



# **POWER BI: INTRODUCTION TO DAX**

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**International Association Crime Analysts  
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# INSTRUCTOR



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## Introduction to the DAX

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# TERMINOLOGY

**Data Analysis Expressions (DAX)** is a formula language used in Microsoft Power BI to perform calculations and create custom measures, columns, and tables.

**DAX** allows you to manipulate data within Power BI to generate valuable insights and reports.

# SOME KEY CONCEPTS

## 1. Measures Quick and Custom:

Measures are calculations that aggregate data in a virtual table.

## 2. Calculated Columns:

Calculated columns are another way to extend the data model.

## 3. Time Intelligence:

DAX includes powerful time intelligence functions, allowing you to perform dates and time period calculations.

# DAX AND EXCEL

Excel: work on cells

```
= (A1*A2)-B2
```

DAX: works only on tables

```
Count of Incidents = COUNT(Crimes[RN Number])
```

Count of Incidents - a name for a measure or calculation

**Crimes** – table name (if a name has two and more words with space, use parenthesis, 'Crime incidents')

**[RN Number]** – column name

# DAX AND EXCEL SIMILARITY

Excel:

```
= IF([@[Event Time] > 19, "Night", "Day")
```

DAX:

```
Evening Incidents = IF(Crimes[Event Time] > 19, "Night", "Day")
```

# POWER BI – DATA SET

Source:

<https://data.oaklandca.gov/PublicSafety/CrimeWatch-Data/ppgh-7dqv>

## CrimeWatch Data

Public Safety

View Data

Visualize ▾

Export

API

⋮

A full dataset of CrimeWatch data.

The Oakland Police Department provides crime data to the public through the City of Oakland's Crime Watch web site. This site presents the data in a geographic format, which allows users of

[More](#)

**Updated**

February 7, 2023

**Data Provided by**

Oakland Police Department

### About this Dataset

Mute Dataset

Updated

**February 7, 2023**

**Data Last Updated**

February 7, 2023

**Metadata Last Updated**

February 7, 2023

**Date Created**

June 17, 2021

### Topics

Category

Public Safety

Tags

crime



# POWER BI – GET DATA

The screenshot displays the Microsoft Power BI Desktop application window. The title bar shows 'Untitled - Power BI Desktop' and the user 'Svetlana Gubin'. The ribbon is set to 'Home', with the 'Get data' group highlighted by a blue box. This group includes options for 'Excel workbook', 'Data hub', 'SQL Server', 'Enter data', 'Dataverse', and 'Recent sources'. Other ribbon groups like 'Transform data', 'New visual', 'Text box', 'More visuals', 'New measure', 'Quick measure', 'Sensitivity', and 'Publish' are also visible.

In the center of the workspace, a dialog box titled 'Add data to your report' is displayed, also highlighted with a blue box. It contains the text: 'Once loaded, your data will appear in the Data pane.' Below this text are four buttons: 'Import data from Excel', 'Import data from SQL Server', 'Paste data into a blank table', and 'Try a sample dataset'. At the bottom of the dialog is a link: 'Get data from another source →'.

On the right side, the 'Visualizations' pane is open, showing various chart and table icons. Below it, the 'Filters' pane is visible, and the 'Data' pane is partially visible on the far right. The bottom status bar shows 'Page 1' and a zoom level of '63%'.

# POWER BI – TEXT/CSV

The screenshot displays the Microsoft Power BI Desktop interface. The top ribbon includes tabs for File, Home, Insert, Modeling, View, Optimize, Help, and External tools. The 'Home' tab is active, and the 'Get data' button is highlighted with a red circle. A dropdown menu is open, listing 'Common data sources' such as Excel workbook, Power BI datasets, Dataflows, Dataverse, SQL Server, Analysis Services, Text/CSV (highlighted with a red circle), Web, OData feed, Blank query, and Power BI Template Apps. Below the menu, the main workspace shows a 'Data' pane on the right with a search bar and a message: 'You haven't loaded any data yet. Get data'. The central area contains the heading 'Add data to your report' and the instruction 'Once loaded, your data will appear in the Data pane.' Below this are four buttons: 'Import data from Excel', 'Import data from SQL Server', 'Paste data into a blank table', and 'Try a sample dataset'. A link 'Get data from another source →' is positioned below these buttons. The bottom status bar shows 'Page 1' and a zoom level of 63%.

# POWER BI – DATA

Open

← → ↑ ↓ This PC > Desktop > IACA Webinar 2023 > 7\_Simple Visuals

Organize · New folder

Search 7\_Simple Visuals

Name	Date modified	Type	Size
CrimeWatch_2023.txt	6/14/2023 7:26 PM	Text Document	80 KB

File name:  Text Files (\*.txt;\*.csv;\*.prn)

