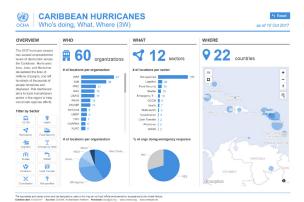
# POWERBI

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 <u>interactive</u> <u>OCHA 3W product</u> from start to finish.

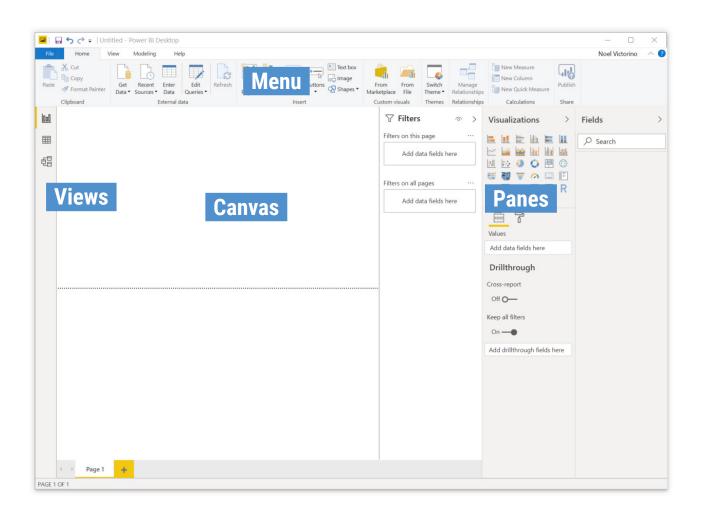


## **SETTINGS AND WORKSPACE**

#### 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 documentwide 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.

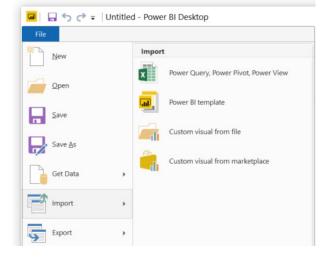


## LAYOUT

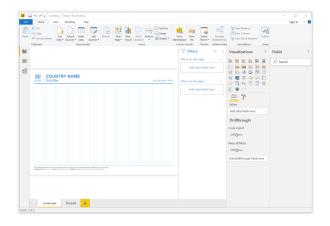
#### Create a new document using an OCHA template

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

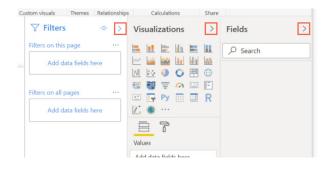
To create a new document using the template, click File > Import > Power BI template.



Browse to <u>exercise\2019\_OCHA\_PowerBI\_A4\_</u> 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 <u>OCHA-Caribbean-3W-2017</u> 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"**.

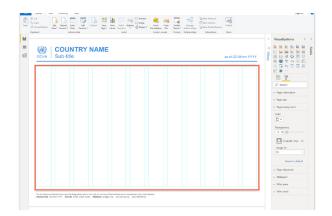


## Right-click the "Landscape" tab and rename it "Overview".

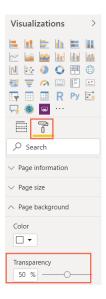


#### Grid

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



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.



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

		HURRICANES at, 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"** 



## 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 settings to create a black, horizontal, 2 pt line and place it below the section title text.

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Rotation	_

Fro

Marke

🖓 Shapes 🔻

Rectangle

Oval

Line

Triangle

Arrow

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:

	<b>RIBBEAN</b> H o's doing, What,	Where (3W)		as of 10 Oct 2017
OVERVIEW	WHO	WHAT	WHERE	

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

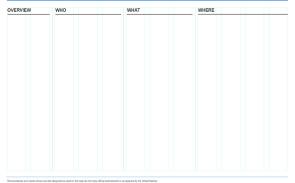
- **Overview:** 2 columns
- Who, What: 3 columns
- Where: 4 columns

#### 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:

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





as of 10 Oct 2011

## **OVERVIEW TEXT**

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



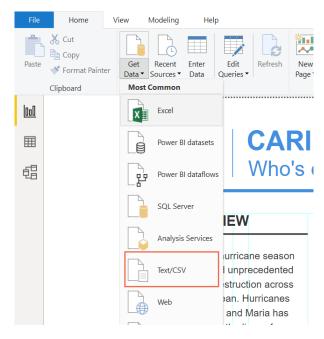
#### Copy and paste this text into the box:

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 <u>exercise\CDEMA-3W.csv</u> and click **Open** 

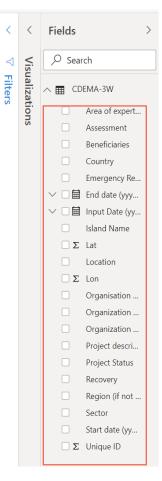
ile Origin	Deli	miter [	Data Type Detection		
1252: Western European (W	(indows) * Co	mma *	Based on first 200 rows *		D
Input Date (yyyy/mm/dd)	Organisation Code	Organization name	Organization type	Area of expertise	
9/6/2017	PAHO	PAHO	UN Agency	Engineer	
9/6/2017	IFRC	Antigua and Barbuda Red Cross	Red Cross and Red Crescent Movement	Management	
9/6/2017	PAHO	PAHO	UN Agency	Environmental Health	
9/6/2017	IFRC	St Kitts and Nevis Red Cross	Red Cross and Red Crescent Movement	Management	
9/7/2017	IOM	International Organization for Migratio	In UN Agency	NEL	
9/8/2017	PAHO	РАНО	UN Agency	Logistics	
9/8/2017	PAHO	PAHO	UN Agency	Architect	
9/8/2017	IFRC	Antigua and Barbuda Red Cross	Red Cross and Red Crescent Movement	Management	
9/8/2017	USAID	Antigua and Barbuda Red Cross	Red Cross and Red Crescent Movement	Diaster Response	
9/8/2017	USAID	The Bahamas Red Cross	Red Cross and Red Crescent Movement	Diaster Response	
9/8/2017	IFRC	St Kitts and Nevis Red Cross	Red Cross and Red Crescent Movement	Logistics	
9/9/2017	UNDP	UNDP	UN Agency	Multi Sector	
9/10/2017	PAHO	PAHO	UN Agency	Health personnel	
9/10/2017	PAHO	PAHO	UN Agency	Engineer	
9/10/2017	PAHO	РАНО	UN Agency	Architect	
9/10/2017	PAHO	РАНО	UN Agency	Electrical Engineer	
9/10/2017	IOM	International Organization for Migratic	in UN Agency	Protection	
9/10/2017	PAHO	PAHO	UN Agency	Management	
9/10/2017	IOM	International Organization for Migratic	in UN Agency	Displacement Tracking	
9/10/2017	IOM	International Organization for Migratic	in UN Agency	Shelter Operations	~
3				> insform Data Canc	el 🗸

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.



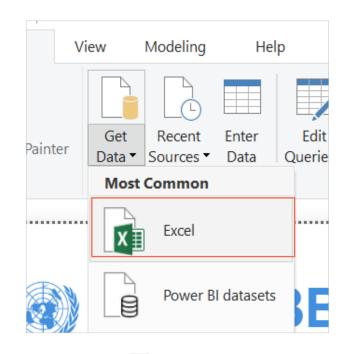
#### Data view

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

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	Input Date (yyyy/mm/dd)	Organisation Code 💌	Organization (
Ħ	Thursday, September 21, 2017	GAC	Global Affairs Canada
	Thursday, September 21, 2017	GAC	Global Affairs Canada
唱	Thursday, September 21, 2017	IOM	International Organization for Mig
	Thursday, September 21, 2017	CARPHA	Caribbean Public Health Agency
	Thursday, September 21, 2017	GAC	Global Affairs Canada
	Thursday, September 21, 2017	IOM	International Organization for Mig
	Thursday, September 21, 2017	WFP	World Food Programme
	Saturday, September 23, 2017	WFP	World Food Programme
	Saturday, September 23, 2017	WFP	World Food Programme
	Saturday, September 23, 2017	WFP	World Food Programme
	Monday, September 25, 2017	IOM	International Organization for Mig
	Monday, September 25, 2017	IOM	International Organization for Mig
	Monday, September 25, 2017	IOM	International Organization for Mig
	Monday, September 25, 2017	IOM	International Organization for Mig
	Monday, September 25, 2017	IOM	International Organization for Mig
	Monday, September 25, 2017	IOM	International Organization for Mig
	Tuesday, September 26, 2017	WFP	World Food Programme
	Tuesday, September 26, 2017	IOM	International Organization for Mig
	Tuesday, September 26, 2017	USAID	USAID
	Tuesday, September 26, 2017	WFP	World Food Programme
	Tuesday, September 26, 2017	WFP	World Food Programme
	Tuesday, September 26, 2017	WFP	World Food Programme
	Tuesday, September 26, 2017	WFP	World Food Programme
	Tuesday, September 26, 2017	IOM	International Organization for Mig
	Tuesday, September 26, 2017	WFP	World Food Programme
	Tuesday, September 26, 2017	IFRC	IFRC
	Wednesday, September 27, 2017	GAC	Global Affairs Canada
	Wednesday, September 27, 2017	GAC	Global Affairs Canada

