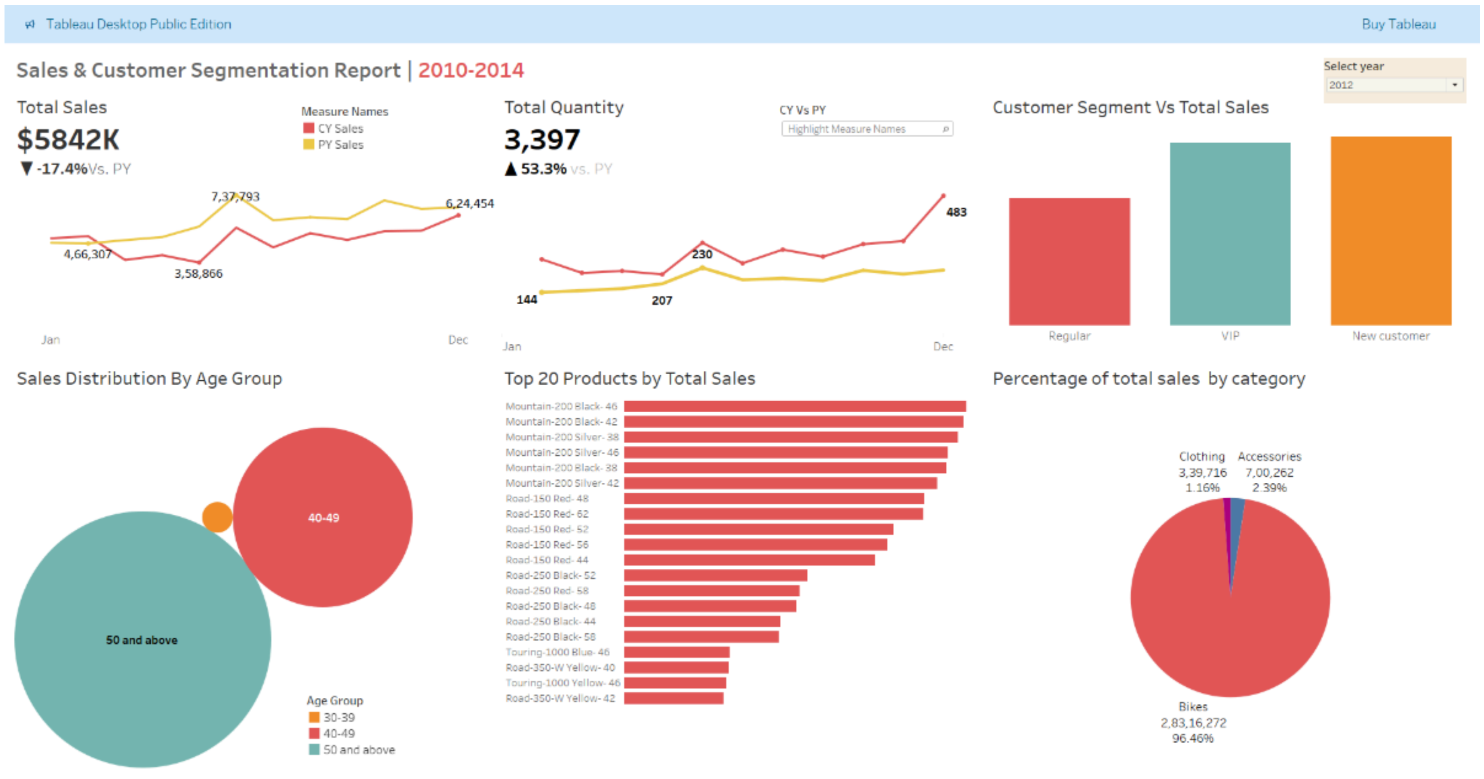
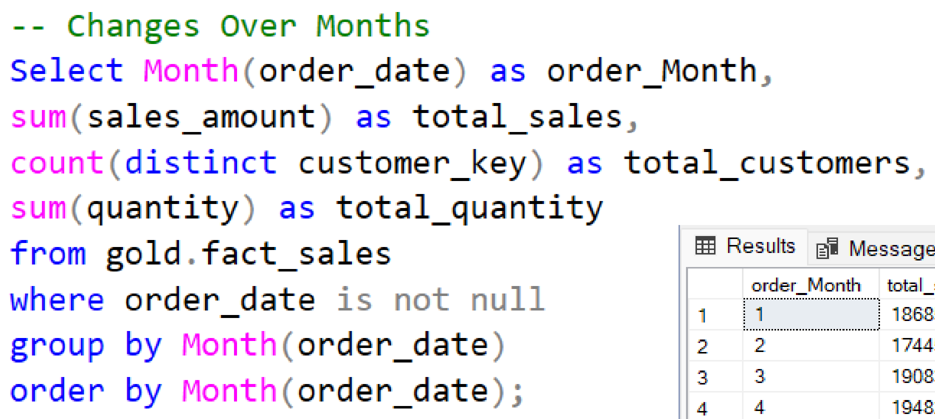
Customer Segmentation & Advanced Sales Data Analysis

Project-By Siddhartha Srivastava

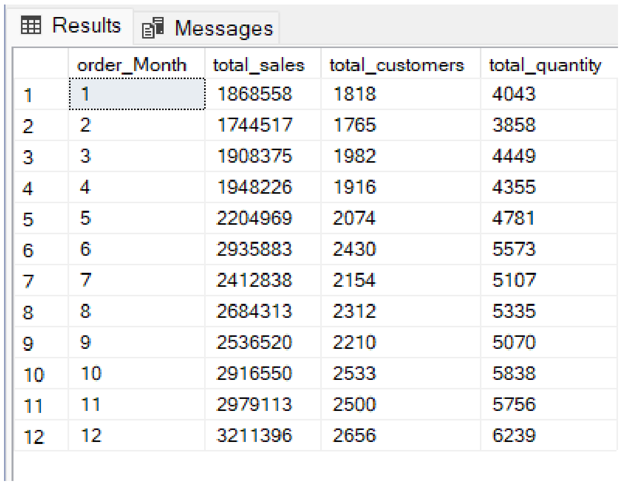


-- Changes Over Months

Select Month(order_date) as order_Month,
sum(sales_amount) as total_sales,
count(distinct customer_key) as total_customers,
sum(quantity) as total_quantity
from gold.fact_sales
where order_date is not null
group by Month(order_date)
order by Month(order_date);

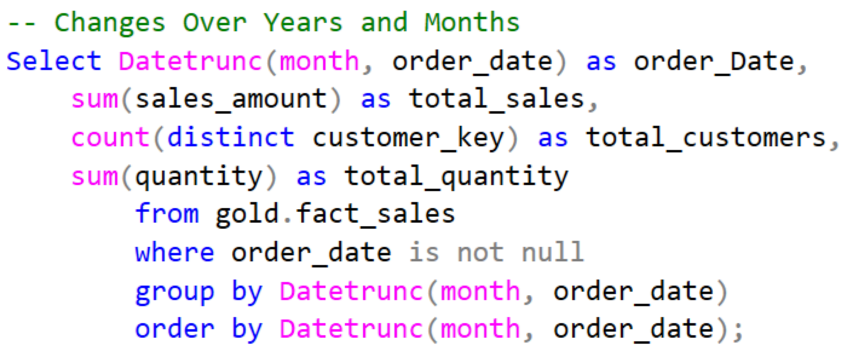


```sql
-- Changes Over Months
Select Month(order_date) as order_Month,
sum(sales_amount) as total_sales,
count(distinct customer_key) as total_customers,
sum(quantity) as total_quantity
from gold.fact_sales
where order_date is not null
group by Month(order_date)
order by Month(order_date);
```

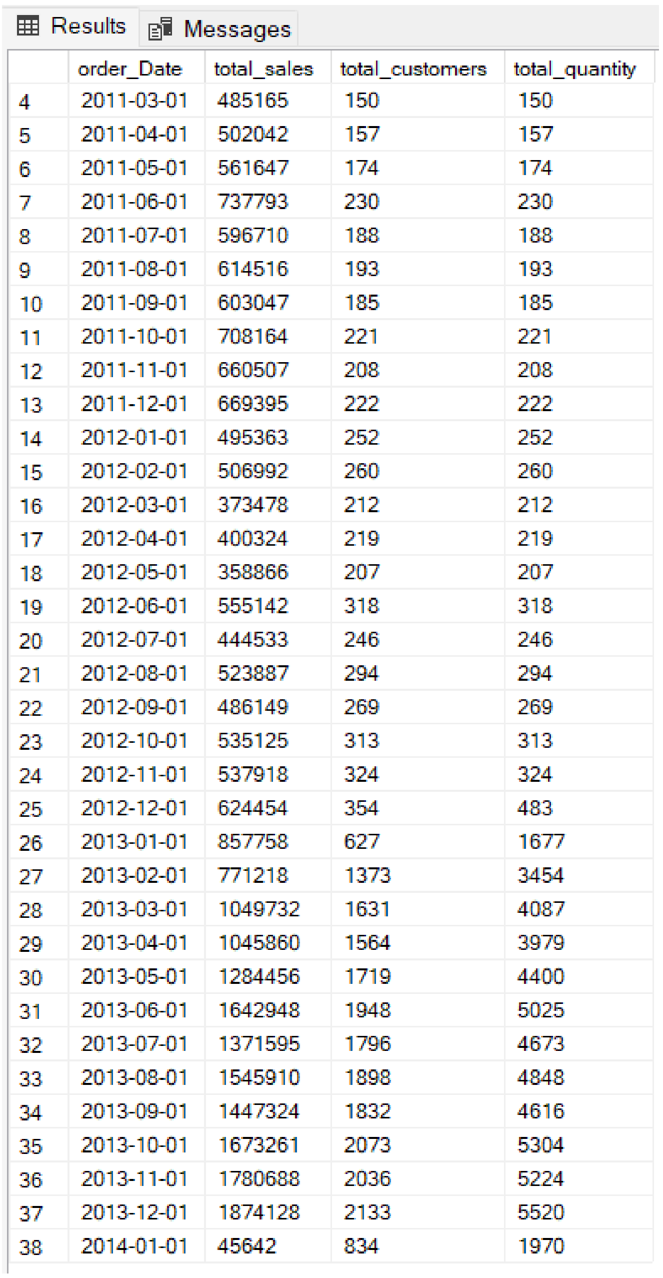

Results
Messages

	order_Month	total_sales	total_customers	total_quantity
1	1	1868558	1818	4043
2	2	1744517	1765	3858
3	3	1908375	1982	4449
4	4	1948226	1916	4355
5	5	2204969	2074	4781
6	6	2935883	2430	5573
7	7	2412838	2154	5107
8	8	2684313	2312	5335
9	9	2536520	2210	5070
10	10	2916550	2533	5838
11	11	2979113	2500	5756
12	12	3211396	2656	6239

```
-- Changes Over Years and Months

Select Datetrunc(month, order_date) as order_Date,
   sum(sales_amount) as total_sales,
   count(distinct customer_key) as total_customers,
   sum(quantity) as total_quantity
      from gold.fact_sales
      where order_date is not null
      group by Datetrunc(month, order_date)
      order by Datetrunc(month, order_date);
```