Open Cancel

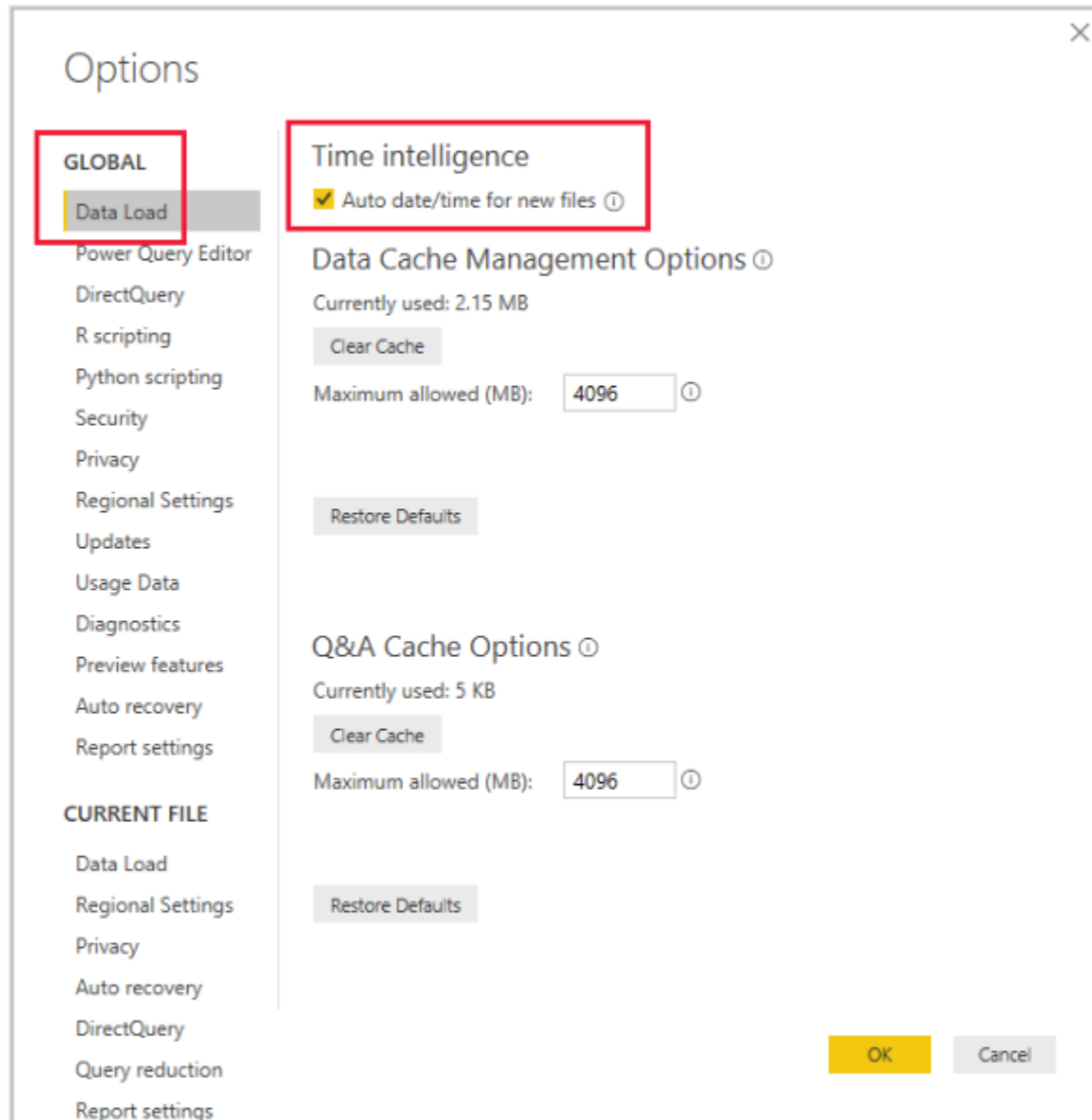
# POWER BI – LOAD DATA

File Origin: 1252: Western European (Windows) | Delimiter: Tab | Data Type Detection: Based on first 200 rows

Address	CaseNumber	City	CrimeType	DateTime	Description	Page
1300 MADISON ST	12-004282	Oakland	TOWED VEHICLE	1/25/2023 11:30:00 AM	BURGLARY-AUTO	03
1400 JACKSON ST	22-000412	Oakland	STOLEN VEHICLE	1/2/2023 8:00:00 PM	VEHICLE THEFT - AUTO	04
400 23RD ST	22-002001	Oakland	BURG - AUTO	1/12/2023 12:37:00 PM	BURGLARY-AUTO	08
800 ISABELLA ST	23-000003	Oakland	ROBBERY	1/1/2023 12:37:00 AM	CARJACKING - STRONGARM	07
1500 MADISON ST	23-000024	Oakland	BURG - COMMERCIAL	1/1/2023 3:28:00 AM	BURGLARY-FORCIBLE ENTRY	04
800 MILTON ST	23-000033	Oakland	MISDEMEANOR ASSAULT	1/1/2023 3:00:00 AM	BATTERY	07
2900 MCCLURE ST	23-000036	Oakland	OTHER	1/1/2023 4:15:00 AM	SC UNEXPLAINED DEATH	08
400 7TH ST	23-000038	Oakland	OTHER	1/1/2023 7:55:00 AM	VIOLATION CUSTODY DECREE	03
500 39TH ST	23-000055	Oakland	THREATS	1/1/2023 8:36:00 AM	CRIMINAL THREATS THREATED CRIME W/INTENT TO TE...	08
500 39TH ST	23-000055	Oakland	THREATS	1/1/2023 8:36:00 AM	EXHIBIT F/ARM THRTNG MANR	08
1400 JACKSON ST	23-000073	Oakland	DOMESTIC VIOLENCE	1/1/2023 11:40:00 AM	BATTERY:SPOUSE/EX SPOUSE/DATE/ETC	04
1400 JACKSON ST	23-000073	Oakland	DOMESTIC VIOLENCE	1/1/2023 11:40:00 AM	KIDNAPPING	04
400 6TH ST	23-000074	Oakland	ROBBERY	1/1/2023 12:02:00 PM	ROBBERY-FIREARM	03
3400 ADELIN ST	23-000154	Oakland	STOLEN VEHICLE	1/1/2023 5:49:00 PM	VEHICLE THEFT - AUTO	07
600 23RD ST	23-000159	Oakland	VANDALISM	1/1/2023 4:00:00 PM	VANDALISM:DEFACE PROPERTY	06
100 14TH ST	23-000183	Oakland	MISDEMEANOR ASSAULT	1/1/2023 2:43:00 AM	FORCE/ADW-OTHER DANGEROUS WEAPON:GBI	04
1000 CLAY ST	23-000190	Oakland	BURG - COMMERCIAL	1/2/2023 4:38:00 AM	BURGLARY-FORCIBLE ENTRY	03
100 13TH ST	23-000193	Oakland	HOMICIDE	1/2/2023 7:16:00 AM	SC UNEXPLAINED DEATH	03
200 29TH ST	23-000195	Oakland	STOLEN VEHICLE	1/2/2023 7:34:00 AM	VEHICLE THEFT - AUTO	08
400 7TH ST	23-000200	Oakland	STOLEN VEHICLE	1/2/2023 8:52:00 AM	VEHICLE THEFT - AUTO	03

