



Power BI Desktop – Interactive Reports & Dashboards

Part 2

IT1.4.2

Last updated: 06.12.2018

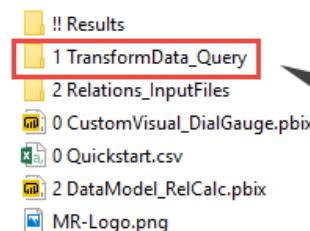
Agenda - Power BI Desktop

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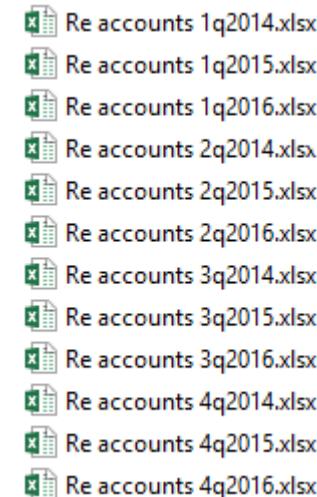
1. Transform Data – Working with the Query Editor

Data - Import Data from Folder

- The folder **1 QueryEditor_TransformData** contains quarterly figures



The data from this folder should be imported for further visualizations



- Every Excel file contains data with the same table structure

A	B	C	D	E	F	G
1 Category	Classic	AA	Unit Linker	Critical Illness	Group Ins.	TOP LIFE
2 Income						
3 Reinsurance premiums net of cancellations	75.823,65	164.636,15	22.946,00	254,88	440,58	24.752,74
Reserve for outstanding claims as at the end						
of the preceding quarter	0,00	0,00	0,00	0,00	0,00	0,00
5 Outgo						
6 Claims payments	0,00	38.555,57	0,00	0,00	0,00	7.500,00
Reserve for outstanding claims as at the end						
of the quarter concerned	0,00	0,00	0,00	0,00	0,00	0,00
8 Profit Participation	-16.345,16	48.237,47	9.527,83	112,81	195,01	0,00

- All data should be summarized in one table – see result on the right
- The file name contains the information **Year / Quarter:**
- This information is additionally needed as separate columns

	1 ² ₃ Year	1 ² ₃ Quarter	A ^B _C Category	A ^B _C Product	1.2 Value
1	2014		1 Reinsurance premiums net of cancellations	Classic	54324,06
2	2014		1 Reinsurance premiums net of cancellations	AA	106697
3	2014		1 Reinsurance premiums net of cancellations	Unit Linked	27802,11
4	2014		1 Reinsurance premiums net of cancellations	Critical Illness	394,56
5	2014		1 Reinsurance premiums net of cancellations	Group Ins.	467,2044
6	2014		1 Reinsurance premiums net of cancellations	TOP LIFE	12544,91
7	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Classic	6833,333333
8	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	AA	70729,68401
9	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Unit Linked	10770,75823
10	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Critical Illness	0
11	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Group Ins.	0
12	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	TOP LIFE	7500
13	2014		1 Claims payments	Classic	0
14	2014		1 Claims payments	AA	99249,92788
15	2014		1 Claims payments	Unit Linked	17537,61744
16	2014		1 Claims payments	Critical Illness	0
17	2014		1 Claims payments	Group Ins.	2500
18	2014		1 Claims payments	TOP LIFE	14250
19	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Classic	0
20	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	AA	79135,09526
21	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Unit Linked	3884,578132
22	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Critical Illness	0
23	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Group Ins.	0
24	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	TOP LIFE	5000

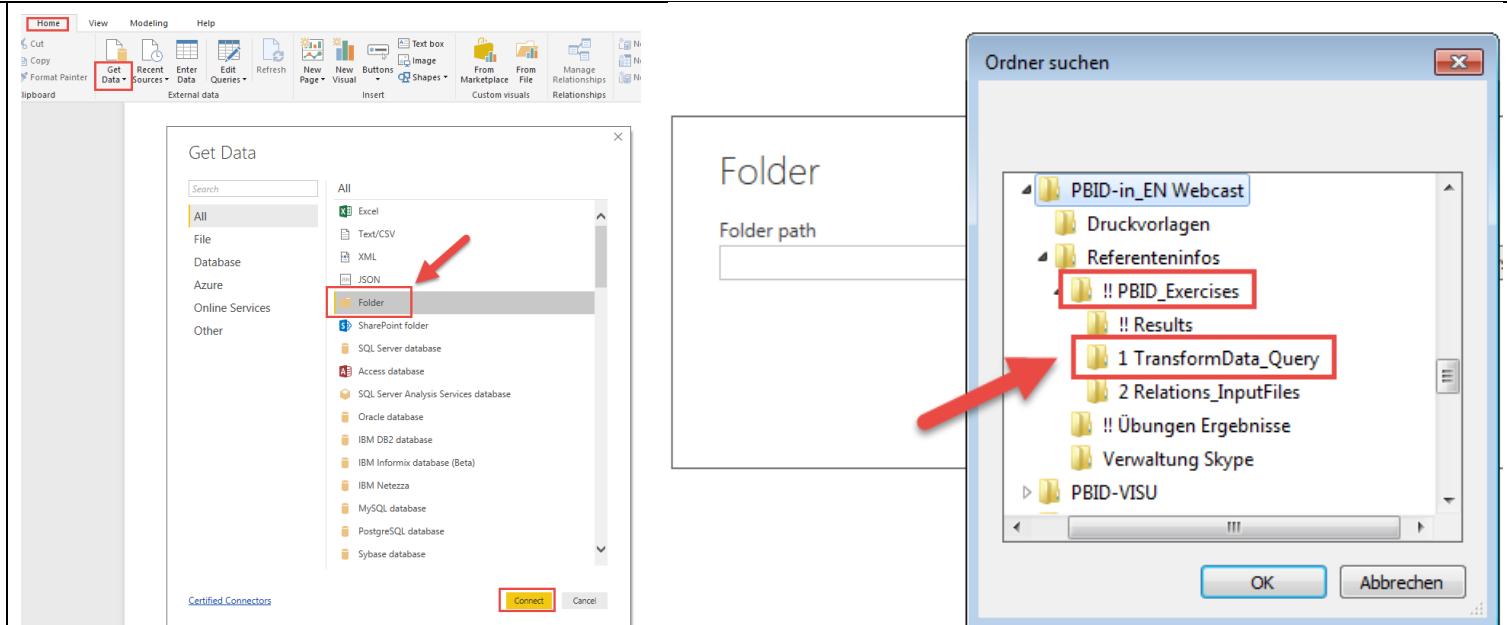
Result



Exercise 1

Start

- Please open Power BI Desktop & start with an empty .PBIX-file
- Via **Home / Get Data / More / Folder**
you start the import process



- You receive a list with all entries from the folder
- Open the Query Editor with **Combine & Edit**
- This command combines all binaries in a given folder
- As long as they have the same file type and structure you will get a consistent list of data

Content	Name	Extension	Date accessed	Date modified	Date created	Attributes	Folder Path
Binary	Re accounts 1q2014.xlsx	xlsx	02.05.2018 09:30:08	25.02.2018 17:05:38	30.04.2018 19:47:18	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 1q2015.xlsx	xlsx	02.05.2018 09:34:00	22.04.2018 15:35:54	30.04.2018 19:47:18	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 1q2016.xlsx	xlsx	02.05.2018 09:34:15	25.02.2018 17:05:52	30.04.2018 19:47:18	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 2q2014.xlsx	xlsx	02.05.2018 09:34:01	22.04.2018 15:36:26	30.04.2018 19:47:18	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 2q2015.xlsx	xlsx	02.05.2018 09:30:42	22.04.2018 15:36:42	30.04.2018 19:47:18	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 2q2016.xlsx	xlsx	02.05.2018 09:33:53	22.04.2018 15:36:12	30.04.2018 19:47:18	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 3q2014.xlsx	xlsx	02.05.2018 09:31:24	22.04.2018 15:36:26	02.05.2018 09:30:42	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 3q2015.xlsx	xlsx	02.05.2018 09:33:19	22.05.2018 09:33:19	02.05.2018 09:30:42	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 3q2016.xlsx	xlsx	02.05.2018 09:31:24	22.04.2018 15:36:12	02.05.2018 09:30:42	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 4q2014.xlsx	xlsx	02.05.2018 09:31:42	22.04.2018 15:36:26	02.05.2018 09:31:24	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 4q2015.xlsx	xlsx	02.05.2018 09:33:53	22.04.2018 15:36:42	02.05.2018 09:31:24	Record	Z:\Documents\@TRAININGS
Binary	Re accounts 4q2016.xlsx	xlsx	02.05.2018 09:33:36	22.04.2018 15:36:12	02.05.2018 09:31:24	Record	Z:\Documents\@TRAININGS

- Select **Re Statement** as data source & click **OK**

Combine Files

Select the object to be extracted from each file. [Learn more](#)

Example File 

Display Options 

-  Sample File Parameter1 [2]
-  Tabelle2
-  **Re Statement** 

Re Statement

Category	Classic	AA
Income		null
Reinsurance premiums net of cancellations	54324,06	
Reserve for outstanding claims as at the end of the preceding quarter	6833,333333	
Outgo	null	
Commissions paid	12291,1	
Claims payments	0	
Reserve for outstanding claims as at the end of the quarter concerned	0	
Profit Participation	20681,76866	



OK

Cancel

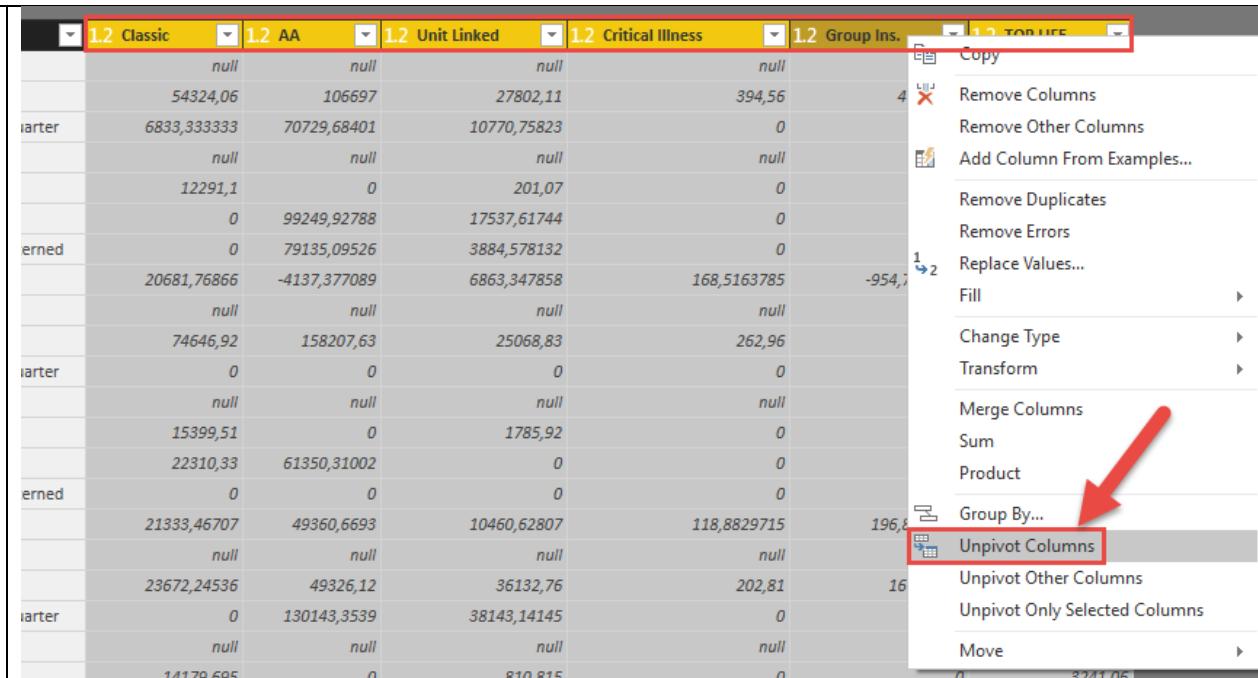
Skip files with errors

- Here you can see the complete list already with all data from all files from the folder-import
- Additionally, the column **Source.Name** shows information for year & quarter

Queries [5] 

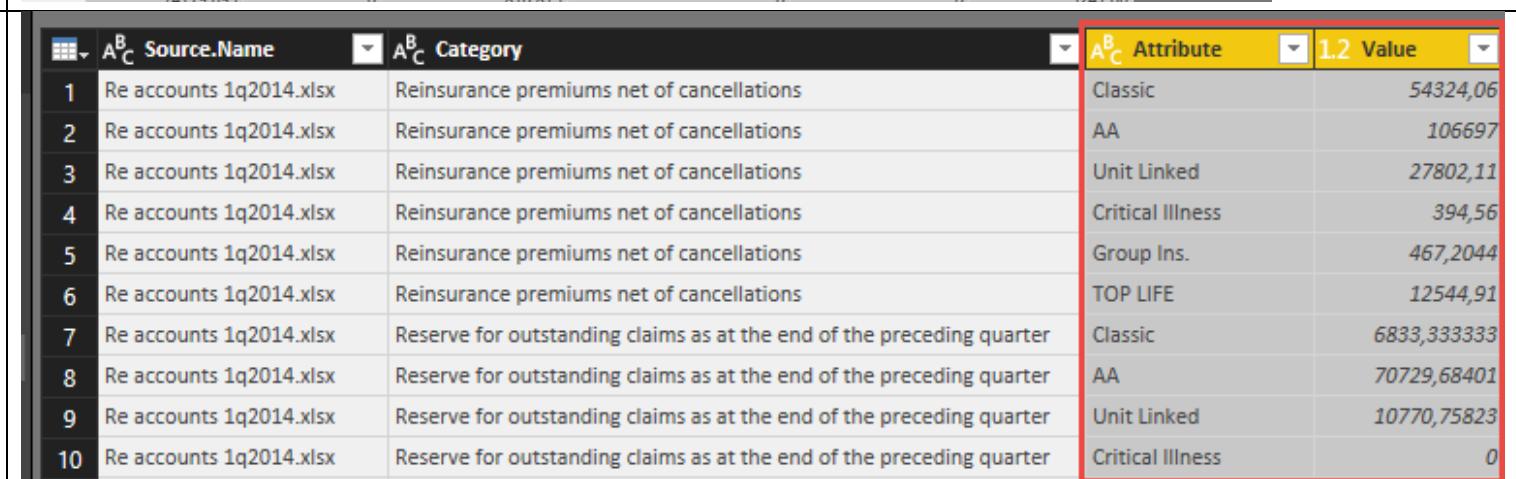
Source.Name	Category	L2 Classic	L2 AA	L2 Unit Linked	L2 Critical Illness	L2 Group Ins.	L2 TOP LIFE
1 Re accounts 1q2014.xlsx	Income	null	null	null	null	null	null
2 Re accounts 1q2014.xlsx	Reinsurance premiums net of cancellations	54324,06	106697	27802,11	394,56	467,2044	12544,91
3 Re accounts 1q2014.xlsx	Reserve for outstanding claims as at the end of the preceding quarter	6833,333333	70729,68401	10770,75823	0	0	7500
4 Re accounts 1q2014.xlsx	Outgo	null	null	null	null	null	null
5 Re accounts 1q2014.xlsx	Commissions paid	12291,1	0	201,07	0	0	157,52
6 Re accounts 1q2014.xlsx	Claims payments	0	99249,92788	17537,61744	0	2500	14250
7 Re accounts 1q2014.xlsx	Reserve for outstanding claims as at the end of the quarter concerned	0	79135,09526	3884,578132	0	0	5000
8 Re accounts 1q2014.xlsx	Profit Participation	20681,76866	-4137,377089	6863,347858	168,5163785	-954,7802059	0

- In order to change the pivot-layout of the table select the highlighted columns
- Then right-click one of these column titles & select **Unpivot Columns**



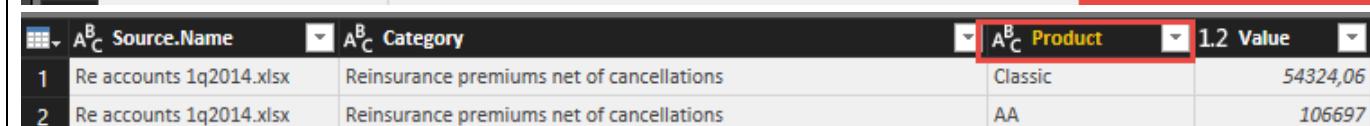
A screenshot of a Microsoft Excel table. The table has several columns with headers: '1.2 Classic', '1.2 AA', '1.2 Unit Linked', '1.2 Critical Illness', '1.2 Group Ins.', and '1.2 TOP LIFE'. A context menu is open over the first five columns. The menu includes options like 'Copy', 'Remove Columns', 'Add Column From Examples...', 'Remove Duplicates', 'Remove Errors', 'Replace Values...', 'Fill', 'Change Type', 'Transform', 'Merge Columns', 'Sum', 'Product', 'Group By...', 'Unpivot Columns' (which is highlighted with a red arrow), 'Unpivot Other Columns', 'Unpivot Only Selected Columns', and 'Move'.

- The result is an unpivoted data table



A screenshot of an unpivoted data table. The table has four columns: 'Source.Name', 'Category', 'Attribute', and 'Value'. The 'Attribute' column is highlighted with a red border. The data consists of 10 rows, each with a number from 1 to 10 in the first column, followed by the file name 'Re accounts 1q2014.xlsx' in the 'Source.Name' column, the category in the 'Category' column, and the value in the 'Value' column. The 'Attribute' column contains values such as 'Classic', 'AA', 'Unit Linked', 'Critical Illness', 'Group Ins.', and 'TOP LIFE'.

- Please double-click the column title **Attribute** & change it to **Product**



A screenshot of the same unpivoted data table, but with the column title 'Attribute' changed to 'Product'. The 'Product' column is highlighted with a red border. The data remains the same as in the previous screenshot.



Exercise 2

- Finally, you should split the column **Source.Name** in order to provide your data with the information of **year & quarter**
- Try the various possibilities of the **Split Column** command & delete all columns not needed
- Rename the column that contains the quarter data to **Quarter** and the column that contains the year data to **Year**

The screenshot illustrates the process of splitting the 'Source.Name' column into 'Year' and 'Quarter' using the Power BI 'Split Column' feature.

Initial Data: The 'Source.Name' column contains full file paths like 'Re accounts 1q2014.xlsx'. The 'Product' column lists various product names.

Step 1: Split Column by Delimiter

A red box highlights the 'Split Column' option in the context menu of the 'Source.Name' column. A red arrow points from this menu to the 'By Delimiter...' option in the dropdown. A red callout box labeled 'Delete columns' points to the 'Source.Name.2' and 'Source.Name.3' columns, which are highlighted with a red border.

Step 2: Configure Split Column by Delimiter

A modal dialog titled 'Split Column by Delimiter' is shown. It specifies a delimiter of '|'. The 'Each occurrence of the delimiter' radio button is selected. The 'OK' button is highlighted with a red border.

