

# DATA EXPLORATION AND ANALYSIS

-- 1. calculate total revenue , cost, profit, number of order

```
SELECT
    SUM(UnitPrice*OrderQty) as Total_Revenue,
    SUM(Cost * OrderQty) as Total_Cost,
    (SUM(UnitPrice*OrderQty) - SUM(Cost * OrderQty)) AS Total_Profit,
    COUNT(*) AS Total_order
FROM #SALEFINAL ;
```

100 %

Results

Messages

	Total_Revenue	Total_Cost	Total_Profit	Total_order
1	110373889.3134	97288600.8008	13085288.5126	121317

-- 2. top 5 products have highest revenue?

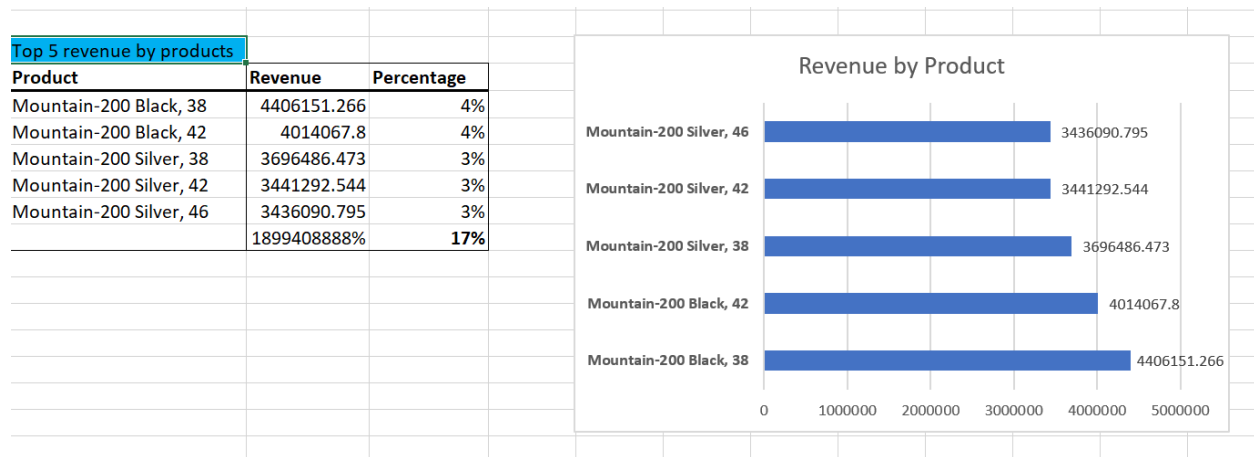
```
SELECT    top 5 p.ProductName,
          SUM(s.UnitPrice*s.OrderQty) AS ProductRevenue
FROM      #SALEFINAL as s
JOIN      #PRODUCT as p
ON        s.ProductID = p.ProductID
GROUP BY  p.ProductName
ORDER BY  ProductRevenue DESC;
```

100 %

Results

Messages

	ProductName	ProductRevenue
1	Mountain-200 Black, 38	4406151.2662
2	Mountain-200 Black, 42	4014067.7999
3	Mountain-200 Silver, 38	3696486.4726
4	Mountain-200 Silver, 42	3441292.5443
5	Mountain-200 Silver, 46	3436090.7946



Insights : 5 products ( total 266 products) above attribute 17% of total Revenue.

