



Welcome to my Pharma Data Analysis project done as part of my Internship with PSYLIQ. This program helps unlock SQL's potential in understanding data.

Pharma Data Assessment Details

1. **Retrieve all columns for all records in the dataset.**

```
SELECT * FROM Pharma_data;
```

2. **How many unique countries are represented in the dataset?**

```
SELECT COUNT(DISTINCT Country) AS UniqueCountriesCount  
FROM Pharma_data;
```

3. **Select the names of all the customers on the 'Retail' channel.**

```
SELECT Customer_Name  
FROM Pharma_data  
WHERE Channel = 'Retail';
```

4. **Find the total quantity sold for the 'Antibiotics' product class.**

```
SELECT SUM(Quantity) AS TotalQuantity  
FROM Pharma_data  
WHERE Product_Class = 'Antibiotics';
```

5. **List all the distinct months present in the dataset.**

```
SELECT DISTINCT Month  
FROM Pharma_data;
```

6. **Calculate the total sales for each year.**

```
SELECT Year,SUM(Sales) AS TotalSales  
FROM Pharma_data  
GROUP BY Year;
```

7. Find the customer with the highest sales value.

```
SELECT TOP 1 Customer_Name, MAX(Sales) AS HighestSales
FROM Pharma_data
GROUP BY Customer_Name
ORDER BY HighestSales DESC;
```

8. Get the names of all employees who are Sales Reps and are managed by 'James Goodwill'.

```
SELECT DISTINCT(a.[Name_of_Sales_Rep])
FROM pharma_data a
JOIN pharma_data m ON a.Manager = m.[Name_of_Sales_Rep]
WHERE m.Manager = 'James Goodwill'
AND a.[Sales_Team] = 'Sales Rep';
```

9. Retrieve the top 5 cities with the highest sales.

```
SELECT TOP 5 City, SUM(Sales) AS HighestSales
FROM Pharma_data
GROUP BY City
ORDER BY HighestSales DESC;
```

10. Calculate the average price of products in each sub-channel.

```
SELECT Sub_channel, AVG(Price) AS AveragePrice
FROM Pharma_data
GROUP BY Sub_channel;
```

11. Join the 'Employees' table with the 'Sales' table to get the name of the Sales Rep and the corresponding sales records.

```
--SELECT e.Employee_Name, p.*
--FROM Employees AS e
--JOIN pharma_data AS p ON e.Name_of_Sales_Rep = p.Name_of_Sales_Rep;
```

12. Retrieve all sales made by employees from ' Rendsburg ' in the year 2018.

```
SELECT *
FROM Pharma_data
WHERE City = 'Rendsburg' AND Year = '2018';
```

13. Calculate the total sales for each product class, for each month, and order the results by year, month, and product class.

```
SELECT Year, Month, Product_Class
FROM Pharma_data
GROUP BY Year, Month, Product_Class
ORDER BY Year, Month, Product_Class;
```

14. Find the top 3 sales reps with the highest sales in 2019.

```
SELECT TOP 3 Name_of_Sales_Rep,SUM(Sales) AS HighestSales
FROM Pharma_data
WHERE Year = 2019
GROUP BY Name_of_Sales_Rep
ORDER BY HighestSales;
```

15. Calculate the monthly total sales for each sub-channel, and then calculate the average monthly sales for each sub-channel over the years.

```
WITH MonthlyTotalSales AS (
    SELECT
        Year AS SalesYear,
        Month AS SalesMonth,
        Sub_channel,
        SUM(Sales) AS MonthlySales
    FROM Pharma_data
    GROUP BY Year,Month,Sub_channel
),
AverageMonthlySales AS (
    SELECT
        Sub_channel,
        AVG(MonthlySales) AS AvgMonthlySales
    FROM MonthlyTotalSales
    GROUP BY Sub_channel
)
SELECT
    Sub_channel,
    AVG(AvgMonthlySales) AS AverageMonthlySales
FROM AverageMonthlySales
GROUP BY Sub_channel;
```

16. Create a summary report that includes the total sales, average price, and total quantity sold for each product class.

```
SELECT
    Product_Class,
    SUM(Sales) AS TotalSales,
    AVG(Price) AS AveragePrice,
    SUM(Quantity) AS TotalQuantity
FROM Pharma_data
GROUP BY Product_Class;
```

