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

Power BI Next Step
Sept-2025

Presented by
David Kofod Hanna

twoday

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Power BI
Next Step

You just have a self-service solution…

David Kofod Hanna

Senior Advisor, Data Storytelling @ twoday

+200 courses as Academy Trainer and 10 years as consultant
MCT, Certified Tabular Editor 3 Trainer, DP-600, DP-700, 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 prefer
Excel, **Power Query UI & {M}**
over
T-SQL, PySpark, Python, R?

20 Power Query {M}agic Tips & Tricks

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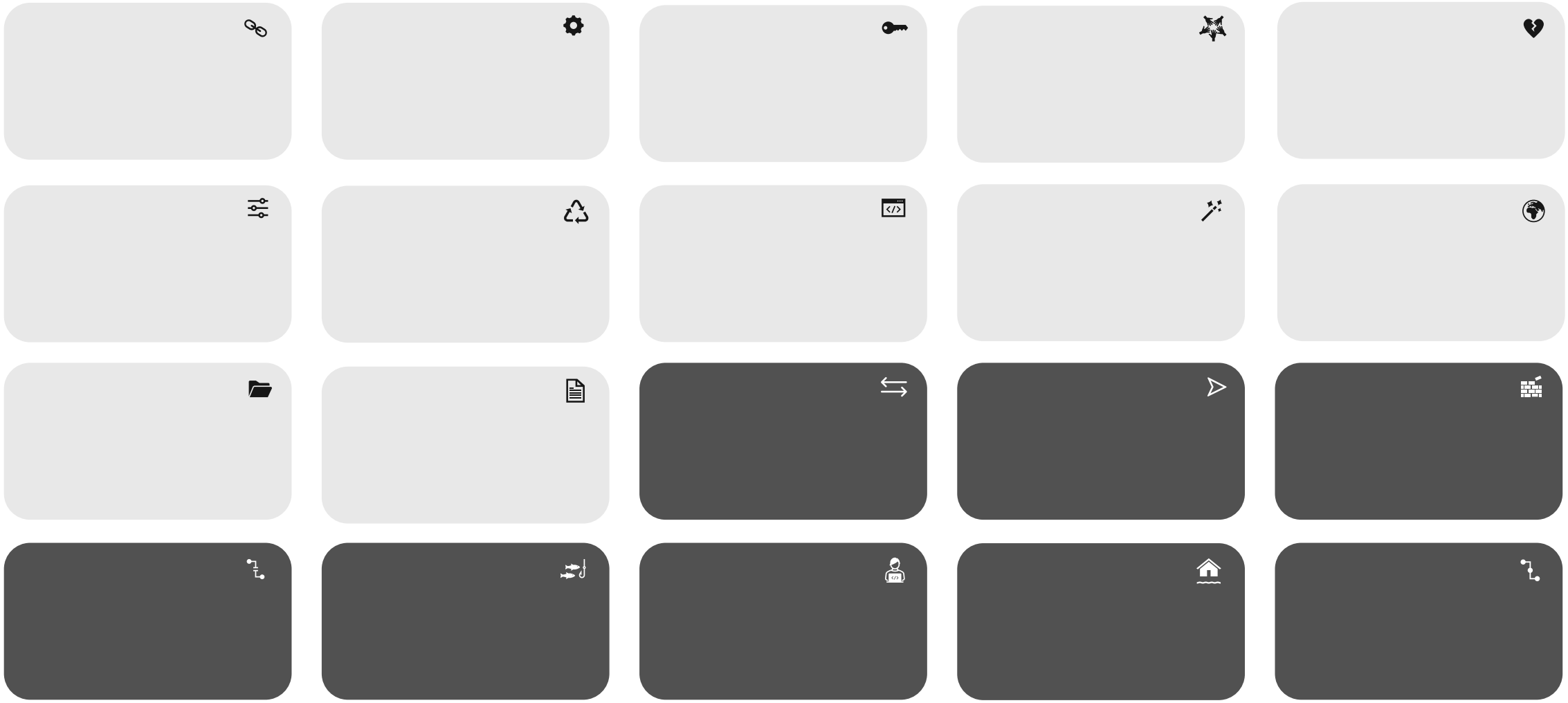
Power BI Desktop Fabric only



20 Power Query {M}agic Tips & Tricks

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1. **Reference** is preferred – *Medallion Architecture is that you?*

2. Choose Columns wisely – **Get the Gear Icon**

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

4. **Composite Key Merge** for multiple column join

5. Red text will break you – MissingField.Ignore or UseNull

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

7. **TMDL** Script for **Date** table

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

9. **Unpivot** – It feels like magic

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

11. Structure your **queries** in **folders**

12. Document **table properties**

13. From Power Query to Fabric Dataflows Gen 2 with **copy-paste**

14. **Dynamically Reference** Your **Tables** for Table.Profile

15. **Snapshots** with **Append to Lakehouse**

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. You can now **write SQL-Views** with Visual Query Editor

