# POWERBI

The PowerBI program is used to create interactive visualizations and business intelligence reports. It could be used for product automation and exploratory data analysis.

In this tutorial, we will learn the basics of PowerBI to create an interactive OCHA 3W product from start to finish.
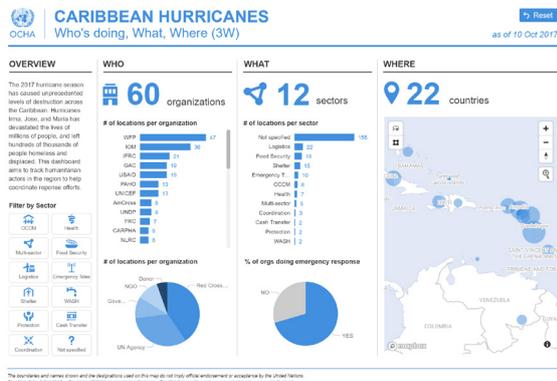
SETTINGS AND WORKSPACE

Workspace overview

Open the PowerBI application. By default, PowerBI will open to a screen that looks similar to the image below. If you have not signed in previously, it will ask you to use your UN email address and password.

A brief description of each section:

- **Menu** ribbons contain most of the document-wide functionsthat's needed.

- **Views** sections allows different ways to view and edit data.

- **Canvas** is where the report is shown.

- **Panes** are the tools that construct the report.
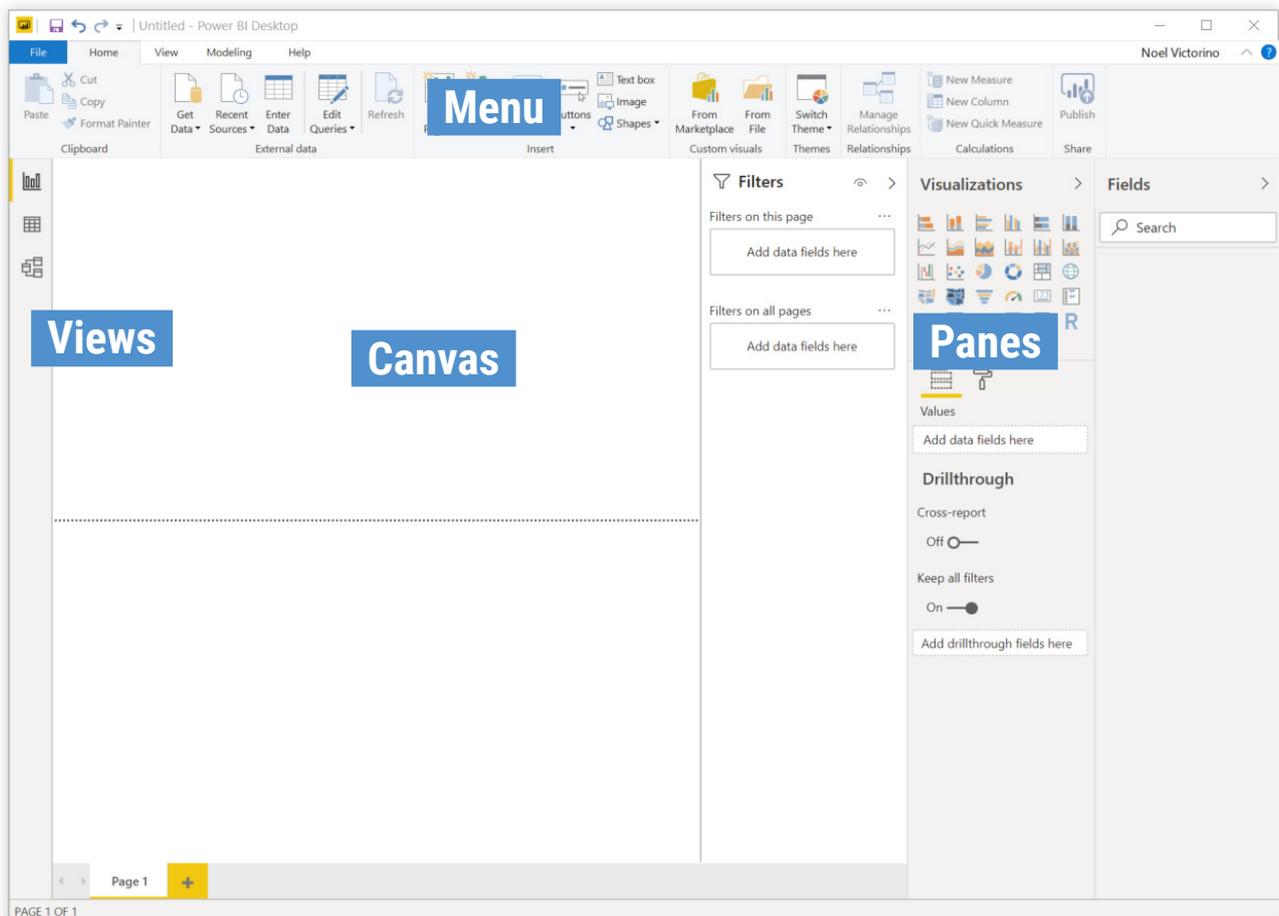
LAYOUT

Create a new document using an OCHA template

For a quick start, there is a pre-made OCHA template containing a banner, footer, grid, and colour swatches.

To create a new document using the template, click **File > Import > Power BI template**.
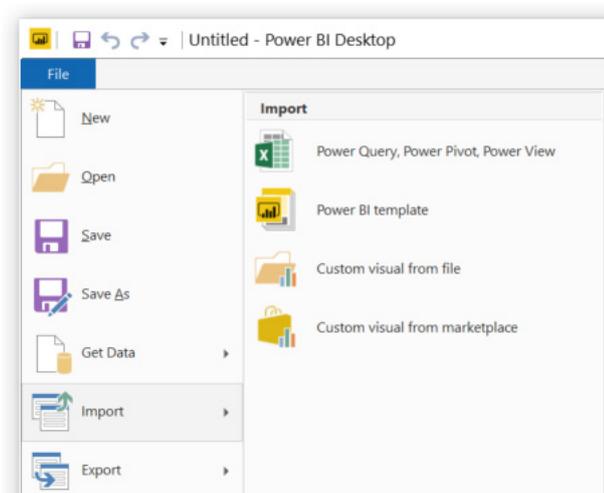
Browse to exercise\2019_OCHA_PowerBI_A4_ template.pbit and click **Open**

The template should look like this:
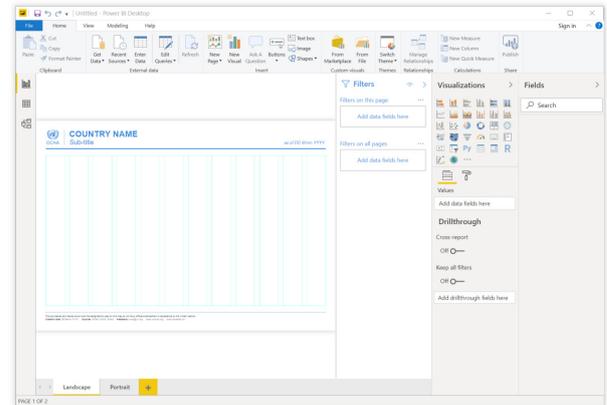
If the panels are fully expanded, close them by clicking the right arrow icons ❯
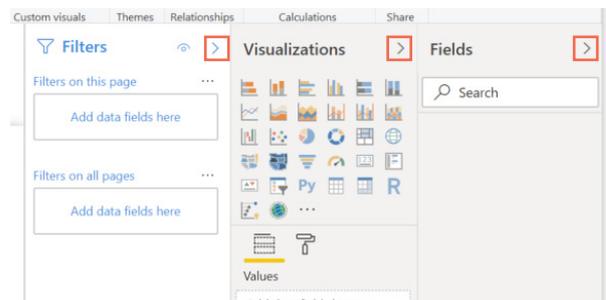
The file is still untitled. Go to **File > Save As** and give it the filename OCHA-Caribbean-3W-2017 with a **.pbix** extension. Save it in the same folder.

