

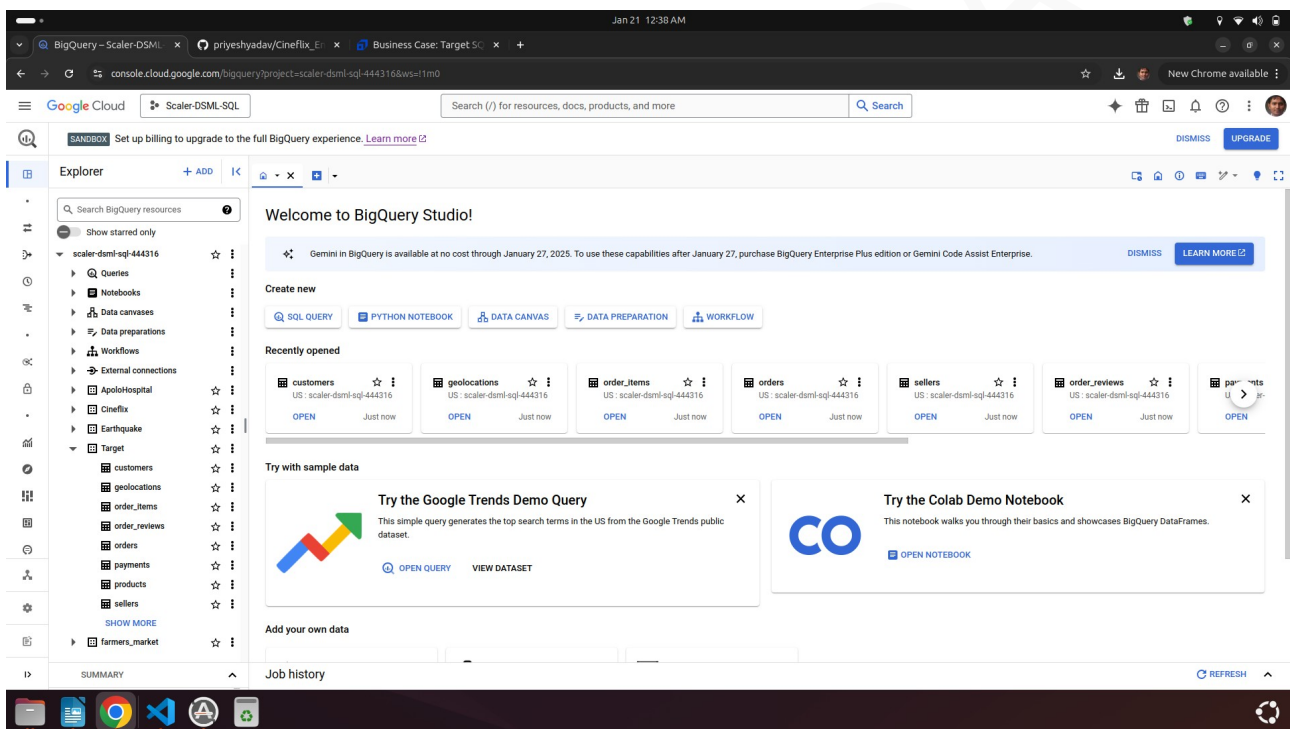
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## TARGET SQL – BUSINESS CASE SOLUTION

**Import the dataset and do usual exploratory analysis steps like checking the structure & characteristics of the dataset**

- Download all(8) CSV files from Google Drive.
- Create a *New Dataset* called **Target** in Google BigQuery.
- Create tables under the Target dataset by uploading each CSV one by one, using **Upload & Auto Detect** schema options.



**Data type of all columns in the "customers" table.**

- Google BigQuery provides a convenient way to check all columns of a table & their data type.
- Click on Custom Table & Big Query will open a tab with Table Schema Details.
- Another way is to use *Information\_Schema.Columns*
- *We observe that there are total 5 columns, 4 have string data type while 1 has timestamp*

Google Cloud Scaler-DSML-SQL

Search (/) for resources, docs, products, and more

SANDBOX Set up billing to upgrade to the full BigQuery experience. [Learn more](#)

### Explorer

Search BigQuery resources

Show starred only

- ▼ scaler-dsml-sql-444316
  - Queries
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    - orders
    - payments
    - products
    - sellers
    - SHOW MORE
  - farmers\_market

### customers

QUERY 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	Description
customer_id	STRING	NULLABLE	-	-	-	-	-
customer_unique_id	STRING	NULLABLE	-	-	-	-	-
customer_zip_code_prefix	INTEGER	NULLABLE	-	-	-	-	-
customer_city	STRING	NULLABLE	-	-	-	-	-
customer_state	STRING	NULLABLE	-	-	-	-	-

EDIT SCHEMA VIEW ROW ACCESS POLICIES

```
7
8
9
10
11 select Column_Name, Data_type
12 from `Target.INFORMATION_SCHEMA.COLUMNS`
13 where table_name = 'customers'
14
15
16
```

