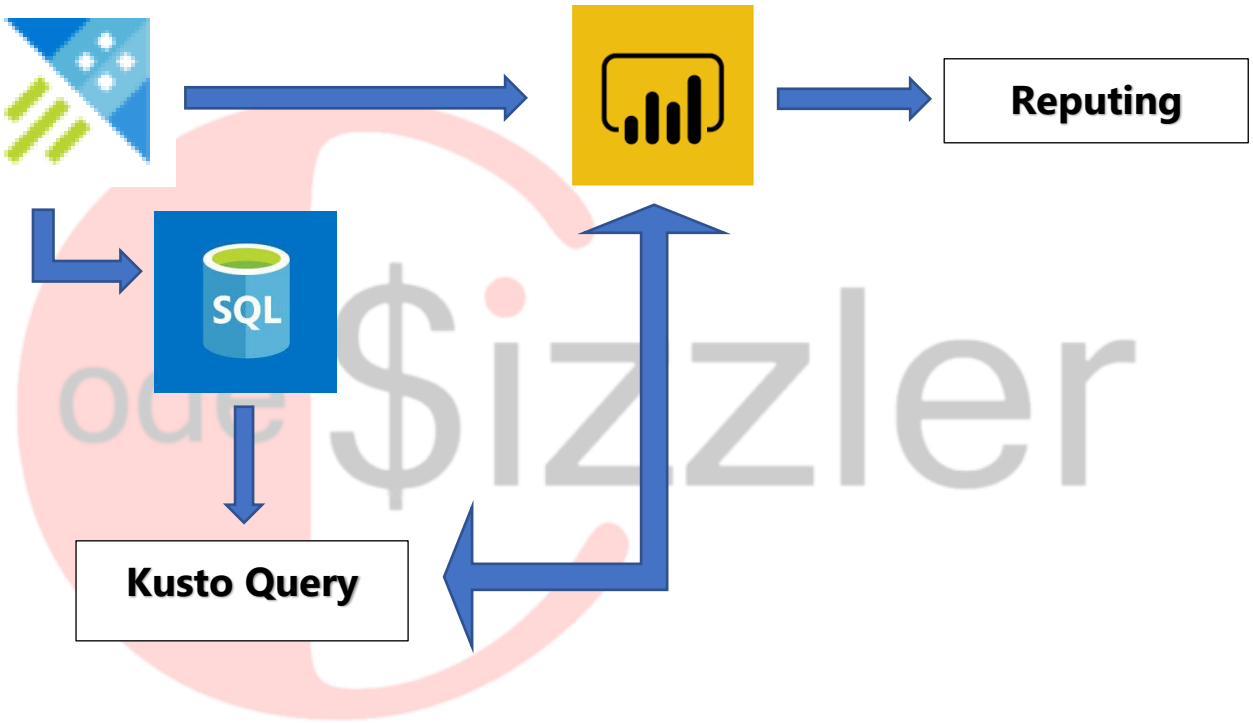
Building massive and lightning-fast analytics solutions with Azure Data Explorer

Use case scenario

Contoso is looking to help their customers make business decisions with immediate impact based on real-time terabyte/petabyte of data in seconds. Here as a Data Analyst you are supposed to build a near-real-time analytical solution with Azure Data Explorer (ADX), which supports interactive ad-hoc queries of terabyte/petabyte data.

Solution Architecture



In Azure Data Explorer you will be creating a database. In that database a query is used to run the program say storm event. Once the query initiated a report will be generated in the power BI, using that report you will manage the results in the Kusto Query Language.

Pre-requisites

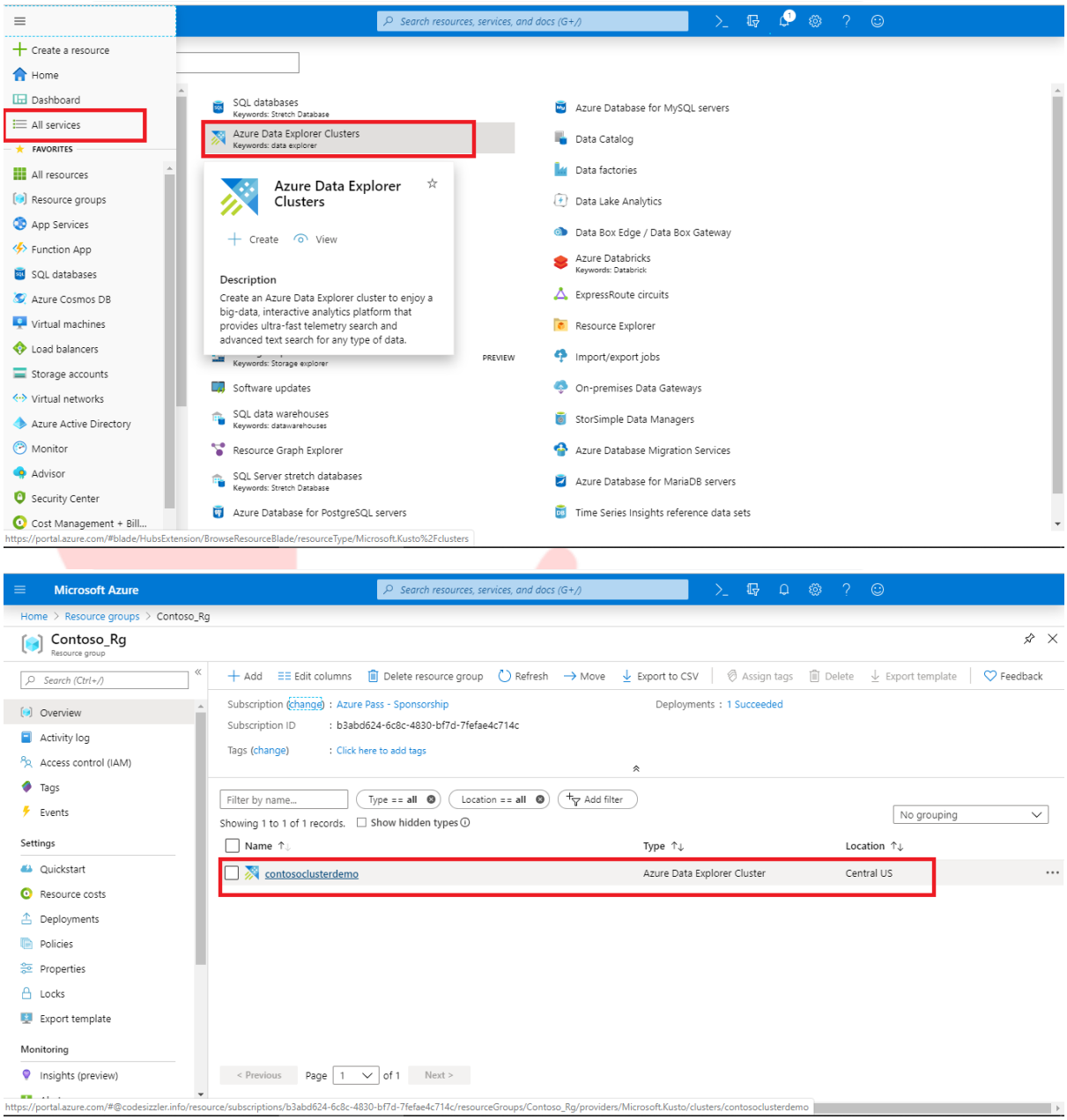
To perform this demo, users must have the following resource:

- Valid Azure Subscription
- Some knowledge on Azure Data Explorer, Power BI and Kusto Query Language.