--3. Top 5 orders by product ?

```

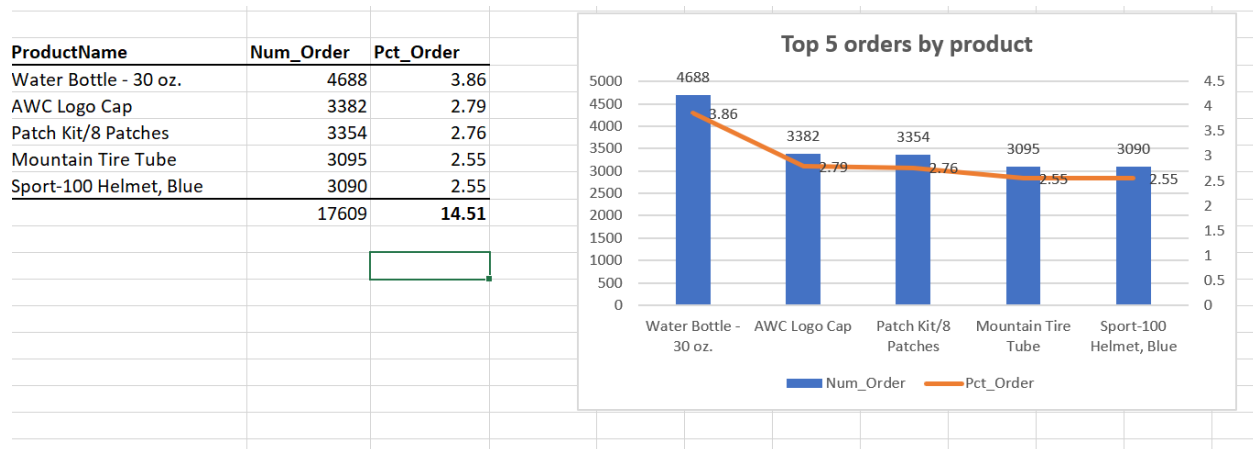
SELECT    top 5 p.ProductName,
          COUNT(s.SalesOrderDetailID) as Num_Order,
          ROUND(CAST(COUNT(s.SalesOrderDetailID) AS float) / (SELECT COUNT(*) FROM
#SALEFINAL) *100,2) AS Pct_Order
FROM      #SALEFINAL as s
JOIN      #PRODUCT as p
ON        s.ProductID = p.ProductID
GROUP BY  p.ProductName
ORDER BY  Num_Order DESC;

```

100 %

Results Messages

	ProductName	Num_Order	Pct_Order
1	Water Bottle - 30 oz.	4688	3.86
2	AWC Logo Cap	3382	2.79
3	Patch Kit/8 Patches	3354	2.76
4	Mountain Tire Tube	3095	2.55
5	Sport-100 Helmet, Blue	3090	2.55



Insights : We have 5 products contribute total 14.5% total orders. So we can have plan to increase production volume of these products.

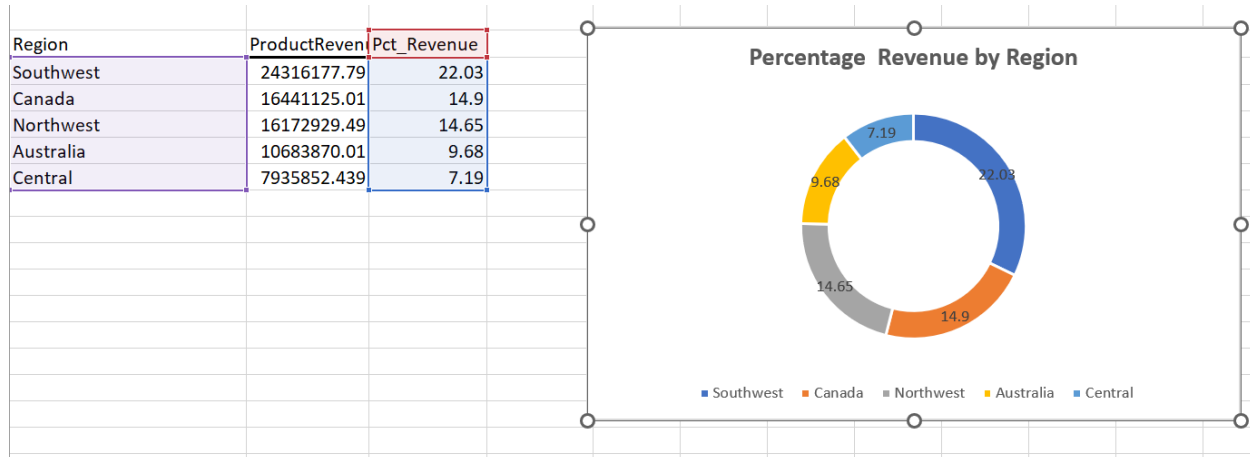
--4. Region has highest revenue?

```

SELECT      top 5 t.Name AS Region,
            SUM(s.UnitPrice*s.OrderQty) AS ProductRevenue,
            ROUND(CAST(SUM(s.UnitPrice*s.OrderQty) AS FLOAT)/(SELECT
SUM(UnitPrice*OrderQty) FROM #SALEFINAL)*100,2) AS Pct_Revenue
FROM        #SALEFINAL as s
JOIN        #TERRITORY as t
ON          s.TerritoryID=t.TerritoryID
GROUP BY    t.Name
ORDER BY    ProductRevenue DESC;