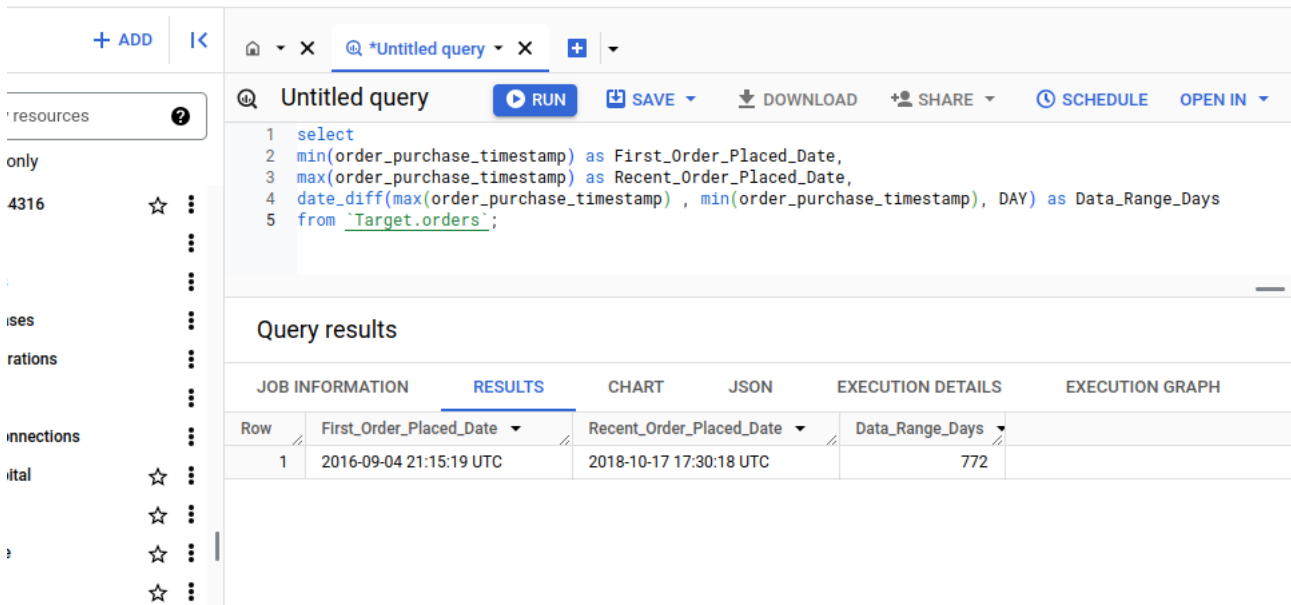
## Query results

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS
Row	Column_Name	Data_type			
1	customer_id	STRING			
2	customer_unique_id	STRING			
3	customer_zip_code_prefix	INT64			
4	customer_city	STRING			
5	customer_state	STRING			

Author : Priyesh Yadav

## Get the time range between which the orders were placed

- We are looking for Oldest & Recent order datetime, Calculating difference between both of them as well.
- Since the same record is updated in the orders table, we do not filter on order\_status
- ***We Observe that We have 772 days of Range.***



The screenshot shows a SQL query editor interface. On the left is a sidebar with a search bar and a list of resources. The main area displays a query titled 'Untitled query' with the following SQL code:

```
1 select
2 min(order_purchase_timestamp) as First_Order_Placed_Date,
3 max(order_purchase_timestamp) as Recent_Order_Placed_Date,
4 date_diff(max(order_purchase_timestamp), min(order_purchase_timestamp), DAY) as Data_Range_Days
5 from 'Target.orders';
```

Below the query editor, the 'Query results' section is visible, showing a table with the following data:

Row	First_Order_Placed_Date	Recent_Order_Placed_Date	Data_Range_Days
1	2016-09-04 21:15:19 UTC	2018-10-17 17:30:18 UTC	772

## Count the Cities & States of customers who ordered during the given period

- If we inner join both *Customers* & *Orders* table, than we get only customers who has placed a order, & it will automatically fall into timeframe of Orders.
- Here also we can provide data in 2 ways
  - Individual count of distinct cities & states.
  - Count of cities per state
- ***We observe that all customer who ordered something belong to 27 different states which has 4119 distinct cities, We also identified number of cities per state.***

Author : Priyesh Yadav

\*Untitled query

**Untitled query** **RUN** **SAVE** **DOWNLOAD** **SHARE** **SQL**

```
1 select
2 count(distinct C.customer_state) as State_Count,
3 count(distinct C.customer_city) as City_Count
4 from `Target.customers` C
5 join `Target.orders` O on C.customer_id = O.customer_id;
6
7
8
```

## Query results

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS	E
Row	State_Count	City_Count				
1	27	4119				

\*Untitled query

**Untitled query** **RUN** **SAVE** **DOWNLOAD** **SHARE** **SCHEDULE** **OPEN IN** **MORE**

```
13 select
14 C.customer_state,
15 count(distinct C.customer_city) as City_Count
16 from `Target.customers` C
17 join `Target.orders` O on C.customer_id = O.customer_id
18 group by 1 order by 2 desc;
19
20
```

Query results **SAVE RESULTS**

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	customer_state	City_Count				
1	MG	745				
2	SP	629				
3	RS	379				
4	PR	364				
5	BA	353				
6	SC	240				
7	GO	178				
8	CE	161				
9	PE	152				
10	RJ	149				
11	MA	122				
12	MT	101				
13	ES	95				
14	PB	92				
15	RN	90				
16	NA	88				

