

20 Power Query {M}agic Tips That Every User Should Know



Data Saturday - Denmark

David Kofod Hanna

Sponsors



David Kofod Hanna



Senior Advisor @ twoday

+200 courses as Academy Trainer and a decade as consultant
Certified Tabular Editor 3 Trainer, DP-600, PL-300, CPUX-F



Passionate about guiding self-service Power BI

developers for more enterprise manageable concepts in a consumable and practical way



Born on beautiful “Sunshine island”: Bornholm

Lives in Silkeborg with wife and 3 kids
Love football and running half-marathons



twoday

How many have created
Dataflows Gen1 in Power BI?



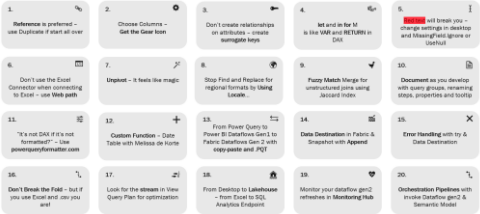
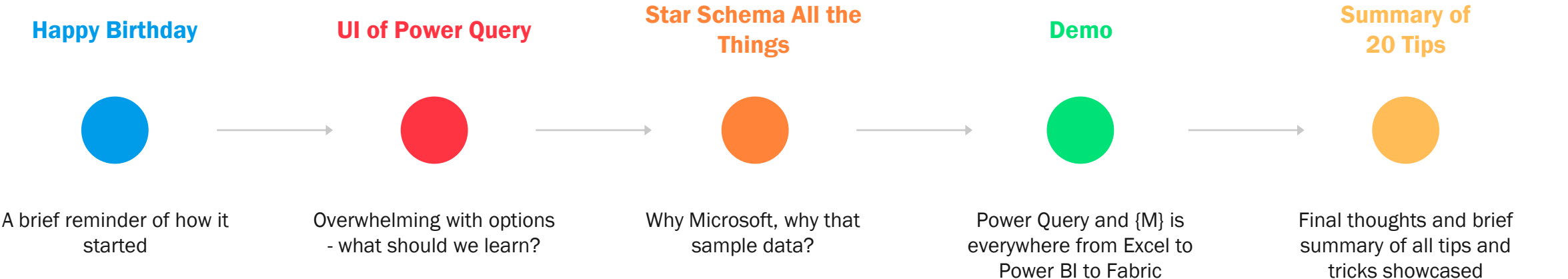
How many have created
Dataflows Gen2 in Fabric?



How many prefer
T-SQL or Python
over
Power Query{M}?



20 Power Query {M}agic Tips That Every User Should Know



20 Power Query {M}agic Tips & Tricks

1.



Reference is preferred –
use Duplicate if to start all
over

2.



Choose Columns –
Get the Gear Icon

3.



Don't create relationships
on attributes – create
surrogate keys

4.



let and **in for M**
is like **VAR** and **RETURN** in
DAX

5.



Red text will break you –
change settings in desktop
and MissingField.Ignore or
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Don't use the Excel
Connector when connecting
to Excel – use **Web path**

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Unpivot – It feels like magic

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Stop Find and Replace for
regional formats by **Using**
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Fuzzy Match Merge for
unstructured joins using
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Document as you develop
with query groups, renaming
steps, properties and tooltip

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“It's not DAX if it's not
formatted?” – Use
powerqueryformatter.com

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Custom Function – Date
Table with Melissa de Korte

13.



From Power Query to
Power BI Dataflows Gen1 to
Fabric Dataflows Gen 2 with
copy-paste and .PQT

14.



Data Destination in Fabric &
Snapshot with **Append**

15.



Error Handling with try &
Data Destination

16.



Don't Break the Fold – but if
you use Excel and .csv you
are!

17.



Look for the **stream** in View
Query Plan for optimization

18.



From Desktop to **Lakehouse**
– from Excel to SQL
Analytics Endpoint

19.



Monitor your dataflow gen2
refreshes in **Monitoring Hub**

20.