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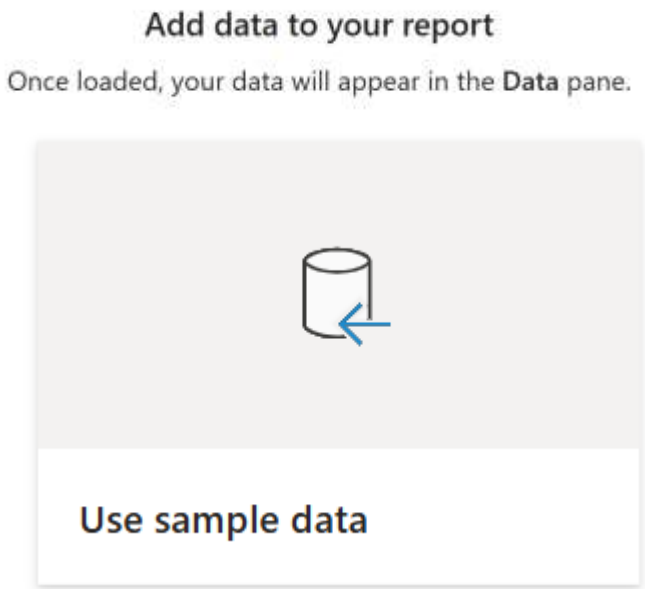
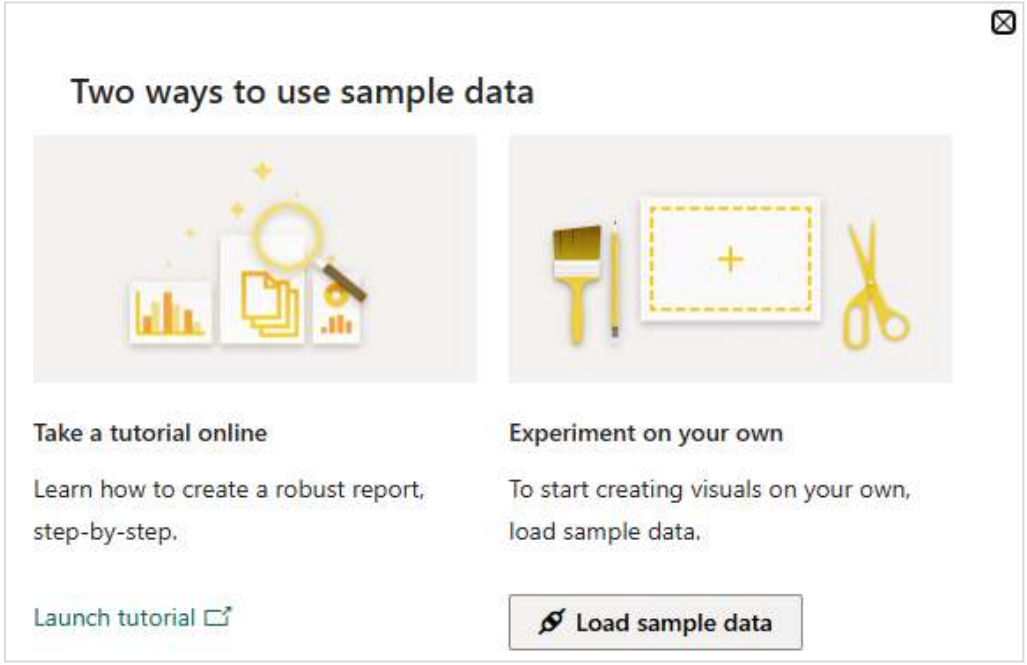
20. **Orchestration Pipelines** with invoke Dataflow gen2 & Semantic Model refresh

Relax – we have Microsoft to assist us…





😩 Welcome to One Big Table – thank you Microsoft…

{1}

Reference is preferred – *Medallion Architecture is that you?*

{2}

Choose Columns wisely –

Get the **Gear Icon**

{3}

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

{4}

Composite Key Merge

{5}

Red text will break you

Red text will break you

```
= Table.SelectColumns(Source,{"Segment", "Product", "Discount Band"})
```

Expression.Error: The column 'Discount Band' of the table wasn't found.
Details:
Discount Band

Option 1: Manual effort

```
= Table.SelectColumns(Source,{"Segment", "Product"})
```

	Segment	Product
1	Government	Carretera
2	Government	Carretera
3	Midmarket	Carretera
4	Midmarket	Carretera
5	Midmarket	Carretera

Red text will break you

```
= Table.SelectColumns(Source,{"Segment", "Product", "Discount Band"})
```

Expression.Error: The column 'Discount Band' of the table wasn't found.
Details:
Discount Band

Option 2: Use MissingField.Ignore

```
= Table.SelectColumns(Source,{"Segment", "Product", "Discount Band"}, MissingField.Ignore)
```

	Segment	Product
1	Government	Carretera
2	Government	Carretera
3	Midmarket	Carretera
4	Midmarket	Carretera
5	Midmarket	Carretera
6	Government	Carretera
7	Midmarket	Montana
8	Channel Partners	Montana

Red text will break you

```
= Table.SelectColumns(Source,{"Segment", "Product", "Discount Band"})
```

Expression.Error: The column 'Discount Band' of the table wasn't found.
Details:
Discount Band

Option 3: Use MissingField.UseNull

```
= Table.SelectColumns(Source,{"Segment", "Product", "Discount Band"}, MissingField.UseNull)
```

	Segment	Product	Discount Band
1	Government	Carretera	null
2	Government	Carretera	null
3	Midmarket	Carretera	null
4	Midmarket	Carretera	null
5	Midmarket	Carretera	null
6	Government	Carretera	null
7	Midmarket	Montana	null
8	Channel Partners	Montana	null
9	Government	Montana	null
10	Channel Partners	Montana	null
11	Midmarket	Montana	null

{6}

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

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

Settings in Power BI Desktop

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

APPLIED STEPS

- Source
- Navigation
- Promoted Headers
- Changed Type
- Added Conditional Column
- Changed Type1
- Added Conditional Column1
- Added Conditional Column2
- Added Conditional Column3
- Changed Type2
- Inserted Sum
- Renamed Columns
- Merged Queries
- Expanded Accuracy Master
- Added Conditional Column4
- Changed Type3
- Filtered Rows