The report will only be one page so delete the second page by **right-clicking its tab and choosing "Delete Page"**.
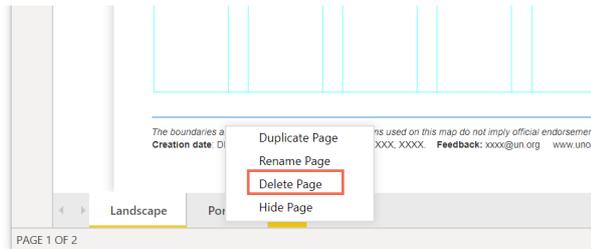

**Right-click the "Landscape" tab and rename it "Overview".**

Grid

A grid will help create a proportional structure that brings clarity, order, consistency, and harmony to your design. The OCHA template provides a 12-column grid design in Cyan.
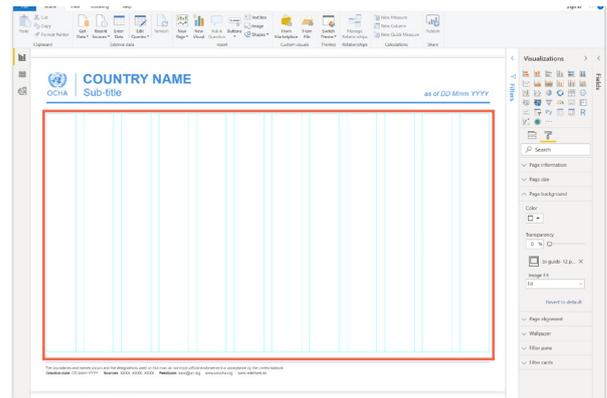
The grid is created by adding a background image to the canvas. Darken or lighten it by adjusting its opacity. Click anywhere on the canvas and select the Format tab in the Visualizations pane. Got to the "Page Background" section and **increase opacity to 50%** to make it lighter.
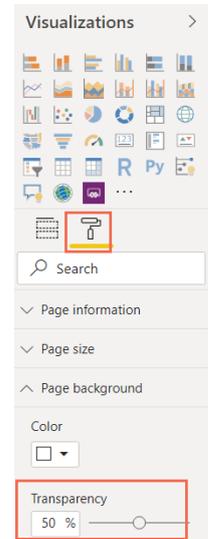
TEXT

Edit template text boxes

The template header has three text fields. To edit, hover the mouse over the text then click and type.

- replace **COUNTRY NAME** with **CARIBBEAN HURRICANES**
- replace **Sub-title** with **Who's doing, What, Where (3W)**
- replace *as of XX Mmm YYYY* with *as of 10 Oct 2017*

CARIBBEAN HURRICANES
Who's doing, What, Where (3W)

The template footer has text as well but it's just one text box.

- change the **Creation date** field info with **5 Oct 2017**
- change the **Sources** field info with **CDEMA, Humanitarian Partners**

Creating text boxes

To create text boxes click the Text box button in the Home menu tab
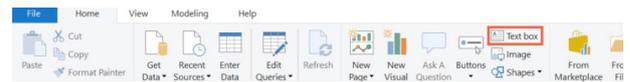
A text box will pop-up. Use the settings in the screenshot below for the section title text.

CARIBBEAN HURRICANES

OVERVIEW

Use #333333 or "black, 20% lighter" for all blacks on the product

To move the text box, make sure the tip of the mouse pointer is right on the the text box border then click and drag. Place the text box in the top left corner of the grid.

Copy and paste

Copy (Ctrl+C) and paste (Ctrl+V) and edit the text to create three more titles as shown below

CARIBBEAN HURRICANES
Who's doing, What, Where (3W)

OVERVIEW   WHO   WHAT   WHERE

Multiple select

To select multiple items **hold down CTRL while clicking objects.**

Alignment

Align the text boxes to their tops by multiple selecting them and then go to the format tab and press the align button. **Choose "Align top"**

CARIBBEAN HURRICANES

OVERVIEW   WHO   WHAT   WHERE
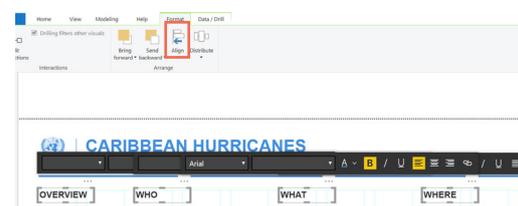
LINES

Add section title lines

Lines under the titles should be added to better distinguish the sections. To add a line **go to the Home tab and look for the Shapes button and select Line.**
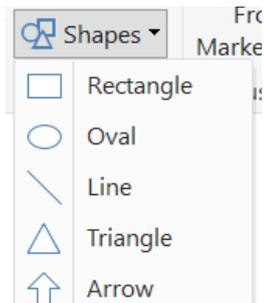
This will add a line but it will be vertical. Use these setttings to create a black, horizontal, 2 pt line and place it below the section title text.

It should look like this:

OVERVIEW
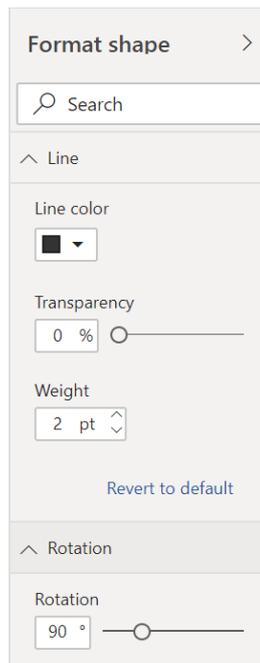
Make sure there's some white space between the text and line. Use the arrow buttons on the keyboard to nudge the line into position.

Create 3 more lines for the other sections like below:

Make sure they are aligned like the text. Note the different column widths of each section:

- **Overview:** 2 columns
- **Who, What:** 3 columns
- **Where:** 4 columns

Add section divider lines

Line dividers separating each section vertically is needed. Follow these settings after creating a line.
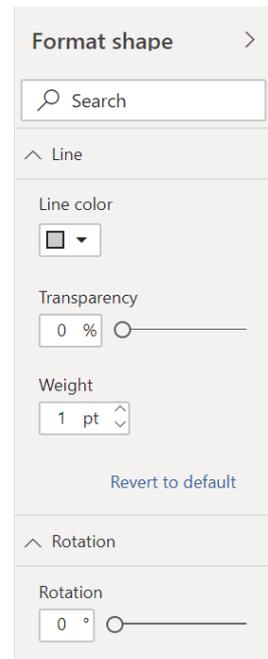
Make sure the lines extend from the top to the bottom of the grid and it is centered within the gutters. Create two more copies to divide the other sections. It should look like below:

OVERVIEW TEXT

Create a text box to hold the overview text and follow these settings:

Copy and paste this text into the box:

The 2017 hurricane season has caused unprecedented levels of destruction across the Caribbean. Hurricanes Irma, Jose, and Maria has devastated the lives of millions of people, and left hundreds of thousands of people homeless and displaced. This dashboard aims to track humanitarian actors in the region to help coordinate response efforts.