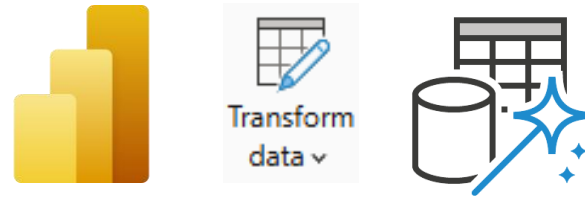


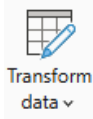
Orchestration Pipelines with
invoke Dataflow gen2 &
Semantic Model

Happy Birthday, codename: **Data Explorer!** 🎂

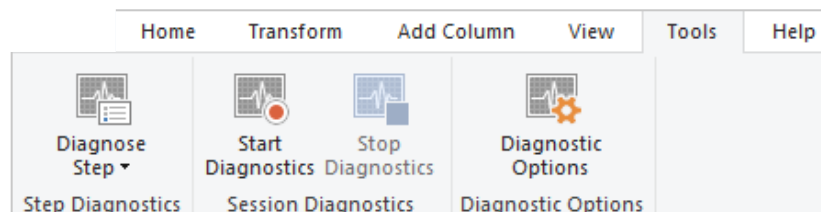
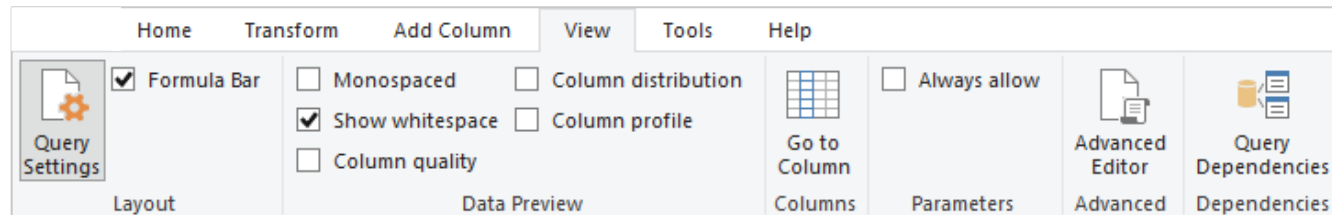
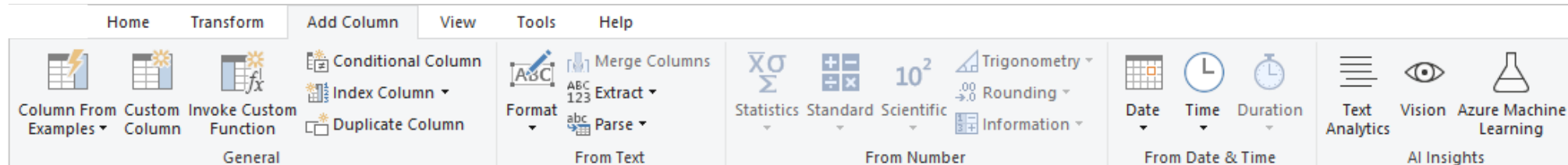
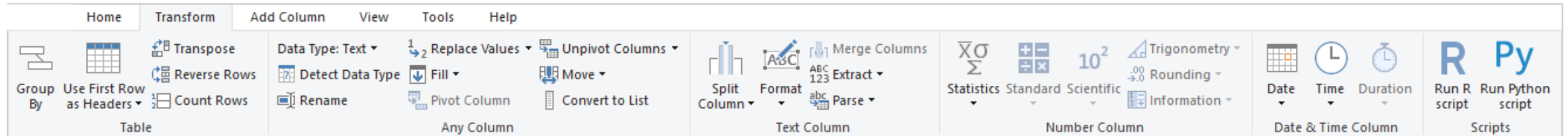
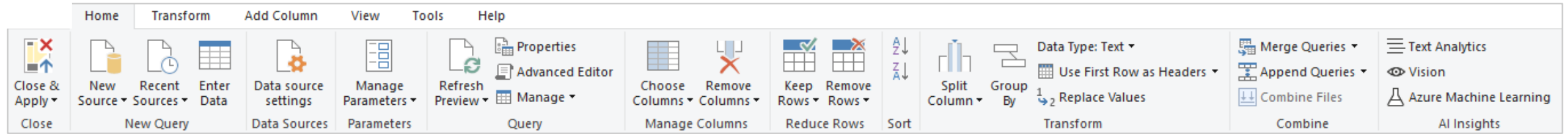
Power Query 6th July 2013 moved into General Availability.

Powerful Self-Service ETL Tool





Use the Power Query Editor to connect, prepare and transform data



My Recipe of Consistent Instructions



Query Settings

×

▲ PROPERTIES

Name

Data

All Properties

▲ APPLIED STEPS

Source

✳

Changed Type

Added Conditional Column

✳

✕ Unpivoted Other Columns

Relax – we have Microsoft to assist us...

Add data to your report

Once loaded, your data will appear in the **Data** pane.



Use sample data

Two ways to use sample data



Take a tutorial online

Learn how to create a robust report, step-by-step.