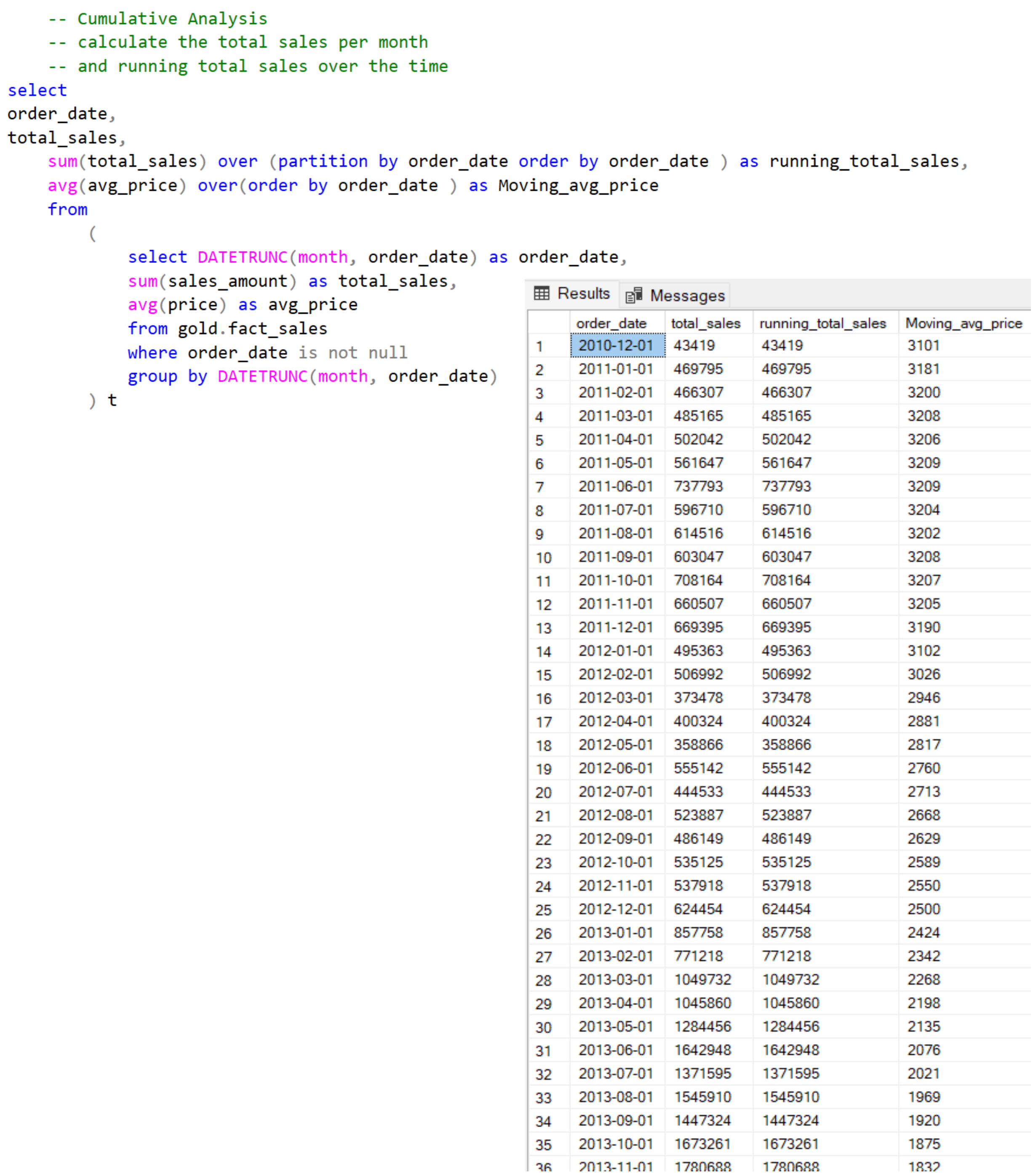


```
-- Changes Over Years and Months
Select Datetrunc(month, order_date) as order_Date,
    sum(sales_amount) as total_sales,
    count(distinct customer_key) as total_customers,
    sum(quantity) as total_quantity
        from gold.fact_sales
        where order_date is not null
        group by Datetrunc(month, order_date)
        order by Datetrunc(month, order_date);
```



	order_Date	total_sales	total_customers	total_quantity
4	2011-03-01	485165	150	150
5	2011-04-01	502042	157	157
6	2011-05-01	561647	174	174
7	2011-06-01	737793	230	230
8	2011-07-01	596710	188	188
9	2011-08-01	614516	193	193
10	2011-09-01	603047	185	185
11	2011-10-01	708164	221	221
12	2011-11-01	660507	208	208
13	2011-12-01	669395	222	222
14	2012-01-01	495363	252	252
15	2012-02-01	506992	260	260
16	2012-03-01	373478	212	212
17	2012-04-01	400324	219	219
18	2012-05-01	358866	207	207
19	2012-06-01	555142	318	318
20	2012-07-01	444533	246	246
21	2012-08-01	523887	294	294
22	2012-09-01	486149	269	269
23	2012-10-01	535125	313	313
24	2012-11-01	537918	324	324
25	2012-12-01	624454	354	483
26	2013-01-01	857758	627	1677
27	2013-02-01	771218	1373	3454
28	2013-03-01	1049732	1631	4087
29	2013-04-01	1045860	1564	3979
30	2013-05-01	1284456	1719	4400
31	2013-06-01	1642948	1948	5025
32	2013-07-01	1371595	1796	4673
33	2013-08-01	1545910	1898	4848
34	2013-09-01	1447324	1832	4616
35	2013-10-01	1673261	2073	5304
36	2013-11-01	1780688	2036	5224
37	2013-12-01	1874128	2133	5520
38	2014-01-01	45642	834	1970

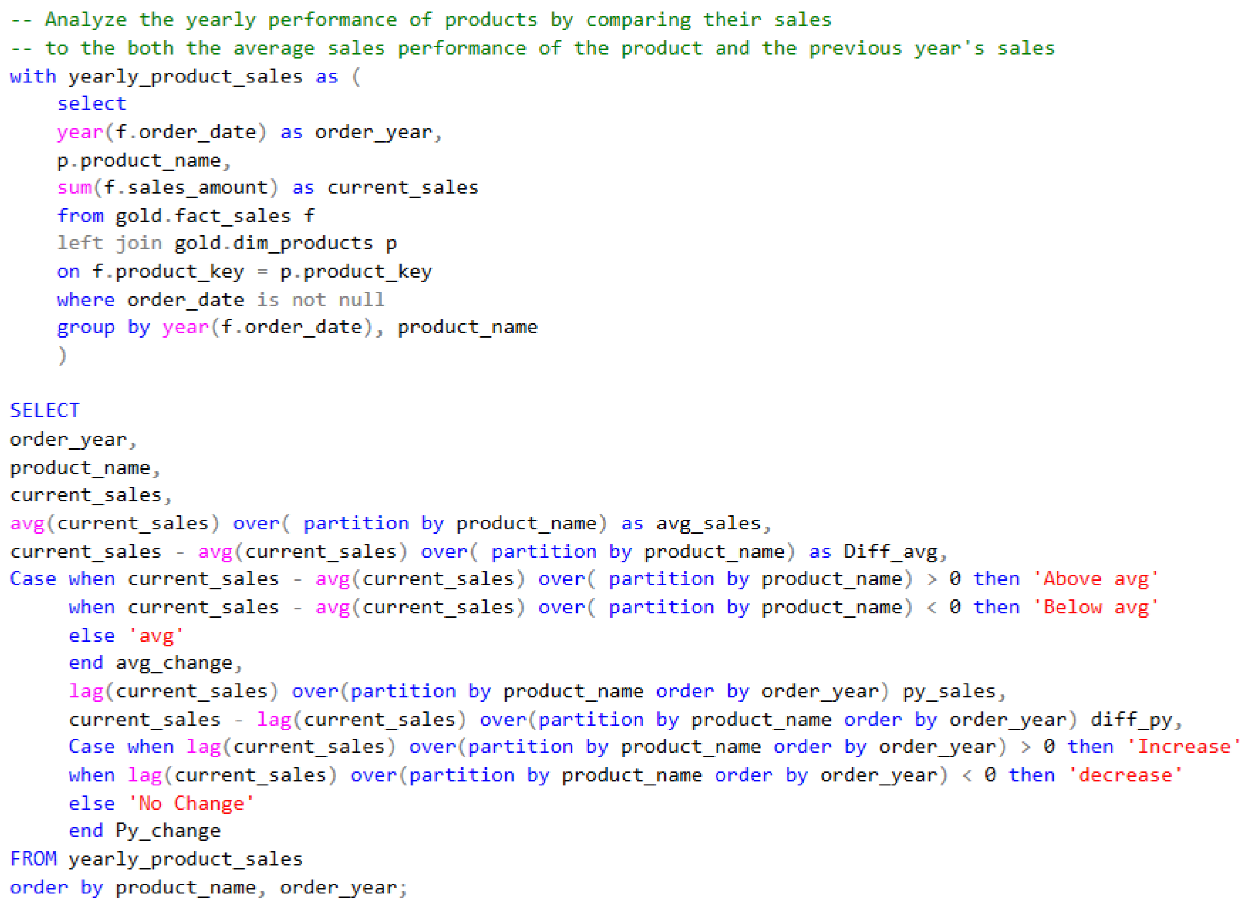
```
-- Cumulative Analysis

  -- calculate the total sales per month
  -- and running total sales over the time
select
order_date,
total_sales,
  sum(total_sales) over (partition by order_date order by order_date ) as
running_total_sales,
  avg(avg_price) over(order by order_date ) as Moving_avg_price
  from
    (
      select DATETRUNC(month, order_date) as order_date,
      sum(sales_amount) as total_sales,
      avg(price) as avg_price
      from gold.fact_sales
      where order_date is not null
      group by DATETRUNC(month, order_date)
    ) t
```



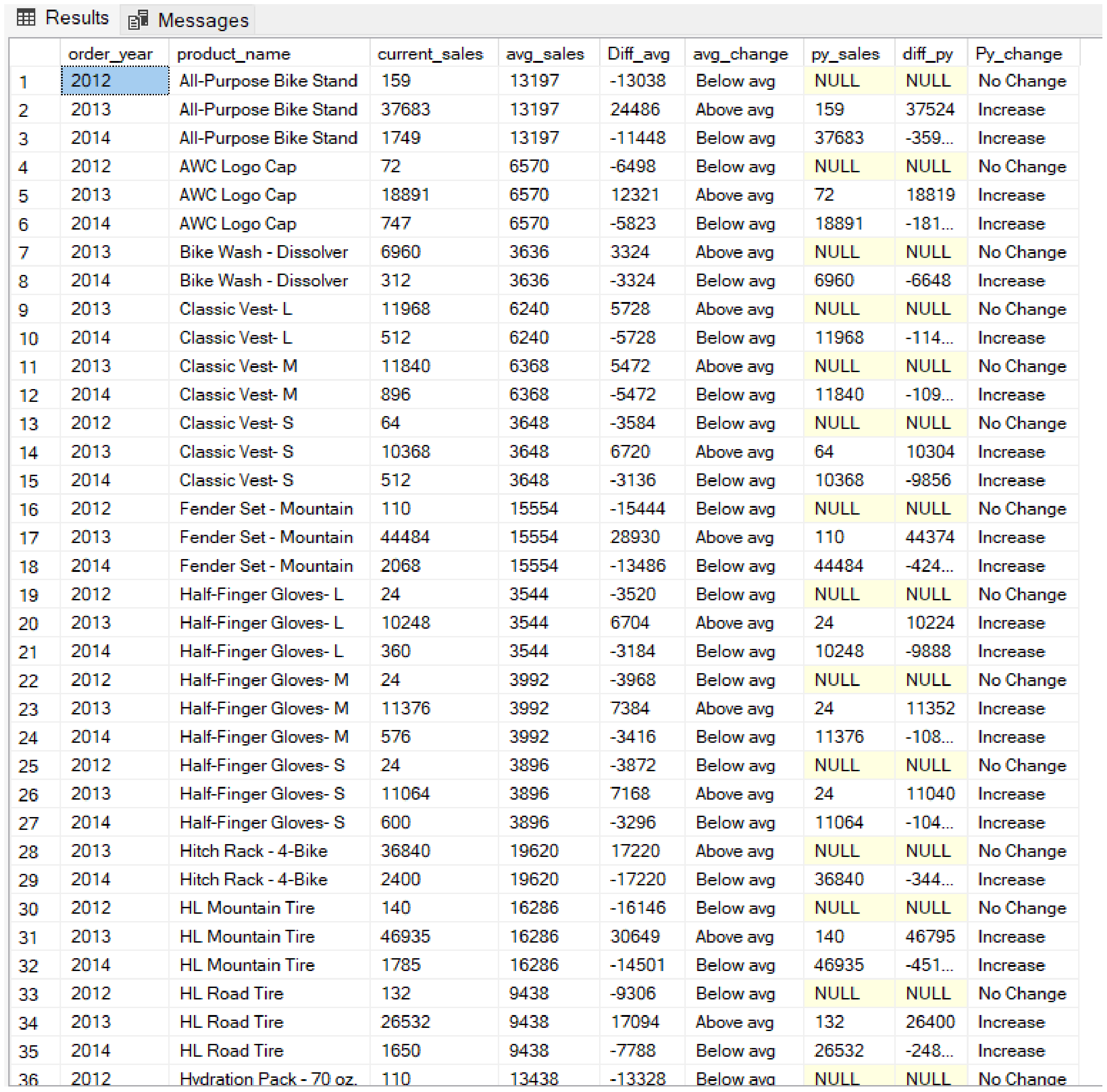
```
    -- Cumulative Analysis
    -- calculate the total sales per month
    -- and running total sales over the time
select
order_date,
total_sales,
    sum(total_sales) over (partition by order_date order by order_date ) as running_total_sales,
    avg(avg_price) over(order by order_date ) as Moving_avg_price
    from
        (
            select DATETRUNC(month, order_date) as order_date,
            sum(sales_amount) as total_sales,
            avg(price) as avg_price
            from gold.fact_sales
            where order_date is not null
            group by DATETRUNC(month, order_date)
        ) t
```

