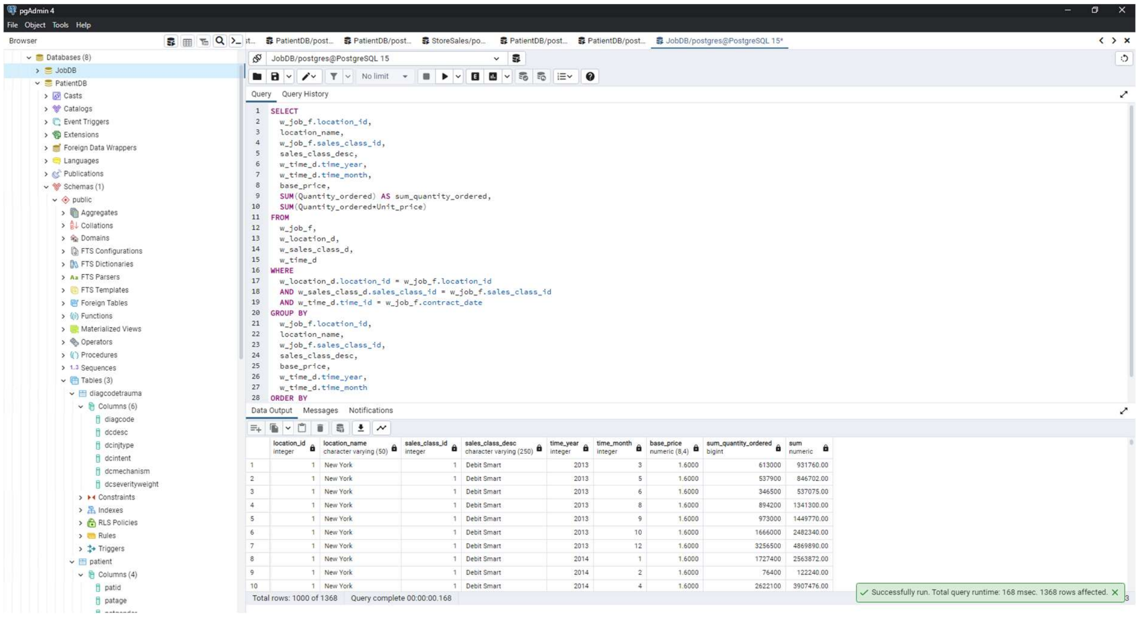
Base Queries(BQ) and Analytical Queries(AQ)

BQ1:

Location/Sales class summary for job quantity and amount (revenue/costs)

```
SELECT
  w_job_f.location_id,
  location_name,
  w_job_f.sales_class_id,
  sales_class_desc,
  w_time_d.time_year,
  w_time_d.time_month,
  base_price,
  SUM(Quantity_ordered) AS sum_quantity_ordered,
  SUM(Quantity_ordered*Unit_price)
FROM
  w_job_f,
  w_location_d,
  w_sales_class_d,
  w_time_d
WHERE
  w_location_d.location_id = w_job_f.location_id
  AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
  AND w_time_d.time_id = w_job_f.contract_date
GROUP BY
  w_job_f.location_id,
  location_name,
  w_job_f.sales_class_id,
  sales_class_desc,
  base_price,
  w_time_d.time_year,

  w_time_d.time_month

ORDER BY

  location_id
```



JobDB/postgres@PostgreSQL 15

```sql
SELECT
  w_job_f.location_id,
  location_name,
  w_job_f.sales_class_id,
  sales_class_desc,
  w_time_d.time_year,
  w_time_d.time_month,
  base_price,
  SUM(Quantity_ordered) AS sum_quantity_ordered,
  SUM(Quantity_ordered*Unit_price)
FROM
  w_job_f,
  w_location_d,
  w_sales_class_d,
  w_time_d
WHERE
  w_location_d.location_id = w_job_f.location_id
  AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
  AND w_time_d.time_id = w_job_f.contract_date
GROUP BY
  w_job_f.location_id,
  location_name,
  w_job_f.sales_class_id,
  sales_class_desc,
  base_price,
  w_time_d.time_year,
  w_time_d.time_month
ORDER BY
```

	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	time_year integer	time_month integer	base_price numeric (8,4)	sum_quantity_ordered bigint	sum numeric
1	1	New York	1	Debit Smart	2013	3	1.6000	613000	931760.00
2	1	New York	1	Debit Smart	2013	5	1.6000	537900	846702.00
3	1	New York	1	Debit Smart	2013	6	1.6000	346500	537075.00
4	1	New York	1	Debit Smart	2013	8	1.6000	894200	1341300.00
5	1	New York	1	Debit Smart	2013	9	1.6000	973000	1449770.00
6	1	New York	1	Debit Smart	2013	10	1.6000	1666000	2482340.00
7	1	New York	1	Debit Smart	2013	12	1.6000	3256500	4869890.00
8	1	New York	1	Debit Smart	2014	1	1.6000	1727400	2563872.00
9	1	New York	1	Debit Smart	2014	2	1.6000	76400	122240.00
10	1	New York	1	Debit Smart	2014	4	1.6000	2622100	3907476.00

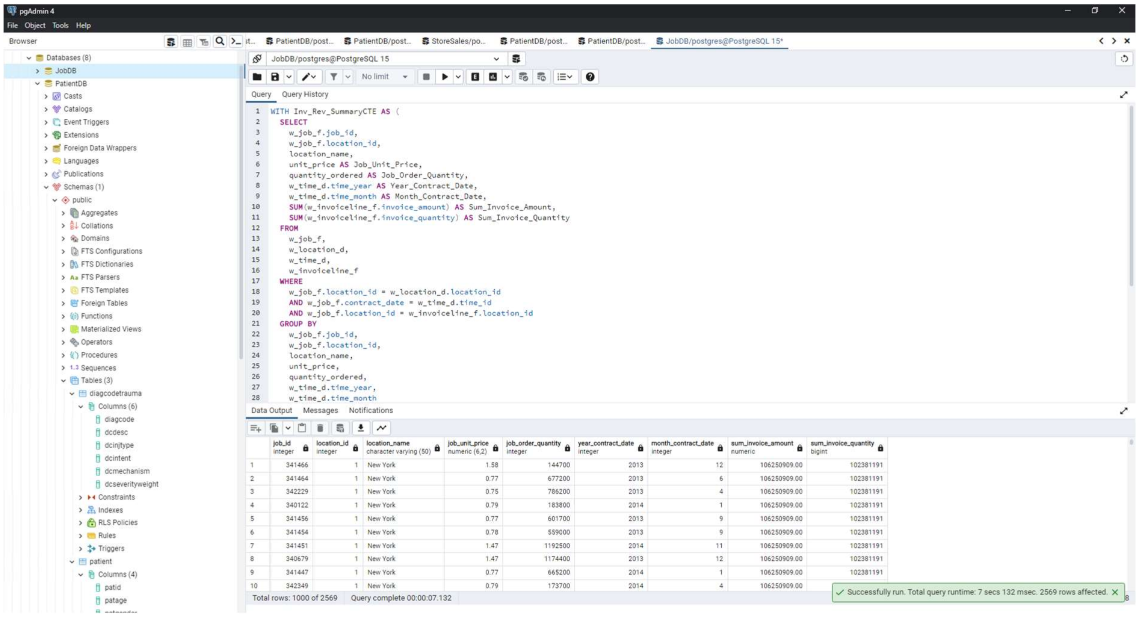
Total rows: 1000 of 1368   Query complete 00:00:00.168

✓ Successfully run. Total query runtime: 168 msec. 1368 rows affected.

BQ2:

Location invoice revenue summary (revenue/costs)

```
WITH Inv_Rev_SummaryCTE AS (
  SELECT
    w_job_f.job_id,
    w_job_f.location_id,
    location_name,
    unit_price AS Job_Unit_Price,
    quantity_ordered AS Job_Order_Quantity,
    w_time_d.time_year AS Year_Contract_Date,
    w_time_d.time_month AS Month_Contract_Date,
    SUM(w_invoiceline_f.invoice_amount) AS Sum_Invoice_Amount,
    SUM(w_invoiceline_f.invoice_quantity) AS Sum_Invoice_Quantity
  FROM
    w_job_f,
    w_location_d,
    w_time_d,
    w_invoiceline_f
  WHERE
    w_job_f.location_id = w_location_d.location_id
    AND w_job_f.contract_date = w_time_d.time_id
    AND w_job_f.location_id = w_invoiceline_f.location_id
  GROUP BY
    w_job_f.job_id,
    w_job_f.location_id,
    location_name,
    unit_price,
    quantity_ordered,
    w_time_d.time_year,
    w_time_d.time_month
)

SELECT
  job_id,
  location_id,
  location_name,
  Job_Unit_Price,
  Job_Order_Quantity,
  Year_Contract_Date,
  Month_Contract_Date,
  Sum_Invoice_Amount,
  Sum_Invoice_Quantity
FROM
  Inv_Rev_SummaryCTE
ORDER BY
  location_id;
```



```
WITH Inv_Rev_SummaryCTE AS (
  SELECT
    w_job_f.job_id,
    w_job_f.location_id,
    location_name,
    unit_price AS Job_Unit_Price,
    quantity_ordered AS Job_Order_Quantity,
    w_time_d.time_year AS Year_Contract_Date,
    w_time_d.time_month AS Month_Contract_Date,
    SUM(w_invoiceline_f.invoice_amount) AS Sum_Invoice_Amount,
    SUM(w_invoiceline_f.invoice_quantity) AS Sum_Invoice_Quantity
  FROM
    w_job_f,
    w_location_d,
    w_time_d,
    w_invoiceline_f
  WHERE
    w_job_f.location_id = w_location_d.location_id
    AND w_job_f.contract_date = w_time_d.time_id
    AND w_job_f.location_id = w_invoiceline_f.location_id
  GROUP BY
    w_job_f.job_id,
    w_job_f.location_id,
    location_name,
    unit_price,
    quantity_ordered,
    w_time_d.time_year,
    w_time_d.time_month
```

	job_id integer	location_id integer	location_name character varying (50)	job_unit_price numeric (6,2)	job_order_quantity integer	year_contract_date integer	month_contract_date integer	sum_invoice_amount numeric	sum_invoice_quantity bigint
1	341466	1	New York	1.58	144700	2013	12	106250909.00	102381191
2	341464	1	New York	0.77	677200	2013	6	106250909.00	102381191
3	342229	1	New York	0.75	786200	2013	4	106250909.00	102381191
4	340122	1	New York	0.79	183800	2014	1	106250909.00	102381191
5	341456	1	New York	0.77	601700	2013	9	106250909.00	102381191
6	341454	1	New York	0.78	559000	2013	9	106250909.00	102381191
7	341451	1	New York	1.47	1192500	2014	11	106250909.00	102381191
8	340679	1	New York	1.47	1174400	2013	12	106250909.00	102381191
9	341447	1	New York	0.77	665200	2014	1	106250909.00	102381191
10	342349	1	New York	0.79	173700	2014	4	106250909.00	102381191

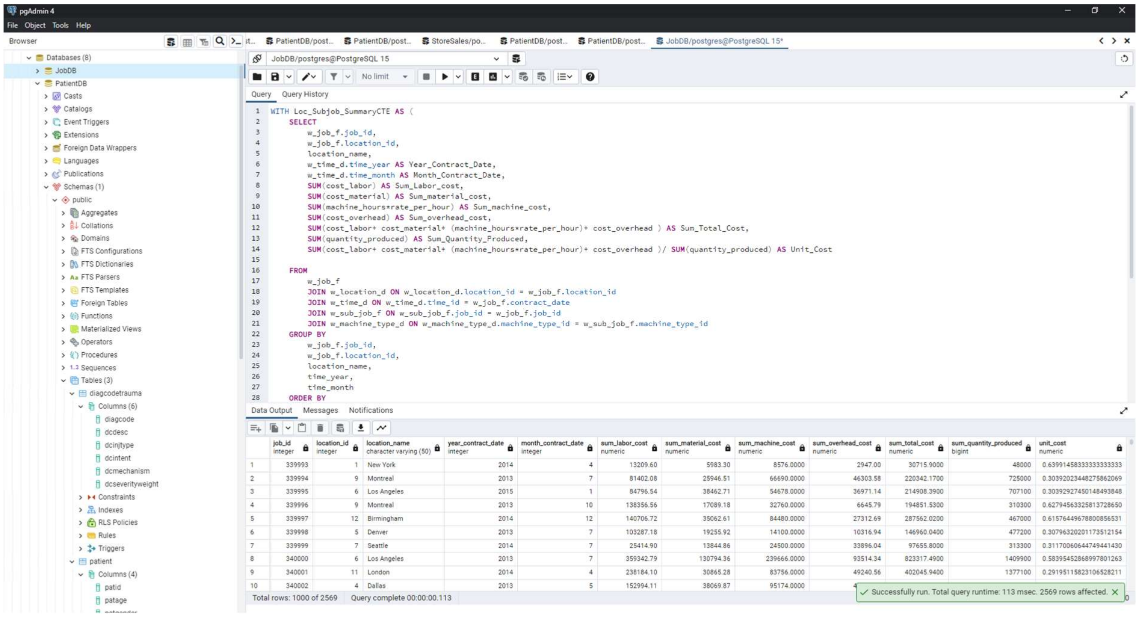
Total rows: 1000 of 2569 Query complete 00:00:07.132

✓ Successfully run. Total query runtime: 7 secs 132 msec. 2569 rows affected.

