



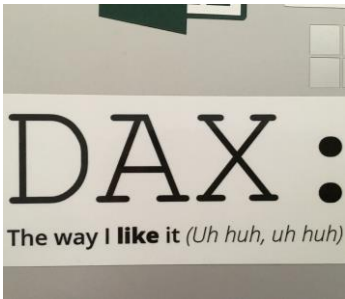


**DAX 101 for
Power BI**

Belinda Allen
BI Program Manager
PowerGPonline.com | Njevity, Inc.
Microsoft MVP

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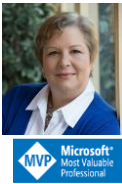
**Back of my
Surface Book**




Me...


- Business Intelligence Program Manager (aka BA Nut) – PowerGP Online @ Njevity, Inc.
- Microsoft MVP – Business Solutions
- GPUG All-Star
- Advisor – Association of Dynamics Professionals Credentialing Council
- Board of Advisors for PBIUG
- Author: 2 books
 - <http://bit.ly/belinda2>
 - <http://amzn.to/2mKn74l>

Belinda Allen



What is DAX?

**Power BI**

**Microsoft SQL Server[®]**
Analysis Services


Single Function Code

Analysis eXpressions

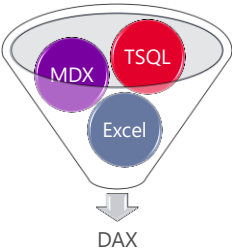
Functions are used by

Microsoft Power BI, Pivot


And SSAS Tabular


**PowerPivot**






M Language – Adding Custom Column

 Simple Math

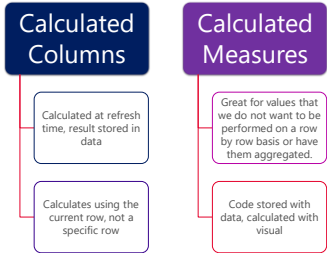
 Text Fields

 Everything Else

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What can be created with DAX?



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Space Test Results

# of Rows	# of Columns	Size of PBIX file	Space used in Power BI Service
667,350	564	137,219 KB	134 MG
667,350	564 edited to 7	13,659 KB	14 MG
667,350	7	13,182 KB	13 MG

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Syntax Notes:

Total Sale = 'Sales'[Quantity] * 'Sales'[Unit Price]

Table name in single quotes (if spaces or characters exist)	Column name in square brackets
---	--------------------------------

*Always use the table name with the field! It makes it easier to read later.

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Data Type Handling (Operator Overloading)

SQL is NOT strongly typed

- The data type of the inputs

- "5" + 4

Concatenate

- 5 & 4 = "54"

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Know your data type
Operator Overloading kills speed

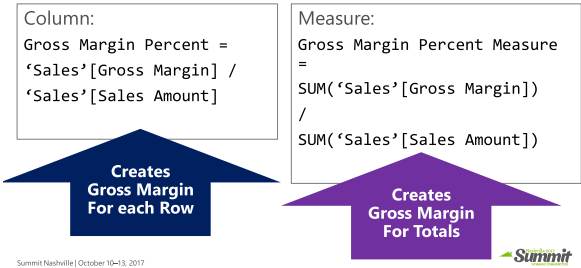


Calculated Columns and Measures Demo (Aggregators)

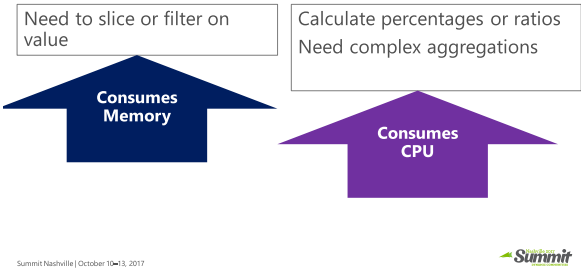


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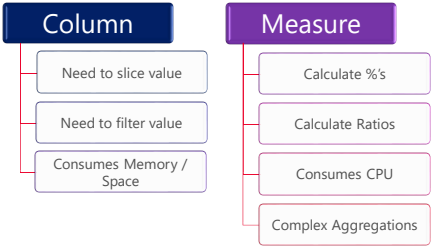
Column syntax vs. Measure syntax