```

100 %			
Results Messages			
	Region	ProductRevenue	Pct_Revenue
1	Southwest	24316177.792	22.03
2	Canada	16441125.0131	14.9
3	Northwest	16172929.4904	14.65
4	Australia	10683870.0063	9.68
5	Central	7935852.4391	7.19



Insight: US is the highest market , follow by Canada. So totally of North America occupy 50% of total revenue.

-- 5. Show the profit margin of each Product Category

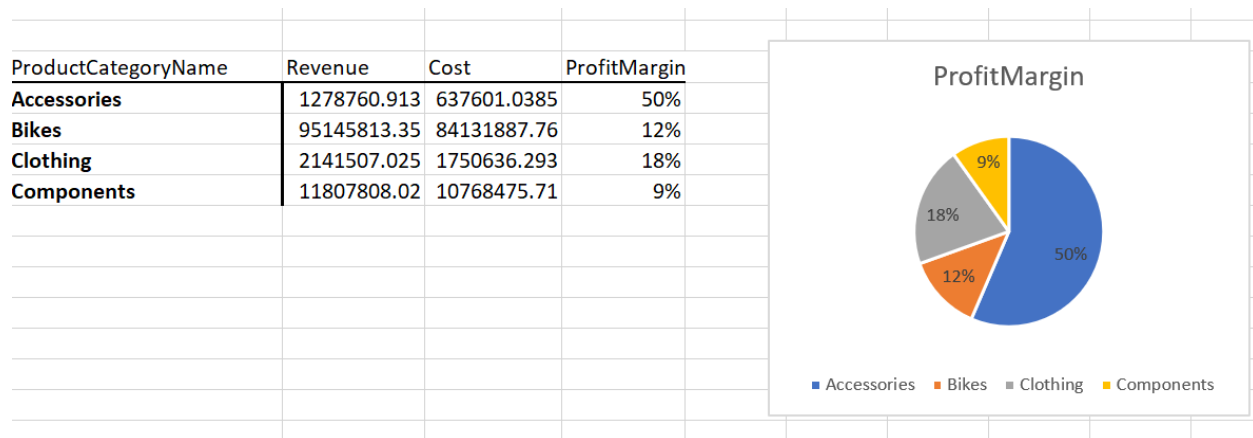
```

SELECT    p.ProductCategoryName,
          SUM(s.UnitPrice*s.OrderQty) AS Revenue,
          SUM(s.OrderQty*s.Cost) AS Cost,
          (SUM(s.UnitPrice*s.OrderQty)-SUM(s.OrderQty*s.Cost)) /
          SUM(s.UnitPrice*s.OrderQty) AS ProfitMargin
FROM      #SALEFINAL as s
JOIN      #PRODUCT as p
ON        s.ProductID = p.ProductID
GROUP BY p.ProductCategoryName;

```

100 %

	ProductCategoryName	Revenue	Cost	ProfitMargin
1	Accessories	1278760.9125	637601.0385	0.5013
2	Bikes	95145813.3519	84131887.7555	0.1157
3	Clothing	2141507.0245	1750636.2931	0.1825
4	Components	11807808.0245	10768475.7137	0.088



Insight: Accessories have the best profit margin with 50%. While the revenue for accessories is low but the profit margin is so high. This mean that we can focus on this category to have more profit.

