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**SQL for Data Science/MF 1224**

**Year 1 : Semester 2**

**Group Assignment**

TASK 02

30.11.2023

**THE REPORT OF  
THE CRIMES IN LONDON  
METROPOLITAN  
POLICE AREAS &  
DASHBOARD DESIGN**

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## 1. INTRODUCTION

This report comprises to demonstrate a comprehensive dashboard within the London metropolitan police areas. The 32 London boroughs make up the Metropolitan Police center; however, the major financial center known as the City of London proper is under the jurisdiction of the City of London Police, a separate law enforcement agency. For every sort of crime, the data is categorized by financial year and can be further refined by Borough and Basic Command Unit (BCU). UK MPS (Metropolitan Police Service) Monthly Crime Datasets provide the raw data which includes data regarding crimes from year 2019 to 2021. Crimes in the metropolitan police areas of London are included in MPS crime data.

Key metrics and Insights into the crime statistics within the Metropolitan Police area has been illustrated in this report. Using T-SQL procedures, this study outlines the systematic creation of tables, views, and stored procedures to effectively manipulate and retrieve data from this large dataset. The steps includes the Download and Review the data set, Create the data base, Import raw data into the SQL server, Connect power BI with SQL server, data cleaning, transformation and building relationships and illustrate a dashboard using maps, line chart, bar chart, KPI s and donut charts. The purpose of creating a dash board is to present visualizations that tells a coherent story about the UK Metropolitan Police Service for the users. This report provide understandable well ordered description about creating a dashboard.

## 02. EXPLORATION OF DATA

### 2.1. Data set review

London Metropolitan Police Areas crime incidents are included in the UK MPS monthly crime data set.

The central business district of London, known as the City of London proper, is not included in the metropolitan police areas; instead, it is under the jurisdiction of the City of London Police, a separate law enforcement agency.

The monthly crimes data set contain both numeric and string data addressed under column names:

Month\_Year, Brough\_SNT, Area Name, Area Code, Crime Type, Crime Subtype, Measure, Financial Year, Count, Outliers.

The column names of metropolitan police crimes statistics consists as follows:

1. Month, year- depicts when the crimes happened the date of the crime
2. Brough\_SNT – the safest Neighbor hoods team
3. Area Name
4. Area Code
5. Crime Type
6. Crime Subtype
7. Measures (offenses, statistics, outcomes)
8. Financial Year
9. Count
10. Outliers- Depicts whether outliers occurred or not ( T/F)

Find more details about the Metropolitan Police on this web page.

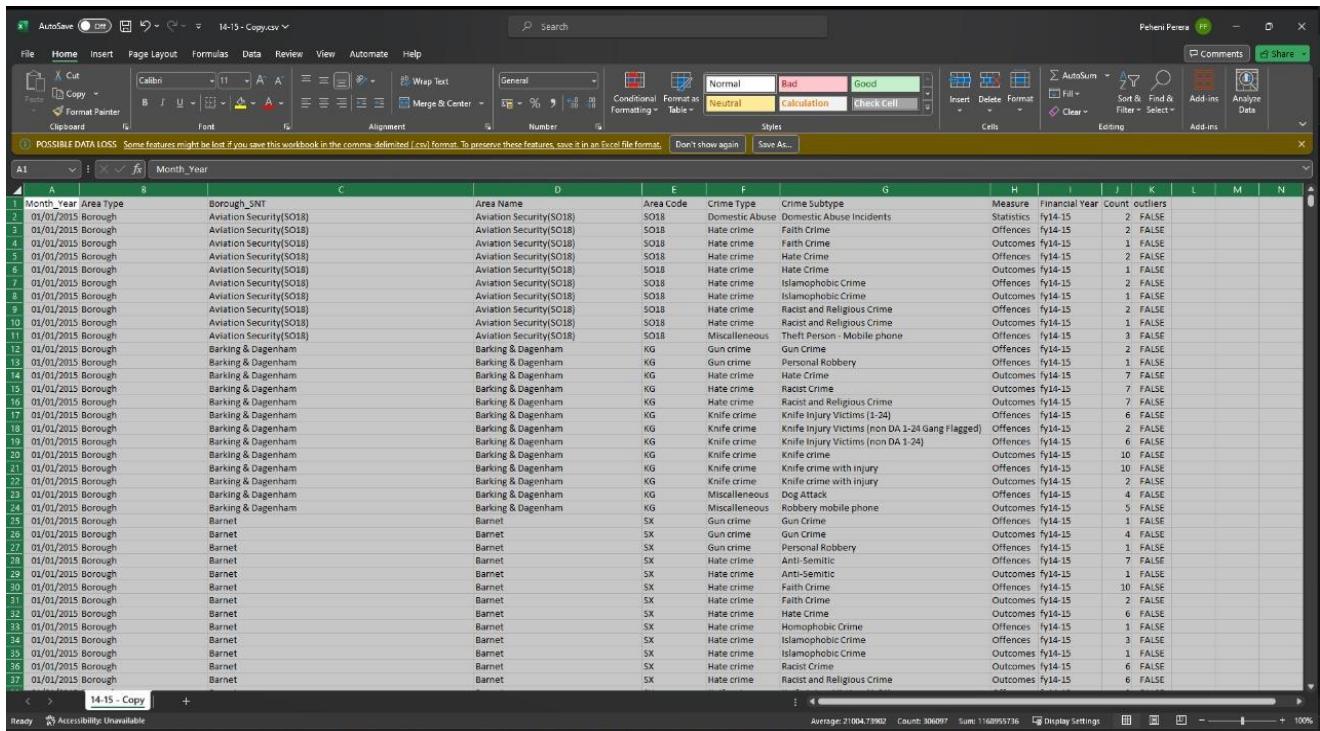
(<https://www.met.police.uk/> )

### 2.2. Importing Data form Excel to a Microsoft SQL Server Database

1. Download the datasets from the below link.

(<https://data.london.gov.uk/dataset/mps-monthly-crime-dahboard-data>)

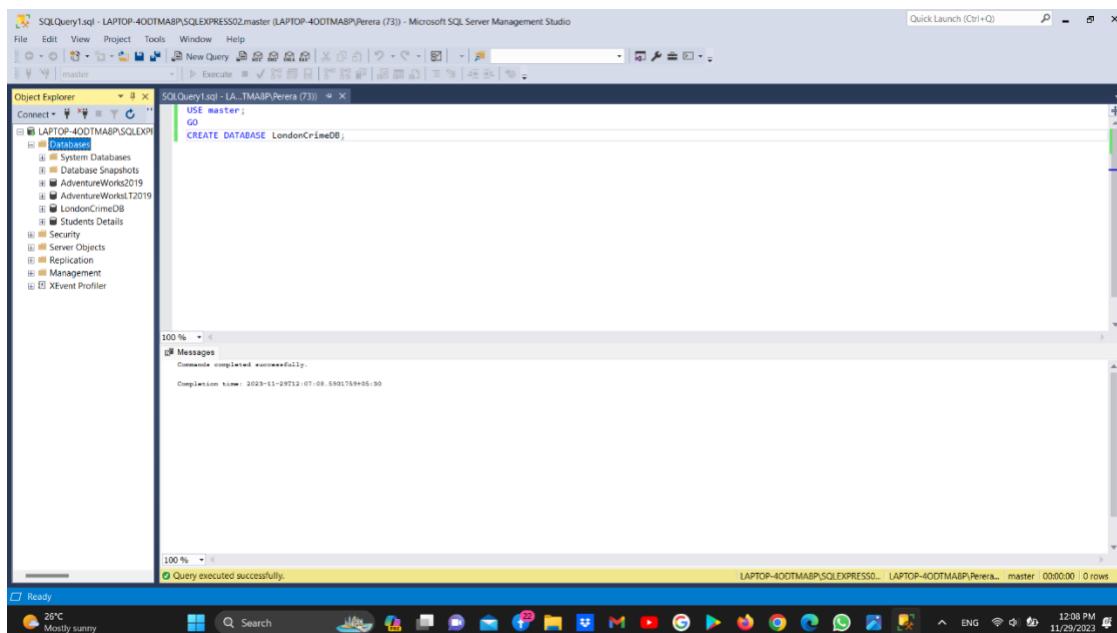
## 2. Remove the outliers, blank spaces, not known values from the databases.



The screenshot shows a Microsoft Excel spreadsheet titled "14-15 - Copy.csv". The data consists of approximately 30,000 rows and 15 columns. The columns include: Month, Year, Area Type, Area Name, Area Code, Crime Type, Crime Subtype, Measure, Financial Year, Count, and Outliers. The data is heavily populated with various crime categories and their subtypes across different London boroughs and years. A warning message at the top of the sheet reads: "POSSIBLE DATA LOSS: Some features might be lost if you save this workbook in the comma-delimited (.csv) format. To preserve these features, save it in an Excel file format." The bottom status bar indicates an average of 21004.73902, a count of 306097, and a sum of 1168955736.

## 3. Open SSMS and connect to SQL Server instance.

## 4. Create a new database called “LondonCrimeDB”.



The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. In the Object Explorer, a database named "LondonCrimeDB" is being created under the "master" database. The script window contains the following T-SQL code:

```

USE master;
GO
CREATE DATABASE LondonCrimeDB;

```

The "Messages" pane displays the output of the command:

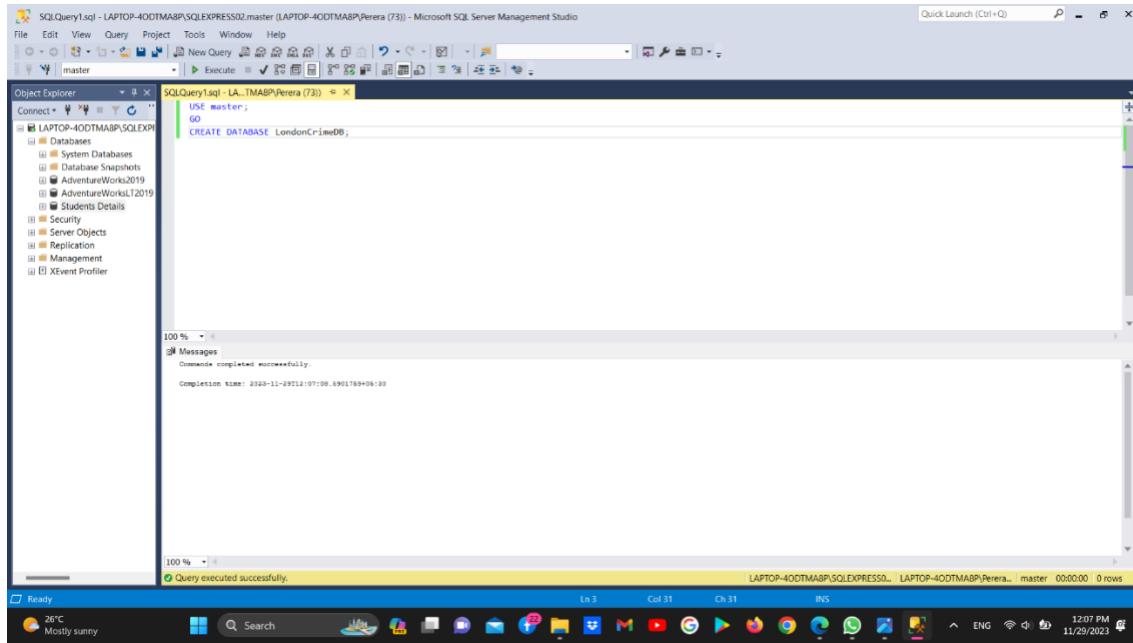
```

Command completed successfully.

Completion time: 2023-11-29T12:07:08.5905759+05:30

```

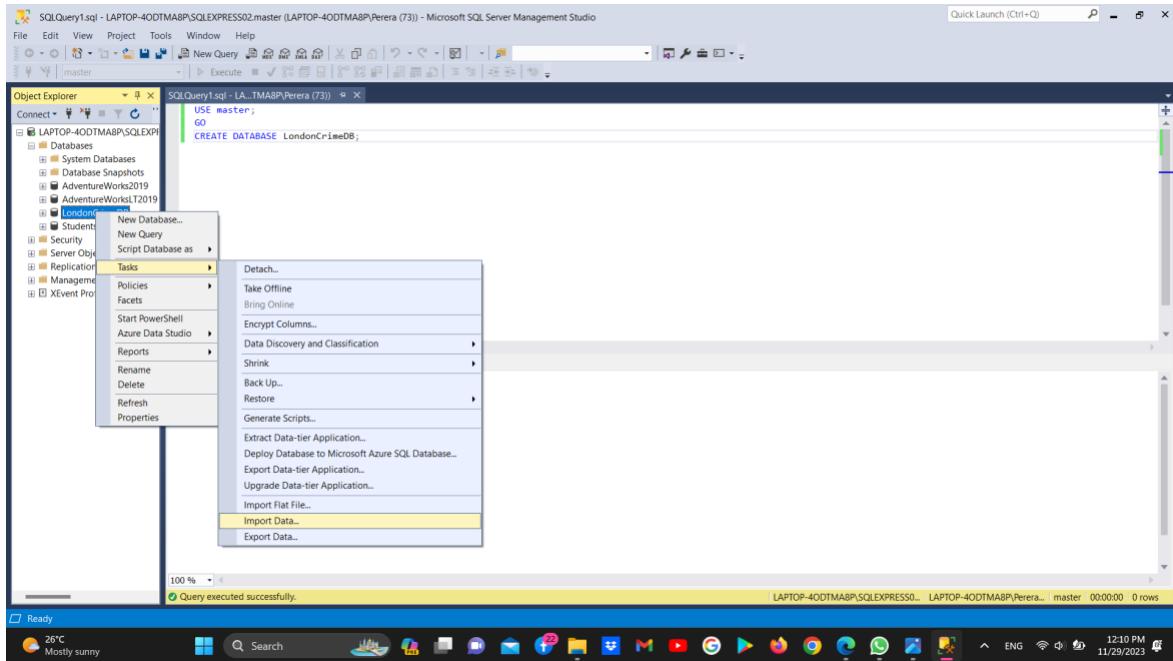
The status bar at the bottom right shows the connection details: "LAPTOP-40DTMAP\Perera (73) - Microsoft SQL Server Management Studio" and "master 00:00:00 0 rows". The taskbar at the bottom shows the system tray with a weather icon (26°C, Mostly sunny) and other application icons.