Buttons: Extract Table Using Examples | Load | Transform Data | Cancel

# TIME INTELLIGENCE OPTIONS



# QUICK MEASURE

The image shows the Microsoft Power BI Desktop interface. At the top, the ribbon includes tabs for File, Home, Insert, Modeling, View, Optimize, Help, External tools, Format, and Data / Drill. The 'Home' tab is active, showing options like 'Get data' (Excel workbook, OneLake data hub, SQL Server) and 'Transform data'. The main workspace contains a table visual with a grey header and several rows of data. On the right, the 'Build a visual' pane is open, displaying 'Visual types' with a grid icon circled in red. Below this are sections for 'Rows', 'Columns', and 'Values', each with a '+Add data' button. The 'Suggest a type' option is currently turned off.

# QUICK MEASURE

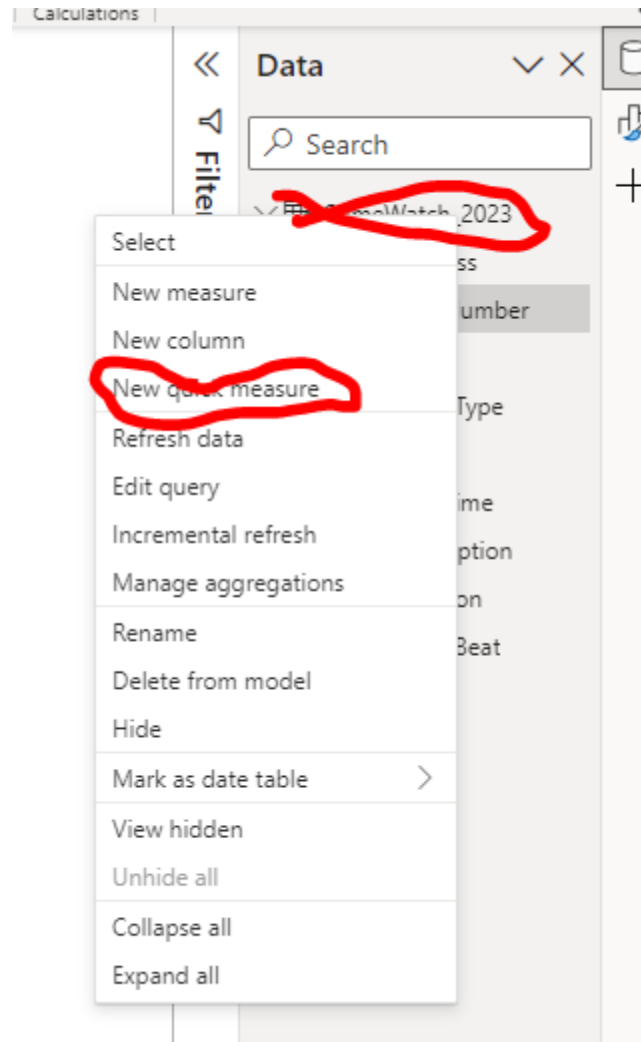
The image shows a data visualization interface. On the left is a table with the following data:

Year	Count of
2018	4856
2019	5643
2020	5743
2021	6447
2022	6837
Qtr 1	1696
Qtr 2	1697
Qtr 3	1799
Qtr 4	1645
2023	474
Qtr 1	474
<b>Total</b>	<b>30000</b>

On the right is the 'Build a visual' panel. It contains the following sections:

- Visual types:** Includes icons for various chart types and a 'Suggest a type' toggle set to 'Off'.
- Rows:** A list of date hierarchy levels: Date, Year, Quarter, and Month. This section is circled in red.
- Columns:** A section with a '+Add data' button.
- Values:** A list of measures: 'Count of Case...'. This section is also circled in red.

