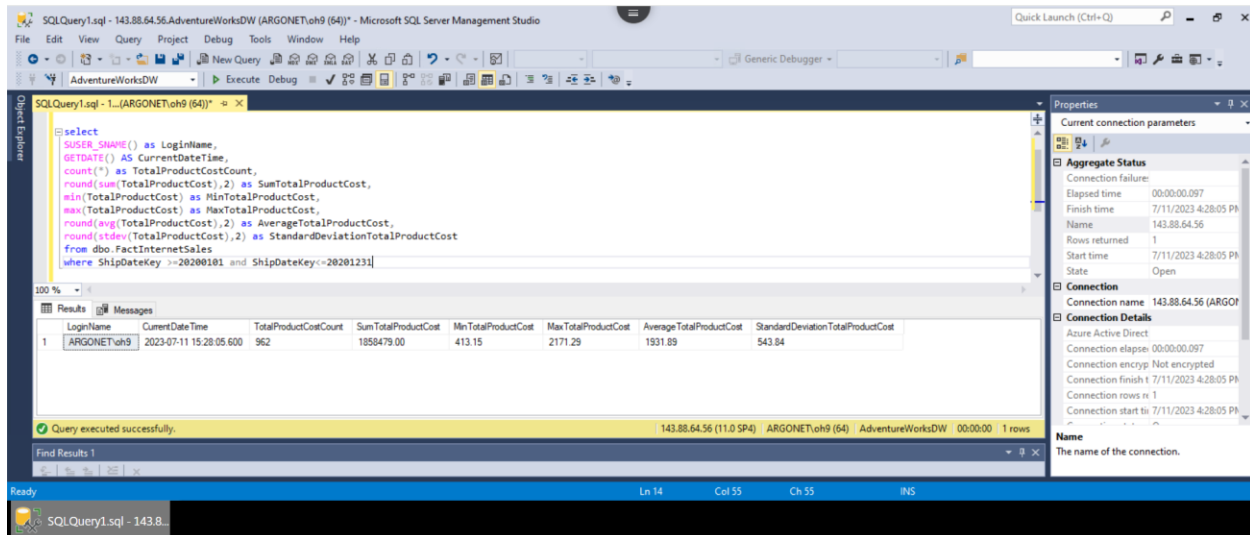


Author: Oscar Hernandez Mata

Summary: I utilized **Microsoft SQL Server Management Studio** to perform comprehensive data analysis on the `dbo.FactInternetSales` for the 2020 calendar year by including aggregate metrics calculation, monthly and regional sales analysis, and high-value sales day identification. Next, I executed queries for count, sum, min, max, average, and standard deviation of `TotalProductCost` for 2020 and 2021, using joins to integrate date and currency dimensions. Finally, I used **Power BI** for bar and pie chart visualizations to display Internet Sales by Fiscal Year for Bikes and `TotalProductCost` by product subcategory, ensuring data accuracy and actionable insights to support strategic decision-making.

I selected the count, sum, min, max, average and standard deviation of the `TotalProductCost` in `dbo.FactInternetSales` for the 2020 calendar year using the `ShipDateKey`. Then I rounded the sum, average and standard deviation to 2 decimal points.



The screenshot displays the Microsoft SQL Server Management Studio interface. The main window shows a query execution result for the query: `select USER_NAME() as LoginName, GETDATE() AS CurrentDateTime, count(*) as TotalProductCostCount, round(sum(TotalProductCost),2) as SumTotalProductCost, min(TotalProductCost) as MinTotalProductCost, max(TotalProductCost) as MaxTotalProductCost, round(avg(TotalProductCost),2) as AverageTotalProductCost, round(stddev(TotalProductCost),2) as StandardDeviationTotalProductCost from dbo.FactInternetSales where ShipDateKey >=20200101 and ShipDateKey<=20201231`. The result set is displayed in a table with the following columns: `LoginName`, `CurrentDateTime`, `TotalProductCostCount`, `SumTotalProductCost`, `MinTotalProductCost`, `MaxTotalProductCost`, `AverageTotalProductCost`, and `StandardDeviationTotalProductCost`. The data row shows: `ARGONET\ah9`, `2023-07-11 15:28:05.600`, `962`, `1858479.00`, `413.15`, `2171.29`, `1931.89`, and `543.84`. The status bar at the bottom indicates 'Query executed successfully.' and '143.88.64.56 (11.0 SP4) ARGONET\ah9 (64) AdventureWorksDW 00:00:00 1 rows'.