Step 3: Resulting Data

The 'Source.Name.3.1' column now contains the 'Year' values ('2014.xlsx'). The 'Source.Name.3.2' column contains the 'Quarter' values ('1', '2', '3', '4'). The original 'Source.Name' column is no longer present.

Split Column by Delimiter

Specify the delimiter used to split the text column.

Select or enter delimiter
--Custom--

Split at
 Left-most delimiter
 Right-most delimiter
 Each occurrence of the delimiter

[Advanced options](#)

OK Cancel

1²₃ Source.Name.3.1 1²₃ Source.Name.3.2.1

1	1	2014
2	1	2014
3	1	2014
4	1	2014
5	1	2014
6	1	2014
7	1	2014
8	1	2014

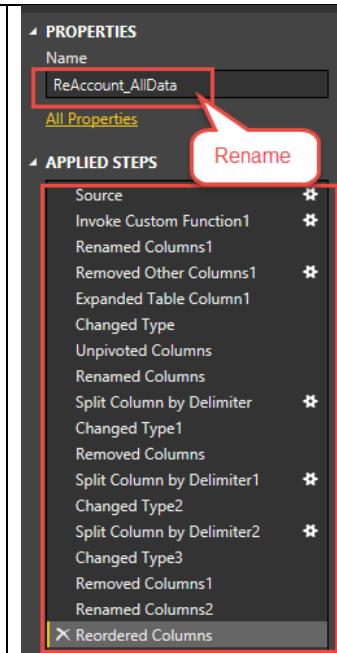
->

1 ² ₃ Source.Name.3.1	1 ² ₃ Source.Name.3.2.1
---	---

Result

	1 ² ₃ Year	1 ² ₃ Quarter	ABC 123 Category	A ^B _C Product	1.2 Value
1	2014		1 Reinsurance premiums net of cancellations	Classic	54324,06
2	2014		1 Reinsurance premiums net of cancellations	AA	106697
3	2014		1 Reinsurance premiums net of cancellations	Unit Linked	27802,11
4	2014		1 Reinsurance premiums net of cancellations	Critical Illness	394,56
5	2014		1 Reinsurance premiums net of cancellations	Group Ins.	467,2044
6	2014		1 Reinsurance premiums net of cancellations	TOP LIFE	12544,91
7	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Classic	6833,333333
8	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	AA	70729,68401
9	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Unit Linked	10770,75823
10	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Critical Illness	0
11	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	Group Ins.	0
12	2014		1 Reserve for outstanding claims as at the end of the preceding quarter	TOP LIFE	7500
13	2014		1 Claims payments	Classic	0
14	2014		1 Claims payments	AA	99249,92788
15	2014		1 Claims payments	Unit Linked	17537,61744
16	2014		1 Claims payments	Critical Illness	0
17	2014		1 Claims payments	Group Ins.	2500
18	2014		1 Claims payments	TOP LIFE	14250
19	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Classic	0
20	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	AA	79135,09526
21	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Unit Linked	3884,578132
22	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Critical Illness	0
23	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	Group Ins.	0
24	2014		1 Reserve for outstanding claims as at the end of the quarter concerned	TOP LIFE	5000
25	2014		1 Profit Participation	Classic	20681,76866
26	2014		1 Profit Participation	AA	-4137,377089

- Rename the table to **ReAccount_AllData**
- The **Applied Steps** pane provides you with access to all steps you performed to transform your data in the necessary form



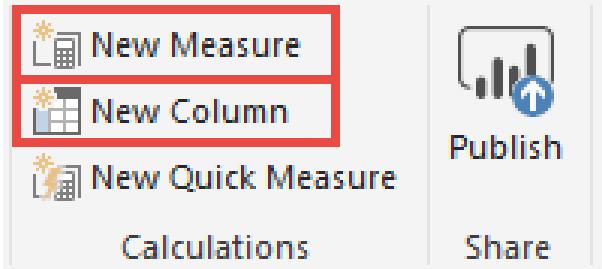
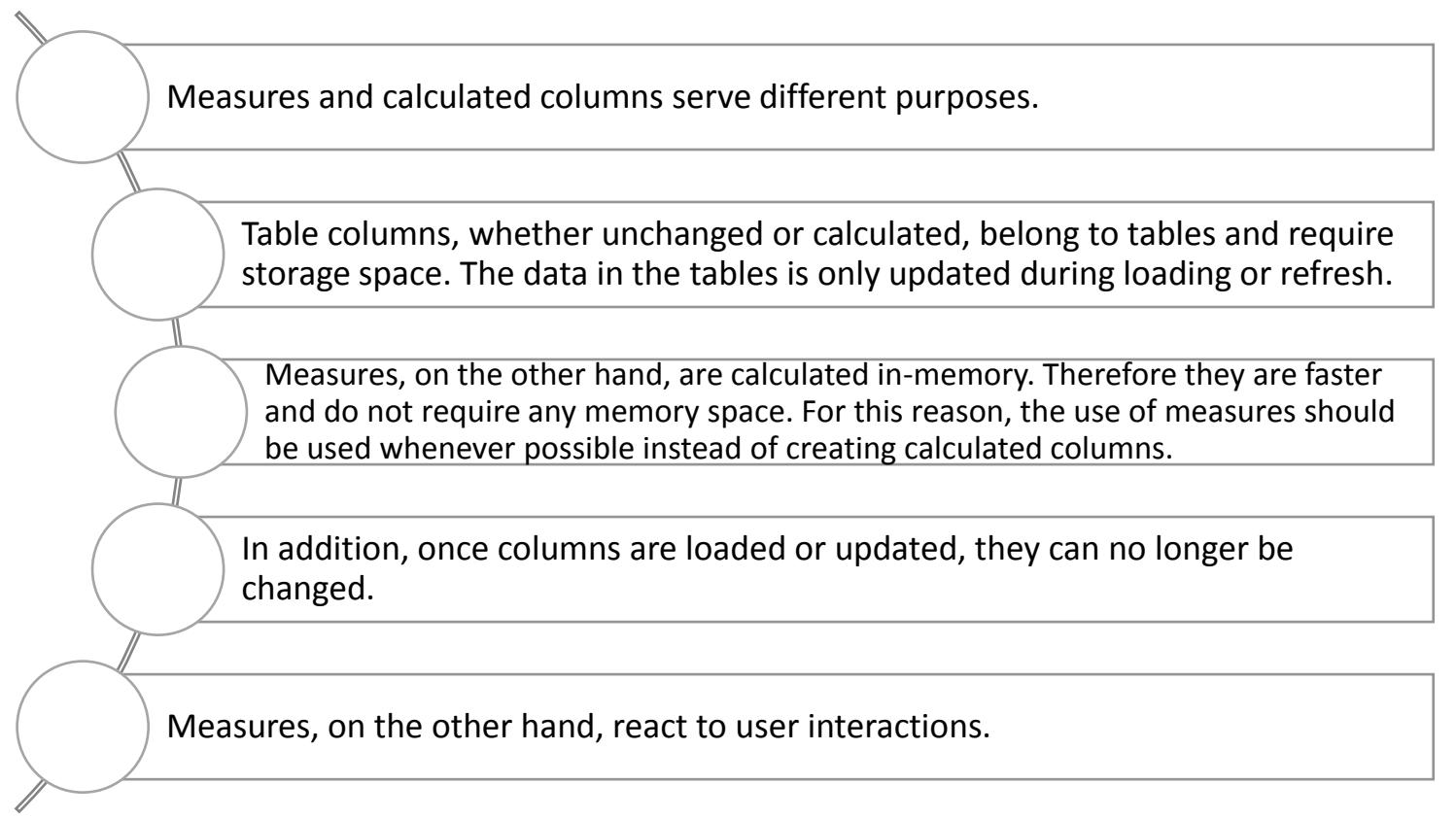
- With **Close & Apply** the connected data will now be imported into the data model

The screenshot shows the Power BI ribbon with the 'Transform' tab selected. The 'Close & Apply' button is highlighted with a red box. Below the ribbon, a preview of the data table 'ReAccount_AllData' is displayed, showing columns for Year, Quarter, and Category, with data rows from 1 to 8.

	Year	Quarter	Category
1	2014		Reinsurance premiums net of c
2	2014		Reinsurance premiums net of c
3	2014		Reinsurance premiums net of c
4	2014		Reinsurance premiums net of c
5	2014		Reinsurance premiums net of c
6	2014		Reinsurance premiums net of c
7	2014		Reserve for outstanding claims
8	2014		Reserve for outstanding claims

The screenshot shows the Microsoft Power BI Fields pane. On the left, there is a 'VISUALIZATIONS' section containing various visualization icons. To its right is the 'FIELDS' section, which includes a search bar and a list of fields. A red arrow points to the 'FIELDS' tab. The list of fields is as follows:

- ReAccount_AllData
 - Category
 - Product
 - Quarter
 - Value
 - Year

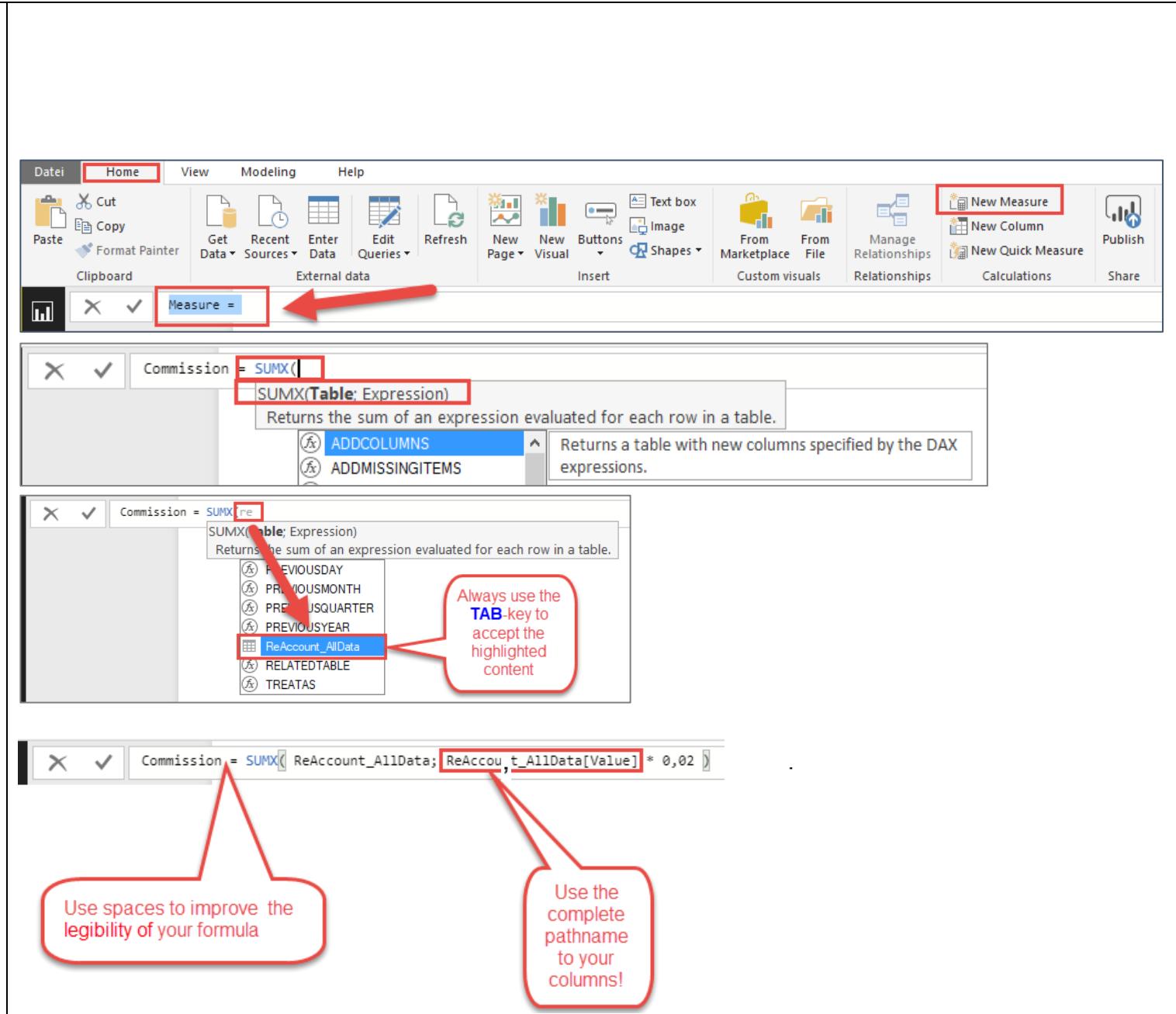
<p>In your data model you use DAX (Data Analysis Expressions) to calculate additional values</p> <ul style="list-style-type: none"> • Calculations can be performed with calculated columns or calculated fields (= Measures). Measures are preferable because they are more performant and use no storage place 	 <p>DAX refers to columns & tables & not to cells (like Excel)</p>
<p>Difference between a Calculated Column and a Measure</p>	 <p>Measures and calculated columns serve different purposes.</p> <p>Table columns, whether unchanged or calculated, belong to tables and require storage space. The data in the tables is only updated during loading or refresh.</p> <p>Measures, on the other hand, are calculated in-memory. Therefore they are faster and do not require any memory space. For this reason, the use of measures should be used whenever possible instead of creating calculated columns.</p> <p>In addition, once columns are loaded or updated, they can no longer be changed.</p> <p>Measures, on the other hand, react to user interactions.</p>

- A Commission of 2 % of the corresponding value has to be calculated & visualized



Exercise 3

- Create a new measure:
Home / New Measure
- Intellisense provides you with information about the selected function
- The function **SUM** aggregates – the function **SUMX** iterates through all rows of the column **Value** & multiplies the value by 2%
- Start typing the name of the table & accept the highlighted content with the **TAB**-key
- Recommendations creating formulas:
 1. use spaces
 2. use the complete pathname addressing fields

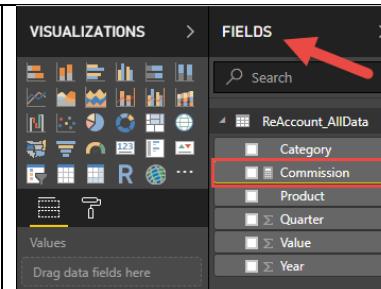


The screenshot shows the Power BI Desktop interface with the 'Home' tab selected. In the formula bar, the measure 'Commission' is being defined with the formula 'Commission = SUMX()'.

The 'SUMX' function is highlighted in the Intellisense dropdown, which includes the following description: 'Returns the sum of an expression evaluated for each row in a table.' Below the dropdown, another dropdown shows suggestions for the table argument, with 'ReAccount_AllData' highlighted. A callout bubble with the text 'Always use the TAB-key to accept the highlighted content' points to this selection.

At the bottom of the formula bar, the completed formula is shown: 'Commission = SUMX(ReAccount_AllData; ReAccount_AllData[Value] * 0,02)'. Three callout bubbles provide tips: one pointing to the formula bar with 'Use spaces to improve the legibility of your formula'; one pointing to the 'ReAccount_AllData' part of the formula with 'Use the complete pathname to your columns!'; and one pointing to the 'ReAccount_AllData' suggestion in the dropdown with 'Always use the TAB-key to accept the highlighted content'.

- When you confirm your formula with **Return** no result is shown - as you might expect it from Excel
- The new measure is simply shown in the field list on the right



VISUALIZATIONS > FIELDS >

ReAccount_AllData

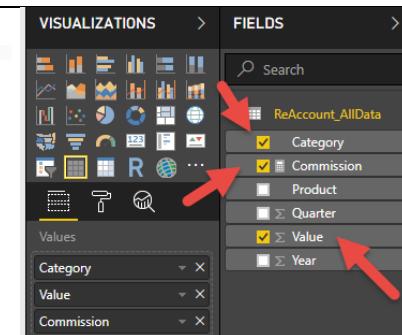
- Category
- Commission
- Product
- Quarter
- Value
- Year

Values

Drag data fields here

- In order to visualize & check the measure, always use the visual **Table**
- Drag & drop the necessary fields to the reporting canvas & check the values
- Finally delete the table

Category	Value	Commission
Claims payments	\$759.123,71	\$15.182,47
Profit Participation	\$549.877,24	\$10.997,54
I Reinsurance premiums net of cancellations	\$2.562.887,39	\$51.257,75
Reserve for outstanding claims as at the end of the preceding quarter	\$890.792,54	\$17.815,85
Reserve for outstanding claims as at the end of the quarter concerned	\$799.144,31	\$15.982,89
Total	\$5.561.825,19	\$111.236,50



VISUALIZATIONS > FIELDS >

ReAccount_AllData

- Category
- Commission
- Product
- Quarter
- Value
- Year

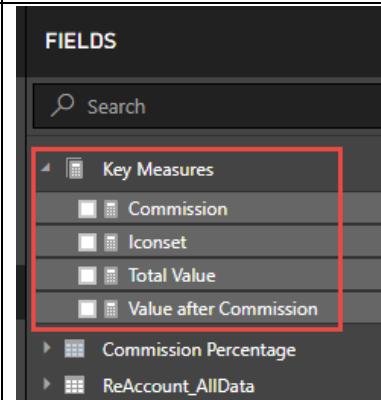
Values

- For a better overview of all measures it is recommended to create a **support table** that contains all calculations of your data model
- However, it is not connected to your data model



Exercise 4

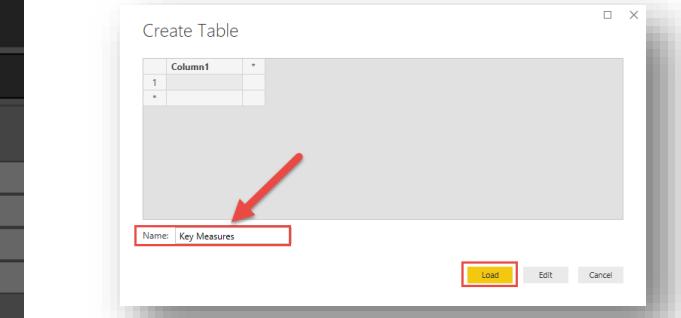
- Create the table **Key Measures**: **Home / Enter Data**
- An empty table is shown – please enter the table name in the left bottom corner
- As a result, an empty table is shown in the **Fields** pane



FIELDS

Search

- Key Measures
- Commission
- Icons
- Total Value
- Value after Commission
- Commission Percentage
- ReAccount_AllData



