



acaps

# **HUMANITARIAN ANALYSIS PROGRAM (HAP)**

## **POWER BI TRAINING GUIDE**



## Table of Contents

Introduction .....	3
Scenario .....	3
Data .....	3
Power BI installation .....	4
Exercise instructions .....	5
Additional exercises .....	18
Further training resources .....	18
Appendix 1 – Data review .....	19

## Introduction

This training will guide you through the development of an operational humanitarian vulnerability dashboard using the desktop tool Microsoft Power BI.

## Scenario

The protection cluster is focussing on identifying the most vulnerable districts within Yemen. Such analysis will support operational teams in planning their humanitarian programming. To give an overview of the most vulnerable areas, the protection cluster have asked you to develop a dashboard highlighting the districts with the most people in need.

## Data

The protection cluster have supplied you with a dataset:

- **yemen\_vulnerability.xlsx** – an Excel file containing key metrics of vulnerability.

The dataset is separated by District with each row representing a District. Different geographic levels are represented in the dataset:

- **District** – admin level 2 – lowest geographic level of data in this dataset.
- **Gov** – Governorate admin level 1. Each Governorate contains multiple districts.
- **UNOCHA Operational Hub** – UNOCHA geographic areas used to support operational planning.
- **PCODE** – unique geographic code for district. PCODES ensure a consistency in locating geographic areas. This is particularly useful when a geographic area can have multiple spellings.

The dataset contains key vulnerability indicators:

### Indicator

IDPs in District 2020 (HNO)

Resident 2020 (HNO)

Total Estimated Population 2020 (HNO)

Persons with Disabilities (Physical and Mental 15%)

# of separated and unaccompanied children

# of female headed households

Muhamasheen (Minority Group Presence)

% of non-functional schools

% of people with access to a regular income

Reduced coping strategies index

Poor to Borderline food consumptions scores (Jan 2019)

% of ind with access to markets

PIN Intercluster

Notice that the data structure is consistent and clean. This flat data structure ensures data quality is high and supports the use of tools such as Tableau or Power BI.

- Row 1 contains the name of each indicator.
- Every other row represents a district. There are no duplicate districts.
- If a indicator contains numerical data, the data does not contains text values.
- The data only contains one table and no graphs are present as these will be created in Power BI.

	A	B	C	D	E	F	G	H	I	J	K	L
	District Code	UNOCHA Operational Hub	Gov	District	IDPs in District 2020 (HNO)	Resident 2020 (HNO)	Total Estimated Population 2020 (HNO)	Persons with Disabilities (Physical a	# of separated and unaccompanied children	# of female headed households	Muhamashan (Minority Group Presence)	% of no
1												
2	YE1209	Aden	Abyan	Ahwar	354	34,359	34,713	5,207	0	0	13 Unknown	
3	YE1201	Aden	Abyan	Al Mahfad	649	36,368	37,017	5,552	0	0	64 Unknown	
4	YE1208	Aden	Abyan	Al Wadi'	723	31,829	32,652	4,898	0	0	0 Unknown	
5	YE1203	Aden	Abyan	Jayshin	306	20,004	20,310	3,045	0	0	15 Unknown	
6	YE1211	Aden	Abyan	Khaifar	14,079	146,793	160,872	24,131	0	0	231 Yes	
7	YE1204	Aden	Abyan	Lawdar	4,939	117,970	122,909	18,435	0	0	472 Yes	
8	YE1202	Aden	Abyan	Mudiyah	942	47,991	48,933	7,940	0	0	0 Unknown	
9	YE1206	Aden	Abyan	Rasid	1,111	76,390	75,501	11,325	0	0	46 Unknown	
10	YE1207	Aden	Abyan	Sarar	498	20,566	21,064	3,160	0	0	28 Unknown	
11	YE1205	Aden	Abyan	Sibah	2,550	21,194	23,744	3,562	0	0	720 Unknown	
12	YE1210	Aden	Abyan	Zinjbar	9,884	11,202	41,176	6,176	0	0	101 Unknown	
13	YE2404	Aden	Aden	Al Burayqah	25,162	108,539	133,701	20,055	0	0	3153 Unknown	
14	YE2403	Aden	Aden	Al Mansurah	9,461	171,573	181,034	27,155	5	0	0 Unknown	
15	YE2406	Aden	Aden	Al Mualla	3,275	80,484	83,759	12,564	0	0	0 Unknown	

Ensuring data follows a consistent structure supports interoperability between different datasets and allows complex analysis to be developed in a timely, consistent and accurate manner. Similarly, the use of PCODES supports accurate geographic mapping of the data.

For this training you will only be using a few vulnerability metrics. Further details of the data can be found in Appendix 1.

## Power BI installation

To install Power BI Desktop, go to <https://powerbi.microsoft.com/en-us/downloads/> and download Microsoft Power BI Desktop.

### Microsoft Power BI Desktop

With the Power BI Desktop you can visually explore your data through a free-form drag-and-drop canvas, a broad range of modern data visualizations, and an easy-to-use report authoring experience.