LoginName	CurrentDateTime	TotalProductCostCount	SumTotalProductCost	MinTotalProductCost	MaxTotalProductCost	AverageTotalProductCost	StandardDeviationTotalProductCost
ARGONET\ah9	2023-07-11 15:28:05.600	962	1858479.00	413.15	2171.29	1931.89	543.84

In the next step I selected the count, sum, min, max, average and standard deviation of the `TotalProductCost` in `dbo.FactInternetSales` for the 2020 calendar year using the `ShipDate`. Similarly, I rounded the sum, average and standard deviation to 2 decimal points.

SQLQuery1.sql - 143.88.64.56:AdventureWorksDW (ARGONET\oh9 (64)) - Microsoft SQL Server Management Studio

```

select
  USER_NAME() as LoginName,
  GETDATE() AS CurrentDateTime,
  count(*) as TotalProductCostCount,
  round(sum(TotalProductCost),2) as SumTotalProductCost,
  min(TotalProductCost) as MinTotalProductCost,
  max(TotalProductCost) as MaxTotalProductCost,
  round(avg(TotalProductCost),2) as AverageTotalProductCost,
  round(stddev(TotalProductCost),2) as StandardDeviationTotalProductCost
from dbo.FactInternetSales
where year(ShipDate)=2020

```

LoginName	CurrentDateTime	TotalProductCostCount	SumTotalProductCost	MinTotalProductCost	MaxTotalProductCost	AverageTotalProductCost	StandardDeviationTotalProductCost
ARGONET\oh9	2023-07-11 15:38:04.920	962	1858479.00	413.15	2171.29	1931.89	543.84

Query executed successfully. 143.88.64.56 (11.0 SP4) ARGONET\oh9 (64) AdventureWorksDW 00:00:00 1 rows

Next, I selected the count, sum, min, max, average and standard deviation of the TotalProductCost in dbo.FactInternetSales for ShipDates in the 2020 fiscal year using a join to the Date dimension. In addition, I rounded the sum, average and standard deviation to 2 decimal points.

SQLQuery1.sql - 143.88.64.56:AdventureWorksDW (ARGONET\oh9 (64)) - Microsoft SQL Server Management Studio

```

select
  USER_NAME() as LoginName,
  GETDATE() AS CurrentDateTime,
  count(*) as TotalProductCostCount,
  round(sum(TotalProductCost),2) as SumTotalProductCost,
  min(TotalProductCost) as MinTotalProductCost,
  max(TotalProductCost) as MaxTotalProductCost,
  round(avg(TotalProductCost),2) as AverageTotalProductCost,
  round(stddev(TotalProductCost),2) as StandardDeviationTotalProductCost
from dbo.FactInternetSales as s
inner join dbo.DimDate as d on s.OrderDateKey=d.DateKey
where year(ShipDate)=2020

```

LoginName	CurrentDateTime	TotalProductCostCount	SumTotalProductCost	MinTotalProductCost	MaxTotalProductCost	AverageTotalProductCost	StandardDeviationTotalProductCost
ARGONET\oh9	2023-07-11 16:01:05.337	962	1858479.00	413.15	2171.29	1931.89	543.84

Query executed successfully. 143.88.64.56 (11.0 SP4) ARGONET\oh9 (64) AdventureWorksDW 00:00:00 1 rows

This time I selected the count, and sum of the TotalProductCost in dbo.FactInternetSales per month for the 2021 fiscal year using a join to the Date dimension grouping by the SpanishMonthName and ordering by the yearMonth. Then I rounded the sum to 2 decimal points.