--7. show the profit,revenue,cost per month

```
SELECT CONVERT(Date,DATEADD(month, DATEDIFF(month, 0,OrderDate), 0)) AS OrderMonth,
        SUM(UnitPrice*OrderQty) AS Total_Revenue,
        SUM(Cost * OrderQty) AS Total_Cost,
        ROUND((SUM(UnitPrice*OrderQty) - SUM(Cost * OrderQty)),2) AS Total_Profit

FROM #SALEFINAL
GROUP BY CONVERT(Date,DATEADD(month, DATEDIFF(month, 0,OrderDate), 0))
--ORDER BY CONVERT(Date,DATEADD(month, DATEDIFF(month, 0,OrderDate), 0))
ORDER BY ROUND((SUM(UnitPrice*OrderQty) - SUM(Cost * OrderQty)),2) DESC;
```

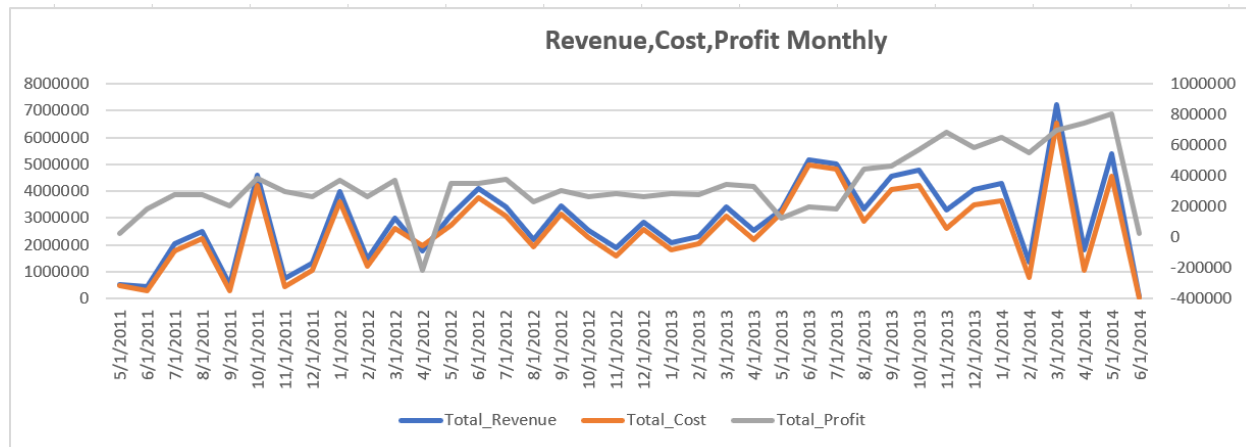
100 %

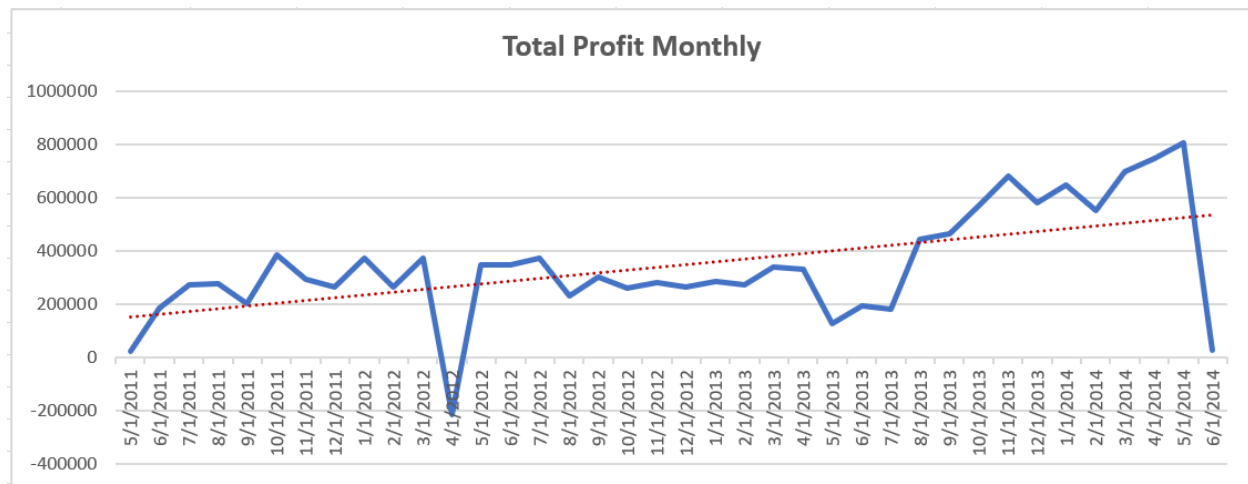
Results Messages

	OrderMonth	Total_Revenue	Total_Cost	Total_Profit
1	2014-05-01	5379614.1726	4574201.4111	805412.76
2	2014-04-01	1797173.923	1050683.7491	746490.17
3	2014-03-01	7238946.1022	6541865.9403	697080.16
4	2013-11-01	3313783.4585	2629991.7129	683791.75
5	2014-01-01	4292364.4301	3642349.1304	650015.30
6	2013-12-01	4078157.0241	3494684.7969	583472.23