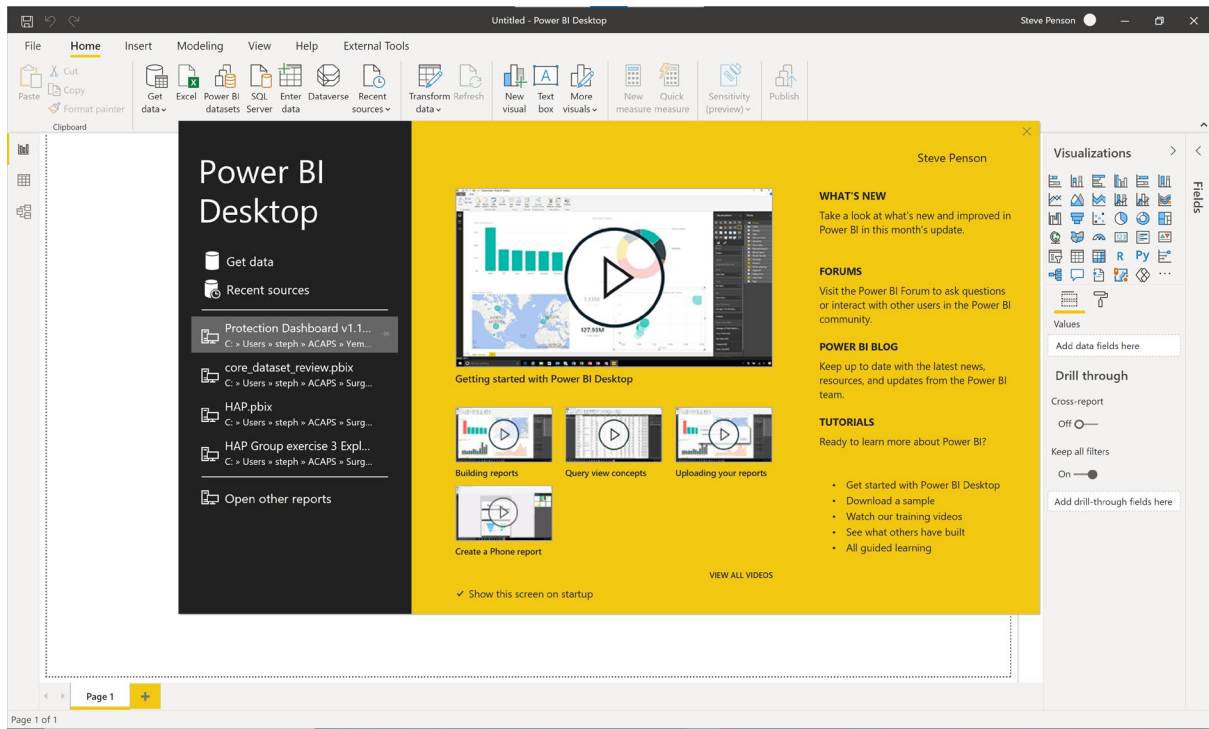
**Download** >

**Advanced download options** >

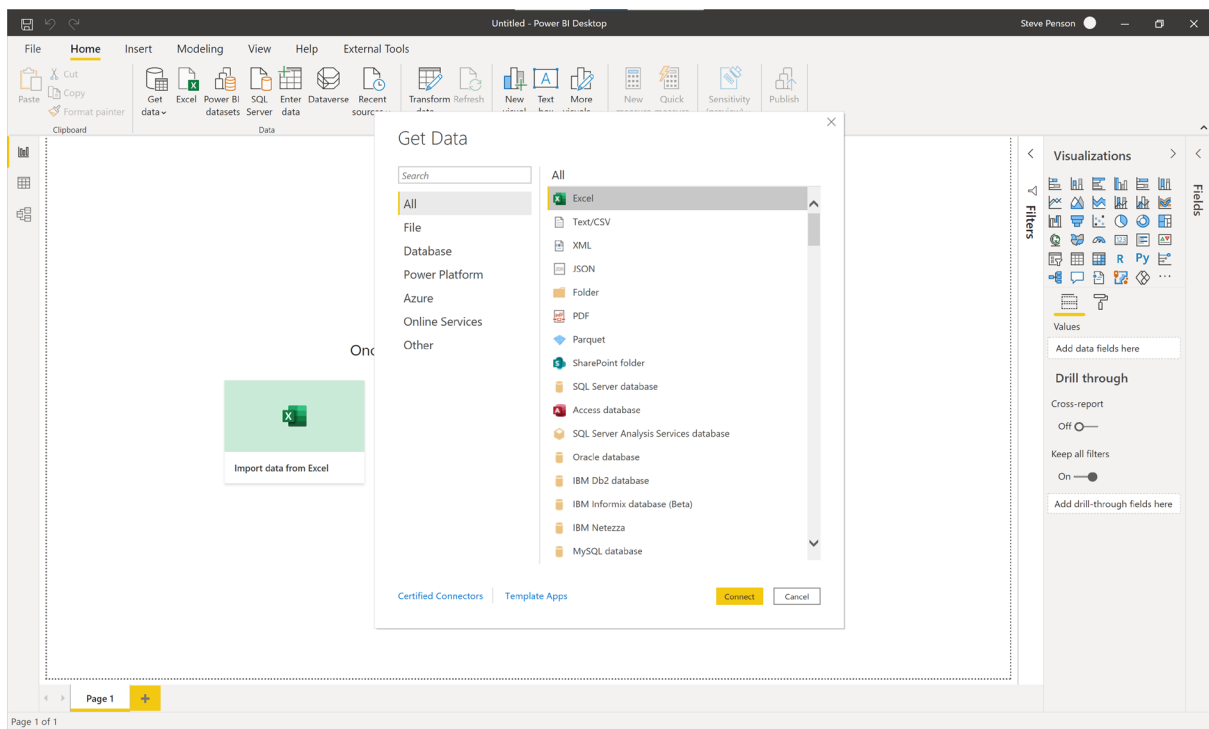
Download is free. If you have an Office 365 License you will be able to publish dashboard online.

## Exercise instructions

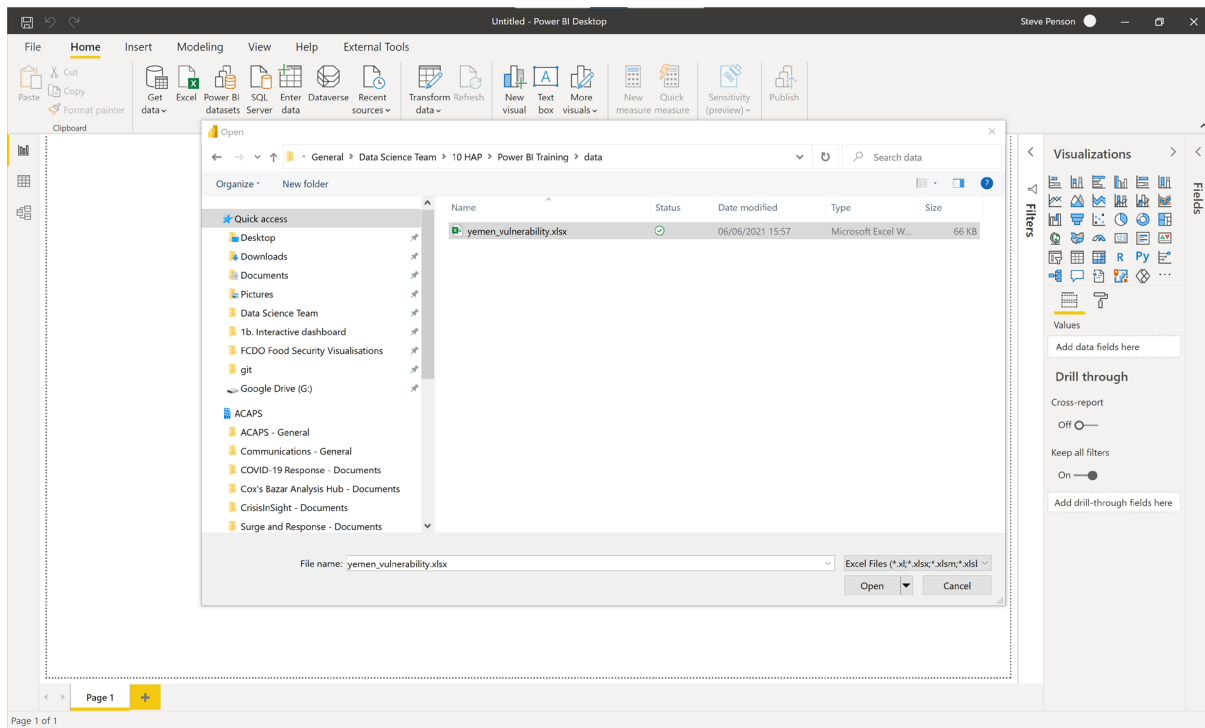
1. Open Power BI desktop.