	order_date	total_sales	running_total_sales	Moving_avg_price
1	2010-12-01	43419	43419	3101
2	2011-01-01	469795	469795	3181
3	2011-02-01	466307	466307	3200
4	2011-03-01	485165	485165	3208
5	2011-04-01	502042	502042	3206
6	2011-05-01	561647	561647	3209
7	2011-06-01	737793	737793	3209
8	2011-07-01	596710	596710	3204
9	2011-08-01	614516	614516	3202
10	2011-09-01	603047	603047	3208
11	2011-10-01	708164	708164	3207
12	2011-11-01	660507	660507	3205
13	2011-12-01	669395	669395	3190
14	2012-01-01	495363	495363	3102
15	2012-02-01	506992	506992	3026
16	2012-03-01	373478	373478	2946
17	2012-04-01	400324	400324	2881
18	2012-05-01	358866	358866	2817
19	2012-06-01	555142	555142	2760
20	2012-07-01	444533	444533	2713
21	2012-08-01	523887	523887	2668
22	2012-09-01	486149	486149	2629
23	2012-10-01	535125	535125	2589
24	2012-11-01	537918	537918	2550
25	2012-12-01	624454	624454	2500
26	2013-01-01	857758	857758	2424
27	2013-02-01	771218	771218	2342
28	2013-03-01	1049732	1049732	2268
29	2013-04-01	1045860	1045860	2198
30	2013-05-01	1284456	1284456	2135
31	2013-06-01	1642948	1642948	2076
32	2013-07-01	1371595	1371595	2021
33	2013-08-01	1545910	1545910	1969
34	2013-09-01	1447324	1447324	1920
35	2013-10-01	1673261	1673261	1875
36	2013-11-01	1780688	1780688	1832

```
-- Analyze the yearly performance of products by comparing their sales
-- to the both the average sales performance of the product and the previous year's sales
with yearly_product_sales as (
  select
  year(f.order_date) as order_year,
  p.product_name,
  sum(f.sales_amount) as current_sales
  from gold.fact_sales f
  left join gold.dim_products p
  on f.product_key = p.product_key
  where order_date is not null
  group by year(f.order_date), product_name
  )

SELECT
order_year,
product_name,
current_sales,
avg(current_sales) over( partition by product_name) as avg_sales,
current_sales - avg(current_sales) over( partition by product_name) as Diff_avg,
Case when current_sales - avg(current_sales) over( partition by product_name) > 0 then 'Above avg'
   when current_sales - avg(current_sales) over( partition by product_name) < 0 then 'Below avg'
   else 'avg'
   end avg_change,
   lag(current_sales) over(partition by product_name order by order_year) py_sales,
   current_sales - lag(current_sales) over(partition by product_name order by order_year) diff_py,
   Case when lag(current_sales) over(partition by product_name order by order_year) > 0 then 'Increase'
   when lag(current_sales) over(partition by product_name order by order_year) < 0 then 'decrease'
   else 'No Change'
   end Py_change
FROM yearly_product_sales
order by product_name, order_year;
```

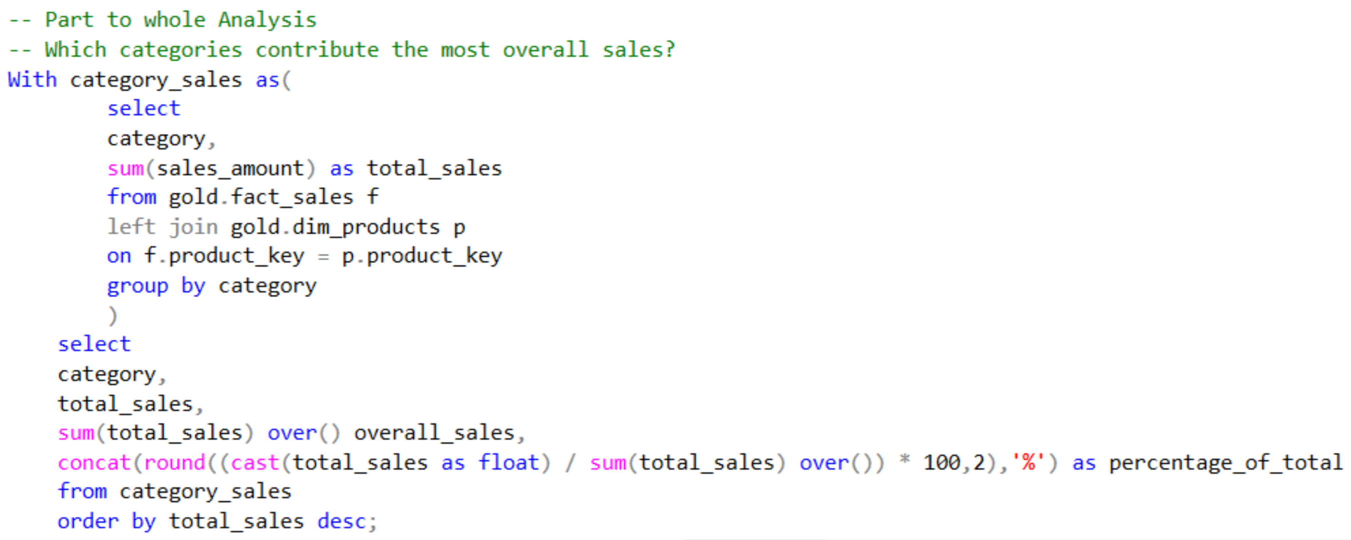


```
-- Analyze the yearly performance of products by comparing their sales
-- to the both the average sales performance of the product and the previous year's sales
with yearly_product_sales as (
    select
    year(f.order_date) as order_year,
    p.product_name,
    sum(f.sales_amount) as current_sales
    from gold.fact_sales f
    left join gold.dim_products p
    on f.product_key = p.product_key
    where order_date is not null
    group by year(f.order_date), product_name
    )

SELECT
order_year,
product_name,
current_sales,
avg(current_sales) over( partition by product_name) as avg_sales,
current_sales - avg(current_sales) over( partition by product_name) as Diff_avg,
Case when current_sales - avg(current_sales) over( partition by product_name) > 0 then 'Above avg'
     when current_sales - avg(current_sales) over( partition by product_name) < 0 then 'Below avg'
     else 'avg'
     end avg_change,
     lag(current_sales) over(partition by product_name order by order_year) py_sales,
     current_sales - lag(current_sales) over(partition by product_name order by order_year) diff_py,
     Case when lag(current_sales) over(partition by product_name order by order_year) > 0 then 'Increase'
     when lag(current_sales) over(partition by product_name order by order_year) < 0 then 'decrease'
     else 'No Change'
     end Py_change
FROM yearly_product_sales
order by product_name, order_year;
```

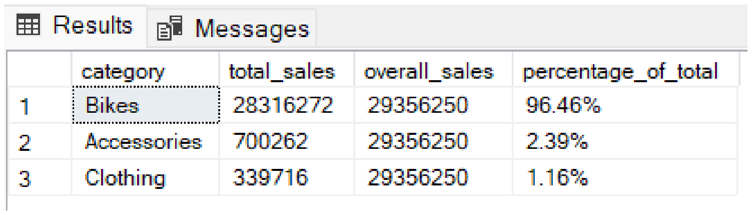


	order_year	product_name	current_sales	avg_sales	Diff_avg	avg_change	py_sales	diff_py	Py_change
1	2012	All-Purpose Bike Stand	159	13197	-13038	Below avg	NULL	NULL	No Change
2	2013	All-Purpose Bike Stand	37683	13197	24486	Above avg	159	37524	Increase
3	2014	All-Purpose Bike Stand	1749	13197	-11448	Below avg	37683	-359...	Increase
4	2012	AWC Logo Cap	72	6570	-6498	Below avg	NULL	NULL	No Change
5	2013	AWC Logo Cap	18891	6570	12321	Above avg	72	18819	Increase
6	2014	AWC Logo Cap	747	6570	-5823	Below avg	18891	-181...	Increase
7	2013	Bike Wash - Dissolver	6960	3636	3324	Above avg	NULL	NULL	No Change
8	2014	Bike Wash - Dissolver	312	3636	-3324	Below avg	6960	-6648	Increase
9	2013	Classic Vest- L	11968	6240	5728	Above avg	NULL	NULL	No Change
10	2014	Classic Vest- L	512	6240	-5728	Below avg	11968	-114...	Increase
11	2013	Classic Vest- M	11840	6368	5472	Above avg	NULL	NULL	No Change
12	2014	Classic Vest- M	896	6368	-5472	Below avg	11840	-109...	Increase
13	2012	Classic Vest- S	64	3648	-3584	Below avg	NULL	NULL	No Change
14	2013	Classic Vest- S	10368	3648	6720	Above avg	64	10304	Increase
15	2014	Classic Vest- S	512	3648	-3136	Below avg	10368	-9856	Increase
16	2012	Fender Set - Mountain	110	15554	-15444	Below avg	NULL	NULL	No Change
17	2013	Fender Set - Mountain	44484	15554	28930	Above avg	110	44374	Increase
18	2014	Fender Set - Mountain	2068	15554	-13486	Below avg	44484	-424...	Increase
19	2012	Half-Finger Gloves- L	24	3544	-3520	Below avg	NULL	NULL	No Change
20	2013	Half-Finger Gloves- L	10248	3544	6704	Above avg	24	10224	Increase
21	2014	Half-Finger Gloves- L	360	3544	-3184	Below avg	10248	-9888	Increase
22	2012	Half-Finger Gloves- M	24	3992	-3968	Below avg	NULL	NULL	No Change
23	2013	Half-Finger Gloves- M	11376	3992	7384	Above avg	24	11352	Increase
24	2014	Half-Finger Gloves- M	576	3992	-3416	Below avg	11376	-108...	Increase
25	2012	Half-Finger Gloves- S	24	3896	-3872	Below avg	NULL	NULL	No Change
26	2013	Half-Finger Gloves- S	11064	3896	7168	Above avg	24	11040	Increase
27	2014	Half-Finger Gloves- S	600	3896	-3296	Below avg	11064	-104...	Increase
28	2013	Hitch Rack - 4-Bike	36840	19620	17220	Above avg	NULL	NULL	No Change
29	2014	Hitch Rack - 4-Bike	2400	19620	-17220	Below avg	36840	-344...	Increase
30	2012	HL Mountain Tire	140	16286	-16146	Below avg	NULL	NULL	No Change
31	2013	HL Mountain Tire	46935	16286	30649	Above avg	140	46795	Increase
32	2014	HL Mountain Tire	1785	16286	-14501	Below avg	46935	-451...	Increase
33	2012	HL Road Tire	132	9438	-9306	Below avg	NULL	NULL	No Change
34	2013	HL Road Tire	26532	9438	17094	Above avg	132	26400	Increase
35	2014	HL Road Tire	1650	9438	-7788	Below avg	26532	-248...	Increase
36	2012	Hydration Pack - 70 oz.	110	13438	-13328	Below avg	NULL	NULL	No Change

```
-- Part to whole Analysis
-- Which categories contribute the most overall sales?
With category_sales as(
    select
    category,
    sum(sales_amount) as total_sales
    from gold.fact_sales f
    left join gold.dim_products p
    on f.product_key = p.product_key
    group by category
    )
  select
  category,
  total_sales,
  sum(total_sales) over() overall_sales,
  concat(round((cast(total_sales as float) / sum(total_sales) over()) * 100,2),'%') as
percentage_of_total
  from category_sales
  order by total_sales desc;
```