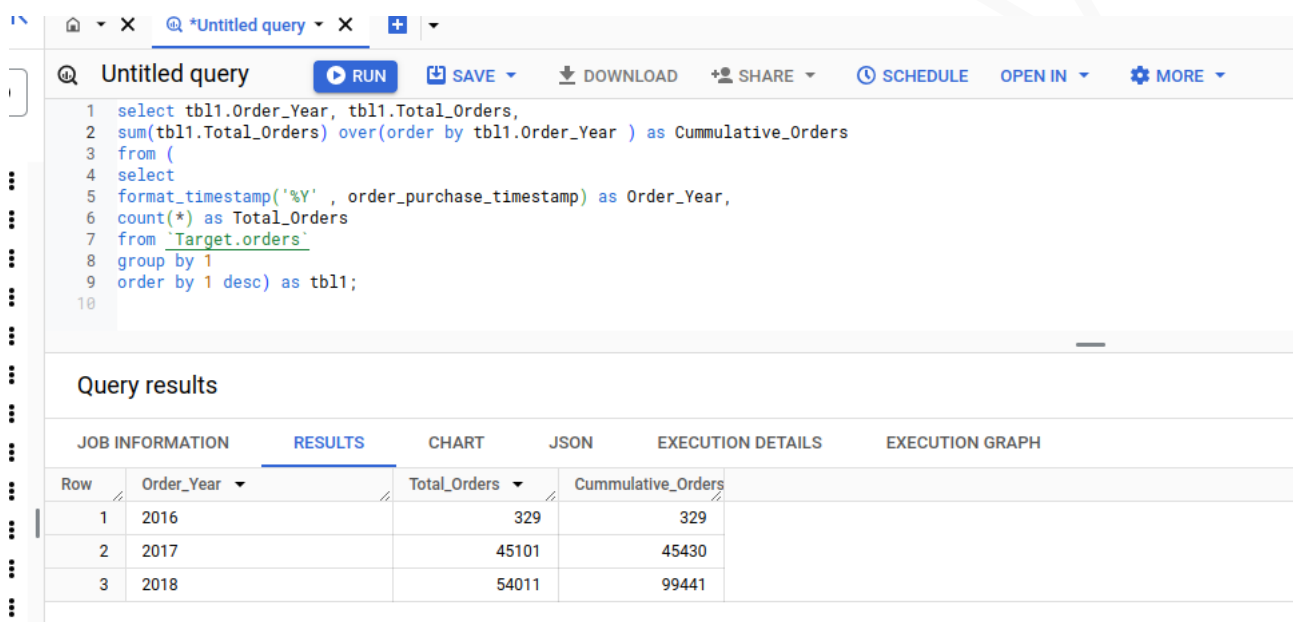
Results per page: 50 1 - 27 of 27

Author : Priyesh Yadav

## In-depth Exploration

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

- To identify yearly trend we should get the number of orders *per year* or *per month per year*.
- Sort the Orders & calculate their cumulative sum year on year
- Since we are considering trend of order placed, we should even consider canceled(625) and unavailable(609) orders
- ***We observe a Positive Yearly Orders count pattern.***



The screenshot displays a SQL query editor interface. At the top, there's a toolbar with icons for home, close, search, and a dropdown menu. Below the toolbar, the query editor shows a SQL query. The query is as follows:

```
1 select tbl1.Order_Year, tbl1.Total_Orders,
2 sum(tbl1.Total_Orders) over(order by tbl1.Order_Year ) as Cumulative_Orders
3 from (
4 select
5 format_timestamp('%Y', order_purchase_timestamp) as Order_Year,
6 count(*) as Total_Orders
7 from `Target.orders`
8 group by 1
9 order by 1 desc) as tbl1;
```

Below the query editor, there's a section titled "Query results". It contains a table with the following data:

Row	Order_Year	Total_Orders	Cumulative_Orders
1	2016	329	329
2	2017	45101	45430
3	2018	54011	99441