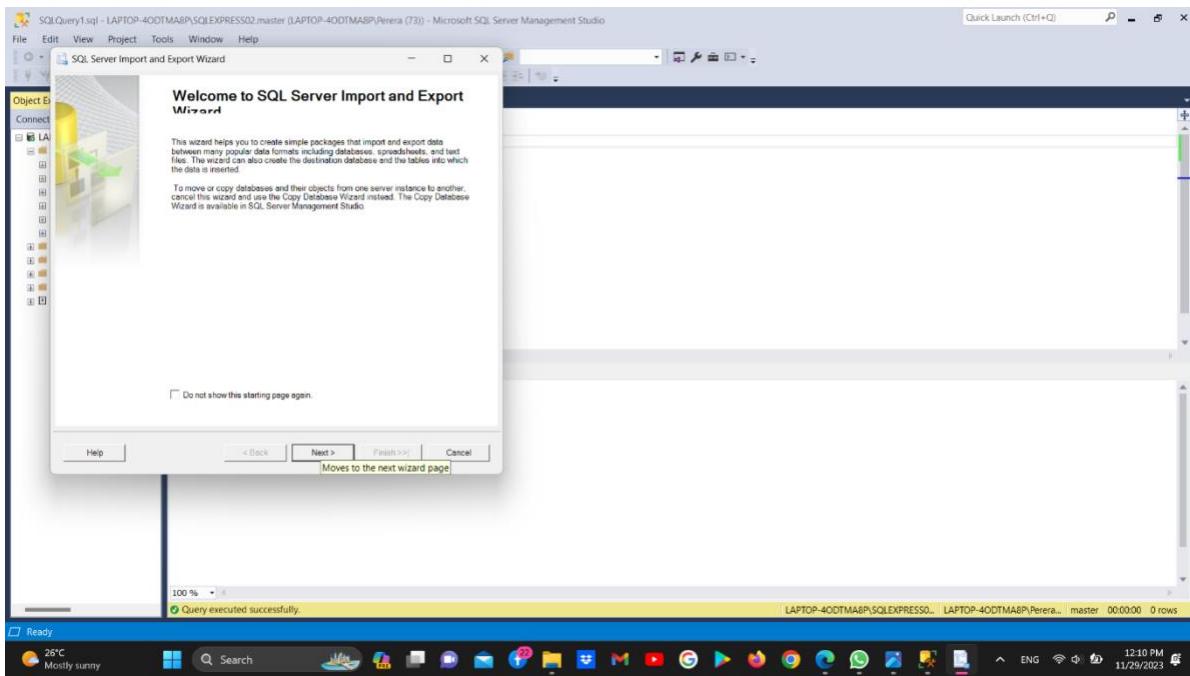
## 5. Import the CSV file to the SQL Server database “LondonCrimeDB”.

- a) Right-click the ‘LondonCrimeDB’ database.

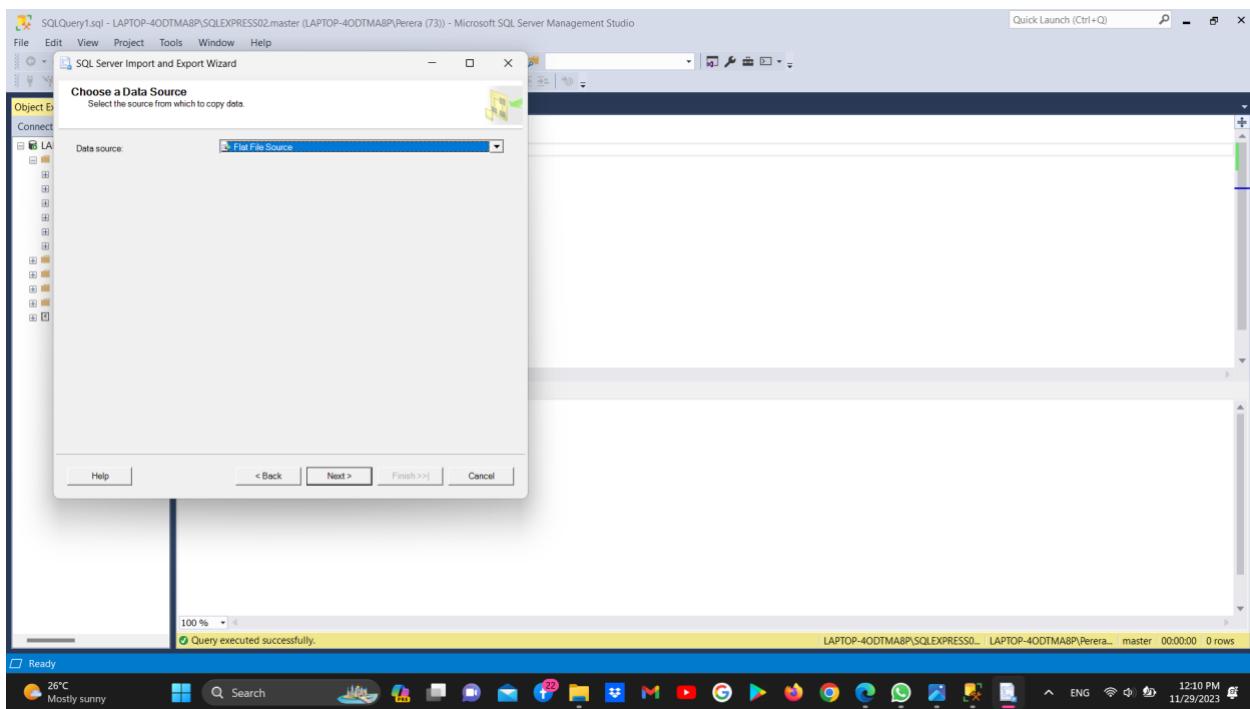
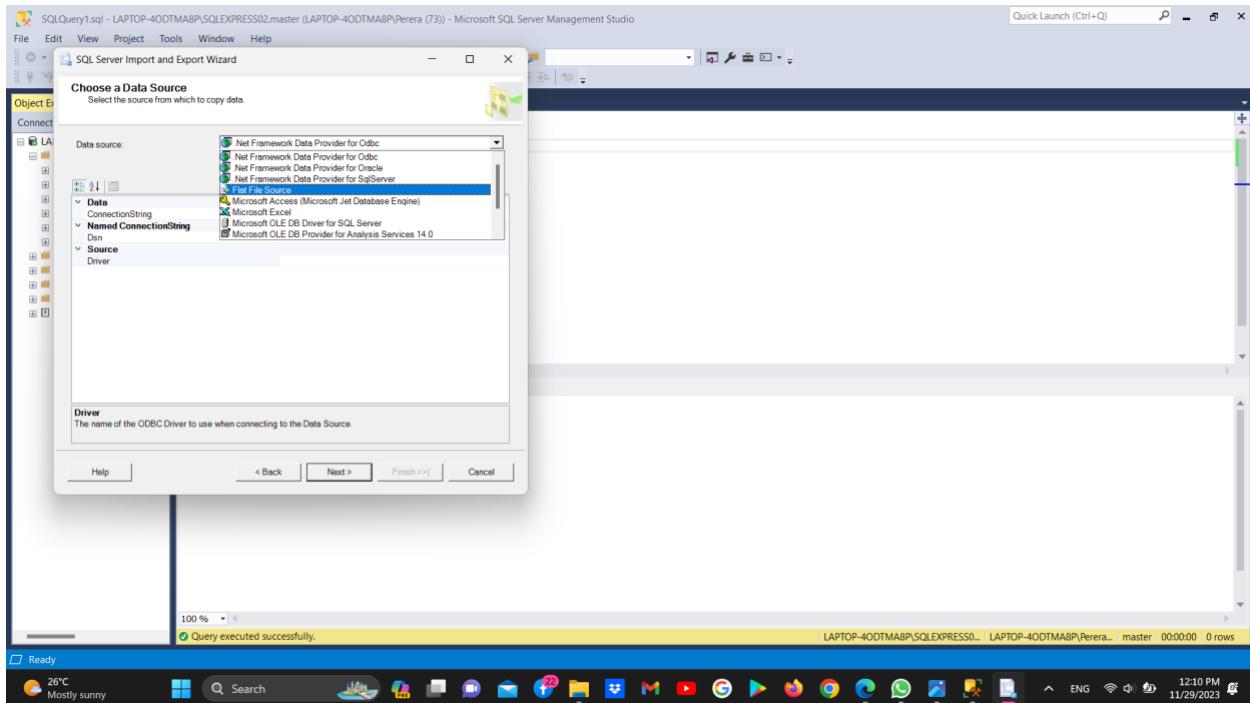
b) Select Tasks → Import Data

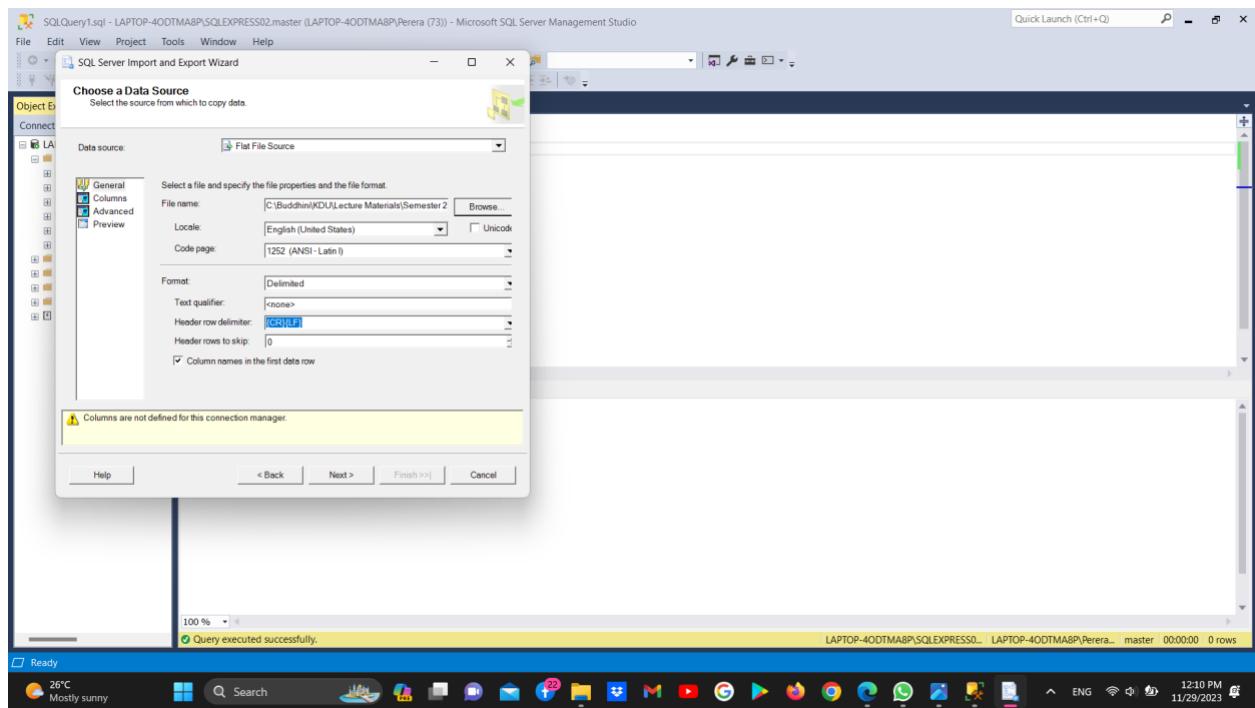
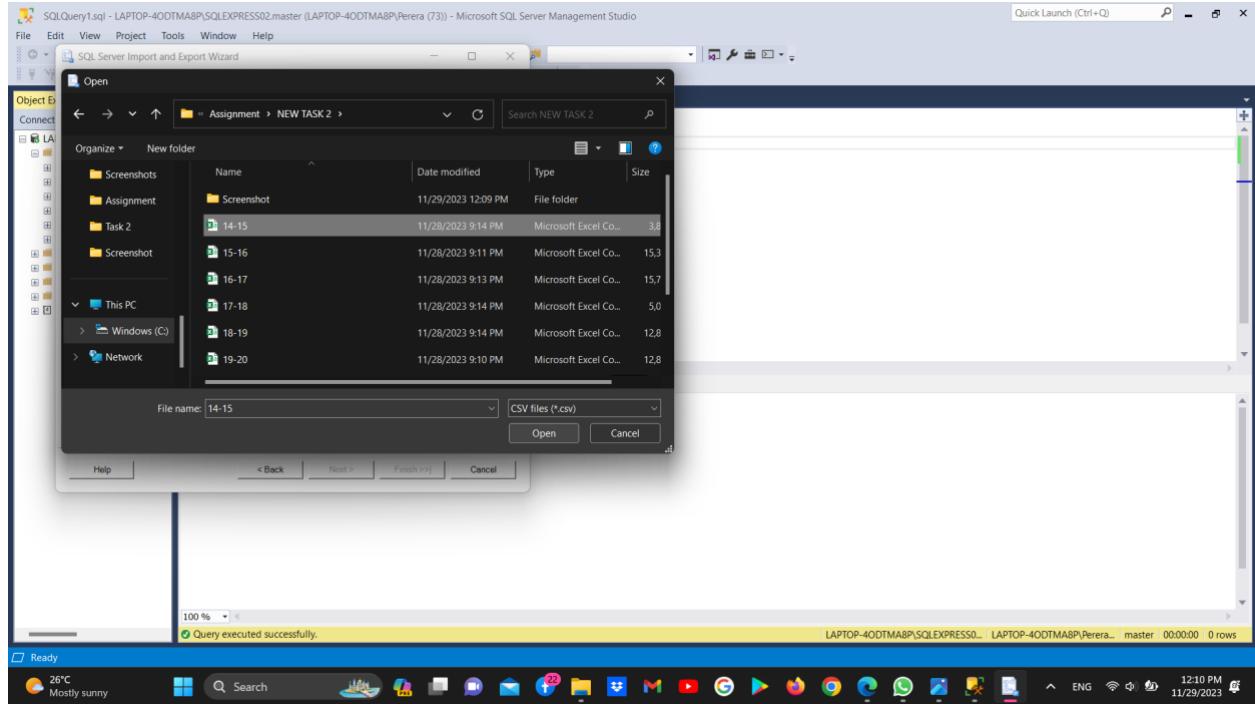


c) Click Next on the SQL Server Import and Export Wizard welcome page.