{7}

TMDL Script for **Date** table

{8}

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

{9}

Unpivot – It feels like magic

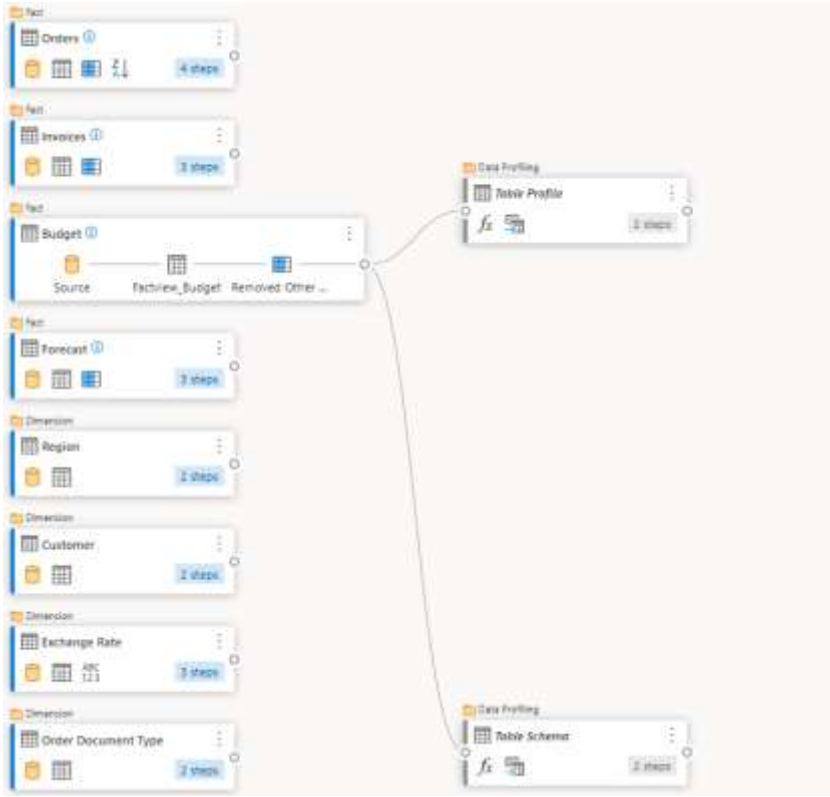
{10}
Stop Find and Replace for regional formats by Using **Locale…**

{11}
Structure your **queries** in **folders**

Query folders by type – and Diagram View in Dataflow Gen2

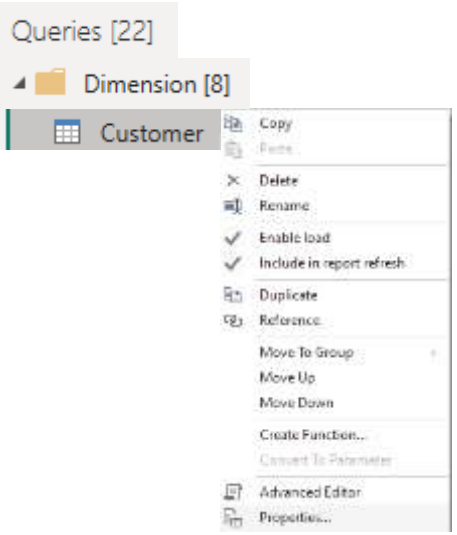
- Dimview Brands
- Dimview Budget Rate
- Dimview Customers
- Dimview Employees
- Dimview Exchange Rate
- Dimview Invoice Document Type
- Dimview Order Document Type
- Dimview Order Status
- Dimview Products
- Dimview Regions
- Factview Budget
- Factview Forecast
- Factview Invoices
- Factview Orders

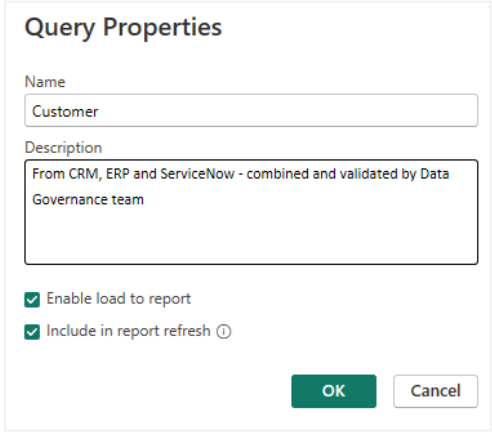
- Fact [4]
  - Orders
  - Invoices
  - Budget
  - Forecast
- Dimension [8]
  - Date
  - Region
  - Product
  - Customer
  - Exchange Rate
  - Order Document Type
  - Order Status
  - Invoice Document Type
- Meta Data & Organize [3]
  - Last Refresh
  - Global Measures
  - Local Measures
- Functions & Parameters [1]
  - *fn Extended Date*
- Staging [2]
  - *Brands*
  - *Products*
- Data Profiling [2]
  - Table Profile
  - Table Schema



{12}
Document **table properties**

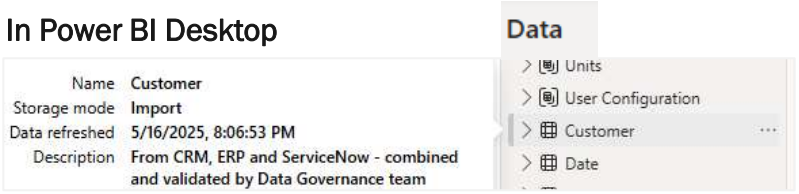
Table properties – add it once and see it everywhere



