Time period for which the data is given

Query:

```
select min(order_purchase_timestamp)
as oldest_order_date,
max(order_purchase_timestamp) as most_recent_order_date
from `sql_project.orders`
```

Output:

Row	oldest_order_date	most_recent_order_date		
1	2016-09-04 21:15:19 UTC	2018-10-17 17:30:18 UTC		

States from which customers have placed orders

Query:

```
select distinct customer_state
from `sql_project.customers`
```

Output:

Row	customer_state
1	RN
2	CE
3	RS
4	SC
5	SP
6	MG
7	BA
8	RJ
9	GO
10	MA
11	PE
12	РВ
13	ES
14	PR
15	RO
16	MS
17	PA
18	TO
19	MT
20	PI

21	AL
22	AM
23	DF
24	SE
25	RR
26	AP
27	AC

Cities from which customers have placed orders

There are more than four thousand cities across all the states from which orders have been placed, upon running a query to find distinct cities from customers tables yielded a very big collection of city hence a snippet of the same containing the first ten cities is shown below:

```
select distinct customer_city,
#distinct customer_city
from `sql_project.customers`
order by customer_city
limit 10
```

Row	customer_city
1	abadia dos dourados
2	abadiania
3	abaete
4	abaetetuba
5	abaiara
6	abaira
7	abare
8	abatia
9	abdon batista
10	abelardo luz

Growing trend on e-commerce in Brazil

```
select year,count(order_id) as no_of_orders,
count(customer_id) as no_of_customers,sum(payment_value) as total_sales
from
(select t1.*,payment_value,
extract(year from order_purchase_timestamp) as year
from
    `sql_project.orders` as t1 left join
    `sql_project.payments` as t2
on t1.order_id=t2.order_id) t3
group by year
order by year
```

Row	year	no_of_orders	no_of_customer	total_sales
1	2016	347	347	59362.3400
2	2017	47525	47525	7249746.72
3	2018	56015	56015	8699763.04

The above table shows that there is a meteoric increase in customers, orders and total_sales for the year 2017 when compared with the previous year and this trend holds true even for the year 2018 hence it can be clearly stated the e-commerce industry in Brazil has a very good scope of growth for the coming years.

Analysis of orders with respect to months

```
select month,count(order_id) as no_of_orders,sum(payment_value) as total_sales
from
(select t1.*,payment_value,
extract(year from order_purchase_timestamp) as year,extract(month from
order_purchase_timestamp) as month
from
    `sql_project.orders` as t1 left join
    `sql_project.payments` as t2
on t1.order_id=t2.order_id)
group by month
order by no_of_orders desc
```

Row	month	no_of_orders	total_sales
1	8	11248	1696821.64
2	5	11079	1746900.96
3	7	10824	1658923.67
4	3	10349	1609515.71
5	6	9855	1535156.88
6	4	9780	1578573.50
7	2	8838	1284371.35
8	1	8413	1253492.22
9	11	7863	1194882.80
10	12	5896	878421.100
11	10	5206	839358.029
12	9	4536	732454.229



The above table shows that the no of orders are relatively high for the months of august,may,july,march relative to the other months. The following insights can be drawn based on the above data:

1) The Carnival ,probably the biggest celebration event in Brazil falls in the month of march hence the higher orders.

When do Brazilians buy?

```
select time_of_the_day,count(order_id) as no_of_orders
from
(select *,
(case
when hour>=0 and hour<=6
then 'Dawn'
when hour>=7 and hour<=12
then 'Morning'
when hour>=13 and hour<=18
then 'Evening'
else 'Night'
end) as time_of_the_day
from
(select *,
extract(hour from order purchase timestamp) as hour,
#extract(year from order_purchase_timestamp) as year
from 'sql project.orders') t3)t4
group by time of the day
order by time_of_the_day desc
```

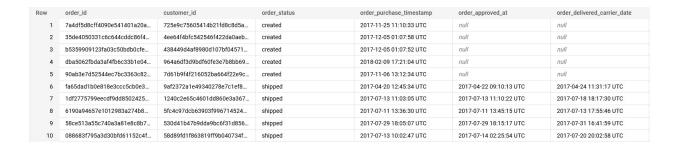
Row	time_of_the_day	no_of_orders
1	Evening	38135
2	Night	28331
3	Morning	27733
4	Dawn	5242