# QUICK MEASURE





# QUICK MEASURE

Calculations | Sensitivity | Share

## Quick measure

Select a calculation to create a measure or describe the measure you need and we'll generate suggestions in DAX, which you can customize later.

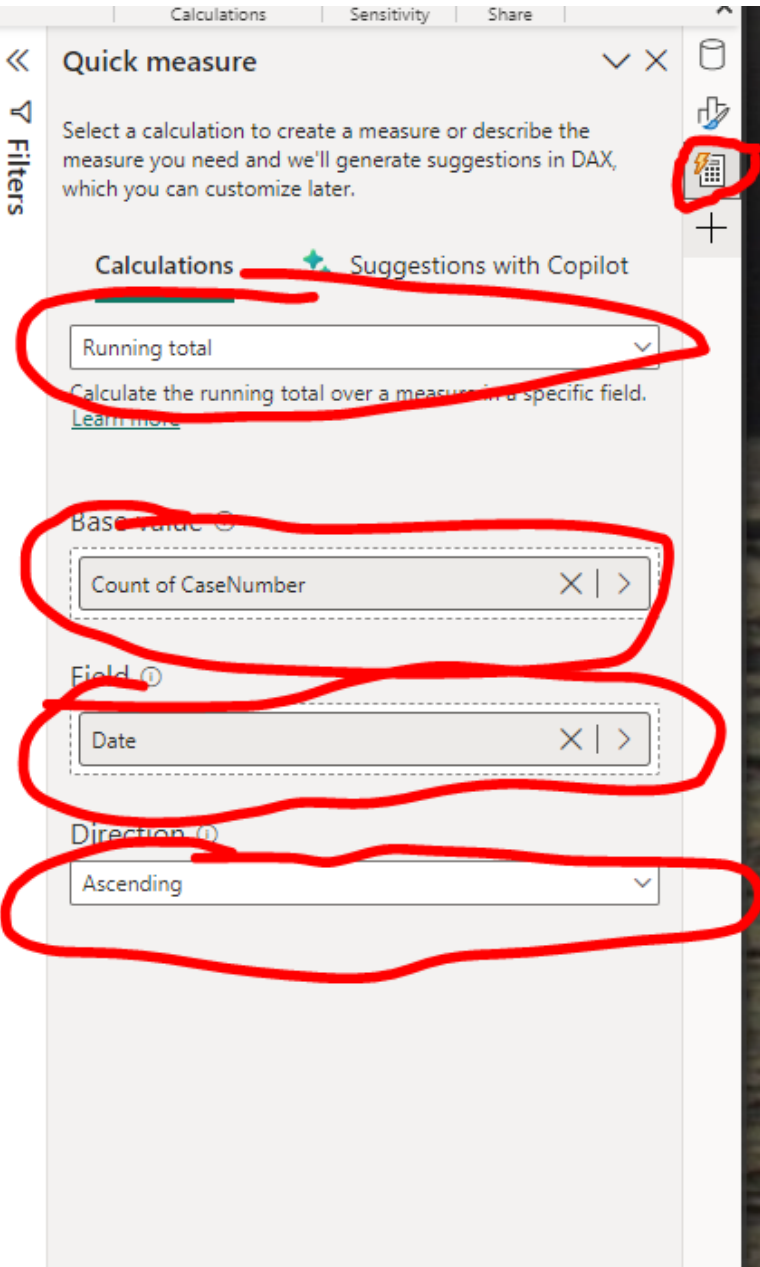
**Calculations** | Suggestions with Copilot

Running total  
Calculate the running total over a measure in a specific field.  
[Learn more](#)

Base value  
Count of CaseNumber

Field  
Date

Direction  
Ascending



year is (All)

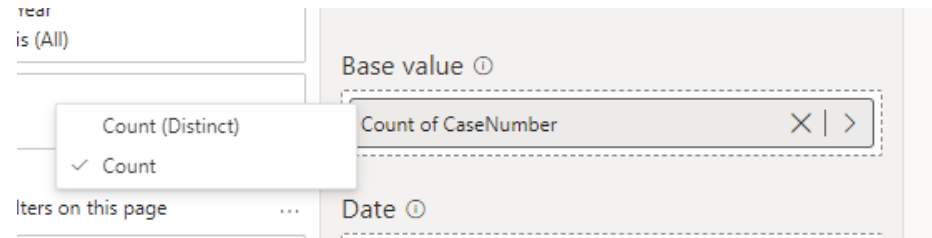
Base value

Count (Distinct)  
✓ Count

Count of CaseNumber

Filters on this page

Date



# QUICK MEASURE

Structure      Formatting      Properties      Calculations

Year	Count of CaseNumber	Count of CaseNumb
+ 2018	4856	4856
+ 2019	5643	5643
+ 2020	5743	5743
+ 2021	6447	6447
- 2022	6837	6837
+ Qtr 1	1696	1696
+ Qtr 2	1697	1697
+ Qtr 3	1799	1799
+ Qtr 4	1645	1645
- 2023	474	474
+ Qtr 1	474	474
<b>Total</b>	<b>30000</b>	<b>30000</b>