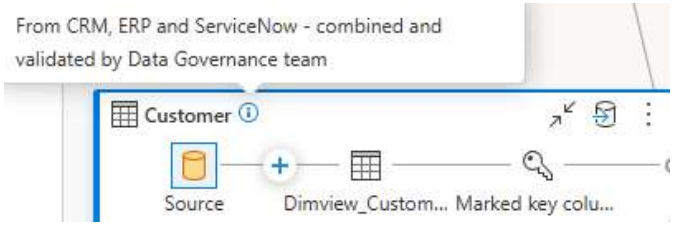


In Power Query Editor

In Power BI Desktop



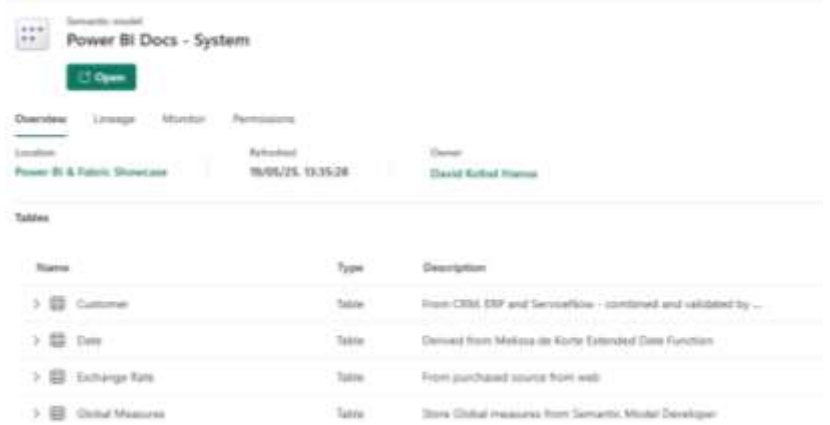
In Dataflows in the service



In TMDL

In INFO.VIEW DAX Functions

In OneLake catalog



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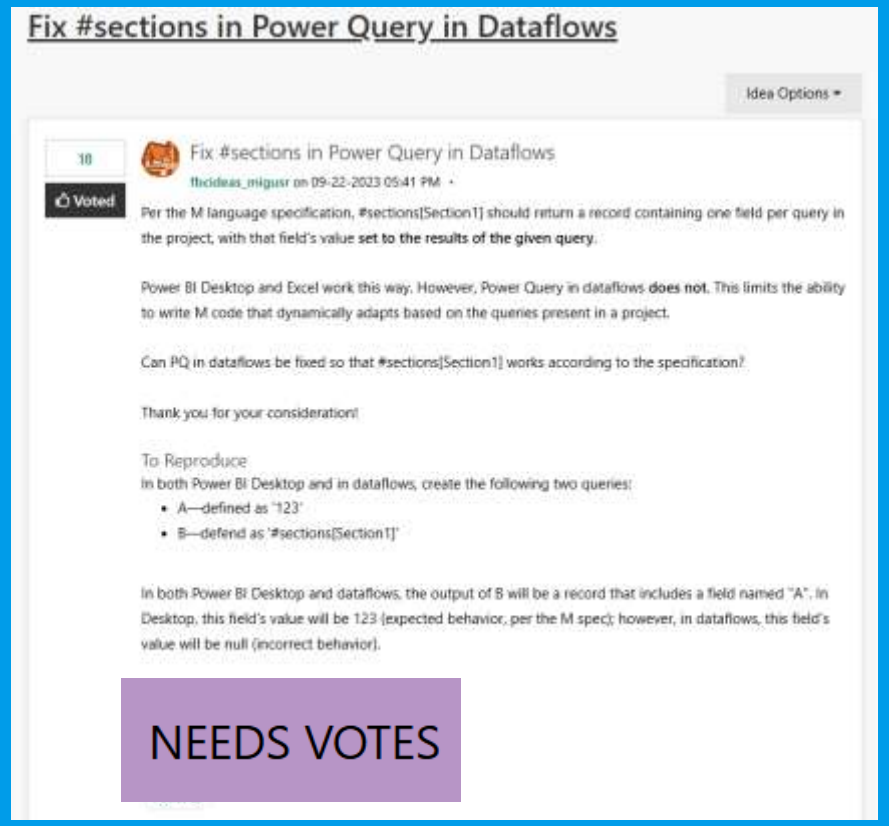
From **Power Query** to to **Fabric Dataflows Gen 2** with **copy-paste**

{14}

Dynamically Reference Your **Tables** for Table.Profile

There should be **one {M}**



{15}
Snapshots with **Append to Lakehouse**

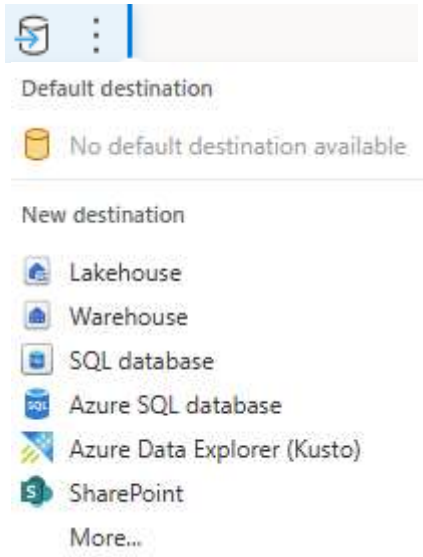
Data Destination & Snapshots with Append

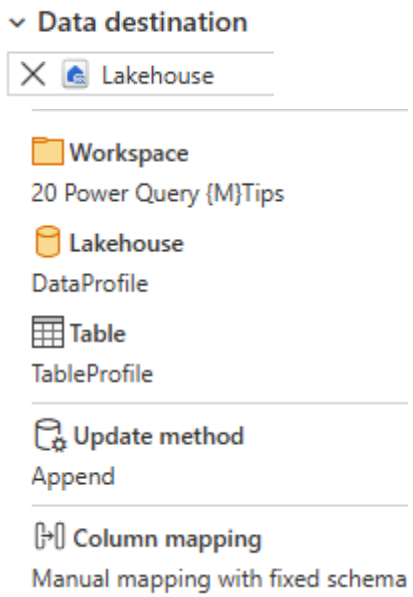
```
let
  Source = Table.Profile(Financials),
  #"Changed column type" = Table.TransformColumnTypes(Source, {{"Count", type number}, {"NullCount", type text}, {"DistinctCount", type text}, {"Average", type text}, {"Max", type text}, {"Min", type text}}),
  #"Added custom" = Table.AddColumn(#"Changed column type", "Table", each "Financials"),
  #"Added custom 1" = Table.AddColumn(#"Added custom", "Custom", each DateTime.LocalNow()),
  #"Renamed columns" = Table.RenameColumns(#"Added custom 1", {{"Custom", "DateTime"}}),
  #"Changed column type 1" = Table.TransformColumnTypes(#"Renamed columns", {{"DateTime", type datetime}, {"Table", type text}})
in
  #"Changed column type 1"
```