DATA

Importing the main data set

To import data into PowerBI click the **Get Data** button in the Home tab and select your data format.
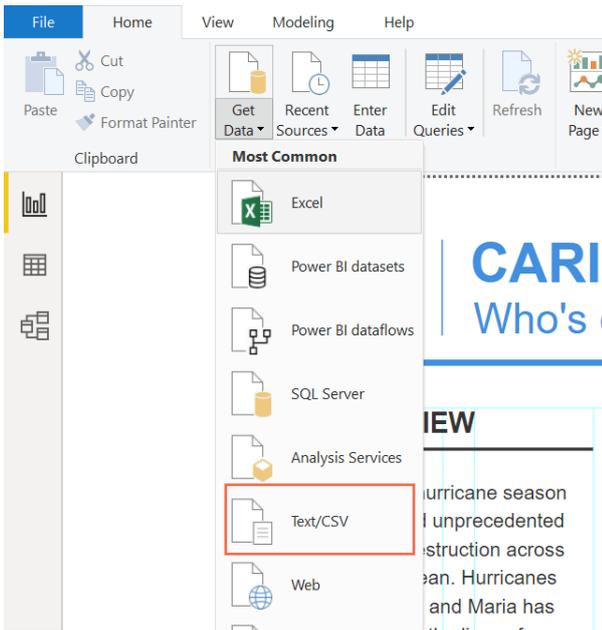
In this case, the data is in CSV format. Browse to exercise\CDEMA-3W.csv and click **Open**
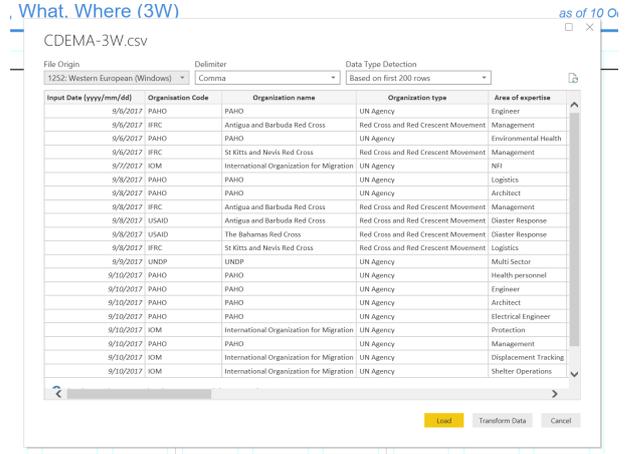
A screen will popup showing the data being imported. **Click Load to finish the process.**

Fields pane

Expand the Fields pane, the data fields imported from the CSV should now be visible.
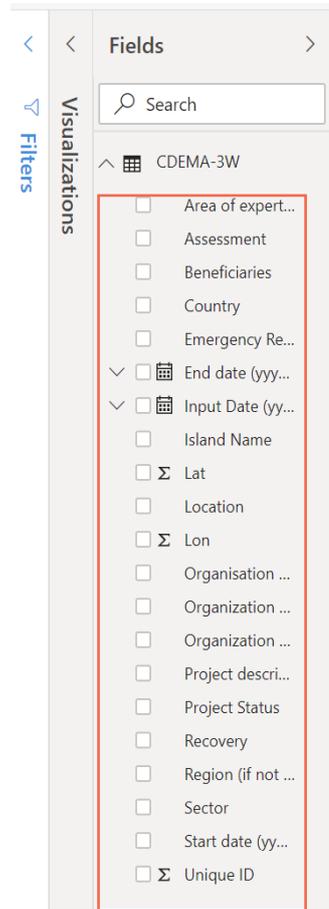
Data view

Go into data view by pressing the **Data button** on the left sidebar ⊞ . This shows all the data uploaded.

Importing another data set

Using the same steps as importing the main data set, **import the spreadsheet containing cluster icons information.** Keep in mind that this new file is in Excel format. The file is located at exercise\cluster-icons.xlsx
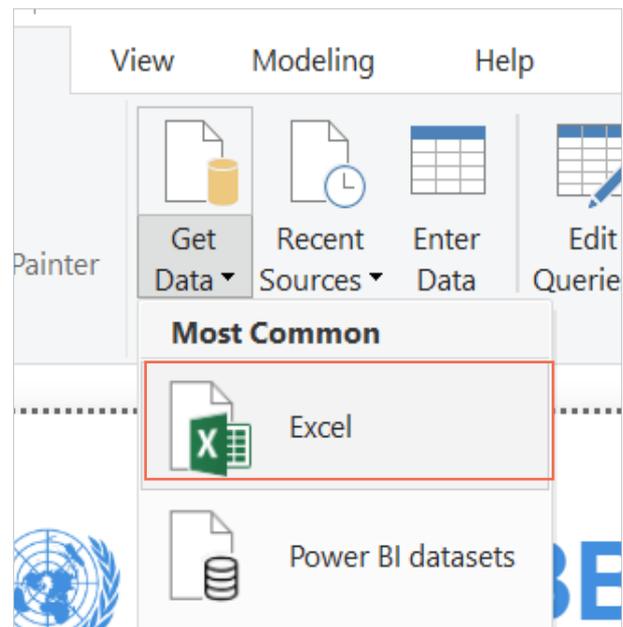
Go into data view ⊞ and choose your table in the Fields menu on the right. Sometimes, you'll get situations like below **where the first row is not treated as your table headers**.

To fix:

1. Click on **Edit Queries**

2. Select **Cluster Icons**

3. Click **Use First Row as Headers**
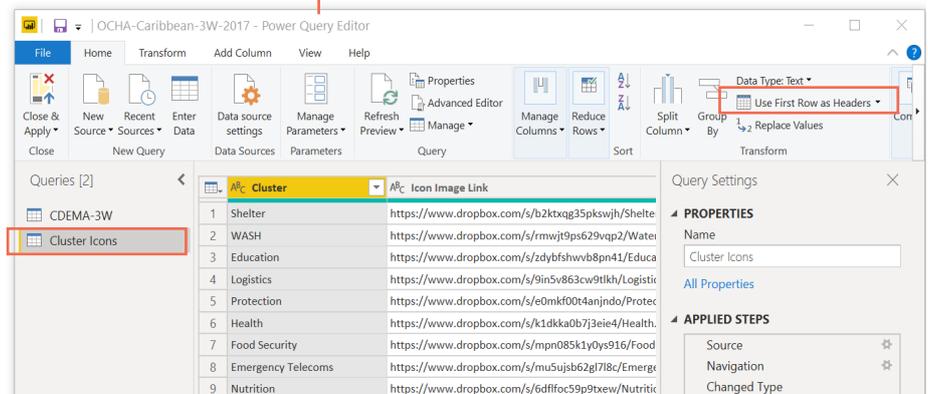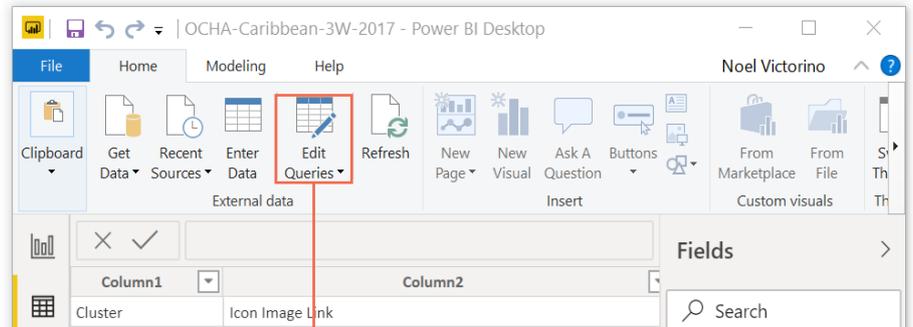
Model view

