4.1. Get % increase in cost of orders from 2017 to 2018 (include months between Jan to Aug only) - You can use "payment_value" column in payments table.

```
with order_updated as(
    select *
    from (
            select *,
                EXTRACT(
                    YEAR
                    FROM order_purchase_timestamp
                ) as opt_year,
                EXTRACT(
                    Month
                    FROM order_purchase_timestamp
                ) as opt_month_id,
                TO_CHAR(
                    DATE_TRUNC('month', order_purchase_timestamp),
                    'Month'
                ) as opt_month
            from orders
        ) x
    where opt_year in (2017, 2018) and opt_month_id between 1 and 8
),
filtered_order_detail as(
    select opt_year, opt_month,
        count(distinct order_purchase_timestamp) as total_opt_quantity,
        sum(payment_value) as total_opt_cost,
        opt_month_id
    from order_updated ou
        join payments p on ou.order_id = p.order_id
    group by opt_year, opt_month, opt_month_id
    order by opt_year, opt_month_id
)
select opt_month
    , round(((current_year_cost-previous_year_cost)/previous_year_cost)*100,2)
as cost_perc_increase
    , current_year_cost, previous_year_cost
from (
    select fod1.opt_month
        ,fod1.opt_month_id
        ,fod1.opt_year as current_year
        ,fod2.opt_year as previous_year
        ,fod1.total_opt_cost as current_year_cost
        ,fod2.total_opt_cost as previous_year_cost
    from filtered_order_detail fod1
        join filtered_order_detail fod2 on fod1.opt_month = fod2.opt_month
        and fod1.opt_year > fod2.opt_year
) x
```

opt_month	cost_perc_increase	current_year_cost	previous_year_c...
Filter...	Filter...	Filter...	Filter...
January	705.13	1115004.18	138488.04
February	239.99	992463.34	291908.01
March	157.78	1159652.12	449863.60
April	177.84	1160785.48	417788.03
May	94.63	1153982.15	592918.82
June	100.26	1023880.50	511276.38
July	80.04	1066540.75	592382.92
August	51.61	1022425.32	674396.32

Here is the '%' increase in cost of orders from 2017 to 2018 (considering months between Jan to Aug only) are shown in **'cost_perc_increase'** column. And **'current_year_cost'** and **'previous_year_cost'** represents Total cost of sales in 2018 and 2017 respectively for corresponding months.

4.2. Mean & Sum of price and freight value by customer state

```sql
with consolidated_sales as(
    select c.customer_state as state,
        p.payment_value as price,
        oi.freight_value,
        customer_id,
        order_id
    from customers c
        join orders o using(customer_id)
        join payments p using(order_id)
        join order_items oi using(order_id)
    order by order_id
)
select state,
    sum(price) as total_price,
    round(avg(price), 2) as mean_price,
    sum(freight_value) as total_freight_value,
    round(avg(freight_value), 2) as mean_freight_value,
    count(distinct order_id) as total_sales_count
from consolidated_sales
group by state
```

state	total_price	mean_price	total_freight_val...	mean_freight_va...	total_sales_count
Filter...	Filter...	Filter...	Filter...	Filter...	Filter...
AC	24984.86	263.00	3802.06	40.02	81
AL	111284.42	242.98	16368.65	35.74	411
AM	34753.30	203.24	5656.54	33.08	147
AP	21642.70	257.65	2863.09	34.08	68
BA	797410.36	196.99	106538.62	26.32	3358
CE	343847.83	221.69	50350.54	32.46	1327
DF	432623.73	174.94	52118.84	21.08	2125
ES	405805.34	173.57	51392.57	21.98	2025
GO	513879.00	211.47	55237.53	22.73	2007
MA	198566.27	235.27	32290.33	38.26	740
MG	2326151.64	170.56	281301.31	20.63	11544
MS	164337.28	194.94	19739.44	23.42	709
MT	256804.62	228.27	32592.32	28.97	903
PA	261788.35	234.58	39881.05	35.74	970
PB	180984.19	283.23	27641.72	43.26	532
PE	376377.27	199.25	61923.56	32.78	1648
PI	136779.96	238.71	22480.64	39.23	493
PR	1064603.99	178.56	122669.69	20.58	4998
RJ	2769347.44	180.68	323413.95	21.10	12762
RN	116264.90	204.33	20074.28	35.28	482
RO	65886.00	230.37	11717.47	40.97	247
RR	12462.21	239.66	2235.19	42.98	46
RS	1147277.00	176.89	141579.69	21.83	5432
SC	786343.71	182.79	92216.36	21.44	3612
SE	88437.51	222.76	14541.29	36.63	345
SP	7597209.66	153.27	753351.18	15.20	41374
TO	72281.17	213.22	13450.60	39.68	279

Here is Mean & Sum of price and freight value by customer state. Where **'total_price'** and **'total_freight_value'** represents TOTAL of price and freight value respectively respective to state. **'mean_price'** and **'mean_freight_value'** represents MEAN of price and freight value respectively respective to state. **'total_sales_count'** represents quantity of order place respective to state.