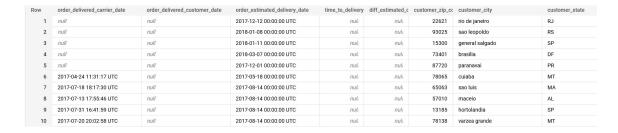
The above table shows that the people of Brazil would usually order more in the evening and not likely to order during dawn but considerable traction of orders is found along both night and morning.

The below query performs a left join on orders and customer table so as to obtain all the corresponding states for the given customer_id in the order table. The solution of the query is stored as a view in biq query going by the name

'scaler-dsml-sql-381611.sql_project.order_date_state' that shall be used as a basis for deriving queries going forward.

Sample of the above query in table format showing the first 10 rows





Distribution of customers across the states in Brazil

```
SELECT customer_state,
count(customer_id) as no_of_customers
FROM `scaler-dsml-sql-381611.sql_project.order_date_state`
group by customer_state
order by no_of_customers desc
limit 10
```

Row	customer_state	no_of_customer		
1	SP	41746		
2	RJ	12852		
3	MG	11635		
4	RS	5466		
5	PR	5045		
6	SC	3637		
7	ВА	3380		
8	DF	2140		
9	ES	2033		
10	GO	2020		

Month on month orders by states

```
select customer_state,month,count(order_id) as no_of_orders
from

(SELECT *,extract(month from order_purchase_timestamp)as month
FROM `scaler-dsml-sql-381611.sql_project.order_date_state` ) t1
```

```
group by customer_state,month
order by customer_state,month
limit 10
```

Row	customer_state	month	no_of_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

Mean & Sum of price and freight value by customer state

SELECT

```
customer_state,
round(sum(price) ,0)AS totaL_price_value,
round(sum(freight_value),0) AS total_freight_value,
round(AVG(price),0) AS avg_price,
round(AVG(freight_value),0) AS avg_freight
```

```
FROM (
 SELECT
   t1.order_id,
   customer_id,
    customer_state,
    order_status,
    order_purchase_timestamp,
   order_delivered_customer_date,
    order_estimated_delivery_date,
    time_to_delivery,
   diff_estimated_delivery,
   price,
   freight_value
 FROM
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
LEFT JOIN
    `sql_project.order_items` AS t2
 ON
   t1.order_id=t2.order_id) t1
GROUP BY
 customer_state
```

order by total_price_value desc

limit 10

Row	customer_state	totaL_price_valu	total_freight_val	avg_price	avg_freight
1	SP	5202955.0	718723.0	110.0	15.0
2	RJ	1824093.0	305589.0	125.0	21.0
3	MG	1585308.0	270853.0	121.0	21.0
4	RS	750304.0	135523.0	120.0	22.0
5	PR	683084.0	117852.0	119.0	21.0
6	SC	520553.0	89660.0	125.0	21.0
7	ВА	511350.0	100157.0	135.0	26.0
8	DF	302604.0	50625.0	126.0	21.0
9	GO	294592.0	53115.0	126.0	23.0
10	ES	275037.0	49765.0	122.0	22.0

YOY in cost of orders from 2017 to 2018

```
select year, tot,

(c/b )*100 as yoy_growth

from

(select

*,

lag(tot) over(order by tot) as b,

tot-lag(tot) over(order by tot) as c

from

(select year, sum(payment_value)as tot

from(select t1.order_id,
```

```
extract(year from t1.order_purchase_timestamp) as year,
extract(month from t1.order_purchase_timestamp) as month,payment_value
from
    'sql_project.orders' t1

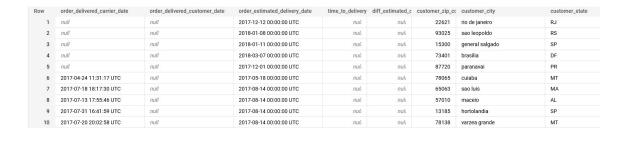
left join
    'sql_project.payments' t2
on t1.order_id=t2.order_id) t1
where month<=8
group by year
having year in (2017,2018) ) t3
order by year) t5</pre>
```

