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Project Abstract

Welcome to my immersive SQL-driven Pharma Data Analysis project done as part of my Data Analyst Internship with PSYLIQ, where the fusion of data science and healthcare opens doors to a realm of possibilities! This program is a gateway to unlocking the potential of SQL in dissecting and comprehending healthcare data. As an MSc grad in Physics passionate about software development and Data Analytics, this internship promises an invaluable opportunity to wield my skills and broaden my horizons. Throughout this enriching journey, we embark on an exploration of a multifaceted dataset encompassing pivotal elements such as Pharma_data (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). This comprehensive real-world dataset mirrors the intricacies of healthcare data, serving as a robust platform to sharpen your SQL prowess.

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 TotalQuantitySold
FROM pharma_data
WHERE [Product Class] = 'Electronics';
```

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 AS a
JOIN pharma_data AS m ON a.Manager = m.[Name of Sales Rep]
WHERE m.Manager = 'John Smith'
AND a.[Sales Team] = 'Sales Rep';
```

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

```
SELECT top 5 City, SUM(Sales) AS TotalSales
FROM pharma_data
GROUP BY City
ORDER BY TotalSales 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 *
FROM pharma_data
WHERE City = 'Rendsburg'
AND YEAR([year]) = 2018;
```

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

```
--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;
```

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

```
SELECT *
FROM pharma_data
WHERE City = 'Rendsburg'
AND YEAR([year]) = 2018;

SELECT
    [Year],
    [Month],
    [Product Class],
    SUM(Sales) AS TotalSales
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 TotalSales
FROM pharma_data
WHERE YEAR([year]) = 2019
GROUP BY [Name of Sales Rep]
ORDER BY TotalSales DESC
```

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

```
SELECT top 3
    [Name of Sales Rep],
    SUM(Sales) AS TotalSales
FROM pharma_data
WHERE YEAR([year]) = 2019
GROUP BY [Name of Sales Rep]
ORDER BY TotalSales DESC
```

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

```
;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];
```

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

```
SELECT
    [Product Class],
    SUM(Sales) AS TotalSales,
    AVG(Price) AS AveragePrice,
    SUM(Quantity) AS TotalQuantity
FROM pharma_data
GROUP BY [Product Class];
```

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

```
;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;
```

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

```

;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;

```

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,
        ROW_NUMBER() OVER(PARTITION BY [Sub-Channel] ORDER BY SUM(Sales) DESC) AS
CountryRank
    FROM
        Pharma_data -- Replace 'YourTableName' with your actual table name
    GROUP BY
        Country,
        [Sub-channel]
)
SELECT
    Country,
    [Sub-channel],
    TotalSales
FROM
    SubChannelSales
WHERE
    CountryRank = 1 ORDER BY [Sub-Channel];

```

RESULTS from SQL Server

Object Explorer

Connect

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Results Messages

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Databases

System Databases

master

Tables

System Tables

External Tables

Graph Tables

dbo.data_dictionary\$

dbo.employee_survey_data

dbo.GENERAL_DATA

dbo.manager_survey_data

dbo.Pharma_data

Columns

Distributor (nvarchar(

Customer Name (nvar

City (nvarchar(255), n

Country (nvarchar(255

Latitude (float, null)

Longitude (float, null)

Channel (nvarchar(25

Sub-channel (nvarcha

Product Name (nvard

Product Class (nvarc

Quantity (float, null)

Price (float, null)

Sales (float, null)

Month (nvarchar(255)

Year (float, null)

Name of Sales Rep (n

Manager (nvarchar(25

Sales Team (nvarchar

Keys

Constraints

Triggers

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Object Explorer

Connect

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master

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dbo.data_dictionary\$

dbo.employee_survey_data

dbo.GENERAL_DATA

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dbo.Pharma_data

Columns

Distributor (nvarchar(

Customer Name (nvar

City (nvarchar(255), n

Country (nvarchar(255

Latitude (float, null)

Longitude (float, null)

Channel (nvarchar(25

Sub-channel (nvarcha

Product Name (nvard

Product Class (nvarc

Quantity (float, null)

Price (float, null)

Sales (float, null)

Month (nvarchar(255)

Year (float, null)

Name of Sales Rep (n

Manager (nvarchar(25

Sales Team (nvarchar

Keys

Constraints

Triggers

Results

Messages

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Sub-channel AveragePrice

1 Institution 412.323580686728

2 Government 415.166565671868

3 Private 407.404106220802

4 Retail 409.583620282223

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

Year Month Product Class TotalSales

5 2017 April Antiseptics 26023969

6 2017 April Mood Stabl... 23802971

7 2017 Febr... Analgesics 32478774

8 2017 Febr... Antibiotics 38999789

9 2017 Febr... Antimalarial 22944087

10 2017 Febr... Antipiretics 37327196

11 2017 Febr... Antiseptics 39137404

12 2017 Febr... Mood Stabl... 38108639

Name of Sales Rep TotalSales

Sub-channel AverageMonthlySales

1 Government 20287540.8125

2 Institution 21138475.05

3 Private 22377592.625

4 Retail 23451784.6875

Product Class TotalSales AveragePrice TotalQuantity

1 Mood Stabilizers 251680301 401.767704839483 640685

2 Antimalarial 173946104 336.956598864711 508100

3 Analgesics 249676552 430.496897468728 586699

4 Antipiretics 217104762 468.683821749607 469580

5 Antiseptics 2725208... 409.135476756023 668003.2

6 Antibiotics 231157726 418.528268129771 558295

Customer Name SalesYear TotalSales

1 Torp-Fisher 2017 12365561

2 Leannon-West Pharmaceutical Limited 2017 10157604

3 Rutherford and Sons Pharm 2017 7011679

Query executed successfully.

CRYPTOGRAPHIC-A\SQLEXPRESS ... CRYPTOGRAPHIC-A\Crypto... master 00:00:02 57,624 rows