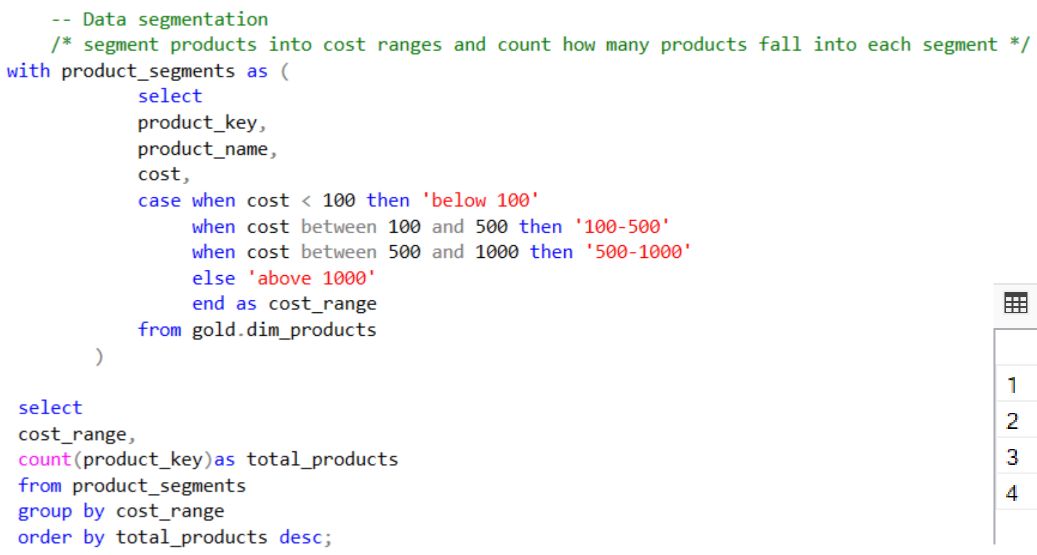
```sql
-- Part to whole Analysis
-- Which categories contribute the most overall sales?
With category_sales as(
        select
        category,
        sum(sales_amount) as total_sales
        from gold.fact_sales f
        left join gold.dim_products p
        on f.product_key = p.product_key
        group by category
        )
    select
    category,
    total_sales,
    sum(total_sales) over() overall_sales,
    concat(round((cast(total_sales as float) / sum(total_sales) over()) * 100,2),'%') as percentage_of_total
    from category_sales
    order by total_sales desc;
```



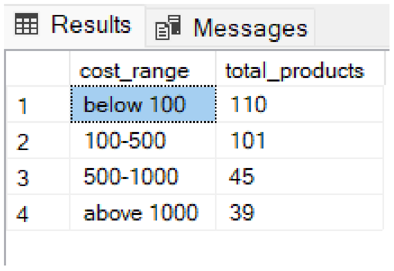
Results | Messages

	category	total_sales	overall_sales	percentage_of_total
1	Bikes	28316272	29356250	96.46%
2	Accessories	700262	29356250	2.39%
3	Clothing	339716	29356250	1.16%

```sql
-- Data segmentation
   /* segment products into cost ranges and count how many products fall into each segment */
with product_segments as (
        select
        product_key,
        product_name,
        cost,
        case when cost < 100 then 'below 100'
            when cost between 100 and 500 then '100-500'
            when cost between 500 and 1000 then '500-1000'
            else 'above 1000'
            end as cost_range
        from gold.dim_products
    )


select
cost_range,
count(product_key)as total_products
from product_segments
group by cost_range
order by total_products desc;
```



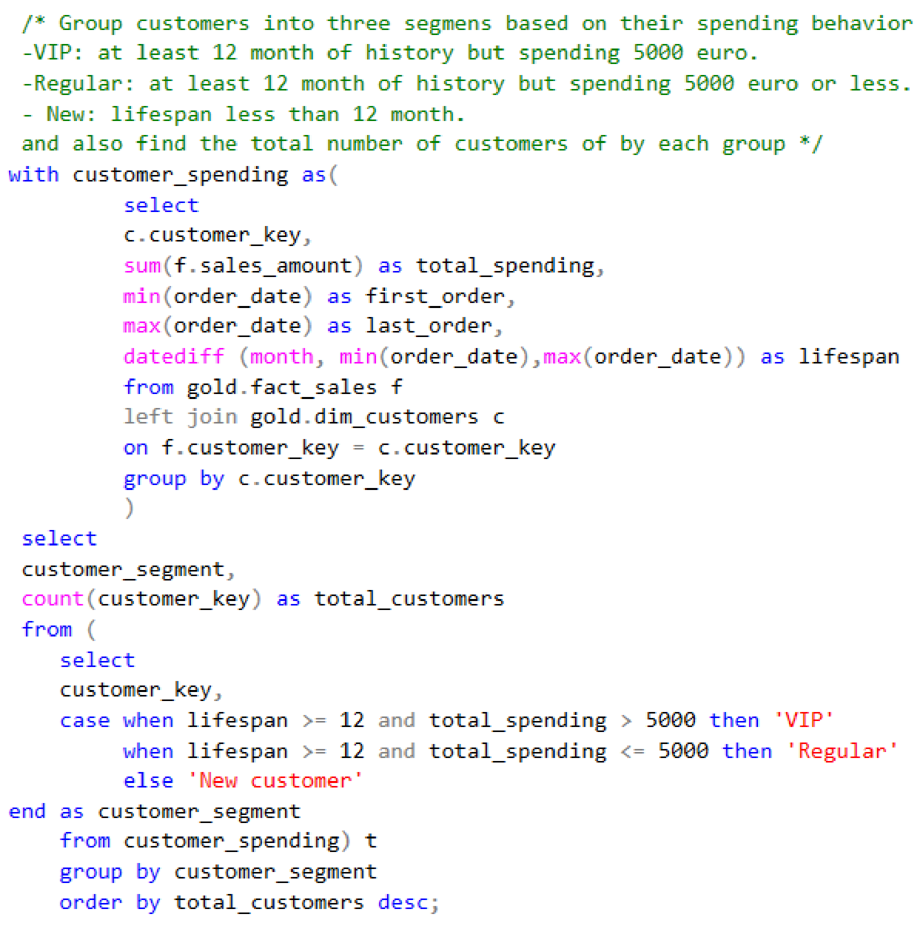
```sql
    -- Data segmentation
    /* segment products into cost ranges and count how many products fall into each segment */
with product_segments as (
            select
            product_key,
            product_name,
            cost,
            case when cost < 100 then 'below 100'
                when cost between 100 and 500 then '100-500'
                when cost between 500 and 1000 then '500-1000'
                else 'above 1000'
                end as cost_range
            from gold.dim_products
        )

  select
  cost_range,
  count(product_key)as total_products
  from product_segments
  group by cost_range
  order by total_products desc;
```



Results | Messages

	cost_range	total_products
1	below 100	110
2	100-500	101
3	500-1000	45
4	above 1000	39

```
/* Group customers into three segmens based on their spending behavior
 -VIP: at least 12 month of history but spending 5000 euro.
 -Regular: at least 12 month of history but spending 5000 euro or less.
 - New: lifespan less than 12 month.
 and also find the total number of customers of by each group */
with customer_spending as(
        select
        c.customer_key,
        sum(f.sales_amount) as total_spending,
        min(order_date) as first_order,
        max(order_date) as last_order,
        datediff (month, min(order_date),max(order_date)) as lifespan
        from gold.fact_sales f
        left join gold.dim_customers c
        on f.customer_key = c.customer_key
        group by c.customer_key
        )
 select
 customer_segment,
 count(customer_key) as total_customers
 from (
   select
   customer_key,
   case when lifespan >= 12 and total_spending > 5000 then 'VIP'
        when lifespan >= 12 and total_spending <= 5000 then 'Regular'
        else 'New customer'
end as customer_segment
   from customer_spending) t
   group by customer_segment
   order by total_customers desc;
```



```
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 -VIP: at least 12 month of history but spending 5000 euro.
 -Regular: at least 12 month of history but spending 5000 euro or less.
 - New: lifespan less than 12 month.
 and also find the total number of customers of by each group */
with customer_spending as(
         select
         c.customer_key,
         sum(f.sales_amount) as total_spending,
         min(order_date) as first_order,
         max(order_date) as last_order,
         datediff (month, min(order_date),max(order_date)) as lifespan
         from gold.fact_sales f
         left join gold.dim_customers c
         on f.customer_key = c.customer_key
         group by c.customer_key
         )
 select
 customer_segment,
 count(customer_key) as total_customers
 from (
    select
    customer_key,
    case when lifespan >= 12 and total_spending > 5000 then 'VIP'
         when lifespan >= 12 and total_spending <= 5000 then 'Regular'
         else 'New customer'
end as customer_segment
    from customer_spending) t
    group by customer_segment
    order by total_customers desc;
```
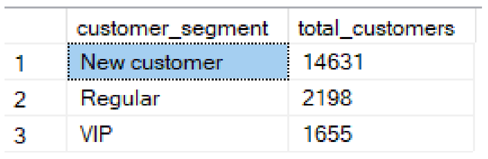
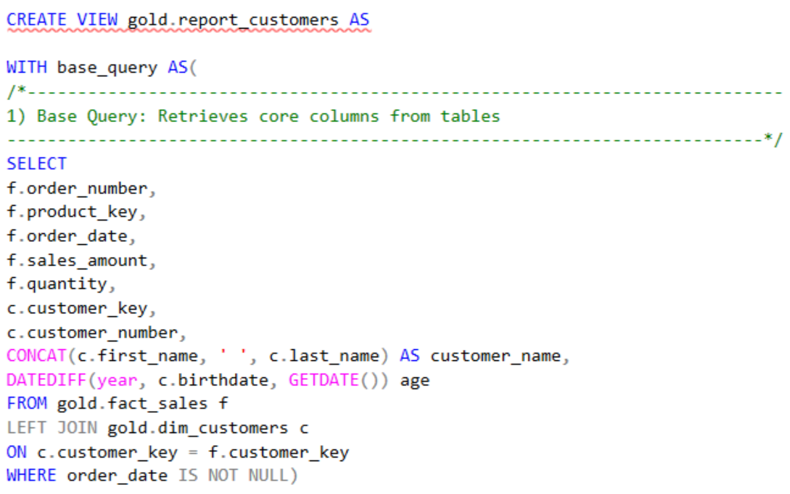
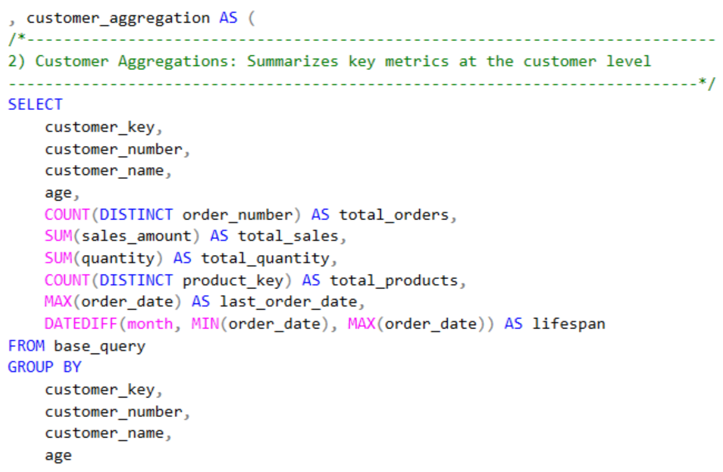