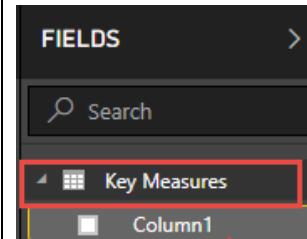
Create Table

Column1

Name: Key Measures

Load Edit Cancel

->



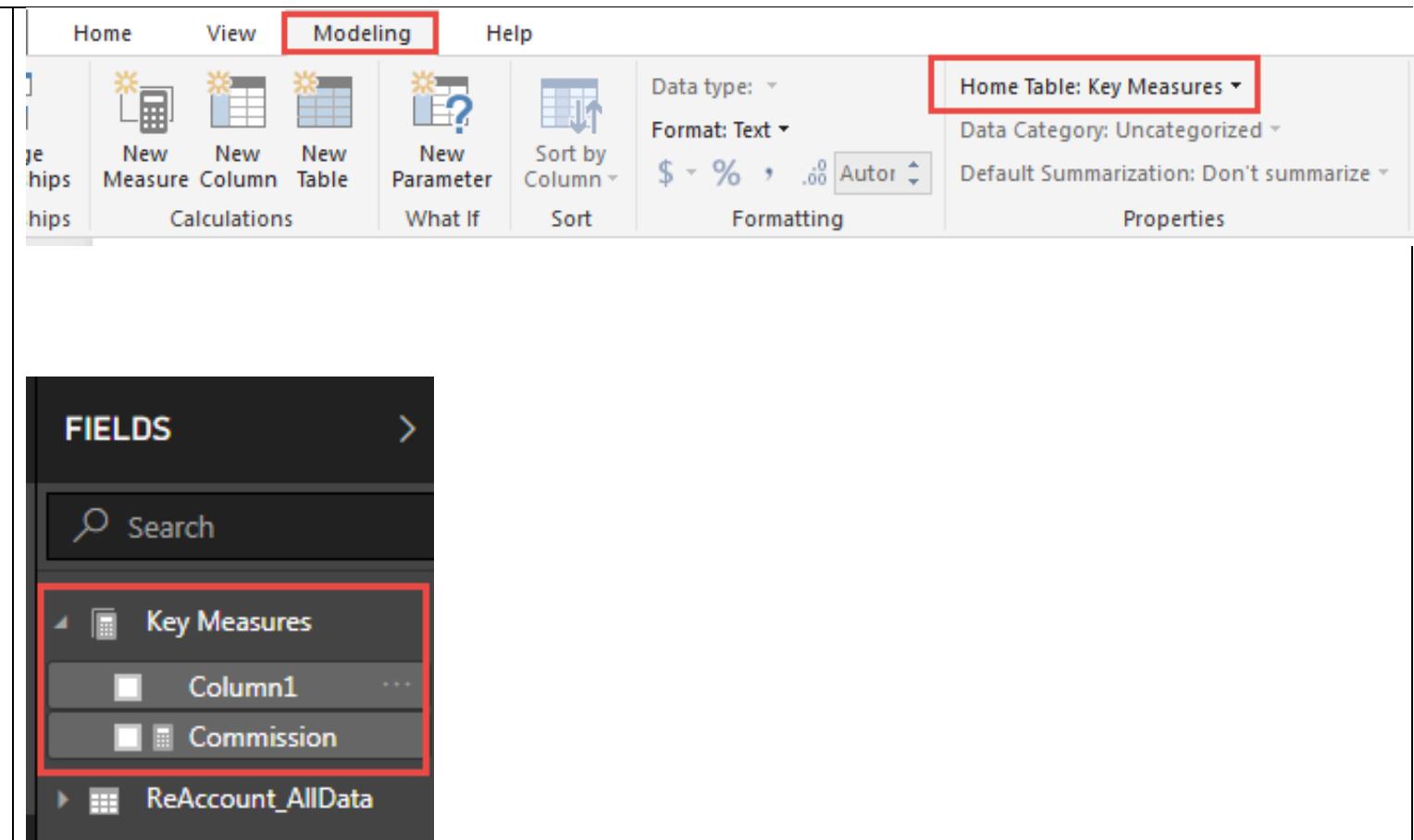
FIELDS >

Search

- Key Measures
- Column1

- Now highlight the measure **Commission**
- With the command **Modeling / Home Table** you can decide where your measures should be stored

- **Please note:**
it is not possible to drag & drop fields in the **Field** pane!
- The table **Key Measures** contains the measure & a field **Column1**
- Please delete or hide that empty column
- Finally close the **Fields** pane & open it again
-> the support table is placed at the top of the list of tables



The screenshot shows the Power BI ribbon with the 'Modeling' tab selected. In the top right corner, there is a dropdown menu labeled 'Home Table: Key Measures'. Below the ribbon, the 'FIELDS' pane is open, displaying a list of tables. The 'Key Measures' table is highlighted with a red box, and it contains two fields: 'Column1' and 'Commission'. Other tables listed in the pane include 'ReAccount_AllData'.

Report Re Account insight

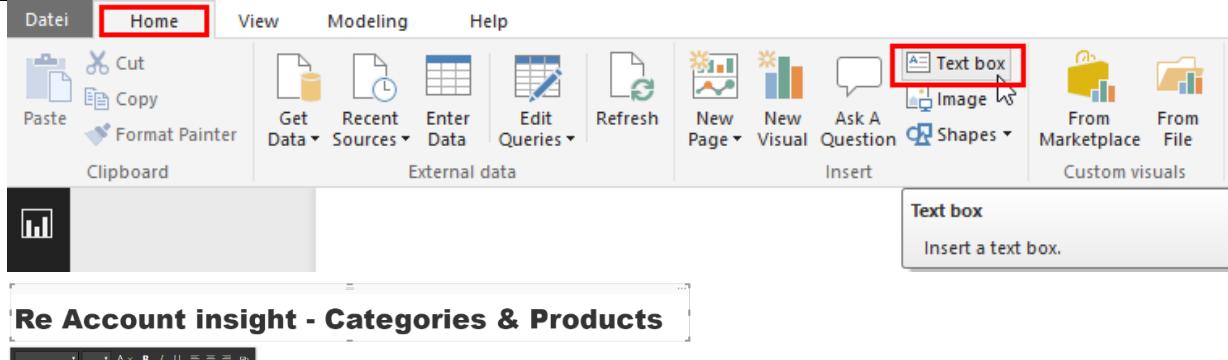
- With all necessary fields available you can start to create the report

Re Account insight - Categories & Products



Exercise 5

- Start with the title – **Home / Textbox**
- Insert the report title & format it:
Font: Arial Black
Size: 28pt

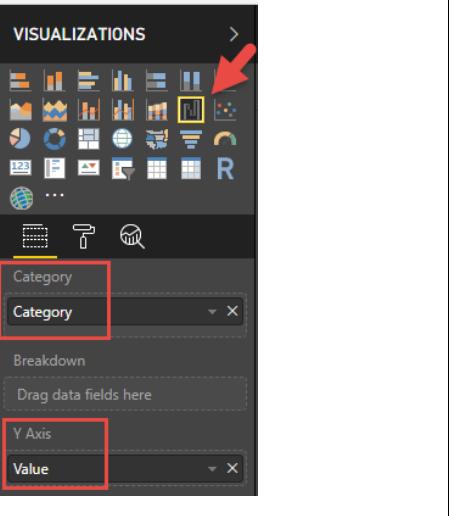
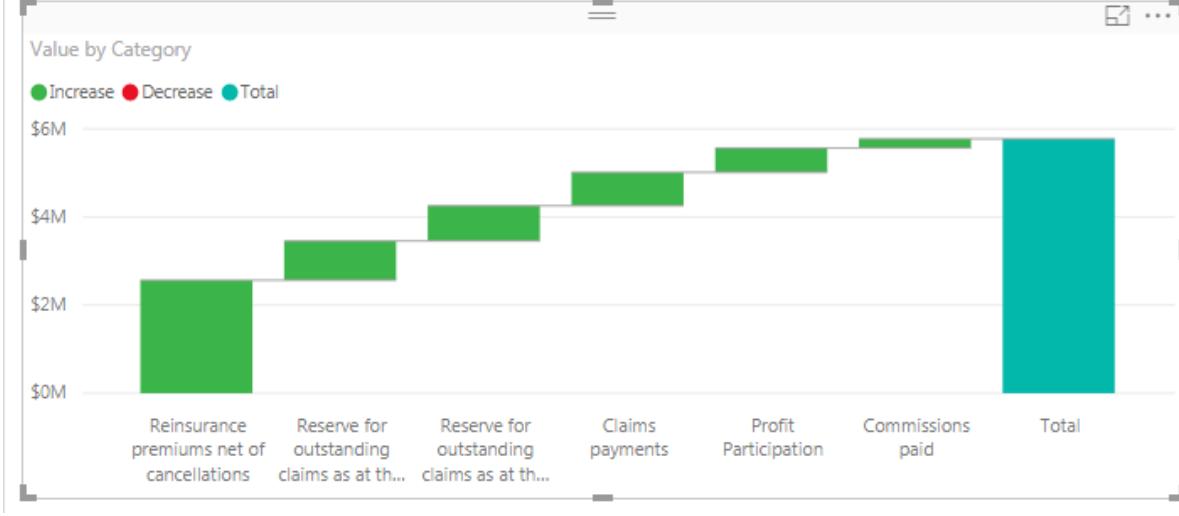
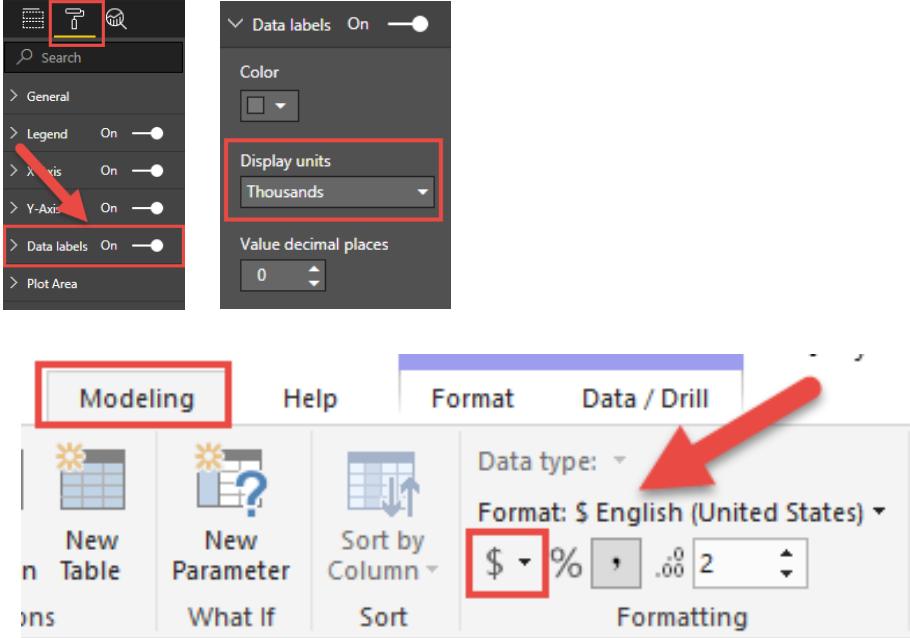


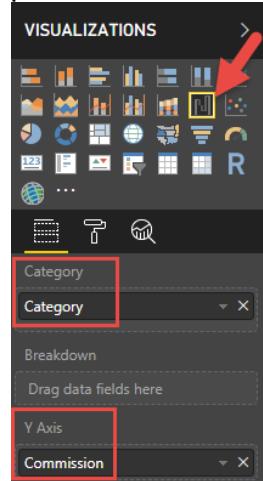
Datei **Home** View Modeling Help

Cut Copy Paste Format Painter Clipboard Get Data Recent Sources Enter Data Edit Queries Refresh New Page New Visual Ask A Question From Marketplace From File Custom visuals

Text box
Insert a text box.

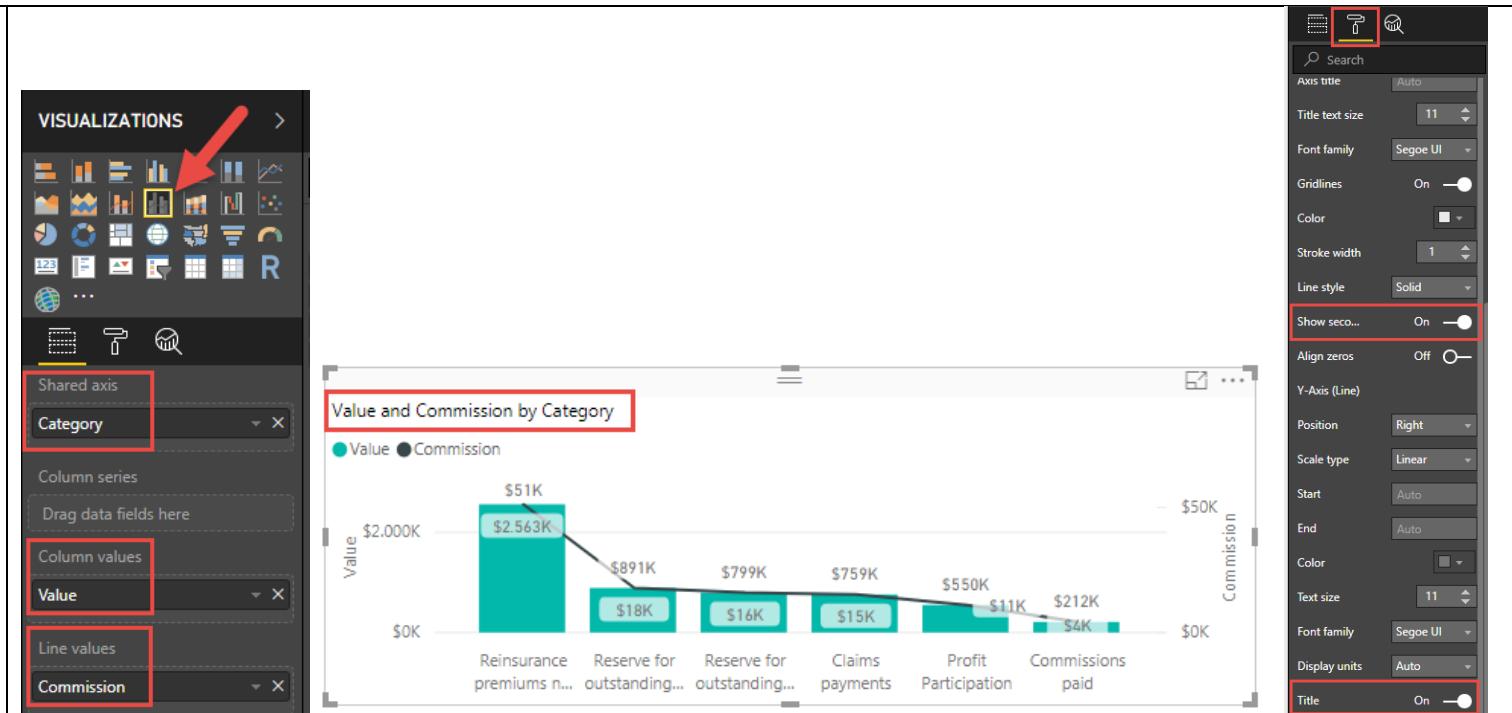
Re Account insight - Categories & Products

<ul style="list-style-type: none"> - Create a Waterfall Chart 	
<ul style="list-style-type: none"> - Activate the Data Labels <p>If you want to show the figures as currency, select (!) the field Value in the Fields pane</p> <p>Switch to the tab Modeling where you can select the currency symbol</p>	

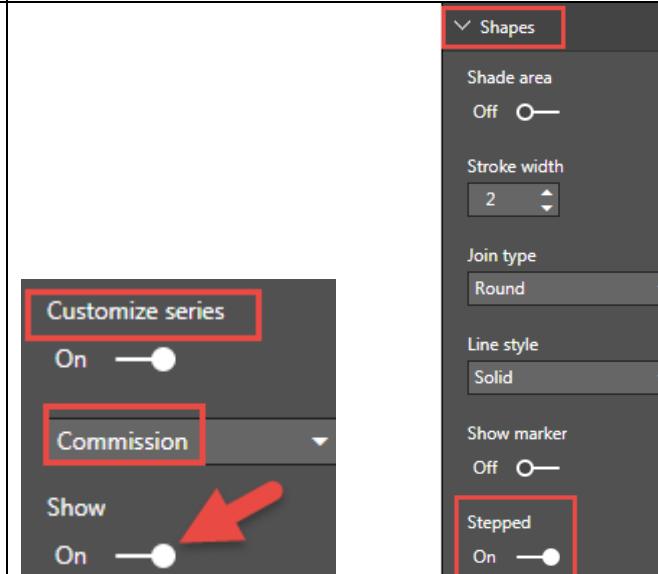
<ul style="list-style-type: none"> - Result 	<p>Value by Category</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Reinsurance premiums net ...</td> <td>\$2.562,89K</td> </tr> <tr> <td>Reserve for outstanding cl...</td> <td>\$890,79K</td> </tr> <tr> <td>Reserve for outstanding cl...</td> <td>\$799,14K</td> </tr> <tr> <td>Claims payments</td> <td>\$759,12K</td> </tr> <tr> <td>Profit Participation</td> <td>\$549,88K</td> </tr> <tr> <td>Total</td> <td>\$5.561,83K</td> </tr> </tbody> </table>	Category	Value	Reinsurance premiums net ...	\$2.562,89K	Reserve for outstanding cl...	\$890,79K	Reserve for outstanding cl...	\$799,14K	Claims payments	\$759,12K	Profit Participation	\$549,88K	Total	\$5.561,83K		
Category	Value																
Reinsurance premiums net ...	\$2.562,89K																
Reserve for outstanding cl...	\$890,79K																
Reserve for outstanding cl...	\$799,14K																
Claims payments	\$759,12K																
Profit Participation	\$549,88K																
Total	\$5.561,83K																
<ul style="list-style-type: none"> - Create a second Waterfall Chart via copy & paste 	<p>Commission by Category</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Reinsurance premiums n...</td> <td>\$51,26K</td> </tr> <tr> <td>Reserve for outstanding ...</td> <td>\$17,82K</td> </tr> <tr> <td>Reserve for outstanding ...</td> <td>\$15,98K</td> </tr> <tr> <td>Claims payments</td> <td>\$15,18K</td> </tr> <tr> <td>Profit Participation</td> <td>\$11,00K</td> </tr> <tr> <td>Commissions paid</td> <td>\$4,25K</td> </tr> <tr> <td>Total</td> <td>\$115,49K</td> </tr> </tbody> </table>	Category	Value	Reinsurance premiums n...	\$51,26K	Reserve for outstanding ...	\$17,82K	Reserve for outstanding ...	\$15,98K	Claims payments	\$15,18K	Profit Participation	\$11,00K	Commissions paid	\$4,25K	Total	\$115,49K
Category	Value																
Reinsurance premiums n...	\$51,26K																
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Reserve for outstanding ...	\$15,98K																
Claims payments	\$15,18K																
Profit Participation	\$11,00K																
Commissions paid	\$4,25K																
Total	\$115,49K																