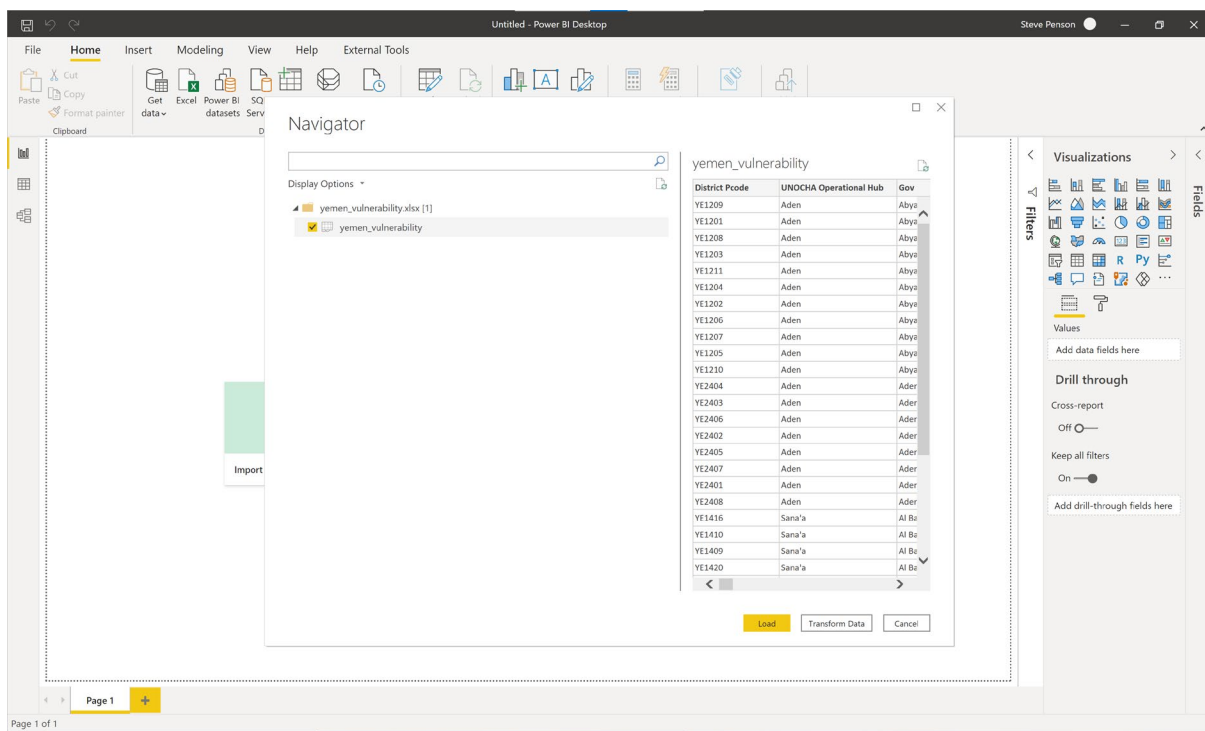
2. Click Get data -> Excel -> Connect.



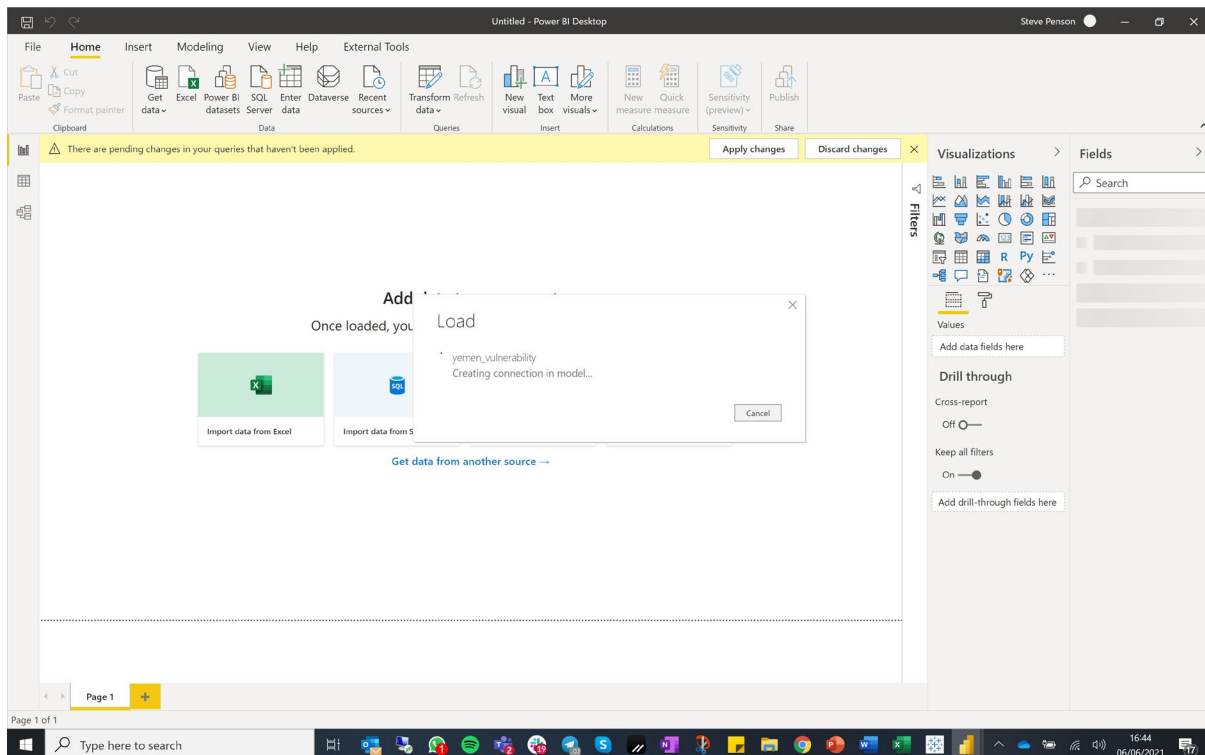
3. Locate the yemen\_vulnerability.xlsx file and click Open.