[Launch tutorial](#) 



Experiment on your own

To start creating visuals on your own, load sample data.

 **Load sample data**

🙄 Welcome to One Big Table – thank you Microsoft...

= Table.TransformColumnTypes(financials_Table,({{"Segment", type text}, {"Country", type text}, {"Product", type text}, {"Discount Band", type text}, {"Units Sold", type number}, {"Manufacturing Price", Int64.Type}, {"Sale Price", Int64.Type}, {"Gross Sales", type number}, {"Discounts", type number}, {"Sales", type number}, {"COGS", type number}, {"Profit", type number}, {"Date", type date}, {"Month Number", type number}, {"Month Name", type text}, {"Year", type number})),{"Segment", type text}, {"Country", type text}, {"Product", type text}, {"Discount Band", type text}, {"Units Sold", type number}, {"Manufacturing Price", Int64.Type}, {"Sale Price", Int64.Type}, {"Gross Sales", type number}, {"Discounts", type number}, {"Sales", type number}, {"COGS", type number}, {"Profit", type number}, {"Date", type date}, {"Month Number", type number}, {"Month Name", type text}, {"Year", type number})																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A _C Segment	A _C Country	A _C Product	A _C Discount Band	1.2 Units Sold	1.2 Manufacturing Price	1.2 Sale Price	1.2 Gross Sales	1.2 Discounts	1.2 Sales	1.2 COGS	1.2 Profit	Date	1.2 Month Number	1.2 Month Name	1.2 Year				
1	Government	Canada	Carretera	None	1618,5	3	20	32370	0	32370	16185	01/01/2014	1	January	2014				
2	Government	Germany	Carretera	None	1321	3	20	26420	0	26420	13210	01/01/2014	1	January	2014				
3	Midmarket	France	Carretera	None	2178	3	15	32670	0	32670	21780	01/06/2014	6	June	2014				
4	Midmarket	Germany	Carretera	None	888	3	15	13320	0	13320	8880	01/06/2014	6	June	2014				
5	Midmarket	Mexico	Carretera	None	2470	3	15	37050	0	37050	24700	01/06/2014	6	June	2014				
6	Government	Germany	Carretera	None	1513	3	350	529550	0	529550	393380	01/12/2014	12	December	2014				
7	Midmarket	Germany	Montana	None	921	5	15	13815	0	13815	9210	01/03/2014	3	March	2014				
8	Channel Partners	Canada	Montana	None	2518	5	12	30216	0	30216	7554	01/06/2014	6	June	2014				
9	Government	France	Montana	None	1899	5	20	37980	0	37980	18990	01/06/2014	6	June	2014				
10	Channel Partners	Germany	Montana	None	1545	5	12	18540	0	18540	13905	01/06/2014	6	June	2014				
11	Midmarket	Mexico	Montana	None	2470	5	15	37050	0	37050	24700	01/06/2014	6	June	2014				
12	Enterprise	Canada	Montana	None	2665,5	5	125	333187,5	0	333187,5	319860	01/07/2014	7	July	2014				
13	Small Business	Mexico	Montana	None	958	5	300	287400	0	287400	239500	01/08/2014	8	August	2014				
14	Government	Germany	Montana	None	2146	5	7	15022	0	10730	4292	01/09/2014	9	September	2014				
15	Enterprise	Canada	Montana	None	345	5	125	43125	0	43125	41400	01/10/2013	10	October	2013				
16	Midmarket	United States of America	Montana	None	615	5	15	9225	0	9225	6150	01/12/2014	12	December	2014				
17	Government	Canada	Paseo	None	292	10	20	5840	0	5840	2920	01/02/2014	2	February	2014				
18	Midmarket	Mexico	Paseo	None	974	10	15	14610	0	14610	9740	01/02/2014	2	February	2014				
19	Channel Partners	Canada	Paseo	None	2518	10	12	30216	0	30216	7554	01/06/2014	6	June	2014				
20	Government	Germany	Paseo	None	1006	10	15	16590	0	16590	10060	01/06/2014	6	June	2014				
21	Channel Partners	Germany	Paseo	None	367	10	15	5505	0	5505	3670	01/07/2014	7	July	2014				
