Power BI Desktop – Interactive Reports & Dashboards

Part 1

Last Update: 08/02/2019

Agenda – Power BI Desktop

1 Overview Power BI Desktop – Power BI Service

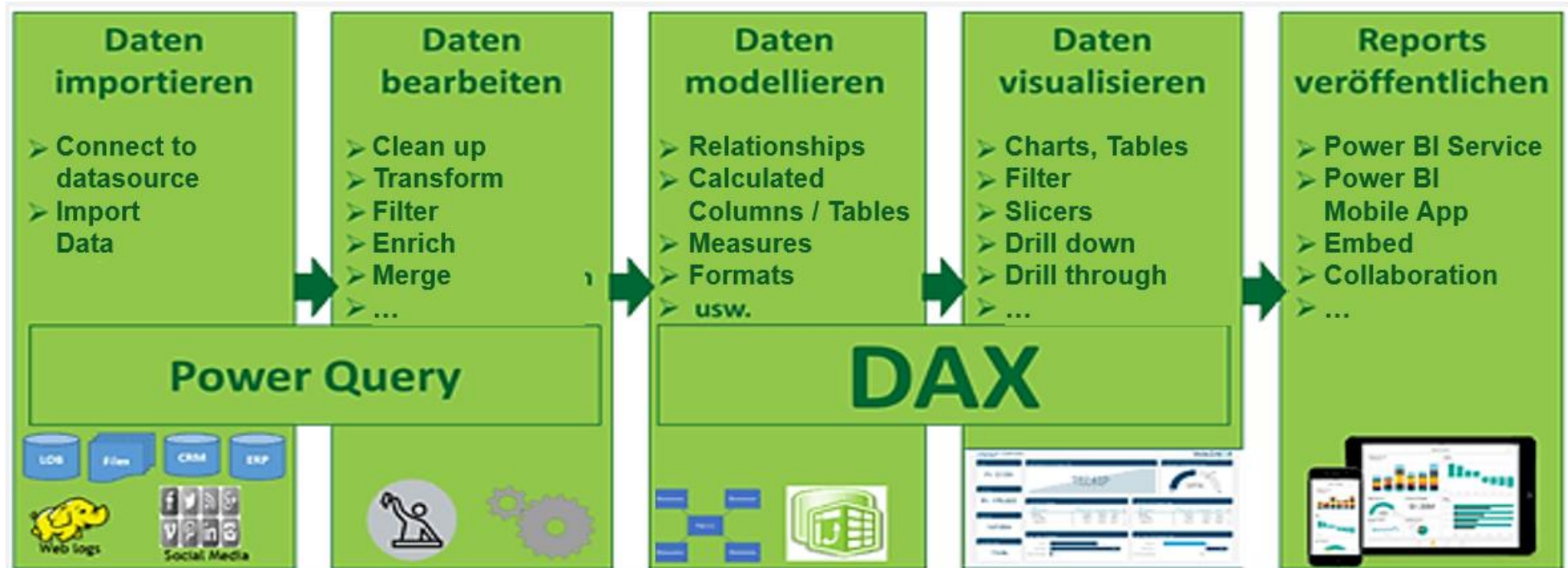# Power BI Tools – available in Excel & in Power BI Desktop

BI (Business Intelligence) Tools
- Preparing Data
- Modelling Data
  (Relations & Calculations)
- Visualize Data
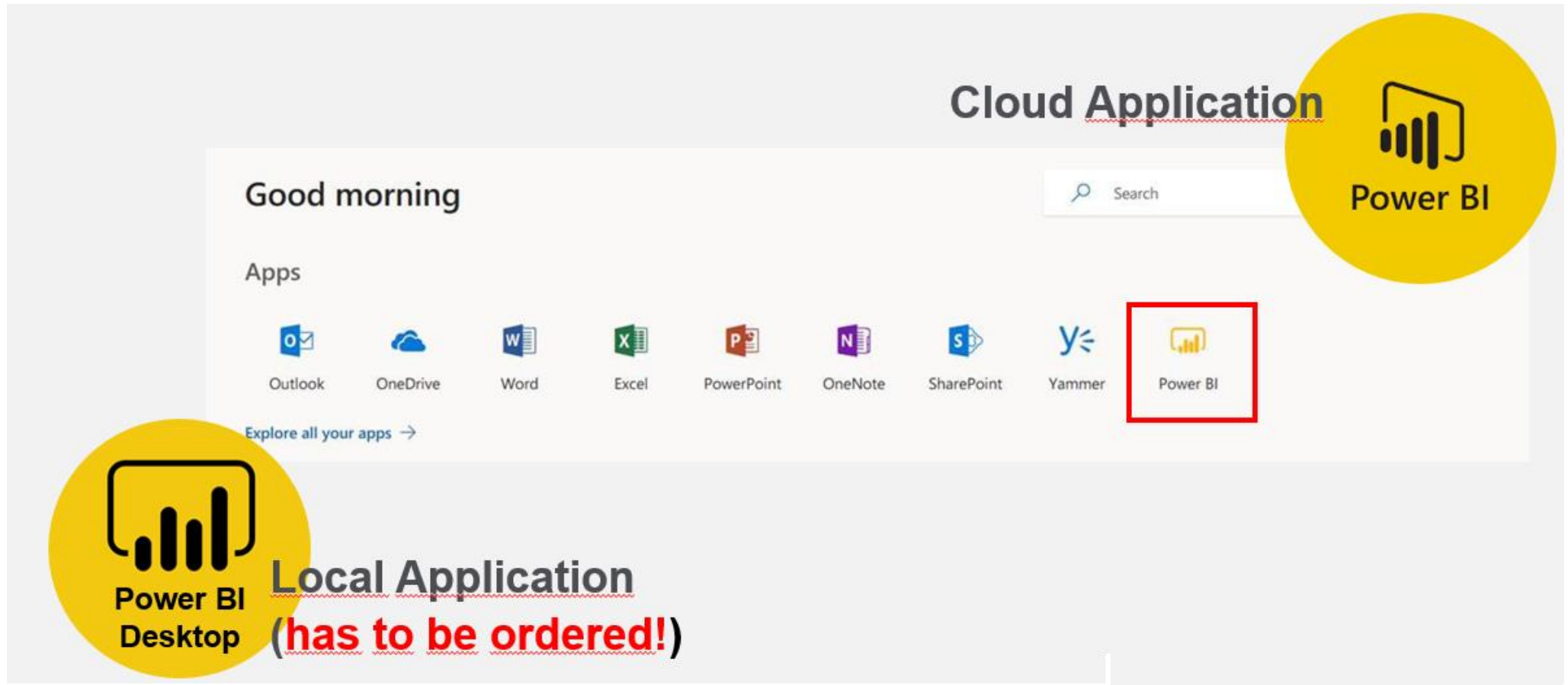
Working with the Power BI Tools

Daten importieren
- Connect to datasource
- Import Data

Daten bearbeiten
- Clean up
- Transform
- Filter
- Enrich
- Merge
- …

Power Query

Daten modellieren
- Relationships
- Calculated Columns / Tables
- Measures
- Formats
- usw.

DAX

Daten visualisieren
- Charts, Tables
- Filter
- Slicers
- Drill down
- Drill through
- …

Reports veröffentlichen
- Power BI Service
- Power BI Mobile App
- Embed
- Collaboration
- …

Power BI – embedded Office 365

Power BI Desktop – Power BI Service

Power BI Desktop

- free desktop application
- meshed with Power BI service
- allows structuring, modeling and visualization of data
- results are stored in a PBIX file
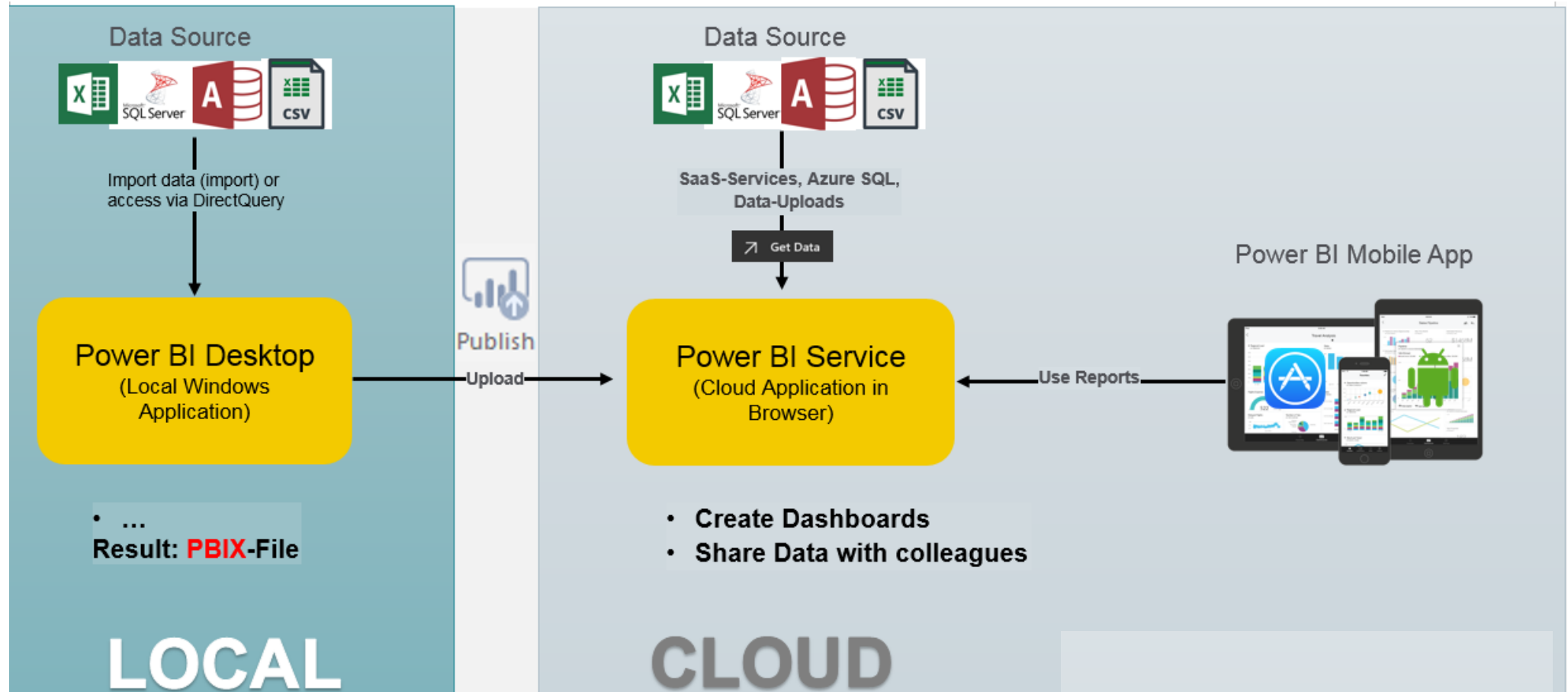- the PBIX file can be published in Power BI service

Power BI

- cloud-based business analytics service
- allows fast visualization & analysis
- provides critical business data through interactive reports & dashboards
- reports / dashboards are provided and released via the Power BI service
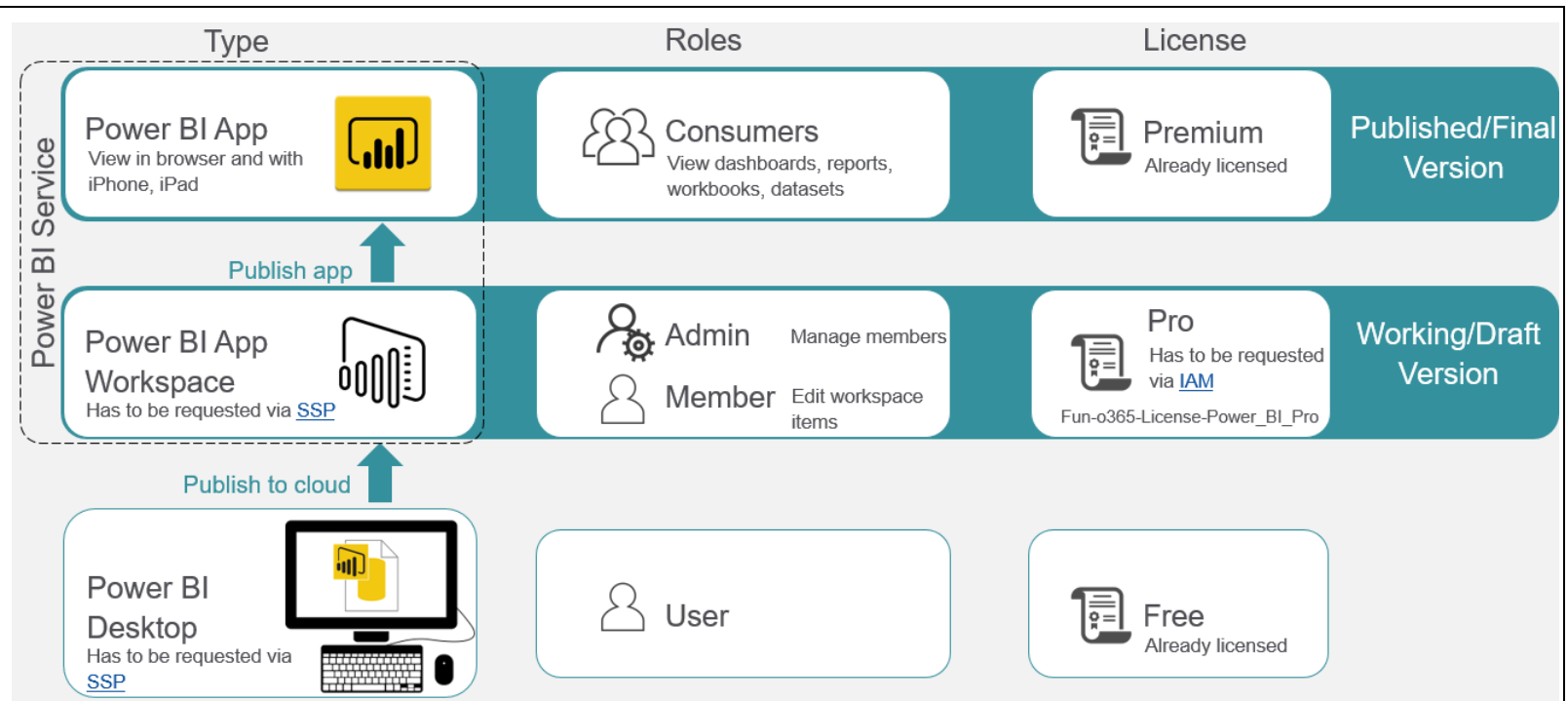
How to work with both applications?

LOCAL

Data Source

Import data (import) or access via DirectQuery

Power BI Desktop
(Local Windows Application)

- ...

Result: **PBIX**-File

Publish

Upload

CLOUD

Data Source

SaaS-Services, Azure SQL, Data-Uploads

↗ Get Data

Power BI Service
(Cloud Application in Browser)

- **Create Dashboards**
- **Share Data with colleagues**

Use Reports

Power BI Mobile App

Notes on use

Versions & Permissions	
	Which license do I need?
	For Personal Use: All Munich Re employees are licensed for Power BI Free & Power BI Premium. There is no need to order a license!	**For Internal Sharing:** Make sure you request in this order! 1. Power BI App Workspace via SSP. 2. Power BI Pro license via IAM.

Personal Use

- Every Munich Re employee has been licensed with a **Power BI Free license**
- With this license you are able to upload your Power BI Report into "My Workspace" within the Power BI Service with data up to **C3**.
- These Power BI Reports are **only for your personal use**.

Do not share any Power BI Report out of "My Workspace" even though you have a Power BI Pro license.

Please use a Power BI App Workspace to share your content.