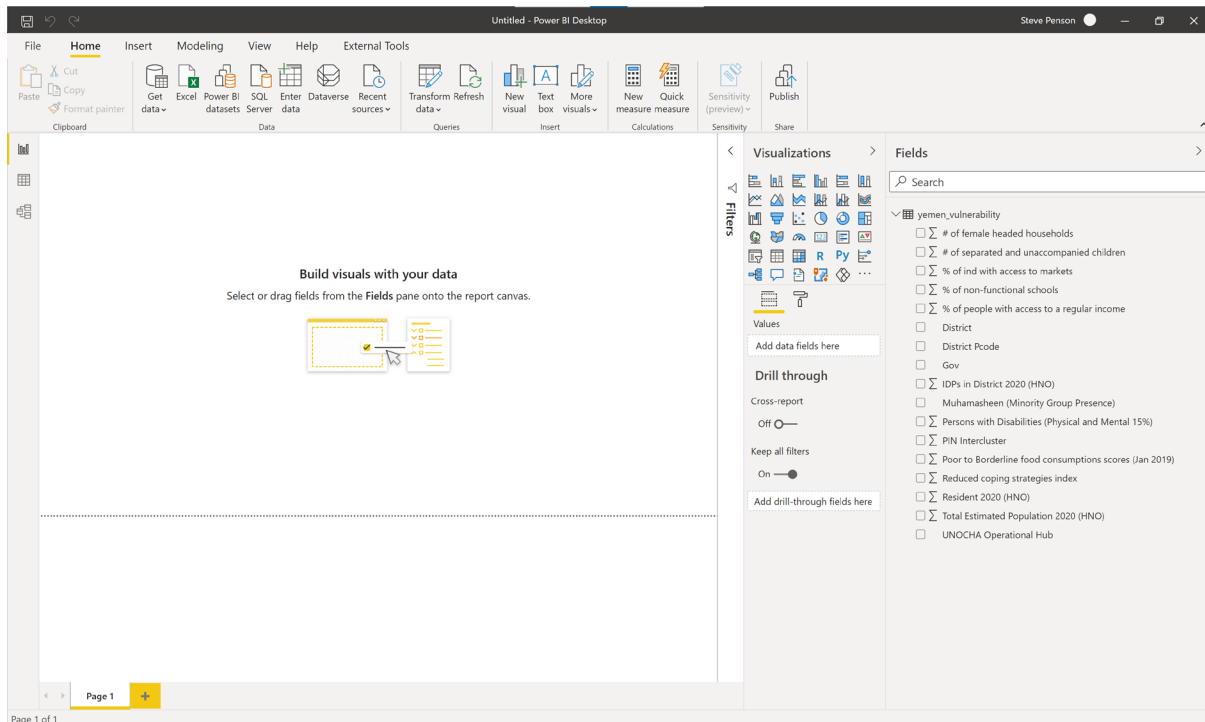
4. Once opened, the Navigator will show the tabs available in the Excel spreadsheet. Select yemen\_vulnerability and click Load.



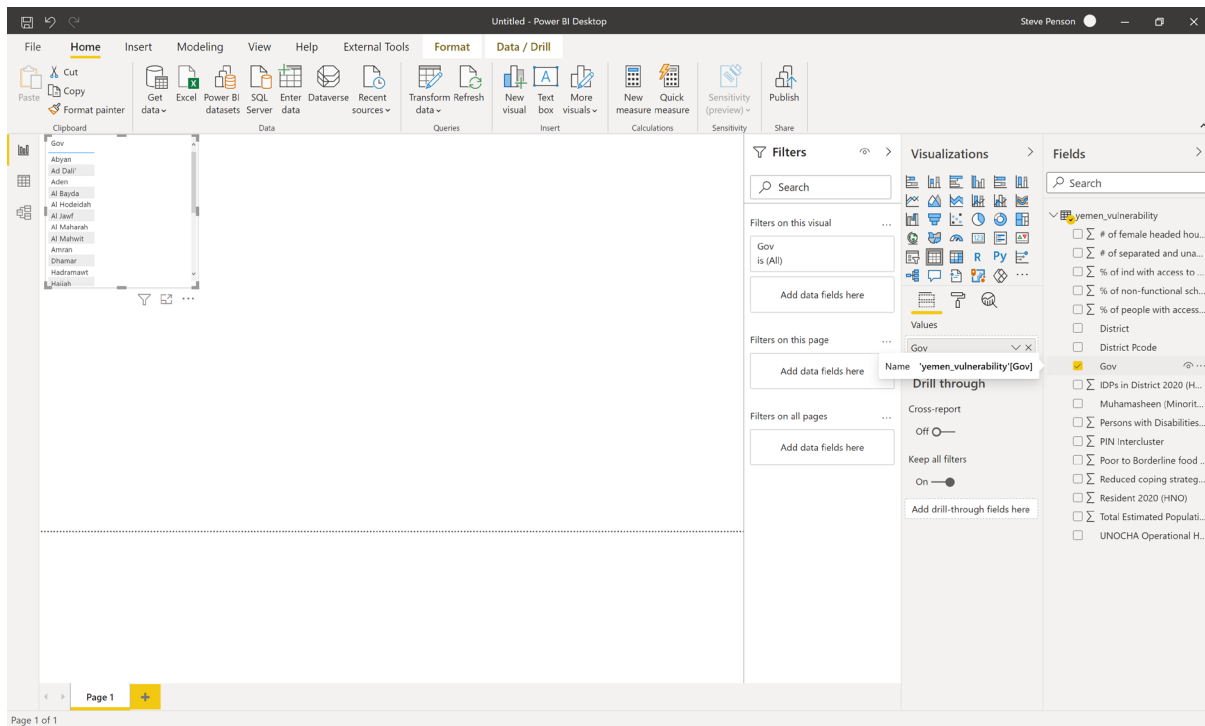
5. The data will then take a few seconds to load.