7	2013-10-01	4801862.0289	4233302.6729	568559.36
8	2014-02-01	1337725.0356	784695.0782	553029.96
9	2013-09-01	4540212.1965	4076136.3363	464075.86
10	2013-08-01	3345067.5667	2899123.9669	445943.60
11	2011-10-01	4590874.8687	4204792.7604	386082.11
12	2012-07-01	3427252.4011	3052474.7259	374777.68

✓ Query executed successfully.

DESKTOP





Insights : Profit increase throughout the time, which highest at May 2014 reach to 800000.

-- 8. Numer of registrations monthly

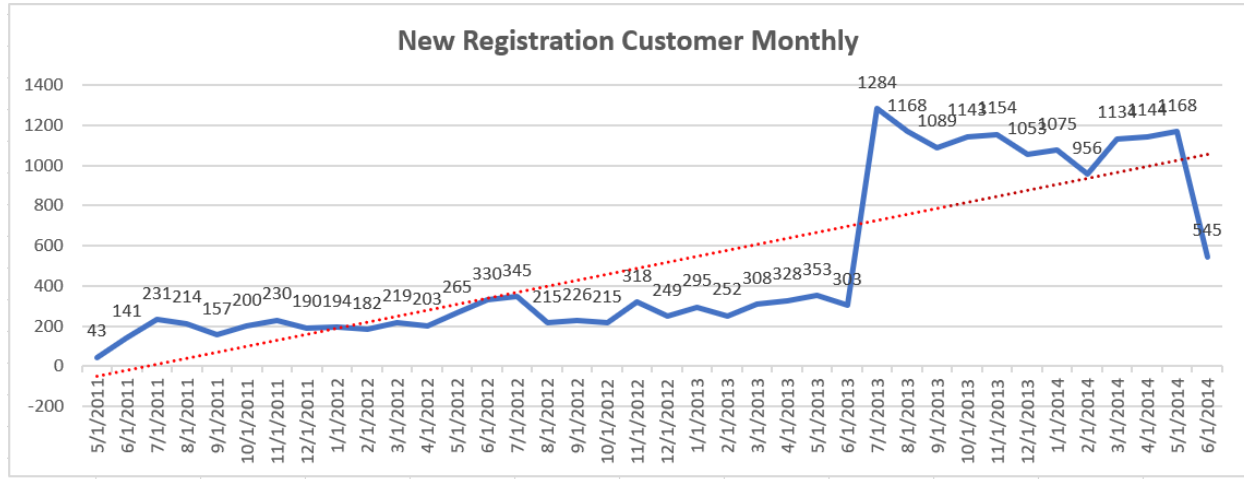
```
WITH reg_date AS
(
    SELECT    CustomerID,
              MIN(CONVERT(Date,OrderDate)) as reg_date
    FROM      #SALEFINAL
    GROUP BY  CustomerID
)

SELECT      CONVERT(Date,DATEADD(month,DATEDIFF(month,0,reg_date),0)) AS OrderMonth,
              COUNT(distinct CustomerID) AS regs
FROM        reg_date
GROUP BY    CONVERT(Date,DATEADD(month,DATEDIFF(month,0,reg_date),0))
ORDER BY    CONVERT(Date,DATEADD(month,DATEDIFF(month,0,reg_date),0))
```