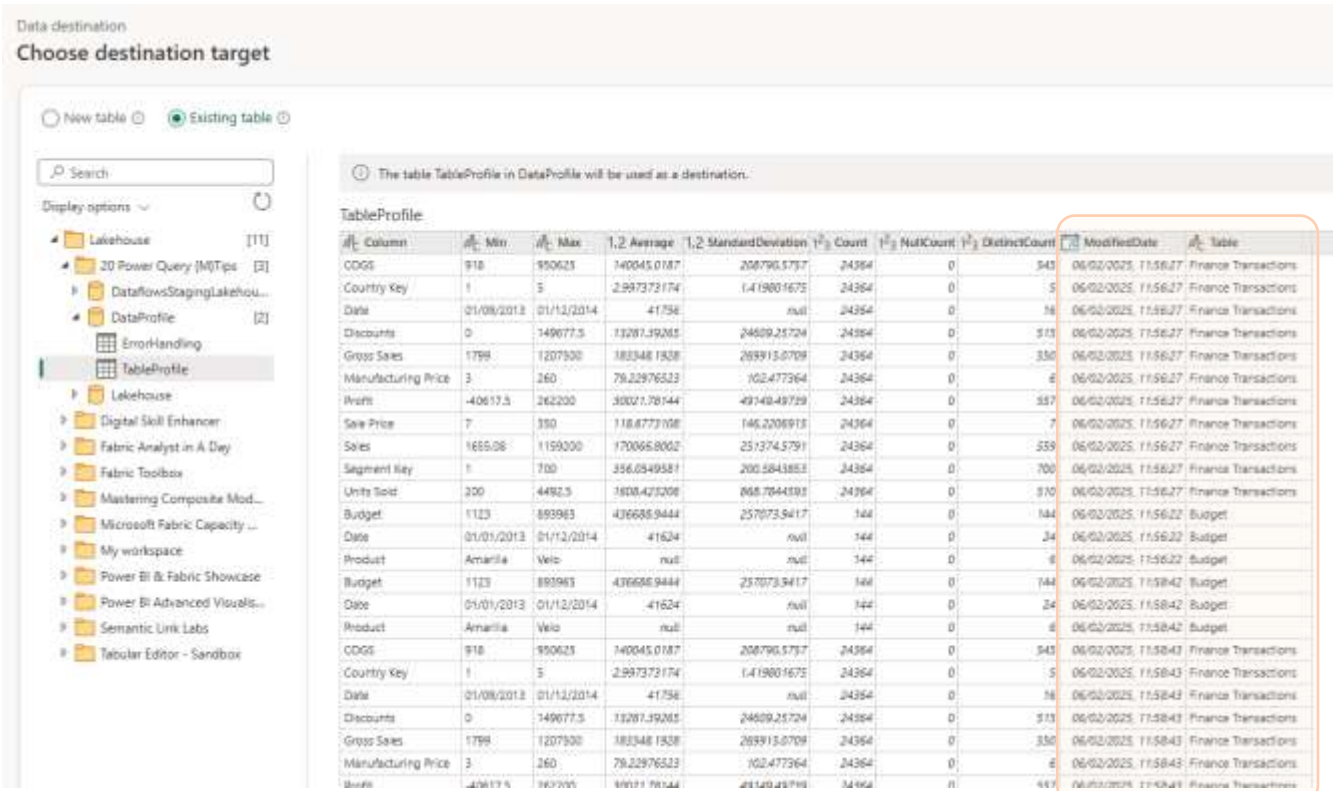
Tab moves focus.

	Column	Min	Max	Average	1.2 StandardDeviation	1.2 Count	NullCount	DistinctCount	Table	DateTime
1	COGS	$1.900,00	$90.740,00	*null*	*null*	35	0	35	Financials	21/08/2025, 12:32:49
2	Country	Canada	United States of America	*null*	*null*	35	0	5	Financials	21/08/2025, 12:32:49
3	Date	01/01/2015	01/01/2015	01/01/2015	*null*	35	0	1	Financials	21/08/2025, 12:32:49
4	Discount Band	High	None	*null*	*null*	35	0	4	Financials	21/08/2025, 12:32:49
5	Discounts	$-	$822,15	*null*	*null*	35	0	34	Financials	21/08/2025, 12:32:49
6	Gross Sales	$118.375,00	$96.600,00	*null*	*null*	35	0	35	Financials	21/08/2025, 12:32:49
7	Manufacturing Price	$10,00	$5,00	*null*	*null*	35	0	6	Financials	21/08/2025, 12:32:49
8	Month Name	January	January	*null*	*null*	35	0	1	Financials	21/08/2025, 12:32:49
9	Month Number	1	1	1	*0*	35	0	1	Financials	21/08/2025, 12:32:49
10	Product	Amarilla	Velo	*null*	*null*	35	0	6	Financials	21/08/2025, 12:32:49
11	Profit	$(12.787,50)	$7.718,40	*null*	*null*	35	0	35	Financials	21/08/2025, 12:32:49
12	Sale Price	$12,00	$7,00	*null*	*null*	35	0	7	Financials	21/08/2025, 12:32:49
13	Sales	$10.733,40	$87.906,00	*null*	*null*	35	0	31	Financials	21/08/2025, 12:32:49
14	Segment	Channel Partners	Small Business	*null*	*null*	35	0	5	Financials	21/08/2025, 12:32:49
15	Units Sold	322	2931	1445.74285714285...	*859.5886274*	35	0	35	Financials	21/08/2025, 12:32:49
16	Year	2015	2015	2015	*0*	35	0	1	Financials	21/08/2025, 12:32:49