SQLQuery1.sql - 143.88.64.56:AdventureWorksDW (ARGONET\oh9 (64)) - Microsoft SQL Server Management Studio

```

select
    d.SpanishMonthName as OrderMonthName,
    USER_NAME() as LoginName,
    GETDATE() AS CurrentDateTime,
    count(*) as TotalProductCostCount,
    round(sum(TotalProductCost),2) as SumTotalProductCost
from dbo.FactInternetSales as s
inner join dbo.DimDate as d on s.OrderDateKey=d.DateKey
where d.FiscalYear=2021
group by d.SpanishMonthName, d.yearMonth
order by d.yearMonth

```

OrderMonthName	LoginName	CurrentDateTime	TotalProductCostCount	SumTotalProductCost
Julio	ARGONET\oh9	2023-07-11 16:18:25.047	253	298352.17
Agosto	ARGONET\oh9	2023-07-11 16:18:25.047	281	324555.81
Septiembre	ARGONET\oh9	2023-07-11 16:18:25.047	198	208370.23
Octubre	ARGONET\oh9	2023-07-11 16:18:25.047	229	243254.24
Noviembre	ARGONET\oh9	2023-07-11 16:18:25.047	193	198658.62
Diciembre	ARGONET\oh9	2023-07-11 16:18:25.047	330	336142.33
Finen	ARGONET\oh9	2023-07-11 16:18:25.047	244	255137.74

Query executed successfully. 143.88.64.56 (11.0 SP4) ARGONET\oh9 (64) AdventureWorksDW 00:00:00 12 rows

In this step I selected all of the currencies from the currency dimension table. I used a left outer join to the FactInternetSales table to get the count and sum of the TotalProductCost. Then I used the ISNULL function to prevent any NULLs in the output.

SQLQuery1.sql - 143.88.64.56:AdventureWorksDW (ARGONET\oh9 (64)) - Microsoft SQL Server Management Studio

```

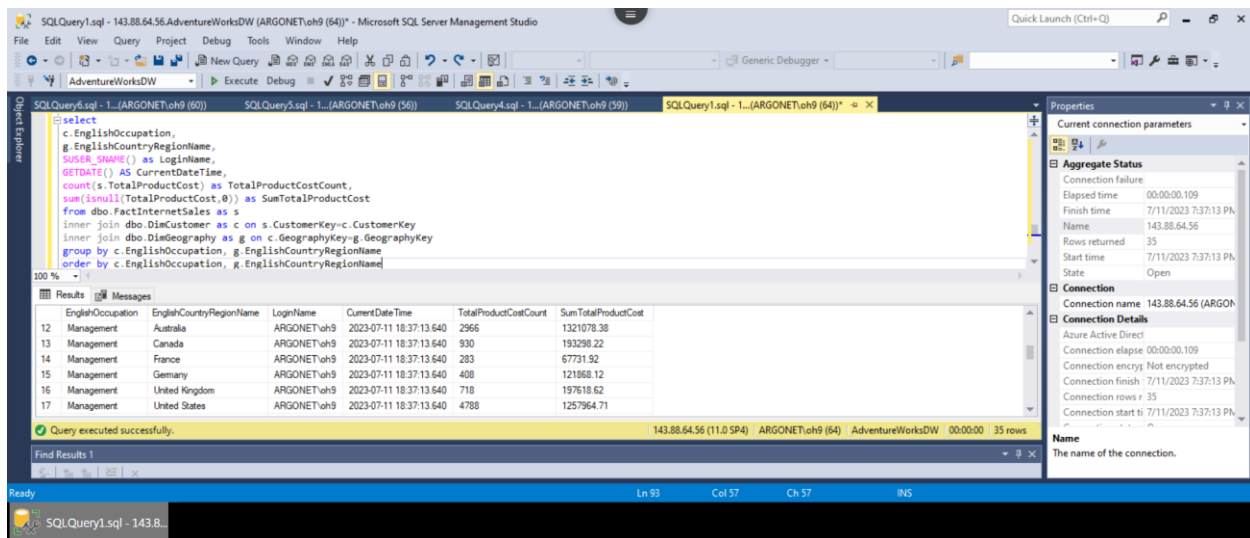
select
    c.CurrencyName,
    table AdventureWorksDW.dbo.DimCurrency AS c
    count(s.TotalProductCost) as TotalProductCostCount,
    sum(isnull(TotalProductCost,0)) as SumTotalProductCost
from dbo.DimCurrency as c
left outer join dbo.FactInternetSales as s
on c.CurrencyKey=s.CurrencyKey
group by c.CurrencyName
order by c.CurrencyName