BQ3:

Location subjob cost summary (revenue/costs)

```
WITH Loc_Subjob_SummaryCTE AS (
    SELECT
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        w_time_d.time_year AS Year_Contract_Date,
        w_time_d.time_month AS Month_Contract_Date,
        SUM(cost_labor) AS Sum_Labor_cost,
        SUM(cost_material) AS Sum_material_cost,
        SUM(machine_hours*rate_per_hour) AS Sum_machine_cost,
        SUM(cost_overhead) AS Sum_overhead_cost,
        SUM(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead ) AS Sum_Total_Cost,
        SUM(quantity_produced) AS Sum_Quantity_Produced,
        SUM(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )/ SUM(quantity_produced) AS Unit_Cost

    FROM
        w_job_f
        JOIN w_location_d ON w_location_d.location_id = w_job_f.location_id
        JOIN w_time_d ON w_time_d.time_id = w_job_f.contract_date
        JOIN w_sub_job_f ON w_sub_job_f.job_id = w_job_f.job_id
        JOIN w_machine_type_d ON w_machine_type_d.machine_type_id = w_sub_job_f.machine_type_id
    GROUP BY
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        time_year,
        time_month
    ORDER BY
        job_id ASC
)

SELECT
    job_id,
    location_id,
    location_name,
    Year_Contract_Date,
    Month_Contract_Date,
    Sum_Labor_cost,
    Sum_material_cost,
    Sum_machine_cost,
    Sum_overhead_cost,
    Sum_Total_Cost,
    Sum_Quantity_Produced,
    Unit_Cost
FROM
    Loc_Subjob_SummaryCTE
```



```
WITH Loc_Subjob_SummaryCTE AS (
    SELECT
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        w_time_d.time_year AS Year_Contract_Date,
        w_time_d.time_month AS Month_Contract_Date,
        SUM(cost_labor) AS Sum_Labor_cost,
        SUM(cost_material) AS Sum_material_cost,
        SUM(machine_hours*rate_per_hour) AS Sum_machine_cost,
        SUM(cost_overhead) AS Sum_overhead_cost,
        SUM(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead ) AS Sum_Total_Cost,
        SUM(quantity_produced) AS Sum_Quantity_Produced,
        SUM(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )/ SUM(quantity_produced) AS Unit_Cost

    FROM
        w_job_f
        JOIN w_location_d ON w_location_d.location_id = w_job_f.location_id
        JOIN w_time_d ON w_time_d.time_id = w_job_f.contract_date
        JOIN w_sub_job_f ON w_sub_job_f.job_id = w_job_f.job_id
        JOIN w_machine_type_d ON w_machine_type_d.machine_type_id = w_sub_job_f.machine_type_id
    GROUP BY
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        time_year,
        time_month
    ORDER BY
```

	job_id integer	location_id integer	location_name character varying (50)	year_contract_date integer	month_contract_date integer	sum_labor_cost numeric	sum_material_cost numeric	sum_machine_cost numeric	sum_overhead_cost numeric	sum_total_cost numeric	sum_quantity_produced bigint	unit_cost numeric
1	339993	1	New York	2014	4	13209.60	5983.30	8576.0000	2947.00	30715.9000	48000	0.63991458333333333333
2	339994	9	Montreal	2013	7	81402.08	25946.51	66690.0000	46303.58	220342.1700	725000	0.30392023448275862069
3	339995	6	Los Angeles	2015	1	84796.54	38462.71	54678.0000	36971.14	214908.3900	707100	0.30392927450148493848
4	339996	9	Montreal	2013	10	138356.56	17089.18	32760.0000	6645.79	194851.5300	310300	0.62794563325813728650
5	339997	12	Birmingham	2014	12	140706.72	35062.61	84480.0000	27312.69	287562.0200	467000	0.61576449678800856531
6	339998	5	Denver	2013	7	103287.18	19255.92	14100.0000	10316.94	146960.0400	477200	0.30796320201173512154
7	339999	7	Seattle	2014	7	25414.90	13844.86	24500.0000	33896.04	97655.8000	313300	0.31170060644749441430
8	340000	6	Los Angeles	2013	7	359342.79	130794.36	239666.0000	93514.34	823317.4900	1409900	0.58395452868997801263
9	340001	11	London	2014	4	238184.10	30865.28	83756.0000	49240.56	402045.9400	1377100	0.29195115823106528211
10	340002	4	Dallas	2013	5	152994.11	38069.87	95174.0000	[illegible]	[illegible]	[illegible]	[illegible]

Total rows: 1000 of 2569 Query complete 00:00:00.113

✓ Successfully run. Total query runtime: 113 msec. 2569 rows affected.

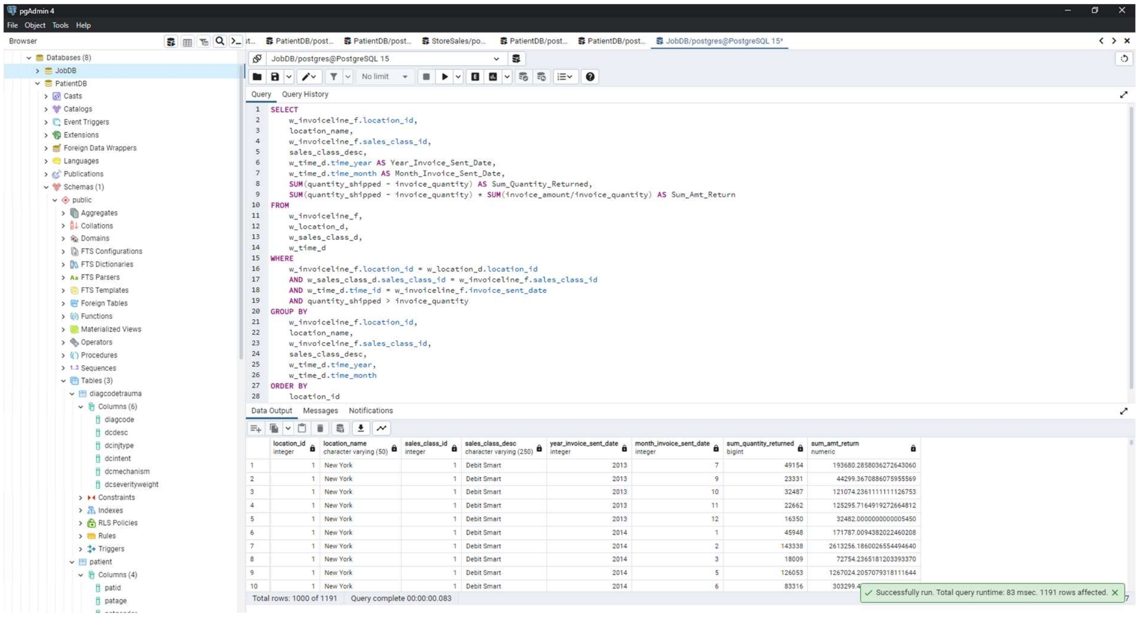
BQ4:

Returns by location and sales class (quality control)

```
SELECT
    w_invoiceline_f.location_id,
    location_name,
    w_invoiceline_f.sales_class_id,
    sales_class_desc,
    w_time_d.time_year AS Year_Invoice_Sent_Date,
    w_time_d.time_month AS Month_Invoice_Sent_Date,
    SUM(quantity_shipped - invoice_quantity) AS Sum_Quantity_Returned,
    SUM(quantity_shipped - invoice_quantity) * SUM(invoice_amount/invoice_quantity) AS Sum_Amt_Return
FROM
    w_invoiceline_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_invoiceline_f.location_id = w_location_d.location_id
    AND w_sales_class_d.sales_class_id = w_invoiceline_f.sales_class_id
    AND w_time_d.time_id = w_invoiceline_f.invoice_sent_date
    AND quantity_shipped > invoice_quantity
GROUP BY
    w_invoiceline_f.location_id,
    location_name,
    w_invoiceline_f.sales_class_id,
    sales_class_desc,
    w_time_d.time_year,
    w_time_d.time_month
```

ORDER BY

location_id



```sql
SELECT
    w_invoiceline_f.location_id,
    location_name,
    w_invoiceline_f.sales_class_id,
    sales_class_desc,
    w_time_d.time_year AS Year_Invoice_Sent_Date,
    w_time_d.time_month AS Month_Invoice_Sent_Date,
    SUM(quantity_shipped - invoice_quantity) AS Sum_Quantity_Returned,
    SUM(quantity_shipped - invoice_quantity) * SUM(invoice_amount/invoice_quantity) AS Sum_Amt_Return
FROM
    w_invoiceline_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_invoiceline_f.location_id = w_location_d.location_id
    AND w_sales_class_d.sales_class_id = w_invoiceline_f.sales_class_id
    AND w_time_d.time_id = w_invoiceline_f.invoice_sent_date
    AND quantity_shipped > invoice_quantity
GROUP BY
    w_invoiceline_f.location_id,
    location_name,
    w_invoiceline_f.sales_class_id,
    sales_class_desc,
    w_time_d.time_year,
    w_time_d.time_month
ORDER BY
    location_id
```

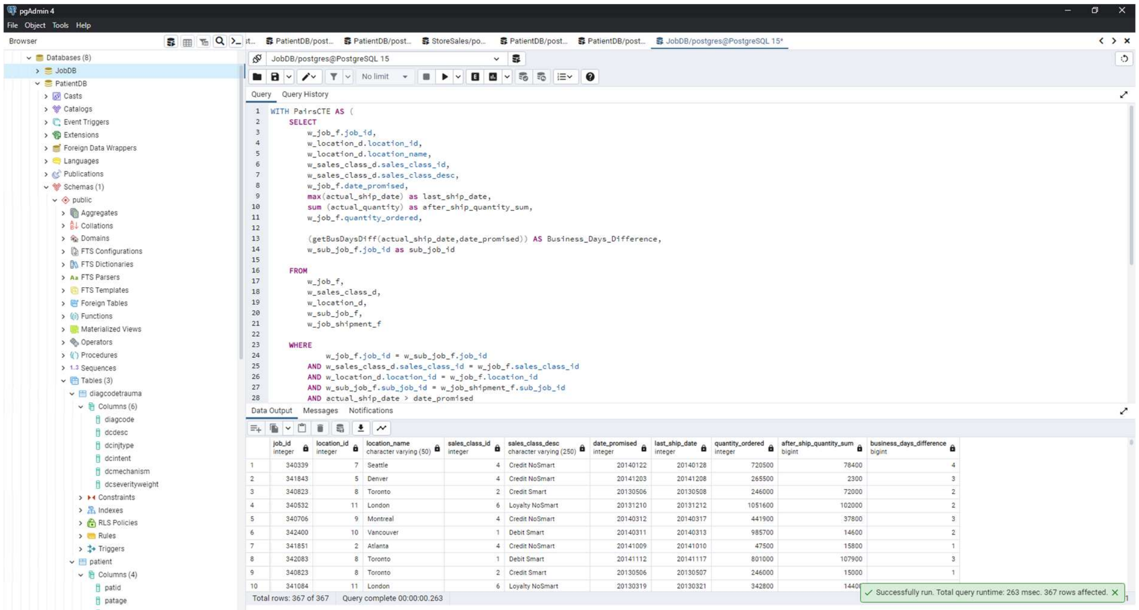
	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	year_invoice_sent_date integer	month_invoice_sent_date integer	sum_quantity_returned bigint	sum_amt_return numeric
1	1	New York	1	Debit Smart	2013	7	49154	193680.2858036272643060
2	1	New York	1	Debit Smart	2013	9	23331	44299.3670886075955569
3	1	New York	1	Debit Smart	2013	10	32487	121074.2361111111126753
4	1	New York	1	Debit Smart	2013	11	22662	125295.7164919272664812
5	1	New York	1	Debit Smart	2013	12	16350	32482.0000000000005450
6	1	New York	1	Debit Smart	2014	1	45948	171787.0094382022460208
7	1	New York	1	Debit Smart	2014	2	143338	2613256.1860026554494640
8	1	New York	1	Debit Smart	2014	3	18009	72754.2365181203393370
9	1	New York	1	Debit Smart	2014	5	126053	1267024.2057079318111644
10	1	New York	1	Debit Smart	2014	6	83316	303299.4

Total rows: 1000 of 1191 Query complete 00:00:00.083

✓ Successfully run. Total query runtime: 83 msec. 1191 rows affected.