- Create a
Line & clustered column chart

- Activate the **Titles**
- Activate **Data Labels**



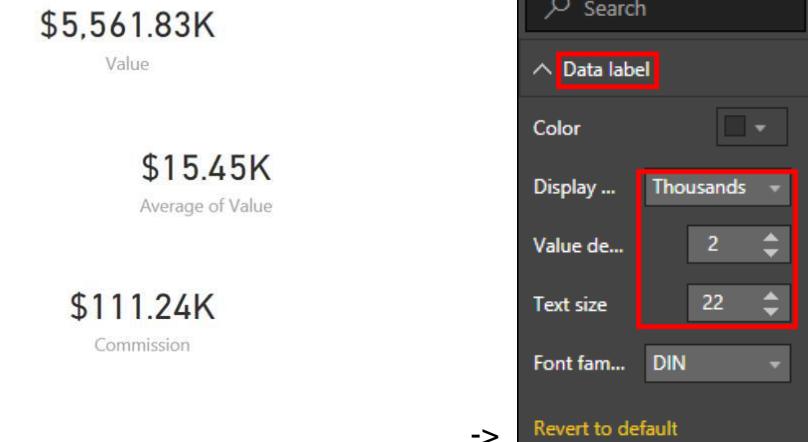
- With **Customize series (On)**, you can also specify here whether the labels for both data series should be displayed
- The format of the line in the Combochart can be converted under **Shapes** to the variant **Stepped**



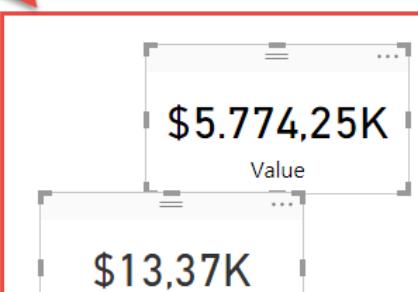
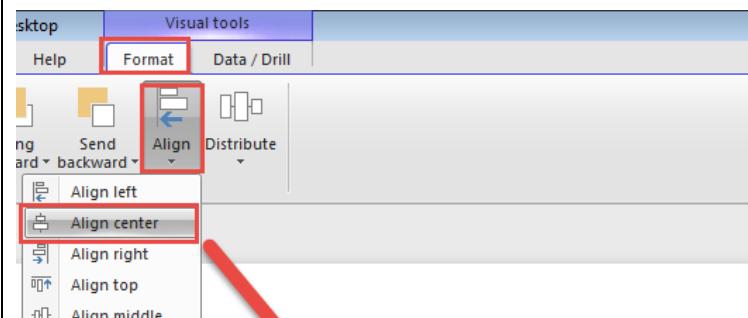


Exercise 6

- Create 3 **Card** visuals
- Format the numbers as shown in the screenshot



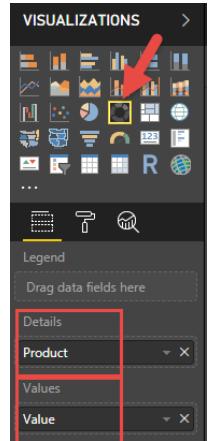
- **Tip:**
with the commands **Align** & **Distribute** you can for example define the exact position of the card visuals





Exercise 7

- Create a **Donut**



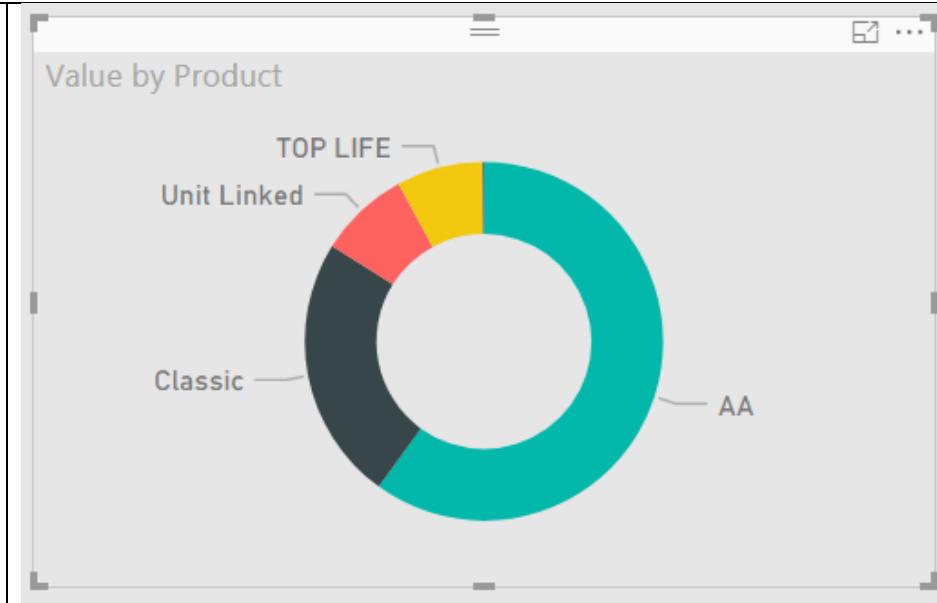
VISUALIZATIONS >

Legend

Drag data fields here

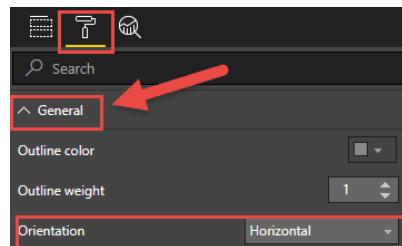
Details

Product	x
Values	x
Value	x



Exercise 8

- Create a **Slicer for Year**
- Switch the layout of the slicer to **list**
- After that you can switch to **Orientation: Horizontal**



General

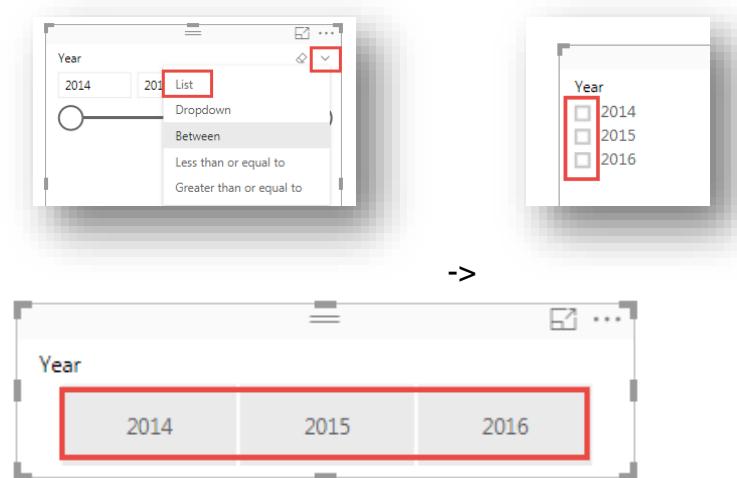
Search

Outline color

Outline weight

Orientation: Horizontal

List

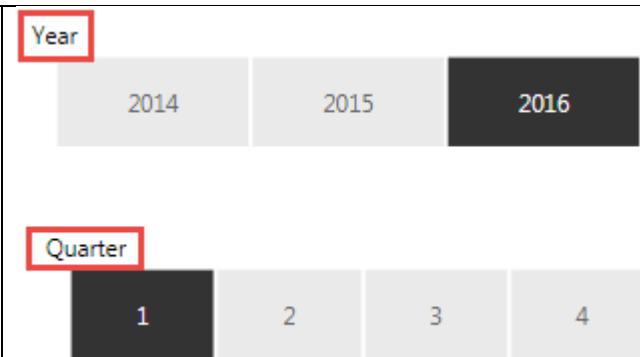


Year

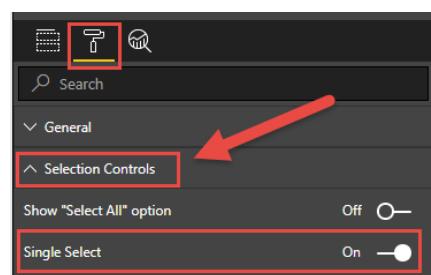
2014 2015 2016

Orientation: Horizontal

- Copy the slicer & change Year to Quarter

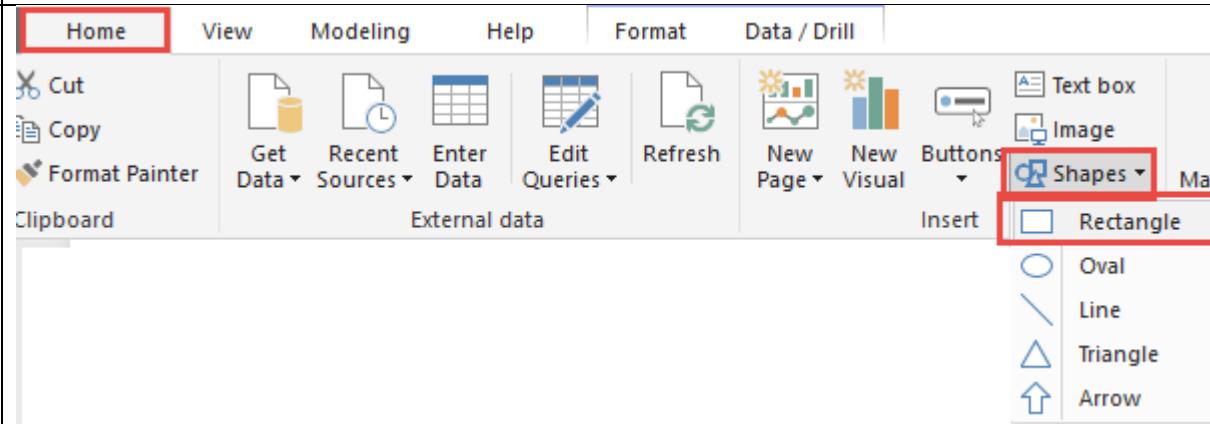


- For Quarter: switch to **Single select: Off**

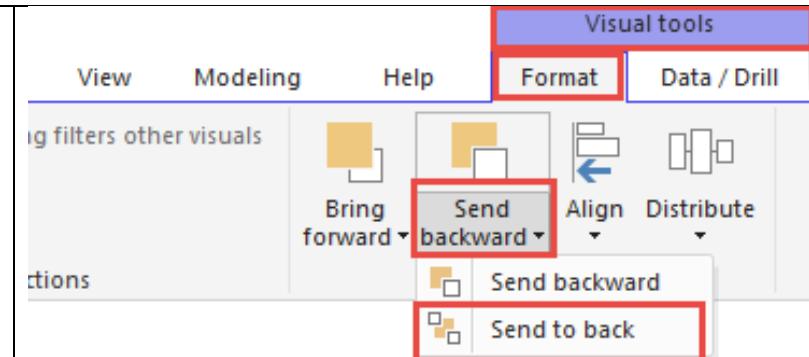


Exercise 9

- Group the visuals with **Home / Shapes: Rectangle**



- Like in PowerPoint you can send the rectangle – once you have shaped it to a suitable size – to the back:
Visual tools / Format / Send backward / Send to back

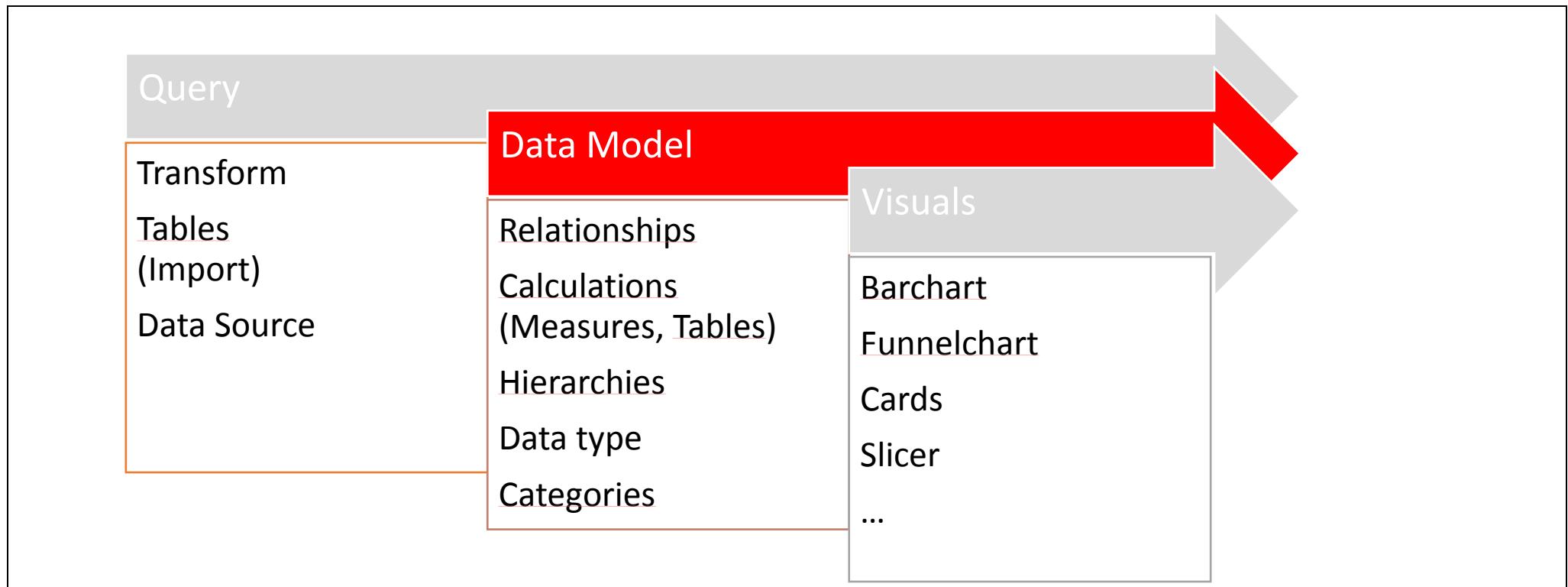


- Result

Re Account insight - Categories & Products



2. Data Model – Relationships & Calculations



Data

- Please have a look at the folder **2 Relations_InputFiles** & open one of the Excel files
- With the **folder import** all data of all Excel files are imported & automatically appended in a PBIX-file
- It is important that you close the Excel file again!

Name

- Kopie von 2012_03_14_disclosed_paid_an...
- Kopie von 2013_03_13_disclosed_paid_an...
- Kopie von Paid-and-reported-triangles-=...
- Kopie von Paid-and-reported-triangles-=...
- Kopie von Paid-and-reported-triangles-=...
- Kopie von Paid-and-Reported-Triangles-...
- Überschriften=1860.xlsx

Property													
Reported loss development in loss ratios													
Treaty Year	Ultimate Premium €m	Development Year											
		1	2	3	4	5	6	7	8	9	10	11	12
2000	2.275	60.6%	76.4%	79.4%	79.2%	79.8%	78.9%	80.4%	82.3%	82.1%	82.0%	81.8%	81.5%
2001	2.573	76.7%	90.5%	94.2%	94.9%	92.7%	92.7%	93.1%	92.6%	93.0%	92.7%	92.4%	
2002	2.916	50.7%	56.5%	57.2%	59.4%	59.5%	59.4%	59.2%	59.0%	59.0%	59.1%		
2003	3.053	39.3%	46.7%	46.0%	45.3%	46.0%	46.0%	46.9%	46.9%	46.9%	46.9%		
2004	2.998	42.6%	55.4%	58.7%	58.9%	59.7%	59.4%	59.3%	59.3%	59.3%	59.3%		
2005	3.072	59.7%	79.8%	83.9%	84.0%	84.1%	83.9%	84.0%					
2006	3.449	29.0%	38.0%	41.2%	42.7%	43.1%	43.5%						
2007	3.685	33.5%	50.5%	51.5%	52.6%	53.6%							
2008	3.655	37.1%	49.7%	51.2%	51.8%								
2009	3.435	34.6%	57.0%	58.2%									
2010	3.288	38.4%	56.8%										
2011	3.557	12.6%											

Reported loss development in absolute amounts													
Treaty Year	Ultimate Premium €m	Development Year											
		1	2	3	4	5	6	7	8	9	10	11	12
2000	2.275	1.380	1.738	1.806	1.803	1.816	1.796	1.828	1.672	1.867	1.866	1.861	1.855
2001	2.573	1.973	2.329	2.435	2.442	2.398	2.387	2.395	2.382	2.394	2.386	2.379	
2002	2.916	1.479	1.648	1.667	1.733	1.734	1.730	1.727	1.721	1.720			
2003	3.053	1.201	1.427	1.403	1.384	1.404	1.404	1.431	1.433	1.433			
2004	2.998	1.281	1.660	1.759	1.764	1.788	1.782	1.779	1.777				
2005	3.072	1.835	2.452	2.576	2.581	2.583	2.577	2.581					
2006	3.449	1.000	1.310	1.420	1.472	1.487	1.500						
2007	3.685	1.234	1.859	1.896	1.938	1.974							
2008	3.655	1.358	1.779	1.871	1.893	1.974							
2009	3.435	1.196	1.956	1.998									
2010	3.288	1.263	1.867										
2011	3.557	447											

->

The data of the PBIX-file below
are imported from this folder already!