22	Government	Mexico	Paseo	None	883	10	15	13245	0	13245	8830	01/08/2014	8	August	2014				
23	Midmarket	France	Paseo	None	549	10	15	8235	0	8235	5490	01/09/2013	9	September	2013				
24	Small Business	Mexico	Paseo	None	788	10	15	11820	0	11820	7880	01/09/2013	9	September	2013				
25	Midmarket	Mexico	Paseo	None	2472	10	15	37080	0	37080	24720	01/09/2014	9	September	2014				
26	Government	United States of America	Paseo	None	1143	10	15	17145	0	17145	11430	01/10/2014	10	October	2014				
27	Government	Canada	Paseo	None	1725	10	15	25875	0	25875	17250	01/11/2013	11	November	2013				
28	Channel Partners	United States of America	Paseo	None	912	10	15	13680	0	13680	9120	01/11/2013	11	November	2013				
29	Midmarket	Canada	Paseo	None	2152	10	15	32280	0	32280	21520	01/12/2013	12	December	2013				
30	Government	Canada	Paseo	None	1817	10	15	27255	0	27255	18170	01/12/2014	12	December	2014				
31	Government	Germany	Paseo	None	1513	10	15	22695	0	22695	15130	01/12/2014	12	December	2014				
32	Government	Mexico	Velo	None	1493	120	15	10451	0	10451	7465	01/01/2014	1	January	2014				
33	Enterprise	France	Velo	None	1804	120	15	22560	0	22560	18040	01/02/2014	2	February	2014				
34	Channel Partners	Germany	Velo	None	2161	120	15	25932	0	25932	21610	01/03/2014	3	March	2014				
35	Government	Germany	Velo	None	1006	120	15	12075	0	12075	10060	01/06/2014	6	June	2014				
36	Channel Partners	Germany	Velo	None	1545	120	15	18540	0	18540	15450	01/06/2014	6	June	2014				
37	Enterprise	United States of America	Velo	None	2821	120	125	352625	0	352625	28210	01/08/2014	8	August	2014				
38	Enterprise	Canada	Velo	None	345	120	125	41225	0	41225	3450	01/10/2013	10	October	2013				
39	Small Business	Canada	VTT	None	2001	250	300	600300	0	600300	500250	01/02/2014	2	February	2014				
40	Channel Partners	Germany	VTT	None	2838	250	12	34056	0	34056	8514	01/04/2014	4	April	2014				
41	Midmarket	France	VTT	None	2178	250	15	32670	0	32670	21780	01/06/2014	6	June	2014				
42	Midmarket	Germany	VTT	None	888	250	15	13320	0	13320	8880	01/06/2014	6	June	2014				
43	Government	France	VTT	None	1527	250	350	534450	0	534450	397020	01/09/2013	9	September	2013				
44	Small Business	France	VTT	None	2151	250	300	637500	0	637500	507550	01/09/2014	9	September	2014				
45	Government	Canada	VTT	None	1817	250	20	36340	0	36340	18170	01/12/2014	12	December	2014				
46	Government	France	Amarilla	None	2750	260	350	962500	0	962500	715000	01/02/2014	2	February	2014				
47	Channel Partners	United States of America	Amarilla	None	1953	260	12	23436	0	23436	19530	01/04/2014	4	April	2014				
48	Enterprise	Germany	Amarilla	None	4219,5	260	125	527437,5	0	527437,5	506340	01/04/2014	4	April	2014				
49	Government	France	Amarilla	None	1899	260	20	37980	0	37980	18990	01/06/2014	6	June	2014				
50	Government	Germany	Amarilla	None	1686	260	7	11802	0	11802	8430	01/07/2014	7	July	2014				
51	Channel Partners	United States of America	Amarilla	None	2141	260	12	25692	0	25692	21410	01/08/2014	8	August	2014				
52	Government	United States of America	Amarilla	None	1143	260	7	8001	0	8001	5715	01/10/2014	10	October	2014				
53	Midmarket	United States of America	Amarilla	None	615	260	15	9225	0	9225	6150	01/12/2014	12	December	2014				
54	Government	France	Paseo	Low	3945	10	7	27615	276,15	27338,85	19725	01/01/2014	1	January	2014				