Row	year		tot	yoy_growth
1		2017	3669022.11	nuli
2		2018	8694733.83	136.976871

The below query performs a left join on orders and customers table so as to obtain all the corresponding state and other geographical features corresponding to customer_id in the order table.

```
(
  SELECT
    t1.*,
    DATE_DIFF(order_delivered_customer_date,order_purchase_timestamp,day) AS
time_to_delivery,
    DATE_DIFF(order_estimated_delivery_date,order_delivered_customer_date,day)
AS diff_estimated_delivery,
    t2.customer_zip_code_prefix,
    t2.customer_city,
    t2.customer_state
  FROM
    `scaler-dsml-sql-381611.sql_project.orders` t1
  LEFT JOIN
    `sql_project.customers` AS t2
  ON
    t1.customer_id=t2.customer_id)
```

Row	order_id	customer_id	order_status	order_purchase_timestamp	order_approved_at	order_delivered_carrier_date
1	7a4df5d8cff4090e541401a20a	725e9c75605414b21fd8c8d5a	created	2017-11-25 11:10:33 UTC	null	null
2	35de4050331c6c644cddc86f4	4ee64f4bfc542546f422da0aeb	created	2017-12-05 01:07:58 UTC	null	null
3	b5359909123fa03c50bdb0cfe	438449d4af8980d107bf04571	created	2017-12-05 01:07:52 UTC	null	null
4	dba5062fbda3af4fb6c33b1e04	964a6df3d9bdf60fe3e7b8bb69	created	2018-02-09 17:21:04 UTC	null	null
5	90ab3e7d52544ec7bc3363c82	7d61b9f4f216052ba664f22e9c	created	2017-11-06 13:12:34 UTC	null	null
6	fa65dad1b0e818e3ccc5cb0e3	9af2372a1e49340278e7c1ef8	shipped	2017-04-20 12:45:34 UTC	2017-04-22 09:10:13 UTC	2017-04-24 11:31:17 UTC
7	1df2775799eecdf9dd8502425	1240c2e65c4601dd860e3a367	shipped	2017-07-13 11:03:05 UTC	2017-07-13 11:10:22 UTC	2017-07-18 18:17:30 UTC
8	6190a94657e1012983a274b8	5fc4c97dcb63903f996714524	shipped	2017-07-11 13:36:30 UTC	2017-07-11 13:45:15 UTC	2017-07-13 17:55:46 UTC
9	58ce513a55c740a3a81e8c8b7	530d41b47b9dda9bc6f31d856	shipped	2017-07-29 18:05:07 UTC	2017-07-29 18:15:17 UTC	2017-07-31 16:41:59 UTC
10	088683f795a3d30bfd61152c4f	58d89fd1f863819ff9b040734f	shipped	2017-07-13 10:02:47 UTC	2017-07-14 02:25:54 UTC	2017-07-20 20:02:58 UTC



Grouping the data by state against average values of freight,time_to_delivery,price and estimate _delivery

The below query performs a left join on order_date_state and order_items table so as to obtain all the corresponding freight and price for the given order_id in the order table and then is being grouped as per state against the average average values of freight, time_to_delivery, price and estimate _delivery

SELECT

```
customer_state,
  AVG(diff_estimated_delivery) AS avg_estimate_delivery,
  AVG(time_to_delivery) AS avg_time_to_delivery,
  AVG(price) AS avg_price,
  AVG(freight_value) AS avg_freight
FROM (
  SELECT
   T1.order_id,
    customer_id,
    customer_state,
    order_status,
    order_purchase_timestamp,
    order_delivered_customer_date,
    order_estimated_delivery_date,
    time_to_delivery,
    diff_estimated_delivery,
    price,
    freight_value
```

```
FROM
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
LEFT JOIN
    `sql_project.order_items` AS t2
ON
    t1.order_id=t2.order_id) t1
GROUP BY
    customer_state
limit 10
```