BQ5:

```
WITH PairsCTE AS (
    SELECT
        w_job_f.job_id,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        w_job_f.date_promised,
        max(actual_ship_date) as last_ship_date,
        sum (actual_quantity) as after_ship_quantity_sum,
        w_job_f.quantity_ordered,

        (getBusDaysDiff(actual_ship_date,date_promised)) AS Business_Days_Difference,
        w_sub_job_f.job_id as sub_job_id

    FROM
        w_job_f,
        w_sales_class_d,
        w_location_d,
        w_sub_job_f,
        w_job_shipment_f

    WHERE
            w_job_f.job_id = w_sub_job_f.job_id
        AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
        AND    w_location_d.location_id = w_job_f.location_id
        AND w_sub_job_f.sub_job_id = w_job_shipment_f.sub_job_id
        AND actual_ship_date > date_promised
    GROUP BY
        w_sub_job_f.sub_job_id,
        w_job_f.job_id,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        Business_Days_Difference

)
SELECT
    PairsCTE.job_id,
    PairsCTE.location_id,
    PairsCTE.location_name,
    PairsCTE.sales_class_id,
    PairsCTE.sales_class_desc,
    PairsCTE.date_promised,
    PairsCTE.last_ship_date,
    PairsCTE.quantity_ordered,
    PairsCTE.after_ship_quantity_sum,
    PairsCTE.Business_Days_Difference
FROM PairsCTE;
```



```sql
WITH PairsCTE AS (
    SELECT
        w_job_f.job_id,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        w_job_f.date_promised,
        max(actual_ship_date) as last_ship_date,
        sum (actual_quantity) as after_ship_quantity_sum,
        w_job_f.quantity_ordered,

        (getBusDaysDiff(actual_ship_date,date_promised)) AS Business_Days_Difference,
        w_sub_job_f.job_id as sub_job_id

    FROM
        w_job_f,
        w_sales_class_d,
        w_location_d,
        w_sub_job_f,
        w_job_shipment_f

    WHERE
            w_job_f.job_id = w_sub_job_f.job_id
        AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
        AND w_location_d.location_id = w_job_f.location_id
        AND w_sub_job_f.sub_job_id = w_job_shipment_f.sub_job_id
        AND actual_ship_date > date_promised
```

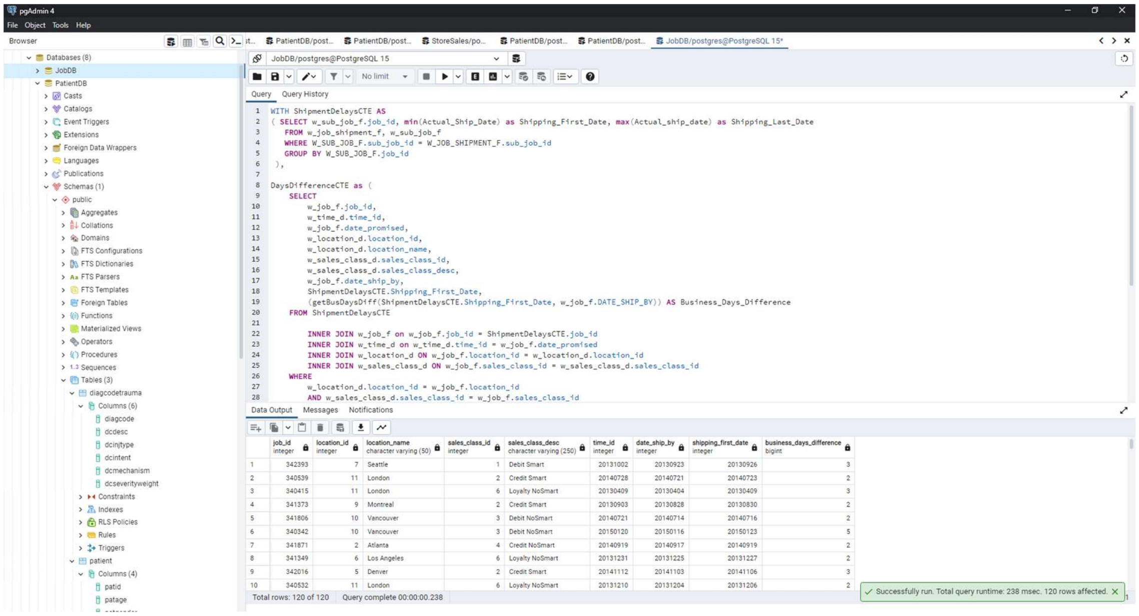
	job_id integer	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	date_promised integer	last_ship_date integer	quantity_ordered integer	after_ship_quantity_sum bigint	business_days_difference bigint
1	340339	7	Seattle	4	Credit NoSmart	20140122	20140128	720500	78400	4
2	341843	5	Denver	4	Credit NoSmart	20141203	20141208	265500	2300	3
3	340823	8	Toronto	2	Credit Smart	20130506	20130508	246000	72000	2
4	340532	11	London	6	Loyalty NoSmart	20131210	20131212	1051600	102000	2
5	340706	9	Montreal	4	Credit NoSmart	20140312	20140317	441900	37800	3
6	342400	10	Vancouver	1	Debit Smart	20140311	20140313	985700	14600	2
7	341851	2	Atlanta	4	Credit NoSmart	20141009	20141010	47500	15800	1
8	342083	8	Toronto	1	Debit Smart	20141112	20141117	801000	107900	3
9	340823	8	Toronto	2	Credit Smart	20130506	20130507	246000	15000	1
10	341084	11	London	6	Loyalty NoSmart	20130319	20130321	342800	14400	

Total rows: 367 of 367 Query complete 00:00:00.263

✓ Successfully run. Total query runtime: 263 msec. 367 rows affected.

BQ6:

```
WITH ShipmentDelaysCTE AS
( SELECT w_sub_job_f.job_id, min(Actual_Ship_Date) as Shipping_First_Date,
max(Actual_ship_date) as Shipping_Last_Date
   FROM w_job_shipment_f, w_sub_job_f
   WHERE W_SUB_JOB_F.sub_job_id = W_JOB_SHIPMENT_F.sub_job_id
   GROUP BY W_SUB_JOB_F.job_id
 ),

DaysDifferenceCTE as (
    SELECT
                    w_job_f.job_id,
                    w_time_d.time_id,
                    w_job_f.date_promised,
                    w_location_d.location_id,
                    w_location_d.location_name,
                    w_sales_class_d.sales_class_id,
                    w_sales_class_d.sales_class_desc,
                    w_job_f.date_ship_by,
                    ShipmentDelaysCTE.Shipping_First_Date,
                    (getBusDaysDiff(ShipmentDelaysCTE.Shipping_First_Date,
w_job_f.DATE_SHIP_BY)) AS Business_Days_Difference
    FROM ShipmentDelaysCTE

                    INNER JOIN w_job_f on w_job_f.job_id = ShipmentDelaysCTE.job_id
                    INNER JOIN w_time_d on w_time_d.time_id = w_job_f.date_promised
                    INNER JOIN w_location_d ON w_job_f.location_id = w_location_d.location_id
                    INNER JOIN w_sales_class_d ON w_job_f.sales_class_id =
w_sales_class_d.sales_class_id
            WHERE
                    w_location_d.location_id = w_job_f.location_id

                    AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id

                    AND ShipmentDelaysCTE.job_id = w_job_f.job_id

                    AND ShipmentDelaysCTE.Shipping_First_Date > w_job_f.DATE_SHIP_BY

            GROUP BY

                    w_job_f.job_id,

                    w_time_d.time_id,

                    w_location_d.location_id,

                    w_location_d.location_name,

                    w_sales_class_d.sales_class_id,

                    w_sales_class_d.sales_class_desc,

                    w_job_f.date_ship_by,

                    ShipmentDelaysCTE.Shipping_First_Date

)


SELECT job_id, location_id, location_name, sales_class_id, sales_class_desc, time_id, date_ship_by, Shipping_First_Date, Business_Days_Difference

FROM DaysDifferenceCTE
```



```
WITH ShipmentDelaysCTE AS
( SELECT w_sub_job_f.job_id, min(Actual_Ship_Date) as Shipping_First_Date, max(Actual_ship_date) as Shipping_Last_Date
   FROM w_job_shipment_f, w_sub_job_f
   WHERE W_SUB_JOB_F.sub_job_id = W_JOB_SHIPMENT_F.sub_job_id
   GROUP BY W_SUB_JOB_F.job_id
 ),

DaysDifferenceCTE as (
    SELECT
        w_job_f.job_id,
        w_time_d.time_id,
        w_job_f.date_promised,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        w_job_f.date_ship_by,
        ShipmentDelaysCTE.Shipping_First_Date,
        (getBusDaysDiff(ShipmentDelaysCTE.Shipping_First_Date, w_job_f.DATE_SHIP_BY)) AS Business_Days_Difference
    FROM ShipmentDelaysCTE

        INNER JOIN w_job_f on w_job_f.job_id = ShipmentDelaysCTE.job_id
        INNER JOIN w_time_d on w_time_d.time_id = w_job_f.date_promised
        INNER JOIN w_location_d ON w_job_f.location_id = w_location_d.location_id
        INNER JOIN w_sales_class_d ON w_job_f.sales_class_id = w_sales_class_d.sales_class_id
    WHERE
        w_location_d.location_id = w_job_f.location_id
        AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
```

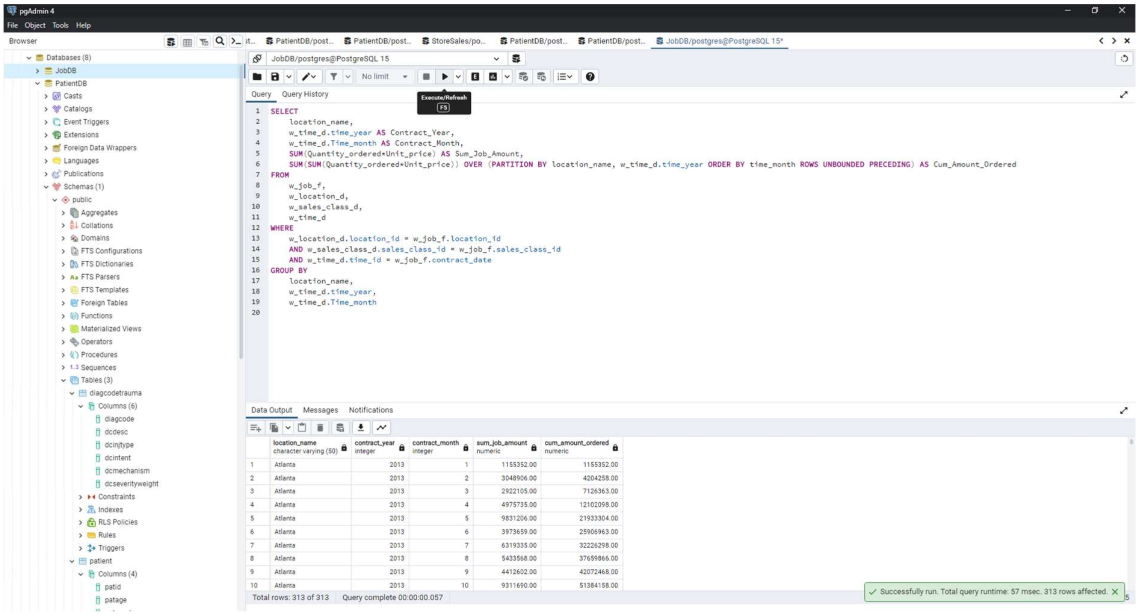
	job_id integer	location_id integer	location_name character varying (50)	sales_class_id integer	sales_class_desc character varying (250)	time_id integer	date_ship_by integer	shipping_first_date integer	business_days_difference bigint
1	342393	7	Seattle	1	Debit Smart	20131002	20130923	20130926	3
2	340539	11	London	2	Credit Smart	20140728	20140721	20140723	2
3	340415	11	London	6	Loyalty NoSmart	20130409	20130404	20130409	3
4	341373	9	Montreal	2	Credit Smart	20130903	20130828	20130830	2
5	341806	10	Vancouver	3	Debit NoSmart	20140721	20140714	20140716	2
6	340342	10	Vancouver	3	Debit NoSmart	20150120	20150116	20150123	5
7	341871	2	Atlanta	4	Credit NoSmart	20140919	20140917	20140919	2
8	341349	6	Los Angeles	6	Loyalty NoSmart	20131231	20131225	20131227	2
9	342016	5	Denver	2	Credit Smart	20141112	20141103	20141106	3
10	340532	11	London	6	Loyalty NoSmart	20131210	20131204	20131206	2

Total rows: 120 of 120   Query complete 00:00:00.238

✓ Successfully run. Total query runtime: 238 msec. 120 rows affected.