Let's Star
Schema All
the things!

{1}

Reference is preferred



{2}

Choose Columns –
Get the **Gear Icon**



{3}

Don't create relationships on
attributes – **create surrogate
keys**



{4}

let and **in** for M

is like **VAR** and **RETURN**

in DAX



{5}

Red text will break you



How many have **deactivated**
Auto date/time in
Power BI Desktop settings?



Change settings with autodetect column types for **unstructured** sources

GLOBAL

- Data Load
- Power Query Editor
- DirectQuery
- R scripting
- Python scripting
- Security
- Privacy
- Regional Settings
- Updates
- Usage Data
- Diagnostics
- Preview features
- Auto recovery
- Report settings
- Copilot (preview)

Type Detection

- ☐ Always detect column types and headers for unstructured sources
- ☒ Detect column types and headers for unstructured sources according to each file's setting
- ☐ Never detect column types and headers for unstructured sources

Background Data

- ☐ Always allow data previews to download in the background
- ☒ Allow data previews to download in the background according to each file's setting
- ☐ Never allow data previews to download in the background

Time intelligence

- ☐ Auto date/time for new files ⓘ [Learn more](#)

CURRENT FILE

- Data Load
- Regional Settings
- Privacy
- Auto recovery
- Published semantic model settings
- Query reduction
- Report settings

Type Detection

- ☒ Detect column types and headers for unstructured sources

Time intelligence

- ☐ Auto date/time ⓘ [Learn more](#)

{6}

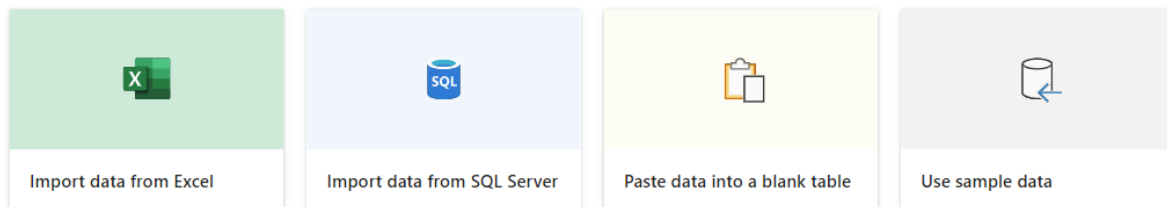
**Don't use the Excel
Connector** when connecting
to Excel – use Web



Ohh – you want to have scheduled refreshes of your data in your report?

Add data to your report

Once loaded, your data will appear in the **Data** pane.



[Get data from another source →](#)

⊗ Last refresh failed: 9/18/2024, 7:25:58 AM

Scheduled refresh has been disabled. [Hide details](#)

Data source error: Scheduled refresh is disabled because at least one data source is missing credentials. To start the refresh again, go to this dataset's settings page and enter credentials for all data sources. Then reactivate scheduled refresh.

Cluster URI: WABI-WEST-EUROPE-E-PRIMARY-redirect.analysis.windows.net

Activity ID: 7f9996f7-b479-4262-a3ce-447caccb937d

Request ID: 53e8e003-0f8f-4c5a-673f-512d862ac625

Time: 2024-09-18 05:25:58Z

```
1 let
2   Source = Excel.Workbook(File.Contents("C:\Users\DavidKofodHanna\OneDrive - twoday\Desktop\Comments.xlsx"), null, true),
3   CommentTable_Table = Source{[Item="CommentTable",Kind="Table"]}[Data]
4 in
5   CommentTable_Table
```

{7}

Unpivot – It feels like magic



{8}

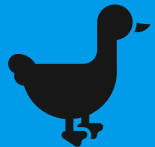
Stop Find and Replace
for regional formats by
Using **Locale...**



{9}

Fuzzy Match

Merge for unstructured joins
using Jaccard Index



“If it looks like a duck, swims like a duck, and quacks like a duck, then it probably is a duck”