**Build a visual**

Visual types

Off    Suggest a type

Rows

- Date X
- Year X
- Quarter X
- Month X

+Add data

Columns

+Add data

Values

- Count of Case... X | >
- Count of Case... X | >

+Add data

# QUICK MEASURE

```
1 Count of CaseNumber running total in Date =  
2 CALCULATE(  
3     COUNTA('CrimeWatch_2023'[CaseNumber]),  
4     FILTER(  
5         ALLSELECTED('CrimeWatch_2023'[Date]),  
6         ISONORAFTER('CrimeWatch_2023'[Date], MAX('CrimeWatch_2023'[Date]), DESC)  
7     )  
8 )
```

# NEW TABLE

Calendar = CALENDAR ("01-01-2018", "12-31-2023")

The image shows a screenshot of the Microsoft Power BI ribbon interface. The 'Modeling' tab is highlighted in yellow. The ribbon is divided into several sections: File, Home, Insert, Modeling, View, Optimize, Help, and External tools. The Modeling section contains the following options: 'New measure', 'Quick measure', 'New column', and 'New table'. The 'New table' option is highlighted with a yellow box. Below the ribbon, the text 'Build visuals with your data' is displayed.

File Home Insert **Modeling** View Optimize Help External tools

Manage relationships Relationships

New measure Quick measure Calculations

New column New table

Change detection Page refresh

New parameter Parameters

Manage roles View as Security

Q&A setup Language Q&A

Linguistic schema


Build visuals with your data


# NEW TABLE


The screenshot displays the Microsoft Power BI Desktop interface. The ribbon at the top includes 'File', 'Home', 'Insert', 'Modeling', 'View', 'Optimize', 'Help', 'External tools', and 'Table tools'. The 'Table tools' ribbon is active, showing options like 'Mark as date table', 'Manage relationships', 'New measure', 'Quick measure', 'New column', and 'New table'. The 'Name' field is set to 'Calendar'. Below the ribbon, the DAX formula bar contains the formula: `Calendar = CALENDAR ("01-01-2018", "12-31-2023")`. The main workspace area contains the text: 'Build visuals with your data' and 'Select or drag fields from the Data pane onto the report canvas.' with an illustration of a report canvas and a data pane.


File Home Insert Modeling View Optimize Help External tools **Table tools**

Name


  
Mark as date  
table ▾  
Calendars

  
Manage  
relationships  
Relationships

  
New  
measure  
Calculations

  
Quick  
measure

  
New  
column

  
New  
table

Structure

1 `Calendar = CALENDAR ("01-01-2018", "12-31-2023")`

## Build visuals with your data

Select or drag fields from the Data pane onto the report canvas.



# MANAGE RELATIONSHIP

File Home Help External tools

Paste Get data Excel workbook OneLake data hub SQL Server Enter data Datasverse Recent sources Transform data Refresh data **Manage relationships** New measure New column New table Manage roles View as Q&A setup Language Linguistic schema Sensitivity Publish

Clipboard Data Queries Relationships Calculations Security Q&A Sensitivity Share

**CrimeWatch**

- Address
- CaseNumber
- City
- CrimeType
- Date
- DateTime
- Description
- Description (groups)
- Location

Collapse ^

**Calendar**

- Date
- MonthNumber
- MonthPrefix
- Year

Collapse ^

**Data**

Search

- Calendar
  - Date
  - MonthNumber**
  - MonthPrefix
  - Year
- CrimeWatch

**Manage relationships**

Active	From: Table (Column)	To: Table (Column)
There are no relationships defined yet.		

**New...** Autodetect... Edit... Delete

Close

# MANAGE RELATIONSHIP

## Create relationship

Select tables and columns that are related.

CrimeWatch

on	DateTime	Location	Description (groups)	Date	Year
T - AUTO	7/7/2020 5:38:00 PM	POINT (-122.25808 37.798)	Other	Tuesday, July 7, 2020	2020
T - AUTO	5/30/2020 5:30:00 PM	POINT (-122.25683 37.7984)	Other	Saturday, May 30, 2020	2020
T - AUTO	10/25/2020 11:15:00 AM	POINT (-122.25683 37.7984)	Other	Sunday, October 25, 2020	2020

Calendar

Date	Year	MonthPrefix	MonthNumber
1/1/2018 12:00:00 AM	2018	Jan	1
1/2/2018 12:00:00 AM	2018	Jan	1
1/3/2018 12:00:00 AM	2018	Jan	1

Cardinality: Many to one (\*:1)  
Cross filter direction: Single

Make this relationship active  
 Assume referential integrity  
 Apply security filter in both directions

OK

## Manage relationships

Active	From: Table (Column)	To: Table (Column)
<input checked="" type="checkbox"/>	CrimeWatch (Date)	Calendar (Date)

New... Autodetect... Edit... Delete

Close

# MANAGE RELATIONSHIP

**CrimeWatch**

- Address
- CaseNumber
- City
- CrimeType
- Date**
- DateTime
- Description
- Description (groups)
- Location
- Collapse ^

**Calendar**

- Date**
- MonthNumber
- MonthPrefix
- Year
- Collapse ^





# CHANGE DATE TYPE

File Home Help External tools **Table tools** Colour

Name  Format

Data type

Structure Formatting

1 Calendar = CALENDAR ("01-01-2018", "12-31-2023")

Date	Year	MonthPrefix	MonthNumber
01/01/2018	2018	Jan	1
02/01/2018	2018	Jan	1
03/01/2018	2018	Jan	1
04/01/2018	2018	Jan	1
05/01/2018	2018	Jan	1
06/01/2018	2018	Jan	1