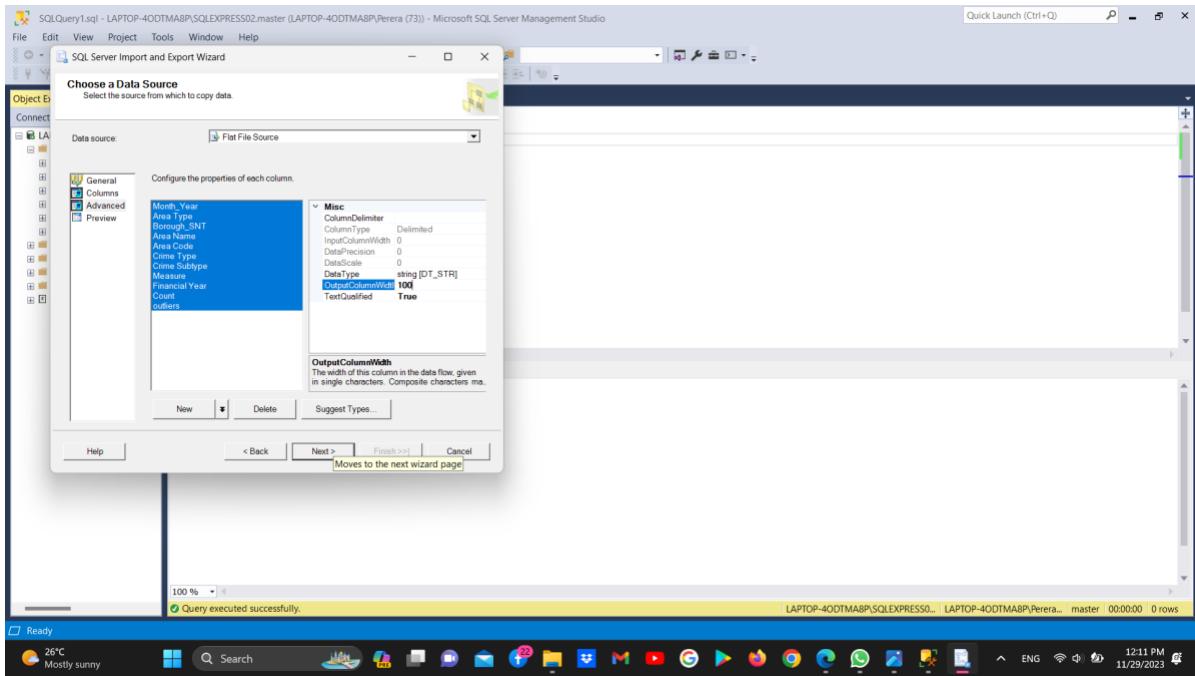


d) Select Flat File Source as the Data Source, and enter or browse for the file to import.

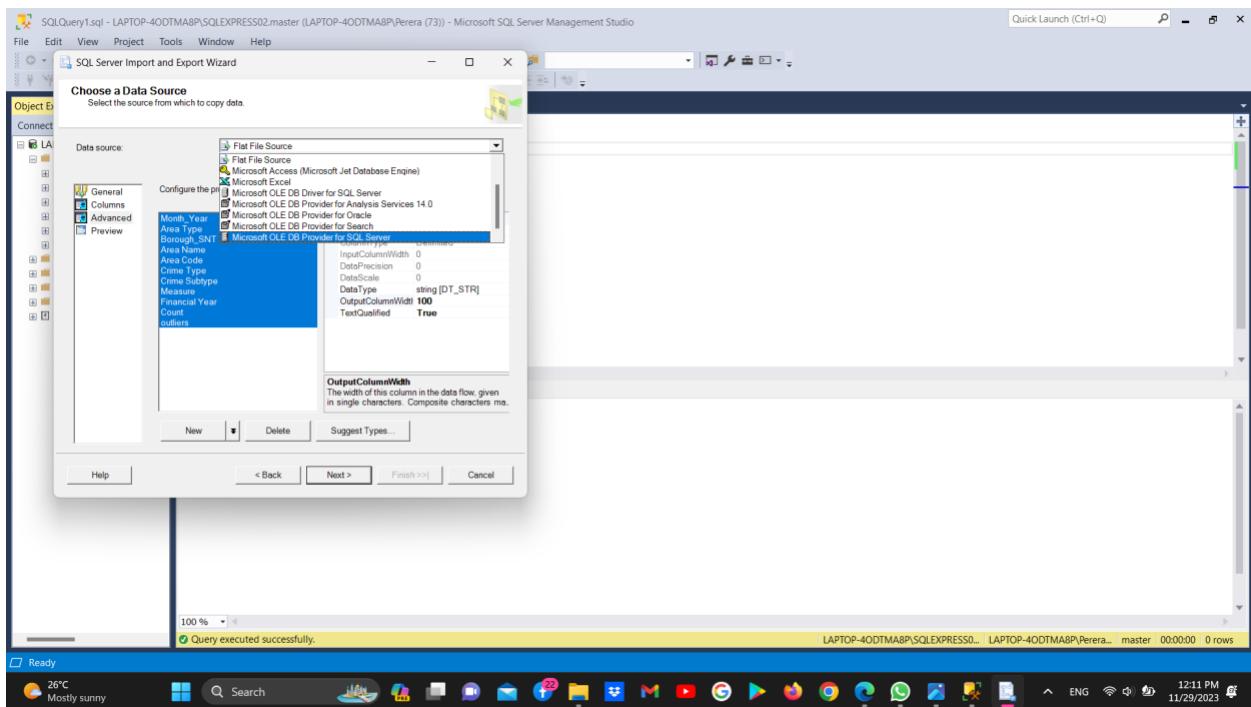


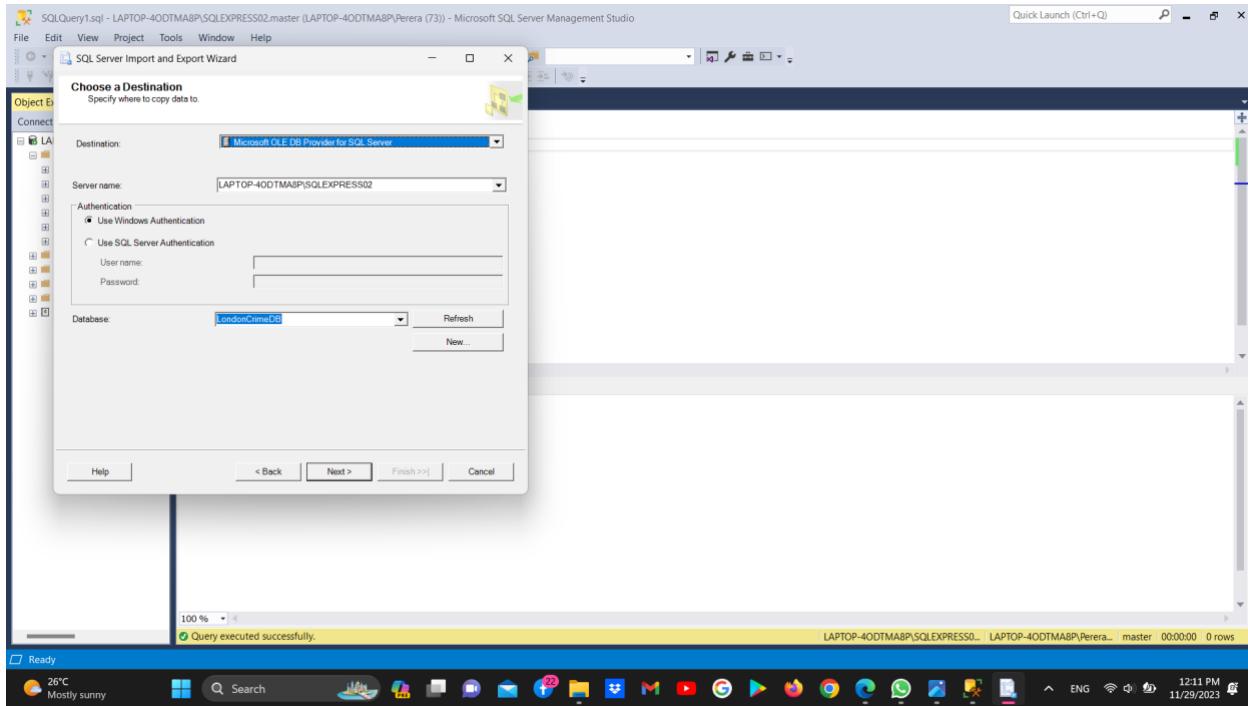


- e) Go to the Advanced tab and change all the column widths from 50 to 100 and click Next.

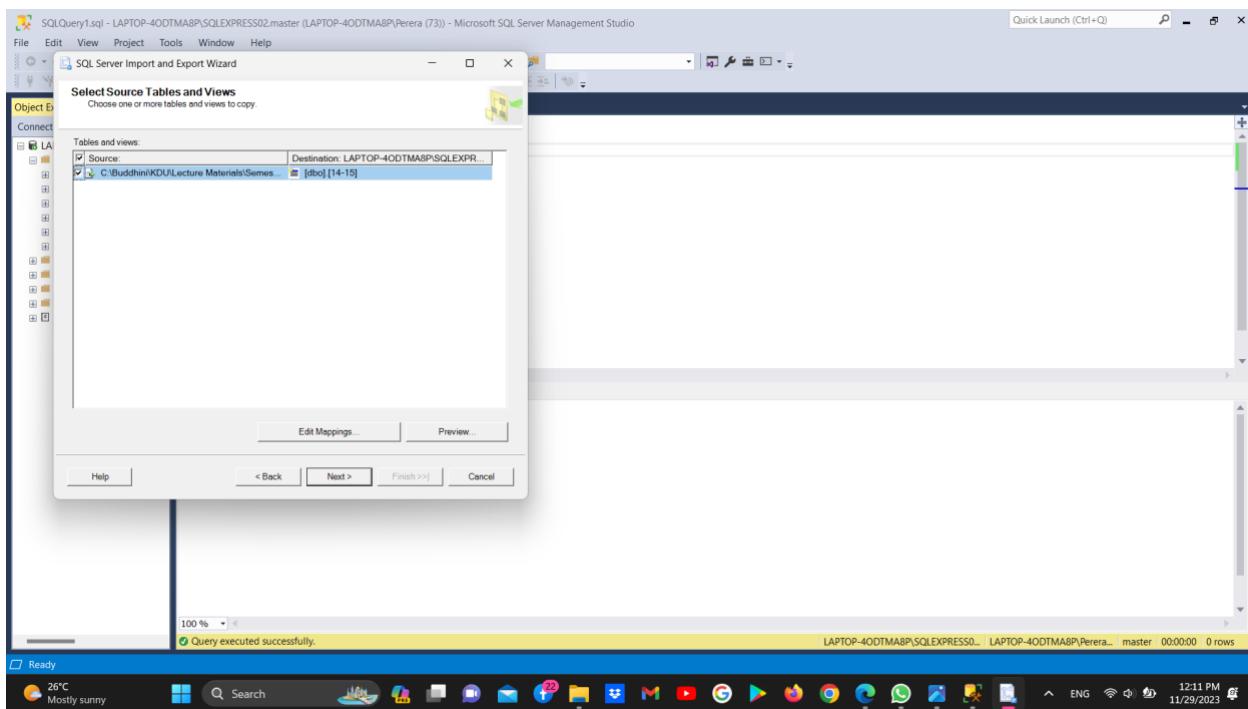


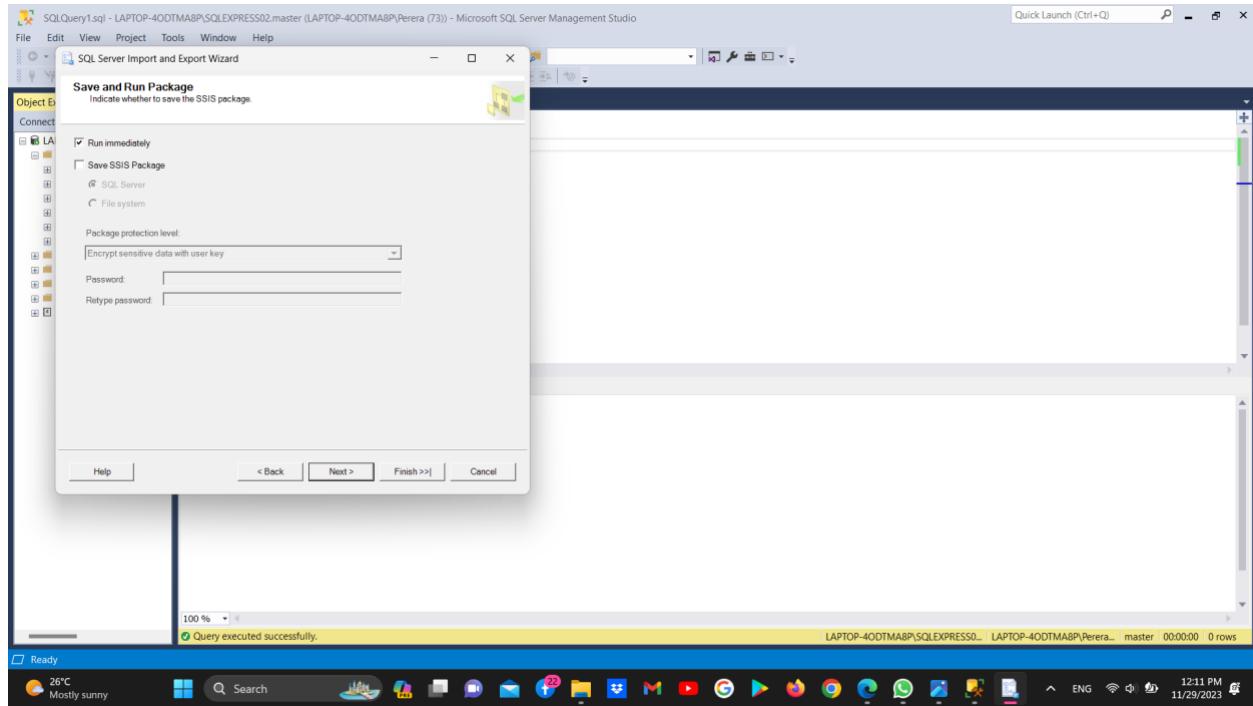
- f) Select Microsoft OLE DB Provider for SQL Server and click next.



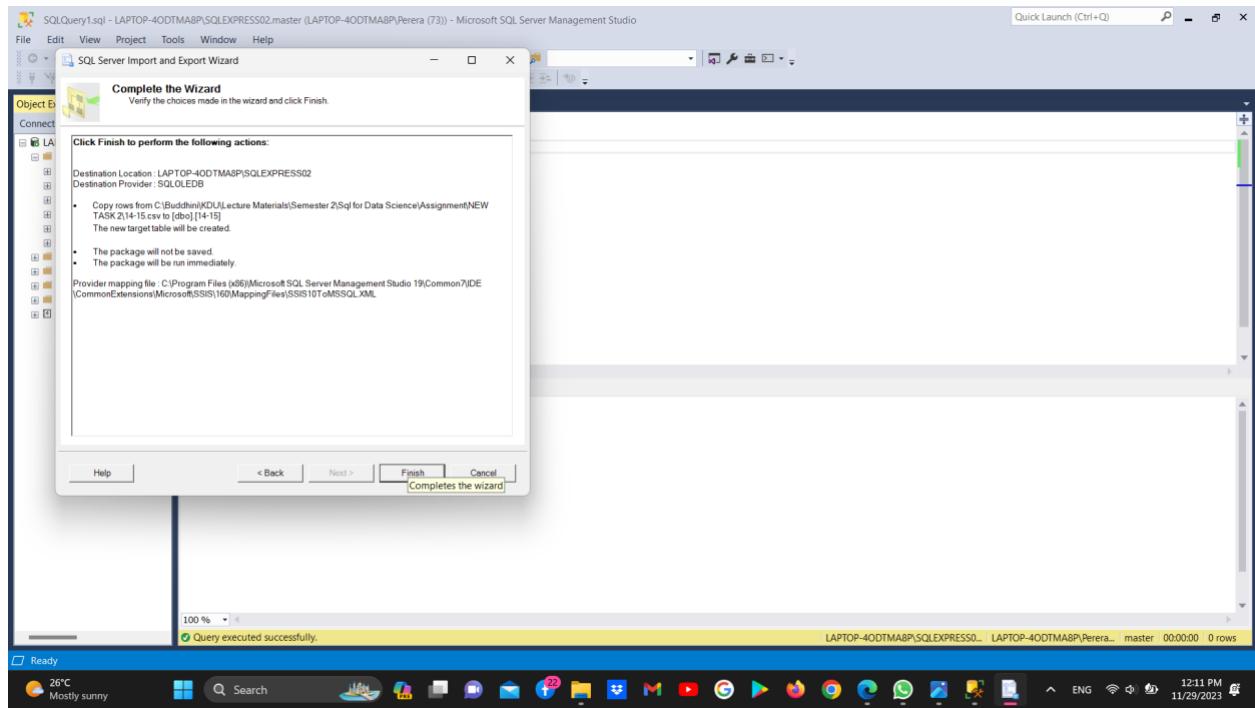


g) Accept the default and click next.

