_timestamp, day)) as est_date,
   AVG(DATE_DIFF(ord.order_delivered_customer_date, ord.order_purchase_timestamp, day)) as delivered_date
FROM `TARGET_SQL.orders` AS ord
JOIN `TARGET_SQL.customers` AS cust
ON ord.customer_id = cust.customer_id
JOIN `TARGET_SQL.geolocation` AS geo
ON cust.customer_zip_code_prefix = geo.geolocation_zip_code_prefix
GROUP BY geo.geolocation_state
)

select top_five.state, top_five.delivered_date
from top_five
where top_five.delivered_date < top_five.est_date
ORDER BY top_five.delivered_date DESC
limit 5
```



Query results

JOB INFORMATION | RESULTS | CHART | JSON | E

Row	state	delivered_date
1	AP	27.99122623772...
2	AM	24.65119678421...
3	RR	24.52060133630...
4	AL	23.14352789271...
5	PA	22.55023982441...

Insights:

Top 5 States(AP, AM, RR, AL, PA)

where order delivery time is faster than the estimated delivery time(~24 days)

---

6. Analysis based on the payments

6.1. Find the month on month no. of orders placed using different payment types.

```
SELECT  pmt.payment_type,
EXTRACT(YEAR FROM ord.order_purchase_timestamp) AS year_x,
EXTRACT(MONTH FROM ord.order_purchase_timestamp) AS month_x,
COUNT(pmt.order_id) AS order_count
FROM `TARGET_SQL.payments` AS pmt
JOIN `TARGET_SQL.orders` AS ord
ON pmt.order_id = ord.order_id
GROUP BY pmt.payment_type ,EXTRACT(YEAR FROM ord.order_purchase_timestamp), EXTRACT(MONTH FROM
ord.order_purchase_timestamp)
ORDER BY pmt.payment_type, year_x, month_x
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | EXECUTION GRAPH

Row	payment_type	year_x	month_x	order_count
1	UPI	2016	10	63
2	UPI	2017	1	197
3	UPI	2017	2	398
4	UPI	2017	3	590
5	UPI	2017	4	496
6	UPI	2017	5	772
7	UPI	2017	6	707
8	UPI	2017	7	845
9	UPI	2017	8	938
10	UPI	2017	9	903
11	UPI	2017	10	993
12	UPI	2017	11	1509
13	UPI	2017	12	1160
14	UPI	2018	1	1518
15	UPI	2018	2	1325
16	UPI	2018	3	1352
17	UPI	2018	4	1287
18	UPI	2018	5	1263
19	UPI	2018	6	1100
20	UPI	2018	7	1229

Insights:

We observed that:

Order count has been increased on 2018 and most of the orders are of UPI type

6.2. Find the no. of orders placed on the basis of the payment installments that have been paid.

```
SELECT payment_type, COUNT(DISTINCT order_id) AS order_count
FROM `TARGET_SQL.payments`
WHERE payment_installments > 0
GROUP BY payment_type
```

Query results

JOB INFORMATION | RESULTS | CHART | JSON

Row	payment_type	order_count
1	voucher	3866
2	not_defined	3
3	credit_card	76503
4	debit_card	1528
5	UPI	19784

Insights:

We observed that:

Maximum orders are from UPI payment.

Minimum order are from debit card type of payment