```

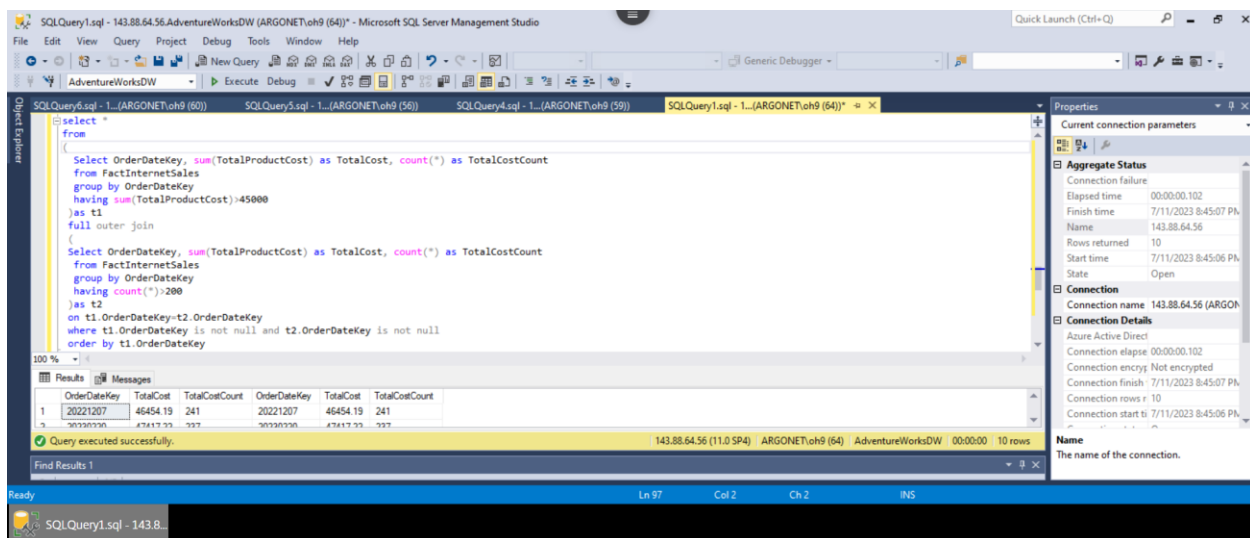
CurrencyName	LoginName	CurrentDateTime	TotalProductCostCount	SumTotalProductCost
Afghani	ARGONET\oh9	2023-07-11 18:04:00.213	0	0.00
Algerian Dinar	ARGONET\oh9	2023-07-11 18:04:00.213	0	0.00
Argentine Peso	ARGONET\oh9	2023-07-11 18:04:00.213	0	0.00
Armenian Dram	ARGONET\oh9	2023-07-11 18:04:00.213	0	0.00
Azerbaijani Manat	ARGONET\oh9	2023-07-11 18:04:00.213	0	0.00
Australian Dollar	ARGONET\oh9	2023-07-11 18:04:00.213	12988	5371042.26
Brazilian Real	ARGONET\oh9	2023-07-11 18:04:00.213	0	0.00

Query executed successfully. 143.88.64.56 (11.0 SP4) ARGONET\oh9 (64) AdventureWorksDW 00:00:00 105 rows