Internal Sharing *

- **Power BI App Workspaces** are the places where you create **Power BI Apps**.
- So you need to request a Power BI App Workspace first, before you create the Power BI App. This you can publish und use to share your dashboards and reports to a wider audience, or even to your entire organization
- **Consumers** of a Power BI App don't need any additional license
- All **members** of a Power BI App Workspace need a **Power BI Pro License**

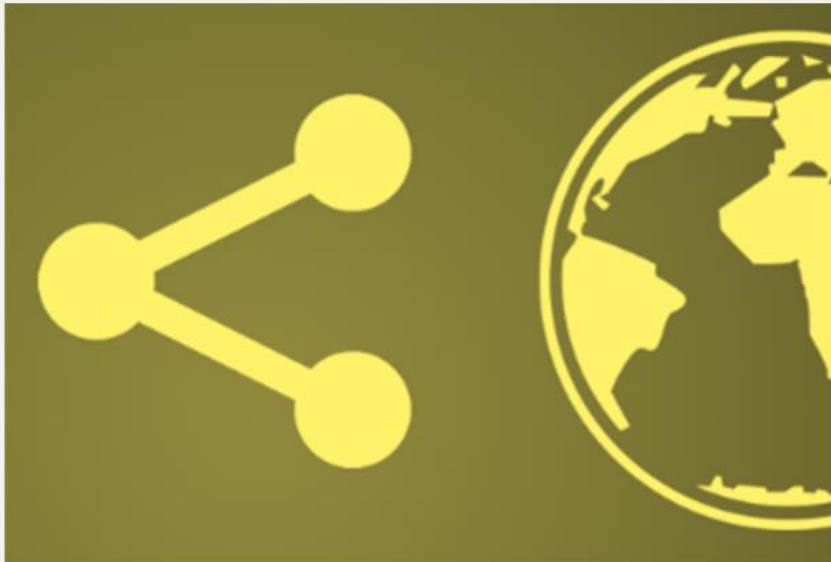| Type	Roles	License
Power BI App — View in browser and with iPhone, iPad	**Consumers** — View dashboards, reports, workbooks, datasets	**Premium** — Already licensed — Published/Final Version
Publish app		
Power BI App Workspace — Has to be requested via SSP	**Admin** — Manage members / **Member** — Edit workspace items	**Pro** — Has to be requested via IAM — Fun-o365-License-Power_BI_Pro — Working/Draft Version
Publish to cloud		
Power BI Desktop — Has to be requested via SSP	**User**	**Free** — Already licensed

*not for **ERGO** & **MEAG** yet

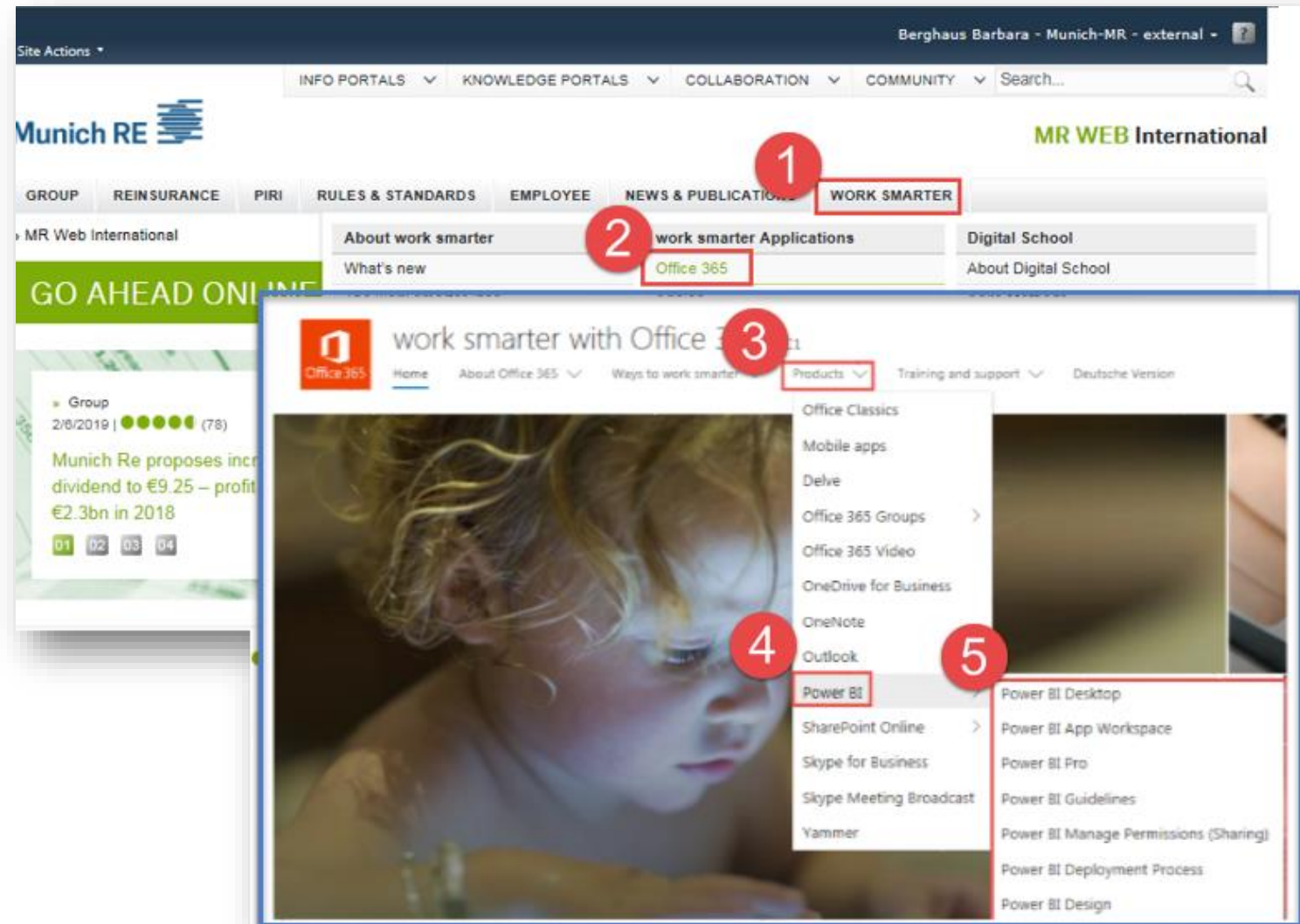|	
Use these links to find a detailed description	**1 Power BI App Workspace:** https://munichre.sharepoint.com/sites/work-smarter/SitePages/Power-BI-App-Workspace.aspx **2 Power BI Pro:** https://munichre.sharepoint.com/sites/work-smarter/SitePages/Power-BI-Pro.aspx

External Sharing	With the approval of **Compliance** and **Security** there is the possibility to share Power BI reports externally. Please contact **David Le** IT-Architect, IT1.6.1.2
Confidentiality	**Up to which confidentiality level may I publish data?** **For Personal Use:** Confidentiality **C0** to **C3** • **For Internal Sharing:** Confidentiality **C0** to **C3**

Work Smarter	
- The most important and up to date information can be found on the intranet - Open **Internet Explorer / Chrome** - On **MR Web International** you find the WORK SMARTER area - Click on Web Analytics … - … & then on Products **/** Power BI which contains study materials and help	
Power BI Group in Yammer	• Join the Power BI Group • You will receive alerts about all news directly by e-mail • Here you will also find links to help and learning materials

2   Working with Power BI Desktop - Quickstart

Quickstart

Import File
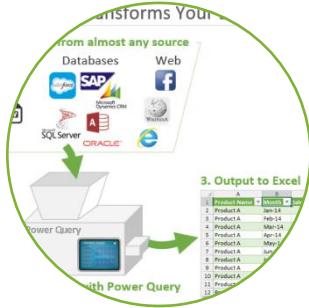
Transform Data

Create / Edit Report
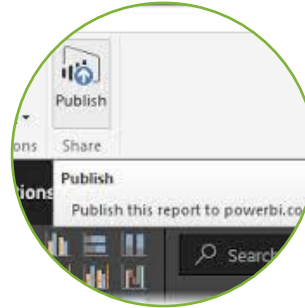
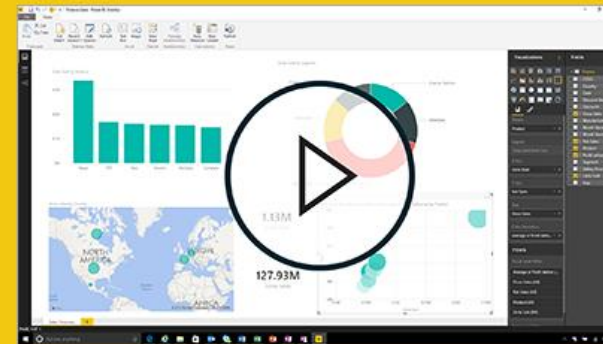Publishing in the Power BI service

Create Dashboard

Web View - Phone View

Quickstart: CSV to Dashboard

|	
- Start **Power BI Desktop** (via **Start Menu**) -> Welcome Screen - You can get data directly from the *Launcher* (using links in the left pane), view *Recent Sources* or *Open Other Reports* - The right part of the **Welcome window** gives you quick access to various resources - When you close the screen, the **Report canvas** from Power BI Desktop appears	**Power BI Desktop** Get Data Recent Sources Open Other Reports Getting started with Power BI Desktop Building reports Query view concepts Uploading your reports View all videos ✓ Show this page on startup **FORUMS** Visit the Power BI Forum to ask questions or interact with other users in the Power BI community. **POWER BI BLOG** Keep up to date with the latest news, resources, and updates from the Power BI team. **TUTORIALS** Analyzing Sales Data Facebook Analytics Importing data from a Web page

1. Power BI Desktop also includes the **Query Editor**, which opens in a separate window.
   In the *External Data* group, you can import data, create queries and transform data
2. Power BI Desktop has three important **views**:
   - *Report*
   - *Data*
   - *Relationships*
   The current view is indicated by the yellow bar on the left edge
3. The **Data Model** is displayed in the *Fields pane*
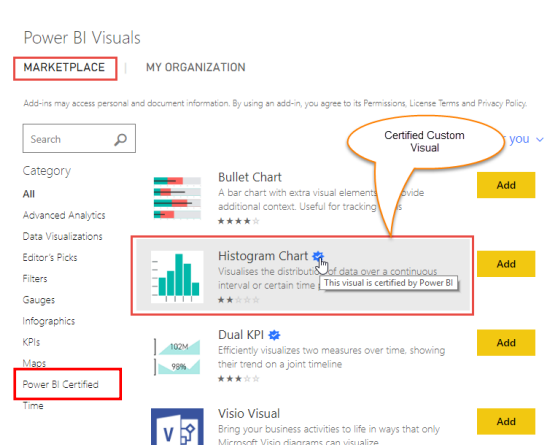4. Finally, in the *Visualizations pane*, you create the report
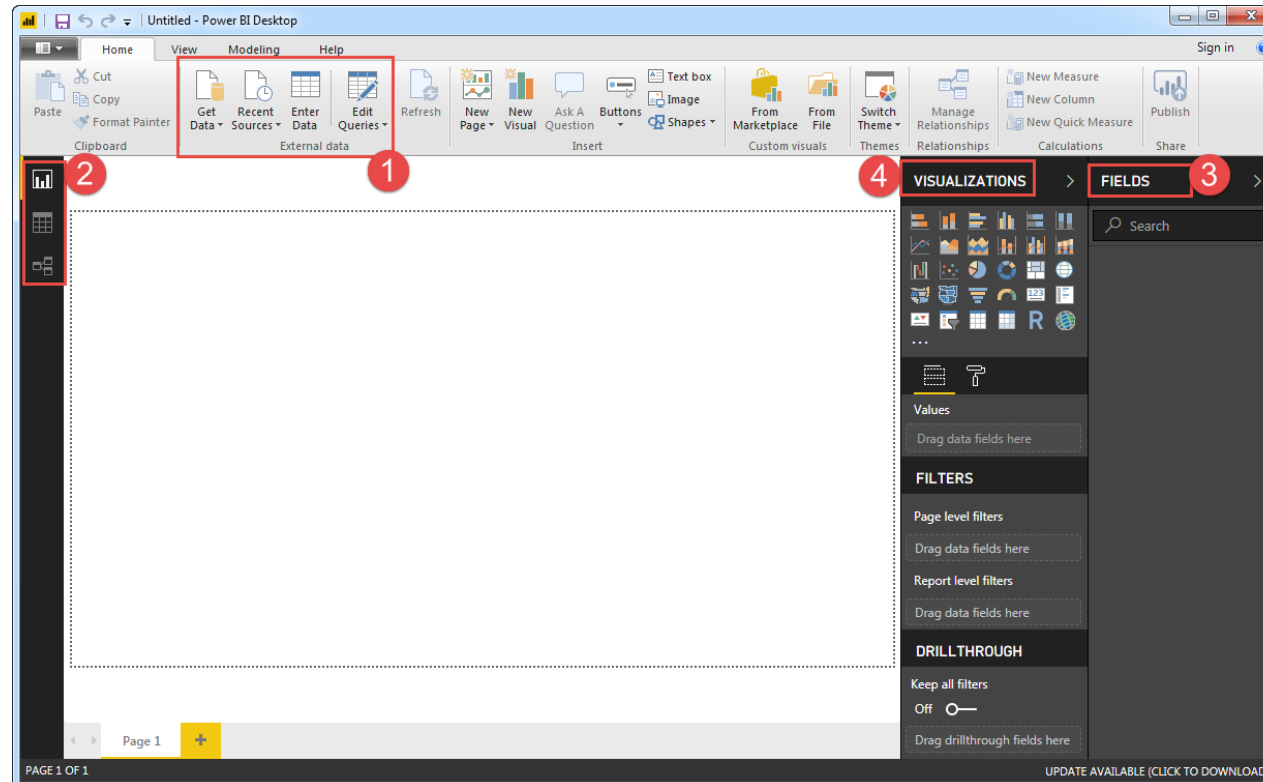
Custom Visuals

- Power BI supports new custom visualization types, called **Custom Visuals**
- This provides you with new and interesting visualization options
- Please only use certified custom visuals!
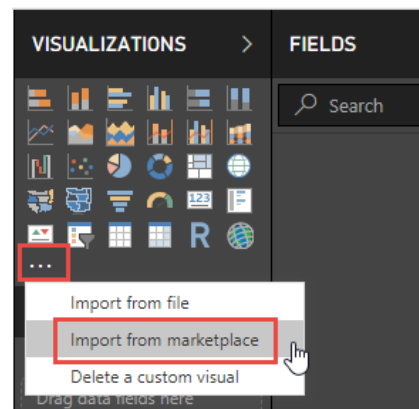
Updates

- Every month Microsoft publishes new features or enhancements to existing functionalities
- Some new features are implemented in **Preview mode** and need to be activated in order to use.
- These features might change or be removed in future releases
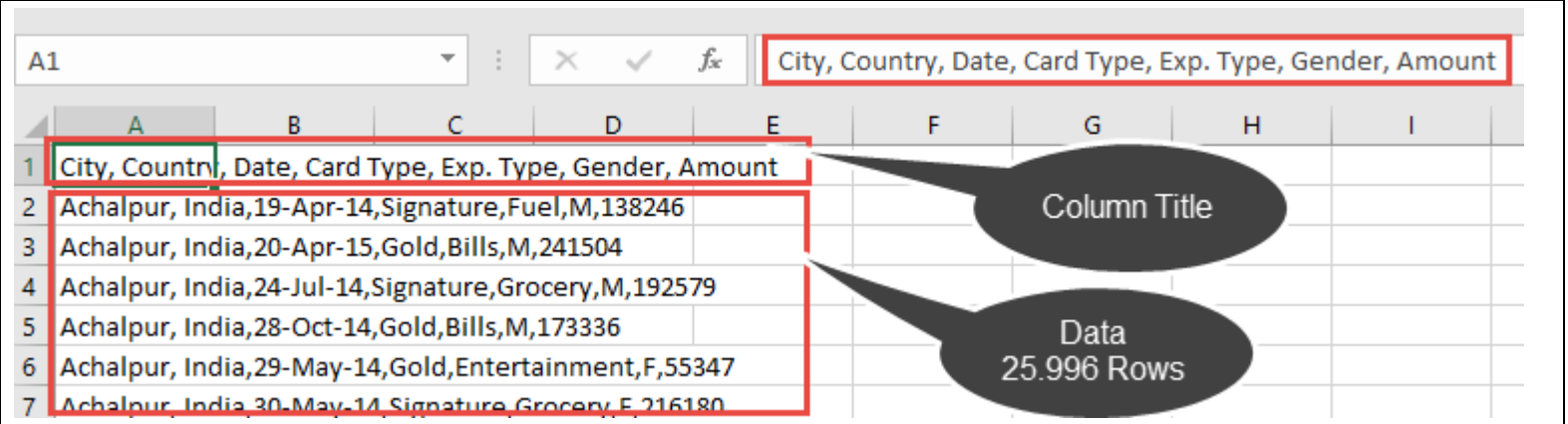- Activate the corresponding settings via
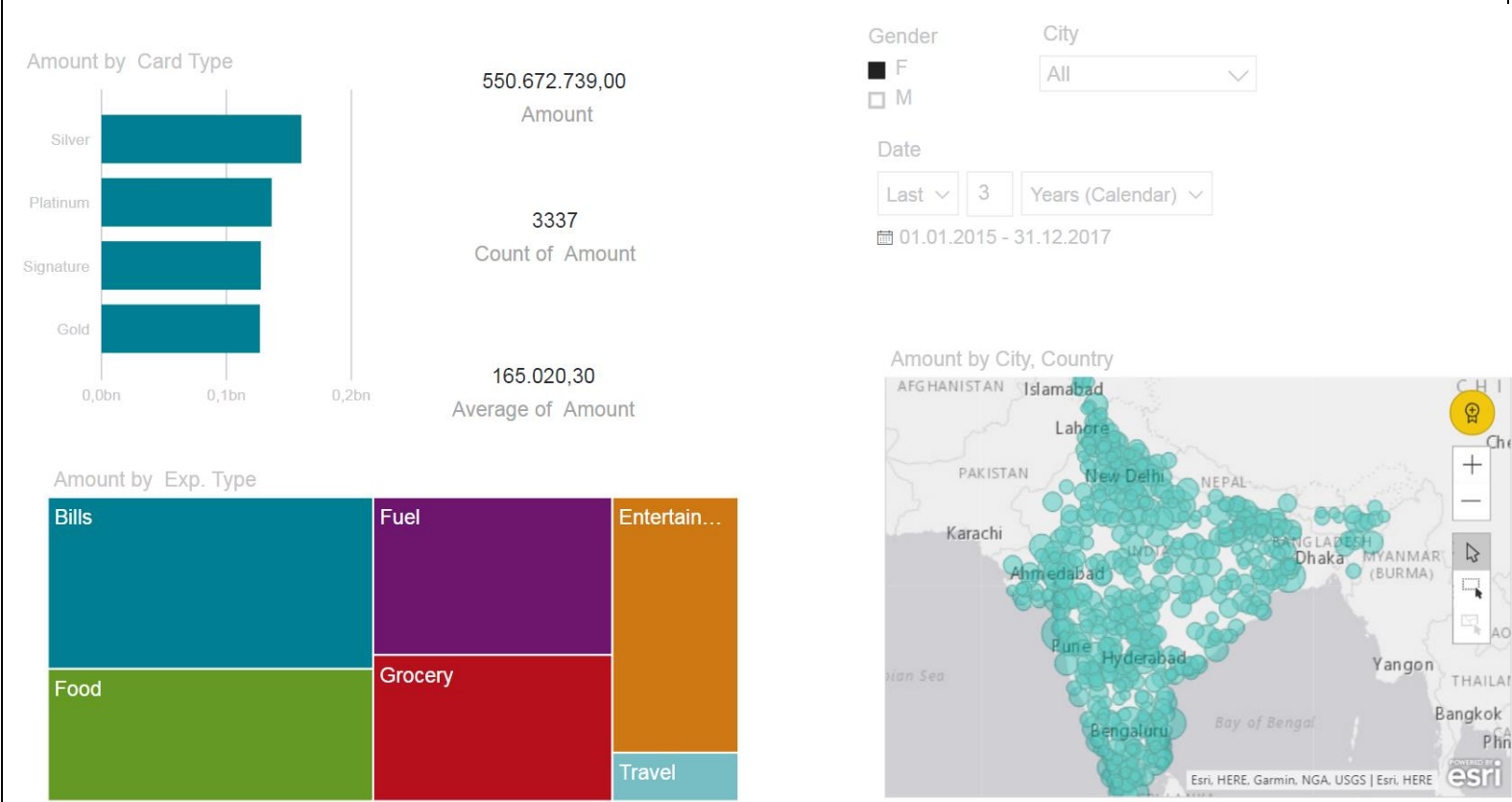*Options and settings / Options*