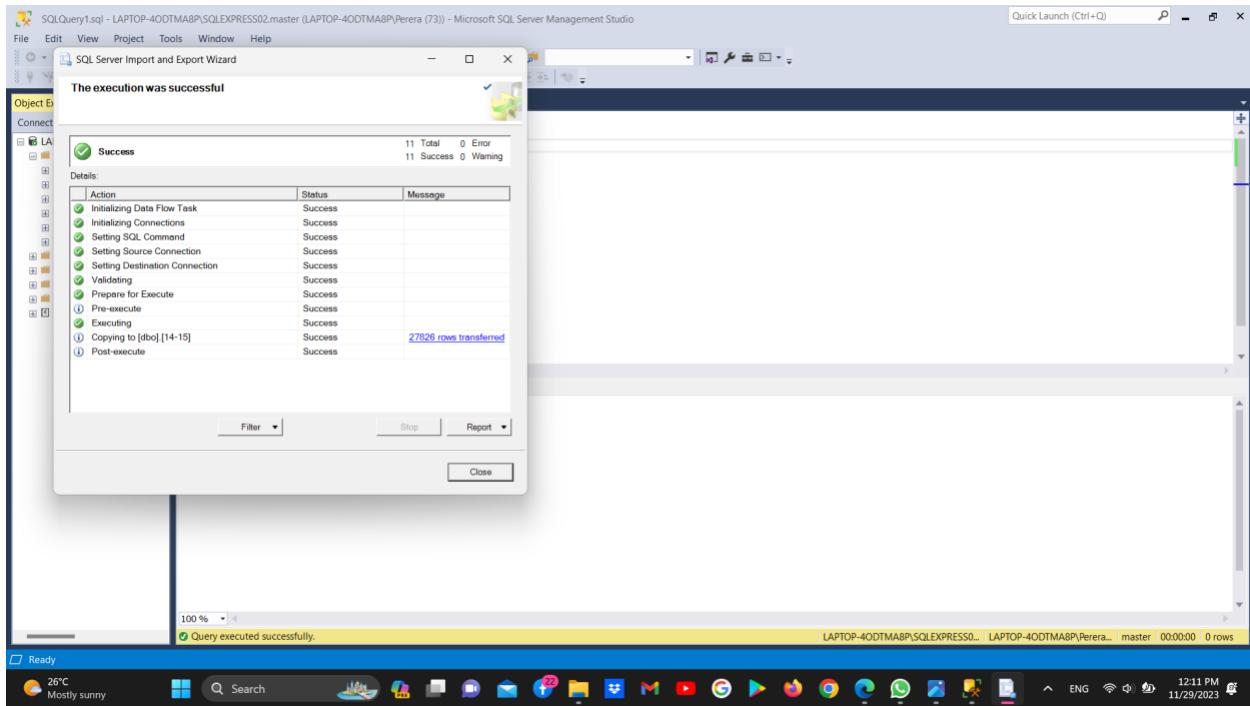




h) Click Finish.



- i) The Execution Result dialog box appears. Assuming that all went well, the data has loaded successfully.



After we can see the new table in the 'LondonCrimeDB' databases.

You must repeat the same procedure for three times to add the 2020, 2021, 2022 CSV files to the 'LondonCrimeDB' database.

## 2.3. Create View

Under a new query, enter the following code to create view 'crimes'.

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar indicates the connection is to 'SQLQuery2.sql - LAPTOP-4ODTMABP\SQLEXPRESS02.master (LAPTOP-4ODTMABP\Perera (53)) - Microsoft SQL Server Management Studio'. The 'File', 'Edit', 'View', 'Project', 'Tools', 'Window', and 'Help' menus are visible at the top. A toolbar with various icons follows. The 'Object Explorer' pane on the left lists the database structure, including databases like 'AdventureworksLT2015', 'AdventureworksLT2K', and 'LondonCrimeDB', along with tables, views, and other objects. The 'SQLQuery2.sql - LA...TMAP\Perera (53)' window contains a T-SQL script for creating a view named 'crimes'. The script uses UNION ALL to combine three SELECT statements from the 'dbo' schema, each selecting different columns related to crime data. The status bar at the bottom shows the connection details and the execution status: 'Connected. (1/1)'. The bottom taskbar includes the Start button, the taskbar search box, and pinned icons for File Explorer, Mail, Photos, Facebook, YouTube, Google, and Chrome.

```
create view crimes
as
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[14-15]

union
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[15-16]

union
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[15-16]
```

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar indicates the connection is to LAPTOP-40DTMABP\SQLEXPRESS02.master (LAPTOP-40DTMABP\Perera (53)) - Microsoft SQL Server Management Studio. The Object Explorer sidebar shows the database structure, including the LondonCrimeDB database which contains several tables related to crime data. The main window displays a T-SQL script for generating a calendar table, specifically a month-year dimension. The script uses UNION ALL to combine three separate SELECT statements. Each statement converts a date range into a month-year format (e.g., '2015-01-01' to '2015-01') and includes columns for Borough\_SNT, Area Name, Area Code, Crime Type, Crime Subtype, Measure, Financial Year, and Count. The script ends with a final UNION statement. The status bar at the bottom shows the connection details and performance metrics: 100% completion, 1 row processed, and 0 rows affected.

```
union
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[16-17]

union

select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[17-18]

union

select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[18-19]
```

SQLQuery2.sql - LAPTOP-40DTMABP\SQLEXPRESS02.master (LAPTOP-40DTMABP\Perera (53)) - Microsoft SQL Server Management Studio

File Edit View Project Tools Window Help

master

Object Explorer

SQLQuery2.sql - LA...TMA8\Perera (53)

```
union
select [Area Type],
convert[datetime],[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[18-19]

union

select [Area Type],
convert[datetime],[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[19-20]

union

select [Area Type],
convert[datetime],[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[19-20]
```

100 %

Connected. (1/1)

LAPTOP-40DTMABP\SQLEXPRESS0... LAPTOP-40DTMABP\Perera... master 00:00:00 0 rows

Ready

Search

9:30 PM 11/30/2023 ENG

SQLQuery2.sql - LAPTOP-40DTMABP\SQLEXPRESS02.master (LAPTOP-40DTMABP\Perera (53)) - Microsoft SQL Server Management Studio

File Edit View Project Tools Window Help

master

Object Explorer

SQLQuery2.sql - LA...TMA8\Perera (53)

```
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[21-22]

union

select [Area Type],
convert[datetime],[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[22-23]

union

select [Area Type],
convert[datetime],[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[23]
```

100 %

Connected. (1/1)

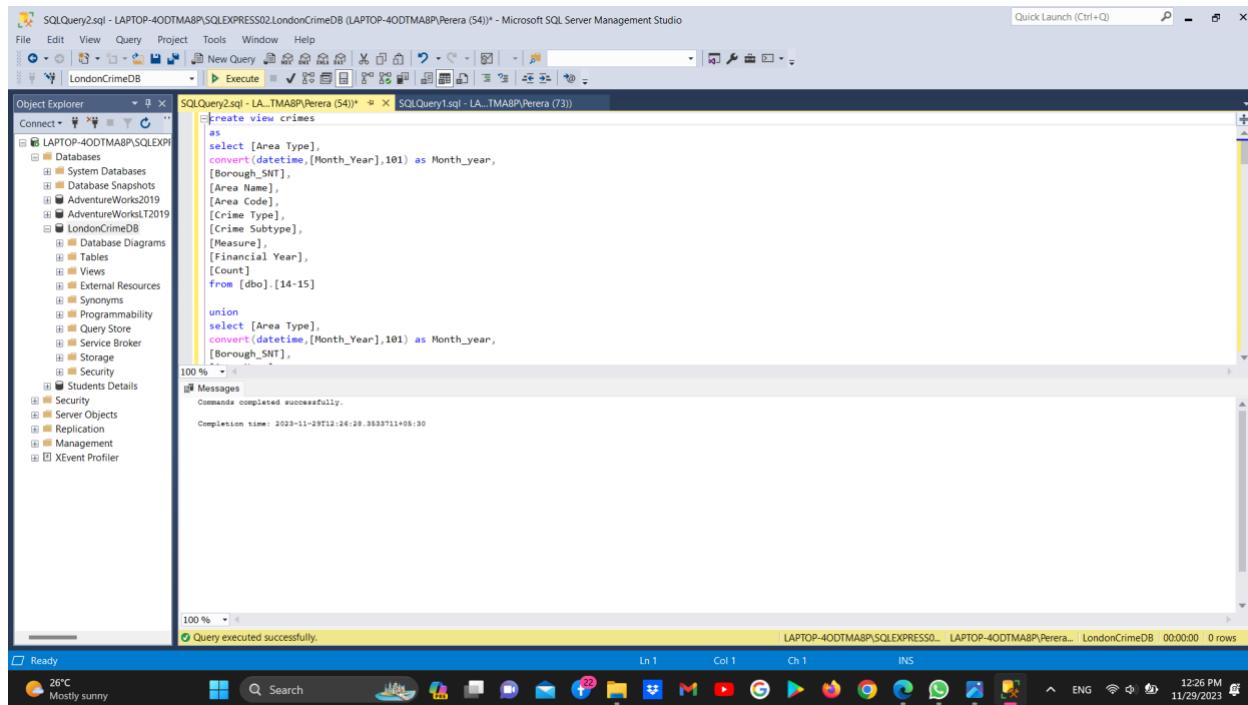
LAPTOP-40DTMABP\SQLEXPRESS0... LAPTOP-40DTMABP\Perera... master 00:00:00 0 rows

Ready

Search

9:30 PM 11/30/2023 ENG

You can see the 'dbo.LondonCrimeDB\_view' under the views, in 'LondonCrimeDB' database.

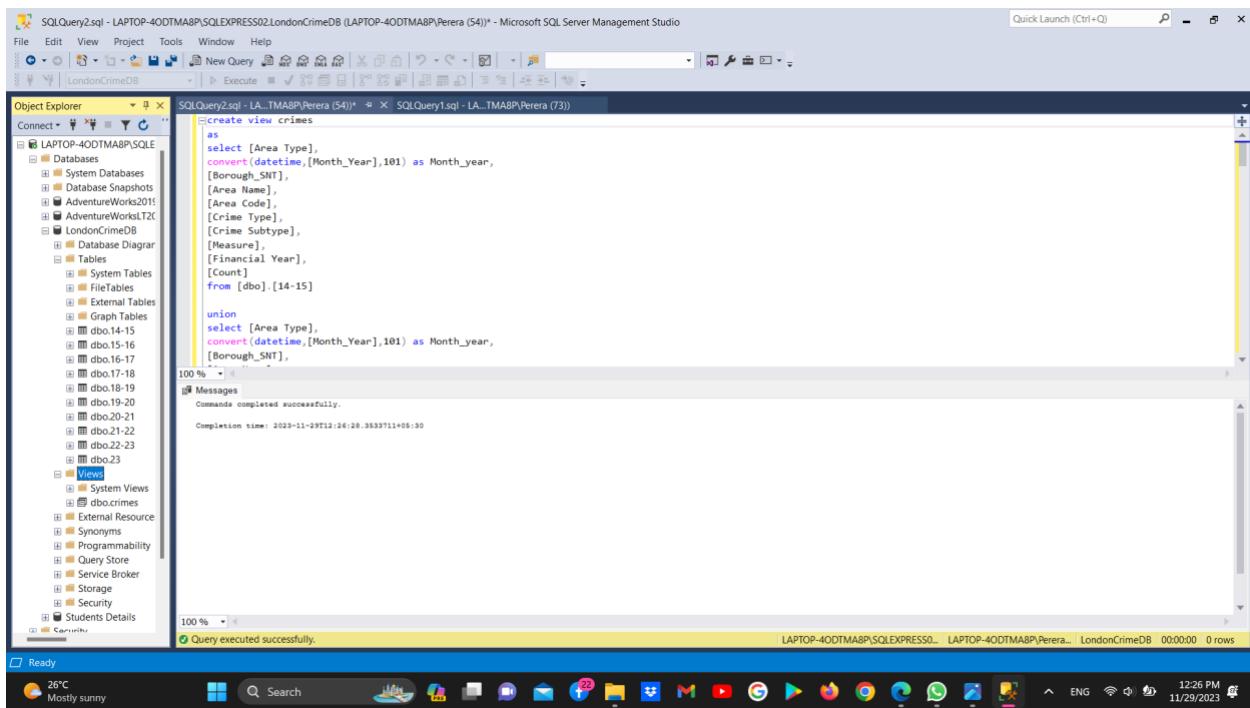


The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left shows the database structure, including the 'LondonCrimeDB' database. The central pane displays the following T-SQL code:

```
create view crimes
as
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[14-15]

union
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
```

The status bar at the bottom indicates "Query executed successfully." and "Completion time: 2023-11-29T12:26:28.3533711+08:30". The taskbar at the bottom shows various application icons and the system clock.