AQ1:

```
SELECT
    location_name,
    w_time_d.time_year AS Contract_Year,
    w_time_d.Time_month AS Contract_Month,
    SUM(Quantity_ordered*Unit_price) AS Sum_Job_Amount,
    SUM(SUM(Quantity_ordered*Unit_price)) OVER (PARTITION BY location_name, w_time_d.time_year ORDER BY time_month ROWS UNBOUNDED PRECEDING) AS Cum_Amount_Ordered
FROM
    w_job_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_location_d.location_id = w_job_f.location_id
    AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
    AND w_time_d.time_id = w_job_f.contract_date
GROUP BY
    location_name,
    w_time_d.time_year,
    w_time_d.Time_month
```



```
SELECT
    location_name,
    w_time_d.time_year AS Contract_Year,
    w_time_d.Time_month AS Contract_Month,
    SUM(Quantity_ordered*Unit_price) AS Sum_Job_Amount,
    SUM(SUM(Quantity_ordered*Unit_price)) OVER (PARTITION BY location_name, w_time_d.time_year ORDER BY time_month ROWS UNBOUNDED PRECEDING) AS Cum_Amount_Ordered
FROM
    w_job_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_location_d.location_id = w_job_f.location_id
    AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
    AND w_time_d.time_id = w_job_f.contract_date
GROUP BY
    location_name,
    w_time_d.time_year,
    w_time_d.Time_month
```

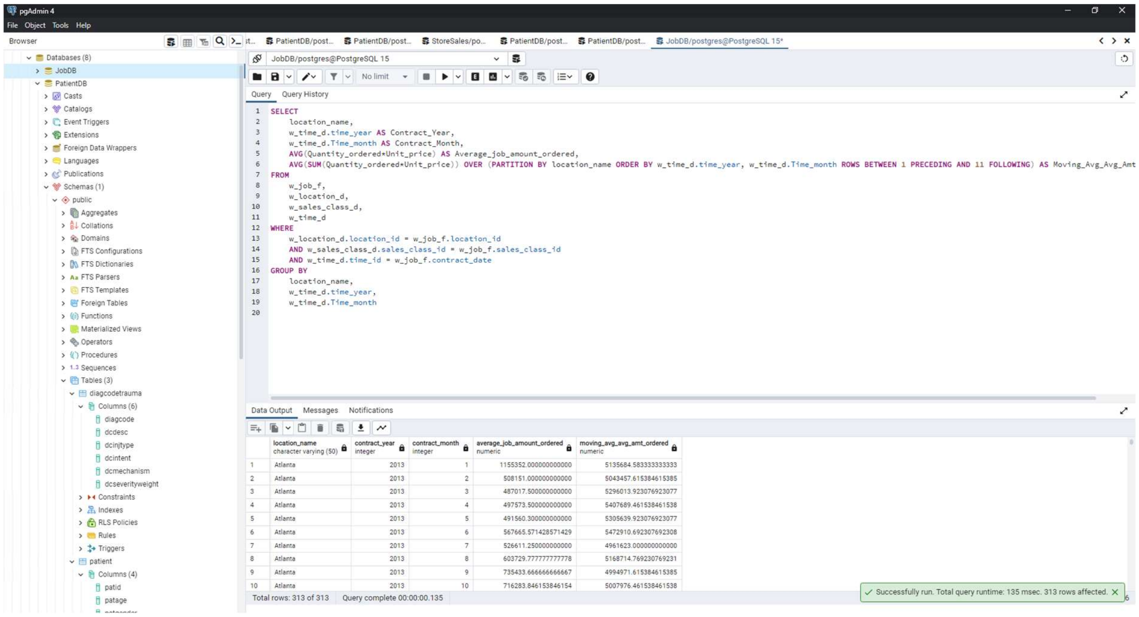
	location_name character varying (50)	contract_year integer	contract_month integer	sum_job_amount numeric	cum_amount_ordered numeric
1	Atlanta	2013	1	1155352.00	1155352.00
2	Atlanta	2013	2	3048906.00	4204258.00
3	Atlanta	2013	3	2922105.00	7126363.00
4	Atlanta	2013	4	4975735.00	12102098.00
5	Atlanta	2013	5	9831206.00	21933304.00
6	Atlanta	2013	6	3973659.00	25906963.00
7	Atlanta	2013	7	6319335.00	32226298.00
8	Atlanta	2013	8	5433568.00	37659866.00
9	Atlanta	2013	9	4412602.00	42072468.00
10	Atlanta	2013	10	9311690.00	51384158.00

Total rows: 313 of 313   Query complete 00:00:00.057

✓ Successfully run. Total query runtime: 57 msec. 313 rows affected.

AQ2:

```
SELECT
    location_name,
    w_time_d.time_year AS Contract_Year,
    w_time_d.Time_month AS Contract_Month,
    AVG(Quantity_ordered*Unit_price) AS Average_job_amount_ordered,
    AVG(SUM(Quantity_ordered*Unit_price)) OVER (PARTITION BY location_name ORDER BY w_time_d.time_year, w_time_d.Time_month ROWS BETWEEN 1 PRECEDING AND 11 FOLLOWING) AS Moving_Avg_Avg_Amt_Ordered
FROM
    w_job_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_location_d.location_id = w_job_f.location_id
    AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
    AND w_time_d.time_id = w_job_f.contract_date
GROUP BY
    location_name,
    w_time_d.time_year,
    w_time_d.Time_month
```



```sql
SELECT
    location_name,
    w_time_d.time_year AS Contract_Year,
    w_time_d.Time_month AS Contract_Month,
    AVG(Quantity_ordered*Unit_price) AS Average_job_amount_ordered,
    AVG(SUM(Quantity_ordered*Unit_price)) OVER (PARTITION BY location_name ORDER BY w_time_d.time_year, w_time_d.Time_month ROWS BETWEEN 1 PRECEDING AND 11 FOLLOWING) AS Moving_Avg_Avg_Amt
FROM
    w_job_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_location_d.location_id = w_job_f.location_id
    AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
    AND w_time_d.time_id = w_job_f.contract_date
GROUP BY
    location_name,
    w_time_d.time_year,
    w_time_d.Time_month
```

	location_name character varying (50)	contract_year integer	contract_month integer	average_job_amount_ordered numeric	moving_avg_avg_amt_ordered numeric
1	Atlanta	2013	1	1155352.000000000000	5135684.583333333333
2	Atlanta	2013	2	508151.000000000000	5043457.615384615385
3	Atlanta	2013	3	487017.500000000000	5296013.923076923077
4	Atlanta	2013	4	497573.500000000000	5407689.461538461538
5	Atlanta	2013	5	491560.300000000000	5305639.923076923077
6	Atlanta	2013	6	567665.571428571429	5472910.692307692308
7	Atlanta	2013	7	526611.250000000000	4961623.000000000000
8	Atlanta	2013	8	603729.777777777778	5168714.769230769231
9	Atlanta	2013	9	735433.666666666667	4994971.615384615385
10	Atlanta	2013	10	716283.846153846154	5007976.461538461538

Total rows: 313 of 313 Query complete 00:00:00.135

✓ Successfully run. Total query runtime: 135 msec. 313 rows affected.

AQ3:

```
WITH Inv_Rev_SummaryCTE AS (
    SELECT w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month,
        SUM(w_invoiceline_f.invoice_amount) AS Sum_Invoice_Amt, SUM(w_invoiceline_f.invoice_quantity) AS Sum_Invoice_Quantity
    FROM w_job_f, w_location_d, w_time_d, w_invoiceline_f
    WHERE w_job_f.location_id = w_location_d.location_id
        AND w_job_f.contract_date = w_time_d.time_id
        AND w_job_f.location_id = w_invoiceline_f.location_id
    GROUP BY w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month
), Loc_Subjob_SummaryCTE AS (
    SELECT w_job_f.job_id, w_job_f.location_id, location_name, w_time_d.time_year, w_time_d.time_month,
        SUM(cost_labor) AS total_Labor_cost, SUM(cost_material) AS Total_material_cost,
        SUM(machine_hours * rate_per_hour) AS total_machine_cost, SUM(cost_overhead) AS Total_overhead_cost,
        SUM(cost_labor + cost_material + (machine_hours * rate_per_hour) + cost_overhead) AS Total_Cost,
        SUM(quantity_produced) AS SumQuantityProduced,
        SUM(cost_labor + cost_material + (machine_hours * rate_per_hour) + cost_overhead) / SUM(quantity_produced) AS Unit_Cost
    FROM w_job_f
    JOIN w_location_d ON w_location_d.location_id = w_job_f.location_id
    JOIN w_time_d ON w_time_d.time_id = w_job_f.contract_date
    JOIN w_sub_job_f ON w_sub_job_f.job_id = w_job_f.job_id
    JOIN w_machine_type_d ON w_machine_type_d.machine_type_id = w_sub_job_f.machine_type_id
    GROUP BY w_job_f.job_id, w_job_f.location_id, location_name, time_year, time_month
    ORDER BY job_id ASC
)
```

SELECT Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year AS Contract_Year,

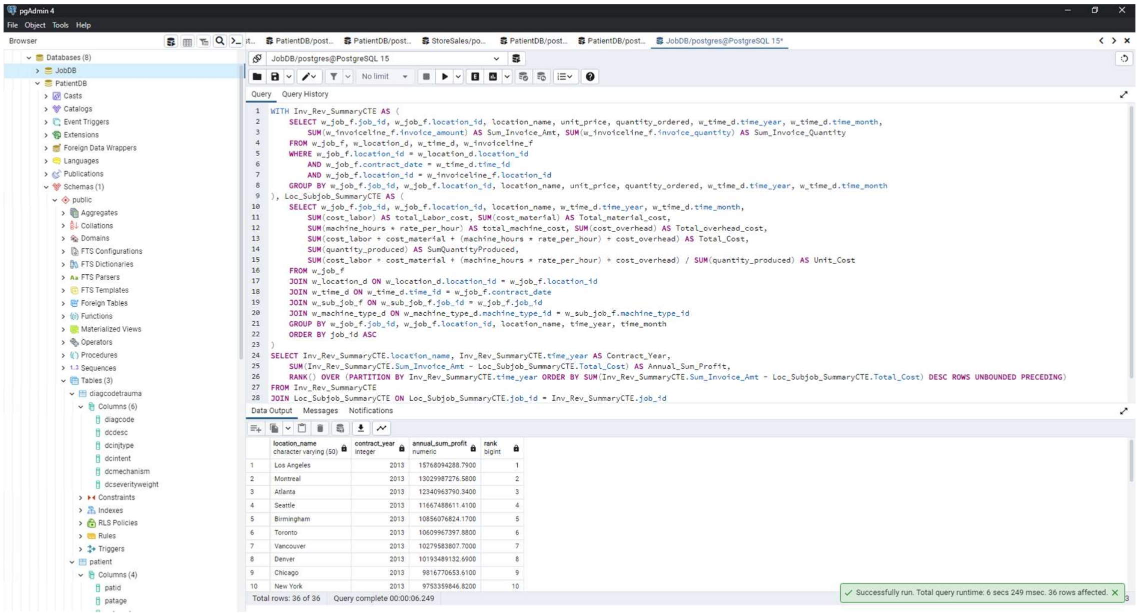
    SUM(Inv_Rev_SummaryCTE.Sum_Invoice_Amt - Loc_Subjob_SummaryCTE.Total_Cost) AS Annual_Sum_Profit,