->
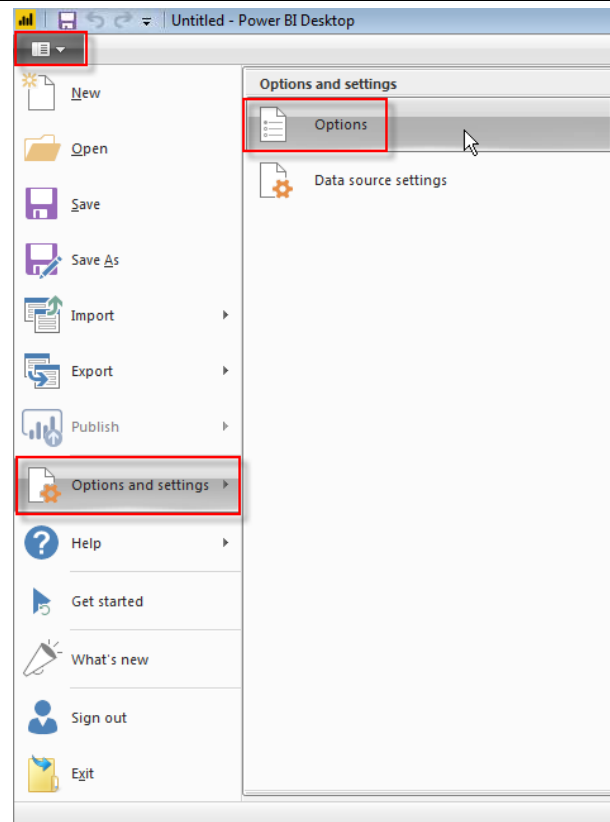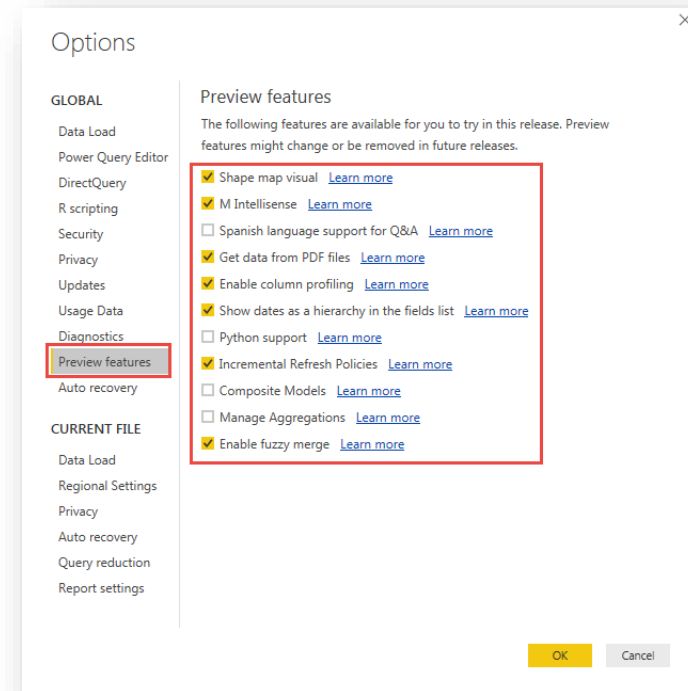
|		
1 Get Data - Open the file 0 Quickstart.csv in Excel		
- The credit card information should be visualized in a report in **Power BI Desktop** & published to **Power BI Service** in order to create a dashboard		

Exercise 1 Get Data

- The *Get Data* window provides all sorts of data sources. The following figure shows how to connect to data.
- To do this, first mark the *Home* tab and then *Get Data / More*.
- For the quick start mark *CSV*.
- Choose **0 Quickstart.csv** in the folder **!! PBID_Exercises**
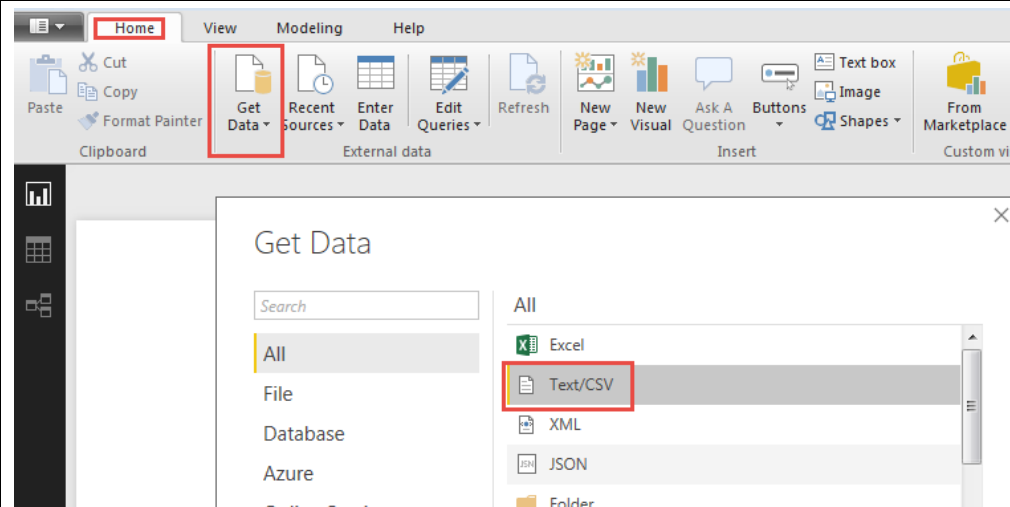
- Power BI Desktop gives you a preview
- In the preview, you can see if all columns of the CSV file have been recognized correctly
- By default, the display of data is based on the **first 200 rows** - this can be changed here
- If you want to check your data select *Edit*
- The **Query Editor** will be opened in a new window
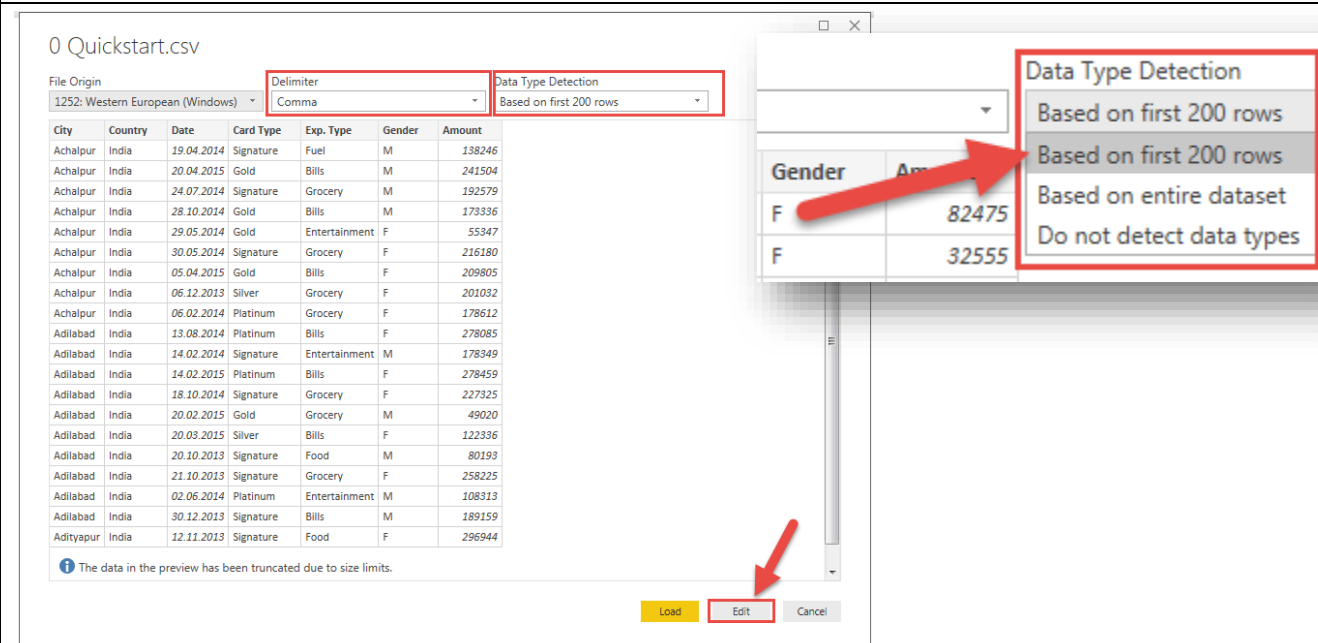
- In the right pane of the Query Editor, the *Applied Steps* area displays the processing steps already performed by the tool
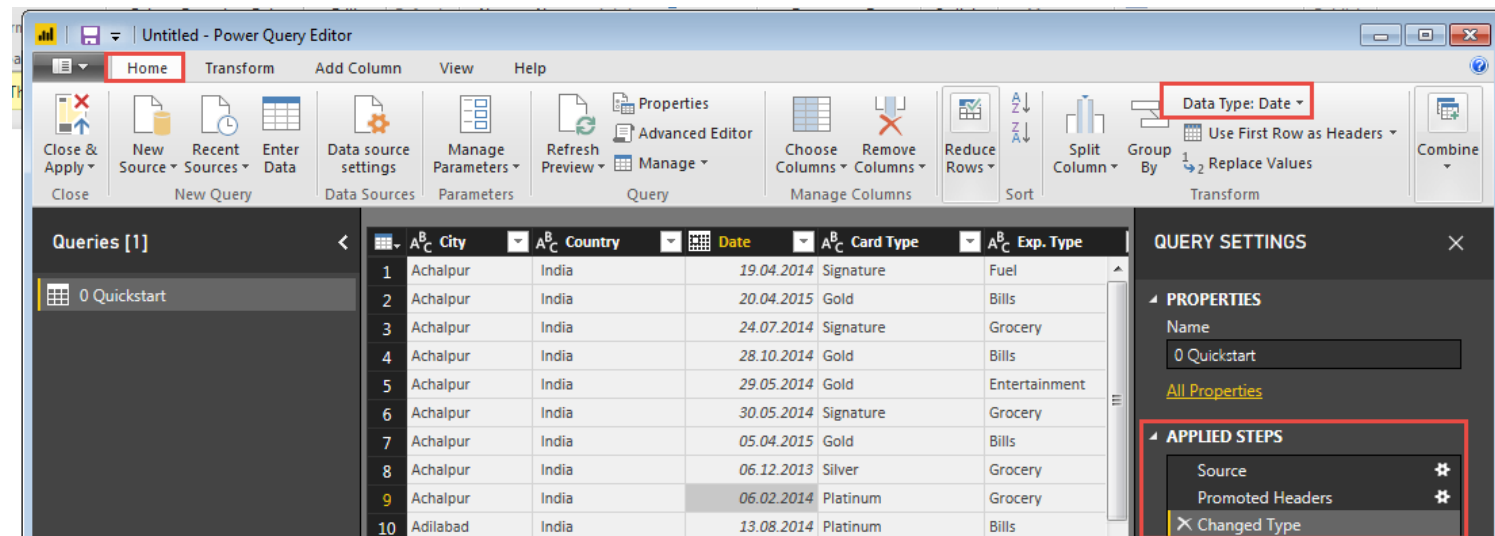
- You should always check the data types of the columns
- Change the data type of the **Amount field** from whole number to Decimal.here *Home / Data Type: Decimal Number* or *$-fixed Decimal* (since it is a monetary amount)
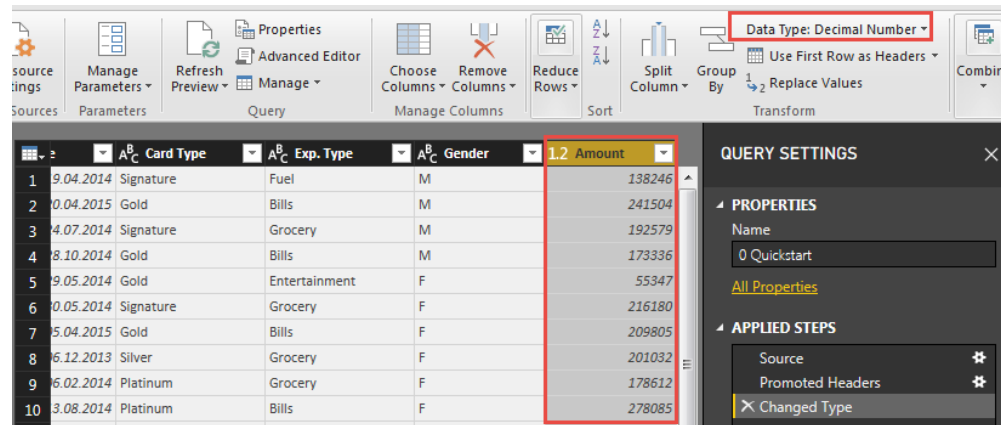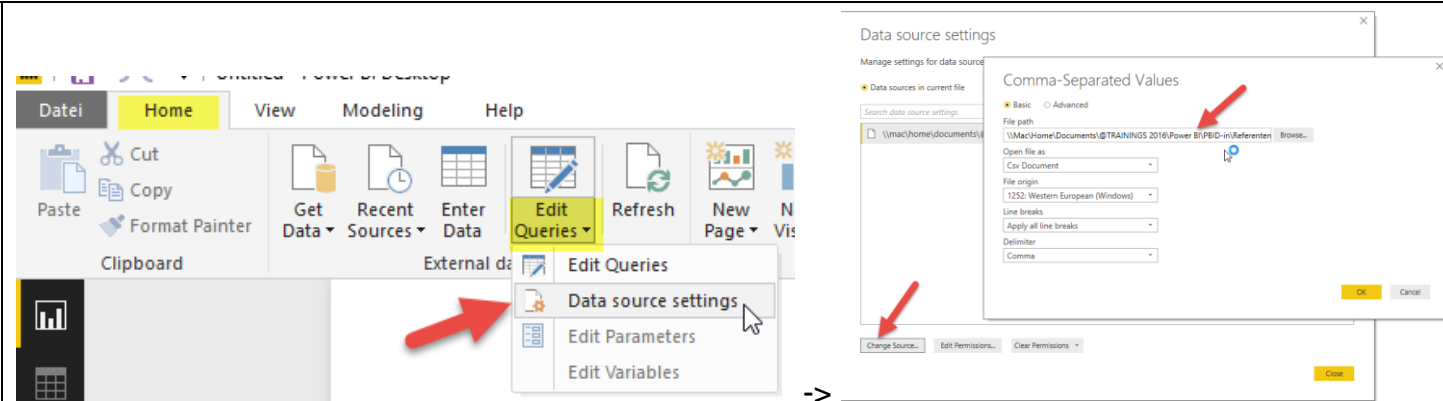

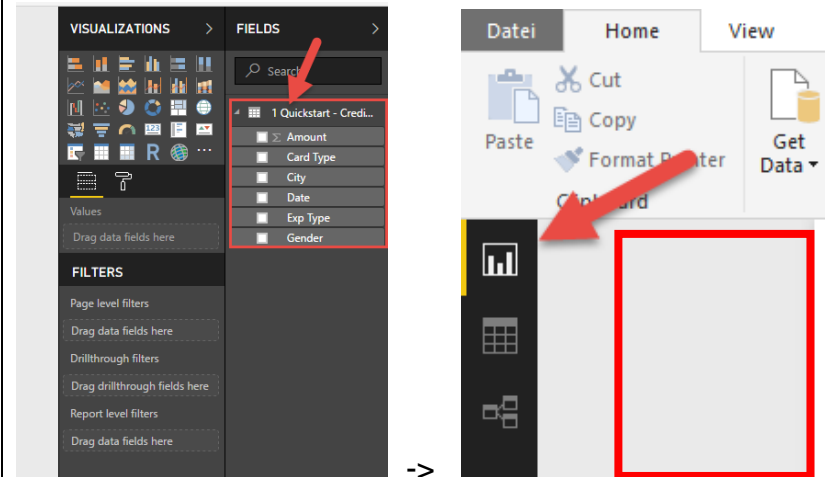**Close & Apply:** the data will then be loaded into the data model
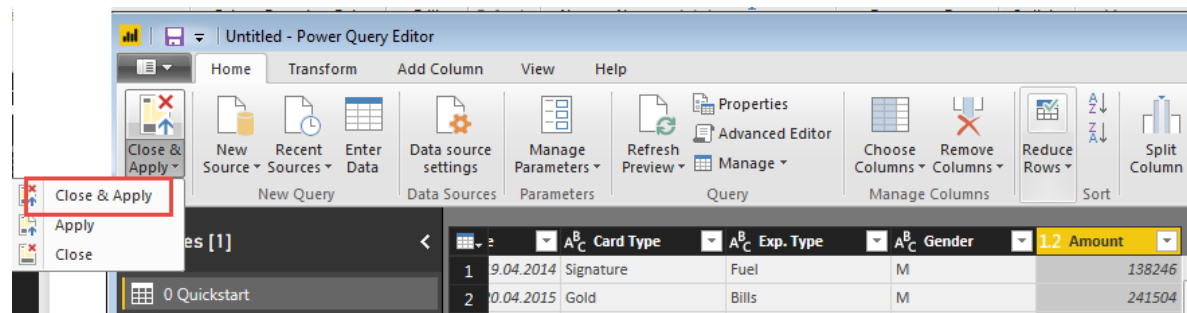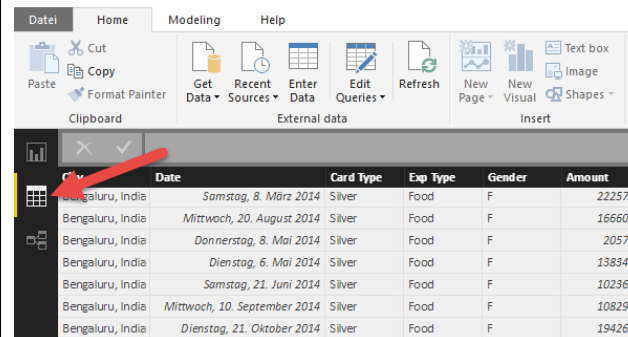
|	
Additionally - If the path to your data source changes, you should correct the path in order to refresh your data: ***Home / Edit Queries / Data source settings***	->
- The loaded CSV file with all fields is displayed in the **Fields** pane - Since you are currently in the ***Report*** pane, nothing is displayed yet	->
- If you switch to ***Data view***, the imported data is displayed as a table	