This screenshot is identical to the one above, showing the creation of the 'crimes' view in the 'LondonCrimeDB' database. The T-SQL code is the same:

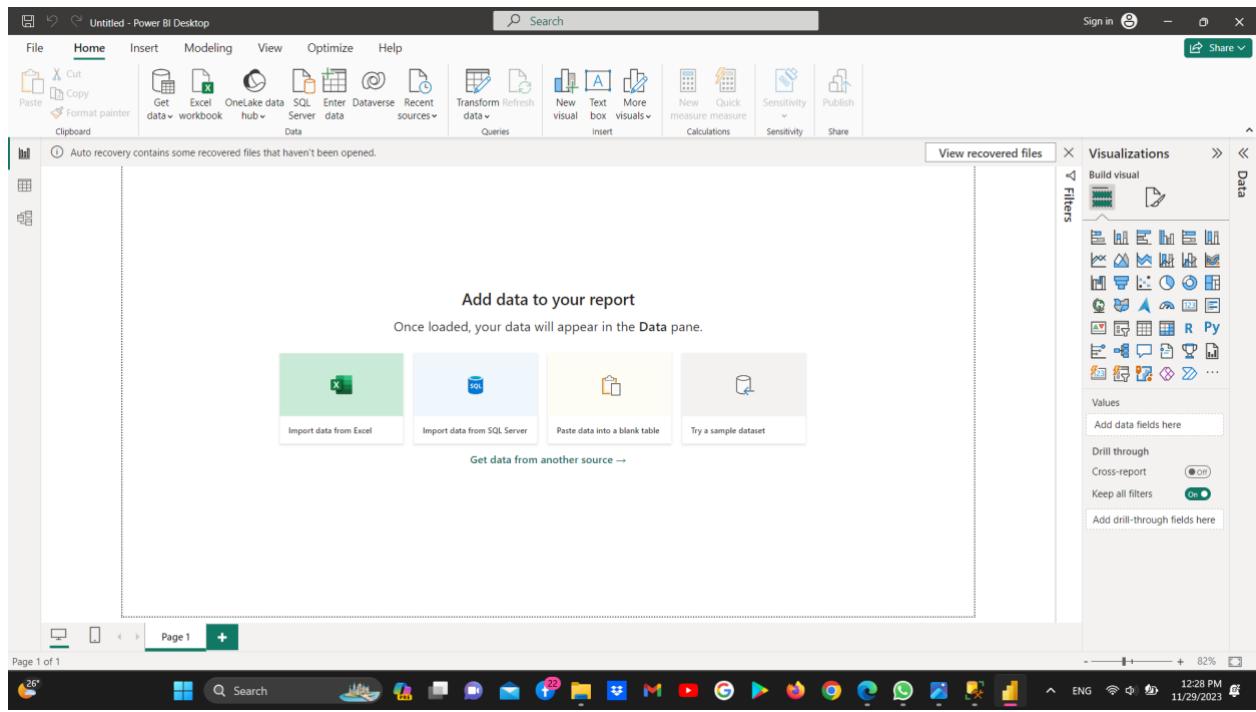
```
create view crimes
as
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
[Area Name],
[Area Code],
[Crime Type],
[Crime Subtype],
[Measure],
[Financial Year],
[Count]
from [dbo].[14-15]

union
select [Area Type],
convert(datetime,[Month_Year],101) as Month_year,
[Borough_SNT],
```

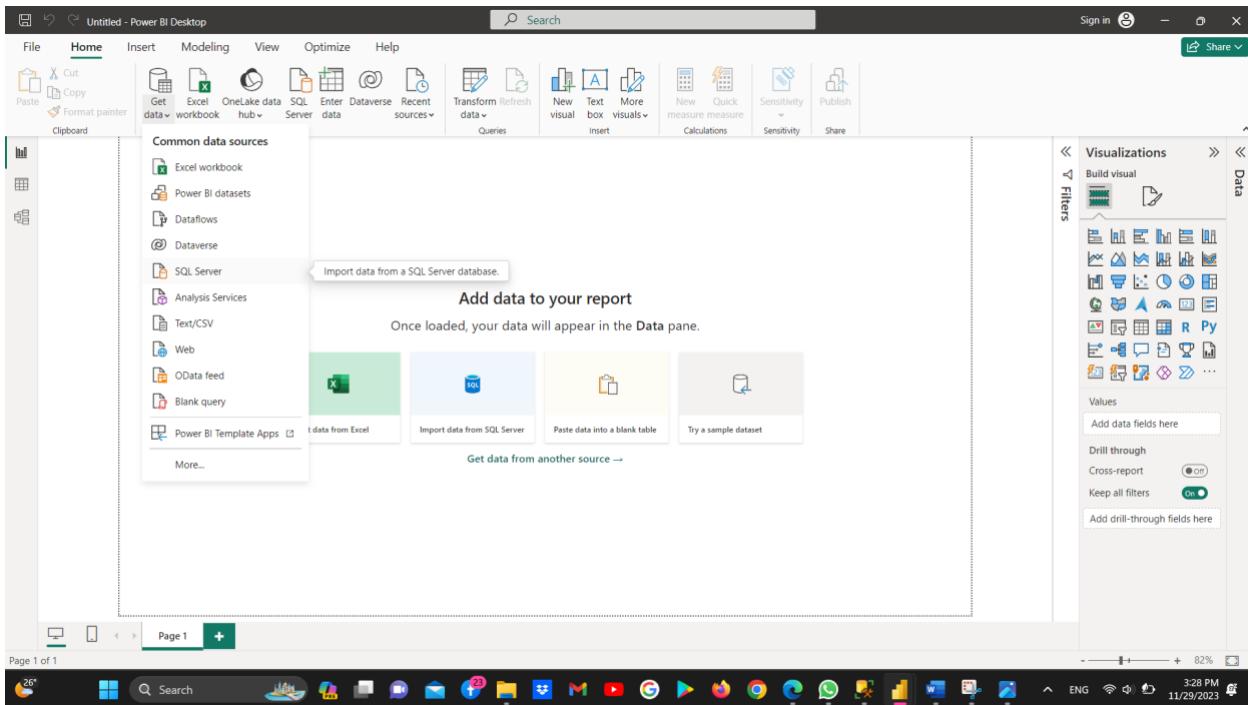
The status bar at the bottom indicates "Query executed successfully." and "Completion time: 2023-11-29T12:26:28.3533711+08:30". The taskbar at the bottom shows various application icons and the system clock.

## 2.4. Importing Data from Microsoft SQL Server to Power BI

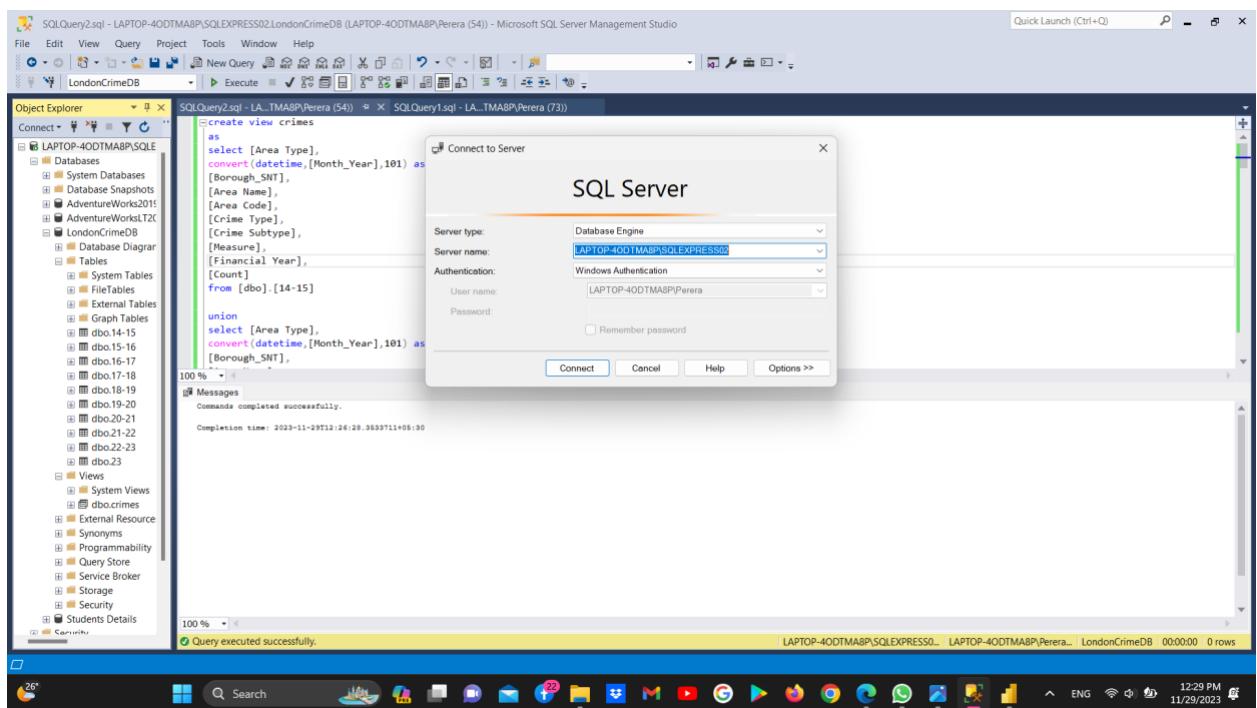
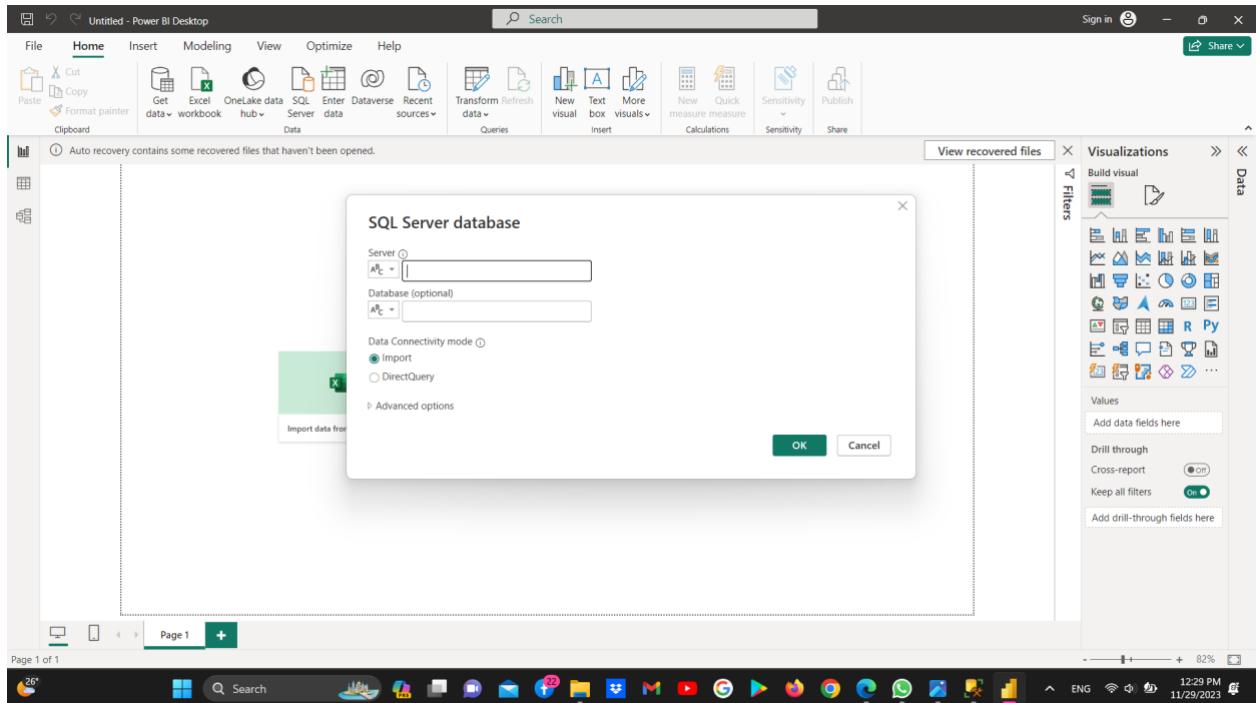
### 1. Open Power BI desktop.