    RANK() OVER (PARTITION BY Inv_Rev_SummaryCTE.time_year ORDER BY SUM(Inv_Rev_SummaryCTE.Sum_Invoice_Amt - Loc_Subjob_SummaryCTE.Total_Cost) DESC ROWS UNBOUNDED PRECEDING)

FROM Inv_Rev_SummaryCTE

JOIN Loc_Subjob_SummaryCTE ON Loc_Subjob_SummaryCTE.job_id = Inv_Rev_SummaryCTE.job_id

GROUP BY Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year



```sql
WITH Inv_Rev_SummaryCTE AS (
    SELECT w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month,
        SUM(w_invoiceline_f.invoice_amount) AS Sum_Invoice_Amt, SUM(w_invoiceline_f.invoice_quantity) AS Sum_Invoice_Quantity
    FROM w_job_f, w_location_d, w_time_d, w_invoiceline_f
    WHERE w_job_f.location_id = w_location_d.location_id
        AND w_job_f.contract_date = w_time_d.time_id
        AND w_job_f.location_id = w_invoiceline_f.location_id
    GROUP BY w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month
), Loc_Subjob_SummaryCTE AS (
    SELECT w_job_f.job_id, w_job_f.location_id, location_name, w_time_d.time_year, w_time_d.time_month,
        SUM(cost_labor) AS total_Labor_cost, SUM(cost_material) AS Total_material_cost,
        SUM(machine_hours * rate_per_hour) AS total_machine_cost, SUM(cost_overhead) AS Total_overhead_cost,
        SUM(cost_labor + cost_material + (machine_hours * rate_per_hour) + cost_overhead) AS Total_Cost,
        SUM(quantity_produced) AS SumQuantityProduced,
        SUM(cost_labor + cost_material + (machine_hours * rate_per_hour) + cost_overhead) / SUM(quantity_produced) AS Unit_Cost
    FROM w_job_f
    JOIN w_location_d ON w_location_d.location_id = w_job_f.location_id
    JOIN w_time_d ON w_time_d.time_id = w_job_f.contract_date
    JOIN w_sub_job_f ON w_sub_job_f.job_id = w_job_f.job_id
    JOIN w_machine_type_d ON w_machine_type_d.machine_type_id = w_sub_job_f.machine_type_id
    GROUP BY w_job_f.job_id, w_job_f.location_id, location_name, time_year, time_month
    ORDER BY job_id ASC
)
SELECT Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year AS Contract_Year,
    SUM(Inv_Rev_SummaryCTE.Sum_Invoice_Amt - Loc_Subjob_SummaryCTE.Total_Cost) AS Annual_Sum_Profit,
    RANK() OVER (PARTITION BY Inv_Rev_SummaryCTE.time_year ORDER BY SUM(Inv_Rev_SummaryCTE.Sum_Invoice_Amt - Loc_Subjob_SummaryCTE.Total_Cost) DESC ROWS UNBOUNDED PRECEDING)
FROM Inv_Rev_SummaryCTE
JOIN Loc_Subjob_SummaryCTE ON Loc_Subjob_SummaryCTE.job_id = Inv_Rev_SummaryCTE.job_id
```

	location_name character varying (50)	contract_year integer	annual_sum_profit numeric	rank bigint
1	Los Angeles	2013	15768094288.7900	1
2	Montreal	2013	13029987276.5800	2
3	Atlanta	2013	12340963790.3400	3
4	Seattle	2013	11667488611.4100	4
5	Birmingham	2013	10856076824.1700	5
6	Toronto	2013	10609967397.8800	6
7	Vancouver	2013	10279583807.7000	7
8	Denver	2013	10193489132.6900	8
9	Chicago	2013	9816770653.6100	9
10	New York	2013	9753359846.8200	10

Total rows: 36 of 36   Query complete 00:00:06.249

✓ Successfully run. Total query runtime: 6 secs 249 msec. 36 rows affected.

AQ4:

```
WITH Inv_Rev_SummaryCTE AS (
    SELECT
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        unit_price,
        quantity_ordered,
        w_time_d.time_year,
        w_time_d.time_month,
        SUM(w_invoiceline_f.invoice_amount) AS Sum_Invoice_Amt,
        SUM(w_invoiceline_f.invoice_quantity)
    FROM w_job_f, w_location_d, w_time_d, w_invoiceline_f
    WHERE w_job_f.location_id = w_location_d.location_id
        AND w_job_f.contract_date = w_time_d.time_id
        AND w_job_f.location_id = w_invoiceline_f.location_id
    GROUP BY
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        unit_price,
        quantity_ordered,
        w_time_d.time_year,
        w_time_d.time_month
),
Loc_Subjob_SummaryCTE AS (
    SELECT
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        w_time_d.time_year,
        w_time_d.time_month,
        SUM(cost_labor) AS total_Labor_cost,
        SUM(cost_material) AS Total_material_cost,
        SUM(machine_hours*rate_per_hour) AS total_machine_cost,
        SUM(cost_overhead) AS Total_overhead_cost,
        SUM(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead ) AS Total_Cost,
        SUM(quantity_produced) AS SumQuantityProduced,
        SUM(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )/ SUM(quantity_produced) AS Unit_Cost
    FROM w_job_f
    JOIN w_location_d ON w_location_d.location_id = w_job_f.location_id
    JOIN w_time_d ON w_time_d.time_id = w_job_f.contract_date
    JOIN w_sub_job_f ON w_sub_job_f.job_id = w_job_f.job_id
    JOIN w_machine_type_d ON w_machine_type_d.machine_type_id = w_sub_job_f.machine_type_id
    GROUP BY
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        time_year,
        time_month
    ORDER BY job_id ASC
)
SELECT
    Inv_Rev_SummaryCTE.location_name,
    Inv_Rev_SummaryCTE.time_year AS Contract_Year,
    SUM(Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost) AS Annual_Sum_Profit,
```

(SUM((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/ Sum_Invoice_Amt)) AS Annual_Profit_Margin,

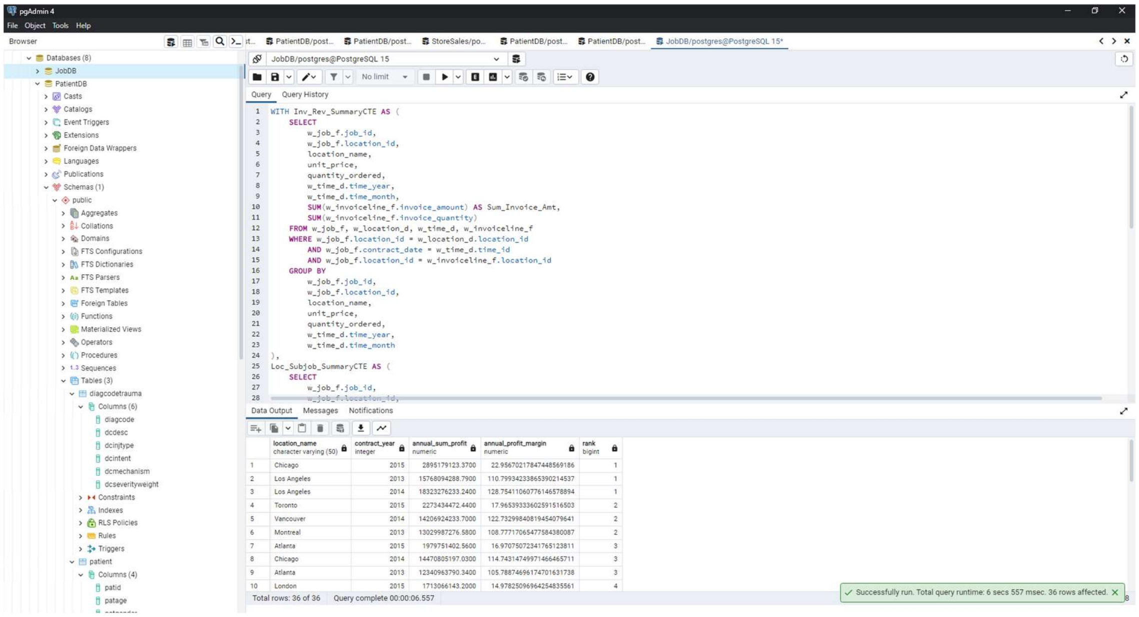
RANK() OVER (PARTITION BY Inv_Rev_SummaryCTE.time_year ORDER BY (SUM((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/Sum_Invoice_Amt)) DESC ROWS UNBOUNDED PRECEDING)

FROM Inv_Rev_SummaryCTE

JOIN Loc_Subjob_SummaryCTE ON Loc_Subjob_SummaryCTE.job_id = Inv_Rev_SummaryCTE.job_id

GROUP BY Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year

ORDER BY RANK;



```
WITH Inv_Rev_SummaryCTE AS (
    SELECT
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        unit_price,
        quantity_ordered,
        w_time_d.time_year,
        w_time_d.time_month,
        SUM(w_invoiceline_f.invoice_amount) AS Sum_Invoice_Amt,
        SUM(w_invoiceline_f.invoice_quantity)
    FROM w_job_f, w_location_d, w_time_d, w_invoiceline_f
    WHERE w_job_f.location_id = w_location_d.location_id
        AND w_job_f.contract_date = w_time_d.time_id
        AND w_job_f.location_id = w_invoiceline_f.location_id
    GROUP BY
        w_job_f.job_id,
        w_job_f.location_id,
        location_name,
        unit_price,
        quantity_ordered,
        w_time_d.time_year,
        w_time_d.time_month
),
Loc_Subjob_SummaryCTE AS (
    SELECT
        w_job_f.job_id,
        w_job_f.location_id,
```

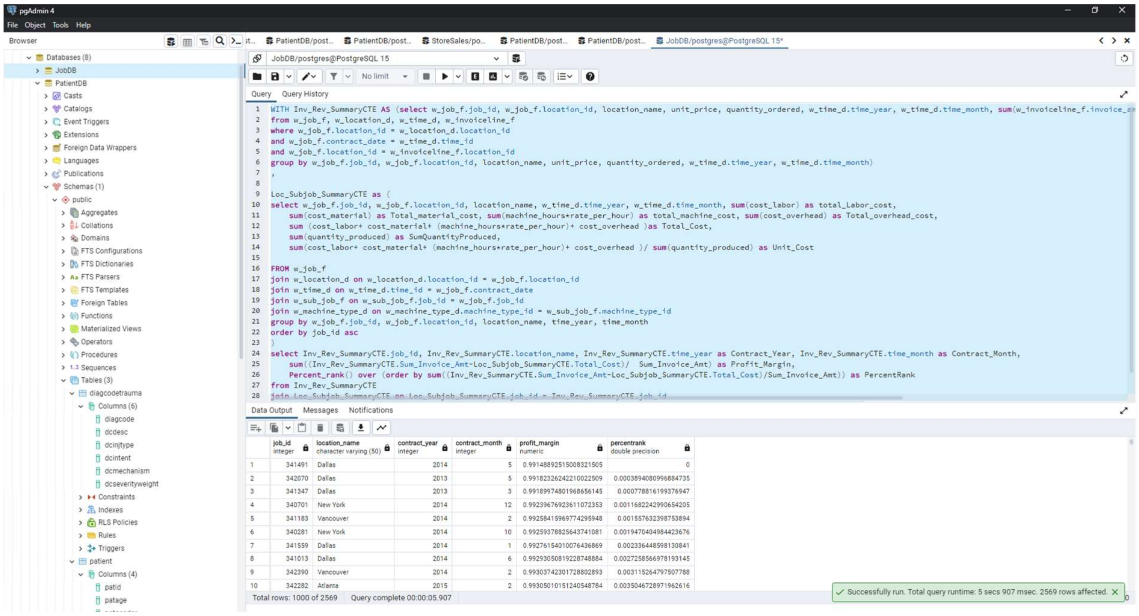
	location_name character varying (50)	contract_year integer	annual_sum_profit numeric	annual_profit_margin numeric	rank bigint
1	Chicago	2015	2895179123.3700	22.95670217847448569186	1
2	Los Angeles	2013	15768094288.7900	110.79934233865390214537	1
3	Los Angeles	2014	18323276233.2400	128.75411060776146578894	1
4	Toronto	2015	2273434472.4400	17.96539333602591516503	2
5	Vancouver	2014	14206924233.7000	122.73299840819454079641	2
6	Montreal	2013	13029987276.5800	108.77717065477584380087	2
7	Atlanta	2015	1979751402.5600	16.97075072341765123811	3
8	Chicago	2014	14470805197.0300	114.74314749971466465711	3
9	Atlanta	2013	12340963790.3400	105.78874696174701631738	3
10	London	2015	1713066143.2000	14.97825096964254835561	4

Total rows: 36 of 36   Query complete 00:00:06.557

✓ Successfully run. Total query runtime: 6 secs 557 msec. 36 rows affected.