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Q

Untitled query

RUN

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```
1 select tbl1.Order_Year_Month, tbl1.Total_Orders,
2 sum(tbl1.Total_Orders) over(order by tbl1.Order_Year_Month ) as Cumulative_Orders
3 from (
4 select
5 format_timestamp('%Y-%m' , order_purchase_timestamp) as Order_Year_Month,
6 count(*) as Total_Orders
7 from Target.orders
8 group by 1
9 order by 1 desc) as tbl1;
```

Press A

Query results

SAVE RESULTS

JOB INFORMATION

RESULTS

CHART

JSON

EXECUTION DETAILS

EXECUTION GRAPH

Row	Order_Year_Month	Total_Orders	Cummulative_Orders
1	2016-09	4	4
2	2016-10	324	328
3	2016-12	1	329
4	2017-01	800	1129
5	2017-02	1780	2909
6	2017-03	2682	5591
7	2017-04	2404	7995
8	2017-05	3700	11695
9	2017-06	3245	14940
10	2017-07	4026	18966
11	2017-08	4331	23297
12	2017-09	4285	27582
13	2017-10	4631	32213
14	2017-11	7544	39757

Results per page: 50

1 - 25 of 25

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

- To identify monthly seasonality , We should group order bases on month.
- Since seasons ( e.g. winter/summer ) are based on months only , we should not consider Year-Month combination.
- Again we are considering all order irrespective of order\_status
- **We observe that Monthly Seasonality**
  - **Months May, June, July & August are best in terms of orders placed.**
  - **Month Sepember, October, November & December are worst in terms of orders placed.**
  - **Orders decline to lowest in November, While we receive most orders in August.**

Author : Priyesh Yadav

Untitled query			
<pre>2 tb11.Order_Month, tb11.Total_Orders, 3 concat(round(ifnull(100*(tb11.Total_Orders - lag(tb11.Total_Orders) over(Order by Order_Month asc ))/tb11.Total_Orders,0),2),'%') as Prev_Montly_Comparision 4 from 5 (select 6 format_timestamp('%m', order_purchase_timestamp) as Order_Month, 7 count(*) as Total_Orders, 8 from Target.orders 9 group by 1 10 ) as tb11 11 order by 1 asc 12</pre>			
Query results			
JOB INFORMATION   RESULTS   CHART   JSON   EXECUTION DETAILS   EXECUTION GRAPH			
Row	Order_Month	Total_Orders	Prev_Montly_Comparision
1	01	8069	0%
2	02	8508	5.16%
3	03	9893	14%
4	04	9343	-5.89%
5	05	10573	11.63%
6	06	9412	-12.34%
7	07	10318	8.78%
8	08	10843	4.84%
9	09	4305	-151.87%
10	10	4959	13.19%
11	11	7544	34.27%
12	12	5674	-32.96%

## During what time of the day, do the Brazilian customers mostly place their orders

- Since the whole data is for Brazilian customer, There is no need to identify Brazilian Customer.
- First we need to extract the Hour part form the Order\_Purchase\_Timestamp.
- Next, Create categories with Case statement with given range of hours.
- Next, We count order placed in each category.
- As our final output requirement is 1 row, we limit 1 rows after sorting data based on order placed in each category in descending order.
- ***We observe that Brazilian customer mostly place thier orders in Afternoon.***



Author : Priyesh Yadav



The screenshot shows a SQL query editor with a query that categorizes orders by time of day and counts them. The query is as follows:

```
select
case
when extract(HOUR from order_purchase_timestamp) between 0 and 6 then 'Dawn'
when extract(HOUR from order_purchase_timestamp) between 7 and 12 then 'Mornings'
when cast(format_timestamp('%H', order_purchase_timestamp) as INT64) between 13 and 18 then 'Afternoon'
else 'Night'
end as Time_of_the_Day,
count(*) as No_Of_Ordes
from 'Target.orders'
Group by 1 order by 2 desc limit 1;
```

Below the query editor, the 'Query results' section is visible, showing a table with the following data:

Row	Time_of_the_Day	No_Of_Ordes
1	Afternoon	38135

## Evolution of E-commerce orders in the Brazil region

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

- Orders table do not have *State* column.
- We should *left join* with *customers* table , so that we get State details, also retain data for orders.
- We can work with null State column separately. (*Curretly we dont have such data.*)
- We can represent this data in two format.
- ***We are able to observe the month on month orders placed in each state, however First solution provides a good pivotal view.***

Author : Priyesh Yadav

Query results

Row	customer_state	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	RJ	990	1176	1302	1172	1321	1128	1288	1307	612	725	
2	RS	427	473	569	488	559	526	565	599	279	276	
3	SP	3351	3357	4047	3967	4632	4104	4381	4982	1648	1908	
4	DF	151	196	207	183	208	220	243	232	97	104	
5	PR	443	460	504	500	524	478	523	556	183	225	
6	MT	96	84	71	92	104	83	85	78	35	55	
7	MA	66	67	77	73	65	59	79	70	42	52	

Query results

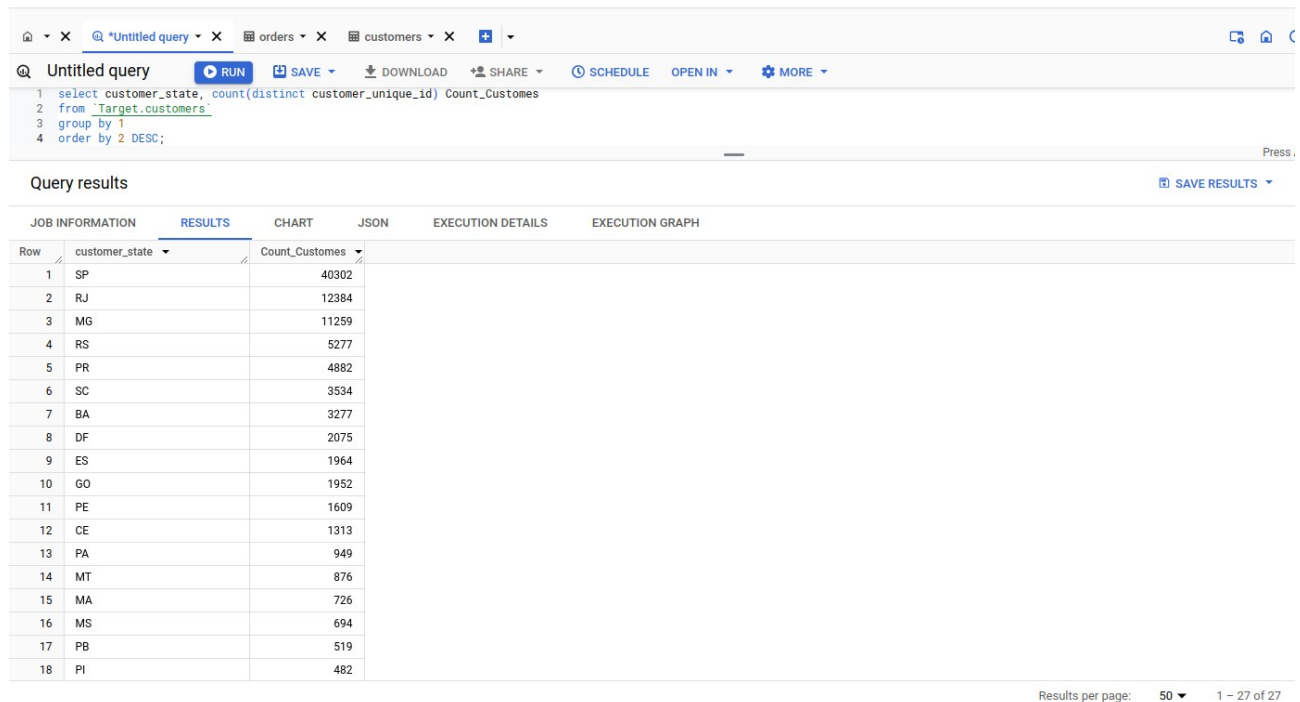
Row	customer_state	Order_Month	Orders
1	AC	1	8
2	AC	2	6
3	AC	3	4
4	AC	4	9
5	AC	5	10
6	AC	6	7
7	AC	7	9
8	AC	8	7
9	AC	9	5
10	AC	10	6
11	AC	11	5
12	AC	12	5
13	AL	1	39
14	AL	2	39
15	AL	3	40

## How are the customers distributed across all the states

- There are two columns, *customer\_id* and *customer\_unique\_id*, But upon checking with *customers* & *orders*, we identify that each *customer\_unique\_id* has multiple *customer\_id* which is directly related to *order\_id*.
- Hence taking the count of *customer\_unique\_id* group by will provide the correct result.

Author : Priyesh Yadav

- ***We Observe Customer distribution across state. SP, RJ & MG are top 3 contributing states.***



Query results

Row	customer_state	Count_Customers
1	SP	40302
2	RJ	12384
3	MG	11259
4	RS	5277
5	PR	4882
6	SC	3534
7	BA	3277
8	DF	2075
9	ES	1964
10	GO	1952
11	PE	1609
12	CE	1313
13	PA	949
14	MT	876
15	MA	726
16	MS	694
17	PB	519
18	PI	482


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

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

- We identify that Orders & Purchase table has 1 to many relationship.
- Purchase table do not have any date column, we can get purchase date details by combining the Orders & Purchase table over order\_id.
- We aggregate the purchase\_amount over given year & month combination in a inner query.

Author : Priyesh Yadav

- We use lag function to get next value & calculate difference. Since we are dealing with only 2 year, One of the output for lag will be null.
- We limit our Rows to only 1 to showcase percentage increase between 2017 & 2018.
- ***We observe Percentage Increase for Cost of Orders , Between January to August months of 2017 & 2018 is almost 138%.***