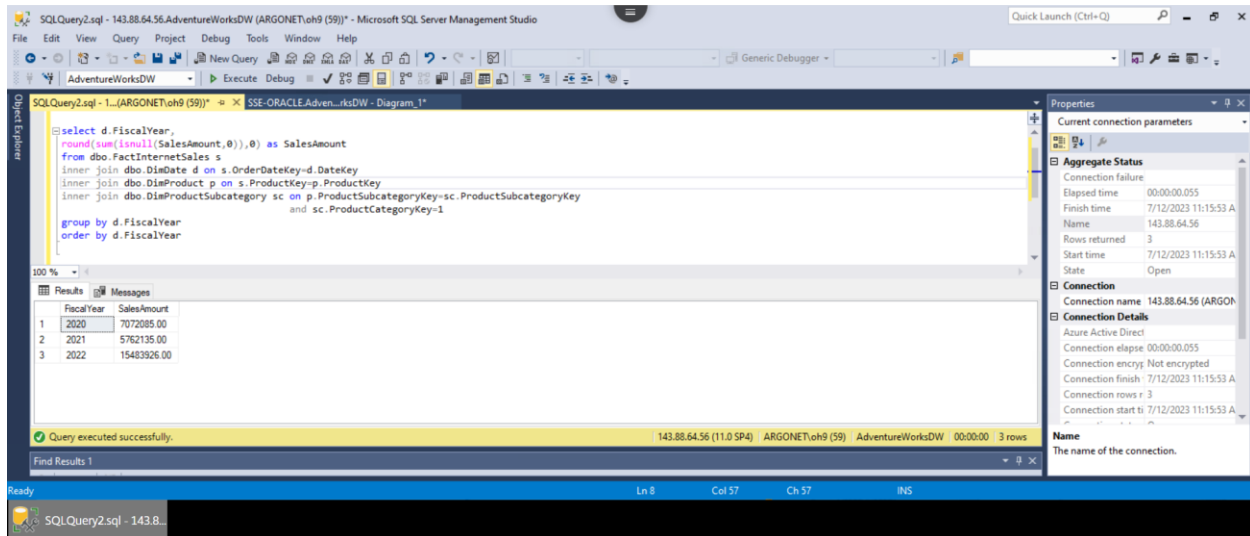
Subsequently I selected the count, and sum of the TotalProductCost in dbo.FactInternetSales per EnglishCountryRegionName and EnglishOccupation grouping by the EnglishCountryRegionName and EnglishOccupation and Ordering by the EnglishCountryRegionName and EnglishOccupation.



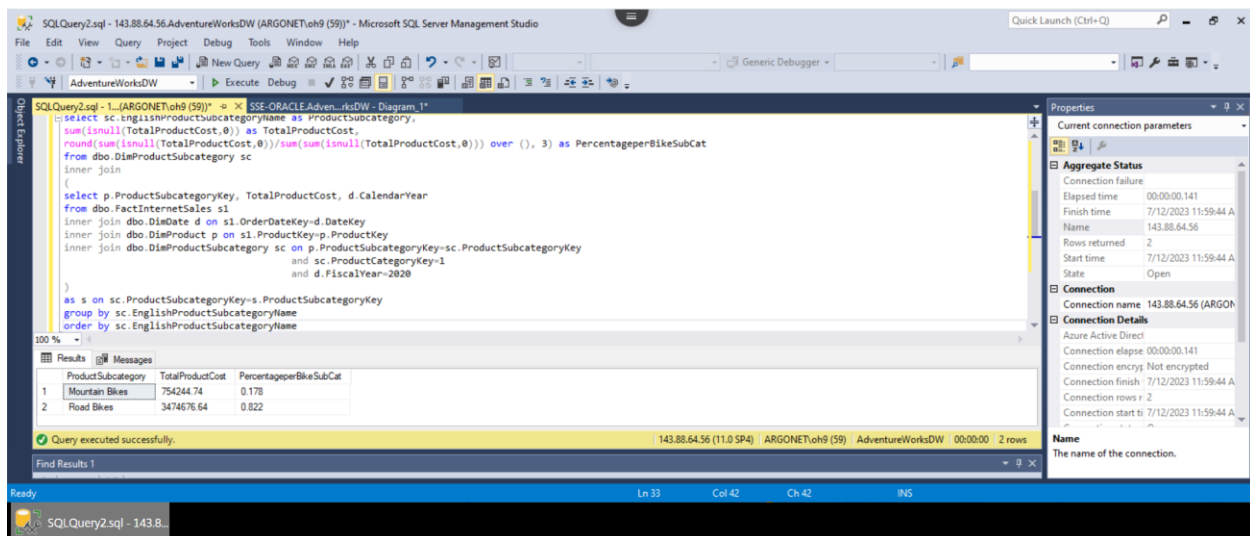
The next task was to find the days where the sum of the total product cost exceeds 45,000 and count exceeds 200. For that I used a full outer join to join 2 subqueries and the HAVING clause.