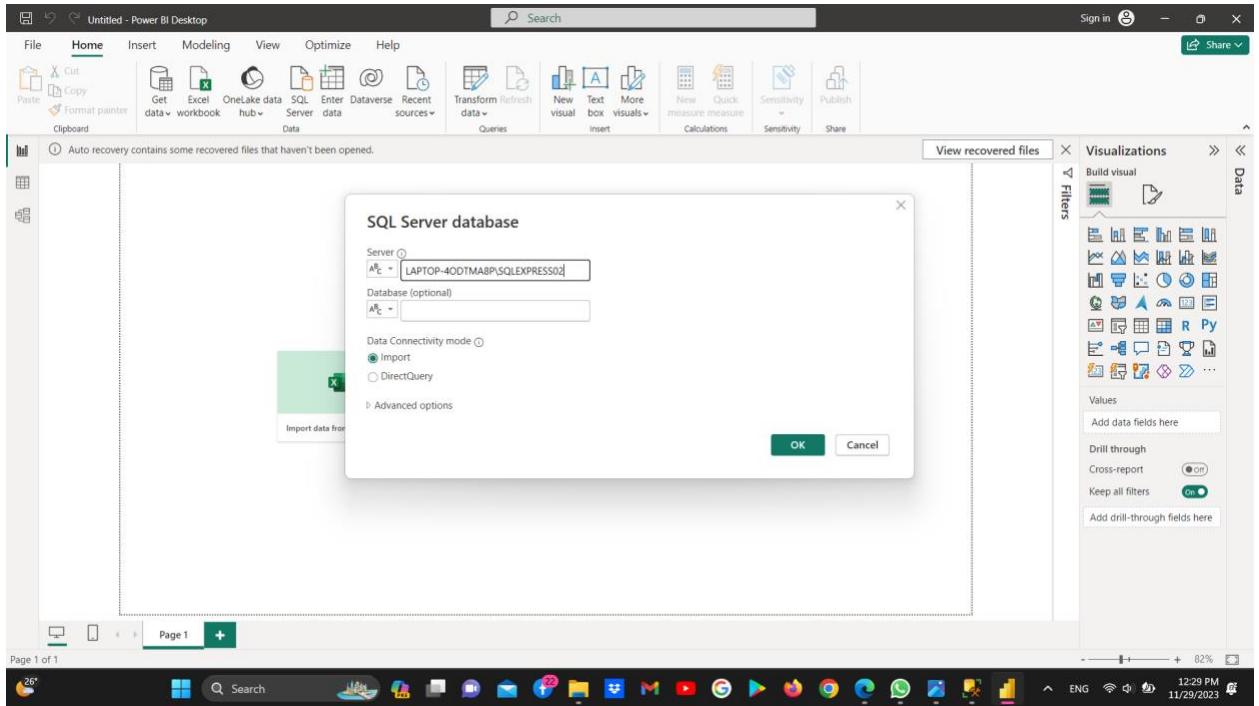


### 2. Select Get → Data SQL Server

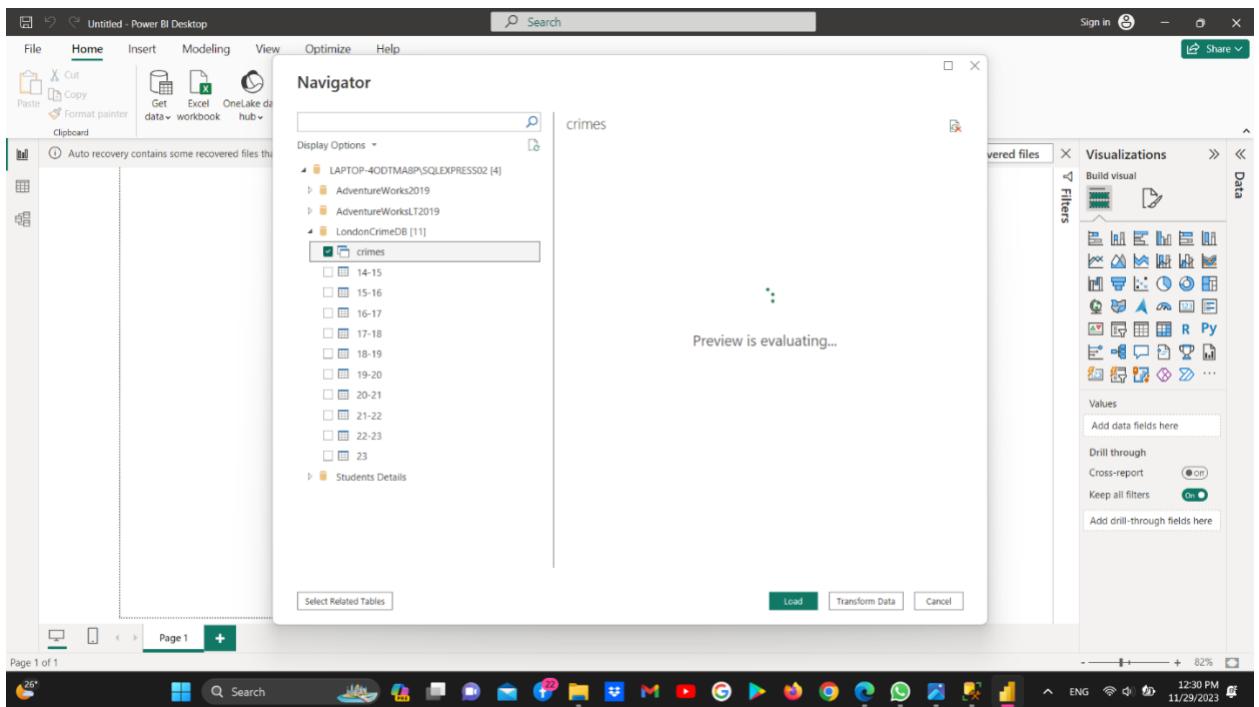


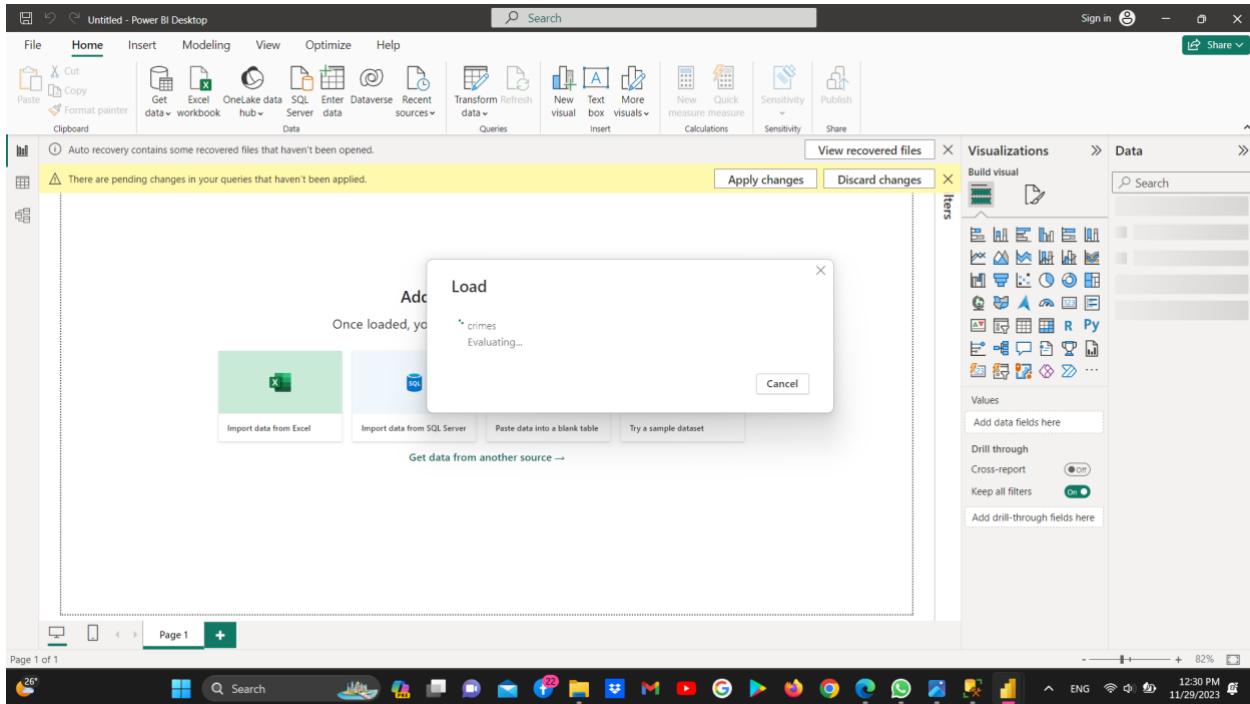
3. From SQL Server Database Server connect to your server. Then select Import and OK.





4. In Navigator Tab, select ‘’ view from ‘LondonCrimeDB’ Database.





Area Type	Month year	Borough_SNT	Area Name	Area Code	Crime Type	Crime Subtype	Measure	Financial Year	Count
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Beam	E05014056	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Becontree	E05014057	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Eastbury	E05014060	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Gascoigne	E05014061	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Heath	E05014063	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Mayesbrook	E05014065	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Parsloes	E05014067	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barking and Dagenham	Thames View	E05014068	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barnet	Barnet Vale	E05013628	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barnet	Brunswick Park	E05013629	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Barnet	Colindale South	E05013633	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Cricklewood	E05013634	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	East Barnet	E05013635	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Garden Suburb	E05013641	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Totteridge & Woodside	E05013646	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	West Finchley	E05013648	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Bexley	Blackfen & Lamorbey	E05011220	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Bexley	Blondin & Penhill	E05011221	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Bexley	Crook Log	E05011223	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Bexley	Thamesmead East	E05011232	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Alperton	E05013496	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Bromley Park	E05013498	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Cricklewood & Mapsebury	E05013499	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Queens Park	E05013507	Hate crime	Racist Crime	Offences	fy15-16	1
Safer Neighbourhood Teams	4/1/2015 12:00:00 AM	Brent	Roundwood	E05013509N	Hate crime	Racist Crime	Offences	fy15-16	1

### 3. DASHBOARD DESIGN AND IMPLEMENTATION

#### 3.1 Dashboard Purpose

The aim of this elaborating the Power BI dashboard for crime incidents in UK Metropolitan Police area is to give stakeholders an easily navigable visual platform to assess and comprehend crime data within the MPS jurisdiction. Using the monthly variations captured by the line chart, trends and patterns can be identified over an extended period of time.

Key Performance Indicators (KPIs) provide brief information on total crimes, types of crimes, and monthly variations, to assist decision makers. With a thorough breakdown, the bar chart classifies incidents according to crime categories. Targeted resource allocation is made easier by the dynamic map's ability to pinpoint crime hotspots. At last, to provide law enforcement and decision-makers with useful information to improve community safety, resource efficiency, and crime prevention, the dashboard is a tactical implication.

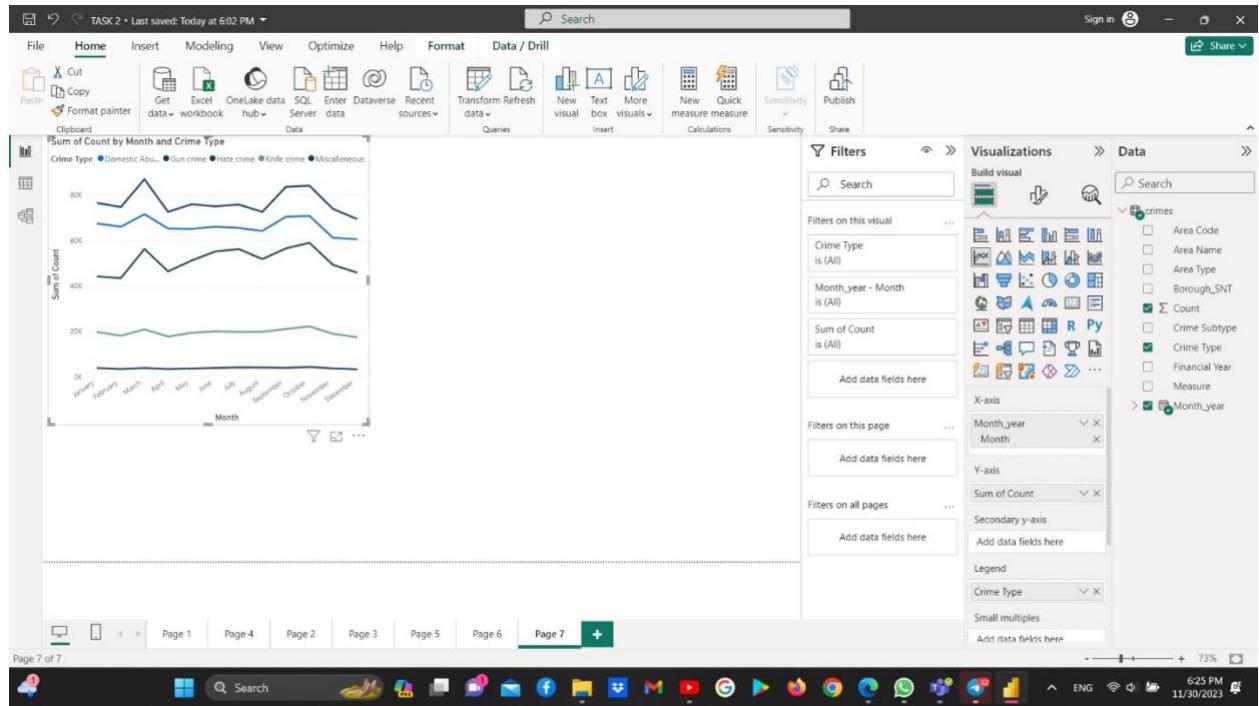
#### 3.2. Dashboard Draw up

##### 1. Creation of Line Chart

First go to visualization & select line chart.

Then, go to values and add column 'Month\_Year' (Month) into X-axis. Add column 'Sum of count' into Y-axis. Add legend as 'Crime Type'.

A new slice also added to compare crime types with years. The line chart views as follows.



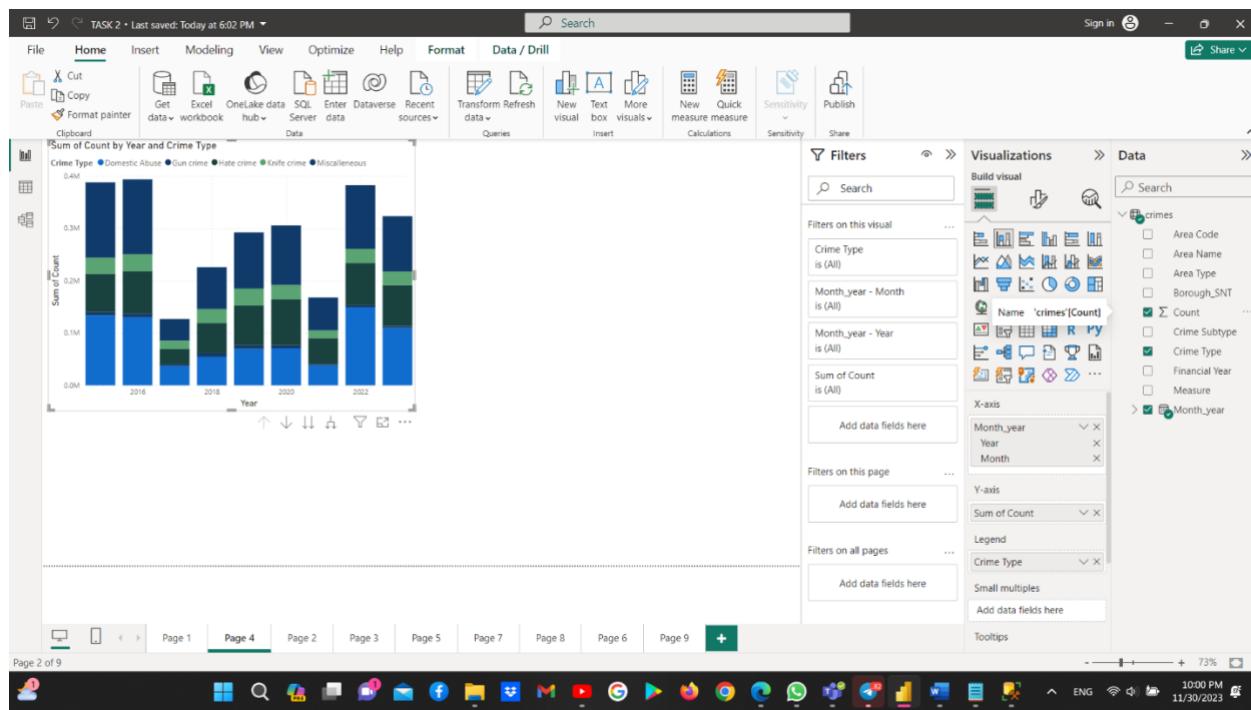
The above line chart shows the monthly variations in crime incidents.

## 2. Creation of Column Chart

First go to visualizations & select stacked column chart.

Then, go to values and add column 'Month\_Year' (Year) into X-axis.  
Add column 'Sum of Count' into Y-axis. Add legend as 'Crime Type'.

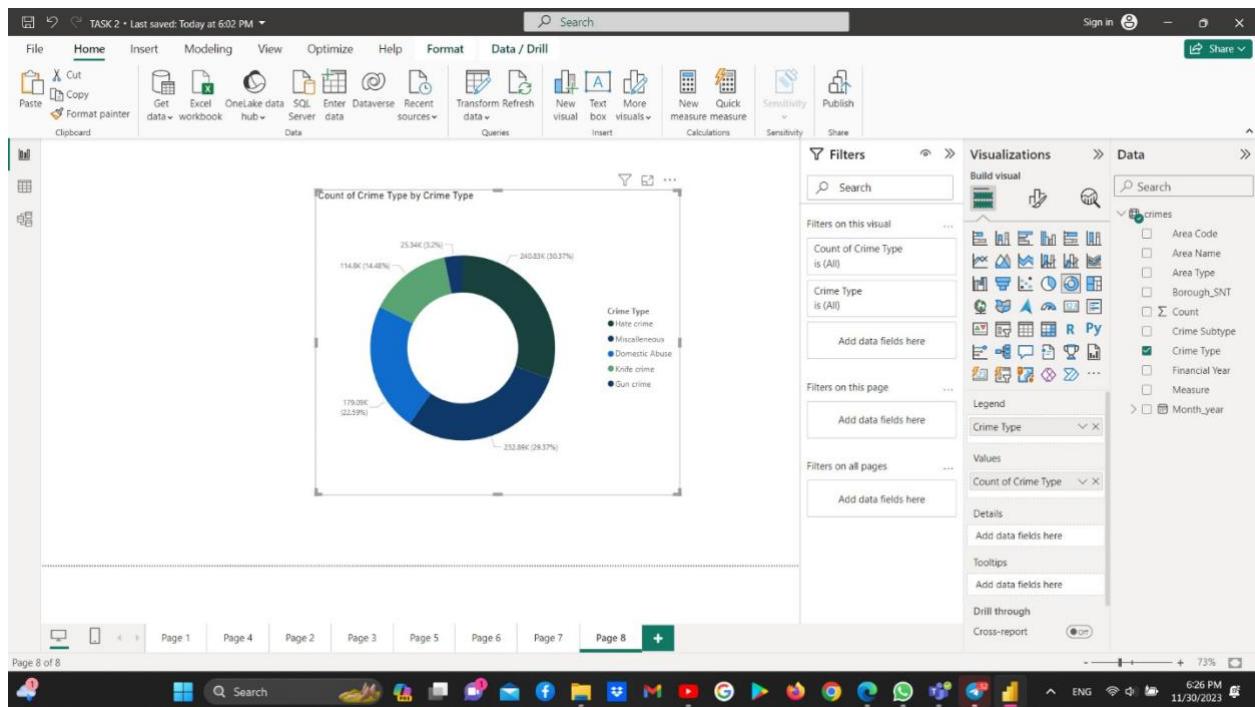
The column chart views as follows.