Model view enables establishing relationships between tables. To go into model view, **press the Model button** on the left sidebar ⊞ .
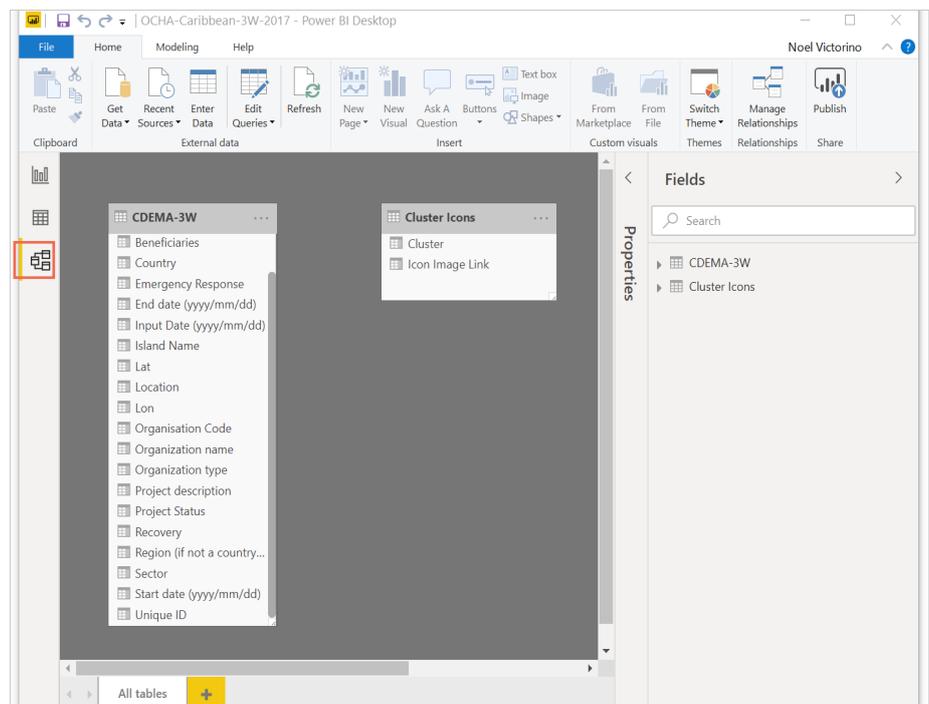
Defining table relationships

A relationship between tables means having a field in both, containing the same data, which allows them to be linked. In this case, the "Sector" field in CDEMA-3W and the "Cluster" field in Cluster Icons need to be linked. Both fields should have matching sector/cluster names so if a cluster icon is needed, this relationship allows its retrieval.

To establish the relationship, **click and drag** the **Sector** field to the **Cluster** field. A line connecting the tables should form.
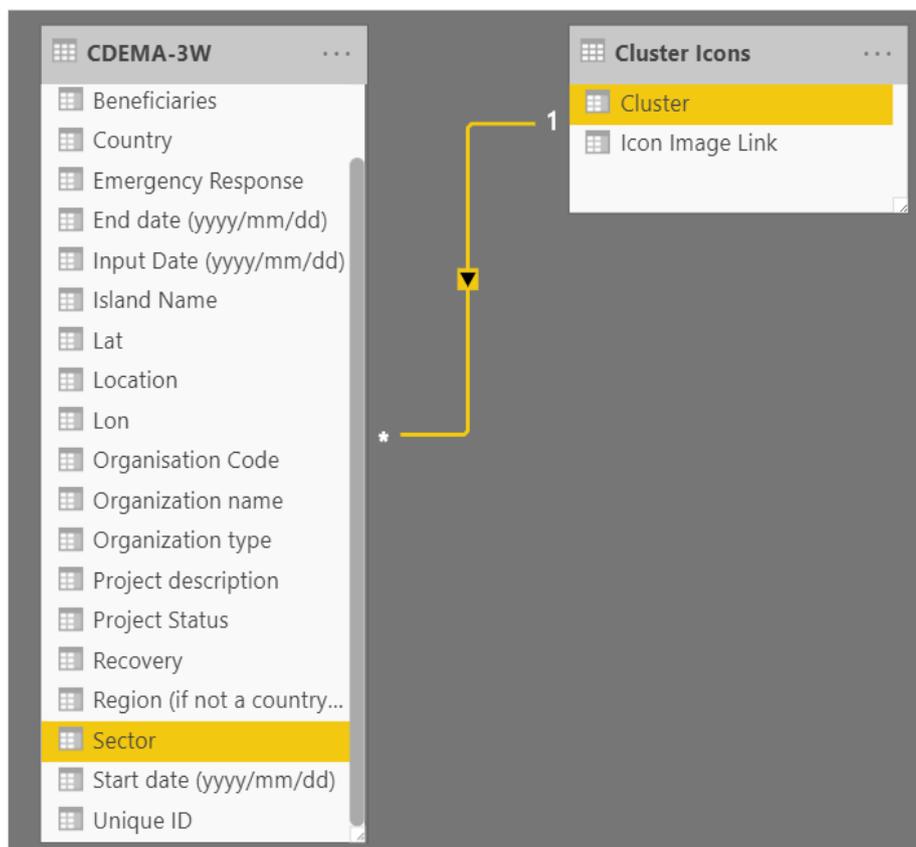
SLICERS

Slicers allows filtering by categories within the report. It is useful when trying to find categorized information quickly. In the Visualizations pane, there's a slicer visual included but we want ours to be more visual so we will install the **"Chiclet Slicer"** from the Marketplace.

Follow the red boxes and lines to learn how to import from the marketplace

Power BI Visuals

MARKETPLACE | MY ORGANIZATION

Add-ins may access personal and document information. By using an add-in, you agree to its Permissions, License Terms and Privacy Policy.

chiclet

Suggested for you ⌄

Category

All

Advanced Analytics

Data Visualizations

Chiclet Slicer
Display image and/or text buttons that act as an in-canvas filter on other visuals
★★★★☆