# CALCULATED COLUMNS

```
Year = YEAR ('Calendar'[Date])
```

```
MonthNumber = MONTH ('Calendar' [Date])
```

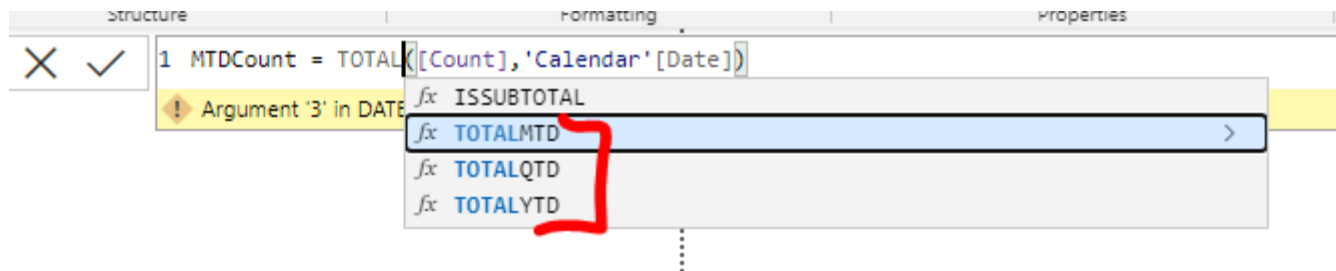
```
MonthPrefix = FORMAT ('Calendar' [Date], "MMM")
```

```
DateWithCrimes = 'Calendar'[Date]<=MAX('CrimeWatch'[Date])
```

# TIME INTELLIGENCE

```
Count = Count('CrimeWatch'[CaseNumber])
```

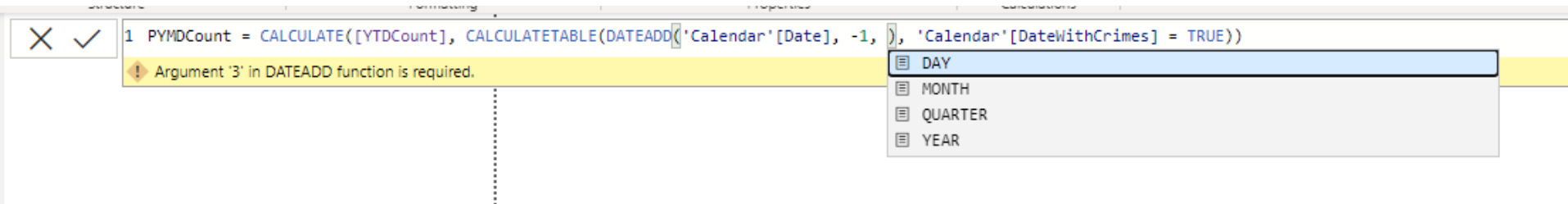
```
YTDCount = TOTALYTD([Count], 'Calendar'[Date])
```



```
MTDCount = TOTALMTD([Count], 'Calendar'[Date])
```

# TIME INTELLIGENCE

```
PYTDCount = CALCULATE([YTDCount],  
CALCULATETABLE(DATEADD('Calendar'[Date], -1, YEAR),  
'Calendar'[DateWithCrimes] = TRUE))
```



# TIME INTELLIGENCE

## YEAR

```
YOYTDCount = IF(NOT ISBLANK([YTDCount]) && NOT  
ISBLANK([PYTDCount]), [YTDCount] - [PYTDCount])
```

```
YOYTD% = IF([PYTDCount] = 0, "NC",  
DIVIDE([YOYTDCount], [PYTDCount]))
```

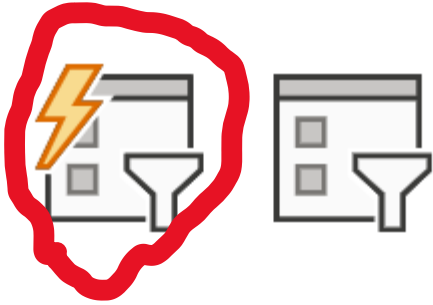
## MONTH

```
MOMTDCount = IF(NOT ISBLANK([MTDCount]) && NOT  
ISBLANK([PMTDCount]), [MTDCount] - [PMTDCount])
```

```
MOMTD% = IF([PMTDCount] = 0, "NC",  
DIVIDE([MOMTDCount], [PMTDCount]))
```

# POWER BI NEW FILTER

## Slicer



Year	
2022	2023



# POWER BI PREVIEW FEATURES

## Options

- GLOBAL
- Data Load
- Power Query Editor
- DirectQuery
- R scripting
- Python scripting
- Security
- Privacy
- Regional Settings
- Updates
- Usage Data
- Diagnostics
- Preview features**
- Save and Recover
- Report settings
- CURRENT FILE
- Data Load
- Regional Settings

### Preview features

The following features are available for you to try in this release. Preview features might change or be removed in future releases.

