

### 3.1. Get month on month orders by states

```
with order_updated as(
    select *,
        TO_CHAR(
            DATE_TRUNC('month', o.order_purchase_timestamp),
            'Month'
        ) as opt_month,
        extract(
            month from o.order_purchase_timestamp
        ) as opt_month_id
    from orders o
        join customers c using(customer_id)
        join payments p using(order_id)
    order by o.order_purchase_timestamp
),
grouped_sate_details as(
    select customer_state as state,
        opt_month as month,
        count(distinct order_id) as order_quantity,
        sum(payment_value) as order_price,
        opt_month_id
    from order_updated
    group by customer_state,
        opt_month,
        opt_month_id
    order by customer_state, opt_month_id
)
select gsd1.state, gsd1.month, gsd1.order_quantity, gsd1.order_price,
    case
        when gsd2.order_quantity is not null then (
            (gsd1.order_quantity - gsd2.order_quantity) * 100 /
            gsd2.order_quantity
        )
        else 0
    end as qnantity_mom,
    case
        when gsd2.order_price is not null then round(
            (gsd1.order_price - gsd2.order_price) * 100 / gsd2.order_price,
            2
        )
        else 0
    end as price_mom
from grouped_sate_details gsd1
    left join grouped_sate_details gsd2 on gsd1.state = gsd2.state
        and gsd1.opt_month_id = gsd2.opt_month_id + 1
order by gsd1.state, gsd1.opt_month_id;
```

state	month	order_quantity	order_price	quantity_mom	price_mom
abc Filter...	abc Filter...	abc Filter...	abc Filter...	abc Filter...	abc Filter...
AC	January	8	1881.04	0	0
AC	February	6	896.62	-25	-52.33
AC	March	4	694.85	-33	-22.50
AC	April	9	1939.68	125	179.15
AC	May	10	3884.06	11	100.24
AC	June	7	1107.53	-30	-71.49
AC	July	9	2564.35	28	131.54
AC	August	7	1370.35	-22	-46.56
AC	September	5	2029.23	-28	48.08
AC	October	6	958.17	20	-52.78
AC	November	5	945.16	-16	-1.36
AC	December	5	1409.58	0	49.14
AL	January	39	6940.26	0	0
AL	February	39	8648.72	0	24.62
AL	March	40	9606.09	2	11.07
AL	April	51	12576.38	27	30.92
AL	May	46	10122.83	-9	-19.51
AL	June	34	6128.95	-26	-39.45
AL	July	40	7854.89	17	28.16
AL	August	34	12589.21	-15	60.27
AL	September	20	5191.65	-41	-58.76
AL	October	30	6471.49	50	24.65
AL	November	26	7441.47	-13	14.99

And so on.

Here, we have grouped records by State, ordered by Month to find Month on Month Change of total quantity of product sold (**quantity\_mom**) and total cost of product sold (**price\_mom**) both are in percentage.

### 3.2. Distribution of customers across the states in Brazil

```
select customer_state as state,  
       count(*) as no_of_customers  
from customers  
group by customer_state  
order by count(*) desc;
```

state	no_of_customers
abc Filter...	abc Filter...
SP	41746
RJ	12852
MG	11635
RS	5466
PR	5045
SC	3637
BA	3380
DF	2140
ES	2033
GO	2020
PE	1652
CE	1336
PA	975
MT	907
MA	747
MS	715
PB	536
PI	495
RN	485
AL	413
SE	350
TO	280
RO	253
AM	148
AC	81
AP	68
RR	46