|	
- Use the third icon to switch to the **Relationships** view - Here you can create relationships between tables of your data model	
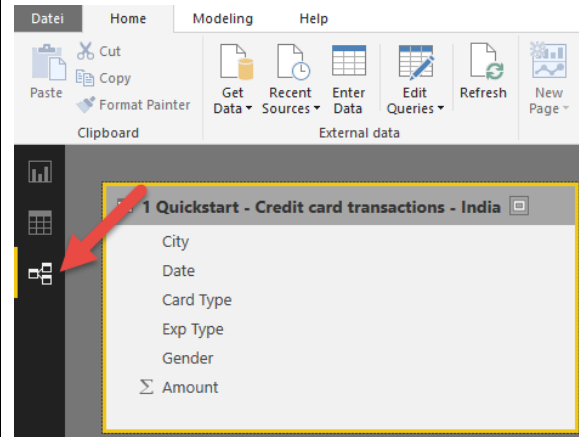
2 Create a report

|	
Visualizations can be created in different ways ✎ **Exercise 2** Example **Amount by Card** Type: *Stacked Bar Chart* - Select the fields in the Fields pane -> the visual **Table** is displayed when you drag a non-numeric field first - Then choose the visualization type **Stacked Bar Chart** or - First select the visualization type **Stacked Bar Chart** & then assign the fields to the	
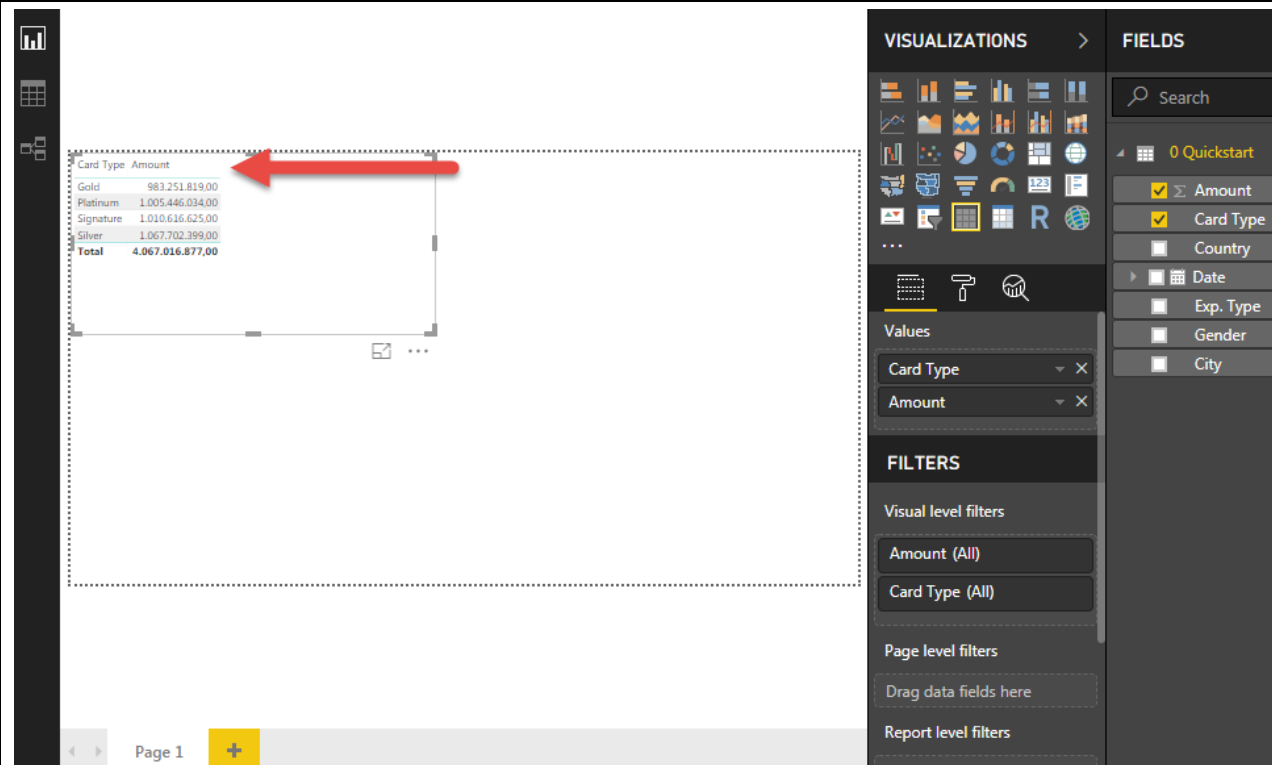
corresponding areas in the second step
- You can sort your visual by all fields which are used in the visual

- The commands **Focus mode** & **Spotlight** provide you with possibilities to show details of your visualizations
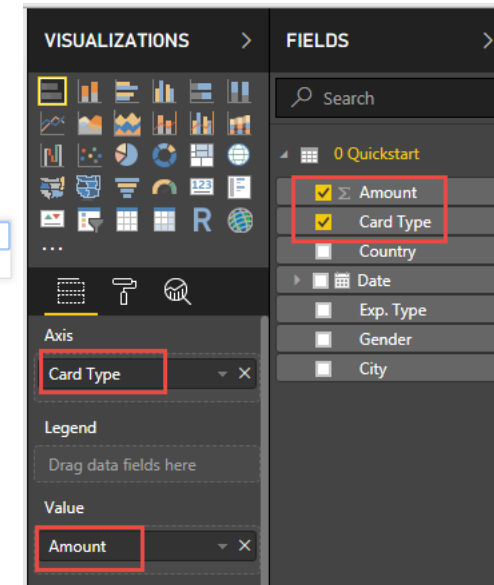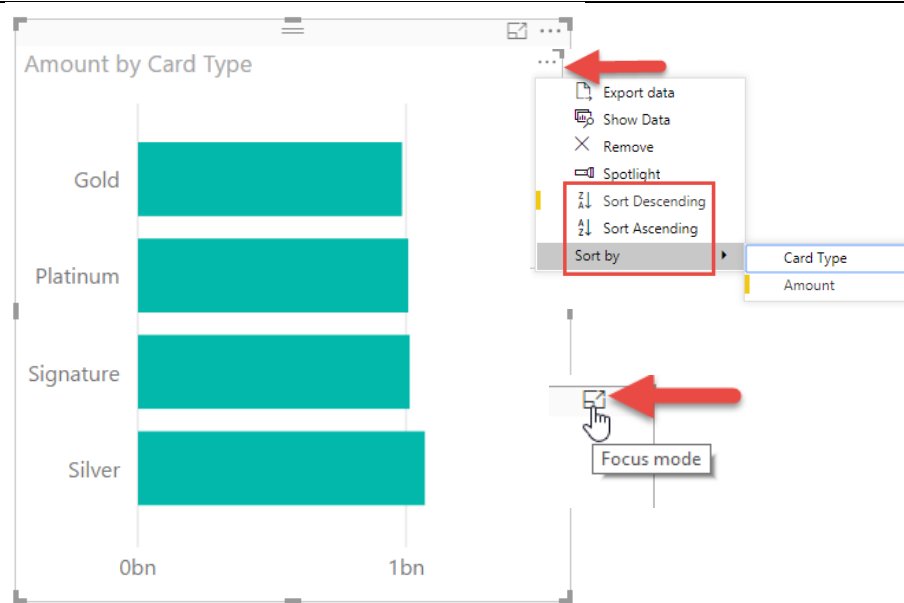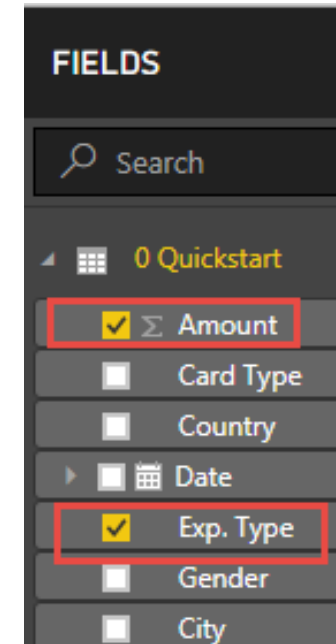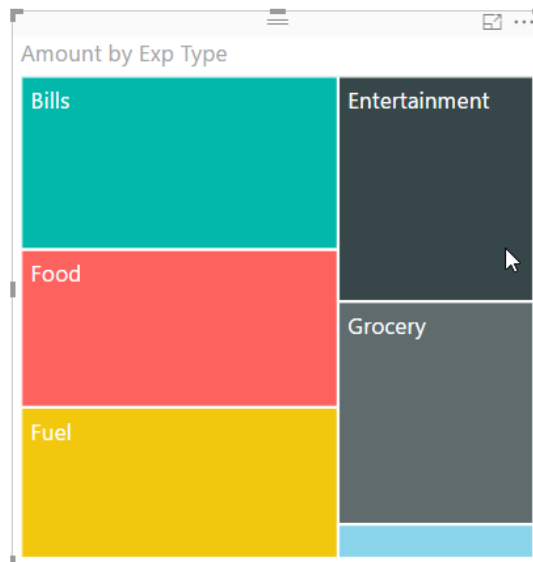

![pencil] **Exercise 3**

Example
Amount by Exp. Type
Type: **Treemap**

- Select the fields & create a pie chart first
- For a structural comparison, the diagram types **Donut** & **Treemap** are also available here
- Create a tree map visual
- This chart type can also be used to visualize hierarchical structures

✏️ **Exercise 4**

Example **Amount / Count of Amount / Average of Amount**
Type **Card**

- Drag the field Amount into the visualization canvas

- Change from the standard visual to the visualization **Card**
  -> by default a **sum is evaluated**

- Change the formatting of the number:
  select **Data Label / Display** & switch from **Auto** to **None**
  -> the entire number is displayed then

-> 4,067,016,877.00
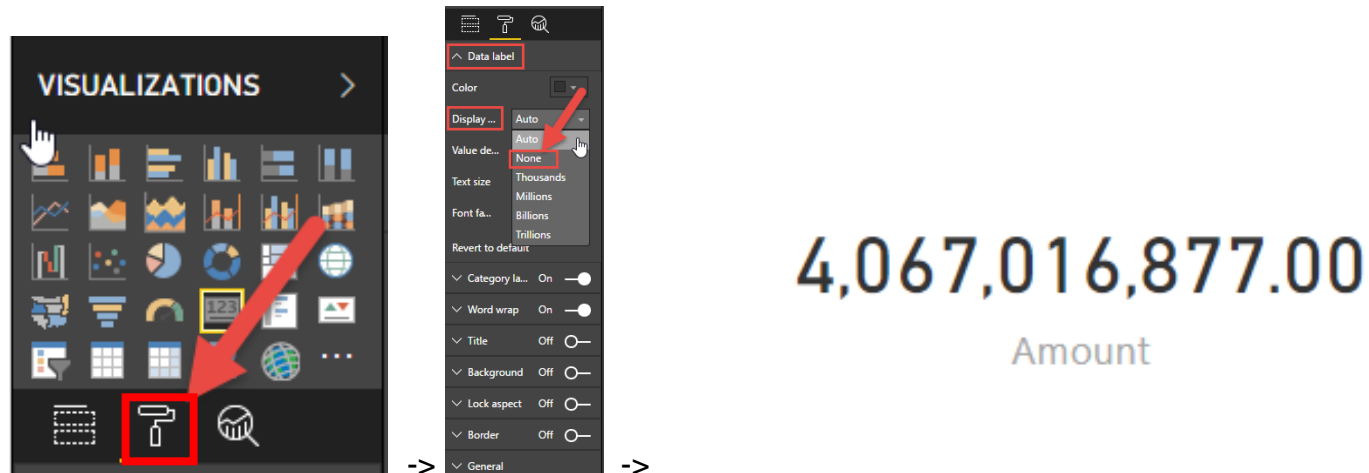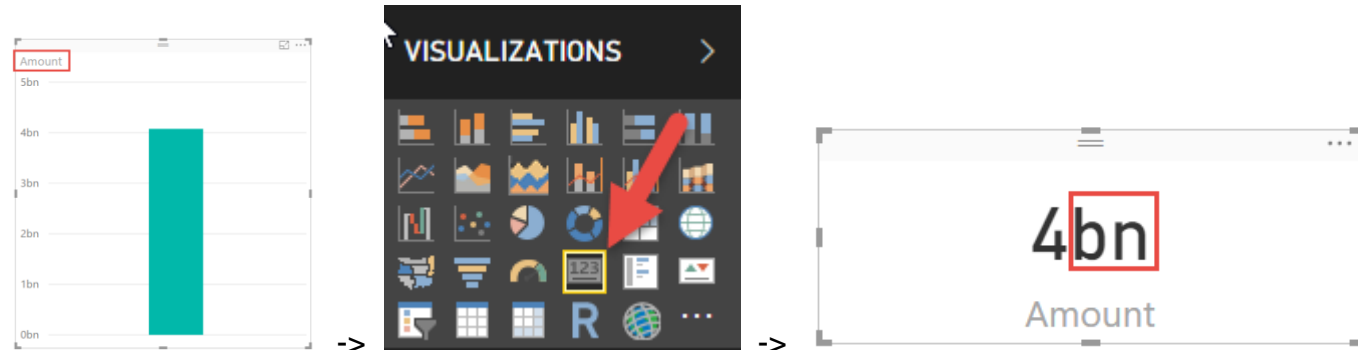
-> Amount

- Copy the field twice & change the evaluation to **Count** & **Average**

-> 25995
Count of Amount
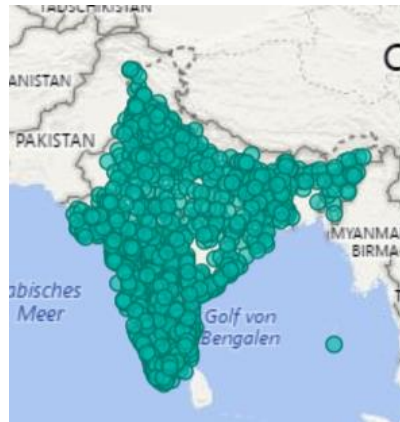
-> 156,453.81
Average of Amount
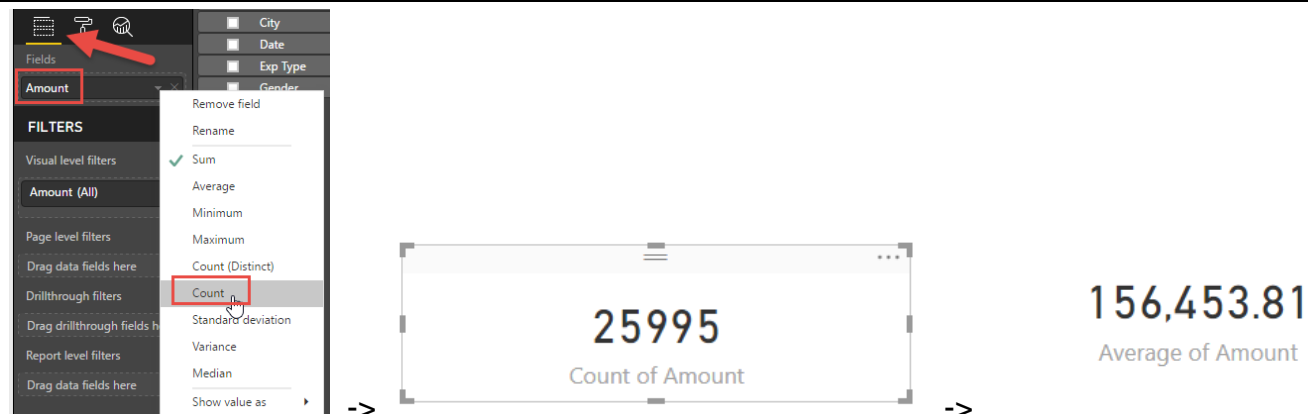
✏️ **Exercise 5**

Example **Amount by City**

Type **Map**

- If you drag the **City** field into the canvas, a map is shown as a standard automatically
- The bubble size should be controlled by the **Amount** field: drag **Amount** to the **Size area**

- If the city names in the map are not assigned correctly, the uniqueness of the assignment can be improved in the **Query Editor**
- Open the Query Editor
- Duplicate the two columns City & Country
- Highlight the two copies: first City, then Country
- Rightclick the column-title & select the **Merge columns** command
- Tip:
- Use the visual **ArcGIS Maps** visual instead of Bing map – it will show the cities in a correct way

Filter the visualizations

- All visualizations of a report are interdependent & change when a filter is set by mouse click
- Another click resets the filter