#### 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 <u>exercise</u> <u>cluster-icons.xlsx</u>



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**.

Colu	mn1	Ŧ	Column2		
Cluster			Icon Image Link	Q	Search
Shelter			https://www.dropbox.com/s/b2ktxqg35pkswjh/Shelter.png?raw		
WASH			https://www.dropbox.com/s/rmwjt9ps629vqp2/Water-Sanitatio	$\sim \blacksquare$	CDEMA-3W
Educatio	n		https://www.dropbox.com/s/zdybfshwvb8pn41/Education.png?	$\sim \blacksquare$	Cluster Icons
Logistics			https://www.dropbox.com/s/9in5v863cw9tlkh/Logistics.png?rav		
Protectio	n		https://www.dropbox.com/s/e0mkf00t4anjndo/Protection.png?		
Health			https://www.dropbox.com/s/k1dkka0b7j3eie4/Health.png?raw=		
Food Sec	urity		https://www.dropbox.com/s/mpn085k1y0ys916/Food-Security.p		
Emerger	cy Telec	oms	https://www.dropbox.com/s/mu5ujsb62gl7l8c/Emergency-Telec		
Nutrition			https://www.dropbox.com/s/6dflfoc59p9txew/Nutrition.png?rav		
CCCM			https://www.dropbox.com/s/2h4aznvmr74rglw/Camp-Coordinat		
Coordina	ition		https://www.dropbox.com/s/j763exmf58l02fy/Coordination.png		
Cash Tra	nsfer		https://www.dropbox.com/s/uigdhxoz2iwgoul/Cash-transfer.png		
Multi-se	tor		https://www.dropbox.com/s/7ce86qdfugjvckn/Multi-cluster-sec		
Not spec	ified		https://www.dropbox.com/s/uu5hlborzx6i00g/Help.png?raw=1		
<			>		

To fix:

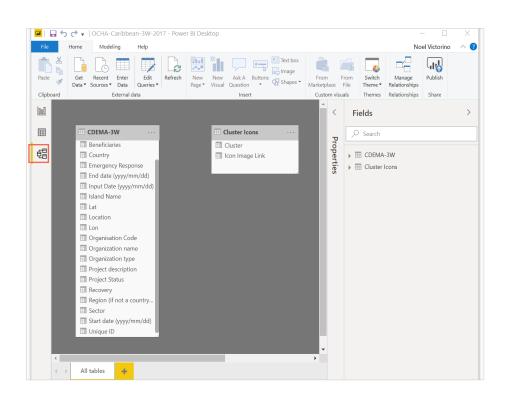
- 1. Click on **Edit Queries**
- 2. Select Cluster Icons

3. Click Use First Row as Headers

File	Home	M	odeling	Help							Noel Victo	orino	$\sim$
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#### Model view

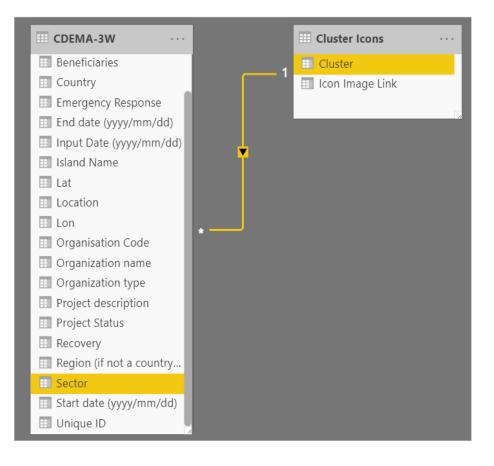
Model view enables establishing relationships between tables. To go into model view, **press the Model button** on the left sidebar 唱.