{10}

Document as you
develop



{11}

*“It’s not ~~**DAX**~~ if it’s not
formatted?” - SQLBI*

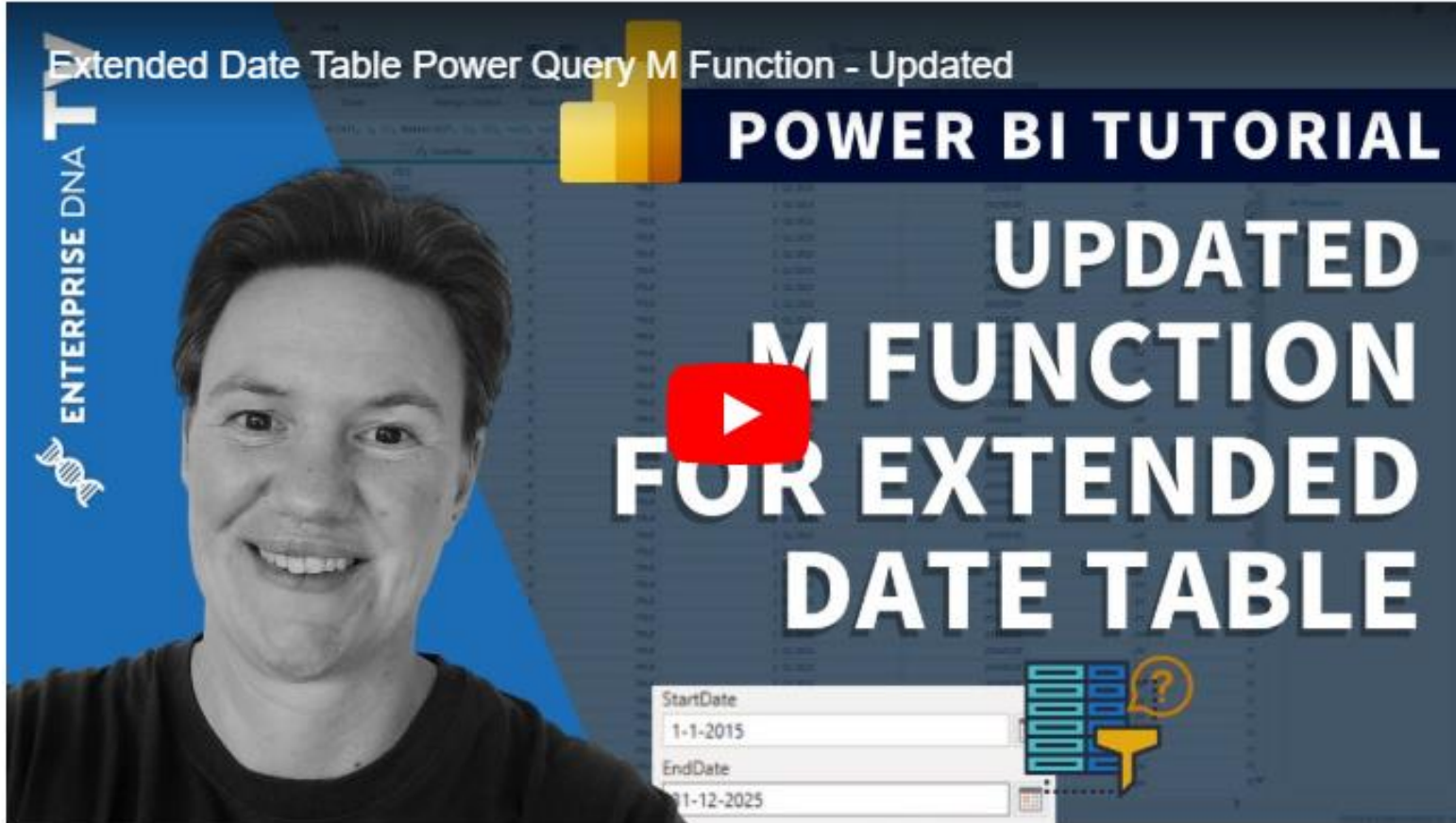
{12}

Custom Function – Date

Table with Melissa de Korte

+

Date Table M Script incl. custom function (Melissa De Korte)



{13}

From **Power Query** to
Power BI Dataflows Gen1 to
Fabric Dataflows Gen 2 with
copy-paste and .PQT