Interactive filter - click on **Travel** & all other visuals will be filtered

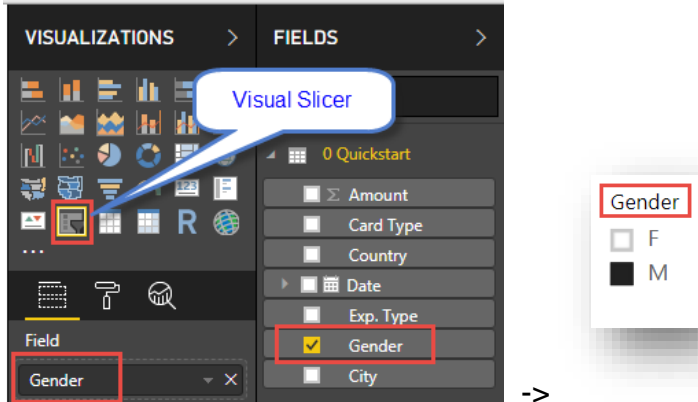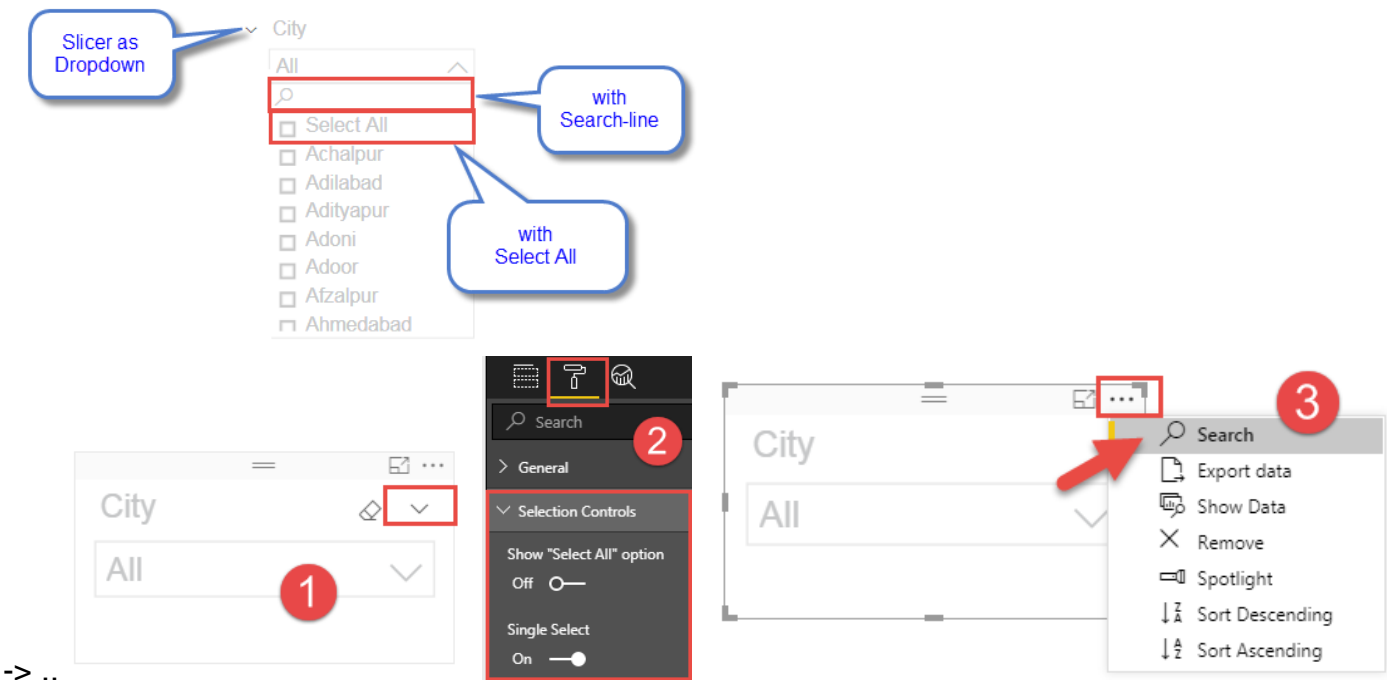| Using Slicers	Slicers are a great choice when you want to: - Display commonly-used or important filters on the report canvas for easier access - Create more focused reports by putting slicers next to important visuals ***Slicers*** work additionally to the interactive filters
Exercise 6 **Slicer Gender / City** - Drag & drop the field **Gender** to the canvas - Then choose the visual ***Slicer***	
- Create a second slicer for **City** **1** With the little **arrow** you can change the layout of the slicer **2** With ***Selection Controls*** you activate the entry ***Select All*** **3** With ***More options*** you can activate the search line	

Exercise 7

Slicer Date (by Year)

- If you want to slice your data by year you select the field Date
- Assign the visual *Slicer* & choose the layout *Relative*
- Select the option *Last Years (Calendar)*
  -> this will set the filter relative to the last 4 years

->
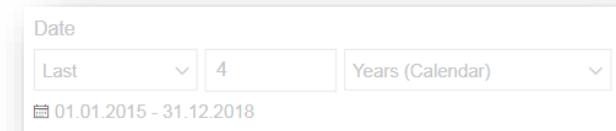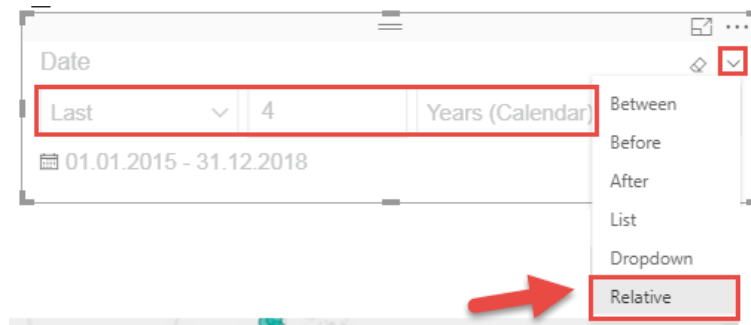
Exercise 8

Color theme Munich Re:

- Via *Home / Switch Theme / Import theme* the Munich Re Colors can be imported from the **MunichRe.json** file
- All visuals are formatted then accordingly
- The JSON-file can be opened and adjusted with a text editor

… ->
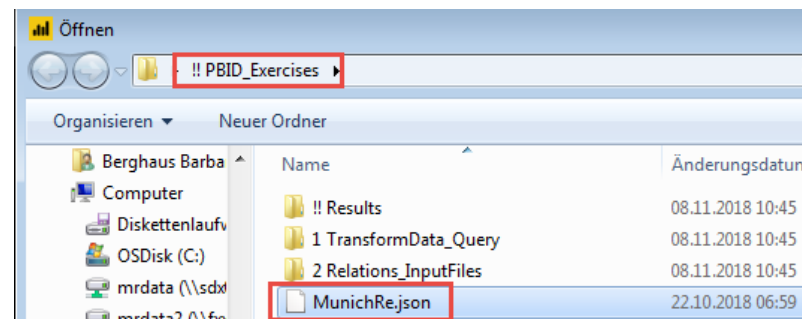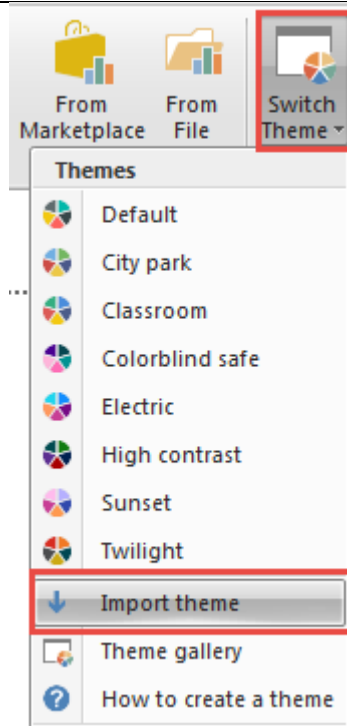
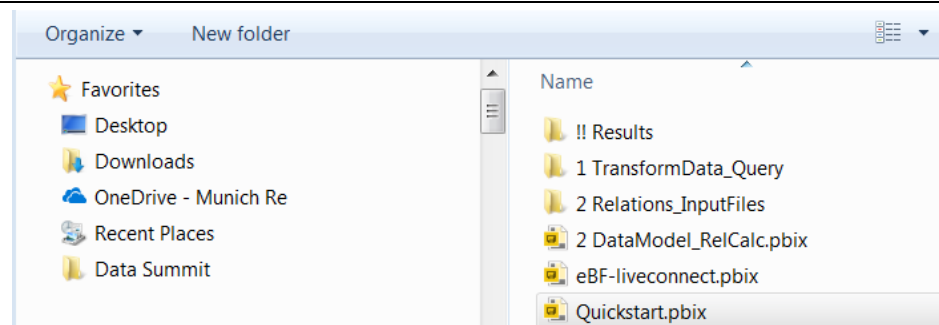| **Save report** - Save the report locally via **File / Save as / Quickstart** -> **.PBIX** file will be created	
3 Publish report ✏️ **Exercise 9** - Use the **Publish** command to start publishing your PBIX file - Did you already log in with your e-mail address when starting Power BI Desktop? If so, then your report will be published without further inquiry - Now you are provided with a link to access your report - If you simply close this window, then you have access to the Power BI service via the Intranet (**Collaboration / Office 365**)	
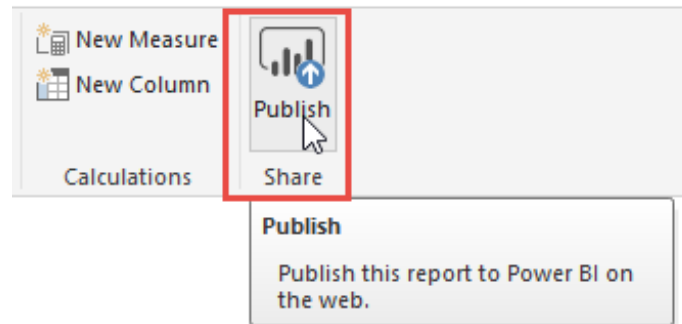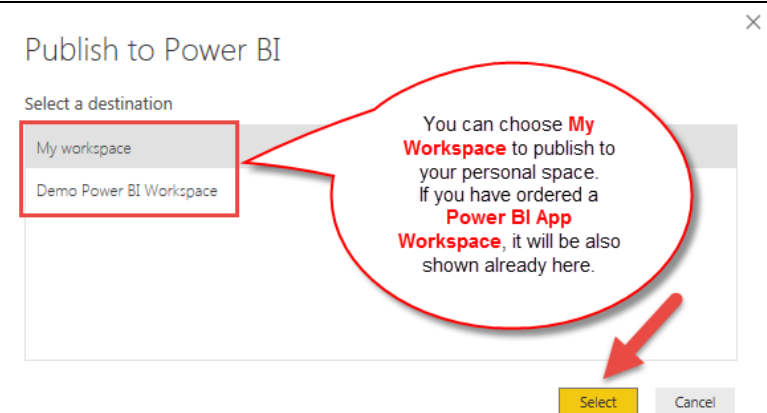
Publishing to Power BI

✓ Success!

[Open 'Quickstart.pbix' in Power BI](#)

[Get Quick Insights](#)

Did you know?
You can create a portrait view of your report tailored for mobile phones, on the **View** tab select **Phone Layout**. [Learn more](#)

Got it

https://www.office.com/?auth=2&home=1
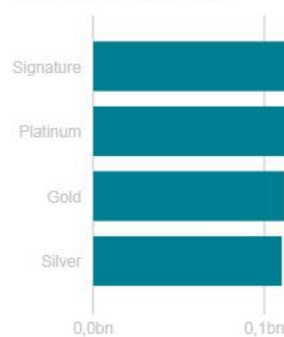
4 Create a dashboard
Power BI Service

The Power BI window

- The report you have created is displayed directly when you open the Power BI window
- All filter options that you already know from the Power BI desktop are also available here
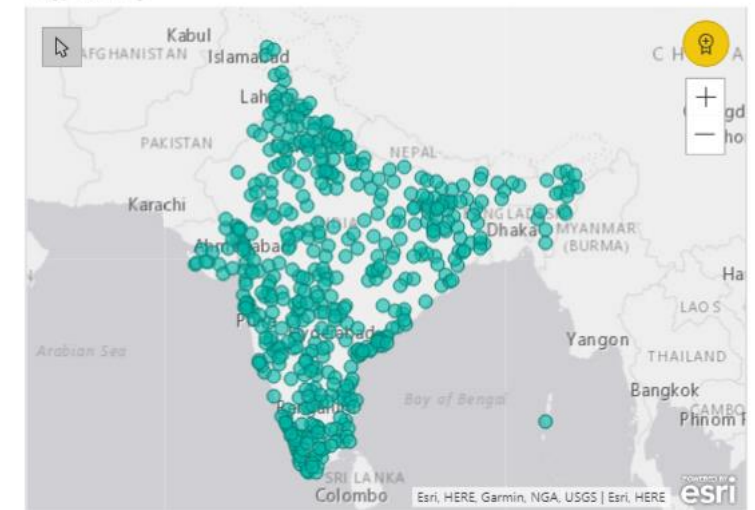
My Workspace – **Elements**

- *My Workspace* displays three elements:
  - *Datasets*
  - *Reports*
  - *Dashboards*

Datasets
- Collection of data that you import or connect to
- Each listed dataset represents a single data source
- Each dataset can be used in as many reports as you like

Workbooks
- Excel folders can be directly imported & updated in Power BI
- Excel data located on *OneDrive / SharePoint Online* can be linked & used as the basis for reports & dashboards - the data is automatically updated by OneDrive / SharePoint Online

Reports
- Contain various visualizations, such as diagrams, maps, key figures, ...
- All visualizations in a report come from a single dataset
- Reports can be created in Power BI Desktop & Power BI Service
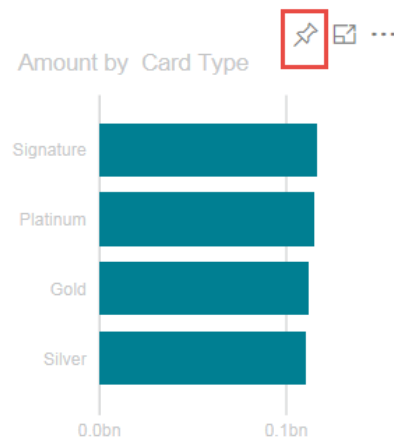
Dashboards
- A dashboard compiles the visualizations from one or several reports in one page
- Think of a dashboard as a window to the underlying reports and datasets
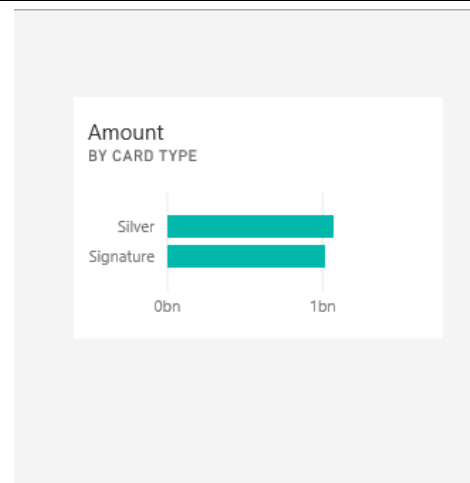- Dashboards are a feature of the Power BI service - they are not available in Power BI Desktop

Exercise 10

Create a dashboard

- Click the *Pin visual*-icon
- You are asked if you want to integrate the visualization into an existing or a new dashboard
- Create a new dashboard with a meaningful name
- The new dashboard is shown in the navigation pane on the left

Amount by Card Type

Signature

Platinum

Gold

Silver

0.0bn   0.1bn

->

Amount
BY CARD TYPE

Silver
Signature

0bn   1bn

Pin to dashboard

Select an existing dashboard or create a new one.

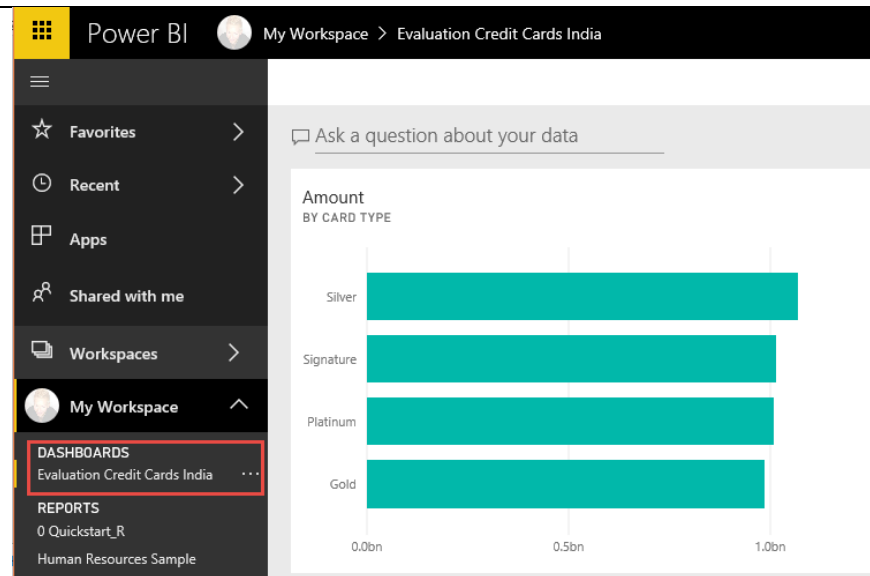**Where would you like to pin to?**

○ Existing dashboard

◉ New dashboard

Evaluation Credit Cards India

Pin   Cancel

- A dashboard summarizes visualizations from different reports, so that all necessary key figures and evaluations from different company divisions can be seen at a glance
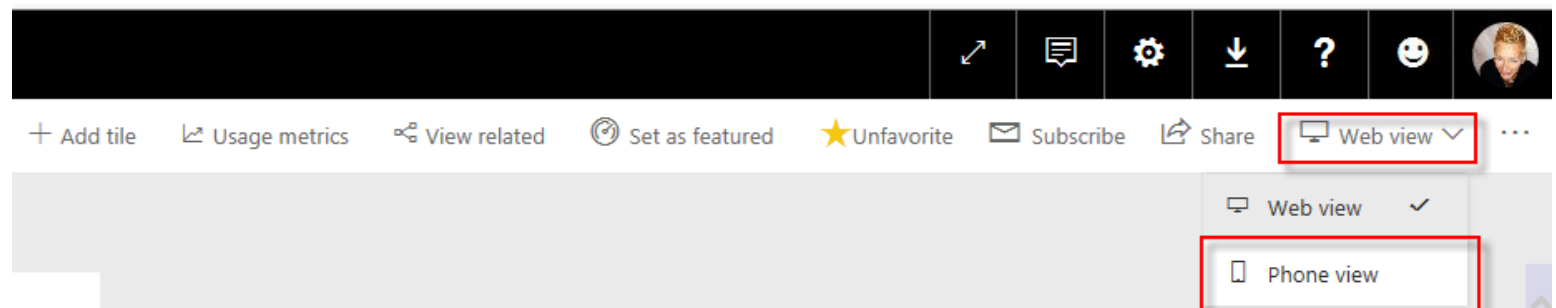- The created dashboard will now be displayed in the navigation pane on the left side