Data Destination & Snapshots with Append



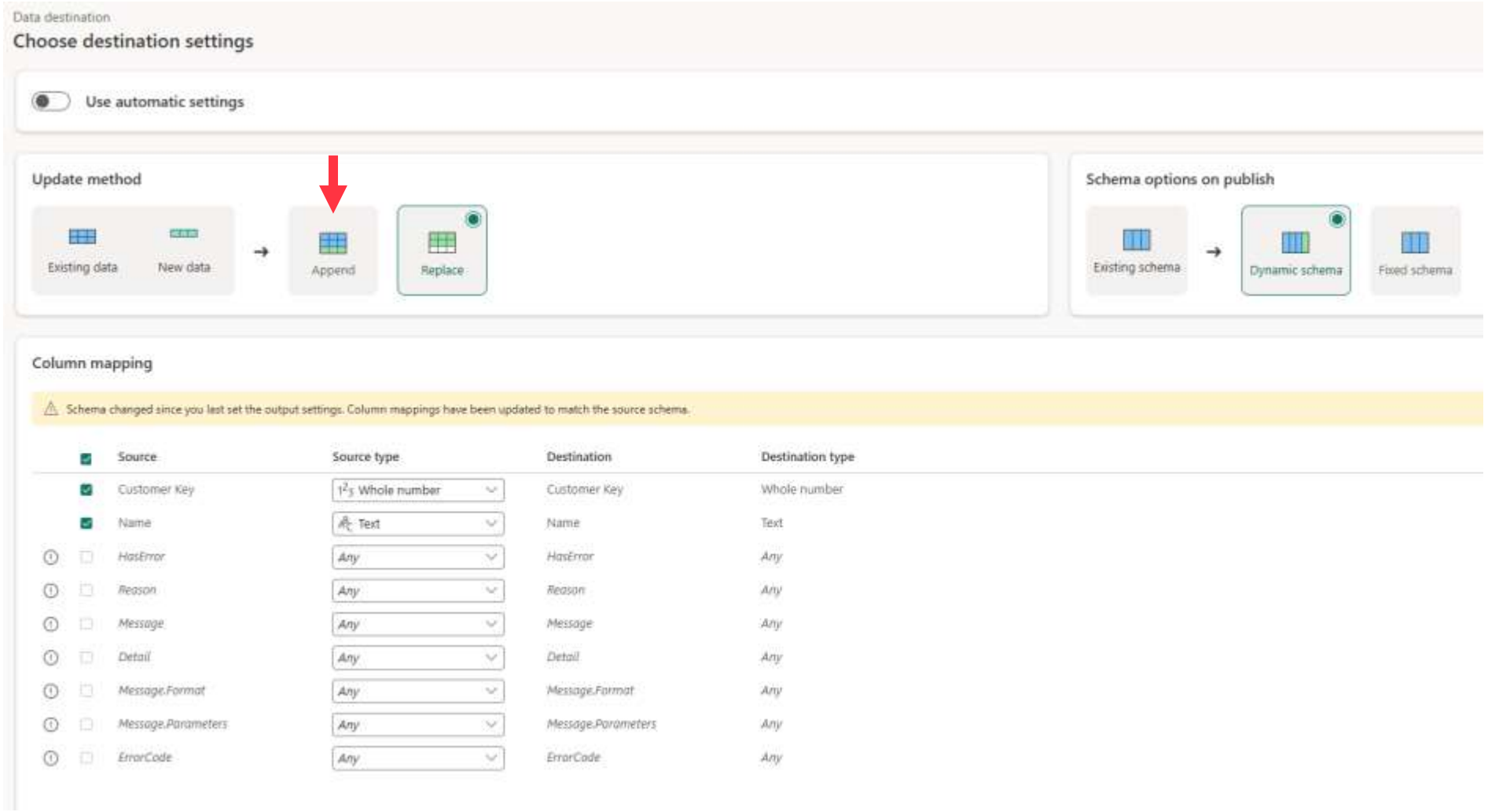




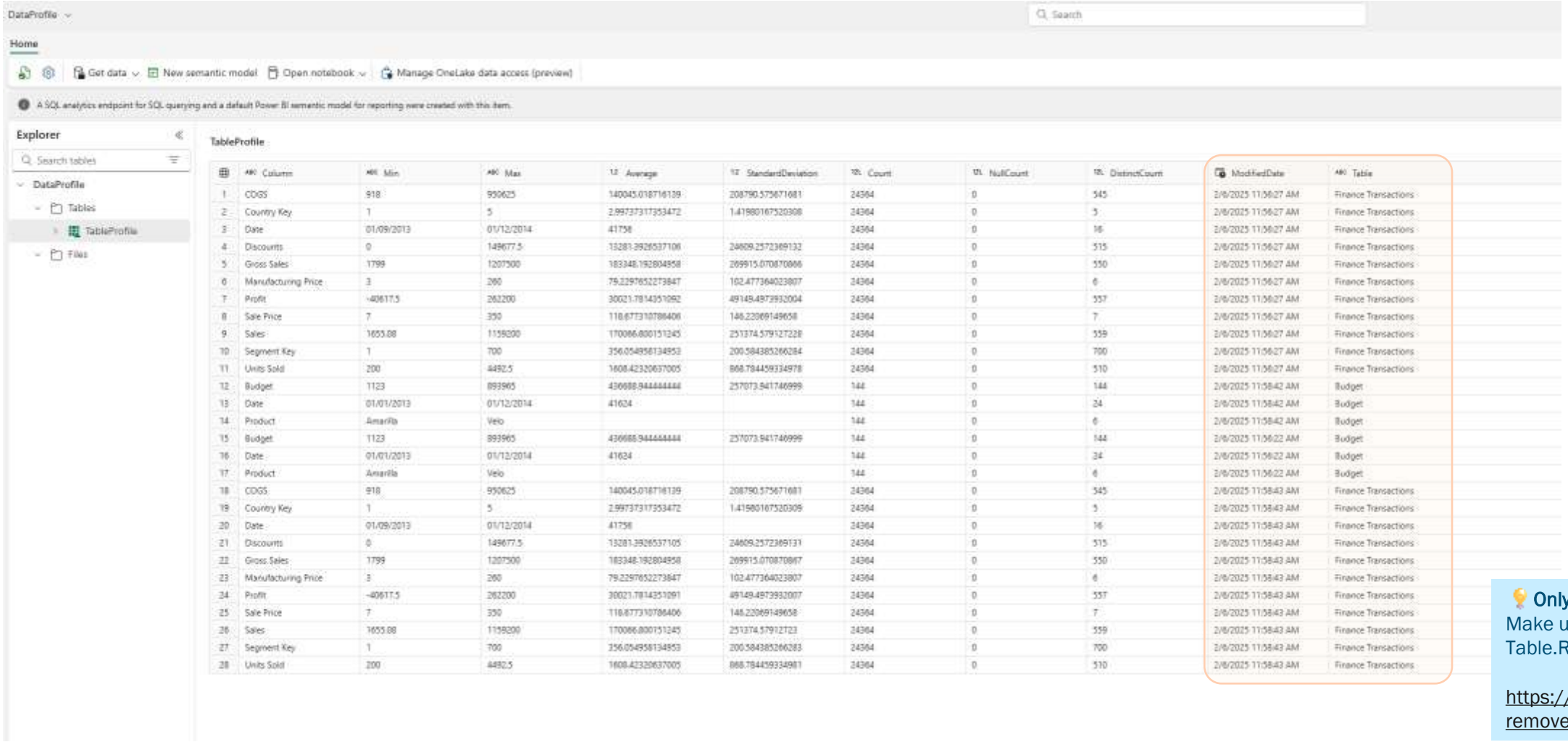
💡 **Have multiple tables/files**
Make use of the function Table.FromPartitions()