When to use Column or Measure

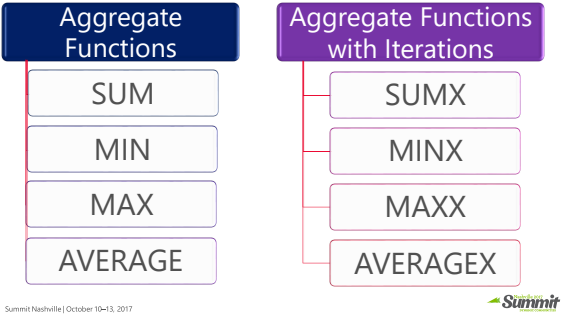


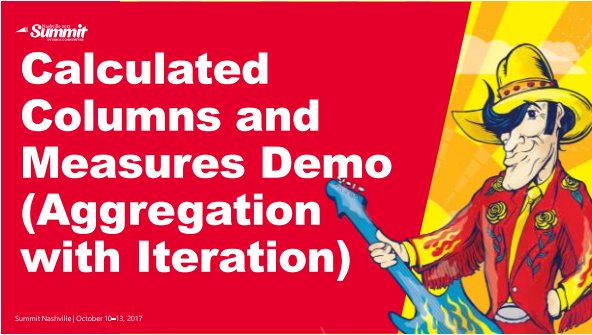
Calculated Columns vs. Measures



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Count Functions	COUNT (only for numeric columns)
	COUNTA (counts all rows EXCEPT blanks)
	COUNTBLANK (counts only blanks)
	COUNTROWS (counts rows in table)
	DISTINCTCOUNT (counts unique fields)

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Boolean Logical Functions	AND (&&)*
	OR ()*
	NOT (!)*
	IF
	IFERROR

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*Can use C# Operators



Information Functions	ISBLANK
	ISNUMBER
	ISTEXT
	ISNONTEXT
	ISERROR

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DistinctCount-

Demo



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MAX and MIN Functions to compare

Computes the maximum of Extended Price
= MAX('Sales Line Items'[Extended Price])



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DIVIDE Function

```
IF (
    Sales[Sales Amount] <> 0,
    Sales[Gross Margin] / Sales[Sales Amount],
    0)

DIVIDE (
    Sales[Gross Margin],
    Sales[Sales Amount],
    0)
```

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Math, Text & Date Functions

- Many similar Excel functions

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Using fields from different Queries - Demo

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Related Functions

- RELATED
 - Uses the Many side to grab a row from the one side in a Many to One relationship.
 - `Commission = 'Sales'[SalesAmount] * RELATED('Salesperson'[CommRate])`
- RELATEDTABLE
 - Uses the One side to grab an aggregate from the many side in a One to Many relationship
 - `NumberOfSales = COUNTROWS(RELATEDTABLE('Sales'))`
 - `Sales = SUMX(RELATEDTABLE('Sales'), 'Sales'[Quantity] * 'Sales'[UnitPrice])`

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Tables Functions

- FILTER
- ALL
- VALUES
- DISTINCT
- RELATEDTABLE

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Declaring and using Variables

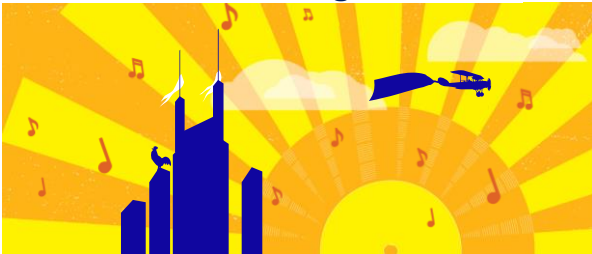
```
Corrected Quantity:=  
  
VAR  
    TotalQuantity = SUM(Sales[Quantity])  
RETURN (  
    IF (  
        TotalQuantity > 1000,  
        TotalQuantity * .95,  
        TotalQuantity * 1.25  
    )  
)
```

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Q&A
Don't forget the Evals!



<https://www.pbusergroup.com>



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Community
Members

145
Total PUGs

200
PUG Leaders

7-City World Tour
Reaching 800+

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Opportunities


Virtual & On-Demand
Education

Online
Collaboration

SIG
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Expand Connections. Exchange Knowledge. Explore Solutions.

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