ow	customer_state	avg_estimate_de	avg_time_to_del	avg_price	avg_freight
1	RJ	11.1444931	14.6893821	125.117818	20.9609239
2	RS	13.2030001	14.7082993	120.337453	21.7358043
3	SP	10.2655943	8.25960855	109.653629	15.1472753
4	DF	11.2747346	12.5014861	125.770548	21.0413549
5	PR	12.5338998	11.4807930	119.004139	20.5316515
6	MT	13.6393442	17.5081967	148.297184	28.1662843
7	MA	9.10999999	21.2037500	145.204150	38.2570024
8	AL	7.97658079	23.9929742	180.889211	35.8436711
9	MG	12.3971510	11.5155221	120.748574	20.6301668
10	PE	12.5521191	17.7920962	145.508322	32.9178626

Top 5 states with lowest average time to delivery

```
SELECT
  customer_state,
  #AVG(diff_estimated_delivery) AS avg_estimate_delivery,
  round(AVG(time_to_delivery),0) AS avg_time_to_delivery_in_days,
  #AVG(price) AS avg_price,
  #AVG(freight_value) AS avg_freight
FROM (
  SELECT
    t1.order_id,
    customer_id,
    customer_state,
```

```
order_status,
    order_purchase_timestamp,
    order_delivered_customer_date,
    order_estimated_delivery_date,
    time_to_delivery,
    diff_estimated_delivery,
    price,
    freight_value
  FROM
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
  LEFT JOIN
    `sql_project.order_items` AS t2
  ON
    t1.order_id=t2.order_id) t1
GROUP BY
  customer_state
order by avg_time_to_delivery_in_days
  limit 5
```

Row	customer_state	avg_time_to_del		
1	SP	8.0		
2	PR	11.0 12.0 13.0		
3	MG			
4	DF			
5	RS	15.0		

Top 5 states with highest average time to delivery

```
SELECT
   customer_state,
   #AVG(diff_estimated_delivery) AS avg_estimate_delivery,
   round(AVG(time_to_delivery),0) AS avg_time_to_delivery_in_days,
   #AVG(price) AS avg_price,
   #AVG(freight_value) AS avg_freight
FROM (
   SELECT
```

```
t1.order_id,
    customer_id,
    customer_state,
    order_status,
    order_purchase_timestamp,
    order_delivered_customer_date,
    order_estimated_delivery_date,
    time_to_delivery,
    diff_estimated_delivery,
    price,
    freight_value
  FROM
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
  LEFT JOIN
    `sql_project.order_items` AS t2
  ON
    t1.order_id=t2.order_id) t1
GROUP BY
  customer_state
order by avg_time_to_delivery_in_days desc
  limit 5
```

Row	customer_state	avg_time_to_del	
1	AP	28.0	
2	RR	28.0	
3	AM	26.0	
4	AL	24.0	
5	PA	23.0	

Top 5 states with lowest average freight value

```
SELECT
  customer_state,
  #AVG(diff_estimated_delivery) AS avg_estimate_delivery,
  #round(AVG(time_to_delivery),0) AS avg_time_to_delivery_in_days,
```

```
#AVG(price) AS avg_price,
  round(AVG(freight_value),0) AS avg_freight
FROM (
  SELECT
   t1.order_id,
   customer_id,
    customer_state,
   order_status,
   order_purchase_timestamp,
   order_delivered_customer_date,
   order_estimated_delivery_date,
    time_to_delivery,
   diff_estimated_delivery,
    price,
    freight_value
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
  LEFT JOIN
    `sql_project.order_items` AS t2
  ON
    t1.order_id=t2.order_id) t1
GROUP BY
  customer_state
order by avg_freight
  limit 5
```

Row	customer_state	avg_freight	
1	SP	15.0	
2	PR	21.0	
3	RJ	21.0	
4	DF	21.0	
5	MG	21.0	