5 Mobile View

Exercise 11

- If you display your dashboard, you can switch from the **Web View** to the **Phone View**
- In the Corporate Phone / BYOD, the Power BI app is now also available

|		
- Log in to your organization's smartphone, you can then also view dashboards on your smartphone - Comments & alarms for falling below or exceeding specific values in tiles can be viewed here - Via the command **Phone view** the display of the dashboard can be checked on the smartphone - individual tiles can be hidden if necessary	 The Power BI app on the smartphone	
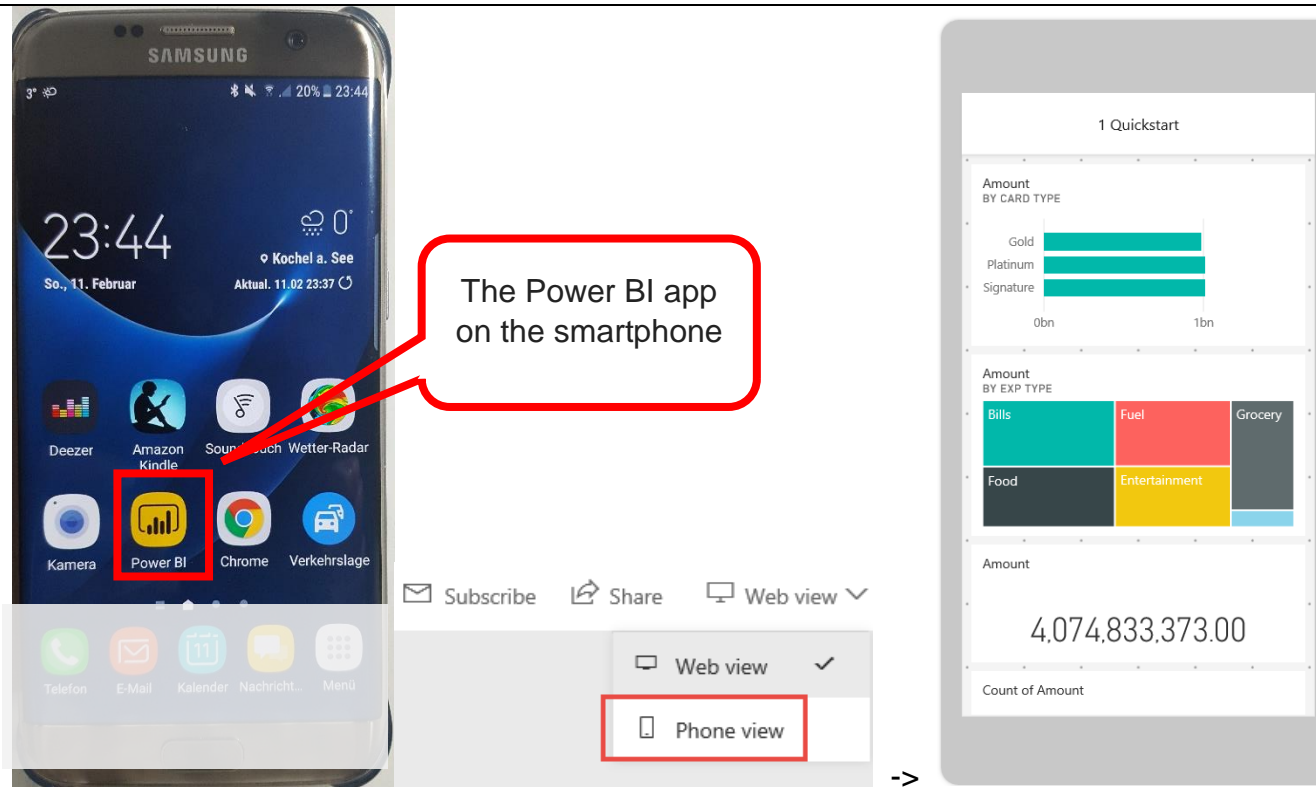
6 Power BI App Workspace

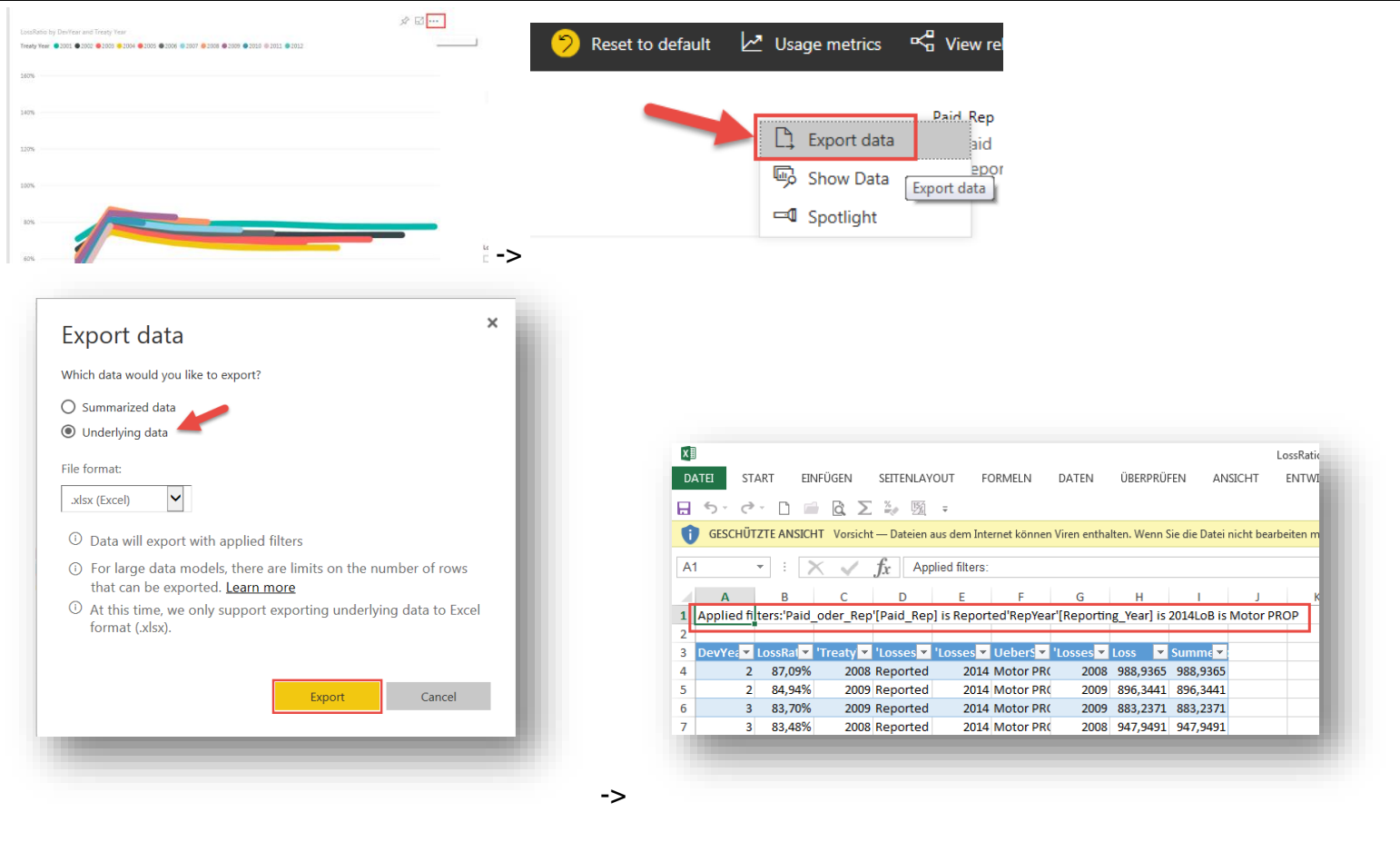- Your *Workspace App* complies Datasets, Reports & Dashboards
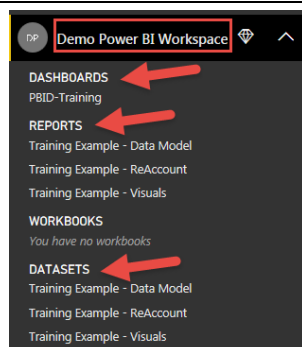
- **Share Data**:
Highlight your Workspace – in the top right corner you will then find the command *Publish app*
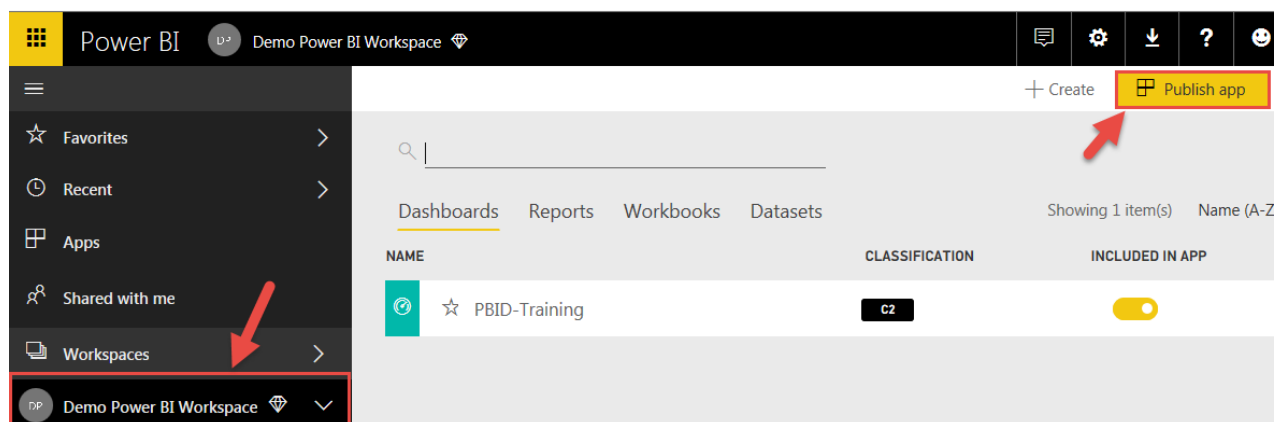
- A dialog opens in which you can define the layout of the app & access for internal colleagues
- You can define access rights for individuals or AD groups here
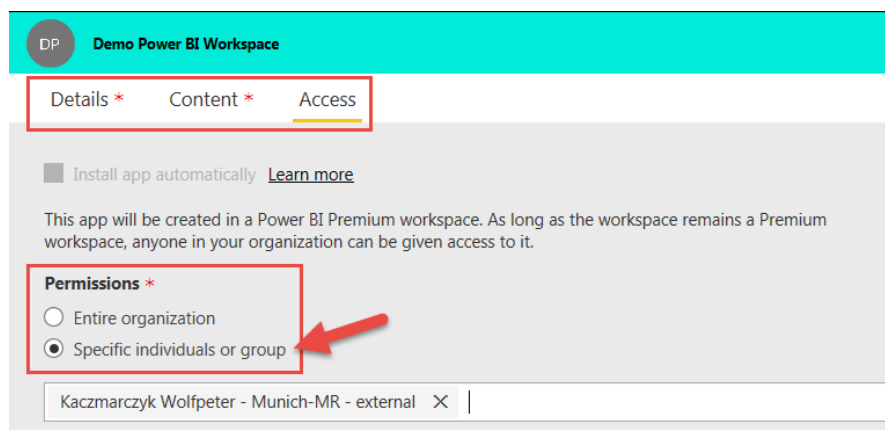
- If you publish your app for the **entire organization**: make sure that no personal data is published
- In **Power BI Service**, you can call detailed data for each visual using the command *Export data / Underlaying data*
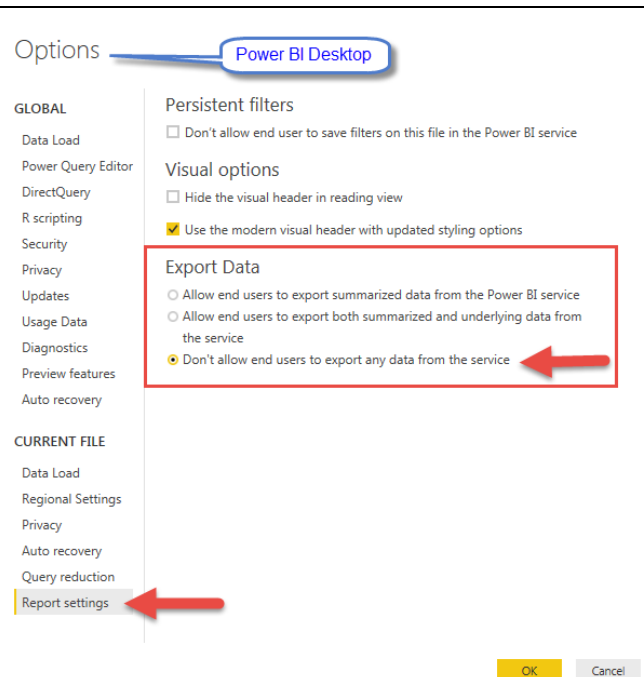- This makes it possible for the reader to view the data in detail in Excel

->

->

->

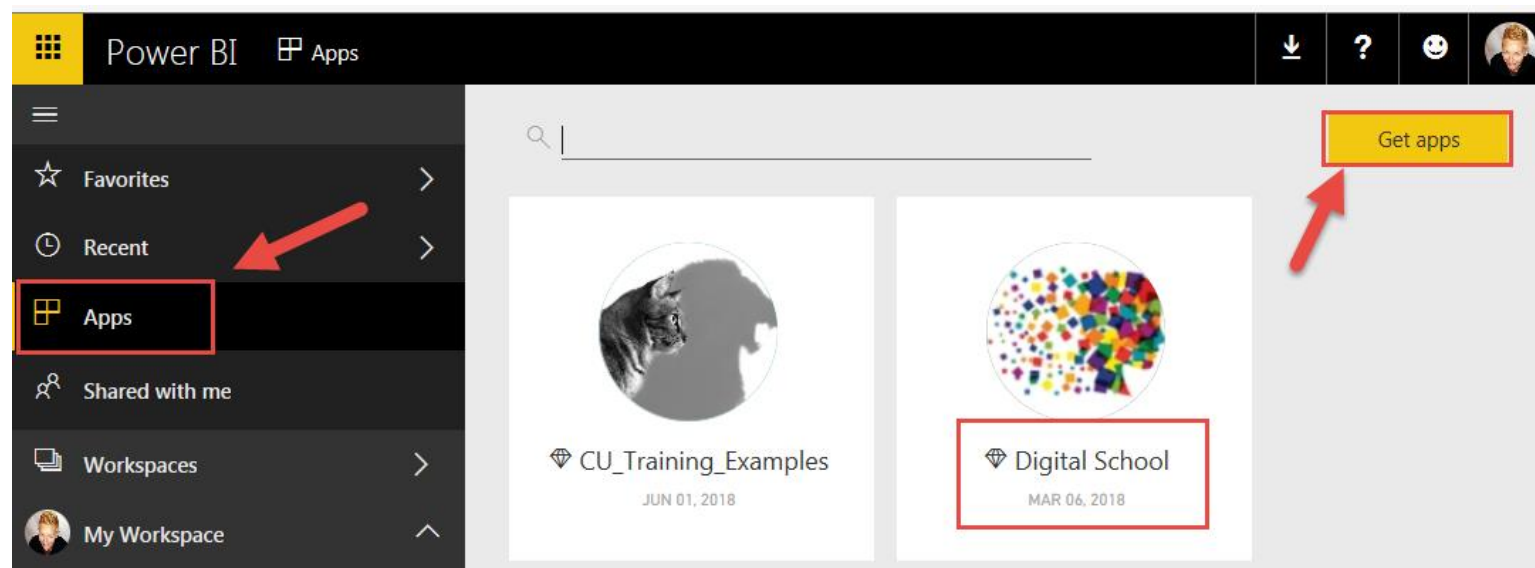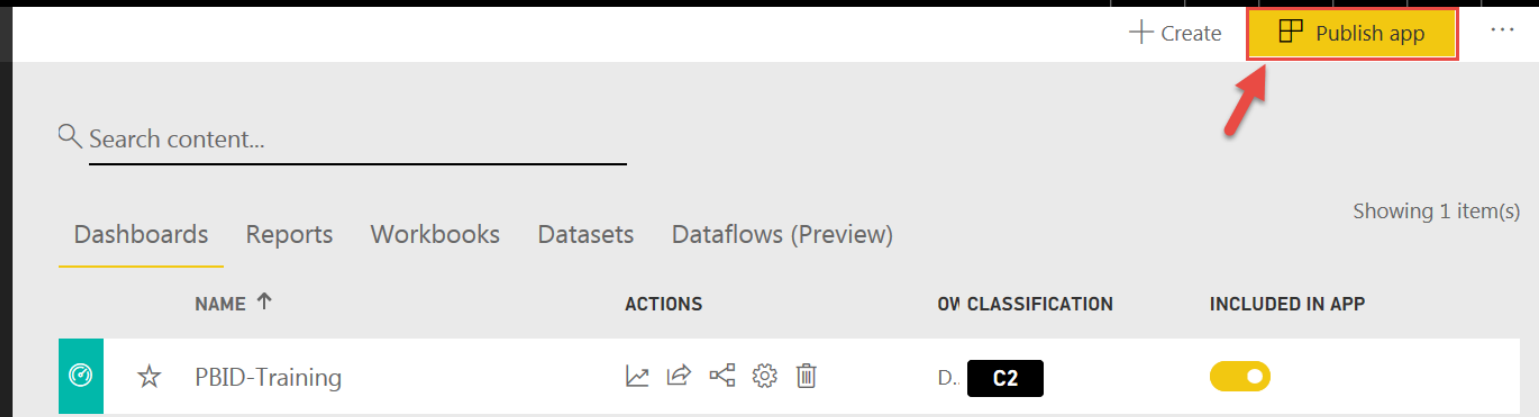|	
Tip - You can prevent people from using the Visual Header at all - **I**n Power BI Desktop activate *Option Settings / Current File / Report Settings / Don't allow*	
Access to Apps - In the navigation bar on the left, the entry *Apps* leads you to an overview of the apps released for you - You can also search for other apps here: *Get apps*	