!! Results

1 TransformData_Query

2 Relations_InputFiles

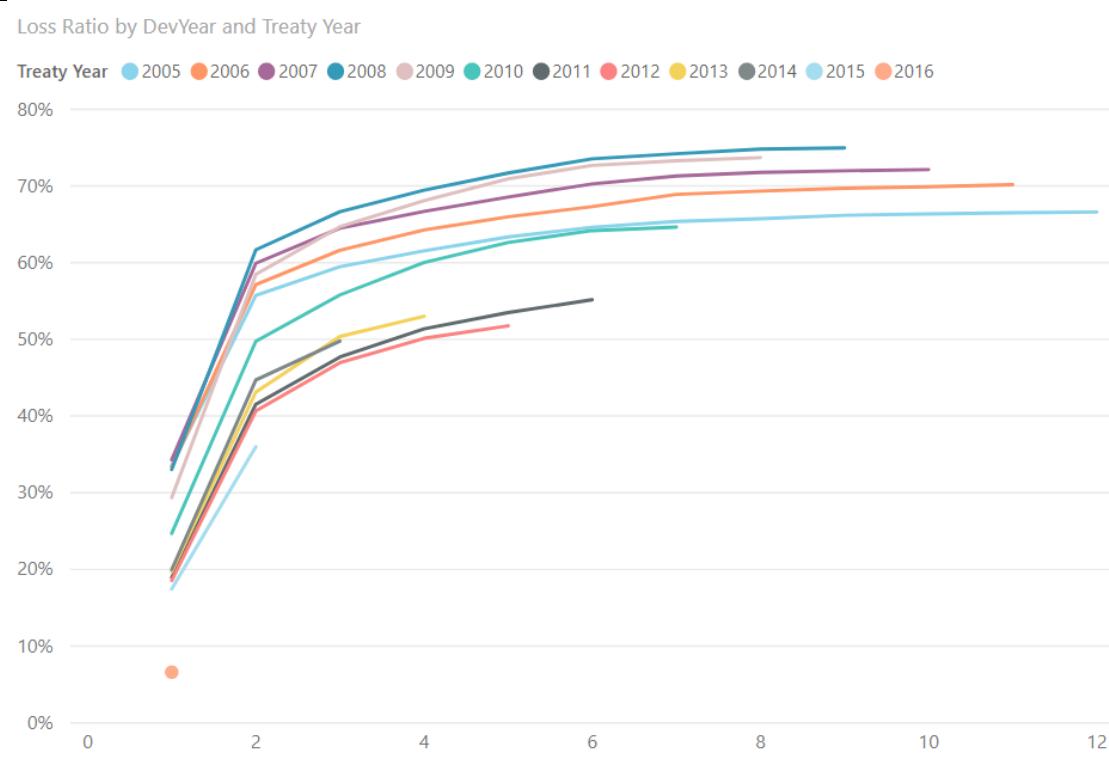
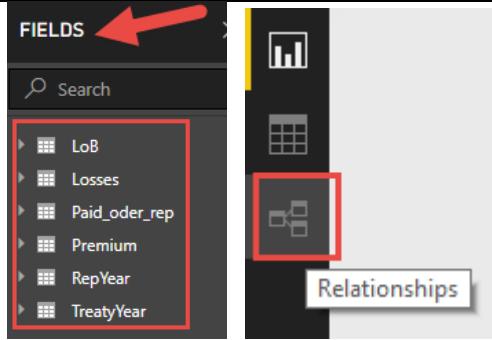
0 CustomVisual_DialGauge.pbix

0 Quickstart.csv

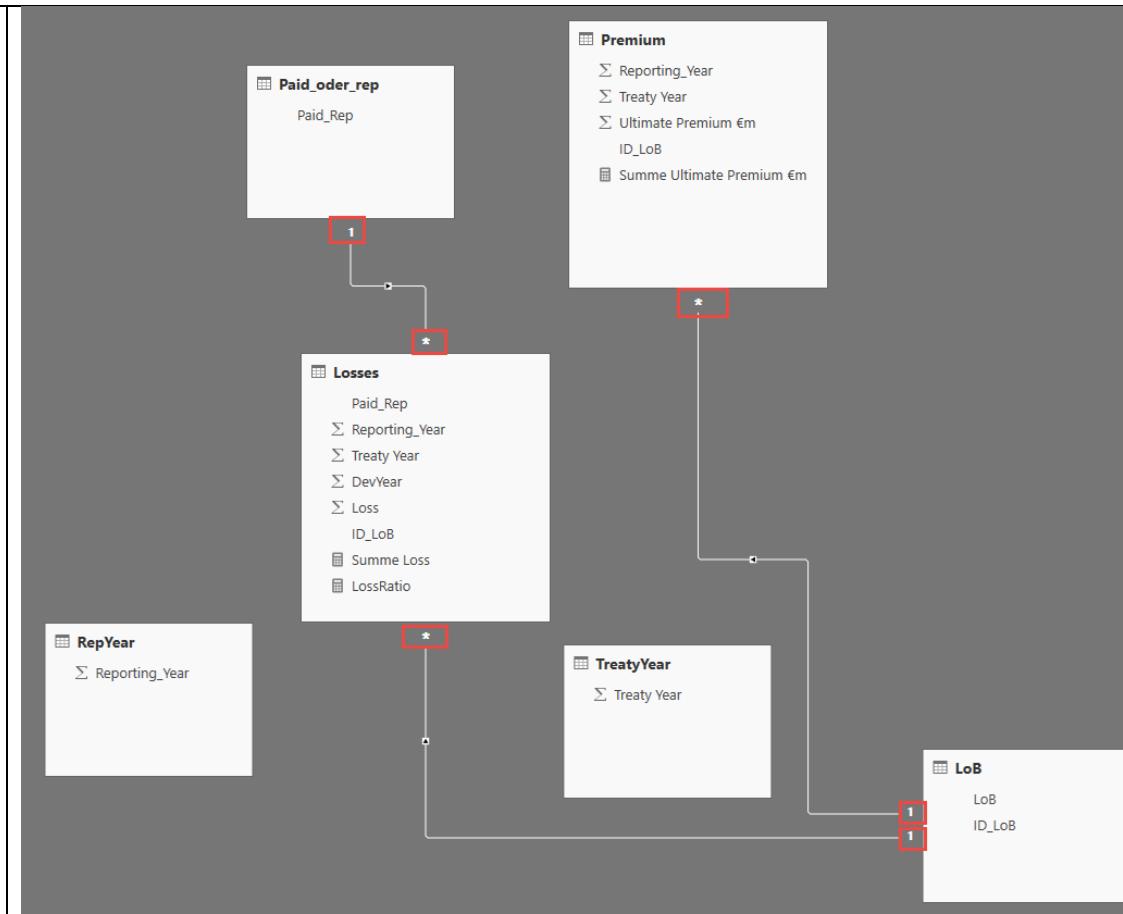
2 DataModel_RelCalc.pbix

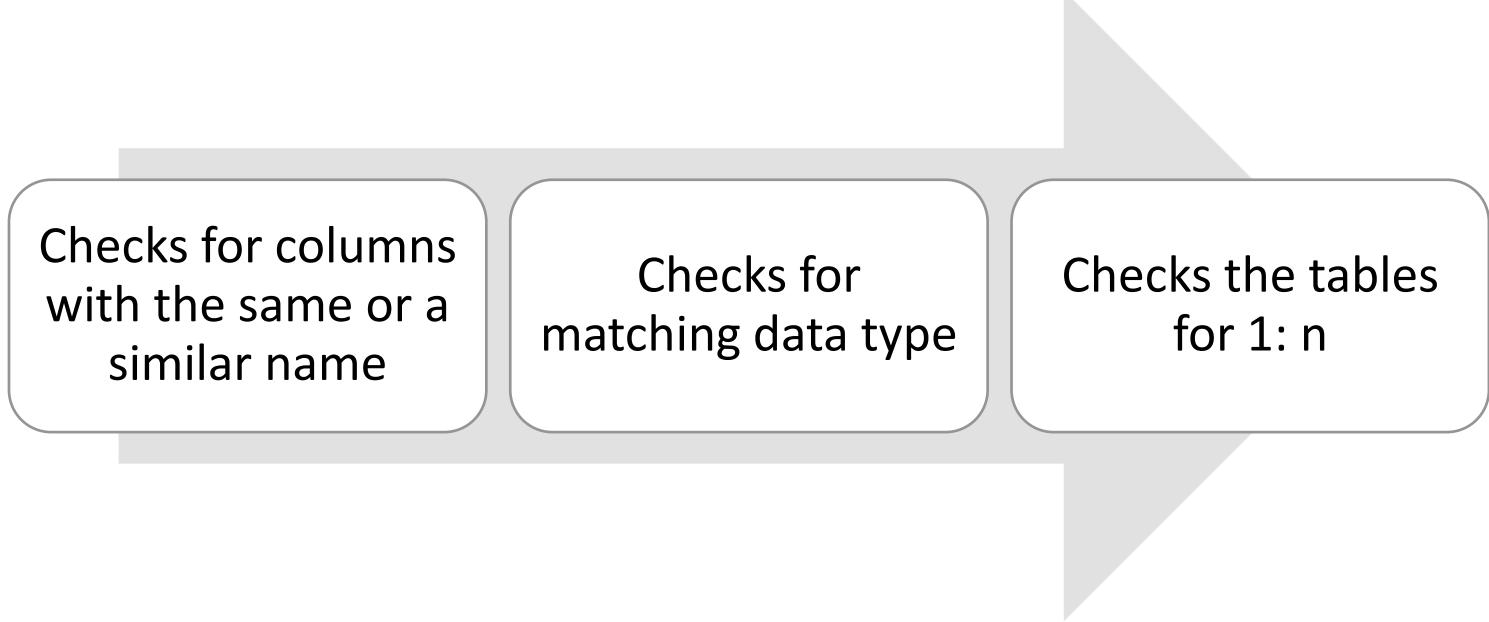
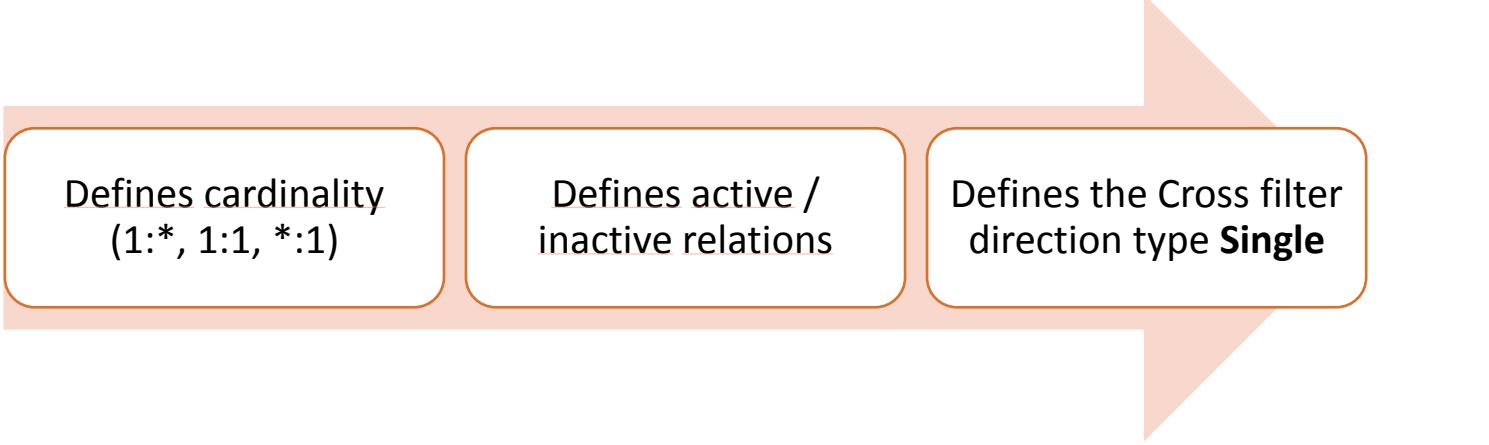
MR-Logo.png



Result <ul style="list-style-type: none"> A Line chart & Slicers as shown on the right should be generated Therefore, the input data from the folder have to be transformed – as you will see in the PBIX-file 	<p>Loss Ratio by DevYear and Treaty Year</p>  <p>Treaty Year: 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016</p> <p>Paid_Rep: Paid (Dark Grey), Reported (Light Grey)</p> <p>Reporting_Year: 2017, 2016, 2015, 2014, 2013, 2012</p> <p>LoB: Credit, Liab NP+FAC, Liab PROP, Marine, Motor NP+FAC, Motor PROP, Pers Acc and WC, Property</p>
1 Using Relationships <ul style="list-style-type: none"> The tables are already imported If you want to create visualizations with more than one table you have to create relationships between the tables So firstly, let's have a look at the Relationships 	

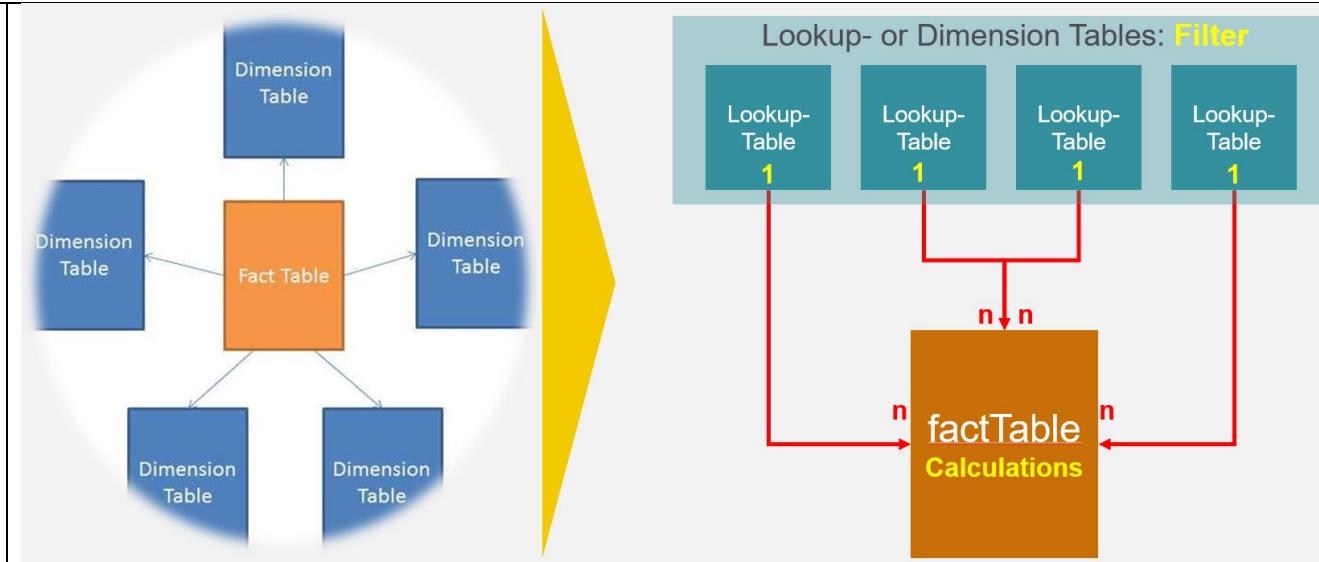
- The Relationship view shows some relationships already – they are created by a feature of Power BI Desktop called **Autodetect**
- Have a look at the relations between **LoB** & **Losses**:
LoB represents the **1-side** & **Losses** the **many-side** of the Connection
- This means: the value **ID_LoB** in the table **LoB** is unique, whereas the value **ID_LoB** in the table **Losses** & **Premium** appears one or several times
- If the value **ID_LoB** in the table **LoB** is not unique the relationship cannot be generated automatically nor manually



<h3>How does Autodetect Handles Relationships?</h3> <ul style="list-style-type: none"> - Power BI Desktop won't necessarily create all relationships - If it doesn't have a very high confidence what to do, it won't create the relationship 	 <p>Checks for columns with the same or a similar name</p> <p>Checks for matching data type</p> <p>Checks the tables for 1:n</p>
<ul style="list-style-type: none"> - Autodetect defines cardinality -> which table is on the 1-side & which is on the many-side - Power BI Desktop may set a relationship to inactive if there is some ambiguity present - So, be sure to review all of the relationships in your dataset, and don't rely entirely on the Autodetect functionality 	 <p>Defines cardinality (1:*, 1:1, *:1)</p> <p>Defines active / inactive relations</p> <p>Defines the Cross filter direction type Single</p>

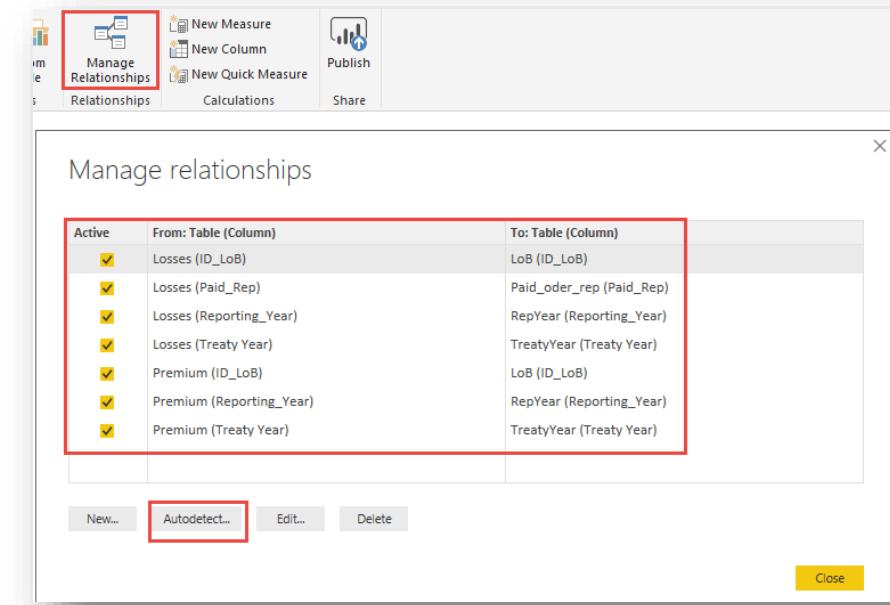
Data model – Star schema

- The tables on the **1-side** are used to set **filters**
- These filters always run to the tables on the **many-side**
- The tables on the **many-side** then **calculate & aggregate** what is filtered
- In order to visualize how the filters flow, it is helpful to arrange the tables according to their functionality in the data model

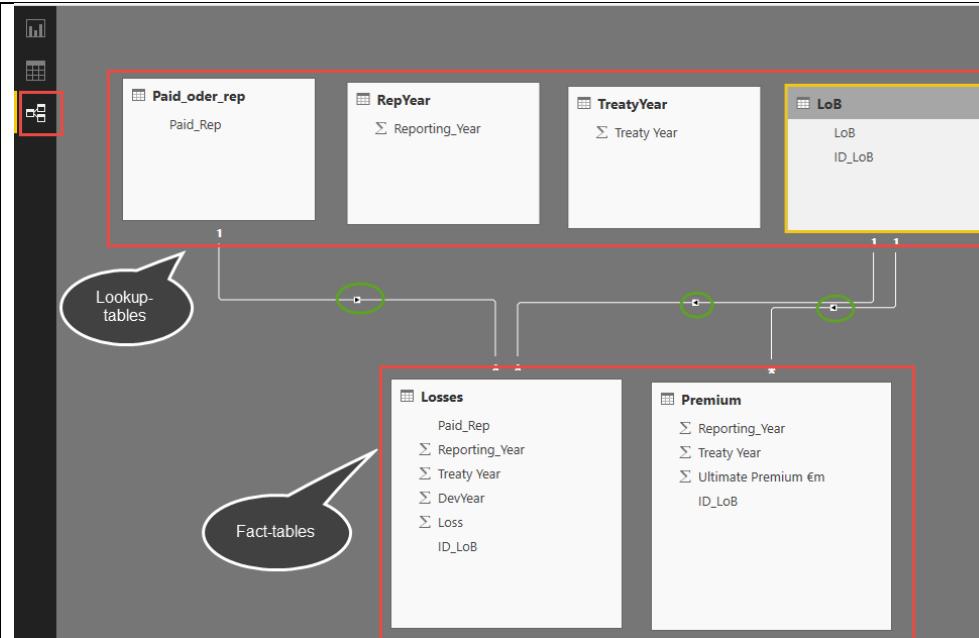


Exercise 1

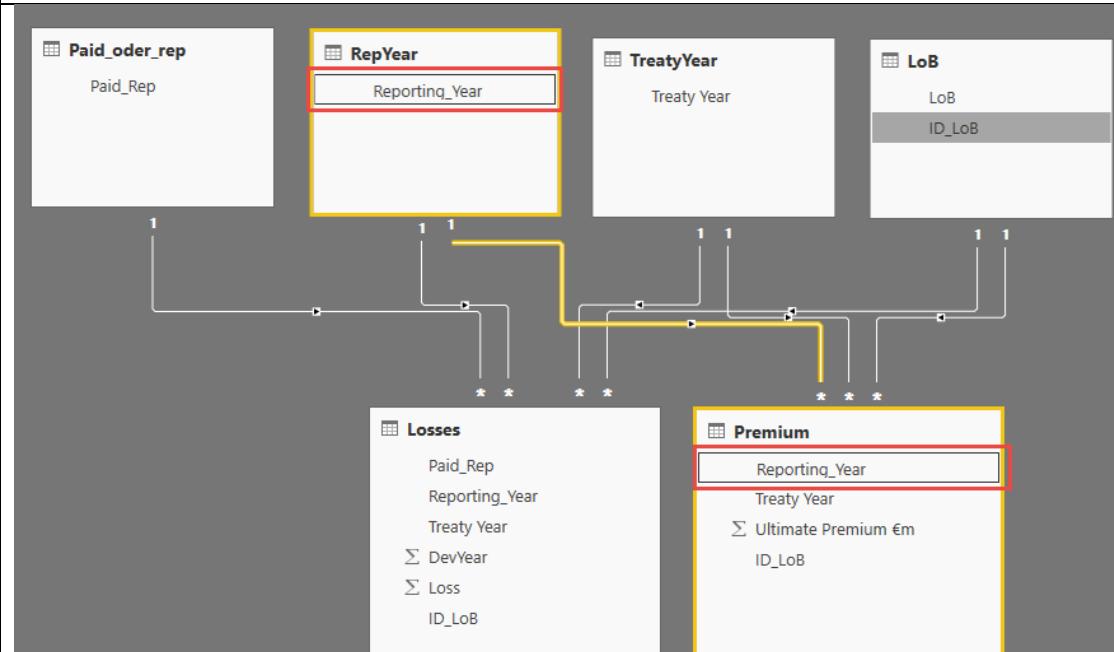
- Switch to the **Relationships** window & click on **Home / Manage Relationships**
- Start the **Autodetect**-function – all relations then should be created