100 %

Results Messages

	OrderMonth	regs
1	2011-05-01	43
2	2011-06-01	141
3	2011-07-01	231
4	2011-08-01	214
5	2011-09-01	157
6	2011-10-01	200
7	2011-11-01	230
8	2011-12-01	190
9	2012-01-01	194
10	2012-02-01	182
11	2012-03-01	219
12	2012-04-01	203



Insight : Number of new registration customer keep stable from May 2011 to June 2013. But, there is a significant increasing after June 2014.

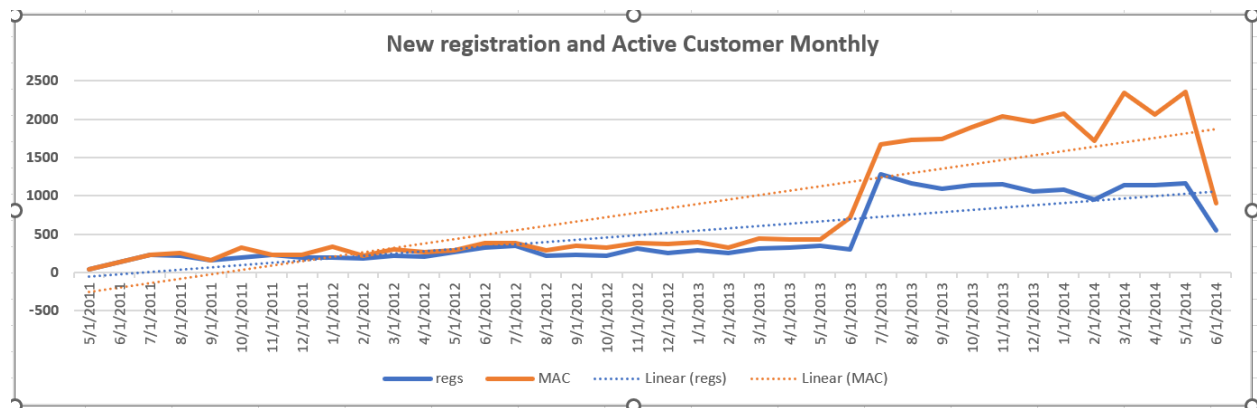


-- 9. Count the monthly active customer

```
SELECT  CONVERT(Date,DATEADD(month,DATEDIFF(month,0,OrderDate),0)) AS OrderMonth,
        COUNT(distinct CustomerID) as MAC
FROM #SALEFINAL
GROUP BY CONVERT(Date,DATEADD(month,DATEDIFF(month,0,OrderDate),0))
ORDER BY CONVERT(Date,DATEADD(month,DATEDIFF(month,0,OrderDate),0))
```

100 %

	OrderMonth	MAC
7	2011-11-01	230
8	2011-12-01	228
9	2012-01-01	336
10	2012-02-01	219
11	2012-03-01	304
12	2012-04-01	269
13	2012-05-01	293
14	2012-06-01	390
15	2012-07-01	385
16	2012-08-01	285
17	2012-09-01	352
18	2012-10-01	321
19	2012-11-01	383



Insight: when combine 2 line charts of New registration and Active customers every month , we can see the good sign after June 2013 as we observe a significant increasing in both new and active customers