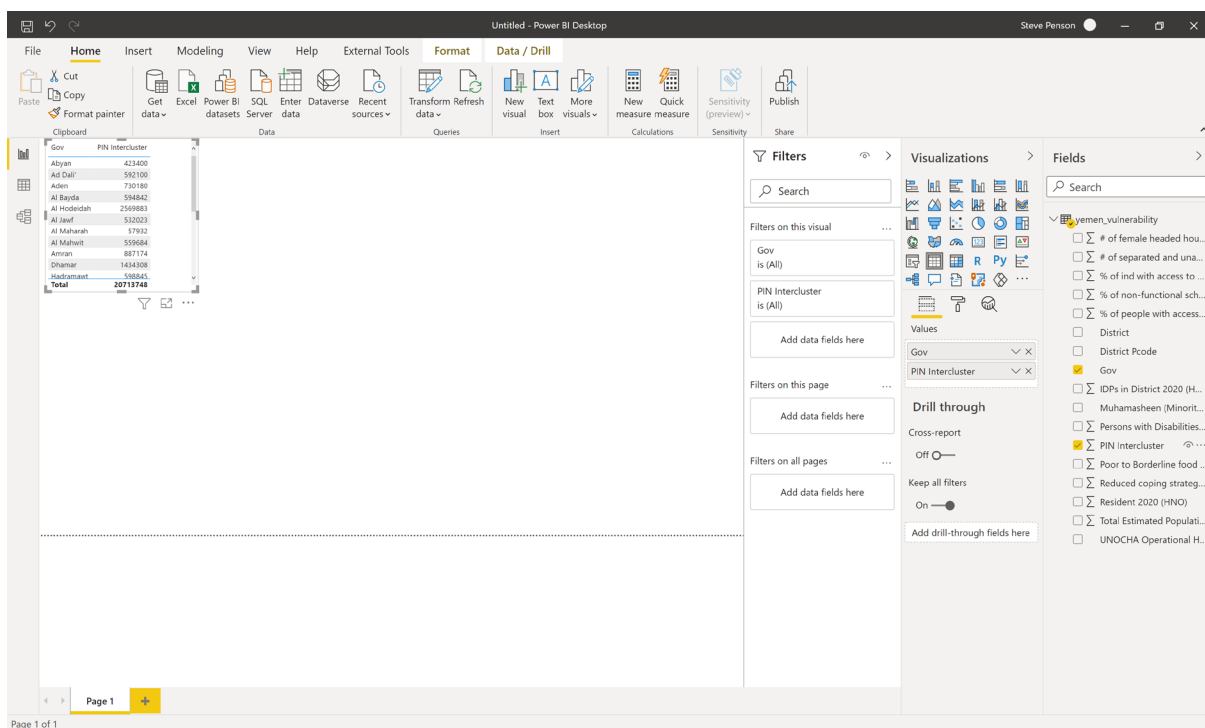
6. Once loaded, the Excel spreadsheet data will be available in the Fields panel on the right hand side. This contains available column names we can use for analysis.