The above bar chart visualizes the incidents per crime category.

### 3. Creation of Donut Chart

First go to visualizations & select donut chart.



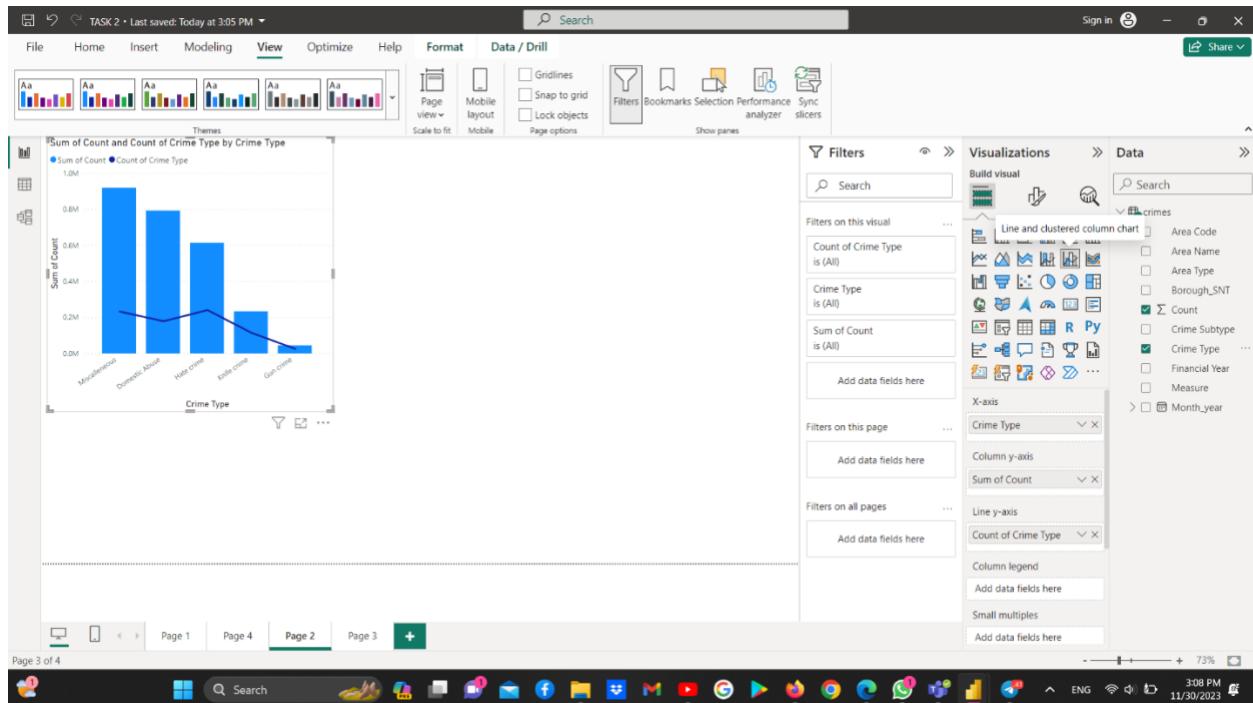
Then, go to values and add column 'Count of crime type'. Add legend as 'Crime Type'.The donut chart views as follows.

#### 4. Creation of Line and clustered column chart.

First go to visualizations & select Line and clustered column chart.

Then, add 'Crime type' into X-axis, 'Sum of Count' into Column Y-axis, 'Count of Crime Type' into Line Y-axis.

The Line and clustered column chart views as follows.

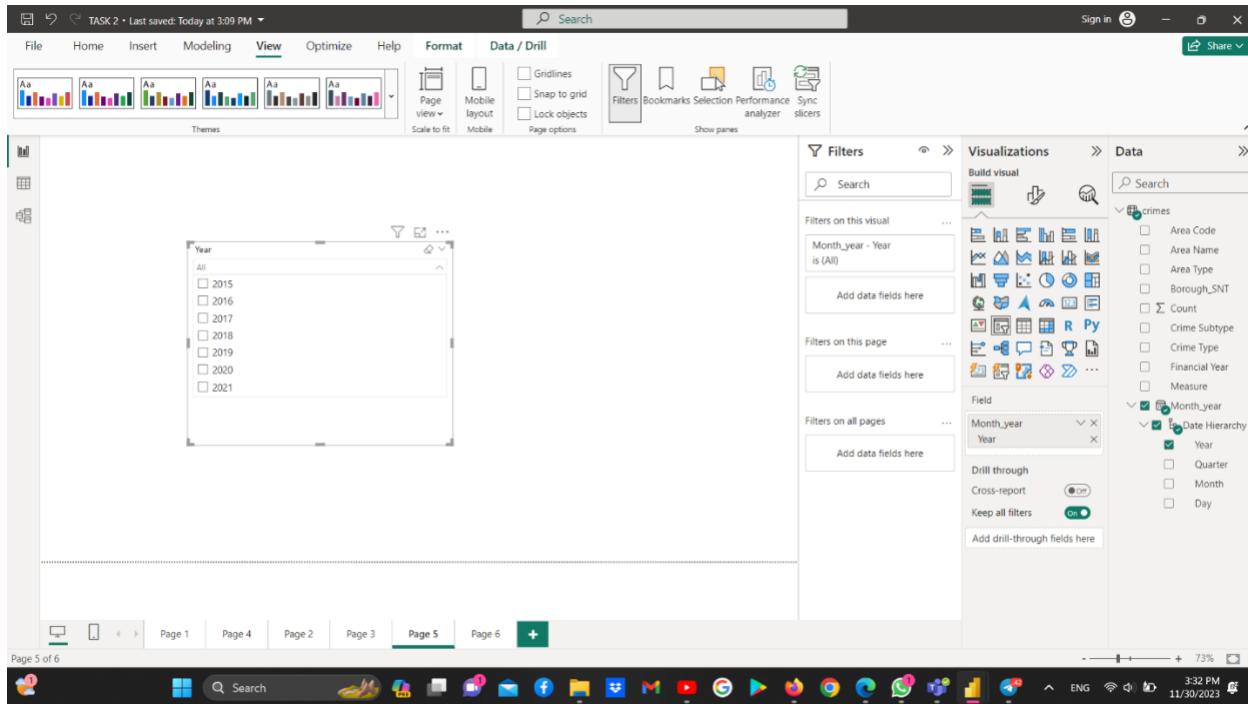


#### 5. Creation of Slicer Chart

First go to visualizations & select Slicer Chart.

Then, add 'Month\_year' into field.

The Slicer chart views as follows.



## 6. Creation of Map

First go to visualizations & select ARCGIS Maps for Power BI.

Then, enter the values as follows.

'Location' → 'Borough\_SNT'

'Size' → 'Sum of Count'

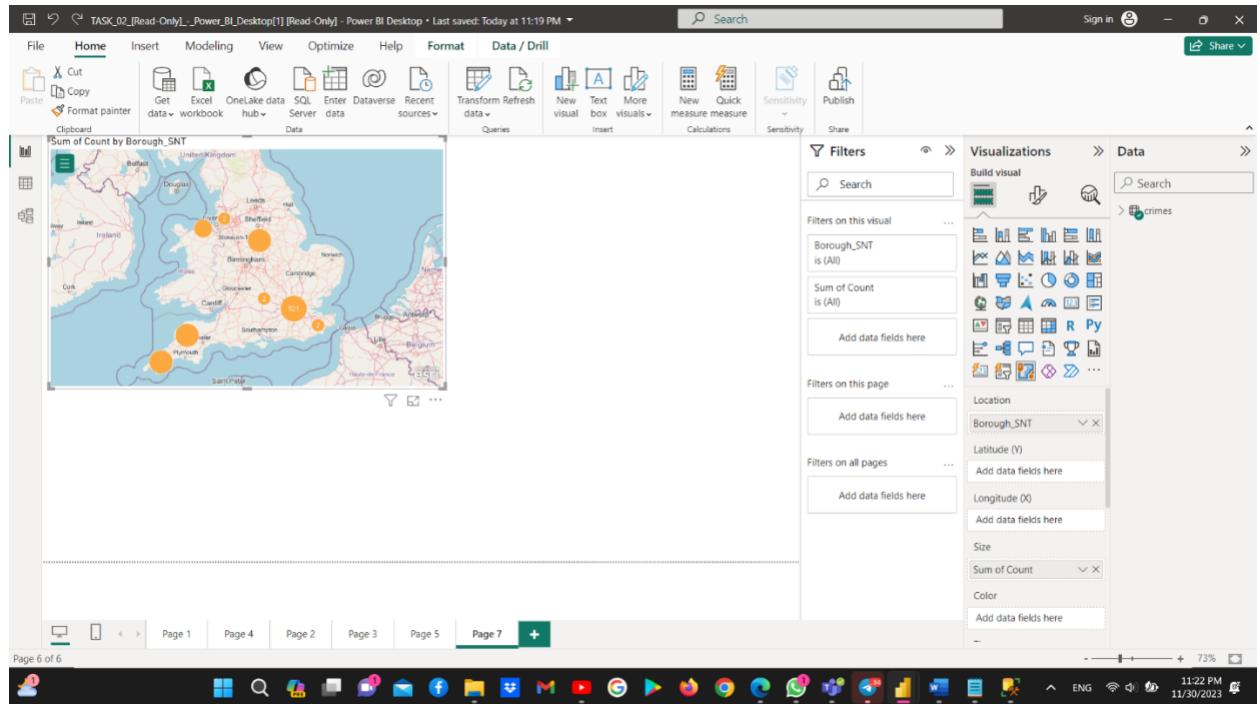
Then select collapse map tools → view a list of layers on the map

Layers → 'Borough\_SNT' → Layer options → Location type → Change many countries into one country, United Kingdom → OK

Go to Clustering → Enable

Go to Labeling → Enable

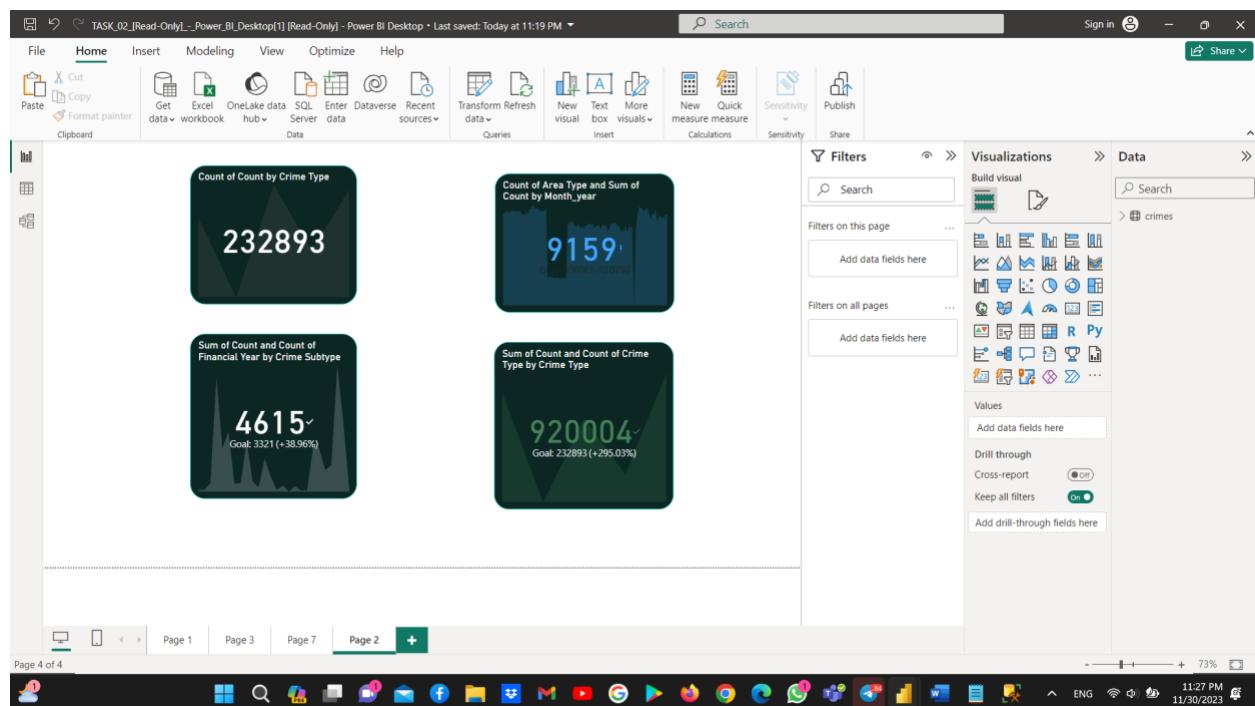
The map view as follows.



The above map illustrate crime hotspots across different regions.

## 7. Creation of KPIs.

First, select KPI from visualizations. You have to create 4KPIs as follows.