Add
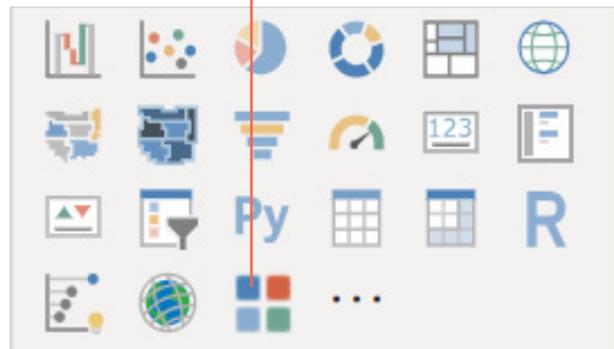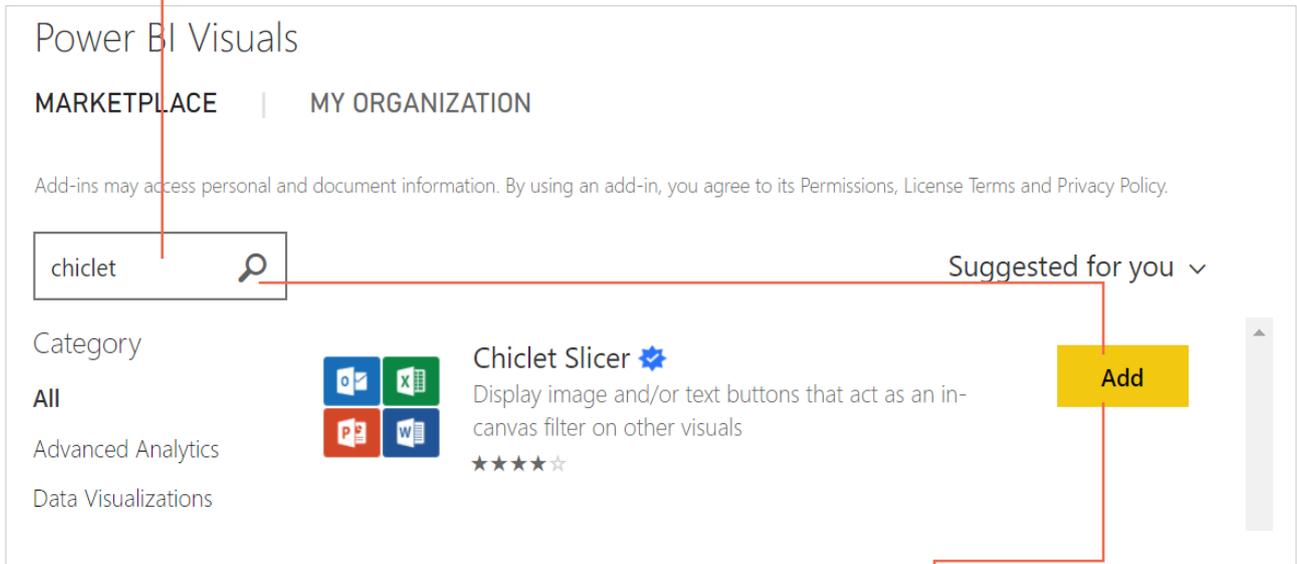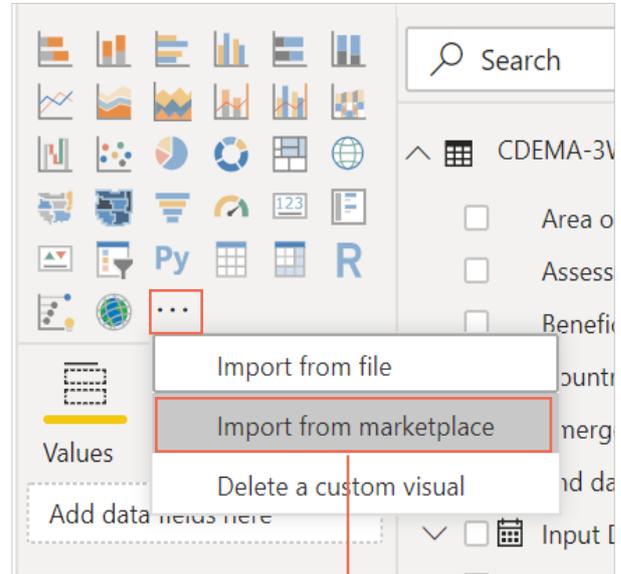
SLICER SETUP

While the newly created slicer is selected, **drag fields on the right to the sections on the left as shown below:**

Now, switch to the formatting pane. Use the following settings:
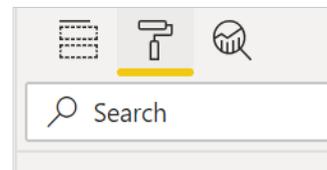
General

- Columns: **2**

Header: Off

Chiclets

- Text size: **8**
- Height: **53**
- Width: **93**
- Selected colour: **#B3D2F2**
- Hover colour: **#B3D2F2**
- Disabled colour: **#E6E6E6**
- Outline colour: **#E6E6E6**
- Outline weight: 1

Position and resize the tile below the overview text and it should look like this. Make sure its left, right, and bottom is lined up with the gridlines.
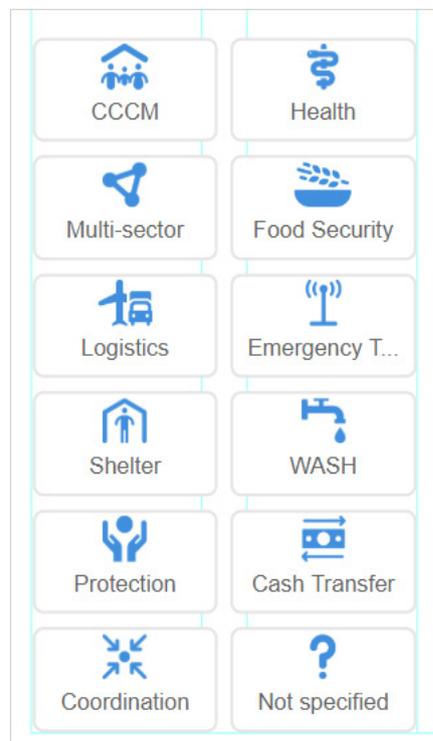
The built-in labels for the tiles won't be used for this exercise since customization is limited. Instead, create a text box above the slicer using the settings below.
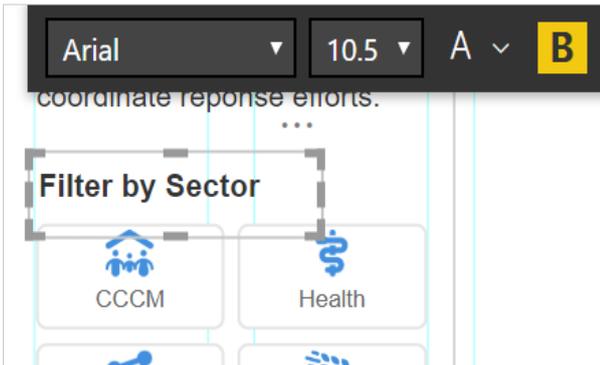
Object layering

Using this method, eventually there will be tile overlaps and it will be hard to select certain things. If you select a tile, the Format tab will activate and the layering order can be adjusted.
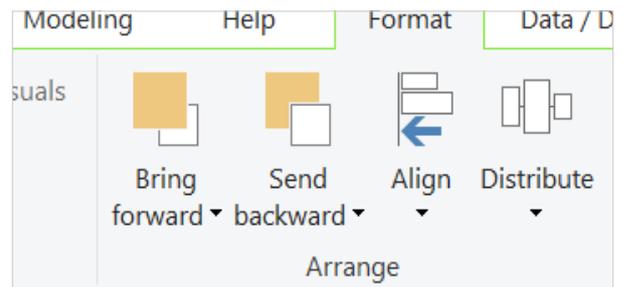
KEY FIGURES

Key Figures are staples of OCHA products. In this section, a key figure visual that looks like this will be created:
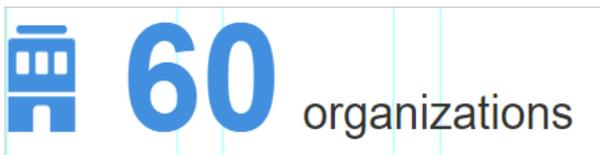
1. To add the icon, click ▣Image button in the menu.