	customer_segment	total_customers
1	New customer	14631
2	Regular	2198
3	VIP	1655

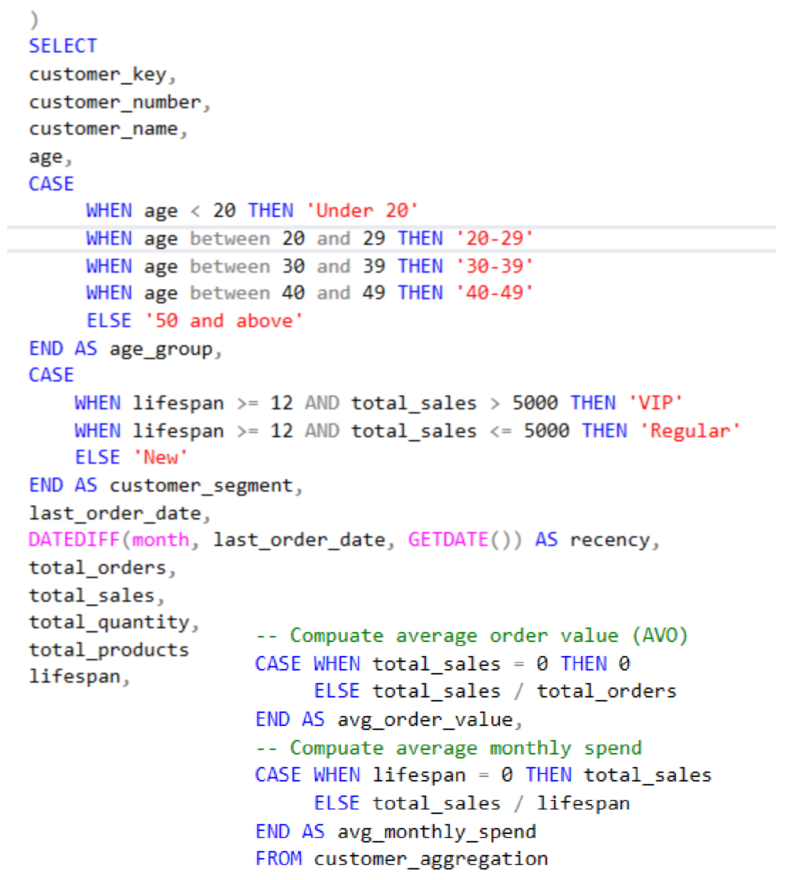
```
/*
===============================================================================
Customer Report
===============================================================================
Purpose:
    - This report consolidates key customer metrics and behaviors


Highlights:
    1. Gathers essential fields such as names, ages, and transaction details.
    2. Segments customers into categories (VIP, Regular, New) and age groups.
    3. Aggregates customer-level metrics:
       - total orders
       - total sales
       - total quantity purchased
       - total products
       - lifespan (in months)
    4. Calculates valuable KPIs:
        - recency (months since last order)
        - average order value
        - average monthly spend
===============================================================================
*/


-- =============================================================================
-- Create Report: gold.report_customers
-- =============================================================================
IF OBJECT_ID('gold.report_customers', 'V') IS NOT NULL
    DROP VIEW gold.report_customers;
GO


CREATE VIEW gold.report_customers AS


WITH base_query AS(
/*---------------------------------------------------------------------------
1) Base Query: Retrieves core columns from tables
---------------------------------------------------------------------------*/
SELECT
f.order_number,
f.product_key,
f.order_date,
f.sales_amount,
f.quantity,
c.customer_key,
c.customer_number,
CONCAT(c.first_name, ' ', c.last_name) AS customer_name,
DATEDIFF(year, c.birthdate, GETDATE()) age
FROM gold.fact_sales f
LEFT JOIN gold.dim_customers c
ON c.customer_key = f.customer_key
WHERE order_date IS NOT NULL)


, customer_aggregation AS (
/*---------------------------------------------------------------------------
2) Customer Aggregations: Summarizes key metrics at the customer level
---------------------------------------------------------------------------*/
SELECT
    customer_key,
    customer_number,
    customer_name,
    age,
    COUNT(DISTINCT order_number) AS total_orders,
    SUM(sales_amount) AS total_sales,
    SUM(quantity) AS total_quantity,
    COUNT(DISTINCT product_key) AS total_products,
    MAX(order_date) AS last_order_date,
    DATEDIFF(month, MIN(order_date), MAX(order_date)) AS lifespan
FROM base_query
GROUP BY
    customer_key,
    customer_number,
    customer_name,
    age
)
SELECT
customer_key,
customer_number,
customer_name,
age,
CASE
     WHEN age < 20 THEN 'Under 20'
     WHEN age between 20 and 29 THEN '20-29'
     WHEN age between 30 and 39 THEN '30-39'
     WHEN age between 40 and 49 THEN '40-49'
     ELSE '50 and above'
END AS age_group,
CASE
    WHEN lifespan >= 12 AND total_sales > 5000 THEN 'VIP'
    WHEN lifespan >= 12 AND total_sales <= 5000 THEN 'Regular'
    ELSE 'New'
END AS customer_segment,
last_order_date,
DATEDIFF(month, last_order_date, GETDATE()) AS recency,
total_orders,
total_sales,
total_quantity,
total_products
lifespan,
-- Compuate average order value (AVO)
CASE WHEN total_sales = 0 THEN 0
     ELSE total_sales / total_orders
END AS avg_order_value,
-- Compuate average monthly spend
CASE WHEN lifespan = 0 THEN total_sales
     ELSE total_sales / lifespan
END AS avg_monthly_spend
FROM customer_aggregation
```



```
CREATE VIEW gold.report_customers AS

WITH base_query AS(
/*---------------------------------------------------------------------------
1) Base Query: Retrieves core columns from tables
---------------------------------------------------------------------------*/
SELECT
f.order_number,
f.product_key,
f.order_date,
f.sales_amount,
f.quantity,
c.customer_key,
c.customer_number,
CONCAT(c.first_name, ' ', c.last_name) AS customer_name,
DATEDIFF(year, c.birthdate, GETDATE()) age
FROM gold.fact_sales f
LEFT JOIN gold.dim_customers c
ON c.customer_key = f.customer_key
WHERE order_date IS NOT NULL)
```

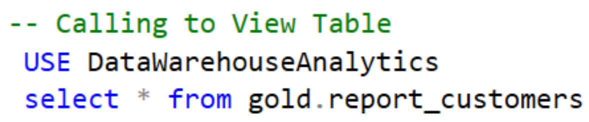


```
, customer_aggregation AS (
/*---------------------------------------------------------------------------
2) Customer Aggregations: Summarizes key metrics at the customer level
---------------------------------------------------------------------------*/
SELECT
    customer_key,
    customer_number,
    customer_name,
    age,
    COUNT(DISTINCT order_number) AS total_orders,
    SUM(sales_amount) AS total_sales,
    SUM(quantity) AS total_quantity,
    COUNT(DISTINCT product_key) AS total_products,
    MAX(order_date) AS last_order_date,
    DATEDIFF(month, MIN(order_date), MAX(order_date)) AS lifespan
FROM base_query
GROUP BY
    customer_key,
    customer_number,
    customer_name,
    age
```

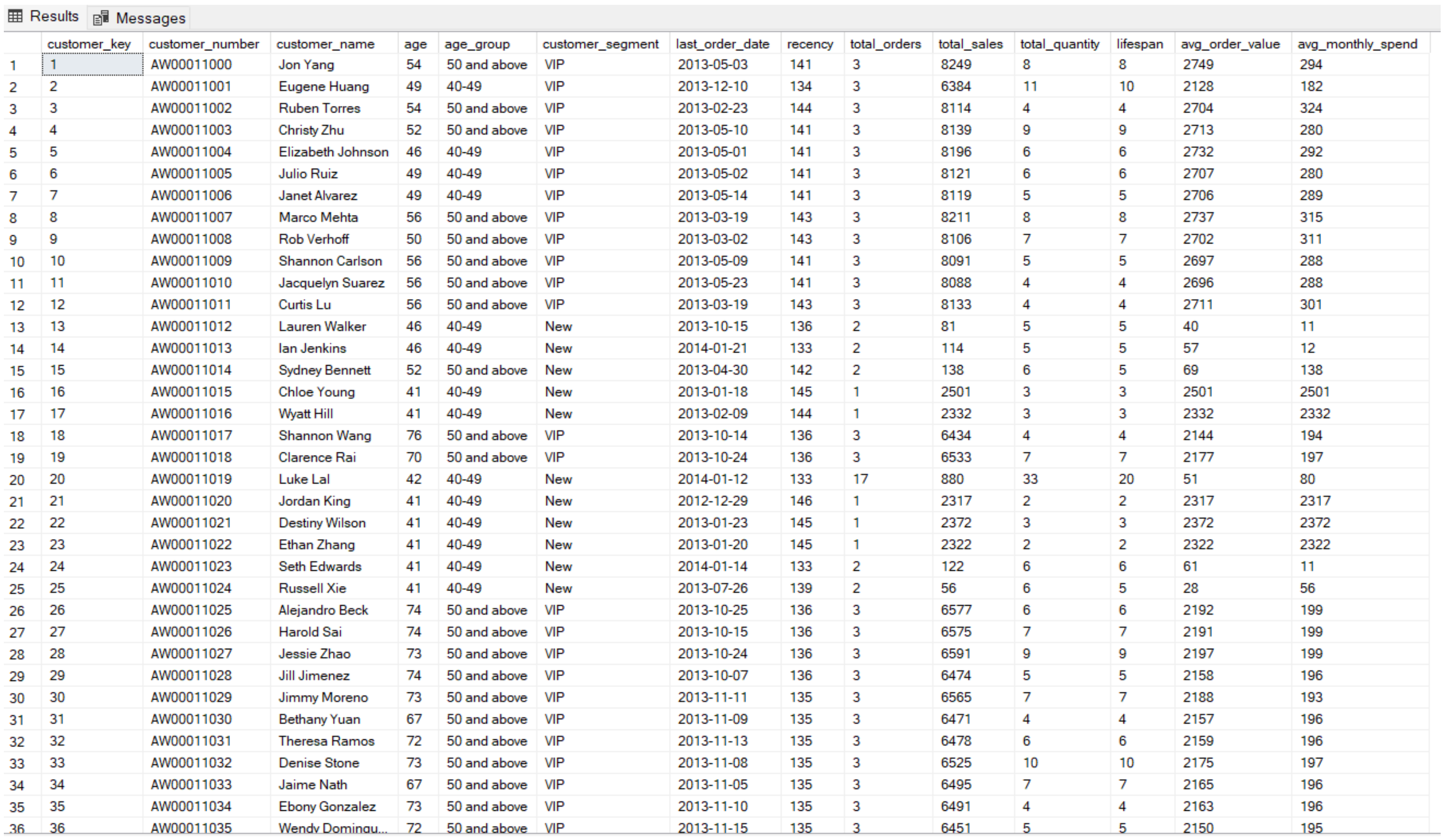


```
)
SELECT
customer_key,
customer_number,
customer_name,
age,
CASE
     WHEN age < 20 THEN 'Under 20'
     WHEN age between 20 and 29 THEN '20-29'
     WHEN age between 30 and 39 THEN '30-39'
     WHEN age between 40 and 49 THEN '40-49'
     ELSE '50 and above'
END AS age_group,
CASE
    WHEN lifespan >= 12 AND total_sales > 5000 THEN 'VIP'
    WHEN lifespan >= 12 AND total_sales <= 5000 THEN 'Regular'
    ELSE 'New'
END AS customer_segment,
last_order_date,
DATEDIFF(month, last_order_date, GETDATE()) AS recency,
total_orders,
total_sales,
total_quantity,
total_products
lifespan,
-- Compuate average order value (AVO)
CASE WHEN total_sales = 0 THEN 0
     ELSE total_sales / total_orders
END AS avg_order_value,
-- Compuate average monthly spend
CASE WHEN lifespan = 0 THEN total_sales
     ELSE total_sales / lifespan
END AS avg_monthly_spend
FROM customer_aggregation
```

```
-- Calling to View Table
   use DataWarehouseAnalytics
   select * from gold.report_customers
```