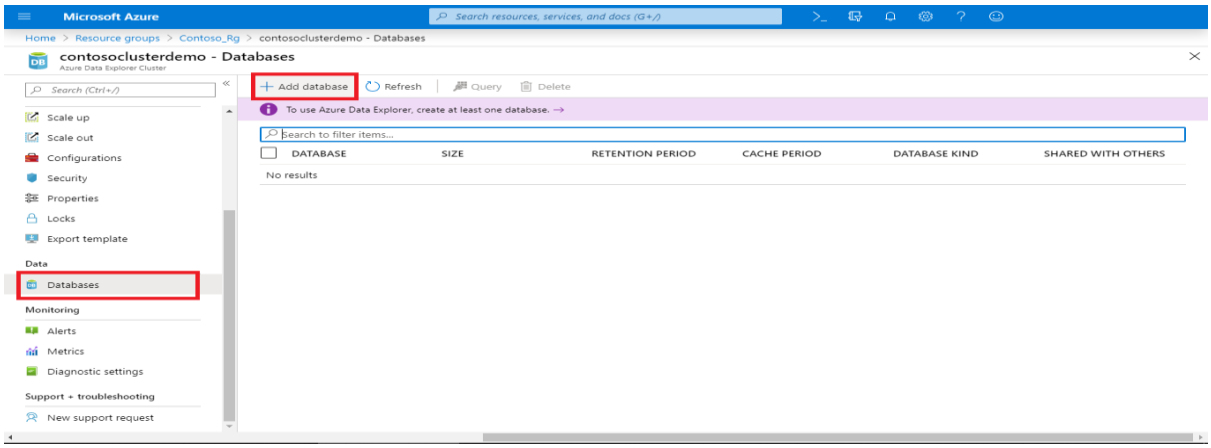
Note – In case if you don't have an azure subscription, sign up for a free trial over here.

Demo

Log-in to Azure portal with your account using www.portal.azure.com. Select all service in the left menu in that select **Azure Data Explorer**. Once it prompts to the page select the created Cluster to add a **Database** in the existing cluster.

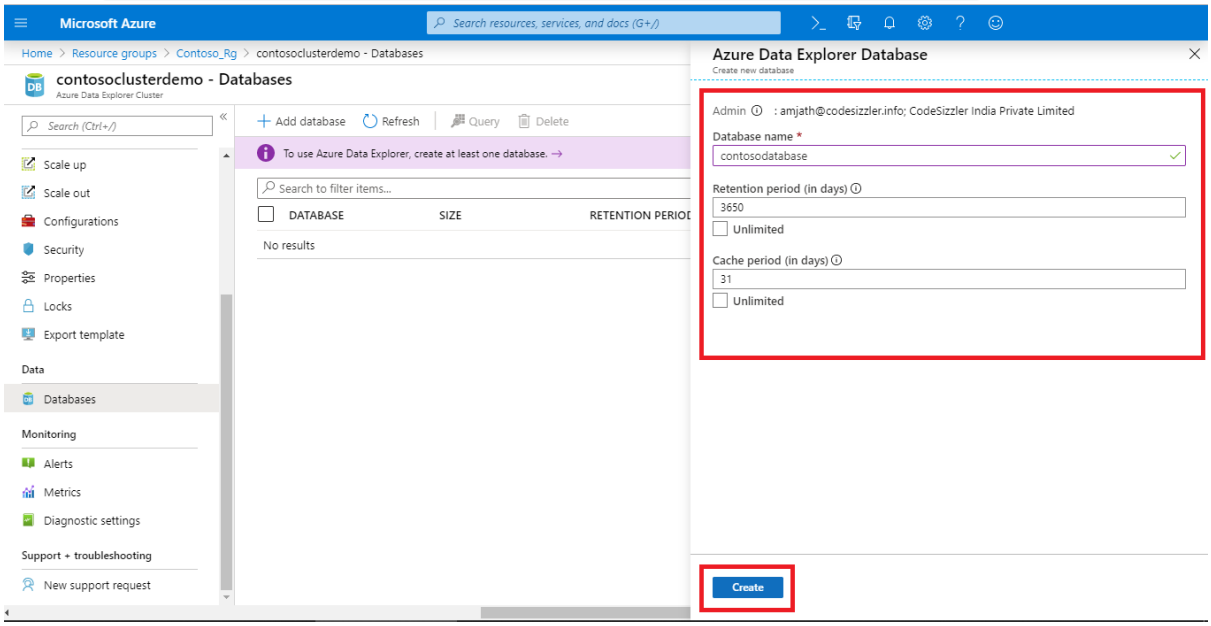


Once you open the existing cluster select **Database** section and then create the database by clicking **+ Add Database** icon.

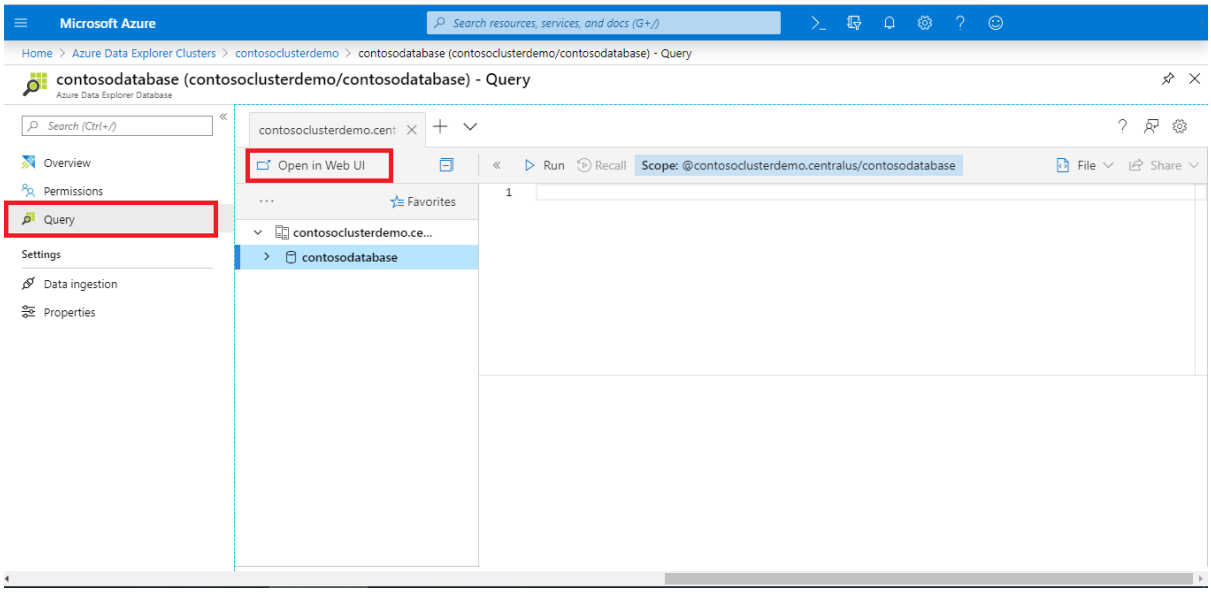


Create the database with the following configuration and click on **Create**:

- Database: Give a valid name to the Database'
- Retention period: 3650.
- Cache period: 31.