2. Choose exercise\icons\building.png.

3. Place it below the WHO section and try to line its top with the overview text on the left.

4. Resize so it's about the same height as three lines of overview text.

Next, add the big blue figure:

1. Install, the Advanced Card [123] custom visual from the marketplace

2. Click on it in the Visualizations pane

3. Drag 'Organization Code' to the 'Data Field'

4. In the field dropdown–, choose 'Count (Distinct)'
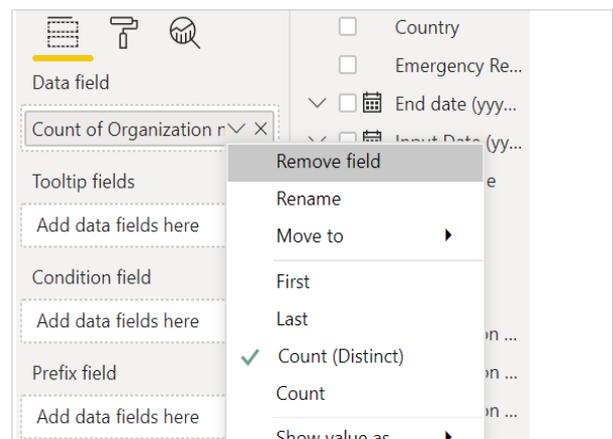
Now switch to the formatting pane and use the following settings. (Note that colours that were used previously could be accessed in the colour picker menu under the "Recently colors" section):

General

- Alignment: **left-align**

Data Label

- Colour: **#418FDE**

- Font-size: **50**

- Font-family: **Arial**

- Bold: **On**

Category: Off

Visual Header: Off

Position and resize it next to the building icon, making sure it is the same height. Add a text label next to it (Arial, 16pt, black). It should look like this:
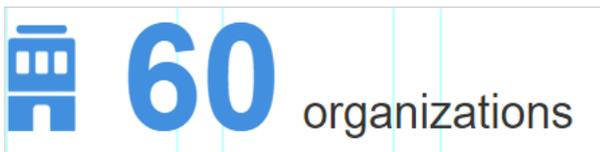
Do this two more times for the 'What' and 'Where' sections but don't start from scratch. Copy and Paste the figure and label to avoid re-doing all the steps. Follow the settings for the other sections:

'What' section

- Data field: **Sector**

- Icon: **Multi-cluster-sector.png**

- Text label: **Sectors**

'Where' section

- Data field: **Country**

- Icon: **Location.png**

- Text label: **Sectors**

Make sure they all line up horizontally. It should look like this:

At this point, the product should look like this:
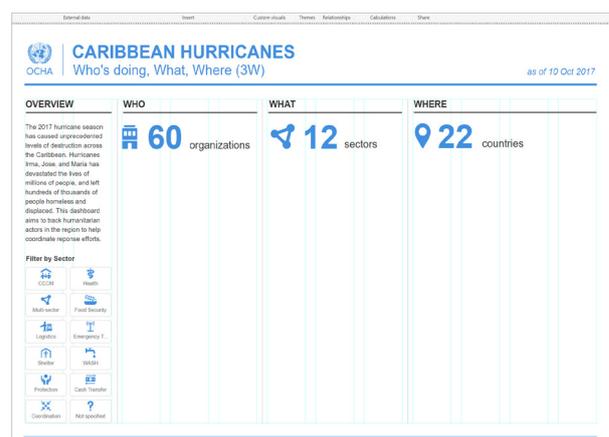
BAR CHARTS

Create a simple bar chart by clicking on the' Stacked Bar Chart' visual. Then, drag the fields shown below:
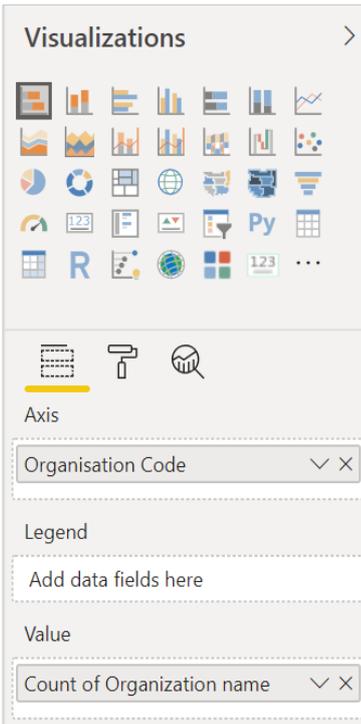
Switch to the formatting pane and use the following settings:
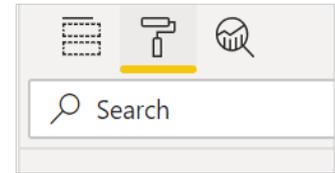
Y-axis

- Colour: **#333333**
- Font-family: **Arial**
- Text size: **9**
- Max size: **35**
- Inner padding: **25**
- Title: **off**

X-axis: off

Data labels

- Colour: **#418FDE**
- Text size: **9**
- Font-family: **Arial**

Position and resize the tile below the 'WHO' key figure and put a label above it like we did for the chiclet slicer. Should look like this.
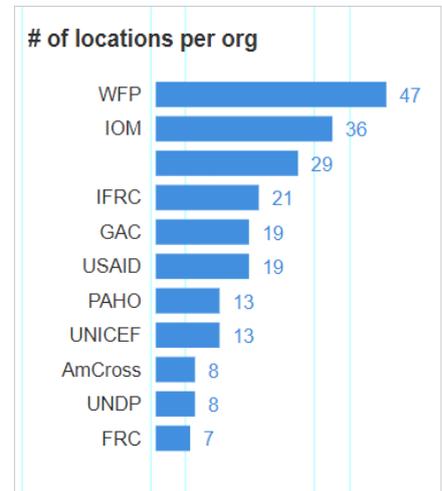
Filtering

You'll notice that the 3rd bar chart value is missing a label. It's most likely because those cells were left blank. In some cases, hiding certain values from appearing in your chart or page is necessary. That's where filtering can help.