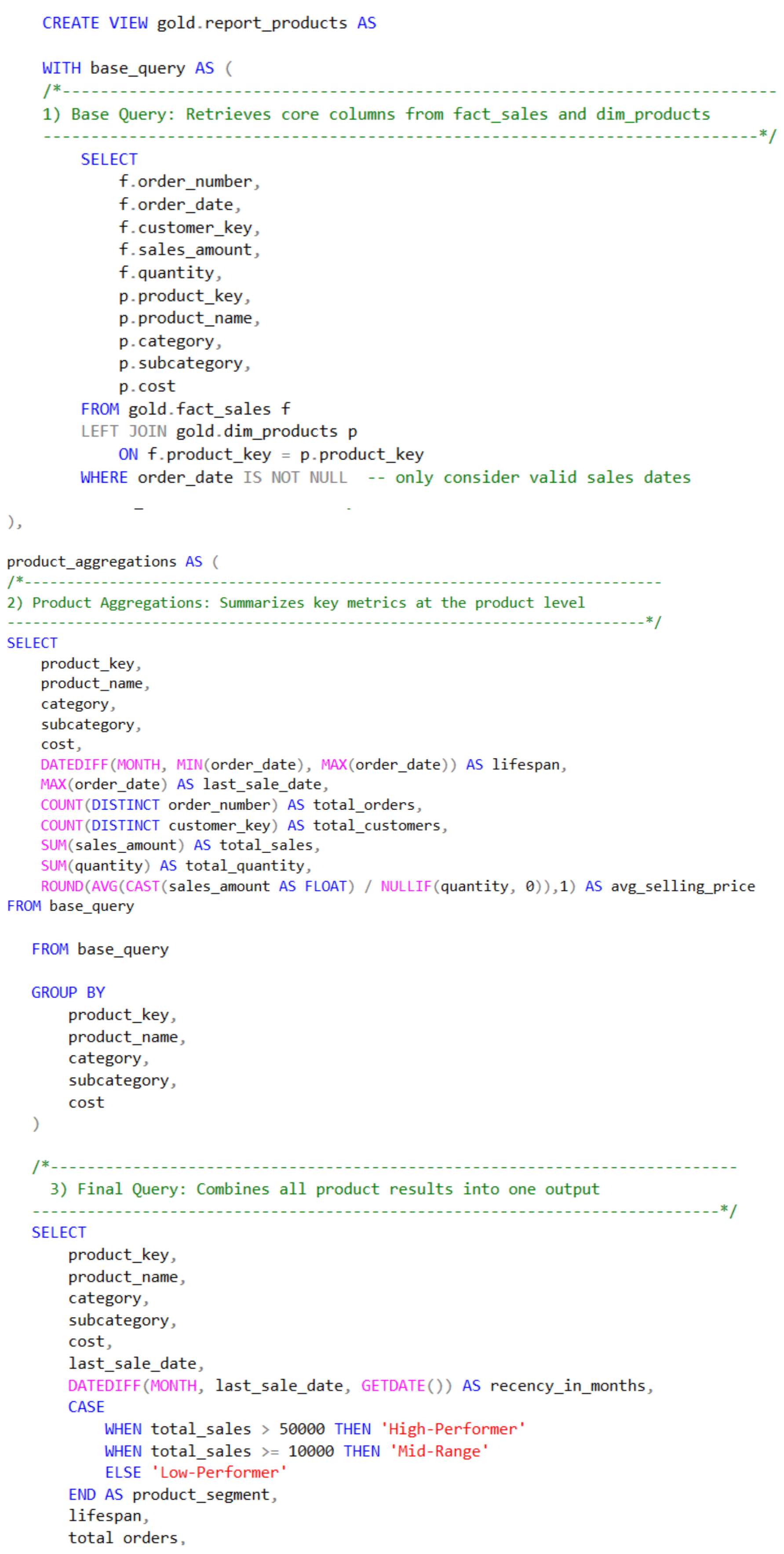
```
-- Calling to View Table
 USE DataWarehouseAnalytics
 select * from gold.report_customers
```



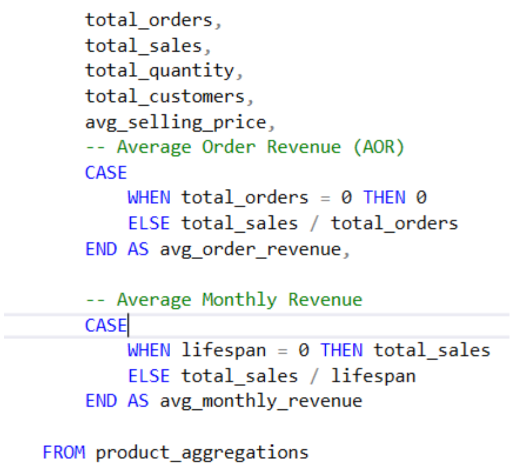
Results | Messages

	customer_key	customer_number	customer_name	age	age_group	customer_segment	last_order_date	recency	total_orders	total_sales	total_quantity	lifespan	avg_order_value	avg_monthly_spend
1	1	AW00011000	Jon Yang	54	50 and above	VIP	2013-05-03	141	3	8249	8	8	2749	294
2	2	AW00011001	Eugene Huang	49	40-49	VIP	2013-12-10	134	3	6384	11	10	2128	182
3	3	AW00011002	Ruben Torres	54	50 and above	VIP	2013-02-23	144	3	8114	4	4	2704	324
4	4	AW00011003	Christy Zhu	52	50 and above	VIP	2013-05-10	141	3	8139	9	9	2713	280
5	5	AW00011004	Elizabeth Johnson	46	40-49	VIP	2013-05-01	141	3	8196	6	6	2732	292
6	6	AW00011005	Julio Ruiz	49	40-49	VIP	2013-05-02	141	3	8121	6	6	2707	280
7	7	AW00011006	Janet Alvarez	49	40-49	VIP	2013-05-14	141	3	8119	5	5	2706	289
8	8	AW00011007	Marco Mehta	56	50 and above	VIP	2013-03-19	143	3	8211	8	8	2737	315
9	9	AW00011008	Rob Verhoff	50	50 and above	VIP	2013-03-02	143	3	8106	7	7	2702	311
10	10	AW00011009	Shannon Carlson	56	50 and above	VIP	2013-05-09	141	3	8091	5	5	2697	288
11	11	AW00011010	Jacquelyn Suarez	56	50 and above	VIP	2013-05-23	141	3	8088	4	4	2696	288
12	12	AW00011011	Curtis Lu	56	50 and above	VIP	2013-03-19	143	3	8133	4	4	2711	301
13	13	AW00011012	Lauren Walker	46	40-49	New	2013-10-15	136	2	81	5	5	40	11
14	14	AW00011013	Ian Jenkins	46	40-49	New	2014-01-21	133	2	114	5	5	57	12
15	15	AW00011014	Sydney Bennett	52	50 and above	New	2013-04-30	142	2	138	6	5	69	138
16	16	AW00011015	Chloe Young	41	40-49	New	2013-01-18	145	1	2501	3	3	2501	2501
17	17	AW00011016	Wyatt Hill	41	40-49	New	2013-02-09	144	1	2332	3	3	2332	2332
18	18	AW00011017	Shannon Wang	76	50 and above	VIP	2013-10-14	136	3	6434	4	4	2144	194
19	19	AW00011018	Clarence Rai	70	50 and above	VIP	2013-10-24	136	3	6533	7	7	2177	197
20	20	AW00011019	Luke Lal	42	40-49	New	2014-01-12	133	17	880	33	20	51	80
21	21	AW00011020	Jordan King	41	40-49	New	2012-12-29	146	1	2317	2	2	2317	2317
22	22	AW00011021	Destiny Wilson	41	40-49	New	2013-01-23	145	1	2372	3	3	2372	2372
23	23	AW00011022	Ethan Zhang	41	40-49	New	2013-01-20	145	1	2322	2	2	2322	2322
24	24	AW00011023	Seth Edwards	41	40-49	New	2014-01-14	133	2	122	6	6	61	11
25	25	AW00011024	Russell Xie	41	40-49	New	2013-07-26	139	2	56	6	5	28	56
26	26	AW00011025	Alejandro Beck	74	50 and above	VIP	2013-10-25	136	3	6577	6	6	2192	199
27	27	AW00011026	Harold Sai	74	50 and above	VIP	2013-10-15	136	3	6575	7	7	2191	199
28	28	AW00011027	Jessie Zhao	73	50 and above	VIP	2013-10-24	136	3	6591	9	9	2197	199
29	29	AW00011028	Jill Jimenez	74	50 and above	VIP	2013-10-07	136	3	6474	5	5	2158	196
30	30	AW00011029	Jimmy Moreno	73	50 and above	VIP	2013-11-11	135	3	6565	7	7	2188	193
31	31	AW00011030	Bethany Yuan	67	50 and above	VIP	2013-11-09	135	3	6471	4	4	2157	196
32	32	AW00011031	Theresa Ramos	72	50 and above	VIP	2013-11-13	135	3	6478	6	6	2159	196
33	33	AW00011032	Denise Stone	73	50 and above	VIP	2013-11-08	135	3	6525	10	10	2175	197
34	34	AW00011033	Jaime Nath	67	50 and above	VIP	2013-11-05	135	3	6495	7	7	2165	196
35	35	AW00011034	Ebony Gonzalez	73	50 and above	VIP	2013-11-10	135	3	6491	4	4	2163	196
36	36	AW00011035	Wendy Domingu...	72	50 and above	VIP	2013-11-15	135	3	6451	5	5	2150	195

```
/*
===============================================================================
Product Report
===============================================================================
Purpose:
    - This report consolidates key product metrics and behaviors.


Highlights:
    1. Gathers essential fields such as product name, category, subcategory, and cost.
    2. Segments products by revenue to identify High-Performers, Mid-Range, or Low-Performers.
    3. Aggregates product-level metrics:
       - total orders
       - total sales
       - total quantity sold
       - total customers (unique)
       - lifespan (in months)
    4. Calculates valuable KPIs:
       - recency (months since last sale)
       - average order revenue (AOR)
       - average monthly revenue
===============================================================================
*/
-- =============================================================================
-- Create Report: gold.report_products
-- =============================================================================
IF OBJECT_ID('gold.report_products', 'V') IS NOT NULL
    DROP VIEW gold.report_products;
GO


CREATE VIEW gold.report_products AS


WITH base_query AS (
/*---------------------------------------------------------------------------
1) Base Query: Retrieves core columns from fact_sales and dim_products
---------------------------------------------------------------------------*/
    SELECT
        f.order_number,
        f.order_date,
        f.customer_key,
        f.sales_amount,
        f.quantity,
        p.product_key,
        p.product_name,
        p.category,
        p.subcategory,
        p.cost
    FROM gold.fact_sales f
    LEFT JOIN gold.dim_products p
        ON f.product_key = p.product_key
    WHERE order_date IS NOT NULL  -- only consider valid sales dates
),


product_aggregations AS (
/*---------------------------------------------------------------------------
2) Product Aggregations: Summarizes key metrics at the product level
---------------------------------------------------------------------------*/
SELECT
    product_key,
    product_name,
    category,
    subcategory,
    cost,
    DATEDIFF(MONTH, MIN(order_date), MAX(order_date)) AS lifespan,
    MAX(order_date) AS last_sale_date,
    COUNT(DISTINCT order_number) AS total_orders,
    COUNT(DISTINCT customer_key) AS total_customers,
    SUM(sales_amount) AS total_sales,
    SUM(quantity) AS total_quantity,
    ROUND(AVG(CAST(sales_amount AS FLOAT) / NULLIF(quantity, 0)),1) AS avg_selling_price
FROM base_query


GROUP BY
    product_key,
    product_name,
    category,
    subcategory,
    cost
)


/*---------------------------------------------------------------------------
  3) Final Query: Combines all product results into one output
---------------------------------------------------------------------------*/
SELECT
    product_key,
    product_name,
    category,
    subcategory,
    cost,
    last_sale_date,
    DATEDIFF(MONTH, last_sale_date, GETDATE()) AS recency_in_months,
    CASE
        WHEN total_sales > 50000 THEN 'High-Performer'
        WHEN total_sales >= 10000 THEN 'Mid-Range'
        ELSE 'Low-Performer'
    END AS product_segment,
    lifespan,
    total_orders,
    total_sales,
    total_quantity,
    total_customers,
    avg_selling_price,
    -- Average Order Revenue (AOR)
    CASE
        WHEN total_orders = 0 THEN 0
        ELSE total_sales / total_orders
    END AS avg_order_revenue,


    -- Average Monthly Revenue
    CASE
        WHEN lifespan = 0 THEN total_sales
        ELSE total_sales / lifespan
    END AS avg_monthly_revenue


FROM product_aggregations
```