{14}

Data Destination & Snapshots with Append



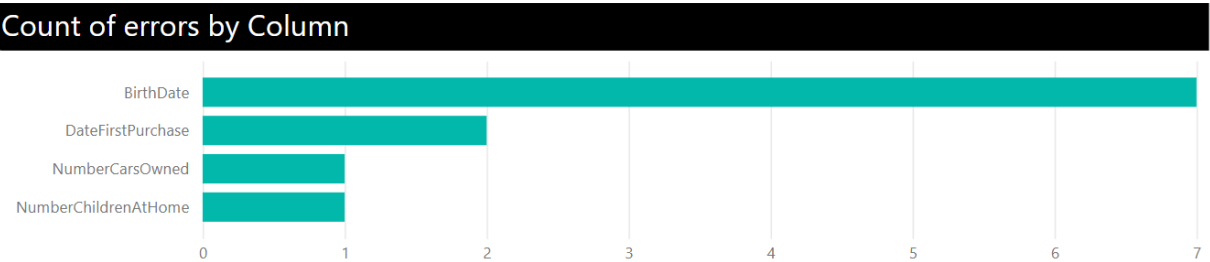
{15}

Error Handling with try

×

Credit to Reza Rad from RADACAD

Exception Report: showing all errors happened across all columns

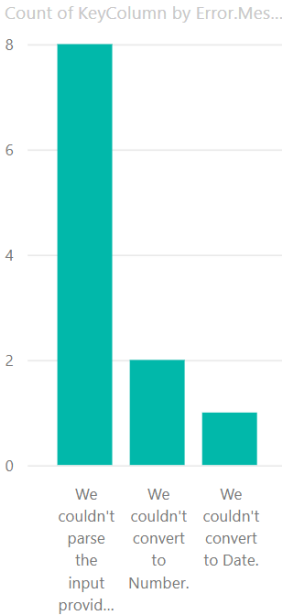


Count of Errors

11



Column Name	Row Identifier	Error.Reason	Error.Message	Error.Detail
BirthDate	12337	DataFormat.Error	We couldn't convert to Date.	9101975
BirthDate	12143	DataFormat.Error	We couldn't parse the input provided as a Date value.	13/11/14965
BirthDate	12448	DataFormat.Error	We couldn't parse the input provided as a Date value.	20/505/1958
BirthDate	12262	DataFormat.Error	We couldn't parse the input provided as a Date value.	2205/1960
BirthDate	12064	DataFormat.Error	We couldn't parse the input provided as a Date value.	9/100/1944
BirthDate	12113	DataFormat.Error	We couldn't parse the input provided as a Date value.	d 23/08/1951
BirthDate	12507	DataFormat.Error	We couldn't parse the input provided as a Date value.	NA
DateFirstPurchase	12057	DataFormat.Error	We couldn't parse the input provided as a Date value.	30/808/2007
DateFirstPurchase	12111	DataFormat.Error	We couldn't parse the input provided as a Date value.	No Date
NumberCarsOwned	12073	DataFormat.Error	We couldn't convert to Number.	two
NumberChildrenAtHome	12242	DataFormat.Error	We couldn't convert to Number.	zero



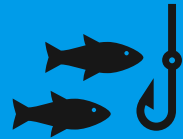
{16}

Don't Break the Fold –
but if you use Excel and
.csv you are!



{17}

Look for the **stream**



{18}

From Desktop to **Lakehouse** –
From Excel to **SQL Analytics**
Endpoint



{19}

Monitoring Hub for
status of refreshes



{20}

Orchestration Pipelines

with invoke Dataflow

gen2 & Semantic Model



20 Power Query {M}agic Tips & Tricks

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Reference is preferred – use Duplicate if start all over

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Choose Columns – **Get the Gear Icon**

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Don't create relationships on attributes – create **surrogate keys**

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let and **in for** M is like **VAR** and **RETURN** in DAX

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Red text will break you – change settings in desktop and MissingField.Ignore or UseNull

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Don't use the Excel Connector when connecting to Excel – use **Web path**

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Unpivot – It feels like magic

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Stop Find and Replace for regional formats by **Using Locale...**

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Fuzzy Match Merge for unstructured joins using Jaccard Index

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Document as you develop with query groups, renaming steps, properties and tooltip

11.



“It's not DAX if it's not formatted?” – Use powerqueryformatter.com

12.



Custom Function – Date Table with Melissa de Korte

13.



From Power Query to Power BI Dataflows Gen1 to Fabric Dataflows Gen 2 with **copy-paste and .PQT**

14.



Data Destination in Fabric & Snapshot with **Append**

15.



Error Handling with try & Data Destination

16.



Don't Break the Fold – but if you use Excel and .csv you are!

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Look for the **stream** in View Query Plan for optimization

18.



From Desktop to **Lakehouse** – from Excel to SQL Analytics Endpoint

19.



Monitor your dataflow gen2 refreshes in **Monitoring Hub**

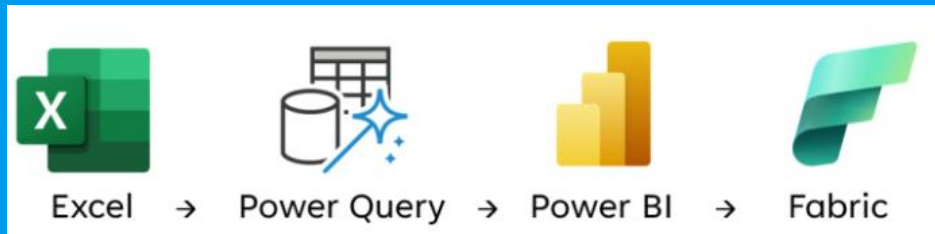
20.



Orchestration Pipelines with invoke Dataflow gen2 & Semantic Model

?

Should I prioritize
(to keep)
learning Power Query {M}...



”


Roche's Maxim of Data Transformation:


Data should be transformed
as far upstream as possible, and
as far downstream as necessary.