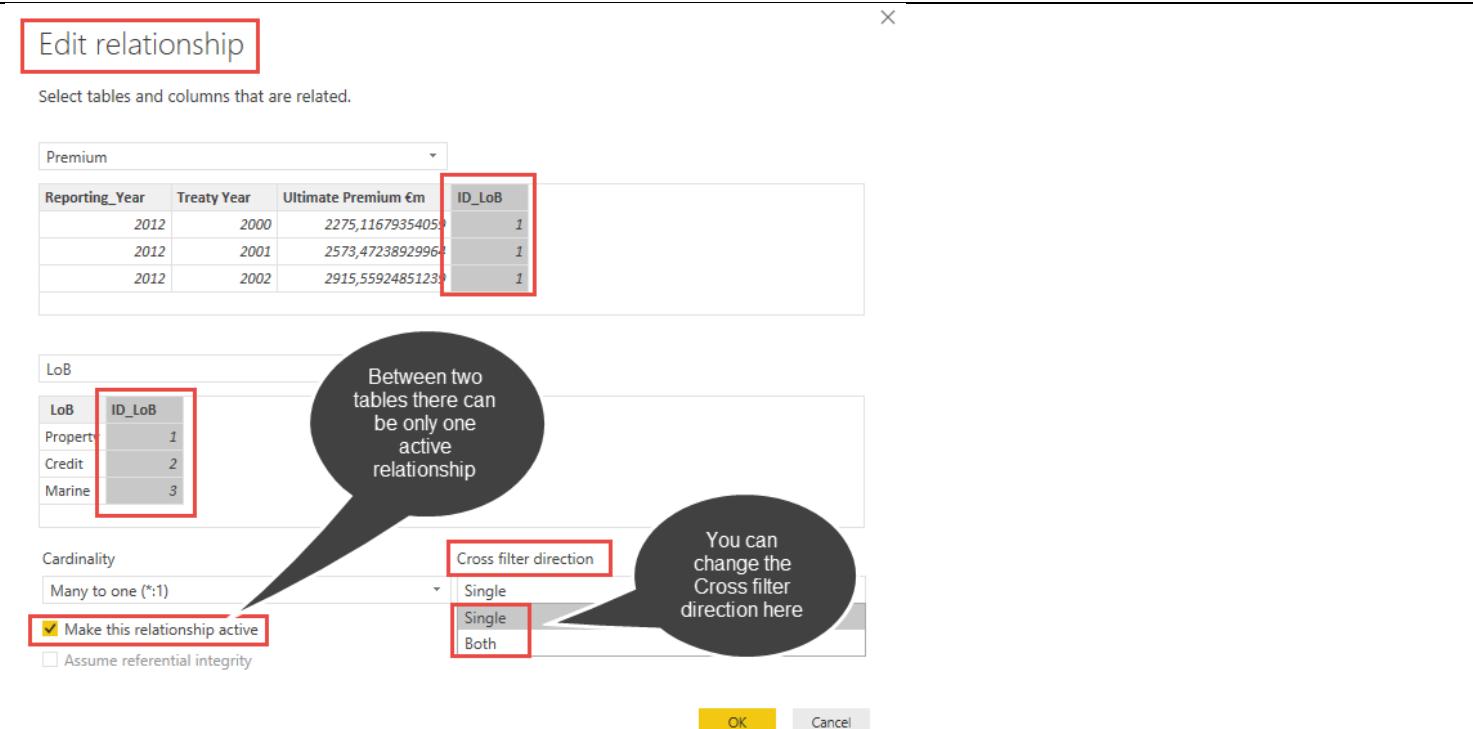
- Rearrange the tables in the way shown on the right
- The arrows show the direction in which the filters flow (Cross filter direction **Single**)



- For safety reasons you should always check if the corresponding fields are connected – you can do that by hovering over the relationship line
-> you can see then which fields are connected
- When you create relationships, the standard Cross-filter-direction is always **Single**

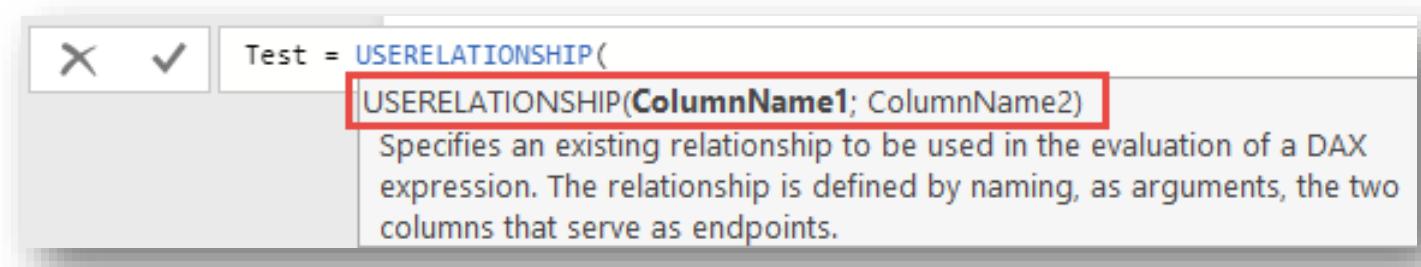


- Doubleclick one of the relationships: a dialogue is opened, where you can edit the relationship
- Avoid using the Cross-filter direction **Both** when you deal with Lookup-tables which are shared from more than one fact-table



Please note:

- If you create more than one relationship between two tables only one relationship is active, all additional relationships are automatically set to **Inactive** -> this is shown by a dotted line
- These relationships are not used by the data model
- You can change the status of a relationship from not-active to active with the DAX-function **USERELATIONSHIP()**

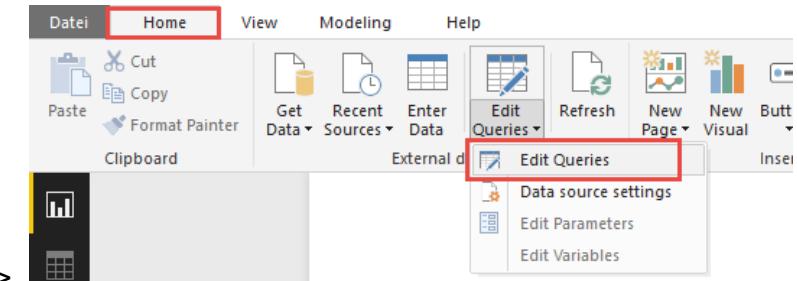
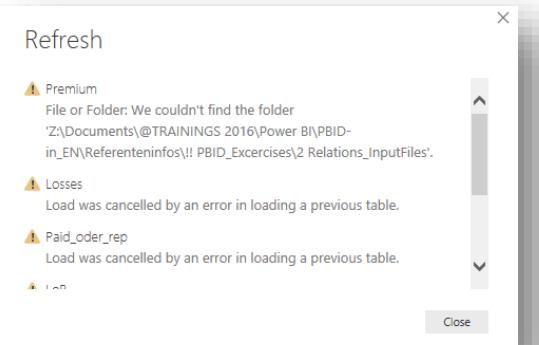


2 Refreshing the Data Model



Exercise 2

- To be sure that you are working with the newest & freshest data, please go to **Home / Refresh**
- The Refresh displays an error message because the path to the data source cannot be found
- You have to open the Query Editor & correct the path:
Home / Edit queries



- In the Query Editor the triangle in the first query indicates an error for the first query **Power MR Schaden dreiecke**

Queries [7]

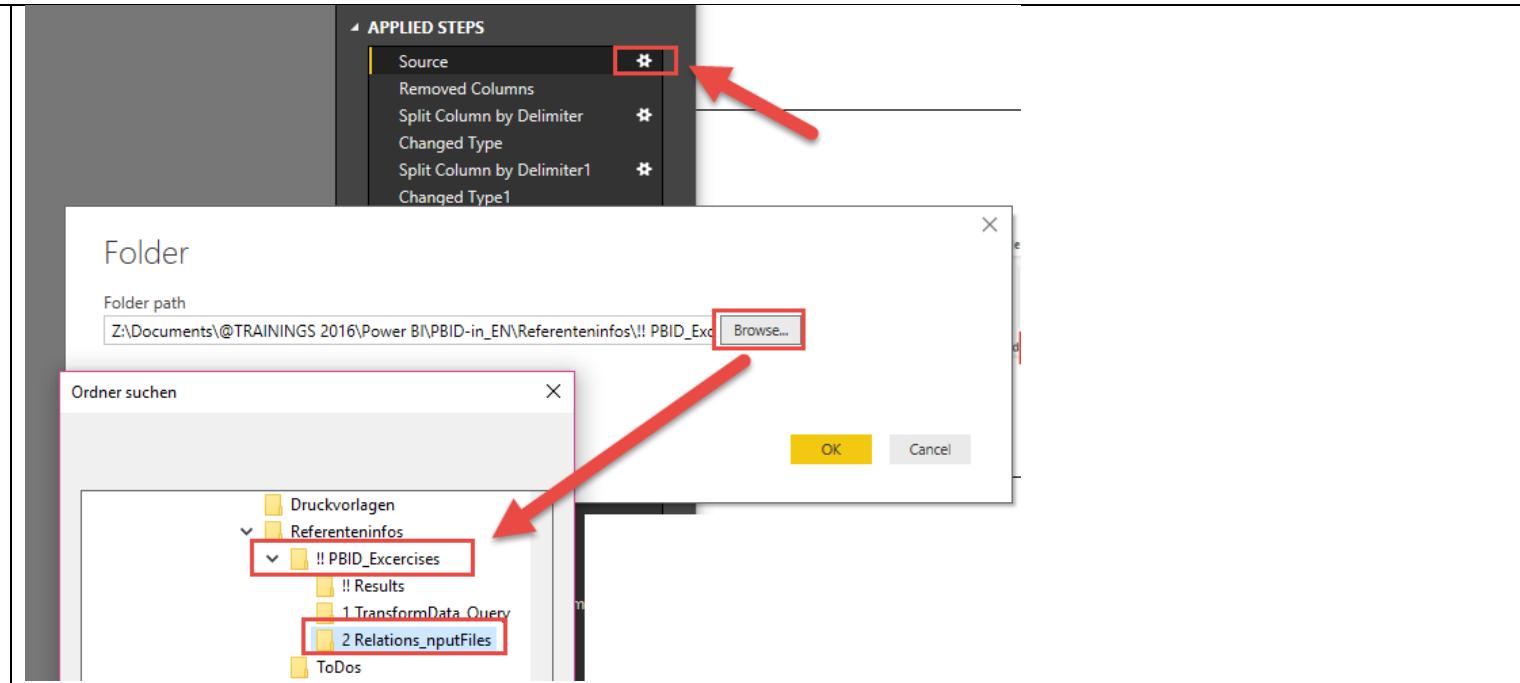
- Staging Queries [1]
 - Power MR Schaden dreiecke** (highlighted with a red box)
- Data Model [6]
 - Premium

! DataSource.NotFound: File or Folder: We couldn't find the folder 'Z:\Documents\@TRAININGS 2016\Power BI\PBID-in_EN\Referenzeninfos\!! PBID_Exercises\2 Relations_InputFiles'.

Details:

Z:\Documents\@TRAININGS 2016\Power BI\PBID-in_EN\Referenzeninfos\!! PBID_Exercises\2 Relations_InputFiles

- Under the title **Applied Steps** you find the line **Source**: please click on the **cogwheel** icon here: it shows a dialogue where you can change the path to the folder which is used for the folder import



- As soon as the folder path is corrected the data refresh works correctly & shows the updated queries
- If the data update is delayed just click the **Refresh**-button again
- Finally click on ***Close & Apply*** in the left top corner to load the data into the data model

The screenshot shows the 'Queries [7]' pane in Power BI, listing seven queries: Power MR Schaden dreiecke, Premium, Losses, Paid_oder_rep, LoB, RepYear, and TreatyYear. A red box highlights the 'Power MR Schaden dreiecke' query. A large red arrow points from this query to a data preview grid. The grid displays a table with the following columns: A^B_C_Paid_Rep, Reporting_Year, A^B_C_UeberSchriften, Treaty Year, and 1.2_Ultimate Premium €. The data consists of 8 rows, each with the value 'Reported' in the first column and various years (2012, 2001, 2002, 2003, 2004, 2005, 2006, 2007) in the second column, followed by category names like 'Property' and numerical values.

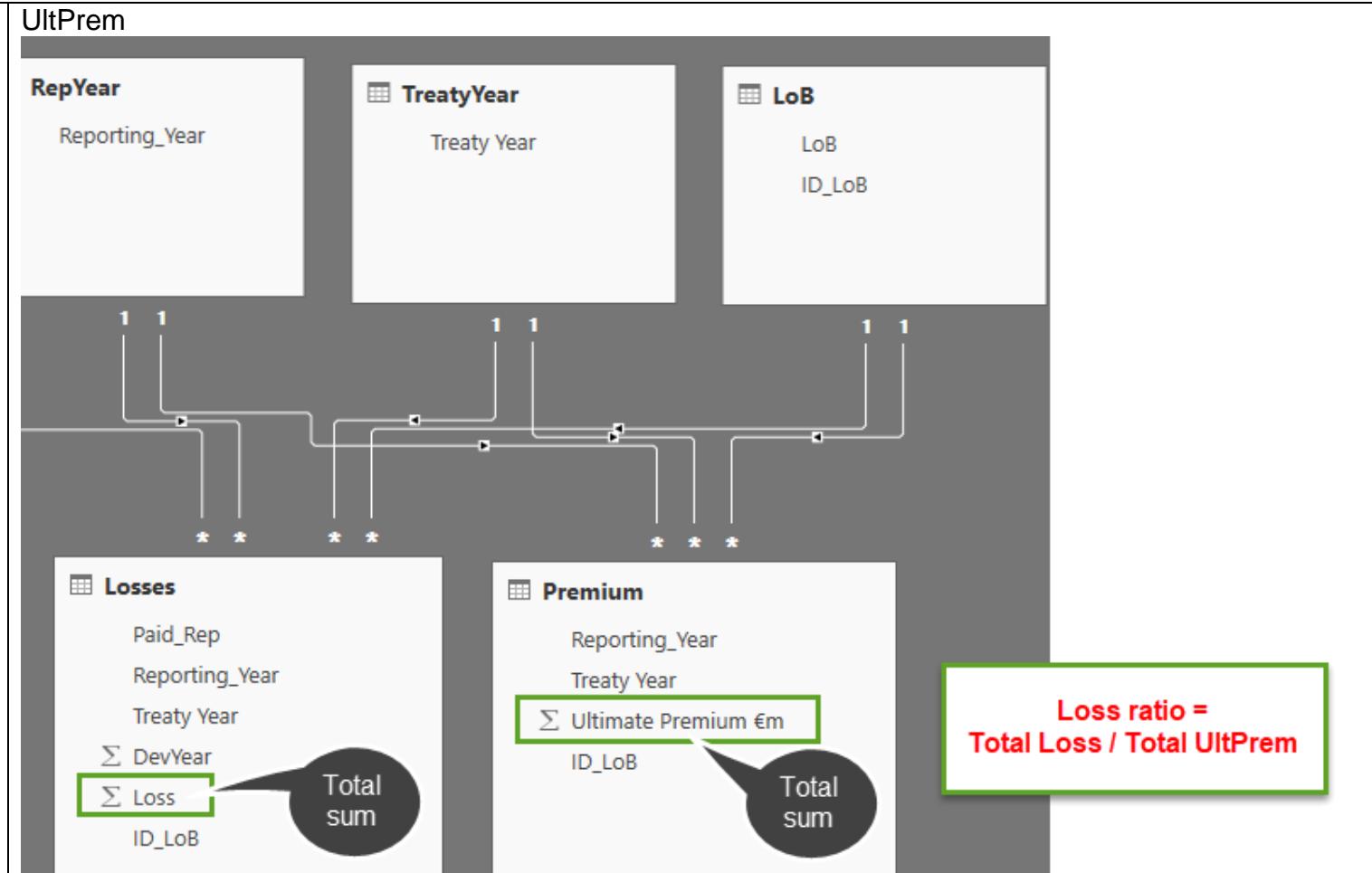
A ^B _C_Paid_Rep	Reporting_Year	A ^B _C_UeberSchriften	Treaty Year	1.2_Ultimate Premium €
Reported	2012	Property	2000	2
Reported	2012	Property	2001	2
Reported	2012	Property	2002	2
Reported	2012	Property	2003	3
Reported	2012	Property	2004	2
Reported	2012	Property	2005	3
Reported	2012	Property	2006	3
Reported	2012	Property	2007	3