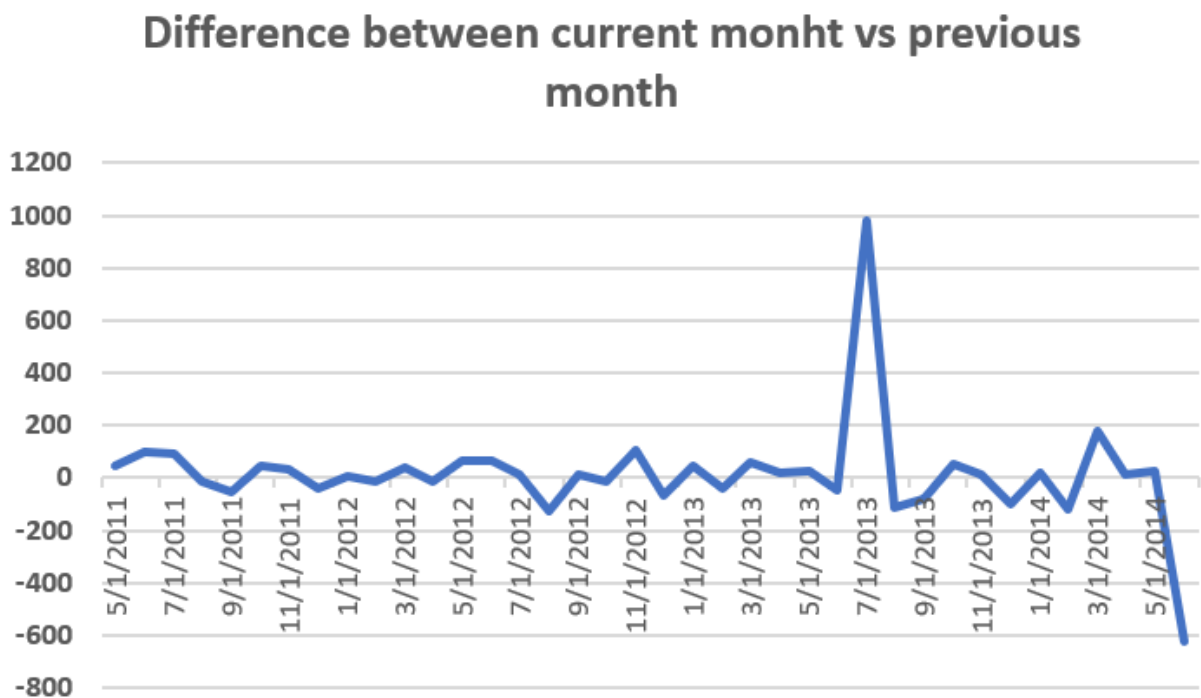
---10. Number of Registrations current month vs previous month

```
WITH reg_date AS
(
    SELECT    CustomerID,
              MIN(CONVERT(Date,OrderDate)) as reg_date
    FROM      #SALEFINAL
    GROUP BY  CustomerID
),
registration AS
(
    SELECT    CONVERT(Date,DATEADD(month,DATEDIFF(month,0,reg_date),0)) AS
OrderMOnth,
              COUNT(distinct CustomerID) AS regs
    FROM      reg_date
    GROUP BY  CONVERT(Date,DATEADD(month,DATEDIFF(month,0,reg_date),0))
)

SELECT    OrderMOnth,
          regs,
          COALESCE(LAG(regs) OVER ( ORDER BY OrderMOnth ASC),0) AS prev_regs
FROM      registration
ORDER BY  OrderMOnth
```

100 %

Results		Messages	
	OrderMonth	regs	prev_regs
1	2011-05-01	43	0
2	2011-06-01	141	43
3	2011-07-01	231	141
4	2011-08-01	214	231
5	2011-09-01	157	214
6	2011-10-01	200	157
7	2011-11-01	230	200
8	2011-12-01	190	230
9	2012-01-01	194	190
10	2012-02-01	182	194
11	2012-03-01	219	182
12	2012-04-01	203	219
13	2012-05-01	265	203



Insight : There is an unstable increase of new registration customer with 2 remarkable month: July 2013 with a lot of new registration with more than 1000 new customers compare to the previous month, while June 2014 witness a large decreasing in new registration.