7. In the Fields panel click 'Gov'. A new table will be created in the dashboard window.

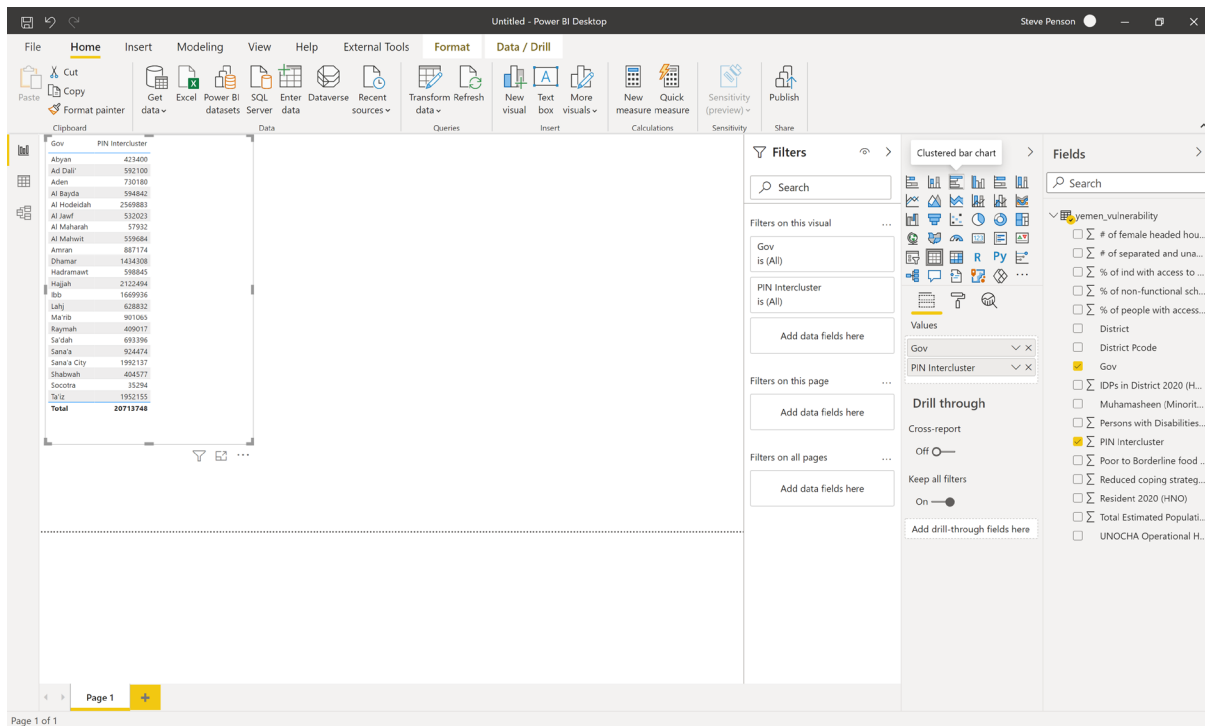



8. In the Fields panel click 'PIN Intercluster'. The number of PIN per governorate will be added to the table.

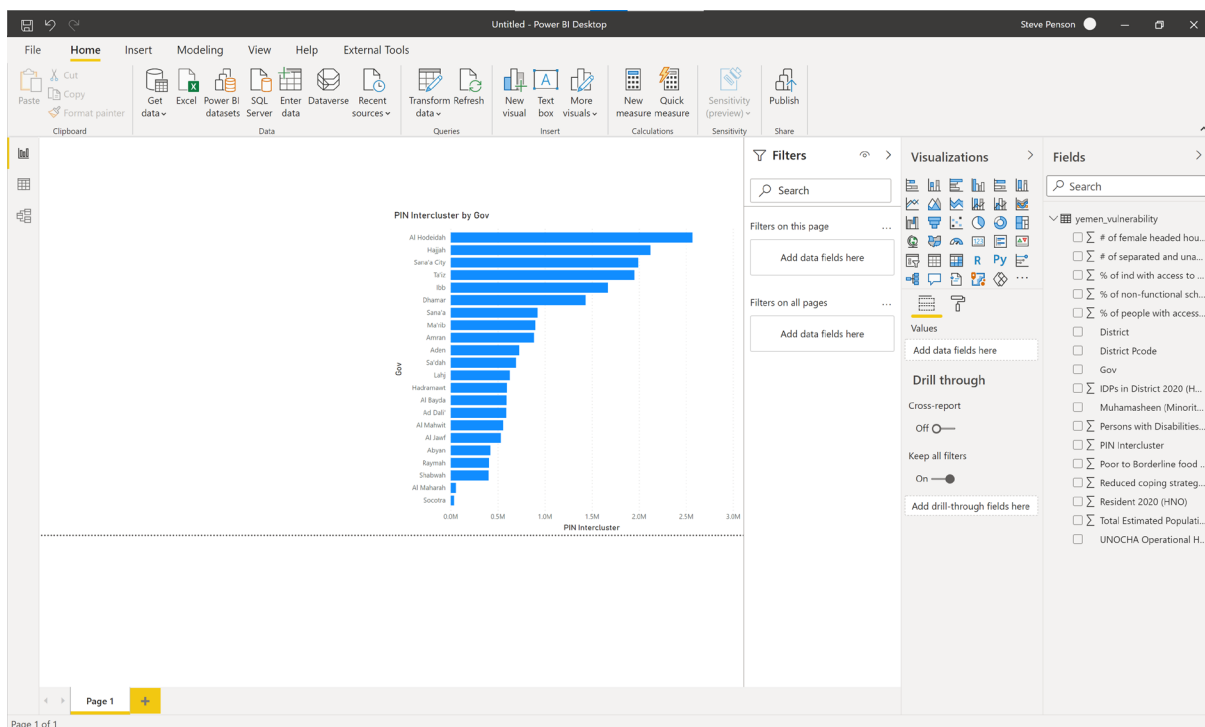




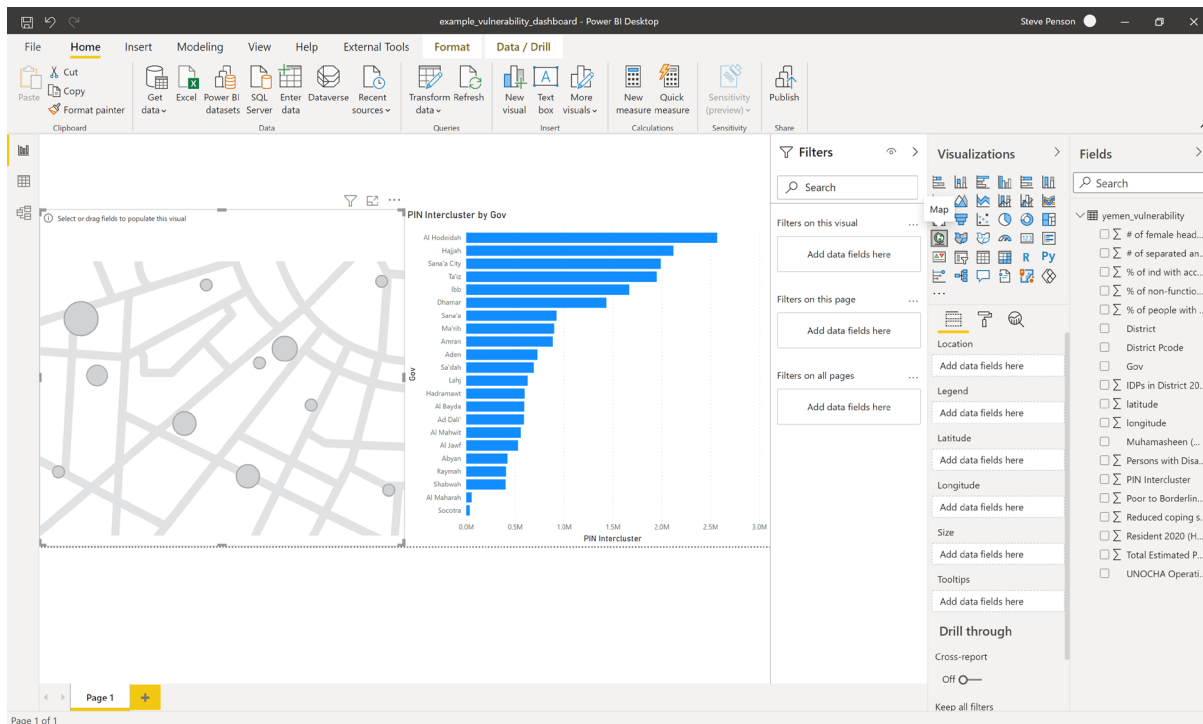
9. Click on the table and drag down to show the whole table.



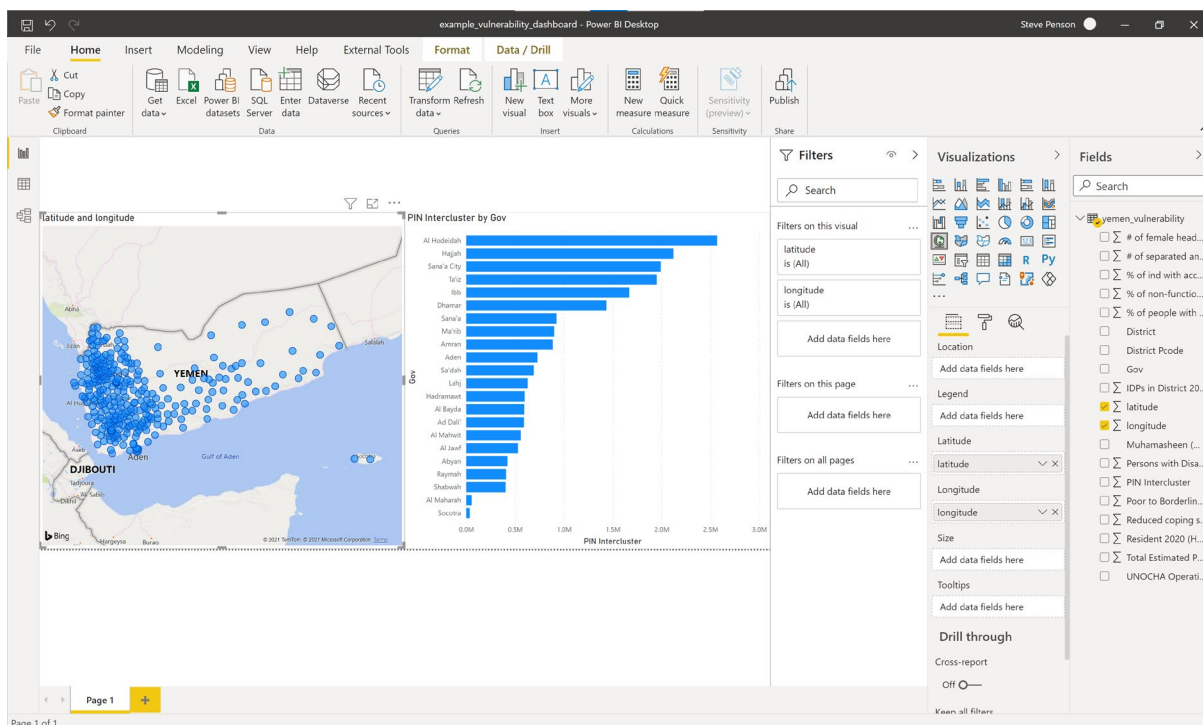
10. Once the table is selected, under the Visualisation panel click on the Clustered Bar chart icon .