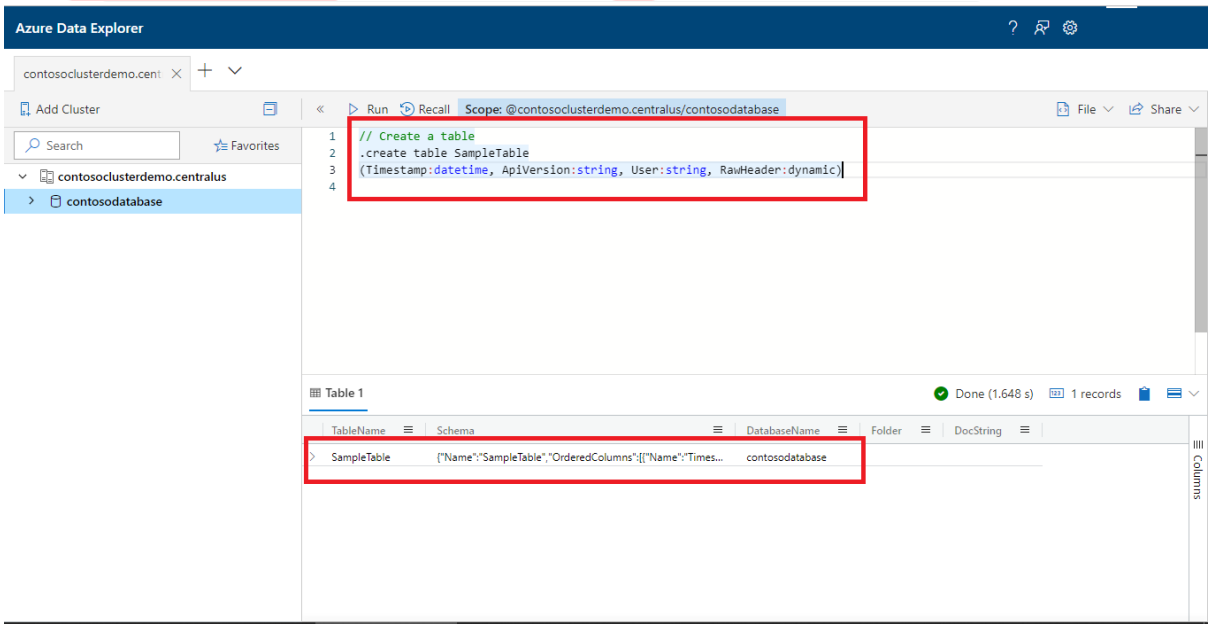


Now select the database and then select **Query** section in that select **Open in Web UI.**



Once you open the query in the web follow you have to create a sample table by using the following command the query.

```
// Create a table
.create table SampleTable
(Timestamp:datetime, ApiVersion:string, User:string, RawHeader:dynamic)
```

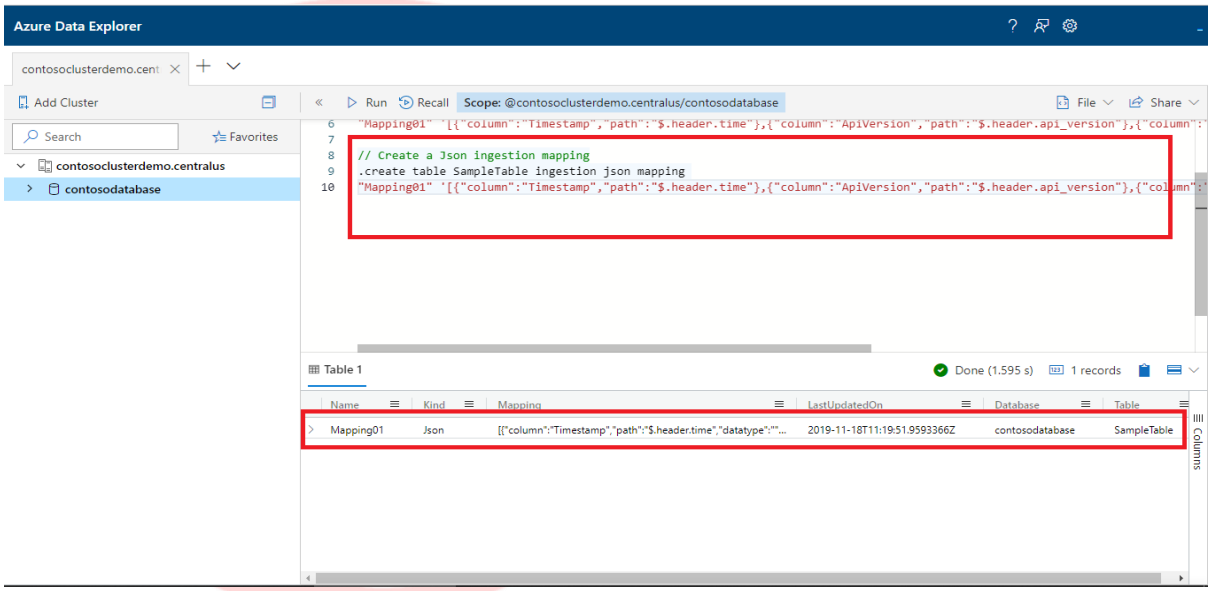


Now create the table mapping in the web UI with the following command.

```
// Create a Json ingestion mapping

.create table SampleTable ingestion json mapping

"Mapping01"
'[{"column":"Timestamp","path":"$.header.time"},{"column":"ApiVersion","path":"
$.header.api_version"},{"column":"RawHeader","path":"$.header"},{"column":"User
","path":"$.payload.user"}]'
```