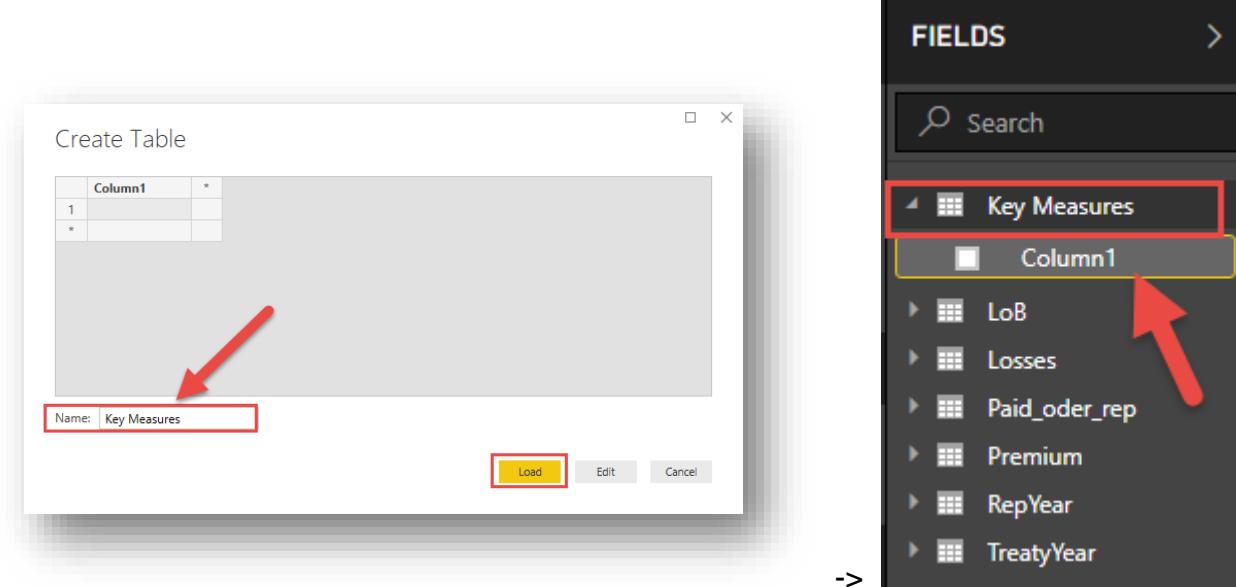
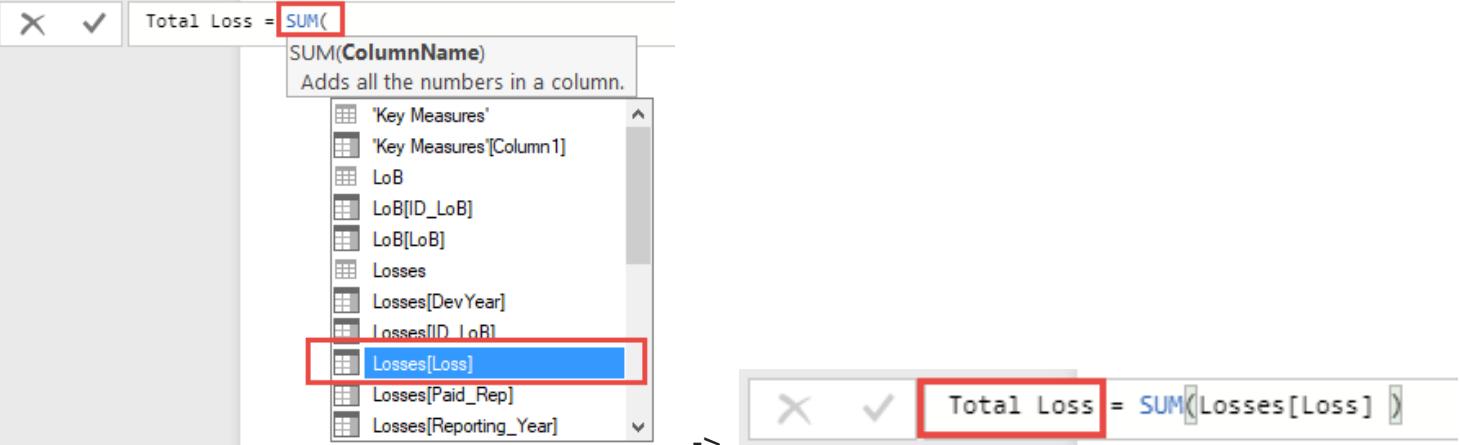
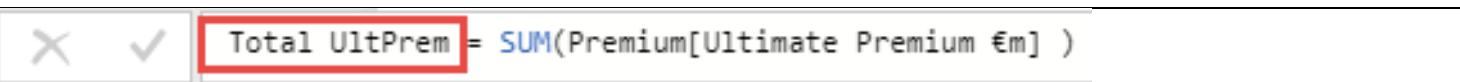
3 Calculating with Measures

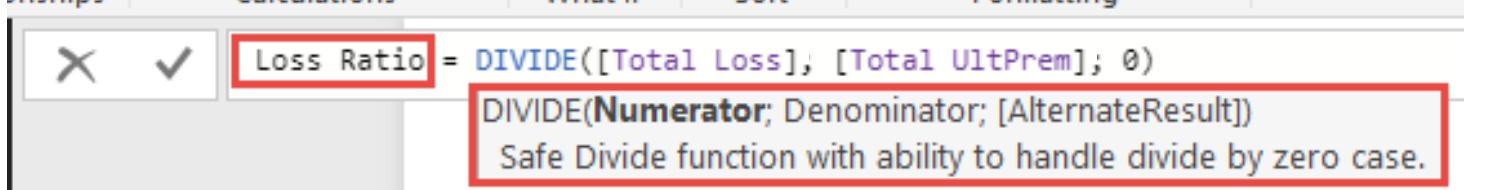
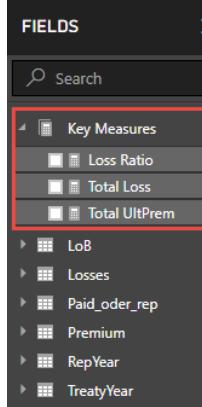
- The visualization with the line chart requires a calculation

Loss ratio:

this calculation needs the total sum of **Loss** & the total sum of **Ultimate Premium €m**



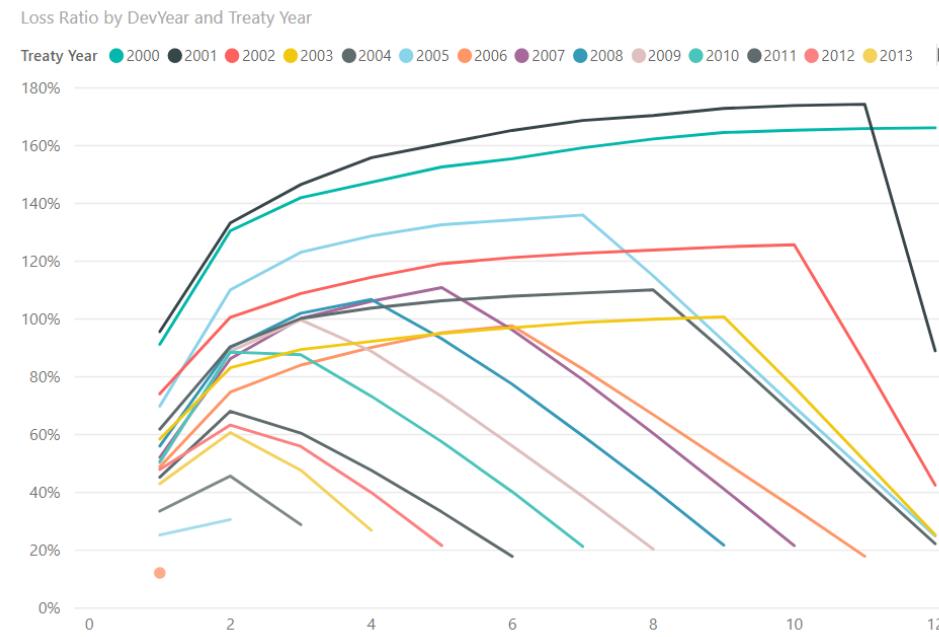
3 Creating measures	<ul style="list-style-type: none"> - Always apply measures even for the simplest calculations: it is much easier later to combine measures for more complex calculations - This approach is called measure branching
<ul style="list-style-type: none"> - For a better overview of all measures it is recommended to create a support table that contains all calculations of your data model – it is not connected to your data model <p> Exercise 3</p> <ul style="list-style-type: none"> - Create the table Key Measures: Home / Enter Data - An empty table is shown – please enter the table name in the left bottom corner - As a result, an empty table is shown in the Fields pane 	
<p> Exercise 4</p> <ul style="list-style-type: none"> - Highlight the new table - Calculate Total Loss: Home / New Measure - Use the function SUM - The new measure will appear in the support table Key Measures 	
<ul style="list-style-type: none"> - Calculate Total UltPrem 	

<ul style="list-style-type: none"> - Now it is very easy to calculate the measure Loss ratio with the help of these two measures - For the division you should use the function DIVIDE: this function prevents error messages caused by division with zero values - Change the format of the measure Loss Ratio to % 	
<ul style="list-style-type: none"> - In the table Key Measures all necessary measures are shown now 	



Exercise 5

- You should now create the visual **Line chart** ...



- ... & the slicers for **Paid_rep**, **Reporting Year** & **LoB**
- Please note:
it is **essential** to use the fields from the **Lookup tables** to create the slicers
- Only when you choose values for the slicer the **Line chart** will show the correct visualization

Paid_Rep
 Paid
 Reported

Paid_Rep
 Paid
 Reported

Reporting_Year
 2017
 2016
 2015
 2014
 2013
 2012

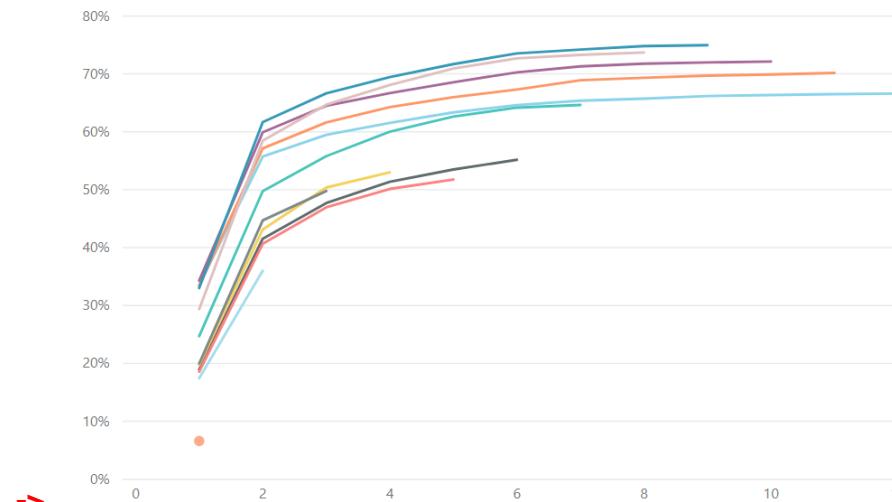
Reporting_Year
 2017
 2016
 2015
 2014
 2013
 2012

LoB
 Credit
 Liab NP+FAC
 Liab PROP
 Marine
 Motor NP+FAC
 Motor PROP
 Pers Acc and WC
 Property

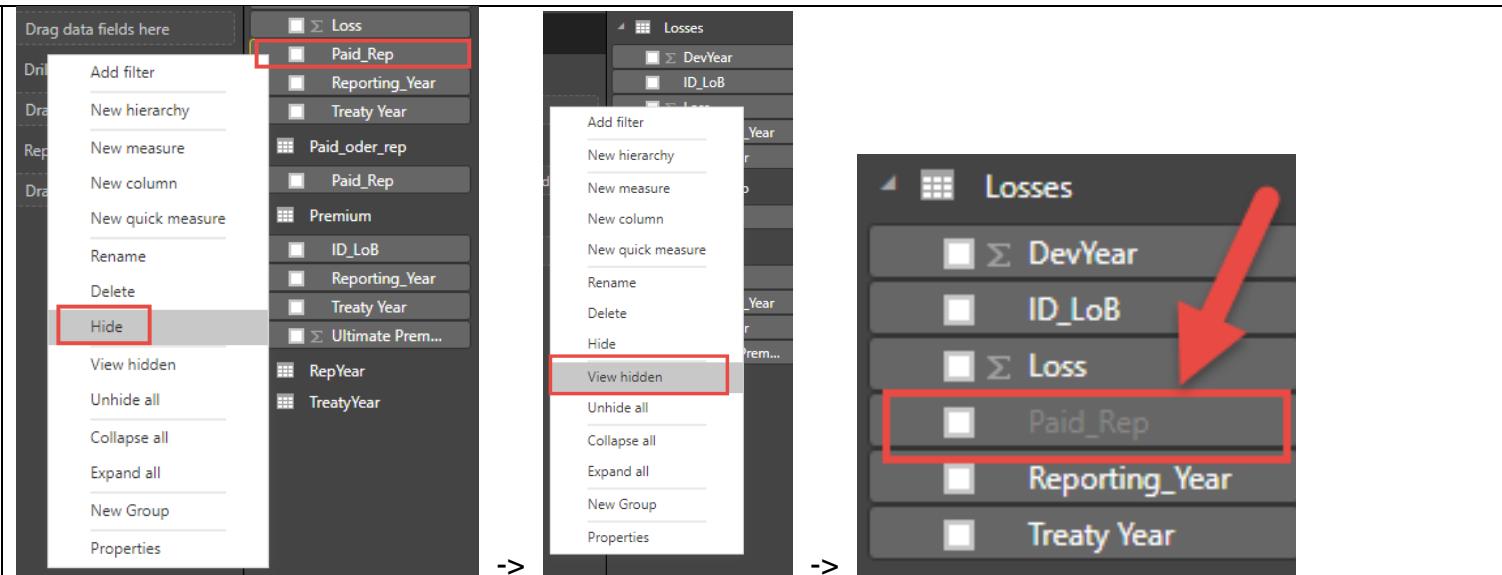
LoB
 Credit
 Liab NP+FAC
 Liab PROP
 Marine
 Motor NP+FAC
 Motor PROP
 Pers Acc and WC
 Property



Loss Ratio by DevYear and Treaty Year
 Treaty Year 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016



- Improving Usability**
- To prevent people from using certain fields you can hide these fields:
 - Hidden fields can be used in the Data Model but they are not shown to the user
 - Rightclick the said field & choose **Hide**
 - If you want to see all hidden fields for administration purposes, rightclick any field & select **View hidden**
 - All hidden entries are then displayed in gray



Exercise 6

- Hide for example the following fields:

Table Key Measures: Column1

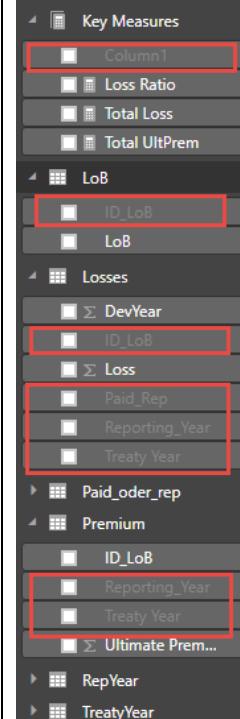
Table LoB: ID_LoB

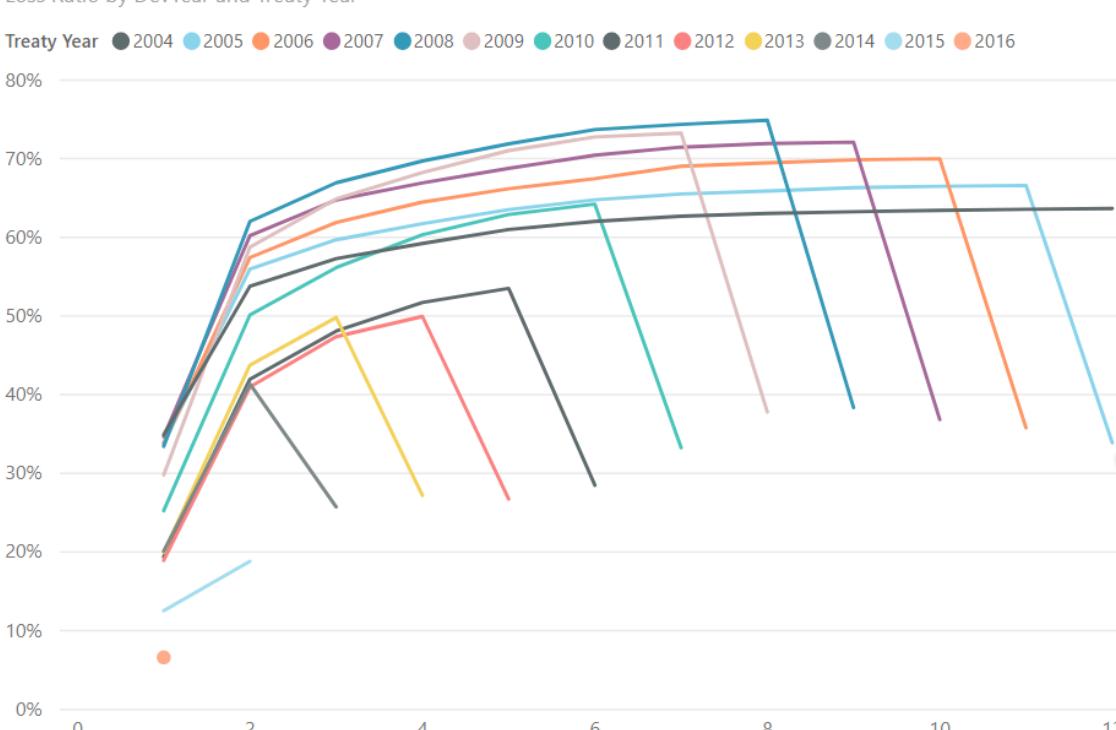
Table Losses:

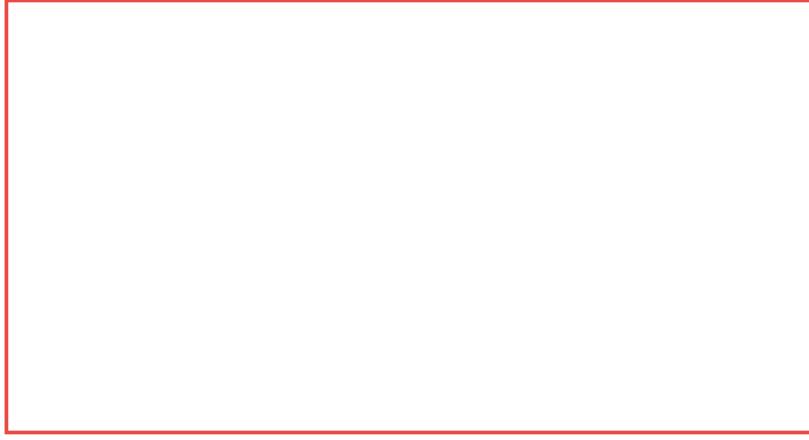
ID_LoB / Reporting Year /
Paid_Rep / Reporting Year

Table Premium:

Reporting Year / Treaty Year



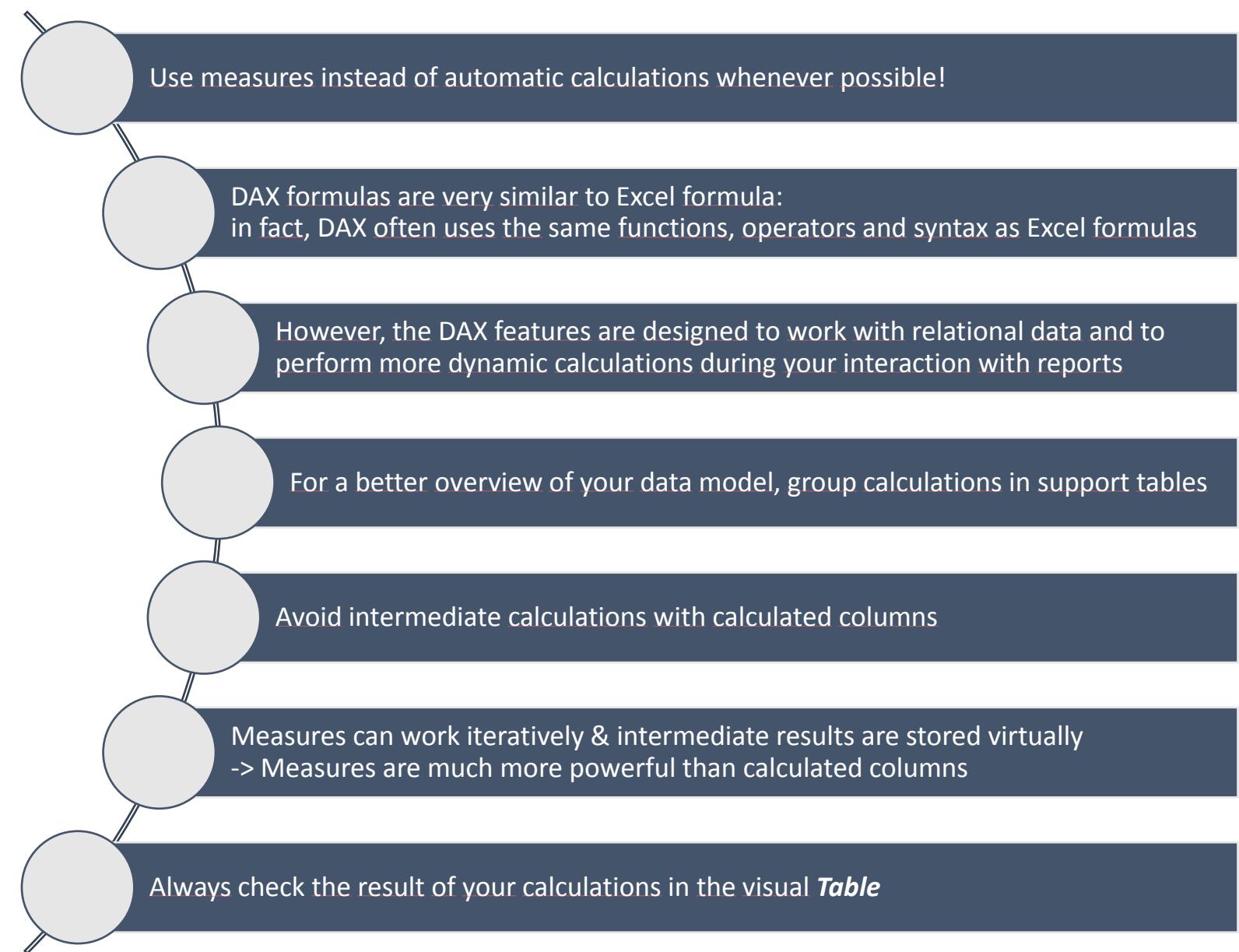
<ul style="list-style-type: none"> - It is possible to choose two or more fields in a slicer - If you select for example more than one Reporting Year (CTRL & mouse); this can show undesirable effects on the Line chart - In case you want to prevent the user from using more than one year in the slicer Reporting Year you have to customize the measure Loss Ratio - You need a formula that verifies if the context is being sliced by one value in order to estimate a percentage against a predefined scenario - In this case you want to compare Total Loss against Total UltPrem: then you need to know if the context is filtered by a single year - Also, if the comparison is meaningless you want to return BLANK 	<p>Loss Ratio by DevYear and Treaty Year</p>  <p>Paid_Rep</p> <ul style="list-style-type: none"> Paid Reported <p>Reporting Year</p> <ul style="list-style-type: none"> 2017 2016 2015 2014 2013 2012 <p>LoB</p> <ul style="list-style-type: none"> Credit Liab NP+FAC Liab PROP Marine Motor NP+FAC Motor PROP Pers Acc and WC Property
<p> Exercise 7</p> <ul style="list-style-type: none"> - The function HASONEVALUE allows you to determine, that the graph is only shown, when only one reporting year is choosen in the slicer 	<p>Loss Ratio updated =</p> <pre>IF(HASONEVALUE(RepYear[Reporting_Year]), DIVIDE([Total Loss], [Total UltPrem], 0), BLANK())</pre> <p>Axis</p> <p>DevYear</p> <p>Legend</p> <p>Treaty Year</p> <p>Values</p> <p>Loss Ratio updated</p> <p>-></p>

<ul style="list-style-type: none"> - Update the measure Loss Ratio & replace it in the Line chart 	
<ul style="list-style-type: none"> - Then you can check what happens if you select one or two reporting years: with two years having been selected here, no Line chart is shown 	<p>Loss Ratio updated by DevYear and Treaty Year</p>    <p>Paid_Rep</p> <ul style="list-style-type: none"> Paid Reported <p>Reporting_Year</p> <ul style="list-style-type: none"> 2017 2016 2015 2014 2013 2012 <p>LoB</p> <ul style="list-style-type: none"> Credit Liab NP+FAC

Takeaways

Organize Queries - Transform Data	 <ul style="list-style-type: none"> Convert Excel data to tables - CTRL + T Always open data in Power BI Desktop in the Query Editor Group Queries: Staging Queries & Data Model Delete unneeded columns Rename columns in the sense of the visuals
Data Model - Create Relationships	 <ul style="list-style-type: none"> Relationship types: always check the relationships in the Relationships view Performance: A simple model does not contain a large flat table, but Lookup- tables & Fact-tables Relationship direction: depending on where the filters should be set, you can switch between Single & Both - Standard: Single

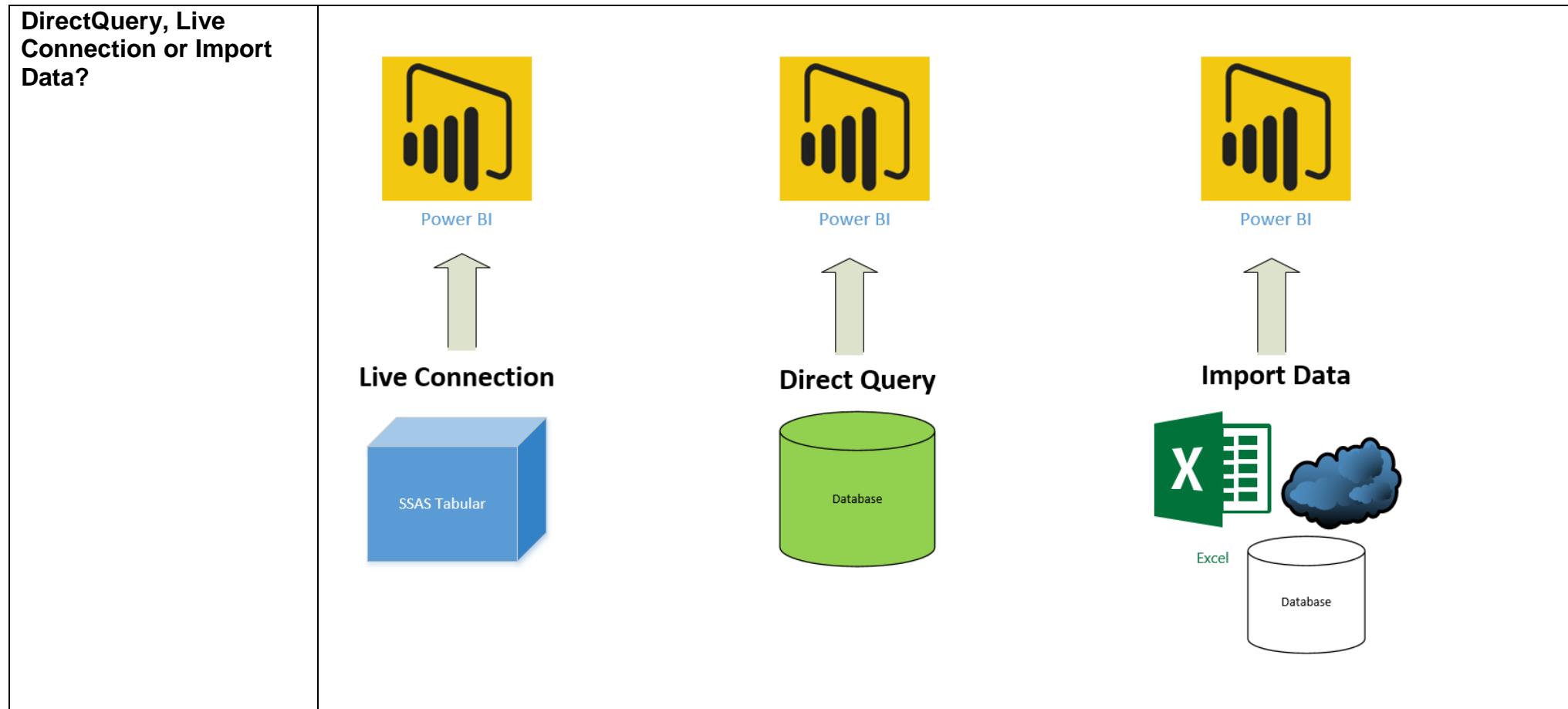
Measures - Grouping & Calculation



Branching Measures	 <ul style="list-style-type: none"> Always create measures, no matter how simple the calculation is Branch in your calculations with measures Add context via Slicer & Visualizations
Visualizations	 <ul style="list-style-type: none"> Copy elements whenever possible - that makes you much faster Name your measures clearly and meaningfully - the titles of the visuals then no longer have to be changed each time a measure is used Control the interactivity of the filters: Edit Interactions Customize the tooltips Think in grids - use visual means to help you to read the visualizations As a graphical background, you can also prepare a PowerPoint slide that you save as a graphic and use as wallpaper for your reports

3. Appendix

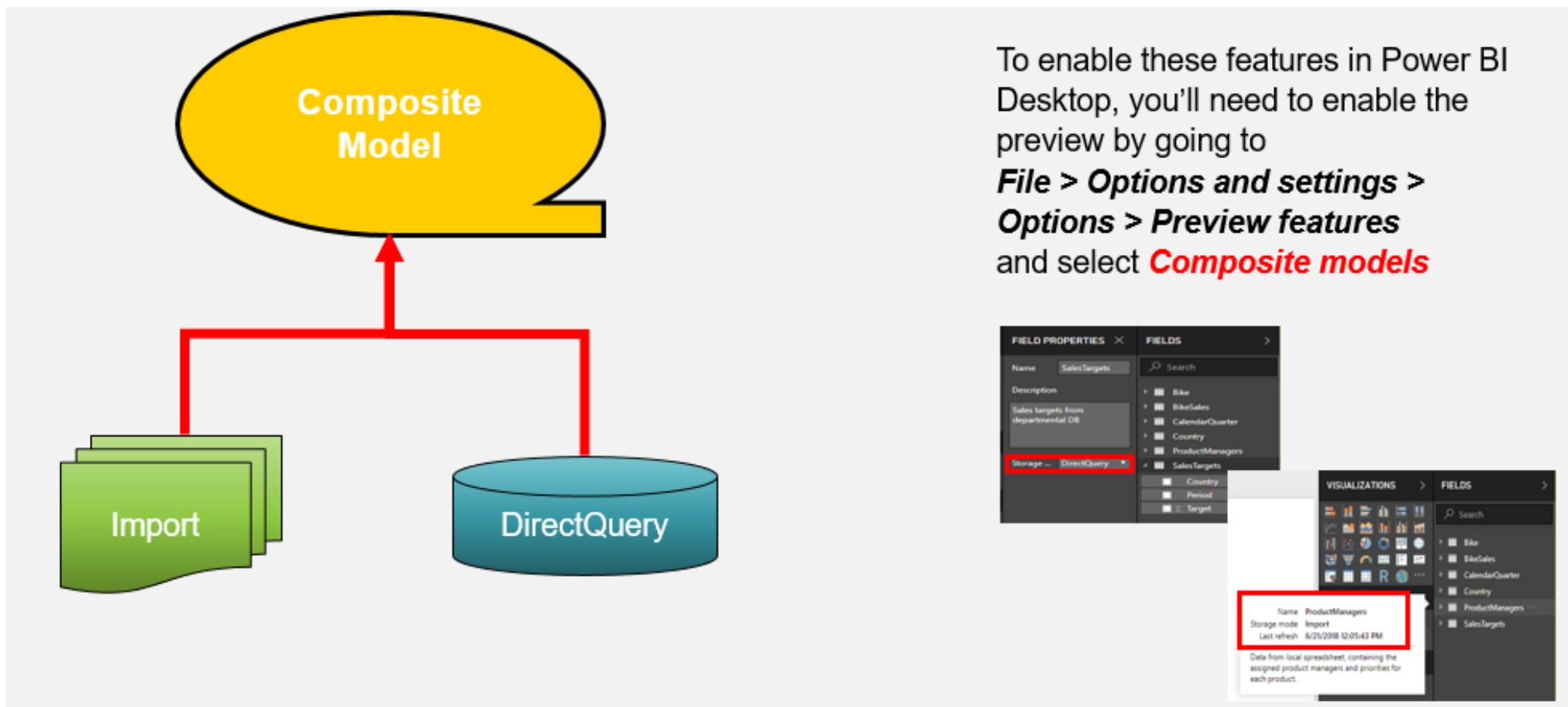
Which connection for which use?



Which method is the most performant?	<p>Import Data</p> <ul style="list-style-type: none"> • Is the fastest option: • Data is loaded into the memory of the server and all queries are processed immediately. <p>Live Connection</p> <ul style="list-style-type: none"> • is the next option in this list, especially if the SSAS Tabular or Power BI service is used, as these are both in-memory technologies that run faster than Multi-Dimensional Cubes. <p>DirectQuery</p> <ul style="list-style-type: none"> • Is the slowest connection type • You must consider the performance optimization of your data source. <p>-> winner here: Import Data</p>
Which method is more flexible?	<p>Import Data</p> <ul style="list-style-type: none"> • Here you get the full functionality of Power BI • Full Power Query functionality and DAX measures as well as visualizations <p>DirectQuery</p> <ul style="list-style-type: none"> • Offers you only a few power query options (all operations where no query fold can be used are not available) • Many DAX features are not available • The query speed is very slow compared to the other two options <p>Live Connection</p> <ul style="list-style-type: none"> • Even if your company does not yet have an SSAS solution and you have a huge database, this option is better than DirectQuery because in SSAS you have MDX or DAX to handle many calculations and modeling tasks <p>-> winner again: Import Data</p>

Which method is better scalable?	<p>Import Data</p> <ul style="list-style-type: none">• has a size limit of 1 GB per model (with the Free license) <p>DirectQuery und Live Connection</p> <ul style="list-style-type: none">• You get better scalability.• The data sources support a much larger amount of data <p>-> winner: Live Connection & DirectQuery</p>
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Preview: Composite Model



What is a Composite Model?	<p>A model that combines data from more than one DirectQuery source or combines DirectQuery with imported data is called a composite model.</p> <p>If you previously connected to a data source in Power BI using DirectQuery, you could not connect to a different data source in the same report (all tables must be from a single database). The new composite model eliminates this limitation and makes it possible to seamlessly combine data from one or more DirectQuery sources and / or combine data from a mix of DirectQuery sources and imported data in a single report.</p> <p>This means you can combine multiple DirectQuery sources with multiple import sources. If your report contains some DirectQuery tables and some import tables, the status bar in the bottom right corner of your report will show Mixed storage mode. If you click here, all tables can easily be switched to import mode.</p> <p>For example, with the composite model, it is possible to create a model that combines</p> <ul style="list-style-type: none"> • Sales data from an enterprise data warehouse using DirectQuery • with sales target data in a SQL Server department database using DirectQuery • along with some data imported from a spreadsheet
Composite Model – only with the TABULAR Model	<ul style="list-style-type: none"> • TABULAR Model is the powerful bridge from Excel / Power Pivot to a professional BI server application as part of a self-service BI strategy. The consistent investment by Microsoft and the high speed of innovation - especially in conjunction with Power BI - ensure relative future security. Disadvantages are the smaller range of functions, the higher hardware requirements and the small number of reference projects. • MULTIDIMENSIONAL cubes are still the professional solution for large data volumes and high model complexity. Disadvantages include the high level of IT orientation and the lack of self-service BI capability, the increased need for know-how and the lack of further development of the technology in the last two releases of SQL Server.

Preview: Dual Storage Mode	<p>Composite models also include a new feature called dual-storage mode.</p> <p>If you are currently using DirectQuery, all visualizations will cause queries to be sent to the back-end source, even if they are simple visualizations, such as: a slicer with all product categories.</p> <p>The ability to define a table to have dual storage mode means that a copy of the data for that table is also imported. All visualizations that reference only columns from this table use the imported data and do not need a query about the underlying source.</p> <p>The benefits are improved performance and lower load on the back-end source.</p> <p>However, when querying large tables with DirectQuery, the dual table acts as a DirectQuery table, so no table data needs to be imported to be linked to an imported table.</p> <p>Note that changing a DirectQuery table to an import table is an irreversible operation; It cannot be changed back to DirectQuery or back to Dual.</p> <p>Also note that there are two restrictions during the preview period:</p> <ul style="list-style-type: none">• DirectQuery only supports the tabular model (no multi-dimensional model)• You cannot publish files of this new model type in the Power BI service.
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Update July	<p>Reporting</p> <ul style="list-style-type: none"> • New visual header with more flexibility & formatting • Wallpaper formatting • Tooltips for table & matrix Turn tooltips off for visuals • Slicer accessibility • Stepped line support in line & combo charts • Turn off combo chart data labels for line or column & individual series <p>Modelling</p> <ul style="list-style-type: none"> • Composite model – Dual storage mode (only in Power BI Desktop) • Many-to-Many Relationship (only in Power BI Desktop) • ...
Update August	<p>Reporting</p> <ul style="list-style-type: none"> • Print reports through Export to PDF • Create bookmark groups • ... <p>Analytics</p> <ul style="list-style-type: none"> • Conditional formatting by values • Q&A in Power BI Desktop generally available • ... <p>Modeling</p> <ul style="list-style-type: none"> • Data categories for measures • ...