- Shape map visual [Learn more](#)
- Spanish language support for Q&A [Learn more](#)
- Q&A for live connected Analysis Services databases [Learn more](#)
- Connect to external datasets shared with me [Learn more](#) | [Share feedback](#)
- Modern visual tooltips [Learn more](#) | [Share feedback](#)
- Sparklines [Learn more](#)
- Metrics visual [Learn more](#)
- Quick measure suggestions [Learn more](#) | [Share feedback](#)
- Field parameters [Learn more](#)
- Enhanced row-level security editor [Learn more](#)
- On-object interaction [Learn more](#) | [Share feedback](#)
- Power BI Home in Desktop [Learn more](#) | [Share feedback](#)
- Enable setting sensitivity label on exported PDF [Learn more](#)
- Dynamic format string for measures [Learn more](#)
- Save to OneDrive and SharePoint [Learn more](#)
  - Share to OneDrive and SharePoint [Learn more](#)
- Power BI Project (.pbip) save option [Learn more](#)
- New card visual [Learn more](#)

# POWER BI QUICK MEASURE SUGGESTIONS

<https://powerbi.microsoft.com/en-us/blog/deep-dive-into-dax-query-view-and-writing-dax-queries/>

The screenshot shows the Power BI Desktop interface. At the top, there is a menu bar with 'File', 'Home', 'Help', and 'External tools'. Below the menu bar is a toolbar with icons for 'Format query', 'Comment', 'Uncomment', 'Find', 'Replace', and 'Command palette'. A notification banner at the top left states 'DAX queries are kept when you save the report.' The main editor area contains a DAX query with a 'Run' button. The query is as follows:

```
2  
3 // Here is a sample DAX query from your model, click 'Run'  
4 // Try other DAX queries by right clicking a table, column, or measure in the data pane and choosing one from 'Quick  
5 // queries'  
6 EVALUATE  
7 | TOPN(100, 'CrimeWatch')
```

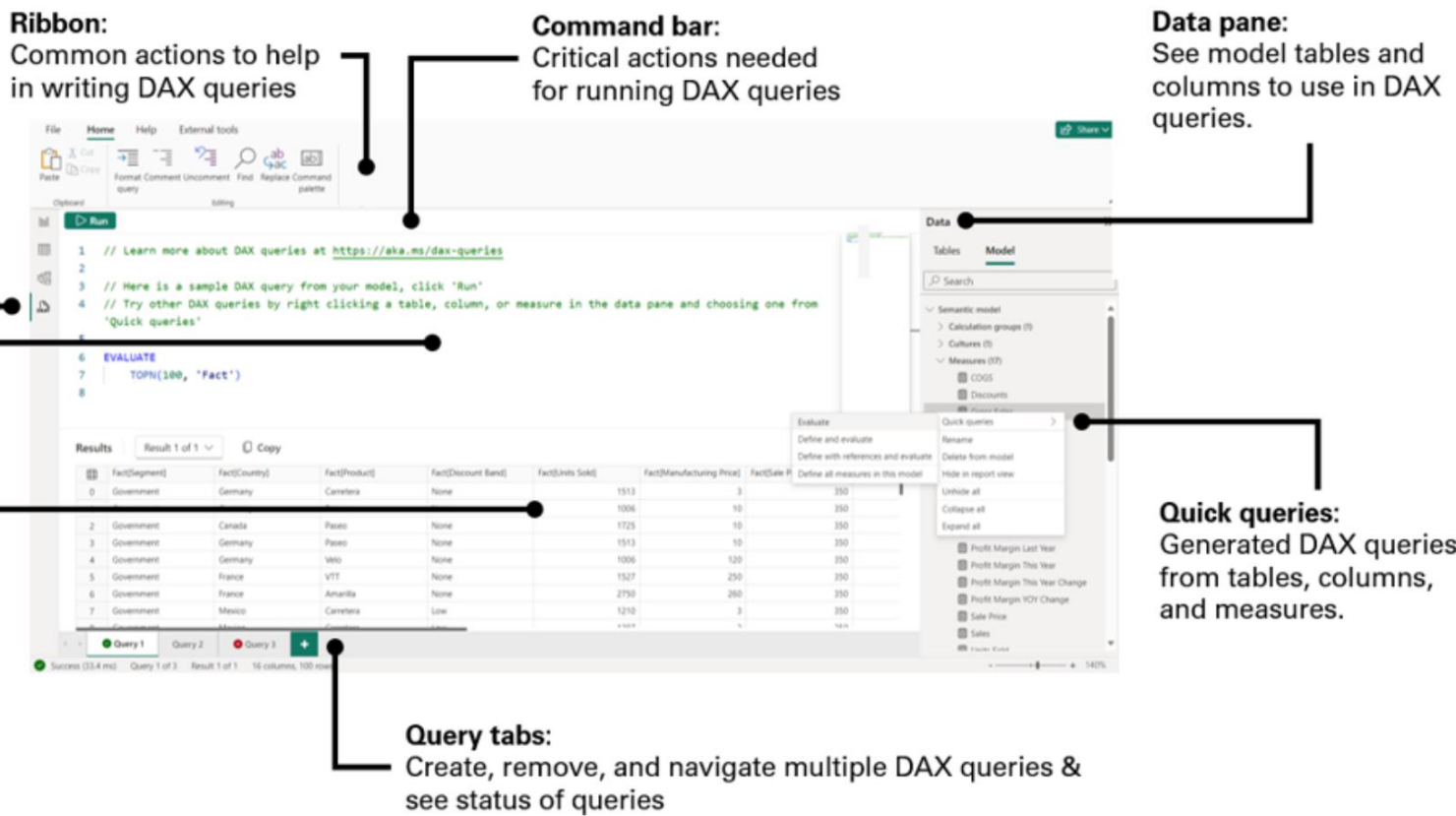
Below the editor is the 'Results' section, which shows a table with 7 columns and 4 rows of data. The columns are: CrimeWatch[Address], CrimeWatch[City], CrimeWatch[State], CrimeWatch[PoliceBeat], CrimeWatch[CaseNum...], and CrimeWatch[CrimeT]. The data rows are:

	CrimeWatch[Address]	CrimeWatch[City]	CrimeWatch[State]	CrimeWatch[PoliceBeat]	CrimeWatch[CaseNum...]	CrimeWatch[CrimeT]
0	10 7TH ST	Oakland	CA	19X	21-053917	STOLEN VEHICLE
1	100 12TH ST	Oakland	CA	19X	22-052940	STOLEN VEHICLE
2	100 BLK OF E 11TH STR...	Oakland	CA	19X	22-013796	STOLEN VEHICLE
3	100 E 11TH ST	Oakland	CA	19X	21-059096	STOLEN VEHICLE

On the right side of the interface, there is a 'Data' pane with 'Tables' and 'Model' tabs. A search bar is present, and a list of tables is shown: 'Measurements', 'Calendar', and 'CrimeWatch'.



# POWER BI QUICK MEASURE SUGGESTIONS



# POWER QUICK MEASURE SUGGESTIONS - TABLE

The screenshot displays the Power BI Desktop interface. At the top, the ribbon includes 'File', 'Home', 'Help', and 'External tools'. The 'Home' ribbon contains options like 'Format query', 'Comment', 'Uncomment', 'Find', 'Replace', and 'Command palette'. A 'Share' button is visible in the top right corner. Below the ribbon, a notification states 'DAX queries are kept when you save the report.' The main editor area shows a DAX query with a 'Run' button. The query is as follows:

```
2  
3 // Here is a sample DAX query from your model, click 'Run'  
4 // Try other DAX queries by right clicking a table, column, or measure in the data pane and choosing one from 'Quick  
   queries'  
5 EVALUATE  
6 | TOPN(100, 'CrimeWatch')
```

Below the query editor is a 'Results' section, which is currently empty. On the right side, the 'Data' pane is open, showing 'Tables' and 'Model' views. A search bar is present. A context menu is open over the 'Measurements' section, with the following items:

- Show top 100 rows
- Show column statistics
- Define all measures in this table
- Define all measures in this model
- Quick queries
- Refresh data
- Edit query
- Manage relationships
- Incremental refresh
- Manage aggregations
- Select columns
- Select measures

# POWER QUICK MEASURE SUGGESTIONS - MEASURE

The screenshot displays a context menu for a measure in Power BI. The menu is open over a list of measures. The 'Evaluate' option is highlighted in yellow on the left side of the menu, and the 'Quick queries' option is highlighted in yellow on the right side. The background shows a list of measures, including 'Count' and 'Count of CaseNumber running total ...'. The 'Quick queries' menu is open, showing options such as 'Rename', 'Delete from model', 'Hide in report view', 'Unhide all', 'Collapse all', and 'Expand all'. The 'Evaluate' menu is open, showing options such as 'Define and evaluate', 'Define with references and evaluate', and 'Define all measures in this model'.

Measurements

Count

Evaluate

Quick queries

per C...

Define and evaluate

Define with references and evaluate

Define all measures in this model

Rename

Delete from model

Hide in report view

Unhide all

Collapse all

Expand all

Count of CaseNumber running total ...

CrimeType

Date

DateTime

Description

# POWER BI FEATURE SUMMARY

✓ <https://powerbi.microsoft.com/en-us/blog/>

# ADDITIONAL INFORMATION (BOOKS)

## ✓ Entry Level

- ✓ *Beginning DAX with Power BI* (2018) by Phillip Seamark
- ✓ *The Definitive Guide to DAX: Business Intelligence for Microsoft Power BI, SQL Server Analysis Services, and Excel* (2019) by Marco Russo and Alberto Ferrari

## ✓ Advance Level

- ✓ *DAX Cookbook* (2020) by Greg Deckler
- ✓ *Pro DAX and Data Modeling on Power BI* (2023) by Adam Aspin
- ✓ *Extreme DAX* (2022) by Michiel Rozema and Henk Vlootman

## ✓ Time Intelligence

- ✓ *DAX Patterns* (2020) by Marco Russo and Alberto Ferrari  
<https://www.daxpatterns.com/patterns/>

# ADDITIONAL INFORMATION (LINKS)

- ✓ Websites, Blogs, and YouTube channels
  - ✓ Power Query documentation  
<https://docs.microsoft.com/en-us/power-query>
  - ✓ Power BI documentation  
<https://docs.microsoft.com/en-us/power-bi/>
  - ✓ Power BI Tips  
<https://powerbi.tips/>
  - ✓ RADACAD  
<https://radacad.com/>
  - ✓ SQLBI  
<https://www.sqlbi.com/>
  - ✓ Guy in a Cube  
<https://guyinacube.com/>
  - ✓ Curbal  
<https://www.youtube.com/channel/UCJ7UhloHSA4wAqPzyi6TOkw>

# CONCLUSIONS & QUESTIONS

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