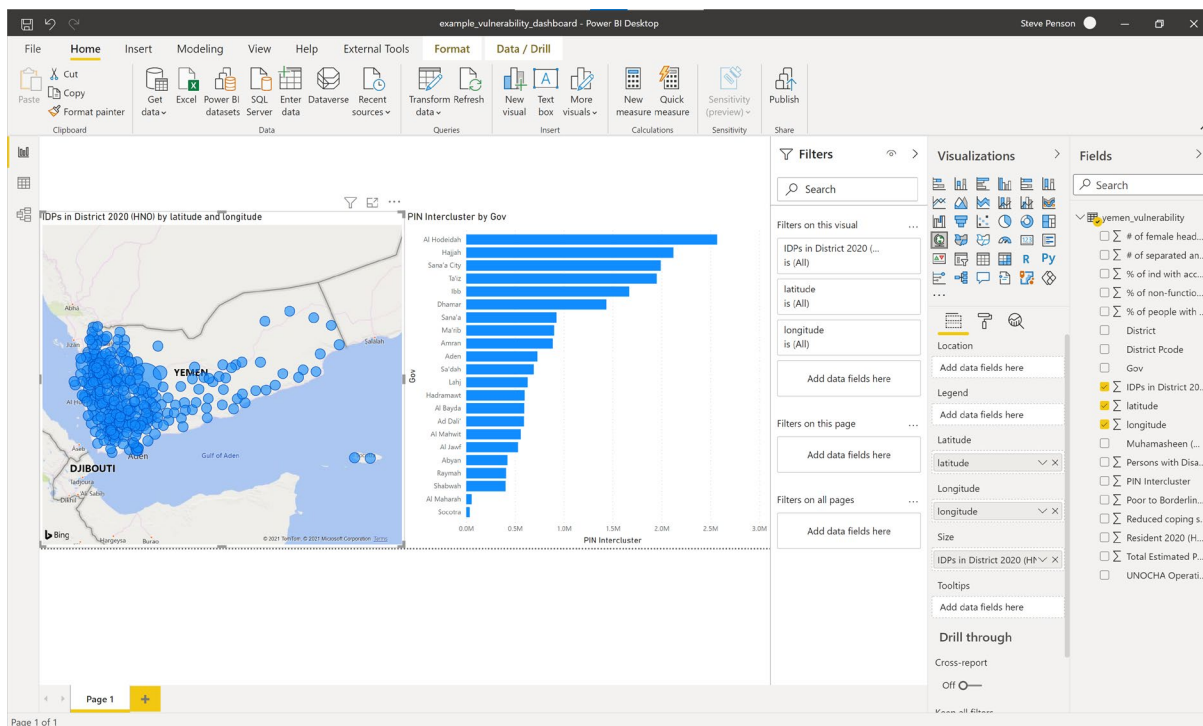
11. On the Visualisations panel select the Map icon . A new empty panel will be created in the dashboard.




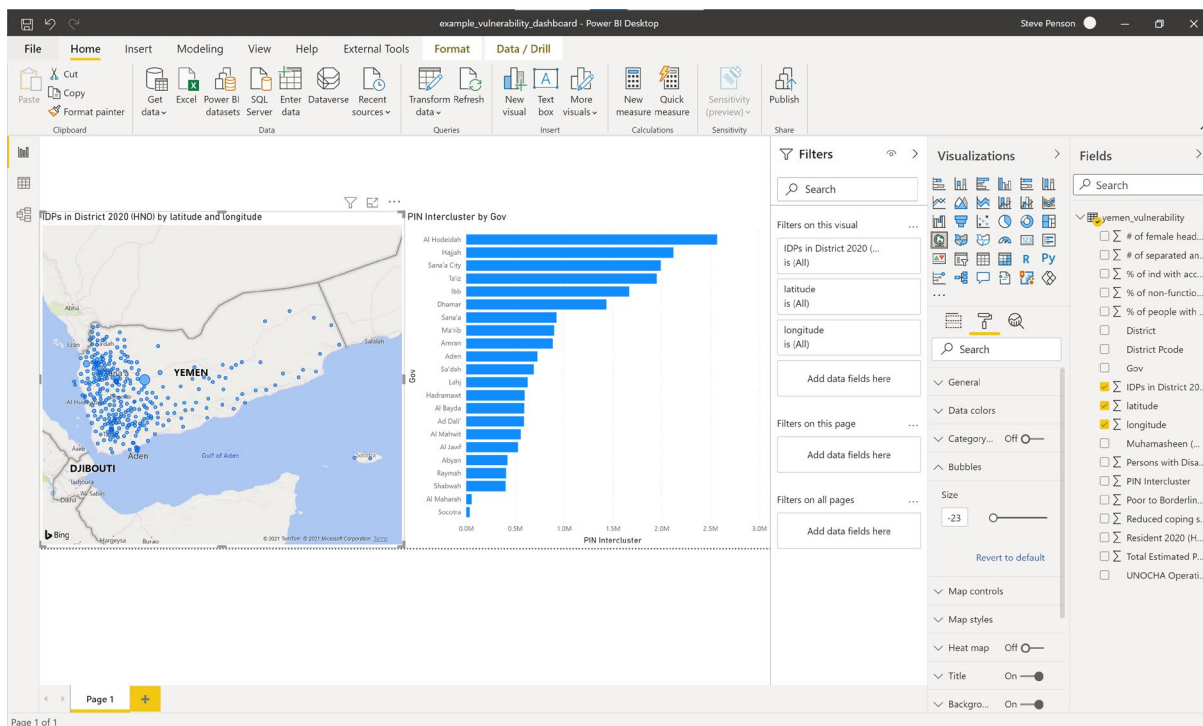
12. From the Fields panel, drag and drop the 'latitude' field to Latitude and the 'longitude' field to Longitude. Points representing each district should now be visible on the map.