```
1 select
2 #Year, Cost_of_Orders,
3 concat(round(ifnull(100*(Cost_of_Orders - lag(Cost_of_orders) over(order by Year))/lag(Cost_of_orders) over(order by Year),0),2), '%') as percentage_increase
4 from
5 (Select extract(YEAR from O.order_purchase_timestamp) as Year, round(sum(P.payment_value),2) as Cost_of_Orders
6 from Target.orders O
7 join Target.payments P on O.order_id = P.order_id
8 where
9 extract(YEAR from O.order_purchase_timestamp) in (2017, 2018) and
10 extract(MONTH from O.order_purchase_timestamp) between 1 and 8
11 group by 1 ) as tbl1
12 order by Year Desc
13 limit 1;
```

Query results

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	percentage_increase					
1	136.98%					

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

- To get order price statewirse, we need to join Payment, Orders & Customers.
- Since one order can have multiple payment, Hence calculating average using payments table directly is not a good options.
- First we create a inner query to calculate Order value per order. Combine it with Statedata & then calculate Statewise Total & Average.
- ***We observe total & average order price for each state.***

Author : Priyesh Yadav

Untitled query			
<pre>1 select C.customer_state, round(sum(tbl_order.Order_Total),2) as Total_Order_Price, round(avg(tbl_order.Order_Total),2) as Average_Order_Price, 2 #count(tbl_order.Order_id) as orders, count(distinct tbl_order.Order_id) as distinct_orders 3 from Target.customers C join 4 ( 5 select O.customer_id as customer_id, O.order_id as Order_id, round(sum(P.payment_value),2) as Order_Total 6 from Target.orders O 7 join Target.payments P on O.order_id = P.order_id 8 group by 1,2 9 ) tbl_order 10 on C.customer_id = tbl_order.customer_id 11 group by 1 order by 1;</pre>			
Query results			
JOB INFORMATION RESULTS CHART JSON EXECUTION DETAILS EXECUTION GRAPH			
Row	customer_state	Total_Order_Price	Average_Order_Price
1	AC	19680.62	242.97
2	AL	96962.06	234.77
3	AM	27966.93	188.97
4	AP	16262.8	239.16
5	BA	616645.82	182.44
6	CE	279464.03	209.18
7	DF	355141.08	165.95
8	ES	325967.55	160.34
9	GO	350092.31	173.31
10	MA	152523.02	204.18
11	MG	1872257.26	160.92
12	MS	137534.84	192.36
13	MT	187029.29	206.21

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

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

- Freight\_value is presnet in order\_items table, which has multiple rows for a single order, So we should first create a total freight\_value for each order.
- We further join it with orders & customer table to get to State for each order.
- Finally we can aggregate required values at state level.
- We observe total & average order freight value per state.*

Author : Priyesh Yadav

Untitled query				
<pre>1 select C.customer_state, round(sum(tbl_Freight.Freight_by_Order),2) as Total_Freight, round(avg(tbl_Freight.Freight_by_Order),2) as Average_Freigh 2 from Target.customers C 3 join Target.orders O on C.customer_id = O.customer_id 4 join ( 5 select order_id, round(sum(freight_value),2) as Freight_by_Order 6 from Target.order_items 7 group by 1) as tbl_Freight 8 on O.order_id = tbl_Freight.order_id 9 group by 1 order by 1</pre>				
Query results				
JOB INFORMATION RESULTS CHART JSON EXECUTION DETAILS EXECUTION GRAPH				
Row	customer_state	Total_Freight	Average_Freigh	
1	AC	3686.75	45.52	
2	AL	15914.59	38.72	
3	AM	5478.89	37.27	
4	AP	2788.5	41.01	
5	BA	100156.68	29.83	
6	CE	48351.59	36.44	
7	DF	50625.5	23.82	
8	ES	49764.6	24.58	
9	GO	53114.98	26.46	
10	MA	31523.77	42.6	
11	MG	270853.46	23.46	
12	MS	19144.03	27.0	
13	MT	29715.43	32.91	
14	PA	38699.3	39.9	
Results per page: 50 1 - 27 of 27				

## Analysis based on sales, freight and delivery time

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.

- Initial inspection of *Orders* table suggest that customer delivery date is only applicable for order with either *delivered* or *canceled* status.
- We are considering 6 *canceled* order which has customer delivery date populated for analysis.
- *We observe that a lot of the orders has been delivered very late.*

Author : Priyesh Yadav

orders				
customers				
Untitled query				
RUN SAVE DOWNLOAD SHARE SCHEDULE OPEN IN MORE				
<pre>1 select order_id, 2 date_diff(order_delivered_customer_date, order_purchase_timestamp, DAY) as time_to_deliver, 3 date_diff(order_delivered_customer_date, order_estimated_delivery_date, DAY) as diff_estimated_delivery 4 from Target.orders where order_delivered_customer_date is not null 5 order by 2 desc, 3;</pre>				
Query results				
SAVE RESULTS				
JOB INFORMATION RESULTS CHART JSON EXECUTION DETAILS EXECUTION GRAPH				
Row	order_id	time_to_deliver	diff_estimated_delivery	
10	437222e3fd1b07396f1d9ba8c...	187	144	
11	c27815f7e3dd0b926b5855262...	187	162	
12	dfe5f68118c2576143240b8d7...	186	153	
13	6e82dcfb5eada6283dba34f16...	182	155	
14	2ba1366baead3c3536f27546...	181	152	
15	d24e8541128cea179a11a6517...	175	161	
16	3566eabb132f8d6471ae7b92...	174	137	
17	ed8e9faf1b75f43ee027103957...	173	153	
18	2fa29503f2ebd9f53deba18716...	172	132	
19	df6d8b7768a047c2981bae0a2...	168	132	
20	4fbc8d6f2f4db3e789d5a876fa...	168	134	
21	525e11b26fdb7f41471d28989...	167	134	
22	a452fba32eab28a4a62af18ee...	167	138	
23	3a1bf08e71a419a...	166	123	
24	594ccade37f5a1...	165	143	
25	3fea016c049693...	148	126	
26	3c98e4bedff26f850c4f9989b1...	146	119	
Results per page: 50 1 - 50 of 96476				

## Find out the top 5 states with the highest & lowest average freight value

- We had already calculated statewise average freight earlier, we can extend same query to identify top 5 & low 5.
- However since we want to display both in adjacement column, we can first calculate state rank over average freight value in both orders & self join to display data in adjacement columns.
- *We observe Top 5 & Low states as per average frieght rate.*

Author : Priyesh Yadav