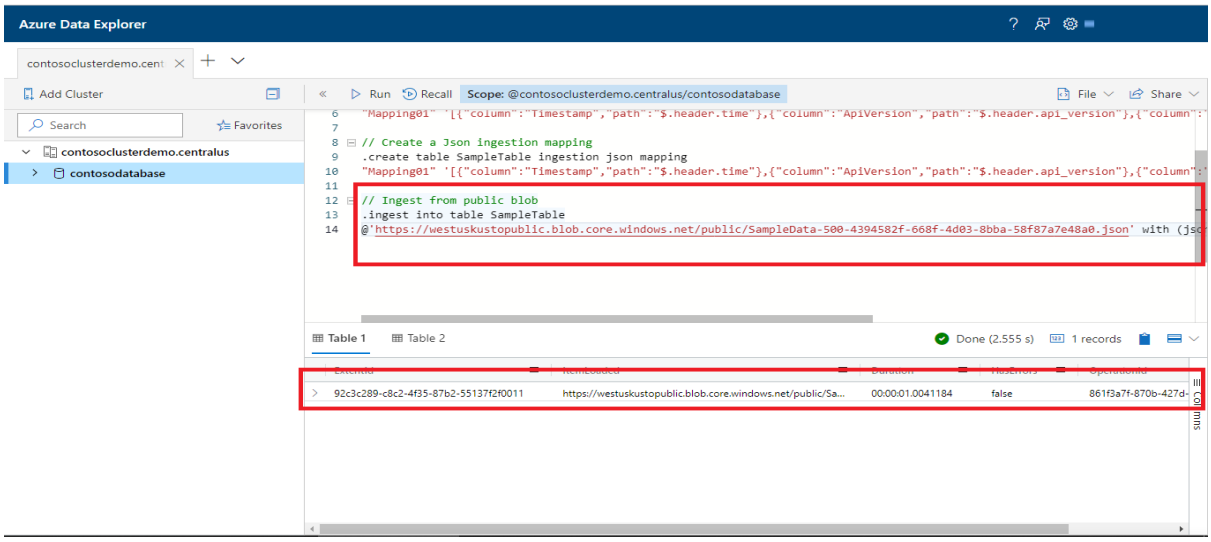
Now run the following command to view the ingestion mapping.

```
// View ingestion mappings

.show table SampleTable ingestion json mappings
```

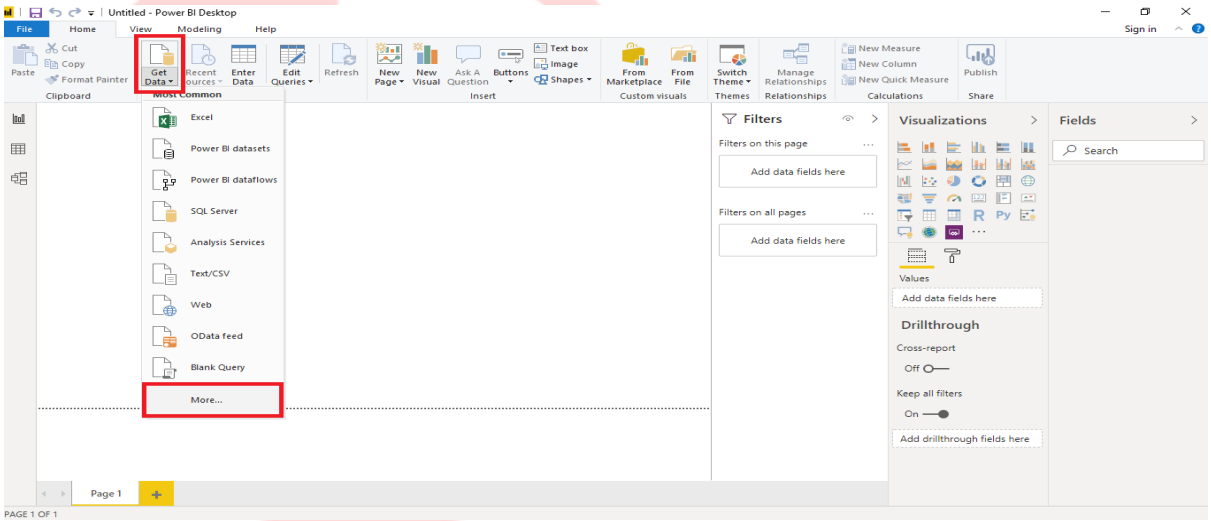


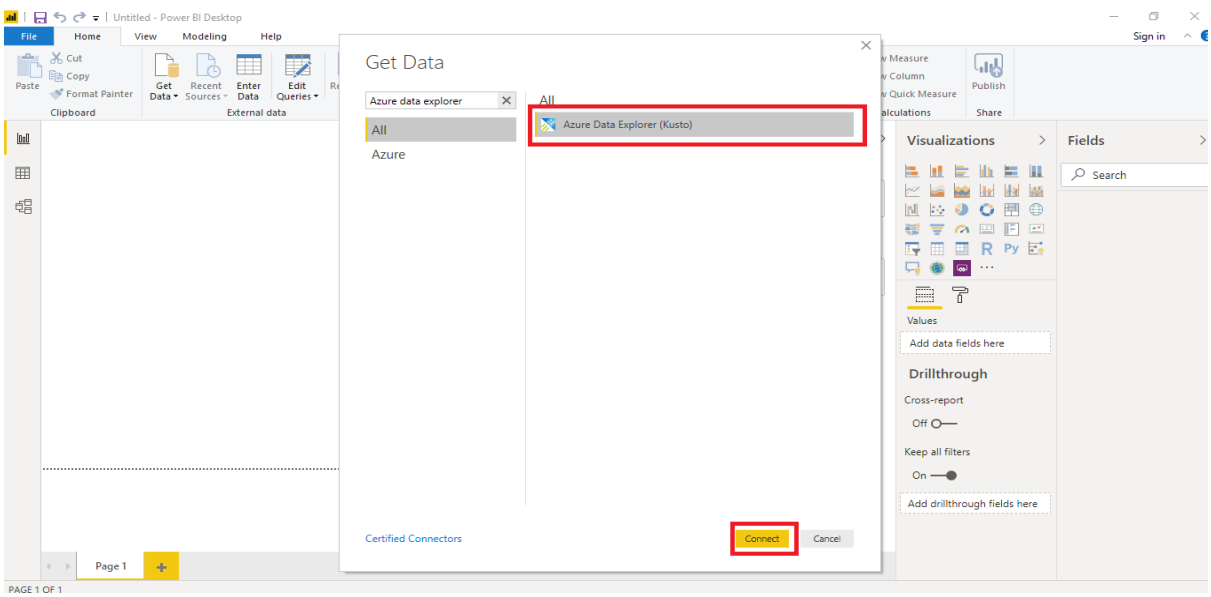
Now run the following command for ingesting data from the public blob.

```
// Ingest from public blob

.ingest into table SampleTable

@'https://westuskustopublic.blob.core.windows.net/public/SampleData-500-
4394582f-668f-4d03-8bba-58f87a7e48a0.json' with (jsonMappingReference =
"Mapping01")
```