#### **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.

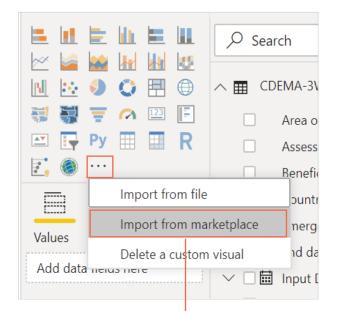
To establish the relationship, **click and drag** the **Sector** field to the **Cluster** field. A line connecting the tables should form.

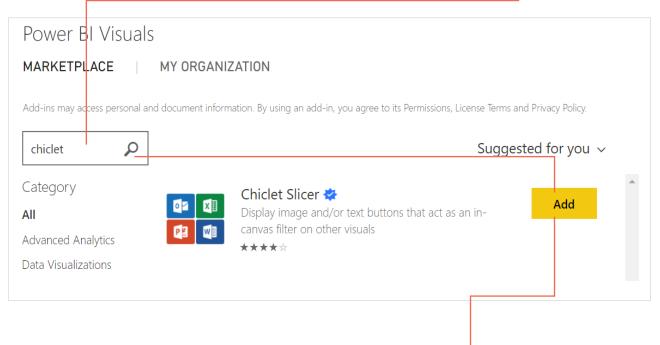


## **SLICERS**

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

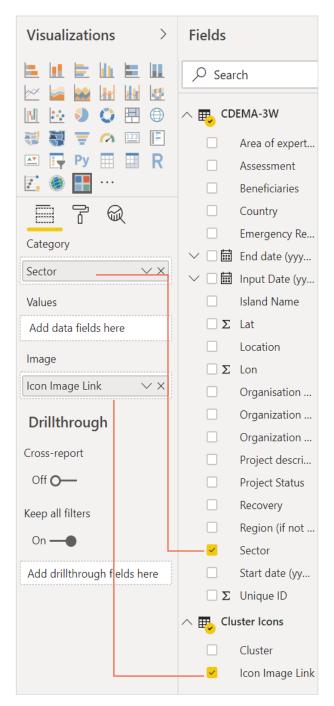






## **SLICER SETUP**

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:



• Columns: 2

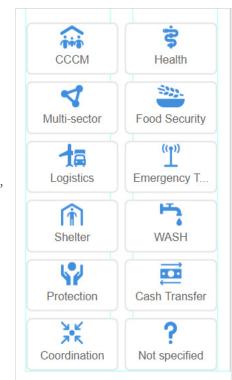
Header: Off

Chiclets

General

- 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.



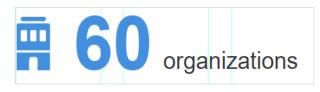
The built-in labels for the tiles won't be used for

### this exercise since customization is limited. Instead, create a text box above the slicer using the settings below.



## **KEY FIGURES**

Key Figures are staples of OCHA products. In this section, a key figure visual that looks like this will be created:

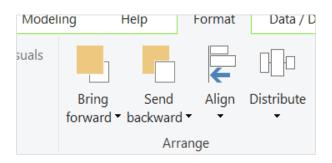


- To add the icon, click 📑 Image button in the 1. menu.
- 2. Choose <u>exercise\icons\building.png</u>.
- 3. Place it below the WHO section and try to line its top with the overview text on the left.
- 4. Resize so it's about the same height as three lines of overview text.



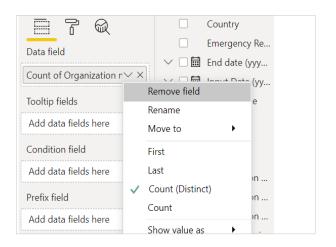
#### **Object layering**

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.