17. Find the top 5 customers with the highest sales for each year.

```
WITH RankedSales AS (  
    SELECT Customer_Name, Year AS SalesYear, SUM(Sales) AS TotalSales,  
    ROW_NUMBER() OVER(PARTITION BY Year ORDER BY SUM(Sales) DESC) AS  
SalesRank  
    FROM Pharma_data  
    GROUP BY Customer_Name, Year  
)  
SELECT Customer_Name, SalesYear, TotalSales  
FROM RankedSales  
WHERE SalesRank <=5;
```

18. Calculate the year-over-year growth in sales for each country.

```
WITH SalesByYear AS (  
    SELECT Year As SalesYear, Country, SUM(Sales) AS TotalSales  
    FROM Pharma_data  
    GROUP BY Year, Country  
)  
SELECT Country, SalesYear, TotalSales,  
LAG(TotalSales) OVER(PARTITION BY Country ORDER BY SalesYear) AS  
PreviousYearSales,  
CASE  
    WHEN LAG(TotalSales) OVER(PARTITION BY Country ORDER BY SalesYear) IS  
NULL THEN NULL  
    ELSE (TotalSales - LAG(TotalSales) OVER(PARTITION BY Country ORDER BY  
SalesYear)) / LAG(TotalSales) OVER (PARTITION BY Country ORDER BY SalesYear)  
*100  
END AS YearOverYearGrowth  
FROM SalesByYear  
ORDER BY Country, SalesYear;
```

19. List the months with the lowest sales for each year.

```
SELECT Year, Month, MIN(Sales) AS LowestSales  
FROM Pharma_data  
GROUP BY Year, Month  
ORDER BY Year;
```

20. Calculate the total sales for each sub-channel in each country, and then find the country with the highest total sales for each sub-channel.

```
WITH SubChannelSales AS (
    SELECT
        Country, Sub_channel, SUM(Sales) AS TotalSales,
        RANK() OVER(PARTITION BY Sub_Channel ORDER BY SUM(Sales) DESC) AS
        CountryRank
    FROM Pharma_data
    GROUP BY Country, Sub_Channel
)
SELECT Country, Sub_Channel, TotalSales, CountryRank
FROM SubChannelSales
WHERE CountryRank = 1
ORDER BY Sub_Channel;
```

Results From SQL Server

Results

Messages

Distributor	Customer_Name	City	Country	Latitude	Longitude	Channel	Sub_channel	Product_Name	Product_Class	Quantity	Price	Sales	Month	Year	Name_of_Sales_Rep	Manager	Sales_Team	
1	Gottlieb-Cruickshank	Zieme, Doyle and Kunze	Lublin	Poland	51.2333	22.5667	Hospital	Private	Topipizole	Mood Stabilizers	4	368	1472	January	2018	Mary Gerrard	Britanny Bold	Delta
2	Gottlieb-Cruickshank	Feest PLC	Ålbewice	Poland	53.4167	18.4333	Pharmacy	Retail	Choriotisin	Antibiotics	7	591	4137	January	2018	Jessica Smith	Britanny Bold	Delta
3	Gottlieb-Cruickshank	Medhurst-Beer Pharmaceutical Limited	Rybnik	Poland	50.0833	18.5	Pharmacy	Institution	Acantaine	Antibiotics	30	66	1980	January	2018	Steve Pepple	Tracy Banks	Bravo
4	Gottlieb-Cruickshank	Barton Ltd Pharma Plc	Czeładzi	Poland	50.3333	19.0833	Hospital	Private	Lioleline Reflruvax	Analgesics	6	435	2610	January	2018	Mary Gerrard	Britanny Bold	Delta
5	Gottlieb-Cruickshank	Keeling LLC Pharmacy	Olsztyn	Poland	53.78	20.4942	Pharmacy	Retail	Oymotroban Fex...	Analgesics	20	458	9160	January	2018	Anne Wu	Britanny Bold	Delta
6	Gottlieb-Cruickshank	Runte-Maquard Pharmaceutical Ltd	Olecko	Poland	54.0333	22.5	Hospital	Private	Pazofenac	Mood Stabilizers	5	123	615	January	2018	Thompson Crawford	James Goo...	Alfa
7	Gottlieb-Cruickshank	Blick, Paschoa and Schowalter	Inowro...	Poland	52.7958	18.2611	Pharmacy	Retail	Symbitrim	Analgesics	20	536	107...	January	2018	Sheila Stones	Britanny Bold	Delta
8	Gottlieb-Cruickshank	Leuschke PLC Pharmacy	Ciecha...	Poland	52.8817	20.6106	Pharmacy	Retail	Morphizolid Tian...	Mood Stabilizers	5	742	3710	January	2018	Mary Gerrard	Britanny Bold	Delta

UniqueCountriesCount

2

Customer_Name

TotalQuantity

4154321.8570179

Month

September

July

August

November

March

January

October

May

Year

TotalSales

2018

3506897353.6

2019

2930937132.77983

2020

2659672415

2017

2701480740.81559

Customer_Name

HighestSales

Maz-Kutach Pharma Plc

74205600

Name_of_Sales_Rep

City

HighestSales

Query executed successfully.