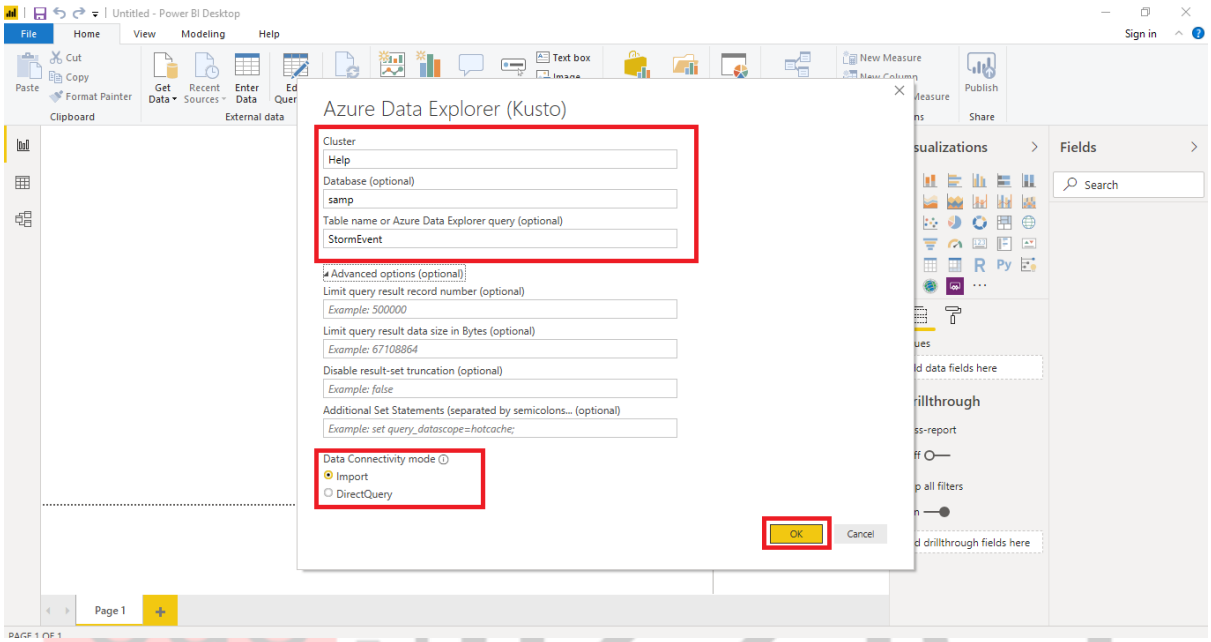
Now connect the **Azure Data Explorer** in the **Power BI** by selecting the **Get Data** in the Power BI and select the more option search for Azure Data Explorer and then select **Connect**.



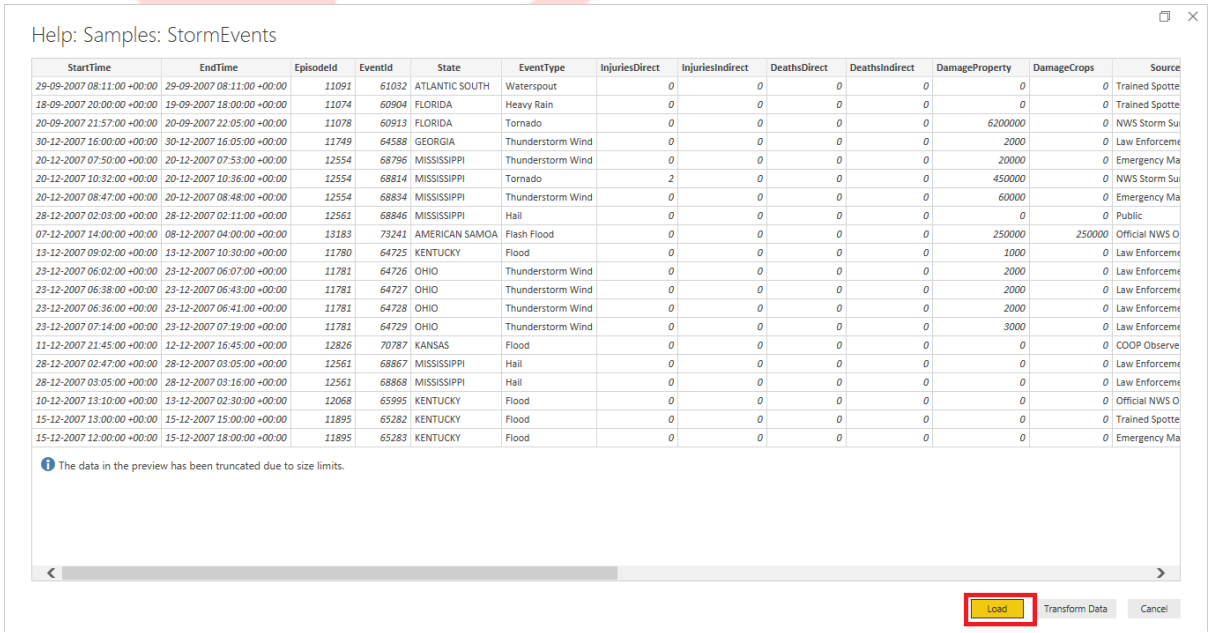


Now connect your Azure Data Explorer with the following configuration and then select **OK**.

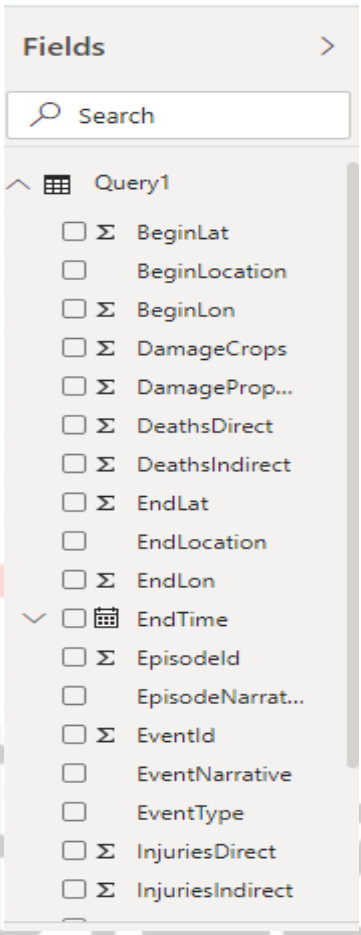
- Cluster: Help.
- Database: Sample.
- Table name or Azure data Explorer Query: Storm Event.
- Data connectivity mode: Import.



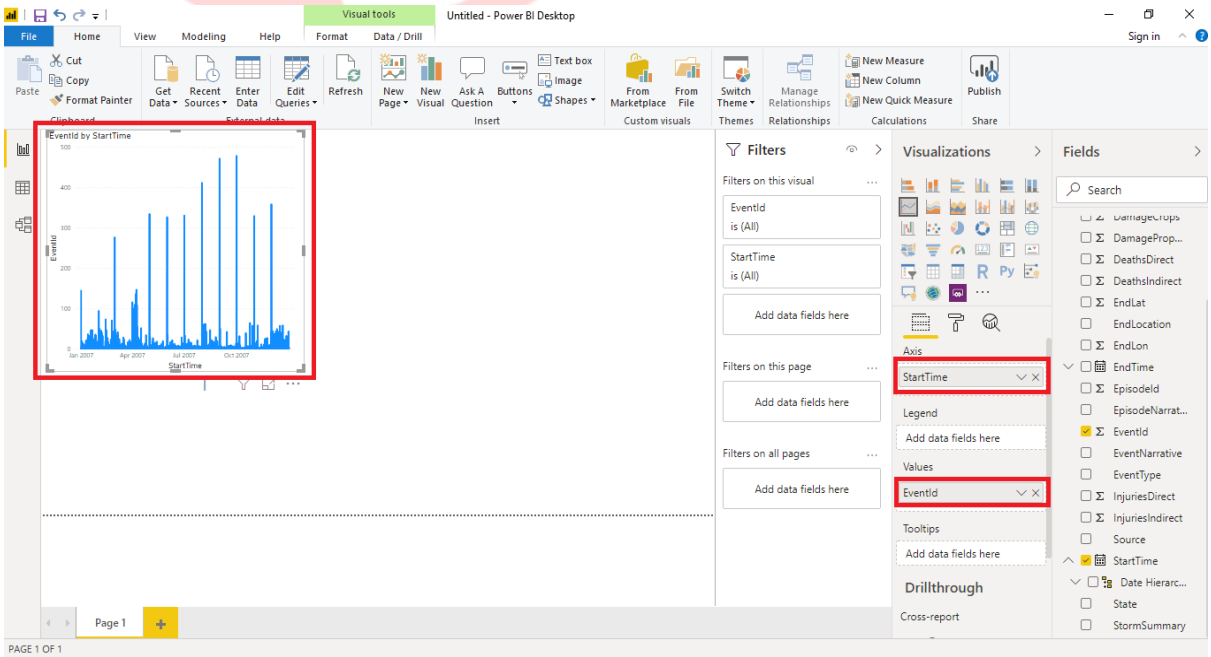
Now select the **Load** in the following page once you connect to the **Azure Data Explorer**.