1. With the chart selected, expand the Filters pane

2. Expand 'Organisation Code'

3. Check 'Select All'

4. Uncheck the empty row
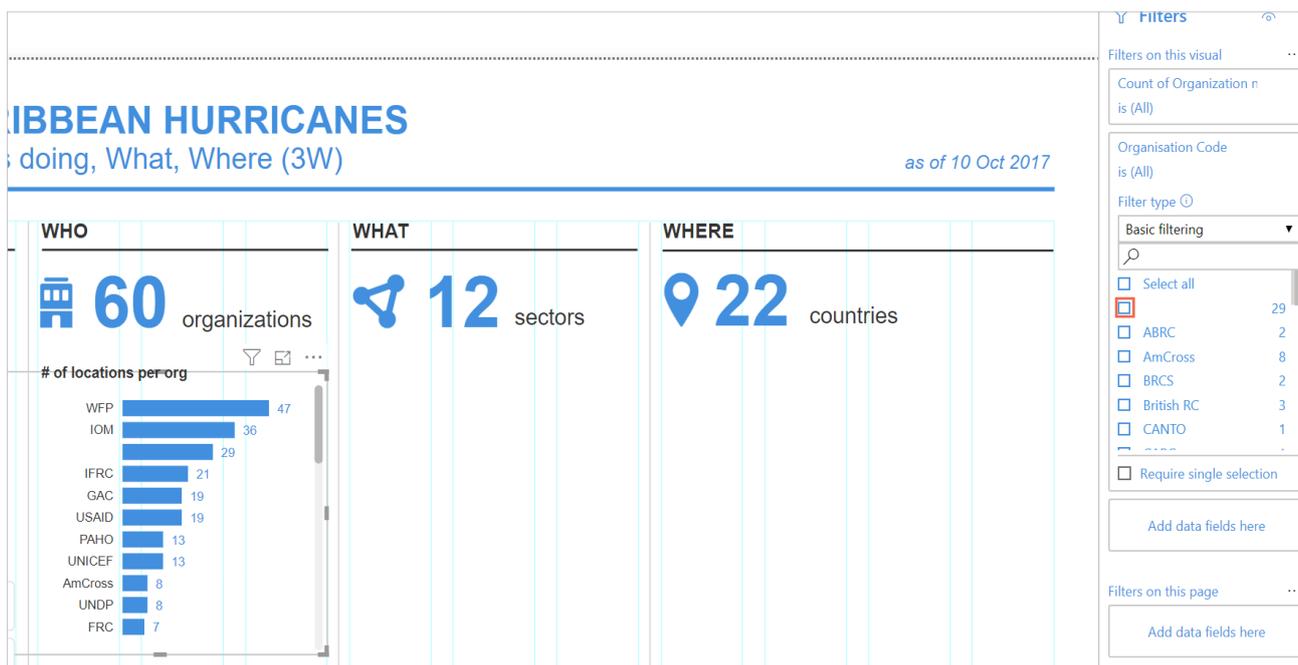
This is needed one more time for the 'What' sections. Copy and Paste the chart and the title to avoid re-doing all the steps. Follow the settings for the other section:

- Axis: **Sector**

- Value: **Count of Sector**

- Title: **# of locations per sector**

Your canvas should now look like this:
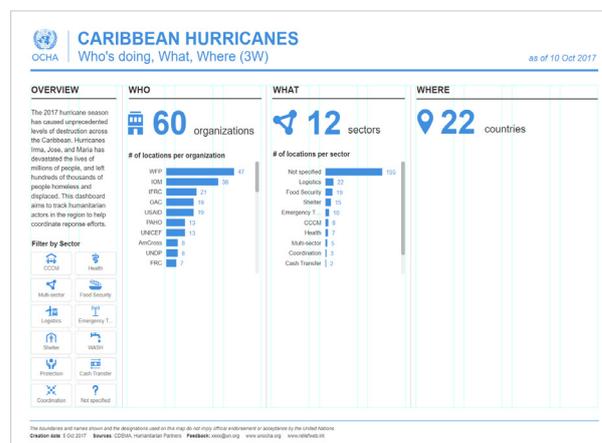
PIE CHARTS

Create a simple pie chart by clicking on the 'Pie chart' ◐ visual. Then drag the fields shown below:

The data received isn't 100% clean so you should use filters for now. Select **Donor, Red Cross, Government, NGO, and UN agency**.

We'll need to do this one more times for the 'What' sections. Copy and Paste the chart and the title to avoid re-doing all the steps. Use these settings:

- Legend: **Emergency Response**
- Values: **Count of Organization Code**
- Title: **% of orgs doing emergency response**

Now we switch to the formatting pane and use the following settings:

Data colours

- Colour: **Pick the OCHA blues**

Detail labels

- Font-family: **Arial**

Title: off

Visual header: off

Position and resize the tile below the 'WHO' bar chart and put a label above it like we did for the bar chart. Should look like this:

Your canvas should now look like this:

MAPPING

For mapping purposes, use the Mapbox Visual custom visual to load a custom basemap that use standard UNGIS boundaries.

1. Install the Mapbox Visual custom visual from the marketplace

2. Click in the Visualizations pane

3. Follow the settings to the right. Note that the tooltip is using 'Organisation Code' but was renamed in the Tooltips section.
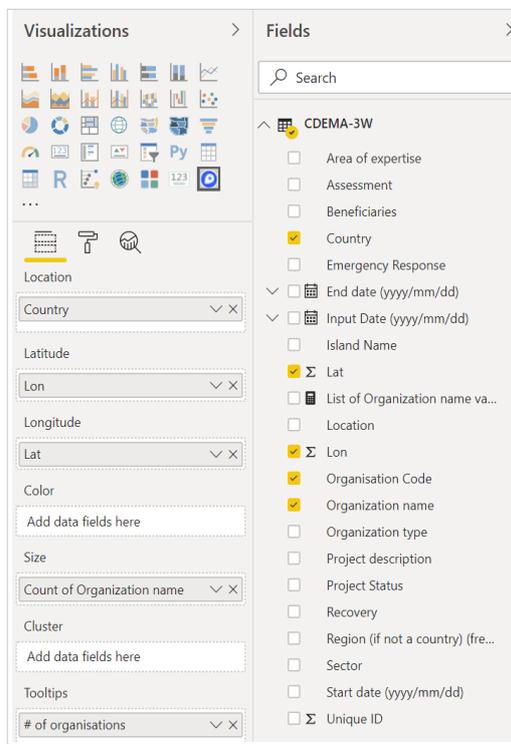
Now, switch to the formatting pane and use the following settings:

Viz Settings

- Access Token: **pk.eyJ1Ijoicm VsaWVmd2ViIiwiYSI6IldYR2ZuV3cifQ.eSPZMZWE6UyLtO0OH_-qrw**

- Map Style: **Custom**

- Style URL: **mapbox://styles/reliefweb/cjyh975uc16641cqv12fi1rz6**

Geocoder: off

Circle

- Radius: **5**

- Min, Max, Highlight Color: **# 418FDE**

- Opacity: **50**

- Stroke width: **0**

- Legend: **off**

Everything else: off

Position and resize the tile below the 'WHERE' key figure. Make sure to stay within the grid.

The canvas should now look like this:

CARIBBEAN HURRICANES
Who's doing, What, Where (3W)

OCHA

as of 10 Oct 2017

OVERVIEW

The 2017 hurricane season has caused unprecedented levels of destruction across the Caribbean. Hurricanes Irma, Jose, and Maria has devastated the lives of millions of people, and left hundreds of thousands of people homeless and displaced. This dashboard aims to track humanitarian actors in the region to help coordinate reponse efforts.

Filter by Sector

CCCM | Health
Multi-sector | Food Security
Logistics | Emergency T...
Shelter | WASH
Protection | Cash Transfer
Coordination | Not specified

WHO

60 organizations

# of locations per organization

WFP — 47
IOM — 36
IFRC — 21
GAC — 19
USAID — 19
PAHO — 13
UNICEF — 13
AmCross — 8
UNDP — 8
FRC — 7
CARPHA — 6
NLRC — 6

# of locations per organization

Donor
NGO | Red Cross...
Gove...
UN Agency

WHAT

12 sectors

# of locations per sector

Not specified — 155
Logistics — 22
Food Security — 19
Shelter — 15
Emergency T... — 10
CCCM — 8
Health — 7
Multi-sector — 5
Coordination — 3
Cash Transfer — 2
Protection — 2
WASH — 2

% of orgs doing emergency response

NO
YES

WHERE

22 countries

BAHAMAS
CUBA
Turks and Caicos Islands
JAMAICA
HAITI
Puerto Rico
Anguilla
Guadeloupe
SAINT VINCENT AN
THE GRENADINES
TRINIDAD AND TOB
VENEZUELA
COLOMBIA
GUYA
mapbox

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
Creation date: 5 Oct 2017   **Sources**: CDEMA, Humanitarian Partners   **Feedback**: xxxx@un.org   www.unocha.org   www.reliefweb.int

BOOKMARKS

PowerBI let's you save a state of a report based on what filters were selected. In this case, the default unfiltered state of the report will be saved as a bookmark so it could be used to reset the interface.