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File Home Insert Modeling View Optimize Help Format Data / Drill

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Get data workbook OneLake data hub SQL Server data Data

Enter Dataverse Recent sources Transform Refresh data Queries

New visual Text box More visuals Insert

Quick measure measure Calculations

Sensitivity Share

Count of Count by Crime Type  
232893

Count of Area Type and Sum of Count by Month\_Year  
9159

Sum of Count and Count of Financial Year by Crime Subtype  
4615 Goal: 3321 (+38.96%)

Sum of Count and Count of Crime Type by Crime Type  
920004 Goal: 232893 (+295.03%)

Filters Visualizations Data

Build visual

Search crimes

Count of Count is (All)

Crime Type is (All)

Add data fields here

Count of Financial Year is (All)

Crime Subtype is (All)

Sum of Count is (All)

Value Count of Count

Trend axis Crime Type

Target Add data fields here

Drill through Cross-report (On)

Keep all filters (On)

Add drill-through fields here

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Build visual

Search crimes

Count of Financial Year is (All)

Crime Subtype is (All)

Sum of Count is (All)

Value Sum of Count

Trend axis Crime Subtype

Target Count of Financial Year

Drill through Cross-report (On)

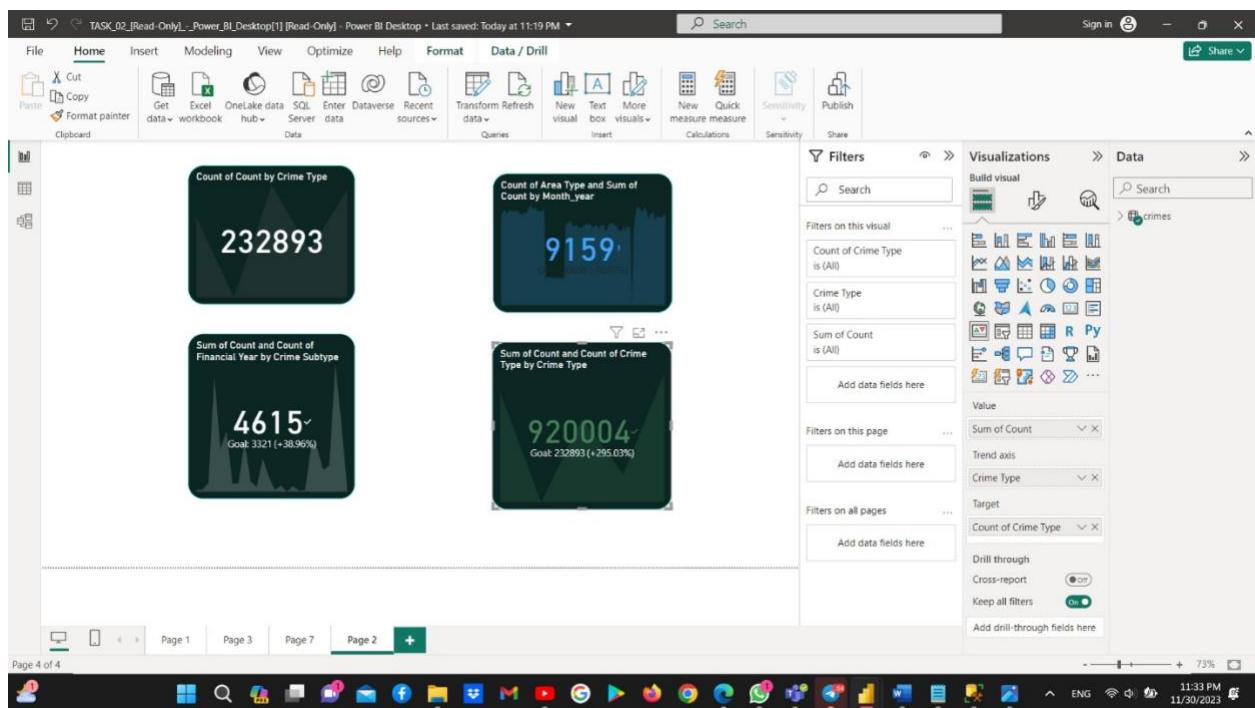
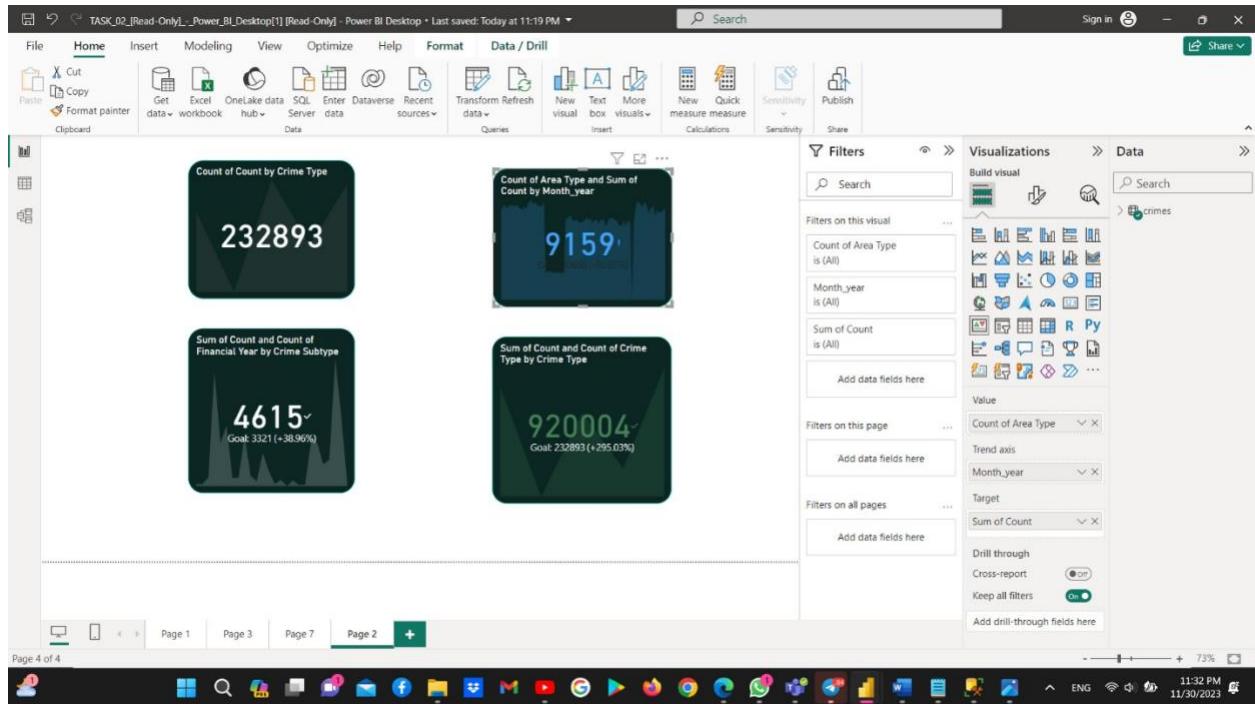
Keep all filters (On)

Add drill-through fields here

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### 3.3.Dashboard Design

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**CrimePulse in UK**

**Total of crime type by year**

Crime Type: Domestic Abuse, Gun crime, Hate crime, Knife crime, Miscellaneous

**total crime indicator**

Sum of Count: 1.0M

**percentage of crime type**

Count of Count by Crime Type: 232893

**Sum of Count by Month and Crime Type**

Crime Type: Domestic Abuse, Gun crime, Hate crime, Knife crime, Miscellaneous

**MAP**

**Count of Area Type and Sum of Count by Month\_year**

Count of Area Type and Sum of Count by Month Year: 9159

Sum of Count and Count of Crime Type by Crime Type: 920004

Goal: 232893 (+295.03%)

**Filters**

Year: All

**Visualizations**

**Data**

Search: crimes

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**CrimePulse in UK**

**Total of crime type by year**

Crime Type: Domestic Abuse, Gun crime, Hate crime, Knife crime, Miscellaneous

**total crime indicator**

Sum of Count: 1.0M

**percentage of crime type**

Count of Count by Crime Type: 232893

**Sum of Count by Month and Crime Type**

Crime Type: Domestic Abuse, Gun crime, Hate crime, Knife crime, Miscellaneous

**MAP**

**Count of Area Type and Sum of Count by Month\_year**

Count of Area Type and Sum of Count by Month Year: 9159

Sum of Count and Count of Crime Type by Crime Type: 920004

Goal: 232893 (+295.03%)

## 4. METHODOLOGY

The data visualization that follows contains the steps that follow.

- Data collection:

The original information was obtained from the monthly crime datasets maintained by the UK Metropolitan Police Service.

- Data Cleaning:

The missing values in the data were located and fixed. Used suitable methods to deal with missing ness consistently, like imputation or data removal. To ensure data integrity for efficient visualizations, all null values are eliminated to remove inconsistencies.

- Transformation of Data:

The relationships between the data tables are investigated in order to find trends and insights.In order to enable insightful visualizations, data transformation was required. Feature engineering, normalization, or data aggregation were used in this.

- The Design of Dashboards with Power BI:

Built an easy-to-use and intuitive dashboard using Power BI.

In order to effectively communicate the insights from the data, data visualization techniques are utilized. The design of the dashboard is involves to tell a cohesive tale, guaranteeing that the insights are displayed in a comprehensible and systematic way

Utilized line charts, bar graphs, donut charts, KPIs, and maps to show monthly variations, illustrate crime hotspots, crime categories, crime types, and annual crimes, among other suitable chart types and visualizations. Review, download, cleaning, transformation, manipulation, analyzation and drawing conclusion are all the steps included in this process.

## 5. ANALYSIS OVERVIEW

### ➤ The donut chart analysis :

In addition to giving a clear visual depiction of the frequency of each crime category, the donut chart offers a concise summary of the distribution of crimes by type. Through the use of counts, it allows users to quickly understand the relative importance of various crime categories. By arranging resources according to the most common offenses, this visualization helps legislators and law enforcement.

### ➤ Analysis of column chart:

A thorough overview of the distribution of offenses is provided by the column chart, which is an effective tool for visualizing incidents by crime category. This makes it possible to have a more nuanced understanding of the scope and nature of various crime types during the period under study.

### ➤ Visualization of line chart:

Users can recognize trends and patterns over time by utilizing the line chart, which effectively conveys monthly variations in crime incidents.

Understanding the seasonality of crimes and modifying preventative measures accordingly are made possible by this temporal analysis.

### ➤ The map analysis:

Stakeholders can pinpoint areas with greater crime rates by using the map analysis, which dynamically displays crime hotspots across different regions. This data is essential for implementing focused intervention programs to address particular regional challenges and for strategically allocating law enforcement resources.

### ➤ Key Performance Indicators (KPIs):

A comprehensive summary of important metrics is provided by the Key Performance Indicators (KPIs) for total crime, crime categories, and monthly variations. These key performance indicators (KPIs) are a handy tool for assessing the overall efficacy of crime prevention initiatives and providing direction for strategic decision-making.

By allowing targeted dashboard exploration based on pre-selected time frames and regions, the integration of slicers and filters improves user interaction. By enabling users to focus their analysis of crime data on particular areas of interest, this feature fosters a personalized analysis. In summary, this feature-rich dashboard offers a thorough and interactive framework for in-depth analysis and well-informed decision-making concerning law enforcement and crime prevention.

## 6. INSIGHTS, IMPLICATIONS AND LIMITATIONS

### Insights and implications

Insights:

#### 1. Temporal Analysis:

Periodic patterns or seasonal differences in criminal activity can be detected with monthly data. Planning ahead for law enforcement tactics based on predicted

#### 2. Crime Trends Identification:

Patterns and trends in criminal activity are revealed by a dashboard based on monthly crimes reported by the UK Metropolitan Police Service. Users can use it to determine which areas have higher or lower rates of criminality.

#### 3. Crime Category Analysis:

An in-depth grasp of the kinds of crimes that are common in various regions can be obtained by classifying crimes. Designing focused interventions and crime prevention strategies benefits greatly from this information.

#### 4. Geospatial Analysis:

The geographical distribution of crimes can be visually represented, aiding in pinpointing hotspots and allocating resources efficiently. This insight is crucial for law enforcement agencies and policymakers.

## Implications:

### 1. Policy Formulation:

By using the data, policymakers can create efficient crime prevention plans that are suited to the trends that have been identified. The accuracy of policy interventions is improved by this data-driven methodology.

### 2 .Evaluation:

It is possible to assess the success of strategies that have been put into practice by regularly checking the dashboard. Agencies can guarantee continuous improvement by modifying their strategies in response to real-time data.

### 3 .Resource Allocation:

Based on the insights gathered from the dashboard, law enforcement organizations can strategically allocate resources, concentrating on regions with higher crime rates and particular crime categories.

### 4 .Community Engagement:

By promoting cooperation between the public and law enforcement, the dashboard can serve as a tool for community engagement. Community participation in crime prevention is encouraged by open communication about crime trends.

## Limitations:

### 1 .Privacy Concerns:

The privacy of individual people may unintentionally be compromised by aggregated crime data. Protecting sensitive data and upholding privacy laws require the implementation of safeguards.

### 2 .Dynamic Nature of Crime:

Because crime patterns are dynamic, it's possible that the dashboard won't immediately pick up on abrupt changes or new trends. Relevance depends on real-time data integration and frequent updates.

### **3 .Dependency on Data Quality:**

High-quality input data is critical to the dashboard's efficacy. The credibility of the insights and their ensuing consequences may be compromised by inaccurate or incomplete data.

### **4 .Reporting Bias:**

Since the data depends on accurate reporting, underreporting or incorrect categorization of crimes may distort the insights and produce false conclusions.

## **RECOMMENDATIONS:**

### **1. Customizable Filters:**

Include modifiable filters like location, crime type, and time range. Users can adjust the dashboard to suit their own requirements and concentrate on pertinent data thanks to this feature.

### **2. User-Friendly Interface:**

Make sure lawmakers, law enforcement, and other stakeholders can easily navigate the dashboard by providing an intuitive user interface. Effective use of the crime data is encouraged by this.

### **3. Real-time Updates:**

To deliver timely insights, incorporate real-time data updates. By providing up-to-date information on crime trends and patterns to all parties involved, this feature facilitates proactive decision making.

### **4. Interactive Maps:**

Include interactive maps to visualize crime data spatially. This facilitates the targeted allocation of resources for law enforcement initiatives and aids in the identification of trends and high-crime areas.

## 5. Accessibility Compliance:

Ensure that the dashboard is accessible to users with disabilities.

Information access needs to be equitable for all parties involved, which means that inclusivity is crucial.

## 6. Predictive Analytics:

See if you can predict future crime hotspots by utilizing predictive analytics.

Preemptive resource deployment can be aided by this proactive approach for law enforcement.

## 7. Comparative Analysis:

Provide instruments to analyze comparisons across various eras, areas, or categories of criminal activity. This facilitates the evaluation of interventions' efficacy and the comprehension of changing patterns of criminal activity by policymakers.

## 8.CONCLUSION

- A thorough and perceptive analysis of crime statistics within the Metropolitan Police area is provided for the users by the comprehensive Power BI dashboard that was created by extracting and utilizing the UK Metropolitan Police Service (MPS) monthly crime datasets from year 2019 to 2021.
- A dynamic map is illustrated to depict crime hotspots in various regions that allows the identification of visually impaired areas by stakeholders, thereby enabling targeted resource allocation for crime prevention efforts.
- In line chart It displays lipa The monthly variations in crime incidents it provides a temporal perspective that aids the identification of patterns and trends changes over time. This temporal analysis is essential for facilitating proactive measures to address emerging challenges and to understand seasonality or shifts in criminal activities.
- A clear breakdown of the different categories of crimes that are prevalent in the Metropolitan Police area can be seen in the bar chart, which classifies incidents according to crime categories. The ability to prioritize efforts

based on the frequency of particular crime types is a valuable tool for law enforcement agencies and policymakers.

- Key Performance Indicators (KPIs) are described per monthly variations, total crimes, and crime types etc. These are metrics that are easy to glance at and for quick comparisons. These KPIs are useful for decision-makers to empower better allocation of the resources and to make best strategic plans.

To put it succinctly, the Power BI dashboard turns complex crime data into actionable intelligence while simultaneously improving accessibility. In the continuous efforts to make communities safer and enhance public safety in general, this dashboard serves as a potent tool due to its visual and analytical nature.