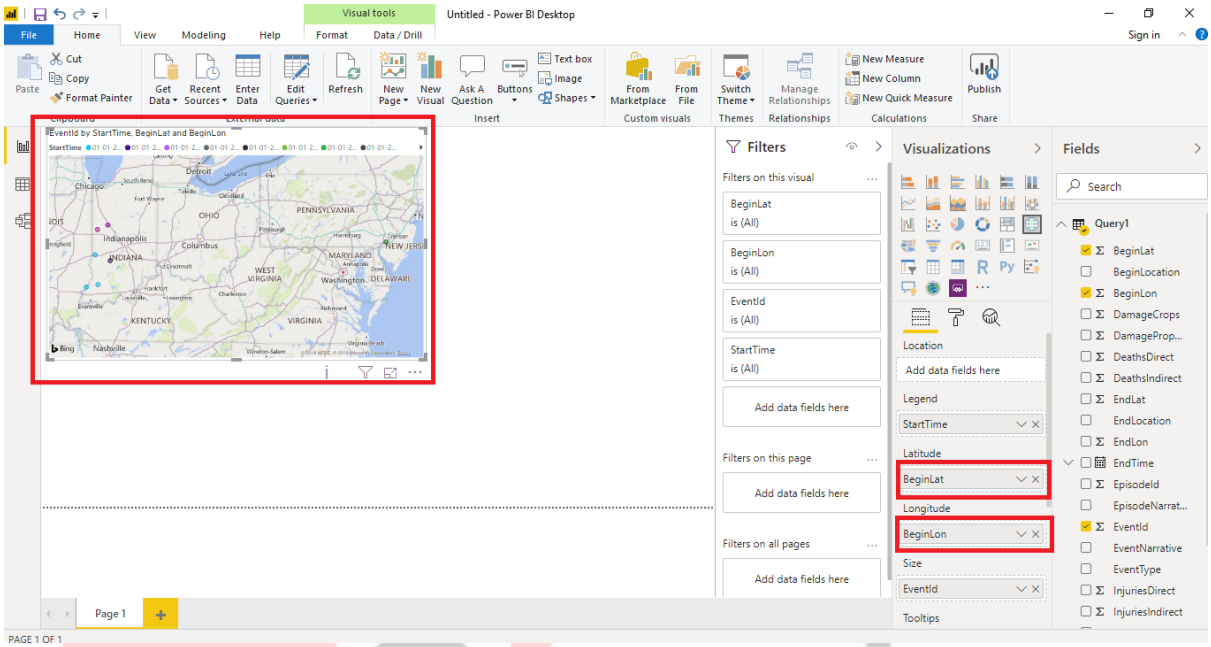
Now the new StormEvent is created in the Power BI report.



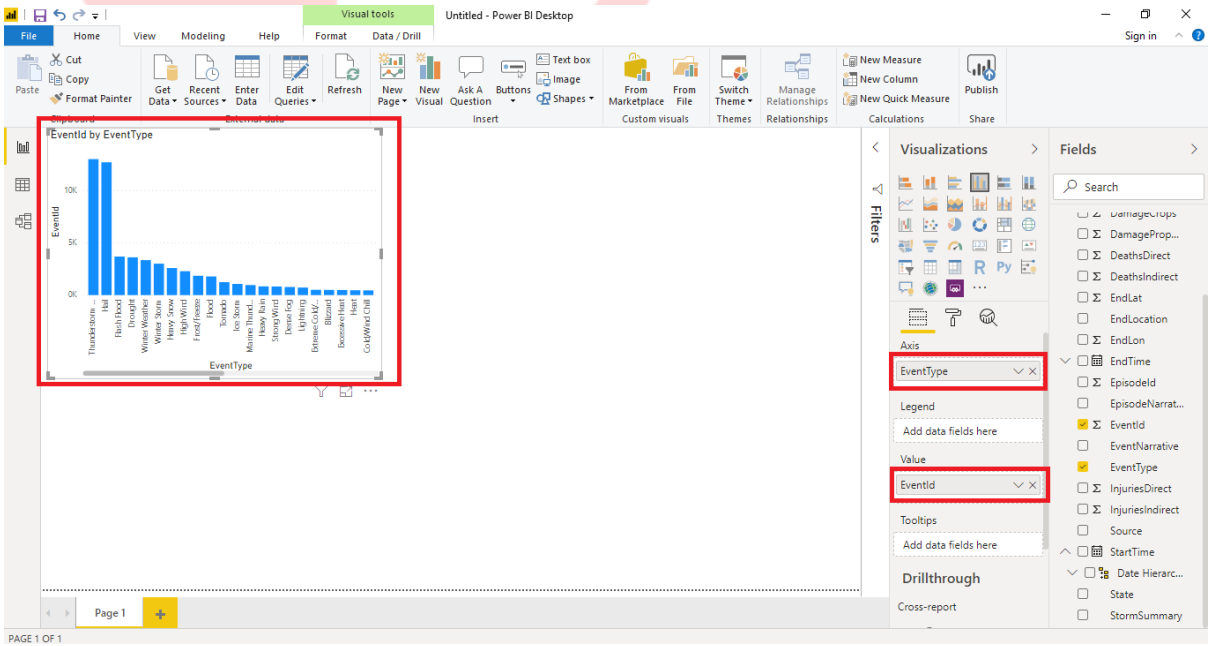
Now create a Power BI report. First create a line chart with total number of events by using **Start Time** in Axis box and **EventId** in the Values box.