Who needs the Power BI Pro license?	- Please note that colleagues who want to collaborate with you and edit the visuals or work with the data in the App Workspace will need a **Power BI Pro License** to do so. - If a user is only going to use the Published App, they do not need another license as read only access to the app is provided for App's published to Application workspaces. - At the time an App is published, the App is created with a point-in-time view of the content in the Application workspace. The current content may be in the process of being enhanced or modified and may differ from the content in the App, therefore, you should provide access to the content via granting access to the App not to the App workspace.
Publish app - Share your app only with the button **Publish app** - Only in this case the consumer of your app does not need the Power BI Pro license	

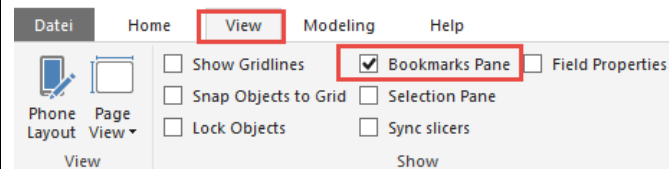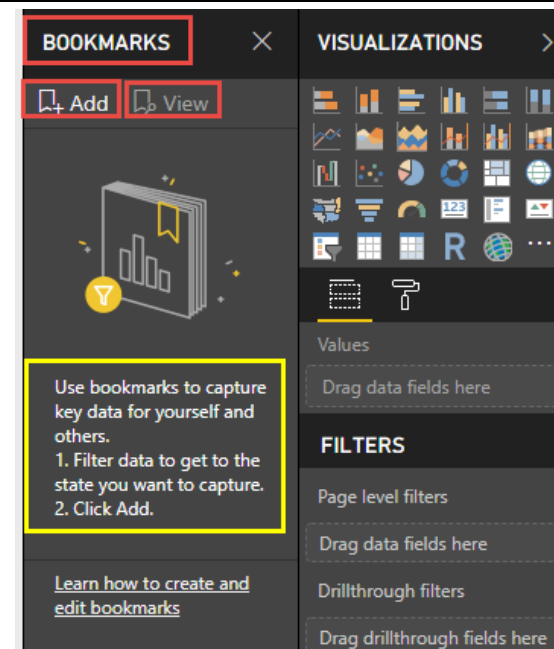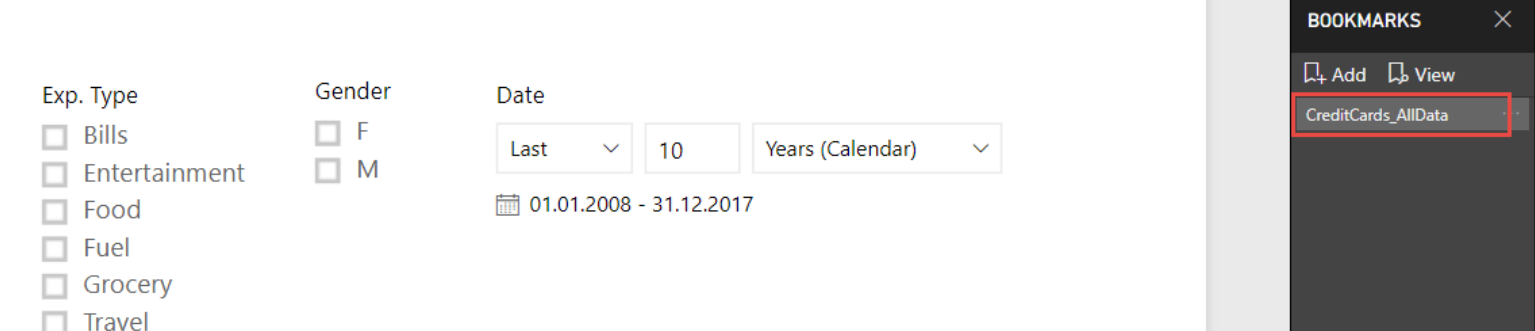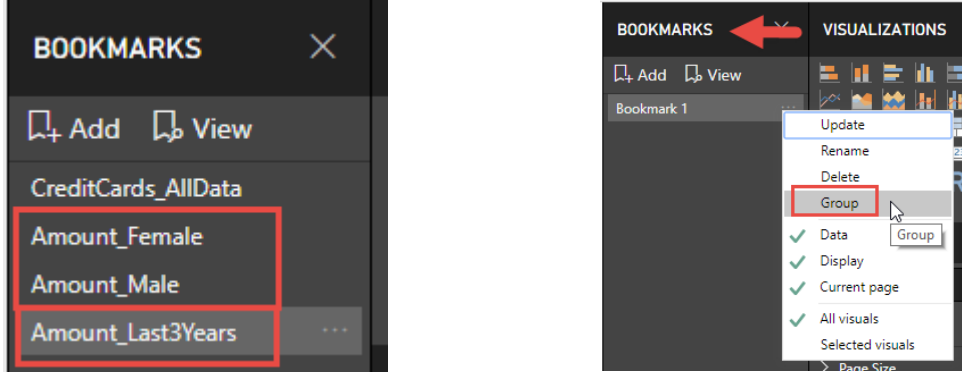| Switch back to **Power BI Desktop**	
7 Working with Bookmarks	- If you want to present your reports in Power BI Desktop or in Power BI Service you can use a very simple & comfortable way by using bookmarks - You can create a collection of bookmarks, arrange them in the order you want, and subsequently step through each bookmark in a presentation to highlight a series of insights, or the story you want to tell with your visuals and reports. - With bookmarks you can prepare your data similar to PowerPoint – being sure that you always present actual data - Let's say you need to show your credit card information filtered by Gender or by Date
✏️ **Exercise 12** - Open the tab **View** & tick the option **Bookmarks Pane** - A new pane appears on the right - it offers two commands: **Add** & **View** - With the command **Add** you can create bookmarks - With the command **View** you can display bookmarks like in a slideshow	

|		
- Turn off all filters in your report & click the button **Add** -> a new entry appears in the Bookmark pane - Doubleclick that entry & rename it: CreditCards_AllData	**Exp. Type** ☐ Bills ☐ Entertainment ☐ Food ☐ Fuel ☐ Grocery ☐ Travel **Gender** ☐ F ☐ M **Date** Last ⌄ 10 Years (Calendar) ⌄ 📅 01.01.2008 - 31.12.2017	**BOOKMARKS** ✕ 🔖 Add 📑 View CreditCards_AllData
- Create three more bookmarks & filter to Gender & Date **Tip**: - You can group bookmarks for a better overview - When you highlight a group the command **View** will start the show from that group	**BOOKMARKS** ✕ 🔖 Add 📑 View CreditCards_AllData Amount_Female Amount_Male Amount_Last3Years	**BOOKMARKS** ← **VISUALIZATIONS** 🔖 Add 📑 View Bookmark 1 Update Rename Delete Group [Group] ✓ Data ✓ Display ✓ Current page ✓ All visuals ✓ Selected visuals > Page Size
- When you click the command **View** the presentation of your bookmarks starts - Please save the **PBIX-file**	Food Arabisches Meer Golf von Bengalen SRI LANKA Sri Jayewardenepura Kotte **b** Bing © 2018 HERE.© 2018 Microsoft Corporation Actual shown bookmark Bookmark 1 of 4 CreditCards_AllData Viai THAILAND Bangkok Navigation Exit < > ✕	

Refresh

🖉 **Exercise 13**

- If you change the **PBIX-file** & want to update your published data in the **Power BI Service**, please use the *Publish*-function of the desktop-tool again
- The data already published will be replaced

- In **Power BI Service** you can open the *Bookmarks pane* & use the created bookmarks as shown before
- Please note:
  in **Power BI Desktop** you can create & view bookmarks
  in **Power BI Service** you can only use the previously created bookmarks

Tip:

- When your data is stored in **OneDrive for Business**, an automatic refresh is provided on an hourly base
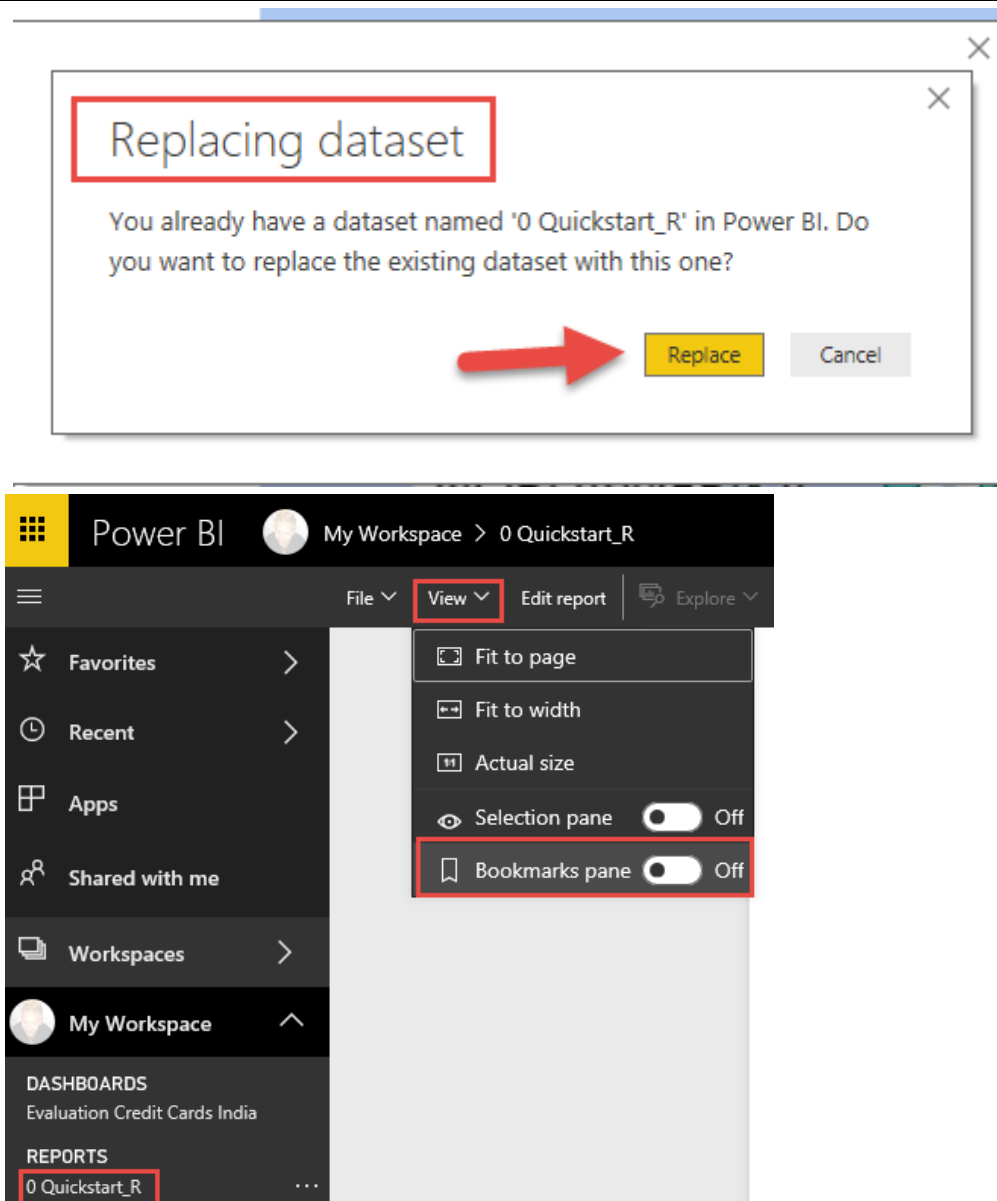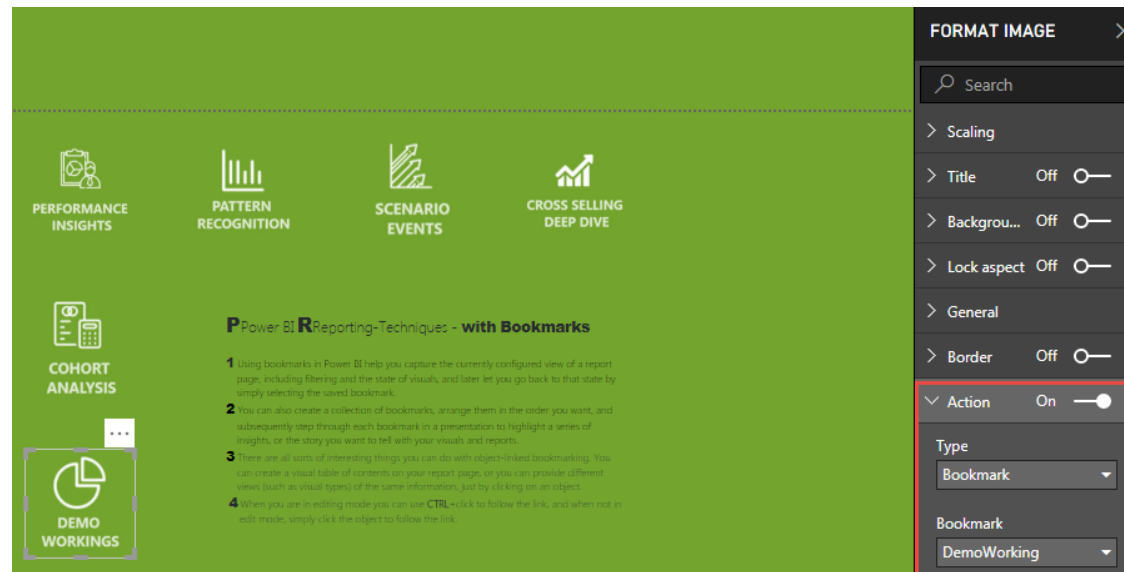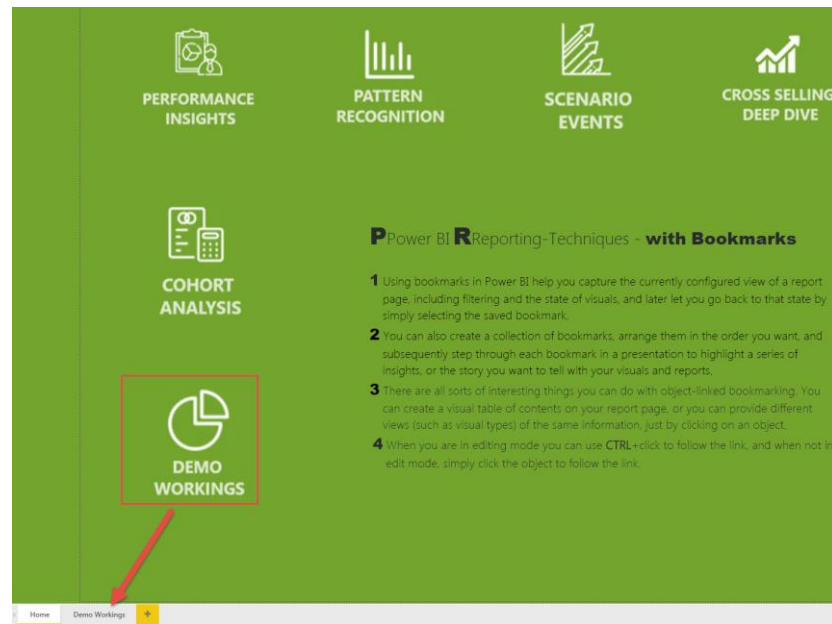
Navigation with Bookmarks

Using bookmarks in Power BI help you capture the currently configured view of a report page, including filtering and the state of visuals, and later let you go back to that state by simply selecting the saved bookmark

✏️ **Exercise 14**

- Open
  1 Bookmarks.pbix
- Add the wallpaper & the icons (Folder **Icons**)
- Create a bookmark for the report page Demo Workings

Format the picture

- With **Action / Type** you can select **Bookmark**
- Pick the created bookmark
- Now you can navigate with a click to the said page (**CTRL + click** in Edit-mode)

3 Store & Update Data

| What can be updated?		
	Automatic update (eg. for data from OneDrive for Business)	• No user configuration required • Data refresh settings are configured for you by Power BI • Only the data for the dataset within the Power BI service is updated - the local file is not updated
	Custom manual or scheduled update (for example, for PBIX files) *	• You can manually refresh a dataset with **Refresh now** or set up an update schedule with **Schedule refresh** in the dataset settings • This type of data update is required for Power BI desktop files and Excel workbooks that connect to external online and local data sources
	Live / DirectQuery (eg. for SSAS data source)	• Direct connection between Power BI & the data source • Datasets that are configured for a **live** or **DirectQuery connection** will be updated approximately every hour or when interacting with the data

* To update local data in the Power BI Service, you need access to Munich Re's gateway
   - please contact the person responsible for the product.
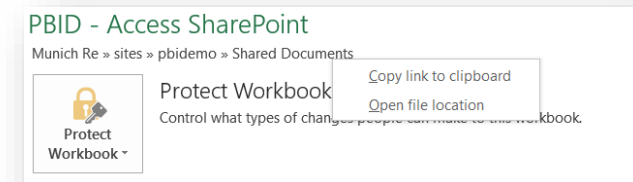
4 Access Files from SharePoint (Demo!)