AQ5:

```
WITH Inv_Rev_SummaryCTE AS (select w_job_f.job_id, w_job_f.location_id, location_name,
unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month,
sum(w_invoiceline_f.invoice_amount) as Sum_Invoice_Amt,
sum(w_invoiceline_f.invoice_quantity)

from w_job_f, w_location_d, w_time_d, w_invoiceline_f

where w_job_f.location_id = w_location_d.location_id

and w_job_f.contract_date = w_time_d.time_id

and w_job_f.location_id = w_invoiceline_f.location_id

group by w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered,
w_time_d.time_year, w_time_d.time_month)

,


Loc_Subjob_SummaryCTE as (

select w_job_f.job_id, w_job_f.location_id, location_name, w_time_d.time_year,
w_time_d.time_month, sum(cost_labor) as total_Labor_cost,

            sum(cost_material) as Total_material_cost, sum(machine_hours*rate_per_hour) as
total_machine_cost, sum(cost_overhead) as Total_overhead_cost,

            sum (cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )as
Total_Cost,

            sum(quantity_produced) as SumQuantityProduced,

            sum(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )/
sum(quantity_produced) as Unit_Cost


FROM w_job_f

join w_location_d on w_location_d.location_id = w_job_f.location_id

join w_time_d on w_time_d.time_id = w_job_f.contract_date

join w_sub_job_f on w_sub_job_f.job_id = w_job_f.job_id

join w_machine_type_d on w_machine_type_d.machine_type_id =
w_sub_job_f.machine_type_id

group by w_job_f.job_id, w_job_f.location_id, location_name, time_year, time_month

order by job_id asc
)

select Inv_Rev_SummaryCTE.job_id, Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year as Contract_Year, Inv_Rev_SummaryCTE.time_month as Contract_Month,

        sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/ Sum_Invoice_Amt) as Profit_Margin,

        Percent_rank() over (order by sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/Sum_Invoice_Amt)) as PercentRank

from Inv_Rev_SummaryCTE

join Loc_Subjob_SummaryCTE on Loc_Subjob_SummaryCTE.job_id = Inv_Rev_SummaryCTE.job_id

group by Inv_Rev_SummaryCTE.job_id, Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year, Inv_Rev_SummaryCTE.time_month
```



```
WITH Inv_Rev_SummaryCTE AS (select w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month, sum(w_invoiceline_f.invoice_a
from w_job_f, w_location_d, w_time_d, w_invoiceline_f
where w_job_f.location_id = w_location_d.location_id
and w_job_f.contract_date = w_time_d.time_id
and w_job_f.location_id = w_invoiceline_f.location_id
group by w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month)
,

Loc_Subjob_SummaryCTE as (
select w_job_f.job_id, w_job_f.location_id, location_name, w_time_d.time_year, w_time_d.time_month, sum(cost_labor) as total_Labor_cost,
    sum(cost_material) as Total_material_cost, sum(machine_hours*rate_per_hour) as total_machine_cost, sum(cost_overhead) as Total_overhead_cost,
    sum (cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )as Total_Cost,
    sum(quantity_produced) as SumQuantityProduced,
    sum(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )/ sum(quantity_produced) as Unit_Cost

FROM w_job_f
join w_location_d on w_location_d.location_id = w_job_f.location_id
join w_time_d on w_time_d.time_id = w_job_f.contract_date
join w_sub_job_f on w_sub_job_f.job_id = w_job_f.job_id
join w_machine_type_d on w_machine_type_d.machine_type_id = w_sub_job_f.machine_type_id
group by w_job_f.job_id, w_job_f.location_id, location_name, time_year, time_month
order by job_id asc
)
select Inv_Rev_SummaryCTE.job_id, Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year as Contract_Year, Inv_Rev_SummaryCTE.time_month as Contract_Month,
    sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/  Sum_Invoice_Amt) as Profit_Margin,
    Percent_rank() over (order by sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/Sum_Invoice_Amt)) as PercentRank
from Inv_Rev_SummaryCTE
join Loc_Subjob_SummaryCTE on Loc_Subjob_SummaryCTE.job_id = Inv_Rev_SummaryCTE.job_id
```

	job_id integer	location_name character varying (50)	contract_year integer	contract_month integer	profit_margin numeric	percentrank double precision
1	341491	Dallas	2014	5	0.99148892515008321505	0
2	342070	Dallas	2013	5	0.99182326242210022509	0.0003894080996884735
3	341347	Dallas	2013	3	0.99189974801968656145	0.000778816199376947
4	340701	New York	2014	12	0.99239676923611072353	0.0011682242990654205
5	341183	Vancouver	2014	2	0.99258415969774295948	0.001557632398753894
6	340281	New York	2014	10	0.99259378825643741081	0.0019470404984423676
7	341559	Dallas	2014	1	0.99276154010076436869	0.002336448598130841
8	341013	Dallas	2014	6	0.99293050819228748884	0.0027258566978193145
9	342390	Vancouver	2014	2	0.99303742301728802893	0.003115264797507788
10	342282	Atlanta	2015	2	0.99305010151240548784	0.0035046728971962616

Total rows: 1000 of 2569 Query complete 00:00:05.907

✓ Successfully run. Total query runtime: 5 secs 907 msec. 2569 rows affected.

AQ6:

```
WITH Inv_Rev_SummaryCTE AS (select w_job_f.job_id, w_job_f.location_id, location_name,
unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month,
sum(w_invoiceline_f.invoice_amount) as Sum_Invoice_Amt,
sum(w_invoiceline_f.invoice_quantity)

from w_job_f, w_location_d, w_time_d, w_invoiceline_f

where w_job_f.location_id = w_location_d.location_id

and w_job_f.contract_date = w_time_d.time_id

and w_job_f.location_id = w_invoiceline_f.location_id

group by w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered,
w_time_d.time_year, w_time_d.time_month)

,


Loc_Subjob_SummaryCTE as (

select w_job_f.job_id, w_job_f.location_id, location_name, w_time_d.time_year,
w_time_d.time_month, sum(cost_labor) as total_Labor_cost,

            sum(cost_material) as Total_material_cost, sum(machine_hours*rate_per_hour) as
total_machine_cost, sum(cost_overhead) as Total_overhead_cost,

            sum (cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )as
Total_Cost,

            sum(quantity_produced) as SumQuantityProduced,

            sum(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )/
sum(quantity_produced) as Unit_Cost


FROM w_job_f

join w_location_d on w_location_d.location_id = w_job_f.location_id

join w_time_d on w_time_d.time_id = w_job_f.contract_date

join w_sub_job_f on w_sub_job_f.job_id = w_job_f.job_id

join w_machine_type_d on w_machine_type_d.machine_type_id =
w_sub_job_f.machine_type_id

group by w_job_f.job_id, w_job_f.location_id, location_name, time_year, time_month

order by job_id asc
```

)

select job_id, location_name, time_year as Contract_Year, time_month as Contract_Month, Annual_Profit_Margin, PercentRankProfit

from (select Inv_Rev_SummaryCTE.job_id, Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year, Inv_Rev_SummaryCTE.time_month,

sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/ Sum_Invoice_Amt) as Annual_Profit_Margin,

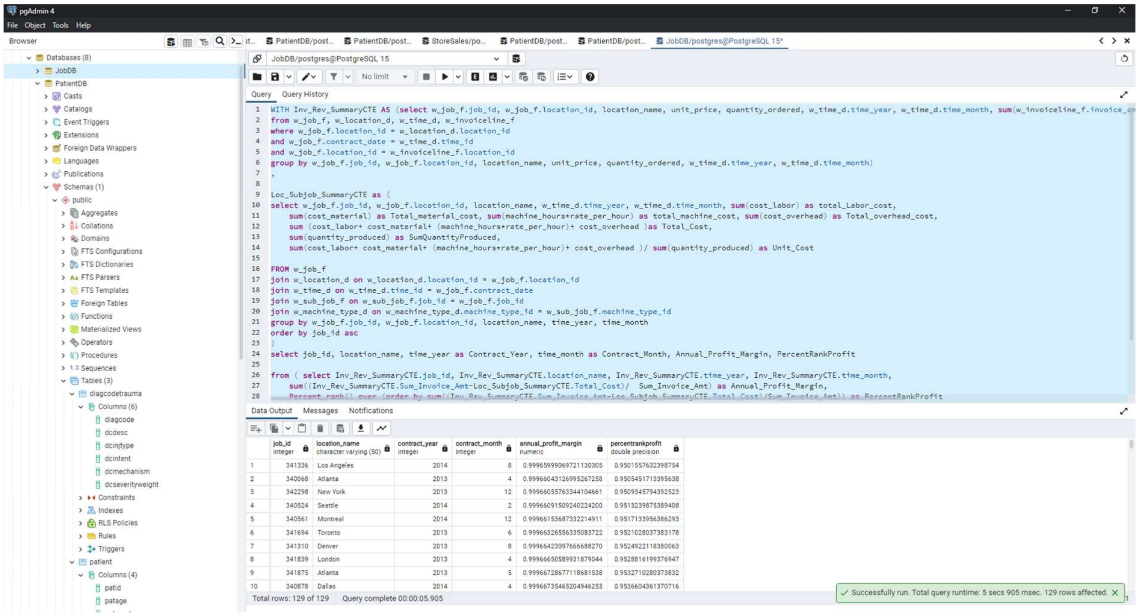
Percent_rank() over (order by sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/Sum_Invoice_Amt)) as PercentRankProfit

from Inv_Rev_SummaryCTE

join Loc_Subjob_SummaryCTE on Loc_Subjob_SummaryCTE.job_id = Inv_Rev_SummaryCTE.job_id

group by Inv_Rev_SummaryCTE.job_id, Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year, Inv_Rev_SummaryCTE.time_month) X

where PercentRankProfit > 0.95



```
WITH Inv_Rev_SummaryCTE AS (select w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month, sum(w_invoiceline_f.invoice_a
from w_job_f, w_location_d, w_time_d, w_invoiceline_f
where w_job_f.location_id = w_location_d.location_id
and w_job_f.contract_date = w_time_d.time_id
and w_job_f.location_id = w_invoiceline_f.location_id
group by w_job_f.job_id, w_job_f.location_id, location_name, unit_price, quantity_ordered, w_time_d.time_year, w_time_d.time_month)
,

Loc_Subjob_SummaryCTE as (
select w_job_f.job_id, w_job_f.location_id, location_name, w_time_d.time_year, w_time_d.time_month, sum(cost_labor) as total_Labor_cost,
    sum(cost_material) as Total_material_cost, sum(machine_hours*rate_per_hour) as total_machine_cost, sum(cost_overhead) as Total_overhead_cost,
    sum (cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )as Total_Cost,
    sum(quantity_produced) as SumQuantityProduced,
    sum(cost_labor+ cost_material+ (machine_hours*rate_per_hour)+ cost_overhead )/ sum(quantity_produced) as Unit_Cost

FROM w_job_f
join w_location_d on w_location_d.location_id = w_job_f.location_id
join w_time_d on w_time_d.time_id = w_job_f.contract_date
join w_sub_job_f on w_sub_job_f.job_id = w_job_f.job_id
join w_machine_type_d on w_machine_type_d.machine_type_id = w_sub_job_f.machine_type_id
group by w_job_f.job_id, w_job_f.location_id, location_name, time_year, time_month
order by job_id asc
)
select job_id, location_name, time_year as Contract_Year, time_month as Contract_Month, Annual_Profit_Margin, PercentRankProfit

from ( select Inv_Rev_SummaryCTE.job_id, Inv_Rev_SummaryCTE.location_name, Inv_Rev_SummaryCTE.time_year, Inv_Rev_SummaryCTE.time_month,
    sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/  Sum_Invoice_Amt) as Annual_Profit_Margin,
    Percent_rank() over (order by sum((Inv_Rev_SummaryCTE.Sum_Invoice_Amt-Loc_Subjob_SummaryCTE.Total_Cost)/Sum_Invoice_Amt)) as PercentRankProfit
```