```
1 |
2 | WITH CTE_State_AVG_FREIGHT as (
3 | select C.customer_state, round(avg(tbl_Freight.Freight_by_Order),2) as Average_Freigh,
4 | dense_rank() over(order by avg(tbl_Freight.Freight_by_Order) desc ) as DESC_RNK,
5 | dense_rank() over(order by avg(tbl_Freight.Freight_by_Order) asc ) as ASC_RNK
6 | from `Target.customers` C
7 | join `Target.orders` O on C.customer_id = O.customer_id
8 | join (
9 | select order_id, round(sum(freight_value),2) as Freight_by_Order
10 | from `Target.order_items`
11 | group by 1 ) as tbl_Freight
12 | on O.order_id = tbl_Freight.order_id
13 | group by 1
14 | )
15 | select H.customer_state as Highest_Avg_Freight, L.customer_state as Lowest_Avg_Freight
16 | from CTE_State_AVG_FREIGHT H
17 | join CTE_State_AVG_FREIGHT L on H.DESC_RNK = L.ASC_RNK
18 | where H.DESC_RNK <=5
19 | order by H.DESC_RNK;
```

Query results

JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	Highest_Avg_Freight ▾	Lowest_Avg_Freight ▾				
1	RR	SP				
2	PB	MG				
3	RO	PR				
4	AC	DF				
5	PI	RJ				

**Find out the top 5 states with the highest & lowest average delivery time.**

- We use the same logic that we have used for average freight value per state.
- *We observe top 5 & low 5 state with average delivery time.*



Author : Priyesh Yadav

Untitled query

RUNSAVEDOWNLOADSHARESCHEDULEOPEN INMORE

```
1 With CTE_AVG_DEV_TIME as
2 ( select C.customer_state as State, round(avg(date_diff(O.order_delivered_customer_date, O.order_purchase_timestamp, I
3 from `Target.orders` O
4 join `Target.customers` C on O.customer_id = C.customer_id
5 where O.order_delivered_customer_date is not null
6 group by 1 ),
7 CTE_STATE_RNK as
8 (
9 select State, Avg_Del_Time ,
10 dense_rank() over(order by Avg_Del_Time Desc) as H_RANK,
11 dense_rank() over(order by Avg_Del_Time ) as L_RANK
12 from CTE_AVG_DEV_TIME
13 )
14 select H.State as High_Delivery_Time,
15 L.State as Low_Delivery_State
16 from CTE_STATE_RNK H join CTE_STATE_RNK L on H.H_Rank = L.L_Rank
17 where H.H_Rank <=5;
```

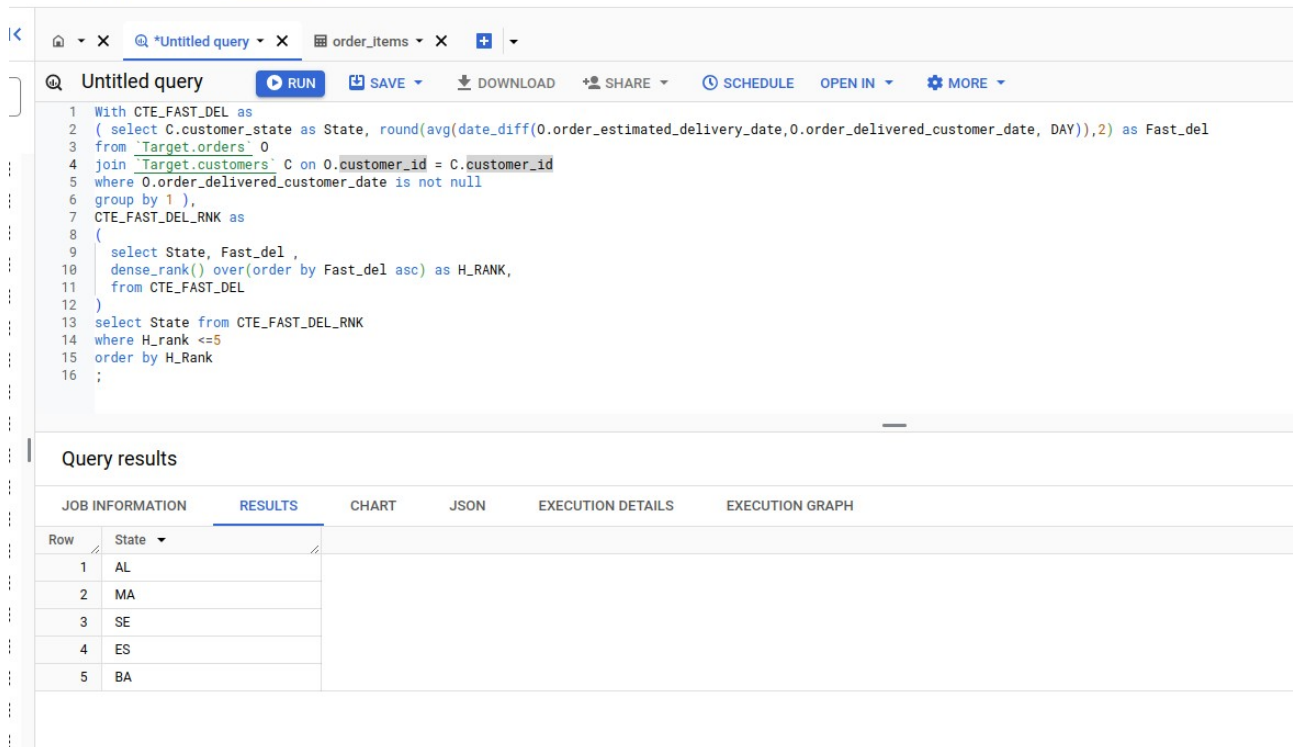
Query results

JOB INFORMATIONRESULTSCHARTJSONEXECUTION DETAILSEXECUTION GRAPH

Row	High_Delivery_Time	Low_Delivery_State
1	AL	DF
2	AP	PR
3	AM	MG
4	RR	SP
5	PA	SC

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

Author : Priyesh Yadav



The screenshot shows a SQL query editor with a query titled "Untitled query". The query is as follows:

```
1 With CTE_FAST_DEL as
2 ( select C.customer_state as State, round(avg(date_diff(0.order_estimated_delivery_date,0.order_delivered_customer_date, DAY)),2) as Fast_del
3 from `Target.orders` O
4 join `Target.customers` C on O.customer_id = C.customer_id
5 where O.order_delivered_customer_date is not null
6 group by 1 ),
7 CTE_FAST_DEL_RNK as
8 (
9   select State, Fast_del ,
10    dense_rank() over(order by Fast_del asc) as H_RANK,
11   from CTE_FAST_DEL
12 )
13 select State from CTE_FAST_DEL_RNK
14 where H_rank <=5
15 order by H_Rank
16 ;
```

Below the query editor, the "Query results" section is visible, showing a table with 5 rows and 2 columns: "Row" and "State".

Row	State
1	AL
2	MA
3	SE
4	ES
5	BA

## Analysis based on the payments

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

- We analyse that one order can have multiple payments & payment type.
- We consider unique combination of order\_id, Order\_date & payment\_type for further analysis.
- Order with multiple payment type ( card & voucher ) will be counted in both payment type.
- We consider only order where payment\_value > 0
- ***We Observe positive month on month trend.***

Author : Priyesh Yadav

Untitled query					
<pre>1 WITH CTE_Order_Payment_type_combination as ( 2   select distinct O.order_id, 3   format_timestamp('%Y-%m',order_purchase_timestamp) as order_purchase, 4   P.payment_type 5   from Target.orders O 6   join Target.payments P on O.order_id = P.order_id 7   where P.payment_value &gt; 0 8   ), 9   CTE_Date_payment_type_count as ( 10    select order_purchase, payment_type, count(*) as No_of_Order 11    from CTE_Order_Payment_type_combination 12    group by 1, 2 13    order by 1, 2 14   ) 15   select payment_type, order_purchase, No_of_Order, 16   sum(No_of_Order) over (partition by payment_type order by order_purchase) as month_on_month_Order 17   from CTE_Date_payment_type_count 18   order by 1, 2</pre>					
Query results					
JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS
Row	payment_type	order_purchase	No_of_Order	month_on_month_Order	
1	UPI	2016-10	63	63	
2	UPI	2017-01	197	260	
3	UPI	2017-02	398	658	
4	UPI	2017-03	590	1248	
5	UPI	2017-04	496	1744	
6	UPI	2017-05	772	2516	
7	UPI	2017-06	707	3223	
8	UPI	2017-07	845	4068	
9	UPI	2017-08	938	5006	
Results per page: 50 1 - 50 of 88					

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

- Order where installments are opted by customer has payment type as *Credit Card*.
- We need to only include playment that has *payment\_value > 0*, *Payment\_installments > 1*
- *Atleast 1 payment* enries is present.
- *We observe orders on installement where atleast 1 emi has been paid.*

Untitled query					
<pre>1 select payment_installments, count(distinct order_id) from 2 Target.payments 3 where 4   payment_type = 'credit_card' 5   and 6   payment_installments &gt; 1 and payment_value &gt; 0 7   group by 1 8   having count(order_id) &gt;= 1;</pre>					
Query results					
JOB INFORMATION		RESULTS	CHART	JSON	EXECUTION DETAILS
Row	payment_installment	fo_			
1	2	12389			
2	3	10443			
3	4	7088			
4	5	5234			
5	6	3916			
6	7	1623			
7	8	4253			
8	9	644			
9	10	5315			
10	11	23			
11	12	133			
12	13	16			
13	14	15			
14	15	74			
15	16	5			
Results per page: 50 1 - 22 of 22					

## Actionable Recommendation

- 1) Target should try to increase city center in state where overall city center count is less than 100. 12 State has more than 100 city centers while 15 State has less than 100 city centers.
- 2) Target should try to identify cause of rapid drop in customer order starting from September till December.
- 3) Most Suitable time for Ad campaign & new launches seems be between May & August.
- 4) Since Orders placed in Dawn period are very few (5.27%), It could be utilized for Production issue fixes & maintenance activities.
- 5) Target should get rid of Customer\_Id column in Customer table, With Each new order a New Customer\_Id is generated which is tagged to Customer\_Unique\_id. Because of this the size of customer table will continue to grow parallel to new orders. Unless its fulfilling some other purpose which we have not discovered based on this Case Study.
- 6) Target should try to increase customer base in state where customer count is less than 2000, Currently 19 State out of 27 have less than 2000 customers.
- 7) Target should improvise on delivering the orders faster, 63 order out of 96476 were delivered in over 100 days.
- 8) Target should improve on providing the estimated delivery date, Only 2754 orders were delivery on estimated delivery date,
- 9) Target should improve average delivery time against expected delivery time in 5 states where it is more than 15 days.