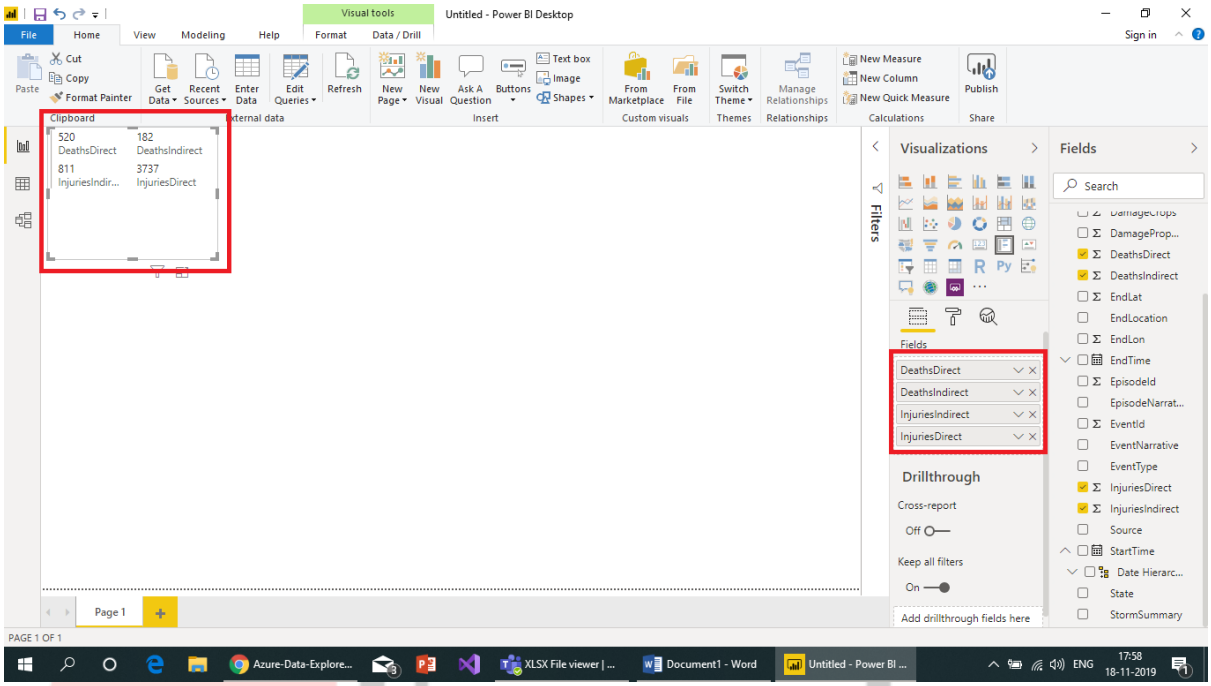
Now add a map title by using **Beginlat** in the Latitude box and use **BeginIon** in the Longitude box.



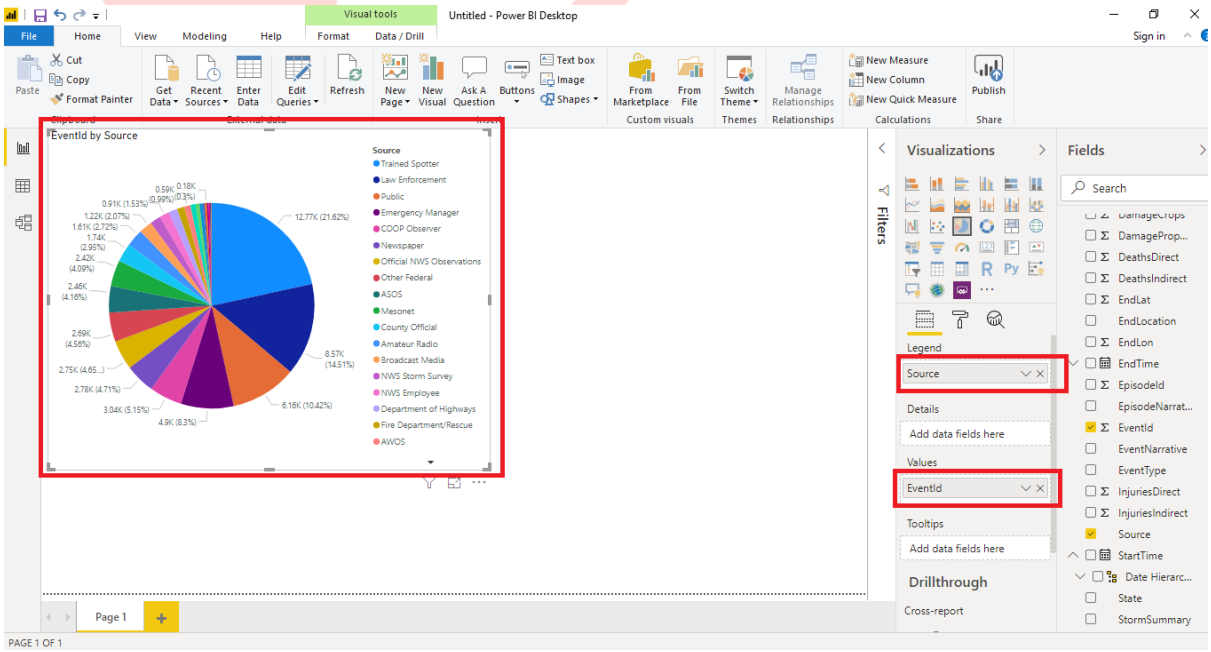
Now create a Clustered column chart by putting **Event Type** in the Axis box and **EventId** in the Value box.



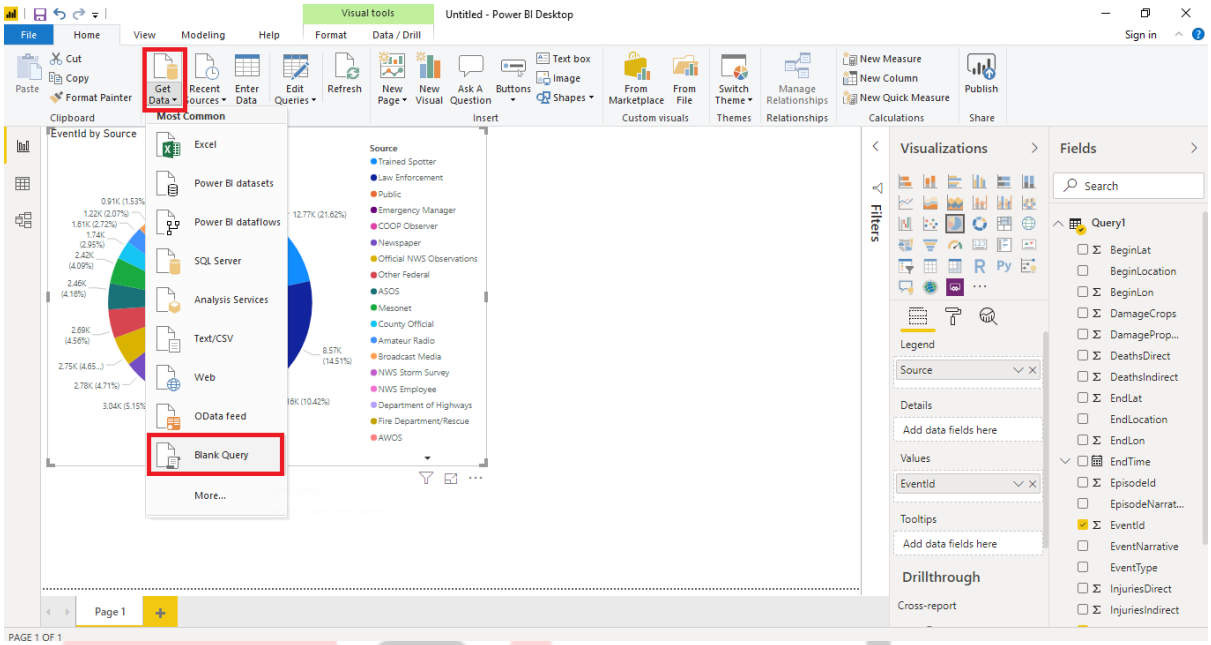
Now create 4 separate card tiles with “DeathDirect”, “DeathIndirect”, “InjuriesDirect” and “InjuriesIndirect in the Fields box.