Next, add the big blue figure:

- 1. Install, the Advanced Card <sup>123</sup> 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

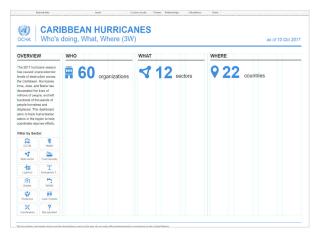
#### 'Where' section

- 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:

Visualizations	>
■       ■       ■       ■       ■       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●       ●	
Axis	
Organisation Code 🗸 🗸	×
Legend	
Add data fields here	
Value	
Count of Organization name $\sim$	×

Switch to the formatting pane and use the following settings:

#### Y-axis

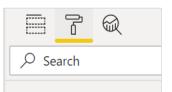
- Colour: **#333333**
- Font-family: Arial
- Text size: 9
- Max size: **35**
- Inner padding: 25
- Title: **off**

X-axis: off

#### Data labels

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

**Position** # of locations per org and resize WFP the tile 47 IOM 36 below the 29 'WHO' IFRC 21 key figure 19 GAC and put a USAID 19 label above PAHO 13 it like we UNICEF 13 did for the AmCross 8 chiclet UNDP 8 slicer. FRC 7 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



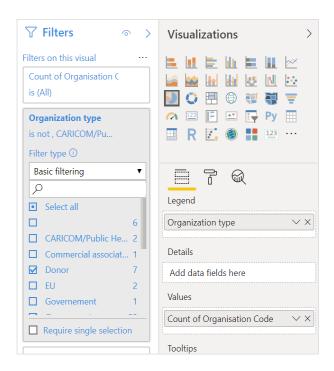
This is needed one more time for the 'What' sections. Copy and Paste the chart and the title to avoid re-doing all the steps. Follow the settings for the other section:

- Axis: Sector
- Value: Count of Sector
- Title: # of locations per sector

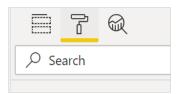
Your canvas should now look like this:

OVERVIE	w	WHO	WHAT	WHERE
The 2017 hum has caused un levels of destri the Caribboan	precedented uction across	# 60 organizations	<b>12</b> sectors	<b>Q 22</b> countries
Irma, Jose, an	d Maria has	# of locations per organization	# of locations per sector	
devastated the millions of peo				
hundreds of th		WFP 47 IOM 26	Not specified 155 Logistics 22	
people homele		IFRC 21	Food Security 19	
displaced. This aims to track h		GAC 19	Shelter 15	
actors in the re	igion to help	USAID 19	Emergency T 10	
coordinate rep	onse efforts.	PAHO 13 UNICEF 13	CCCM 0 Health 7	
Filter by Sec		AmCross 8	Multi-sector 5	
	3	UNDP 8	Coordination 3	
CCCM	Health	FRC 7	Cash Transfer   2	
4	9222			
Multi-sector	Food Security			
-1=	- 14			
Logistics	Emergency T.			
(ft)	17			
Shelter	WASH			
192	<b>100</b>			
Protection	Cash Transfer			
×	?			
Coordination	Not specified			

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



#### Data colours

• Colour: Pick the OCHA blues

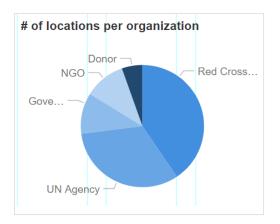
#### **Detail labels**

• Font-family: Arial

Title: off

#### Visual header: off

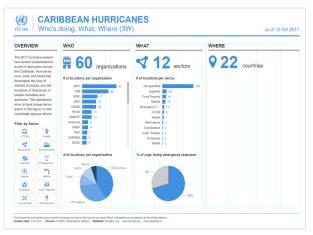
Position and resize the tile below the 'WHO' bar chart and put a label above it like we did for the bar chart. Should look like this:



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

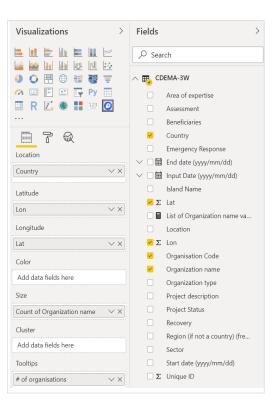
#### Your canvas should now look like this:



## MAPPING

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

- Install the Mapbox Visual O 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.eyJ1IjoicmVsaWVmd2ViIiwiYSI6IldYR2ZuV3cifQ.eSPZMZWE6UyLtO0OH\_-qrw
- Map Style: Custom
- Style URL: mapbox://styles/reliefweb/cjyh975uc16641cqv12fi1rz6