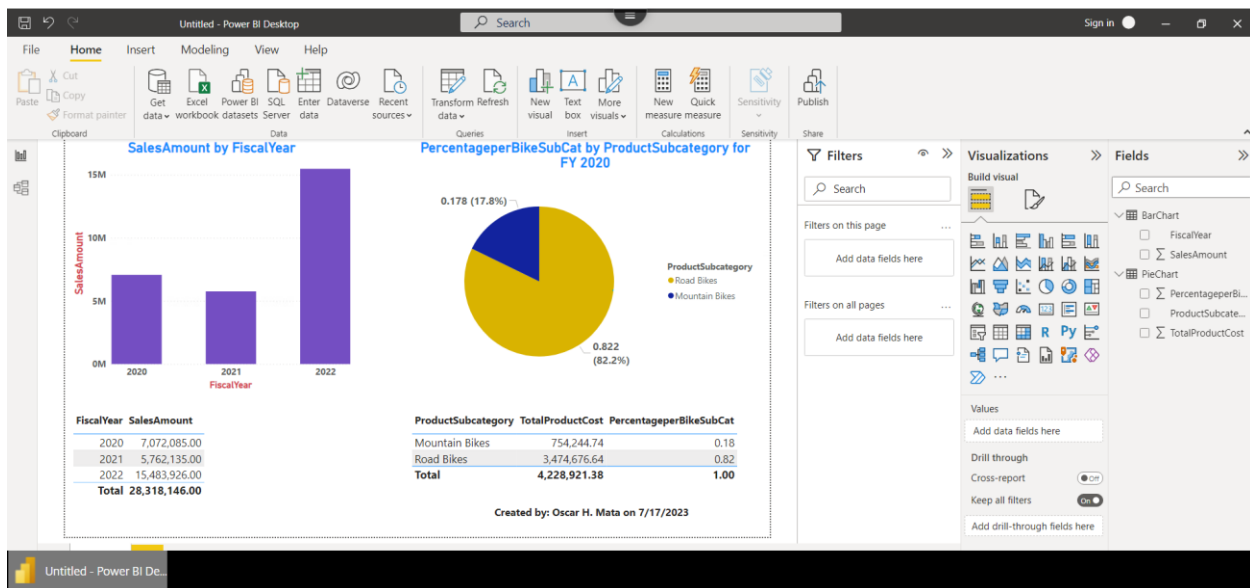


In order to visualize results I wrote a query for a **bar chart** using Internet Sales by Fiscal Year for Bikes. I displayed the fiscal year on the horizontal axis and the total product cost on the vertical axis (See graphics below).



Finally, I wrote a query for a **pie chart** using TotalProductCost and percentage per product subcategory for fiscal year 2020 (See graphics below).





Graphics conducted using Power BI (bar chart on the left and pie chart on the right).

Does the total for the subcategories for fiscal year 2020 equal the amount for fiscal year 2020 in the previous query? I concluded that the subcategories for fiscal year 2020 do match the amount for fiscal year 2020 in Sales Amount. $1341121.04 + 5730963.67 = 7072084.71$, which rounded is 7072085 (See snip below).