- Navigate to SharePoint and open the Excel file via the browser (not from a synchronized folder in Windows Explorer)
- Now open the Excel file with the Excel client.
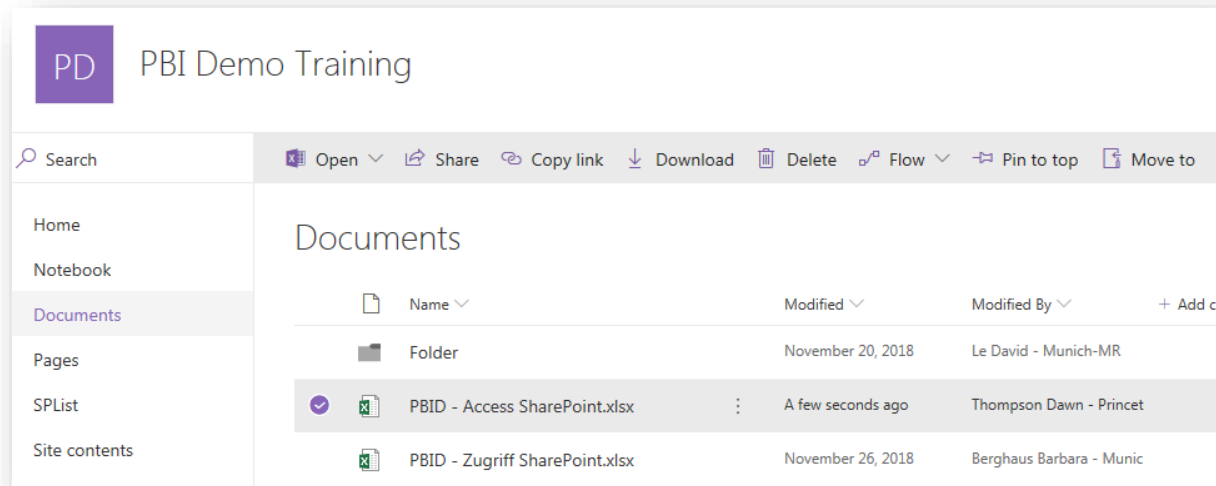
- Navigate to the **File menu** in Excel
- *File / Information*
- In the Information tab you will find a button for copying the file path
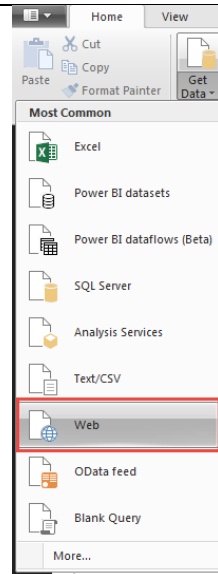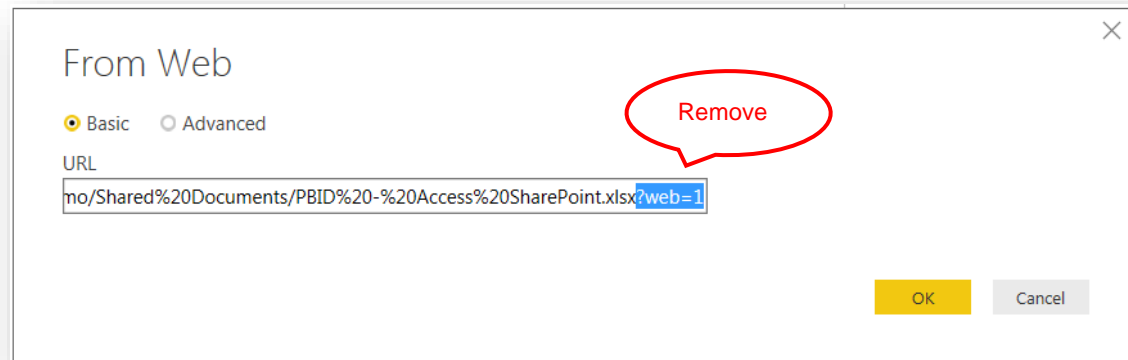

->
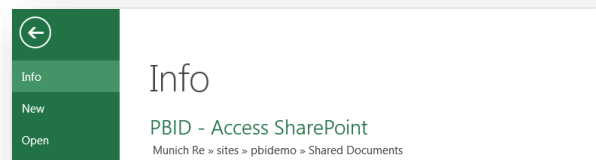
Now you can insert this URL for use in Power BI Desktop:
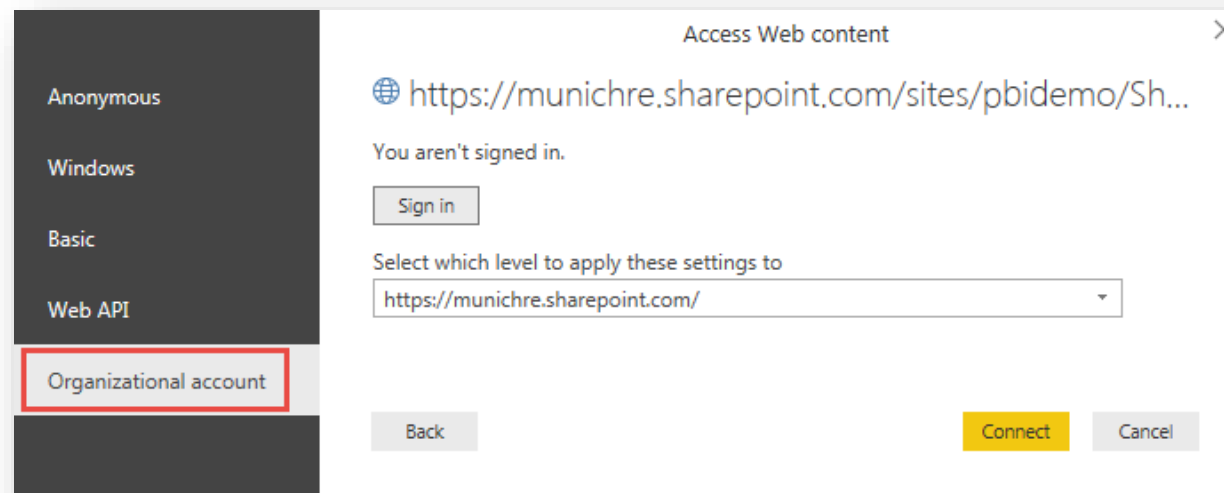
- Select the Web Connector and remove the "? Web = 1"

->

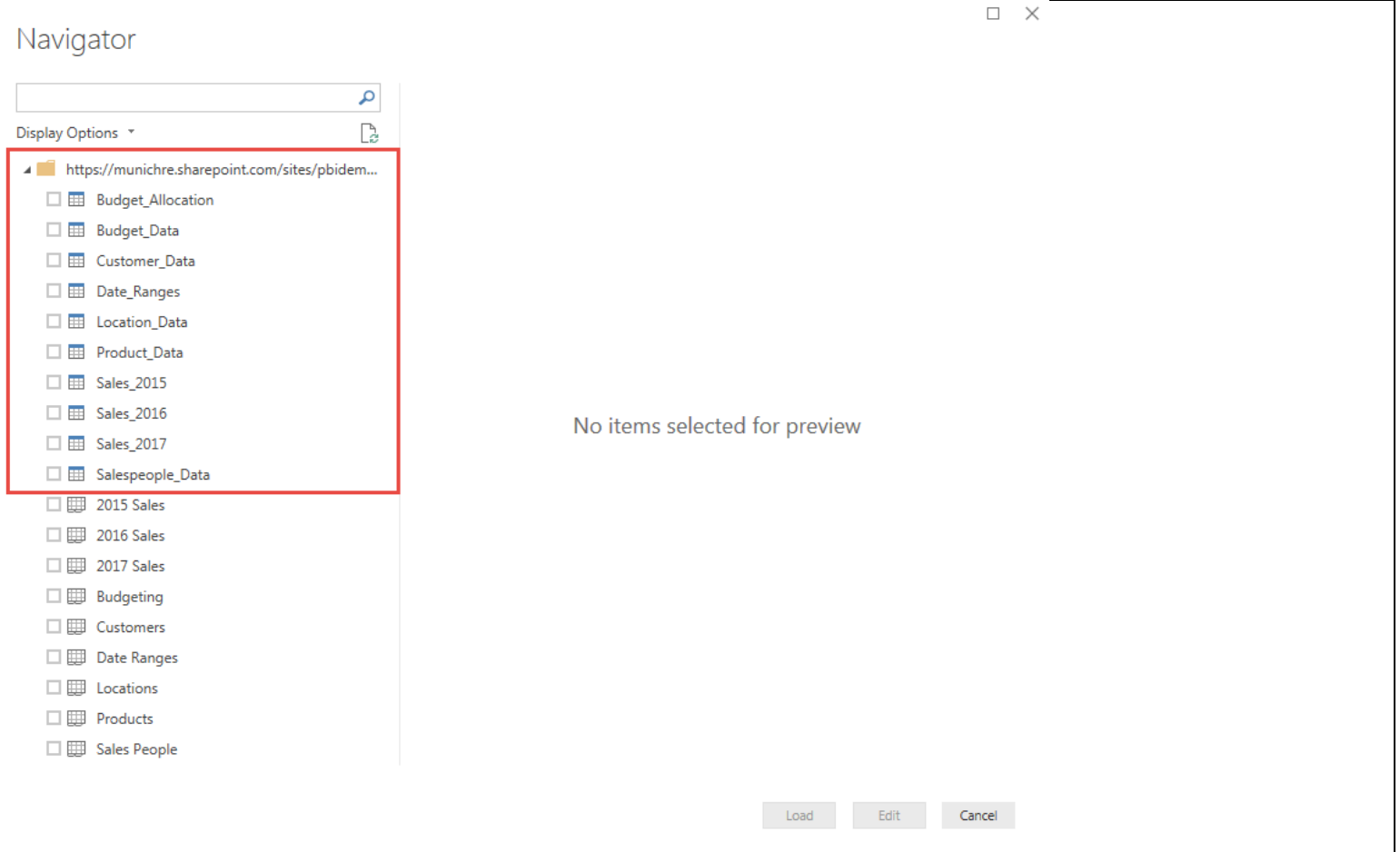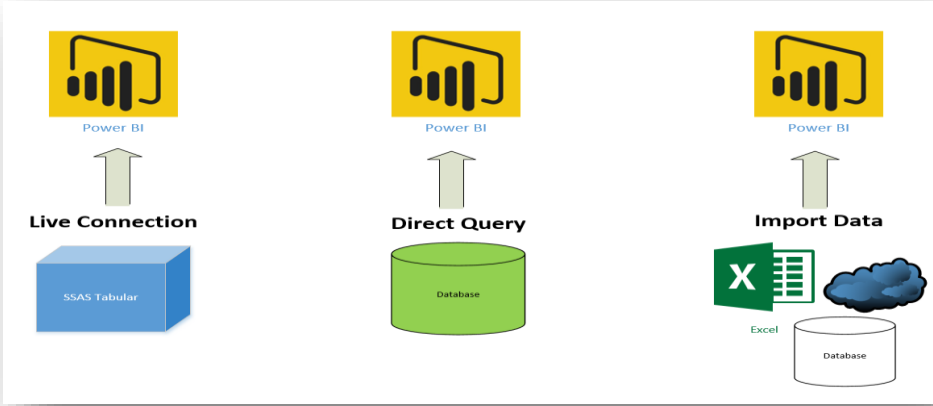- Please use the **Organizational Account** as authorization method

- The Excel sheets are displayed & the data can be imported for reports

Navigator

Display Options ▾

▲ 📁 https://munichre.sharepoint.com/sites/pbidem...
  ☐ 🖽 Budget_Allocation
  ☐ 🖽 Budget_Data
  ☐ 🖽 Customer_Data
  ☐ 🖽 Date_Ranges
  ☐ 🖽 Location_Data
  ☐ 🖽 Product_Data
  ☐ 🖽 Sales_2015
  ☐ 🖽 Sales_2016
  ☐ 🖽 Sales_2017
  ☐ 🖽 Salespeople_Data
  ☐ 🖽 2015 Sales
  ☐ 🖽 2016 Sales
  ☐ 🖽 2017 Sales
  ☐ 🖽 Budgeting
  ☐ 🖽 Customers
  ☐ 🖽 Date Ranges
  ☐ 🖽 Locations
  ☐ 🖽 Products
  ☐ 🖽 Sales People

No items selected for preview

- You can also use this procedure if you want to access data from **OneDrive For Business**!

Load   Edit   Cancel

5 Import Data – Connect Data

|	
Data import	• The selected tables and columns are imported into Power BI Desktop. • When creating or interacting with a visualization, Power BI Desktop uses the imported data. • You must refresh the data, which will re-import the entire record to show any changes made to the underlying data since the first import or last update. • Import records in the Power BI services are limited to **10 GB** for the premium version and **1 GB** for the free version (with the compression capabilities allowing much larger records to be imported).
DirectQuery	• In Power BI Desktop, no data is imported or copied here. • When you create a visualization or interact with a visualization, Power BI Desktop queries the underlying data source so that you always see the latest data. • With DirectQuery, you can create visualizations over very large datasets that you would not even be able to import through **Import Data.**
Live Connection	• Works similar to **DirectQuery**, but access is only possible for a very limited selection of data sources: • **SSAS Tabular** • **SSAS Multidimensional** • **Power BI Service** • Power BI here serves only for visualization, all other tasks are processed in the modeling engines of the data sources.

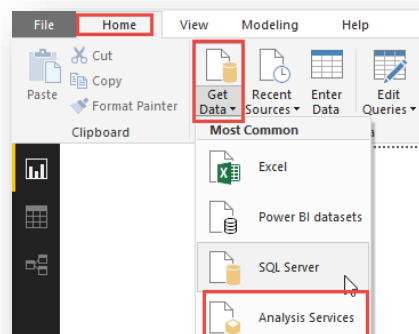## IMPORT or CONNECT

✏️ **Exercise 15**

- Open a new PBIX-file
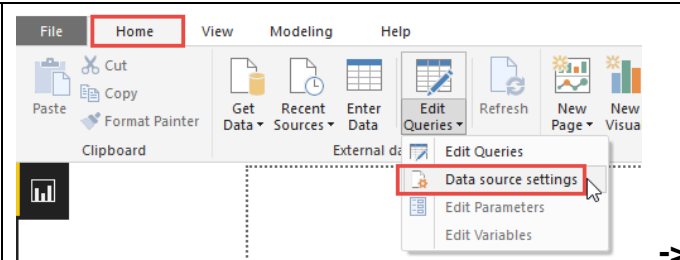- Select *Get Data / SQL-Server*

->
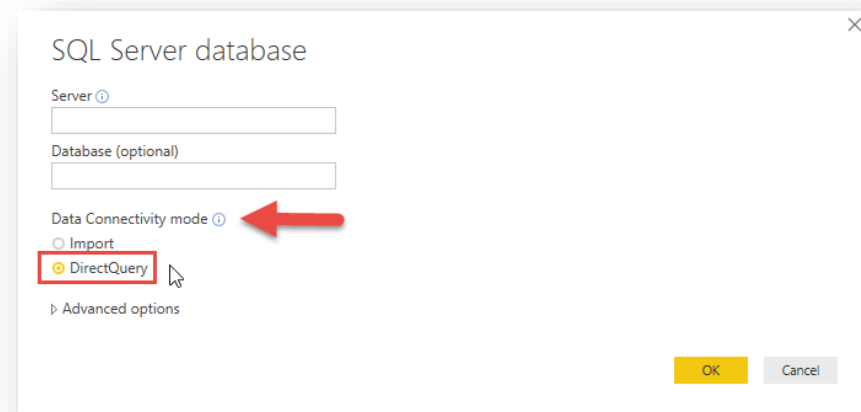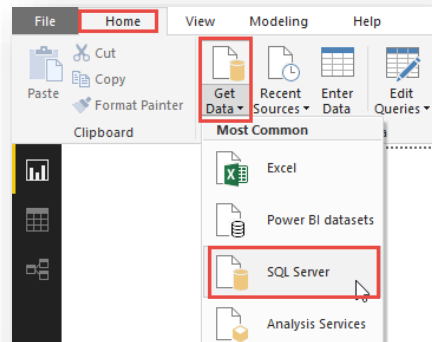
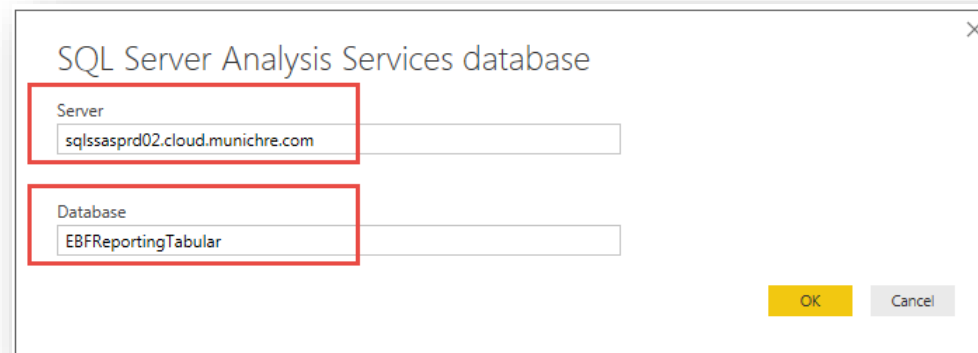- Select *Get Data / Analysis services*

->
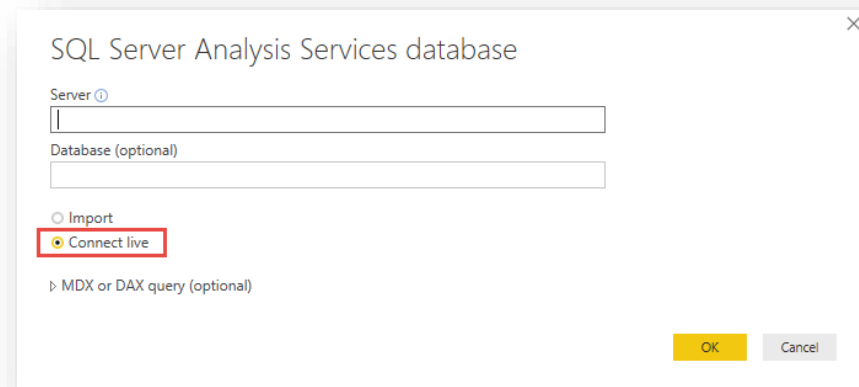
Example **Live connection**

-   Open
    eBF-liveconnect.pbix
-   Except of the command
    Data source queries
    all other commands of
    the group *External data*
    is inactive

->

-   Also *Data view* &
    Relationships view are
    not shown here –
    indicating that these
    tasks are processed in
    the modeling engines of
    the data sources