#### Geocoder: off

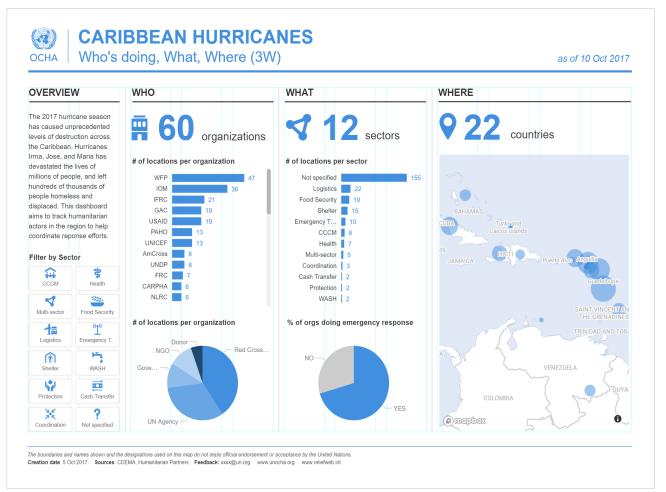
#### Circle

- 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.

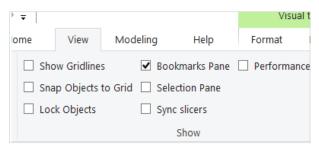
The canvas should now look like this:



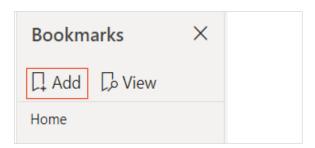
## **BOOKMARKS**

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".

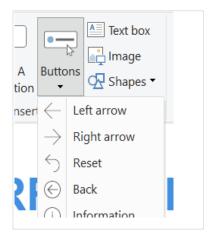


Now, anytime you want to go back to this or any view, you just select its bookmark. The bookmark just created will be used in the next section, where it will be the linked to a button as an action.

## **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:

# ✓ Search

#### **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

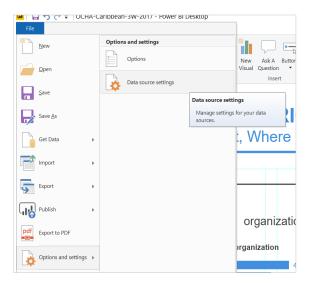
# **Position and resize the button at the top right corner of the header.** It should look like this:



## **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.

Data source	e settings	
Manage settings for	data sources that	you have connected to using Po
• Data sources in cu	rrent file O GI	obal permissions
Search data source s	ettings	
c:\dropbox (or	cha dmu)\training	ve\exercise_files\cdema-3w.csv
C:\dropbox (or	cha dmu)\training.	rcise_files\cluster-icons.xlsx
	Edit Permissions	Clear Permissions 👻

## **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

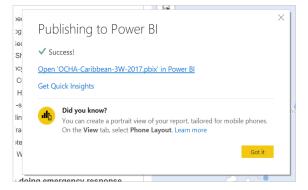
#### PDF

Go to File > Export to PDF

#### **Embedding or Web link**

**Click the Publish button** workspace.

Follow the open link:

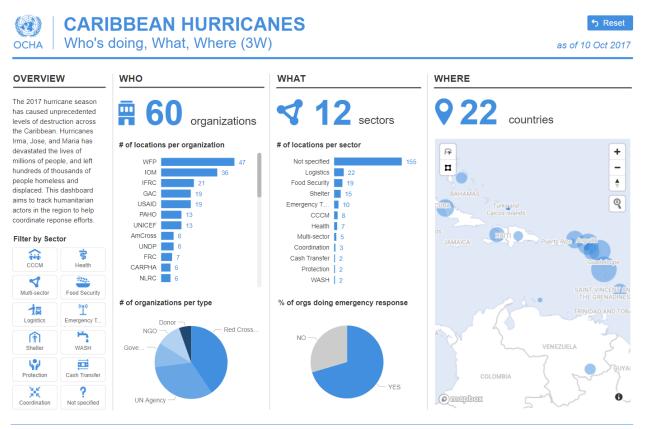


Choose from the options. You might be restricted based on account level (Pro vs Non-pro).



## **CONGRATS!**

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



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: xxxxQun.org www.unocha.org www.relietweb.int