Click the View tab and check the Bookmarks Pane box.
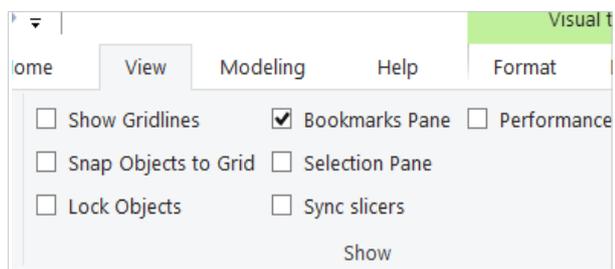
The Bookmarks pane should now be visible. Make sure no filters are selected and press the Add button. A "Bookmarks 1" button will be added but right-click that and rename it "Home".
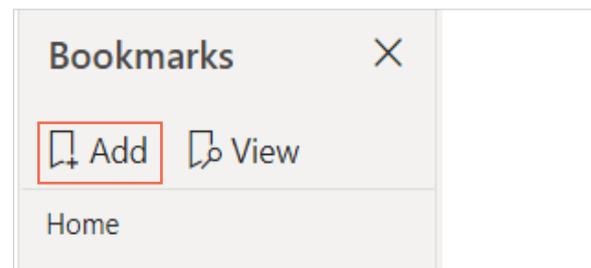

Now, anytime you want to go back to this or any view, you just select its bookmark. The bookmark just created will be used in the next section, where it will be the linked to a button as an action.

BUTTONS

Create a 'Reset' button so the audience can always go back to the product's original state.

Click 'Buttons' in the menu and select 'Reset'
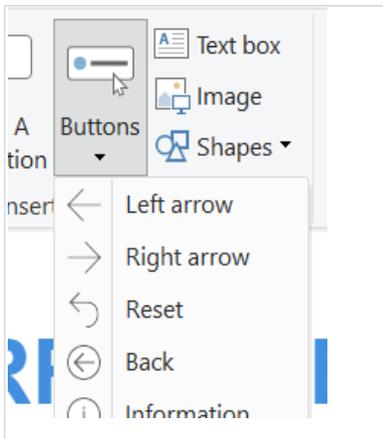
Switch to the formatting pane and use the following settings:
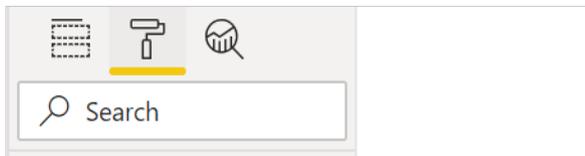
Button text:

- Button text: **Reset**
- Font color: **White**
- Padding: **16**
- Text size: **12**
- Font family: **Arial**

Icon:

- Padding: **7px**
- Line color: **White**
- Weight: **2**

Outline:

- Outline color: **#418FDE**
- Outline weight: **3**
- Round edges: **3**

Fill:

- Fill color: **#418FDE**

Title: off

Visual header: off

Action:

- Type: **Bookmark**
- Bookmark: **Home**
- Tooltip: **Reset the entire page**

Position and resize the button at the top right corner of the header. It should look like this:
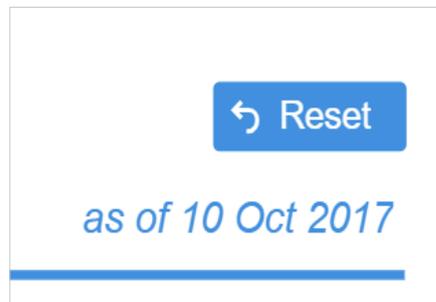
REPLACING THE DATA

If data changes, replace it in PowerBI and the graphics will automatically update as long as the fields are the same.

Go to **File > Options and settings > Data source settings.**
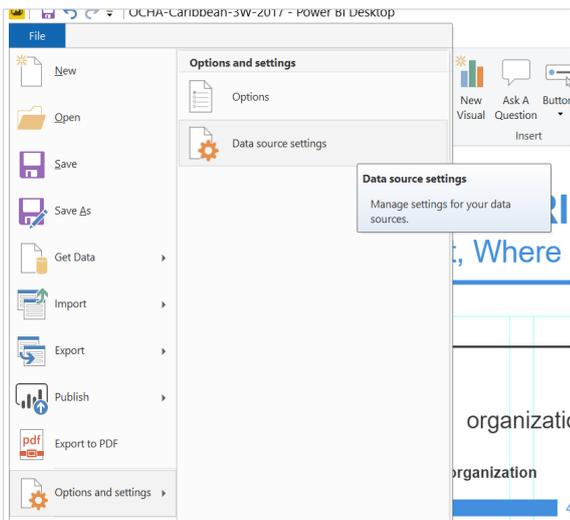
Highlight one of your data sets and change its source.
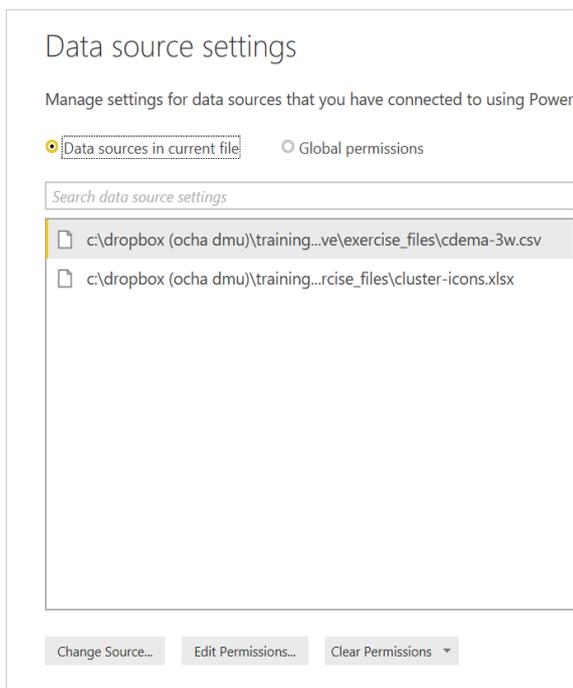
PUBLISHING

Before publishing, don't forget to save the document and hide the guides.

There are many ways to save which inlcude the following:

- Saving as a PDF and submitting to ReliefWeb

- Embedding to a platform

- Sharing a web link

PDF

Go to **File > Export to PDF**

Embedding or Web link

**Click the Publish button** and choose a workspace.

Follow the open link:
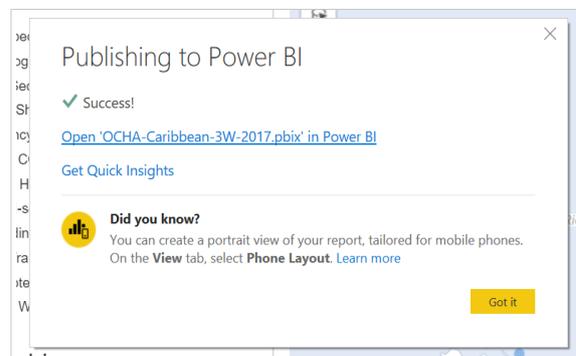
Choose from the options. You might be restricted based on account level (Pro vs Non-pro).

CONGRATS!

You finished the tutorial! The final output should look like this:

For questions or comments, email: victorino@un.org