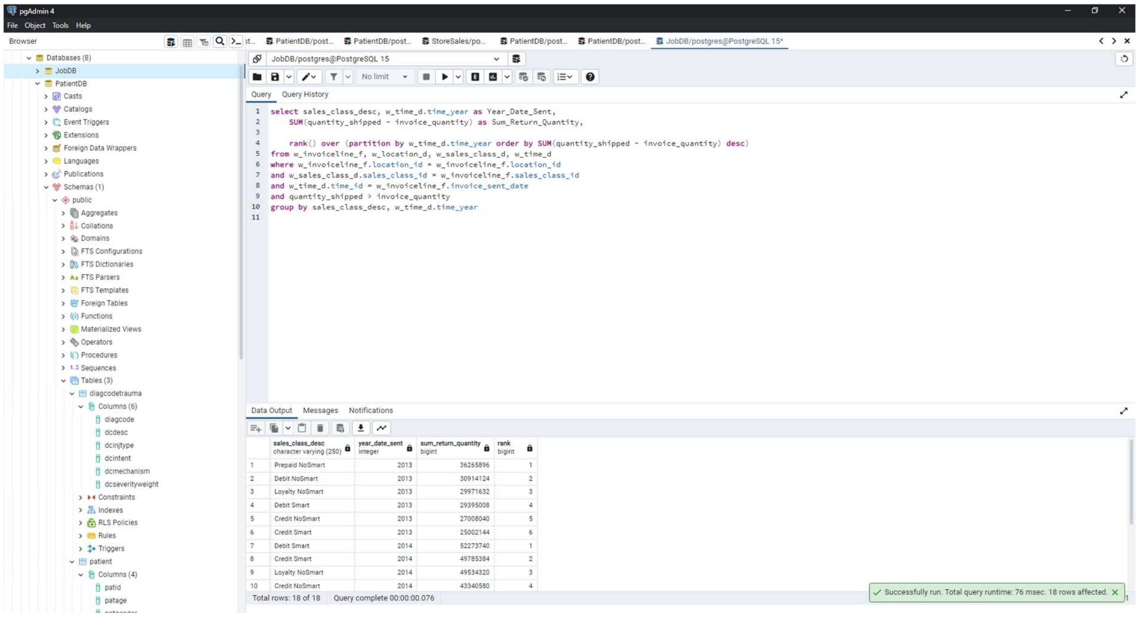
	job_id integer	location_name character varying (50)	contract_year integer	contract_month integer	annual_profit_margin numeric	percentrankprofit double precision
1	341336	Los Angeles	2014	8	0.99965999069721130305	0.9501557632398754
2	340068	Atlanta	2013	4	0.99966043126995267258	0.9505451713395638
3	342298	New York	2013	12	0.99966055763344104661	0.9509345794392523
4	340524	Seattle	2014	2	0.99966091509240224200	0.9513239875389408
5	340561	Montreal	2014	12	0.99966153687332214911	0.9517133956386293
6	341694	Toronto	2013	6	0.99966326556335083722	0.9521028037383178
7	341310	Denver	2013	8	0.99966423097666688270	0.9524922118380063
8	341839	London	2013	4	0.99966650589931879044	0.9528816199376947
9	341875	Atlanta	2013	5	0.99966728677118681538	0.9532710280373832
10	340878	Dallas	2014	4	0.99966735465204946253	0.9536604361370716

Total rows: 129 of 129 Query complete 00:00:05.905

✓ Successfully run. Total query runtime: 5 secs 905 msec. 129 rows affected.

AQ7:

```sql
select sales_class_desc, w_time_d.time_year as Year_Date_Sent,
	SUM(quantity_shipped - invoice_quantity) as Sum_Return_Quantity,


	rank() over (partition by w_time_d.time_year order by SUM(quantity_shipped - invoice_quantity) desc)
from w_invoiceline_f, w_location_d, w_sales_class_d, w_time_d
where w_invoiceline_f.location_id = w_invoiceline_f.location_id
and w_sales_class_d.sales_class_id = w_invoiceline_f.sales_class_id
and w_time_d.time_id = w_invoiceline_f.invoice_sent_date
and quantity_shipped > invoice_quantity
group by sales_class_desc, w_time_d.time_year
```



JobDB/postgres@PostgreSQL 15

```sql
select sales_class_desc, w_time_d.time_year as Year_Date_Sent,
    SUM(quantity_shipped - invoice_quantity) as Sum_Return_Quantity,

    rank() over (partition by w_time_d.time_year order by SUM(quantity_shipped - invoice_quantity) desc)
from w_invoiceline_f, w_location_d, w_sales_class_d, w_time_d
where w_invoiceline_f.location_id = w_invoiceline_f.location_id
and w_sales_class_d.sales_class_id = w_invoiceline_f.sales_class_id
and w_time_d.time_id = w_invoiceline_f.invoice_sent_date
and quantity_shipped > invoice_quantity
group by sales_class_desc, w_time_d.time_year
```

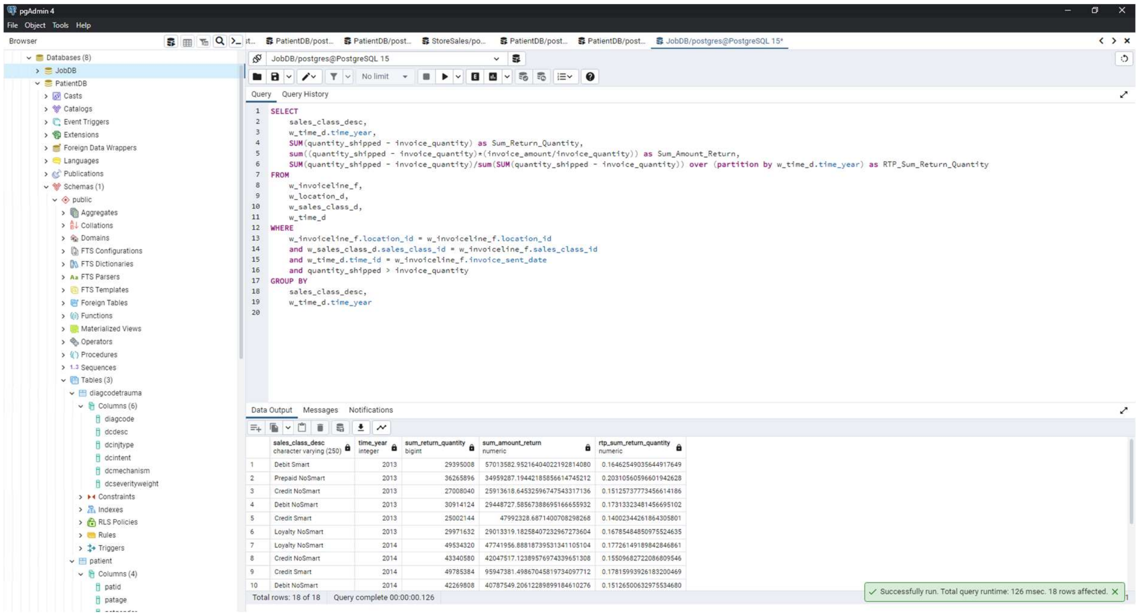
	sales_class_desc character varying (250)	year_date_sent integer	sum_return_quantity bigint	rank bigint
1	Prepaid NoSmart	2013	36265896	1
2	Debit NoSmart	2013	30914124	2
3	Loyalty NoSmart	2013	29971632	3
4	Debit Smart	2013	29395008	4
5	Credit NoSmart	2013	27008040	5
6	Credit Smart	2013	25002144	6
7	Debit Smart	2014	52273740	1
8	Credit Smart	2014	49785384	2
9	Loyalty NoSmart	2014	49534320	3
10	Credit NoSmart	2014	43340580	4

Total rows: 18 of 18 Query complete 00:00:00.076

✓ Successfully run. Total query runtime: 76 msec. 18 rows affected.

AQ8:

```
SELECT
    sales_class_desc,
    w_time_d.time_year,
    SUM(quantity_shipped - invoice_quantity) as Sum_Return_Quantity,
    sum((quantity_shipped - invoice_quantity)*(invoice_amount/invoice_quantity)) as Sum_Amount_Return,
    SUM(quantity_shipped - invoice_quantity)/sum(SUM(quantity_shipped - invoice_quantity)) over (partition by w_time_d.time_year) as RTP_Sum_Return_Quantity
FROM
    w_invoiceline_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_invoiceline_f.location_id = w_invoiceline_f.location_id
    and w_sales_class_d.sales_class_id = w_invoiceline_f.sales_class_id
    and w_time_d.time_id = w_invoiceline_f.invoice_sent_date
    and quantity_shipped > invoice_quantity
GROUP BY
    sales_class_desc,
    w_time_d.time_year
```



```sql
SELECT
    sales_class_desc,
    w_time_d.time_year,
    SUM(quantity_shipped - invoice_quantity) as Sum_Return_Quantity,
    sum((quantity_shipped - invoice_quantity)*(invoice_amount/invoice_quantity)) as Sum_Amount_Return,
    SUM(quantity_shipped - invoice_quantity)/sum(SUM(quantity_shipped - invoice_quantity)) over (partition by w_time_d.time_year) as RTP_Sum_Return_Quantity
FROM
    w_invoiceline_f,
    w_location_d,
    w_sales_class_d,
    w_time_d
WHERE
    w_invoiceline_f.location_id = w_invoiceline_f.location_id
    and w_sales_class_d.sales_class_id = w_invoiceline_f.sales_class_id
    and w_time_d.time_id = w_invoiceline_f.invoice_sent_date
    and quantity_shipped > invoice_quantity
GROUP BY
    sales_class_desc,
    w_time_d.time_year