Top 5 states with highest average freight value

```
SELECT
  customer_state,
  #AVG(diff_estimated_delivery) AS avg_estimate_delivery,
  #round(AVG(time_to_delivery),0) AS avg_time_to_delivery_in_days,
  #AVG(price) AS avg_price,
  round(AVG(freight_value),0) AS avg_freight
FROM (
  SELECT
    t1.order_id,
    customer_id,
    customer_state,
    order_status,
   order_purchase_timestamp,
    order_delivered_customer_date,
   order_estimated_delivery_date,
    time_to_delivery,
   diff_estimated_delivery,
    price,
    freight_value
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
  LEFT JOIN
    `sql_project.order_items` AS t2
  ON
    t1.order_id=t2.order_id) t1
GROUP BY
  customer_state
order by avg_freight desc
  limit 5
 Row
           customer_state
                                             avg_freight
      1
           RR
                                                      43.0
      2
           PB
                                                      43.0
      3
           RO
                                                      41.0
      4
           AC
                                                      40.0
```

39.0

5

PI

Top 5 states where delivery is really fast compared to estimated date

```
SELECT
  customer_state,
  ROUND(AVG(diff_estimated_delivery), 0) AS avg_estimate_delivery
FROM (
  SELECT
   t1.order_id,
   customer_id,
   customer_state,
   order_status,
   order_purchase_timestamp,
   order_delivered_customer_date,
   order_estimated_delivery_date,
    time_to_delivery,
    diff_estimated_delivery,
    price,
    freight_value
  FROM
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
  LEFT JOIN
    `sql_project.order_items` AS t2
  ON
    t1.order_id=t2.order_id) t1
GROUP BY
  customer_state
order by avg_estimate_delivery desc
  limit 5
```

Row	customer_state	avg_estimate_de		
1	AC	20.0		
2	RO	19.0		
3	AM	19.0		
4	RR	17.0		
5	AP	17.0		

Top 5 states where delivery is really not so fast compared to estimated date

```
SELECT
  customer_state,
  ROUND(AVG(diff_estimated_delivery), ∅) AS avg_estimate_delivery
FROM (
  SELECT
    t1.order_id,
    customer_id,
    customer_state,
    order_status,
    order_purchase_timestamp,
    order_delivered_customer_date,
    order_estimated_delivery_date,
    time_to_delivery,
    diff_estimated_delivery,
    price,
    freight_value
  FROM
    `scaler-dsml-sql-381611.sql_project.order_date_state` AS t1
  LEFT JOIN
    `sql_project.order_items` AS t2
  ON
    t1.order_id=t2.order_id) t1
GROUP BY
  customer_state
order by avg_estimate_delivery desc
  limit 5
```

Row	customer_state	avg_estimate_de	
1	AL	8.0	
2	MA	9.0 9.0 10.0	
3	SE		
4	SP		
5	ВА	10.0	

Count of orders based on the no. of payment installments

The above query performs a left join on orders and payments table so as to obtain all the corresponding payment related columns corresponding to order_id in orders table.

```
select payment_installments,count(order_id) as no_of_orders
from
(SELECT
 t1.order_id,
  extract(month from order_purchase_timestamp) as months ,
  payment_type,
  payment_installments
FROM
  `sql_project.orders` t1
LEFT JOIN
  `scaler-dsml-sql-381611.sql_project.payments` t2
ON
 t1.order_id=t2.order_id
) t5
group by payment_installments
order by payment_installments
limit 10
```

Row	payment_installr	no_of_orders
1	nuli	1
2	0	2
3	1	52546
4	2	12413
5	3	10461
6	4	7098
7	5	5239
8	6	3920
9	7	1626
10	8	4268

Month over Month count of orders for different payment types

```
select months,payment_type,count(order_id) as no_of_orders
from

(SELECT
    t1.order_id,
    extract(month from order_purchase_timestamp) as months ,
    payment_type,
    payment_installments

FROM
    `sql_project.orders` t1
LEFT JOIN
```

```
`scaler-dsml-sql-381611.sql_project.payments` t2
```

ON

```
t1.order_id=t2.order_id) t6
group by months,payment_type
order by months,payment_type
```

Row	months	payment_type	no_of_orders
1	1	UPI	1715
2	1	credit_card	6103
3	1	debit_card	118
4	1	voucher	477
5	2	UPI	1723
6	2	credit_card	6609
7	2	debit_card	82
8	2	voucher	424
9	3	UPI	1942
10	3	credit_card	7707