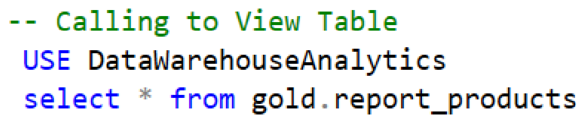


```
    CREATE VIEW gold.report_products AS

    WITH base_query AS (
    /*---------------------------------------------------------------------------
    1) Base Query: Retrieves core columns from fact_sales and dim_products
    ---------------------------------------------------------------------------*/
        SELECT
            f.order_number,
            f.order_date,
            f.customer_key,
            f.sales_amount,
            f.quantity,
            p.product_key,
            p.product_name,
            p.category,
            p.subcategory,
            p.cost
        FROM gold.fact_sales f
        LEFT JOIN gold.dim_products p
            ON f.product_key = p.product_key
        WHERE order_date IS NOT NULL  -- only consider valid sales dates

),

product_aggregations AS (
/*---------------------------------------------------------------------------
2) Product Aggregations: Summarizes key metrics at the product level
---------------------------------------------------------------------------*/
SELECT
    product_key,
    product_name,
    category,
    subcategory,
    cost,
    DATEDIFF(MONTH, MIN(order_date), MAX(order_date)) AS lifespan,
    MAX(order_date) AS last_sale_date,
    COUNT(DISTINCT order_number) AS total_orders,
    COUNT(DISTINCT customer_key) AS total_customers,
    SUM(sales_amount) AS total_sales,
    SUM(quantity) AS total_quantity,
    ROUND(AVG(CAST(sales_amount AS FLOAT) / NULLIF(quantity, 0)),1) AS avg_selling_price
FROM base_query

  FROM base_query

  GROUP BY
      product_key,
      product_name,
      category,
      subcategory,
      cost
  )

  /*---------------------------------------------------------------------------
    3) Final Query: Combines all product results into one output
  ---------------------------------------------------------------------------*/
  SELECT
      product_key,
      product_name,
      category,
      subcategory,
      cost,
      last_sale_date,
      DATEDIFF(MONTH, last_sale_date, GETDATE()) AS recency_in_months,
      CASE
          WHEN total_sales > 50000 THEN 'High-Performer'
          WHEN total_sales >= 10000 THEN 'Mid-Range'
          ELSE 'Low-Performer'
      END AS product_segment,
      lifespan,
      total_orders,
```

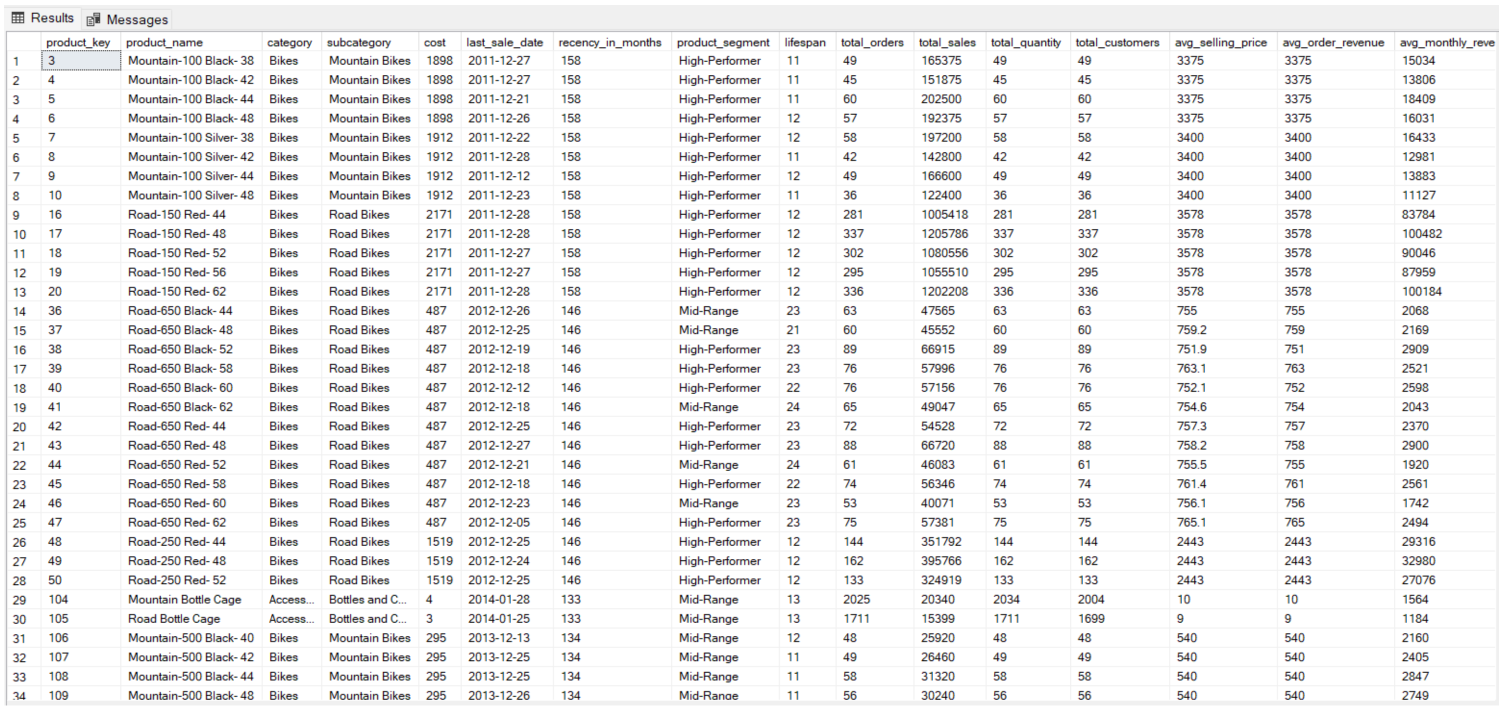


```sql
            total_orders,
            total_sales,
            total_quantity,
            total_customers,
            avg_selling_price,
            -- Average Order Revenue (AOR)
            CASE
                WHEN total_orders = 0 THEN 0
                ELSE total_sales / total_orders
            END AS avg_order_revenue,

            -- Average Monthly Revenue
            CASE
                WHEN lifespan = 0 THEN total_sales
                ELSE total_sales / lifespan
            END AS avg_monthly_revenue

        FROM product_aggregations
```

-- Calling to View Table
USE DataWarehouseAnalytics
select * from gold.report_products



```sql
-- Calling to View Table
 USE DataWarehouseAnalytics
 select * from gold.report_products
```



Results | Messages

	product_key	product_name	category	subcategory	cost	last_sale_date	recency_in_months	product_segment	lifespan	total_orders	total_sales	total_quantity	total_customers	avg_selling_price	avg_order_revenue	avg_monthly_reve
1	3	Mountain-100 Black- 38	Bikes	Mountain Bikes	1898	2011-12-27	158	High-Performer	11	49	165375	49	49	3375	3375	15034
2	4	Mountain-100 Black- 42	Bikes	Mountain Bikes	1898	2011-12-27	158	High-Performer	11	45	151875	45	45	3375	3375	13806
3	5	Mountain-100 Black- 44	Bikes	Mountain Bikes	1898	2011-12-21	158	High-Performer	11	60	202500	60	60	3375	3375	18409
4	6	Mountain-100 Black- 48	Bikes	Mountain Bikes	1898	2011-12-26	158	High-Performer	12	57	192375	57	57	3375	3375	16031
5	7	Mountain-100 Silver- 38	Bikes	Mountain Bikes	1912	2011-12-22	158	High-Performer	12	58	197200	58	58	3400	3400	16433
6	8	Mountain-100 Silver- 42	Bikes	Mountain Bikes	1912	2011-12-28	158	High-Performer	11	42	142800	42	42	3400	3400	12981
7	9	Mountain-100 Silver- 44	Bikes	Mountain Bikes	1912	2011-12-12	158	High-Performer	12	49	166600	49	49	3400	3400	13883
8	10	Mountain-100 Silver- 48	Bikes	Mountain Bikes	1912	2011-12-23	158	High-Performer	11	36	122400	36	36	3400	3400	11127
9	16	Road-150 Red- 44	Bikes	Road Bikes	2171	2011-12-28	158	High-Performer	12	281	1005418	281	281	3578	3578	83784
10	17	Road-150 Red- 48	Bikes	Road Bikes	2171	2011-12-28	158	High-Performer	12	337	1205786	337	337	3578	3578	100482
11	18	Road-150 Red- 52	Bikes	Road Bikes	2171	2011-12-27	158	High-Performer	12	302	1080556	302	302	3578	3578	90046
12	19	Road-150 Red- 56	Bikes	Road Bikes	2171	2011-12-27	158	High-Performer	12	295	1055510	295	295	3578	3578	87959
13	20	Road-150 Red- 62	Bikes	Road Bikes	2171	2011-12-28	158	High-Performer	12	336	1202208	336	336	3578	3578	100184
14	36	Road-650 Black- 44	Bikes	Road Bikes	487	2012-12-26	146	Mid-Range	23	63	47565	63	63	755	755	2068
15	37	Road-650 Black- 48	Bikes	Road Bikes	487	2012-12-25	146	Mid-Range	21	60	45552	60	60	759.2	759	2169
16	38	Road-650 Black- 52	Bikes	Road Bikes	487	2012-12-19	146	High-Performer	23	89	66915	89	89	751.9	751	2909
17	39	Road-650 Black- 58	Bikes	Road Bikes	487	2012-12-18	146	High-Performer	23	76	57996	76	76	763.1	763	2521
18	40	Road-650 Black- 60	Bikes	Road Bikes	487	2012-12-12	146	High-Performer	22	76	57156	76	76	752.1	752	2598
19	41	Road-650 Black- 62	Bikes	Road Bikes	487	2012-12-18	146	Mid-Range	24	65	49047	65	65	754.6	754	2043
20	42	Road-650 Red- 44	Bikes	Road Bikes	487	2012-12-25	146	High-Performer	23	72	54528	72	72	757.3	757	2370
21	43	Road-650 Red- 48	Bikes	Road Bikes	487	2012-12-27	146	High-Performer	23	88	66720	88	88	758.2	758	2900
22	44	Road-650 Red- 52	Bikes	Road Bikes	487	2012-12-21	146	Mid-Range	24	61	46083	61	61	755.5	755	1920
23	45	Road-650 Red- 58	Bikes	Road Bikes	487	2012-12-18	146	High-Performer	22	74	56346	74	74	761.4	761	2561
24	46	Road-650 Red- 60	Bikes	Road Bikes	487	2012-12-23	146	Mid-Range	23	53	40071	53	53	756.1	756	1742
25	47	Road-650 Red- 62	Bikes	Road Bikes	487	2012-12-05	146	High-Performer	23	75	57381	75	75	765.1	765	2494
26	48	Road-250 Red- 44	Bikes	Road Bikes	1519	2012-12-25	146	High-Performer	12	144	351792	144	144	2443	2443	29316
27	49	Road-250 Red- 48	Bikes	Road Bikes	1519	2012-12-24	146	High-Performer	12	162	395766	162	162	2443	2443	32980
28	50	Road-250 Red- 52	Bikes	Road Bikes	1519	2012-12-25	146	High-Performer	12	133	324919	133	133	2443	2443	27076
29	104	Mountain Bottle Cage	Access...	Bottles and C...	4	2014-01-28	133	Mid-Range	13	2025	20340	2034	2004	10	10	1564
30	105	Road Bottle Cage	Access...	Bottles and C...	3	2014-01-25	133	Mid-Range	13	1711	15399	1711	1699	9	9	1184
31	106	Mountain-500 Black- 40	Bikes	Mountain Bikes	295	2013-12-13	134	Mid-Range	12	48	25920	48	48	540	540	2160
32	107	Mountain-500 Black- 42	Bikes	Mountain Bikes	295	2013-12-25	134	Mid-Range	11	49	26460	49	49	540	540	2405
33	108	Mountain-500 Black- 44	Bikes	Mountain Bikes	295	2013-12-25	134	Mid-Range	11	58	31320	58	58	540	540	2847
34	109	Mountain-500 Black- 48	Bikes	Mountain Bikes	295	2013-12-26	134	Mid-Range	11	56	30240	56	56	540	540	2749