```

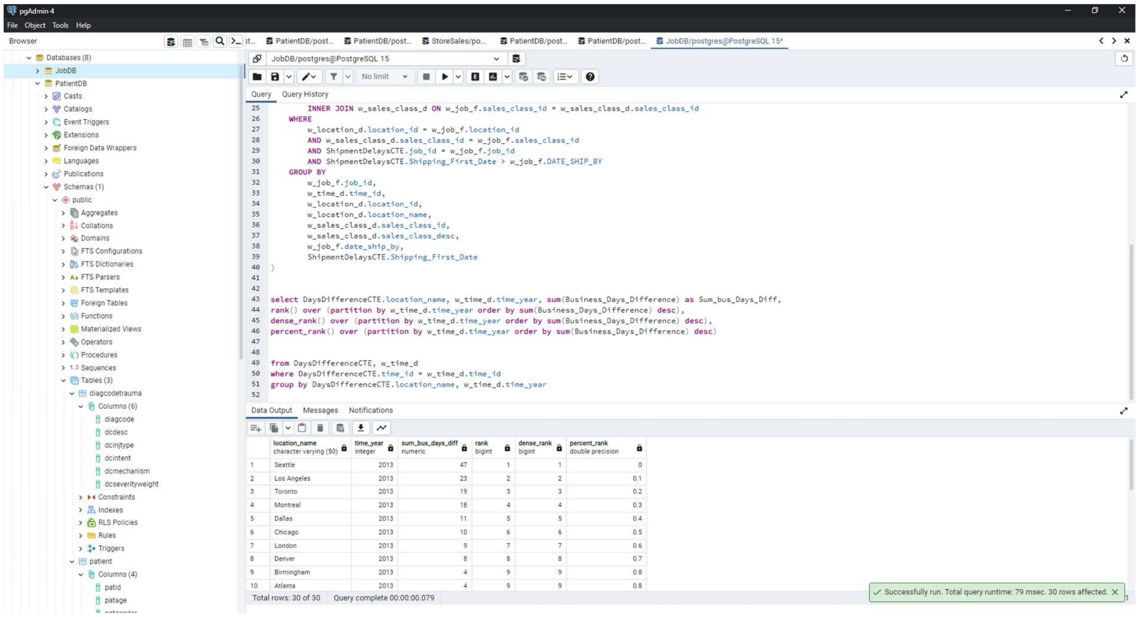
	sales_class_desc character varying (250)	time_year integer	sum_return_quantity bigint	sum_amount_return numeric	rtp_sum_return_quantity numeric
1	Debit Smart	2013	29395008	57013582.95216404022192814080	0.16462549035644917649
2	Prepaid NoSmart	2013	36265896	34959287.19442185856614745212	0.20310560596601942628
3	Credit NoSmart	2013	27008040	25913618.64532596747543317136	0.15125737773456614186
4	Debit NoSmart	2013	30914124	29448727.58567388695166655932	0.17313323481456695102
5	Credit Smart	2013	25002144	47992328.6871400708298268	0.14002344261864305801
6	Loyalty NoSmart	2013	29971632	29013319.18258407232967273604	0.16785484850975524635
7	Loyalty NoSmart	2014	49534320	47741956.88818739531341105104	0.17726149189842846861
8	Credit NoSmart	2014	43340580	42047517.12389576974339651308	0.15509682722086809546
9	Credit Smart	2014	49785384	95947381.49867045819734097712	0.17815993926183200469
10	Debit NoSmart	2014	42269808	40787549.20612289899184610276	0.15126500632975534680

Total rows: 18 of 18   Query complete 00:00:00.126

✓ Successfully run. Total query runtime: 126 msec. 18 rows affected. ✕

AQ9:

```
WITH ShipmentDelaysCTE AS
( SELECT w_sub_job_f.job_id, min(Actual_Ship_Date) as Shipping_First_Date,
max(Actual_ship_date) as Shipping_Last_Date
  FROM w_job_shipment_f, w_sub_job_f
  WHERE W_SUB_JOB_F.sub_job_id = W_JOB_SHIPMENT_F.sub_job_id
  GROUP BY W_SUB_JOB_F.job_id
 ),

DaysDifferenceCTE as (
   SELECT
                w_job_f.job_id,
                w_time_d.time_id,
                w_job_f.date_promised,
                w_location_d.location_id,
                w_location_d.location_name,
                w_sales_class_d.sales_class_id,
                w_sales_class_d.sales_class_desc,
                w_job_f.date_ship_by,
                ShipmentDelaysCTE.Shipping_First_Date,
                (getBusDaysDiff(ShipmentDelaysCTE.Shipping_First_Date,
w_job_f.DATE_SHIP_BY)) AS Business_Days_Difference
   FROM ShipmentDelaysCTE

                INNER JOIN w_job_f on w_job_f.job_id = ShipmentDelaysCTE.job_id
                INNER JOIN w_time_d on w_time_d.time_id = w_job_f.date_promised
                INNER JOIN w_location_d ON w_job_f.location_id = w_location_d.location_id
                INNER JOIN w_sales_class_d ON w_job_f.sales_class_id =
w_sales_class_d.sales_class_id
        WHERE
                w_location_d.location_id = w_job_f.location_id
                AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
                AND ShipmentDelaysCTE.job_id = w_job_f.job_id
                AND ShipmentDelaysCTE.Shipping_First_Date > w_job_f.DATE_SHIP_BY
        GROUP BY
                w_job_f.job_id,
                w_time_d.time_id,
                w_location_d.location_id,
                w_location_d.location_name,
                w_sales_class_d.sales_class_id,
                w_sales_class_d.sales_class_desc,
                w_job_f.date_ship_by,
                ShipmentDelaysCTE.Shipping_First_Date
)


select DaysDifferenceCTE.location_name, w_time_d.time_year, sum(Business_Days_Difference) as Sum_bus_Days_Diff,
rank() over (partition by w_time_d.time_year order by sum(Business_Days_Difference) desc),
dense_rank() over (partition by w_time_d.time_year order by sum(Business_Days_Difference) desc),
percent_rank() over (partition by w_time_d.time_year order by sum(Business_Days_Difference) desc)


from DaysDifferenceCTE, w_time_d
where DaysDifferenceCTE.time_id = w_time_d.time_id
group by DaysDifferenceCTE.location_name, w_time_d.time_year
```



```sql
        INNER JOIN w_sales_class_d ON w_job_f.sales_class_id = w_sales_class_d.sales_class_id
    WHERE
        w_location_d.location_id = w_job_f.location_id
        AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
        AND ShipmentDelaysCTE.job_id = w_job_f.job_id
        AND ShipmentDelaysCTE.Shipping_First_Date > w_job_f.DATE_SHIP_BY
    GROUP BY
        w_job_f.job_id,
        w_time_d.time_id,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        w_job_f.date_ship_by,
        ShipmentDelaysCTE.Shipping_First_Date
)


select DaysDifferenceCTE.location_name, w_time_d.time_year, sum(Business_Days_Difference) as Sum_bus_Days_Diff,
rank() over (partition by w_time_d.time_year order by sum(Business_Days_Difference) desc),
dense_rank() over (partition by w_time_d.time_year order by sum(Business_Days_Difference) desc),
percent_rank() over (partition by w_time_d.time_year order by sum(Business_Days_Difference) desc)


from DaysDifferenceCTE, w_time_d
where DaysDifferenceCTE.time_id = w_time_d.time_id
group by DaysDifferenceCTE.location_name, w_time_d.time_year

```

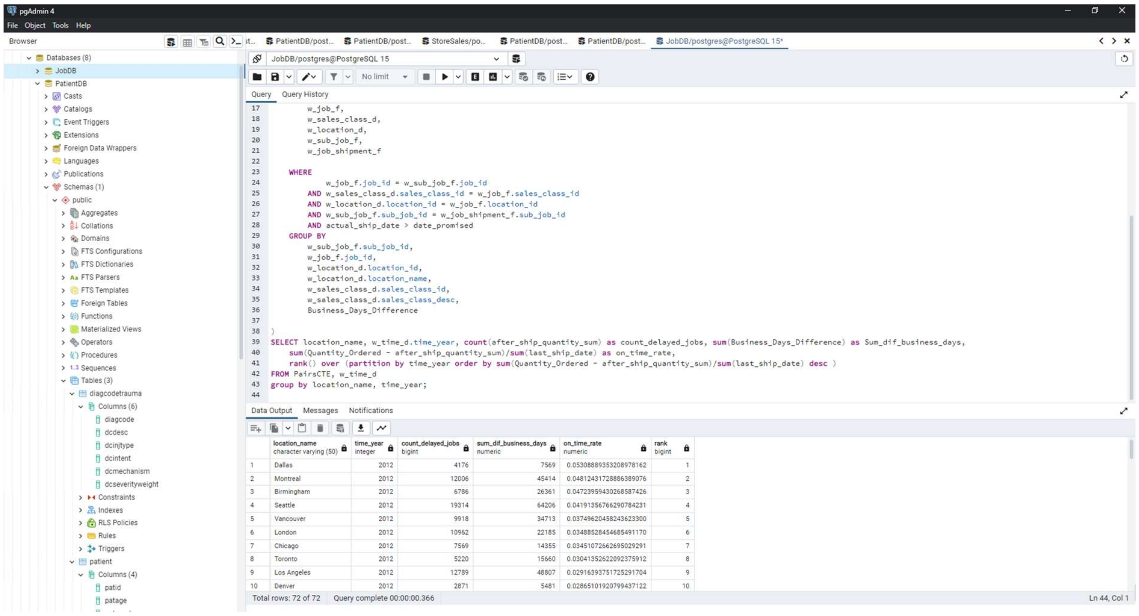
	location_name character varying (50)	time_year integer	sum_bus_days_diff numeric	rank bigint	dense_rank bigint	percent_rank double precision
1	Seattle	2013	47	1	1	0
2	Los Angeles	2013	23	2	2	0.1
3	Toronto	2013	19	3	3	0.2
4	Montreal	2013	18	4	4	0.3
5	Dallas	2013	11	5	5	0.4
6	Chicago	2013	10	6	6	0.5
7	London	2013	9	7	7	0.6
8	Denver	2013	8	8	8	0.7
9	Birmingham	2013	4	9	9	0.8
10	Atlanta	2013	4	9	9	0.8

Total rows: 30 of 30   Query complete 00:00:00.079

✓ Successfully run. Total query runtime: 79 msec. 30 rows affected.

AQ10:

```
WITH PairsCTE AS (
    SELECT
        w_job_f.job_id,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        w_job_f.date_promised,
        max(actual_ship_date) as last_ship_date,
        sum (actual_quantity) as after_ship_quantity_sum,
        w_job_f.quantity_ordered,

        (getBusDaysDiff(actual_ship_date,date_promised)) AS Business_Days_Difference,
        w_sub_job_f.job_id as sub_job_id

    FROM
        w_job_f,
        w_sales_class_d,
        w_location_d,
        w_sub_job_f,
        w_job_shipment_f

    WHERE
            w_job_f.job_id = w_sub_job_f.job_id
        AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
        AND    w_location_d.location_id = w_job_f.location_id
        AND w_sub_job_f.sub_job_id = w_job_shipment_f.sub_job_id
        AND actual_ship_date > date_promised
    GROUP BY
        w_sub_job_f.sub_job_id,
        w_job_f.job_id,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        Business_Days_Difference

)
SELECT location_name, w_time_d.time_year, count(after_ship_quantity_sum) as count_delayed_jobs, sum(Business_Days_Difference) as Sum_dif_business_days,
    sum(Quantity_Ordered - after_ship_quantity_sum)/sum(last_ship_date) as on_time_rate,
    rank() over (partition by time_year order by sum(Quantity_Ordered - after_ship_quantity_sum)/sum(last_ship_date) desc )
FROM PairsCTE, w_time_d
group by location_name, time_year;
```



```
        w_job_f,
        w_sales_class_d,
        w_location_d,
        w_sub_job_f,
        w_job_shipment_f

    WHERE
            w_job_f.job_id = w_sub_job_f.job_id
        AND w_sales_class_d.sales_class_id = w_job_f.sales_class_id
        AND w_location_d.location_id = w_job_f.location_id
        AND w_sub_job_f.sub_job_id = w_job_shipment_f.sub_job_id
        AND actual_ship_date > date_promised
    GROUP BY
        w_sub_job_f.sub_job_id,
        w_job_f.job_id,
        w_location_d.location_id,
        w_location_d.location_name,
        w_sales_class_d.sales_class_id,
        w_sales_class_d.sales_class_desc,
        Business_Days_Difference

)
SELECT location_name, w_time_d.time_year, count(after_ship_quantity_sum) as count_delayed_jobs, sum(Business_Days_Difference) as Sum_dif_business_days,
    sum(Quantity_Ordered - after_ship_quantity_sum)/sum(last_ship_date) as on_time_rate,
    rank() over (partition by time_year order by sum(Quantity_Ordered - after_ship_quantity_sum)/sum(last_ship_date) desc )
FROM PairsCTE, w_time_d
group by location_name, time_year;
```

	location_name character varying (50)	time_year integer	count_delayed_jobs bigint	sum_dif_business_days numeric	on_time_rate numeric	rank bigint
1	Dallas	2012	4176	7569	0.05308889353208978162	1
2	Montreal	2012	12006	45414	0.04812431728886389076	2
3	Birmingham	2012	6786	26361	0.04723959430268587426	3
4	Seattle	2012	19314	64206	0.04191356766290784231	4
5	Vancouver	2012	9918	34713	0.03749620458243623300	5
6	London	2012	10962	22185	0.03488528454685491170	6
7	Chicago	2012	7569	14355	0.03451072662695029291	7
8	Toronto	2012	5220	15660	0.03041352622092375912	8
9	Los Angeles	2012	12789	48807	0.02916393751725291704	9
10	Denver	2012	2871	5481	0.02865101920799437122	10

Total rows: 72 of 72   Query complete 00:00:00.366