https://powerquery.how/table-frompartitions/

Data Destination & Snapshots with Append



Data Destination & Snapshots with Append



	Column	Min	Max	Average	StandardDeviation	Count	NullCount	DistinctCount	ModifiedDate	Table
1	COGS	918	950625	140045.018716139	208790.575671681	24364	0	545	2/6/2025 11:56:27 AM	Finance Transactions
2	Country Key	1	5	2.99737317353472	1.41980167520308	24364	0	5	2/6/2025 11:56:27 AM	Finance Transactions
3	Date	01/09/2013	01/12/2014	41758		24364	0	16	2/6/2025 11:56:27 AM	Finance Transactions
4	Discounts	0	149677.5	13281.3926537106	24609.2572369132	24364	0	515	2/6/2025 11:56:27 AM	Finance Transactions
5	Gross Sales	1799	1207500	183348.192804858	269915.070870866	24364	0	550	2/6/2025 11:56:27 AM	Finance Transactions
6	Manufacturing Price	3	260	79.2297652273847	102.477364023807	24364	0	6	2/6/2025 11:56:27 AM	Finance Transactions
7	Profit	-40617.5	262200	30021.7814351092	49148.4973932004	24364	0	557	2/6/2025 11:56:27 AM	Finance Transactions
8	Sale Price	7	350	118.677310786406	146.22069149658	24364	0	7	2/6/2025 11:56:27 AM	Finance Transactions
9	Sales	1655.88	1159200	170086.800151245	251374.579127228	24364	0	559	2/6/2025 11:56:27 AM	Finance Transactions
10	Segment Key	1	700	356.054958134953	200.584385266284	24364	0	700	2/6/2025 11:56:27 AM	Finance Transactions
11	Units Sold	200	4492.5	1608.42320637005	868.784459334978	24364	0	510	2/6/2025 11:56:27 AM	Finance Transactions
12	Budget	1123	893965	436688.944444444	257073.941746999	144	0	144	2/6/2025 11:56:42 AM	Budget
13	Date	01/01/2013	01/12/2014	41624		144	0	24	2/6/2025 11:56:42 AM	Budget
14	Product	Amarilla	Velo			144	0	6	2/6/2025 11:56:42 AM	Budget
15	Budget	1123	893965	436688.944444444	257073.941746999	144	0	144	2/6/2025 11:56:22 AM	Budget
16	Date	01/01/2013	01/12/2014	41624		144	0	24	2/6/2025 11:56:22 AM	Budget
17	Product	Amarilla	Velo			144	0	6	2/6/2025 11:56:22 AM	Budget
18	COGS	918	950625	140045.018716139	208790.575671681	24364	0	545	2/6/2025 11:58:43 AM	Finance Transactions
19	Country Key	1	5	2.99737317353472	1.41980167520309	24364	0	5	2/6/2025 11:58:43 AM	Finance Transactions
20	Date	01/09/2013	01/12/2014	41758		24364	0	16	2/6/2025 11:58:43 AM	Finance Transactions
21	Discounts	0	149677.5	13281.3926537105	24609.2572369131	24364	0	515	2/6/2025 11:58:43 AM	Finance Transactions
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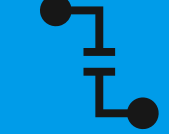
24	Profit	-40617.5	262200	30021.7814351091	49148.4973932007	24364	0	557	2/6/2025 11:58:43 AM	Finance Transactions
25	Sale Price	7	350	118.677310786406	146.22069149658	24364	0	7	2/6/2025 11:58:43 AM	Finance Transactions
26	Sales	1655.88	1159200	170086.800151245	251374.57912723	24364	0	559	2/6/2025 11:58:43 AM	Finance Transactions
27	Segment Key	1	700	356.054958134953	200.584385266283	24364	0	700	2/6/2025 11:58:43 AM	Finance Transactions
28	Units Sold	200	4492.5	1608.42320637005	868.784459334981	24364	0	510	2/6/2025 11:58:43 AM	Finance Transactions