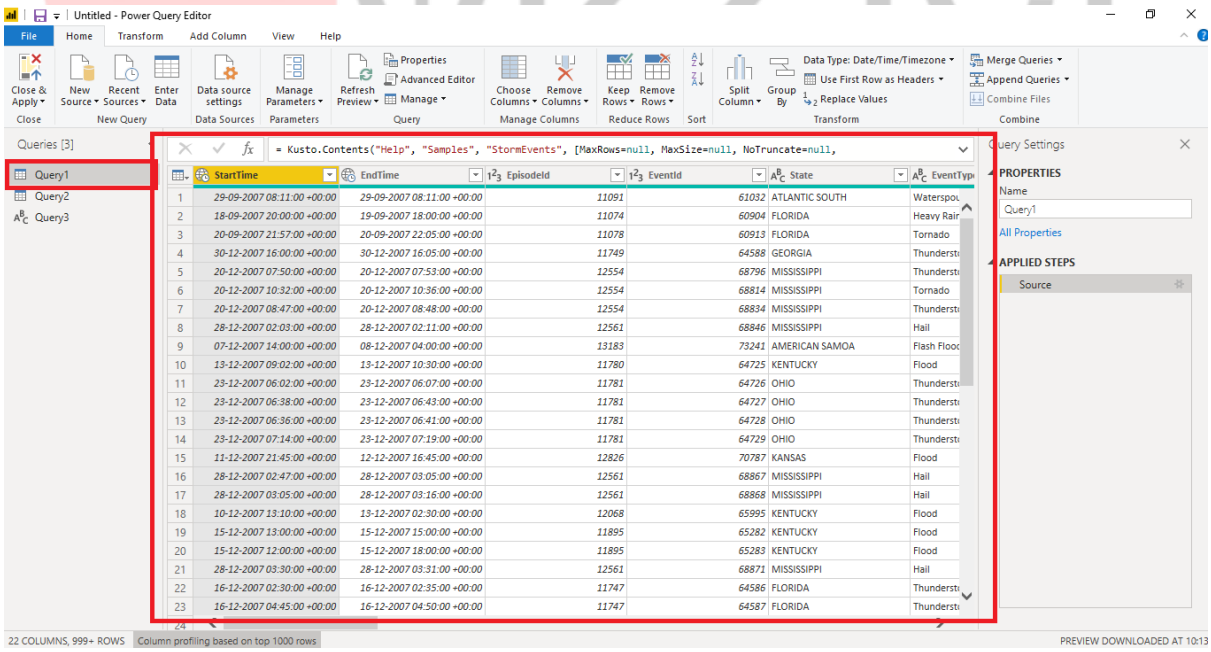
Now create a pie chart of reporting sources by using the **Source** in the Legend box and by using the **EventId** in the Values box.



Once you are done with the report you can view the results in the Query select **Get data** and select **Blank Query**.



Now you can see the results in the Query you have created.



	StartTime	EndTime	EpisodeId	EventId	State	EventType
1	29-09-2007 08:11:00 +00:00	29-09-2007 08:11:00 +00:00	11091	61032	ATLANTIC SOUTH	Waterspou
2	18-09-2007 20:00:00 +00:00	19-09-2007 18:00:00 +00:00	11074	60904	FLORIDA	Heavy Rain
3	20-09-2007 21:57:00 +00:00	20-09-2007 22:05:00 +00:00	11078	60913	FLORIDA	Tornado
4	30-12-2007 16:00:00 +00:00	30-12-2007 16:05:00 +00:00	11749	64588	GEORGIA	Thunderst
5	20-12-2007 07:50:00 +00:00	20-12-2007 07:53:00 +00:00	12554	68796	MISSISSIPPI	Thunderst
6	20-12-2007 10:32:00 +00:00	20-12-2007 10:36:00 +00:00	12554	68814	MISSISSIPPI	Tornado
7	20-12-2007 08:47:00 +00:00	20-12-2007 08:48:00 +00:00	12554	68834	MISSISSIPPI	Thunderst
8	28-12-2007 02:03:00 +00:00	28-12-2007 02:11:00 +00:00	12561	68846	MISSISSIPPI	Hail
9	07-12-2007 14:00:00 +00:00	08-12-2007 04:00:00 +00:00	13183	73241	AMERICAN SAMOA	Flash Flood
10	13-12-2007 09:02:00 +00:00	13-12-2007 10:30:00 +00:00	11780	64725	KENTUCKY	Flood
11	23-12-2007 06:02:00 +00:00	23-12-2007 06:07:00 +00:00	11781	64726	OHIO	Thunderst
12	23-12-2007 06:38:00 +00:00	23-12-2007 06:43:00 +00:00	11781	64727	OHIO	Thunderst
13	23-12-2007 06:36:00 +00:00	23-12-2007 06:41:00 +00:00	11781	64728	OHIO	Thunderst
14	23-12-2007 07:14:00 +00:00	23-12-2007 07:19:00 +00:00	11781	64729	OHIO	Thunderst
15	11-12-2007 21:45:00 +00:00	12-12-2007 16:45:00 +00:00	12826	70787	KANSAS	Flood
16	28-12-2007 02:47:00 +00:00	28-12-2007 03:05:00 +00:00	12561	68867	MISSISSIPPI	Hail
17	28-12-2007 03:05:00 +00:00	28-12-2007 03:16:00 +00:00	12561	68868	MISSISSIPPI	Hail
18	10-12-2007 13:10:00 +00:00	13-12-2007 02:30:00 +00:00	12068	65995	KENTUCKY	Flood
19	15-12-2007 13:00:00 +00:00	15-12-2007 15:00:00 +00:00	11895	65282	KENTUCKY	Flood
20	15-12-2007 12:00:00 +00:00	15-12-2007 18:00:00 +00:00	11895	65283	KENTUCKY	Flood
21	28-12-2007 03:30:00 +00:00	28-12-2007 03:31:00 +00:00	12561	68871	MISSISSIPPI	Hail
22	16-12-2007 02:30:00 +00:00	16-12-2007 02:35:00 +00:00	11747	64586	FLORIDA	Thunderst
23	16-12-2007 04:45:00 +00:00	16-12-2007 04:50:00 +00:00	11747	64587	FLORIDA	Thunderst

You can also manage the results by using the **Kusto Query Language**.