Star Schema All the Things

Log Results History VertiPaq Analyzer

Tables
Columns
Relationships
Partitions
Summary


 Financials Sample Data


 Total Size in Memory Last Data Refresh
5,18 MB ⓘ 31/01/2025 11.37.07 +01:00

Compatibility	Tables	Columns
1550	1	16

Log Results History VertiPaq Analyzer

Tables
Columns
Relationships
Partitions
Summary

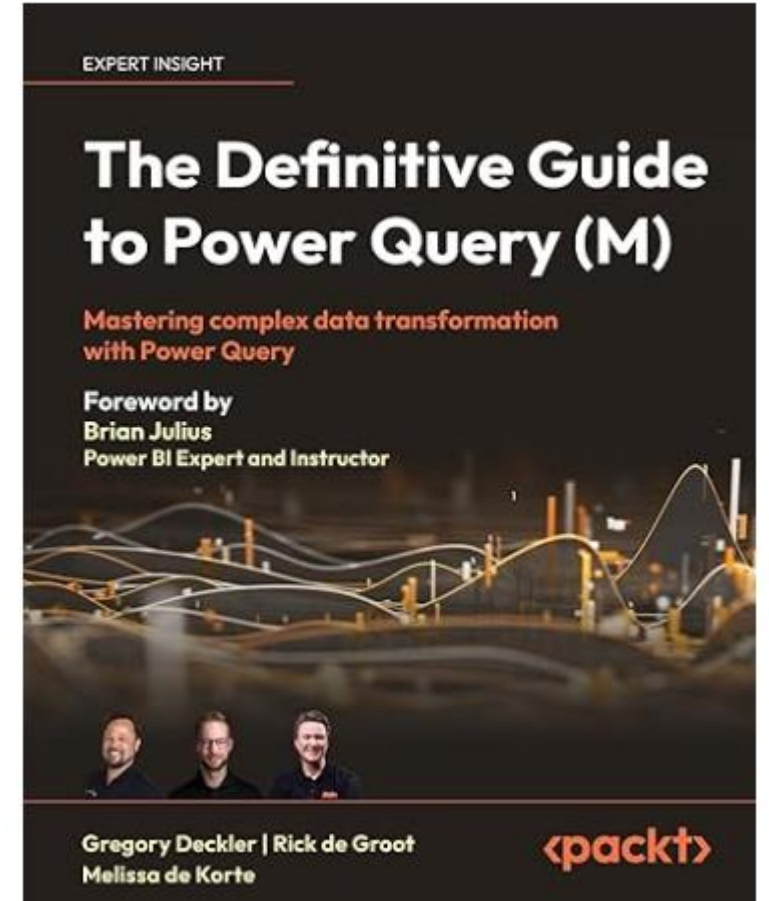
 Financials Sample Data

 Total Size in Memory Last Data Refresh
1,21 MB ⓘ 31/01/2025 11.40.19 +01:00

Compatibility	Tables	Columns
1550	4	22

Credit and resources

- [The Definitive Guide to Power Query {M}](#) by Gregory Deckler, Rick de Groot and Melissa de Korte
- Goodly Chandeeep <https://goodly.co.in/blog/>
- <https://learn.microsoft.com/en-us/power-query/best-practices>
- <https://learn.microsoft.com/da-dk/archive/blogs/dataexplorer/data-explorer-is-now-microsoft-power-query-for-excel>
- Power Query Battle tricks <https://www.youtube.com/watch?v=iixGowsOUmE>
- <https://forum.enterprisedna.co/t/extended-date-table-power-query-m-function/6390>
- <https://powerquery.how/>
- <https://radacad.com/power-query-template-one-giant-leap>
- <https://radacad.com/exception-reporting-in-power-query-and-power-bi-part-2-catching-error-rows-for-all-columns-in-the-table-section-1>



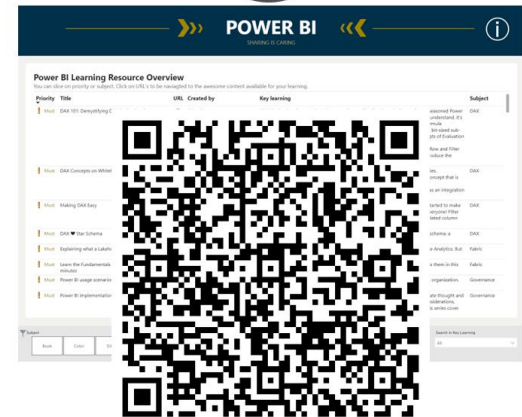
Thank you and {M}joy




David Kofod Hanna
Senior Advisor @ twoday Data & AI



 Connect on LinkedIn



 Open Free Learning
Resource Power BI Report