Visual Reporting

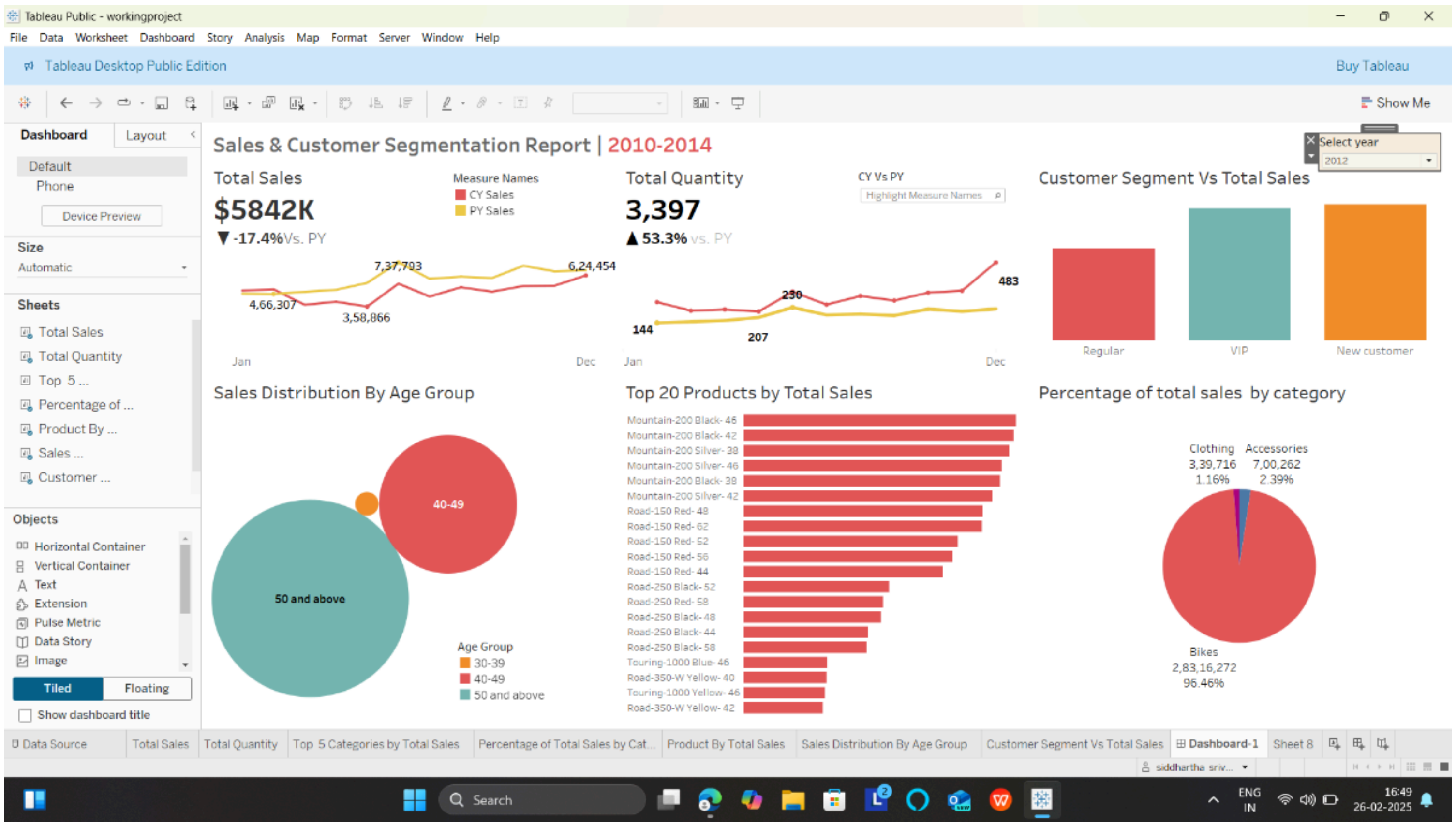


Tableau Public - workingproject
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Tableau Desktop Public Edition
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Layout
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Phone
Device Preview
Size
Automatic
Sheets
Total Sales
Total Quantity
Top 5 ...
Percentage of ...
Product By ...
Sales ...
Customer ...
Objects
Horizontal Container
Vertical Container
Text
Extension
Pulse Metric
Data Story
Image
Tiled
Floating
Show dashboard title
Sales & Customer Segmentation Report | 2010-2014
Select year
2012
Total Sales
$5842K
▼ -17.4%Vs. PY
Measure Names
CY Sales
PY Sales
7,37,793
6,24,454
4,66,307
3,58,866
Jan
Dec
Total Quantity
3,397
▲ 53.3% vs. PY
CY Vs PY
Highlight Measure Names
230
483
144
207
Jan
Dec
Customer Segment Vs Total Sales
Regular
VIP
New customer
Sales Distribution By Age Group
40-49
50 and above
Age Group
30-39
40-49
50 and above
Top 20 Products by Total Sales
Mountain-200 Black- 46
Mountain-200 Black- 42
Mountain-200 Silver- 38
Mountain-200 Silver- 46
Mountain-200 Black- 38
Mountain-200 Silver- 42
Road-150 Red- 48
Road-150 Red- 62
Road-150 Red- 52
Road-150 Red- 56
Road-150 Red- 44
Road-250 Black- 52
Road-250 Red- 58
Road-250 Black- 48
Road-250 Black- 44
Road-250 Black- 58
Touring-1000 Blue- 46
Road-350-W Yellow- 40
Touring-1000 Yellow- 46
Road-350-W Yellow- 42
Percentage of total sales by category
Clothing
3,39,716
1.16%
Accessories
7,00,262
2.39%
Bikes
2,83,16,272
96.46%
Data Source
Total Sales
Total Quantity
Top 5 Categories by Total Sales
Percentage of Total Sales by Cat...
Product By Total Sales
Sales Distribution By Age Group
Customer Segment Vs Total Sales
Dashboard-1
Sheet 8
siddhartha sriv...
Search
ENG
IN
16:49
26-02-2025

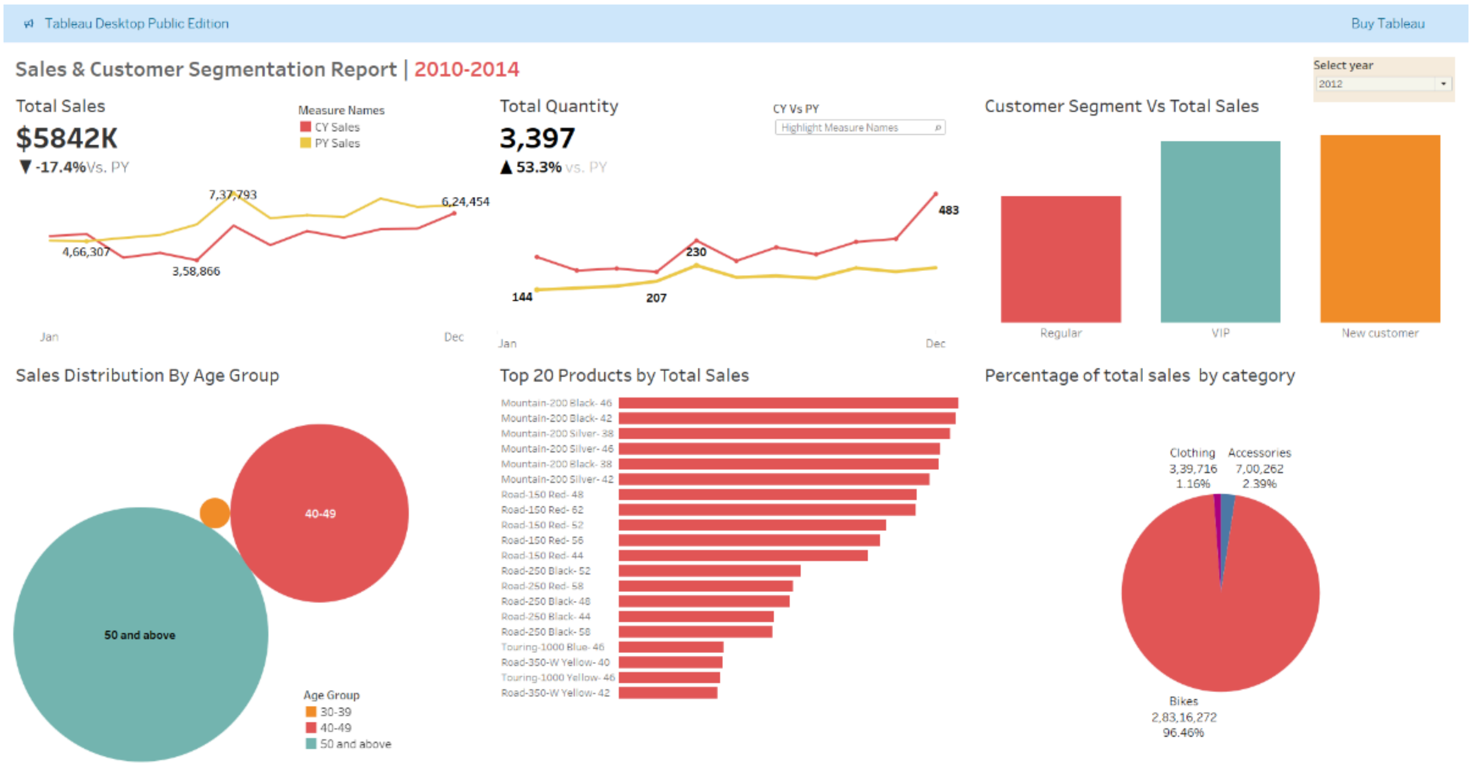
Tableau Desktop Public Edition
Buy Tableau
Sales & Customer Segmentation Report | 2010-2014
Select year
2012
Total Sales
$5842K
▼ -17.4%Vs. PY
Measure Names
CY Sales
PY Sales
7,37,793
6,24,454
4,66,307
3,58,866
Jan
Dec
Total Quantity
3,397
▲ 53.3% vs. PY
CY Vs PY
Highlight Measure Names
230
483
144
207
Jan
Dec
Customer Segment Vs Total Sales
Regular
VIP
New customer
Sales Distribution By Age Group
40-49
50 and above
Age Group
30-39
40-49
50 and above
Top 20 Products by Total Sales
Mountain-200 Black- 46
Mountain-200 Black- 42
Mountain-200 Silver- 38
Mountain-200 Silver- 46
Mountain-200 Black- 38
Mountain-200 Silver- 42
Road-150 Red- 48
Road-150 Red- 62
Road-150 Red- 52
Road-150 Red- 56
Road-150 Red- 44
Road-250 Black- 52
Road-250 Red- 58
Road-250 Black- 48
Road-250 Black- 44
Road-250 Black- 58
Touring-1000 Blue- 46
Road-350-W Yellow- 40
Touring-1000 Yellow- 46
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