💡 **Only need new rows?**
Make use of the function Table.RemoveMatchingRows()

https://powerquery.how/table-removematchingrows/

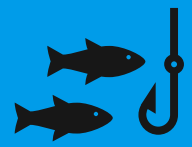
{16}

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



{17}

Look for the **stream**



{18}

You can now **write SQL-Views** with Visual Query Editor

{19}

From Excel to **SQL Analytics Endpoint in Lakehouse**

{20}

Orchestration Pipelines

with invoke Dataflow Gen2

& Semantic Model refresh

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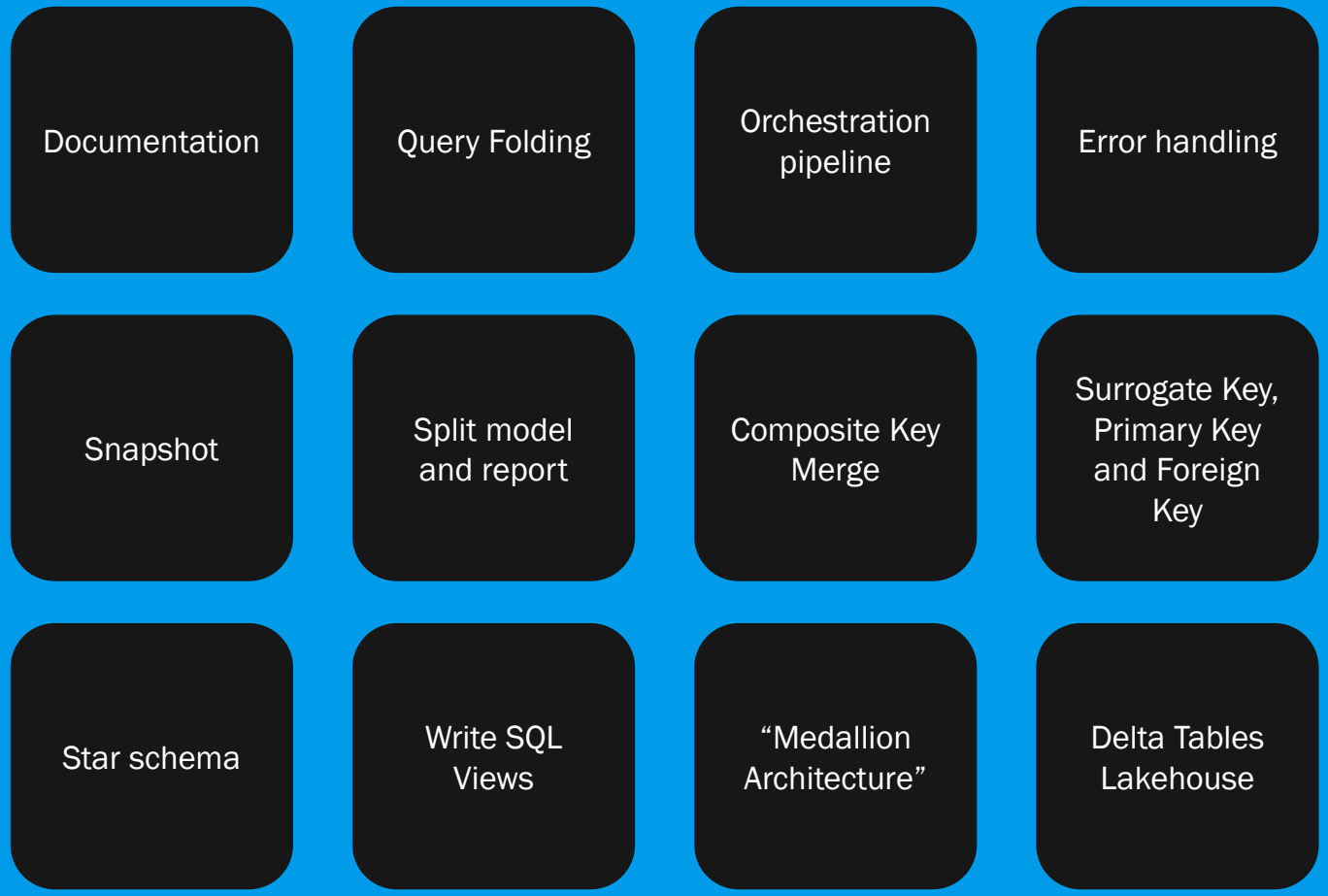
You just have a self-service solution…

Really?

- Star schema
- Query Folding
- Surrogate Key, Primary Key and Foreign Key
- Orchestration pipeline
- Split model and report
- Write SQL Views
- Snapshot
- “Medallion Architecture”
- Error handling
- Delta Tables Lakehouse
- Composite Key Merge
- Documentation

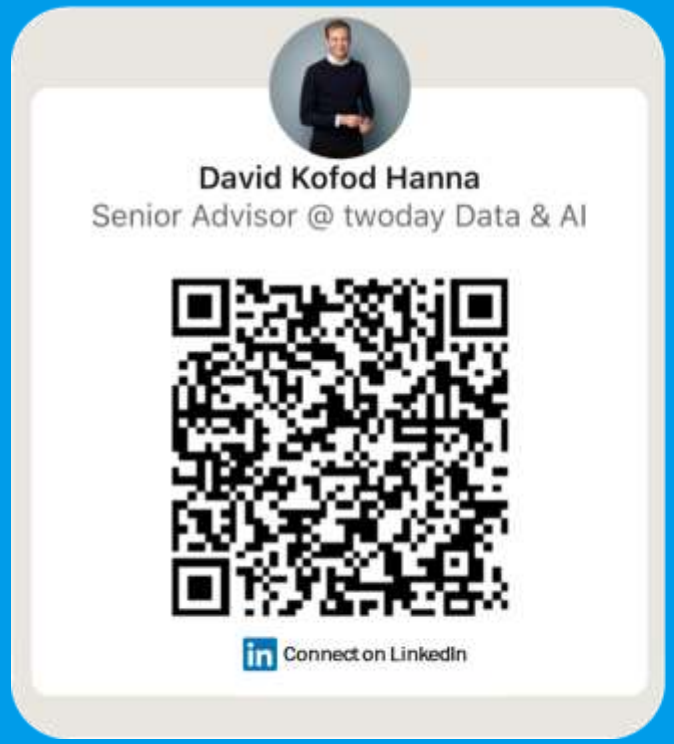
What about **user adoption** and **solving** business **problems**?



It’s not about the **tech** and new features

It’s about **people** and solving needs for the **business** and **customers**

Thank you and {M}joy



Any **feedback** is highly appreciated