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City HighestSales	
1	Butzbach 93561780
2	Baersweiler 64890501
3	Cuxhaven 56006680
4	Friedberg 52183634.6
5	Altenburg 50885320
Sub_channel AveragePrice	
1	Institution 411
2	Government 413
3	Retail 412
4	Private 410
Distributor Customer_Name City Country Latitude Longitude Channel Sub_channel Product_Name Product_Class Quantity Price Sales Month Year Name_of_Sales_Rep Manager Sales_Team	
1	Gerlach LLC Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Interfester Antibiotics 2 62 124 January 2018 Sheila Stones Britanny Bold Delta
2	Koss Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Proprolamide... Mood Stabilizers 180 391 70380 January 2018 Thompson Crawford James Goodwill Alfa
3	Gerlach LLC Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Araxetine Antibiotics 3 450 1350 January 2018 Jimmy Grey Alisha Cordwell Charlie
4	Gerlach LLC Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Aprerae Antipretics 3 726 2178 March 2018 Jimmy Grey Alisha Cordwell Charlie
5	Daugherty Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Seviodem Antipretics 10 663 6630 March 2018 Mary Gerrard Britanny Bold Delta
6	Gerlach LLC Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Aspiravir Silo... Antibiotics 5 549 2745 May 2018 Stella Owen Alisha Cordwell Charlie
7	Gerlach LLC Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Synbitrim Analgesics 12 536 6432 May 2018 Mary Gerrard Britanny Bold Delta
8	Gerlach LLC Barton Ltd Pharm Rendsburg Germany 54.3044 9.6644 Pharmacy Institution Nacrae Antibiotics 2 393 786 May 2018 Alan Ray James Goodwill Alfa
Year Month Product_Class	
1	2017 April Analgesics
2	2017 April Antibiotics
3	2017 April Antimalarial
4	2017 April Antipretics
5	2017 April Antiseptics
6	2017 April Mood Stabili...
7	2017 Aug... Analgesics
8	2017 Aug... Antibiotics

Name_of_Sales_Rep		HighestSales
1	Thompson Crawford	189365359.178331
2	Mary Gernard	194240491.91093
3	Anne Wu	201172379.664681

Sub_channel		AverageMonthlySales
1	Retail	69647852.0914831
2	Institution	59900317.464489
3	Government	63713338.4988745
4	Private	52550734.4908911

Product_Class	TotalSales	AveragePrice	TotalQuantity
1	Antipiretics	1883305591.17649	469
2	Antimalarial	1487455333.90992	337
3	Antibiotics	1793277238.54387	419
4	Mood Stabili...	2058909622.63676	400
5	Analgesics	2371515114.28388	432
6	Antiseptics	2237524743.6455	412

Customer_Name	SalesYear	TotalSales
1	Parker, Green and Emmerich Pharma Plc	2020
2	Torphy, Pfeffer and Jakubowski Pharm	2020
3	Stehr-Champlin Pharmacy	2020
4	Runoffsson, Swaniaewski and Jaskolski ...	2020
5	Goldner-Tilman Pharm	2020
6	Mraz-Kutch Pharma Plc	2019
7	Zemlak-Wilting	2019
8	Streich PLC	2019

Country	SalesYear	TotalSales	PreviousYearSales	YearOverYearGrowth
1	Germany	2017	2701480740.81559	NULL
2	Germany	2018	2826017951.8	2701480740.81559
3	Germany	2019	2930937132.77983	2826017951.8
4	Germany	2020	2659672415	2930937132.77983
5	Poland	2018	680879801.8	NULL

Year	Month	LowestSales
1	2017	October
2	2017	June
3	2017	April
4	2017	July
5	2017	Dece...
6	2017	January
7	2017	Febru...
8	2017	March

Year			Month	LowestSales
1	2017	October	-301600	
2	2017	June	-984000	
3	2017	April	-702900	
4	2017	July	-176400	
5	2017	Dece...	-133250	
6	2017	January	-29325	
7	2017	Febru...	-502400	
8	2017	March	-345600	

Country	Sub_Channel	TotalSales	CountryRank
1	Germany	Government	2920913380.94598
2	Germany	Institution	2719605147.49547
3	Germany	Private	2315301981.56277
4	Germany	Retail	3162287330.39119