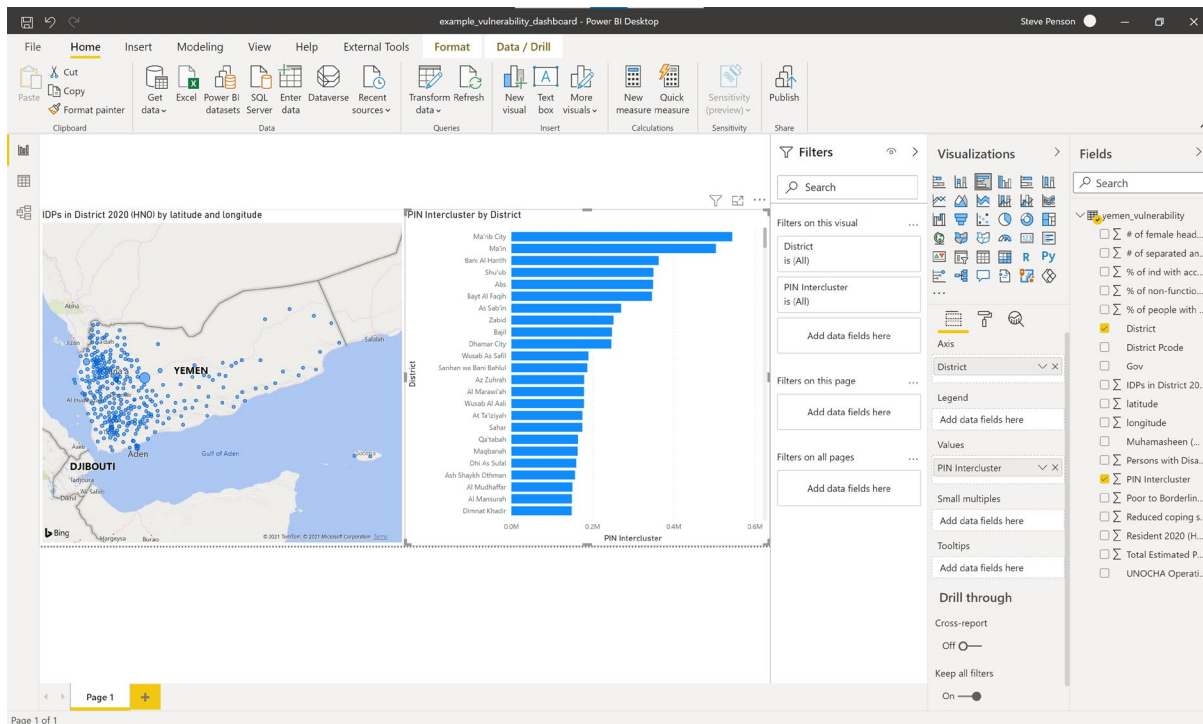
13. From the Fields panel, drag and drop the 'PIN Intercluster' field to Size. The district points will now be sized based on the number of people in need within the district.




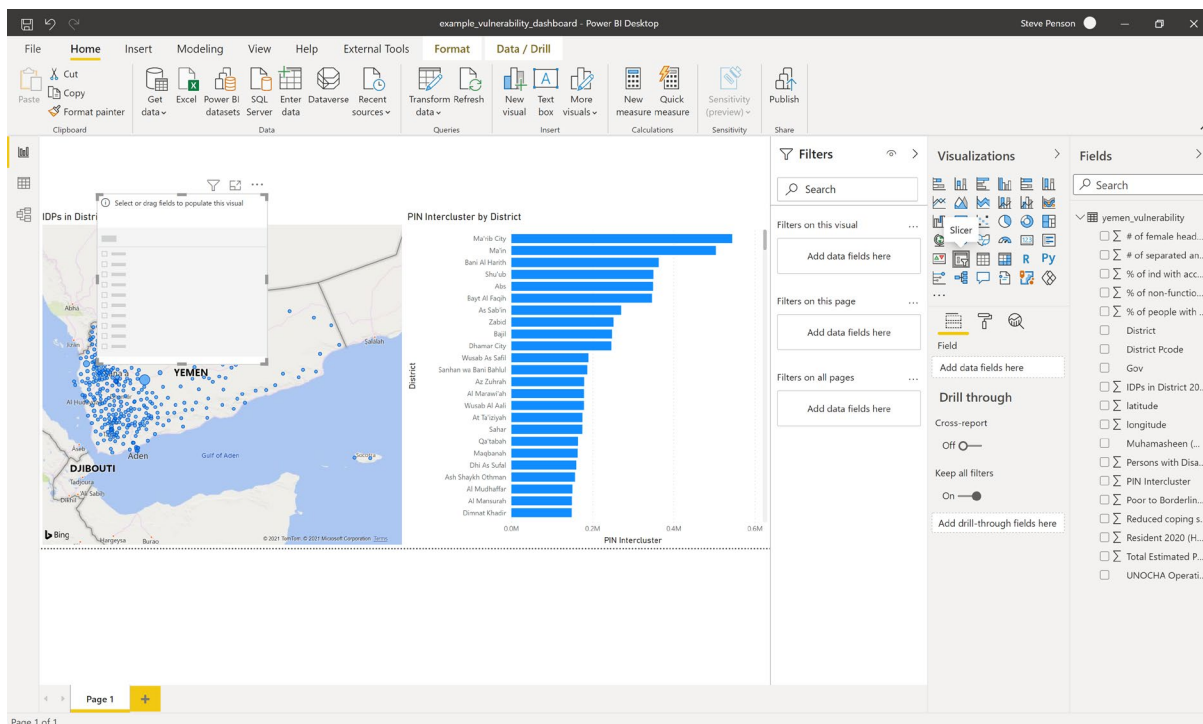
14. With the map selected, click the Format icon . Under the bubbles option, it is possible to readjust the size of the bubbles to make the map clearer.



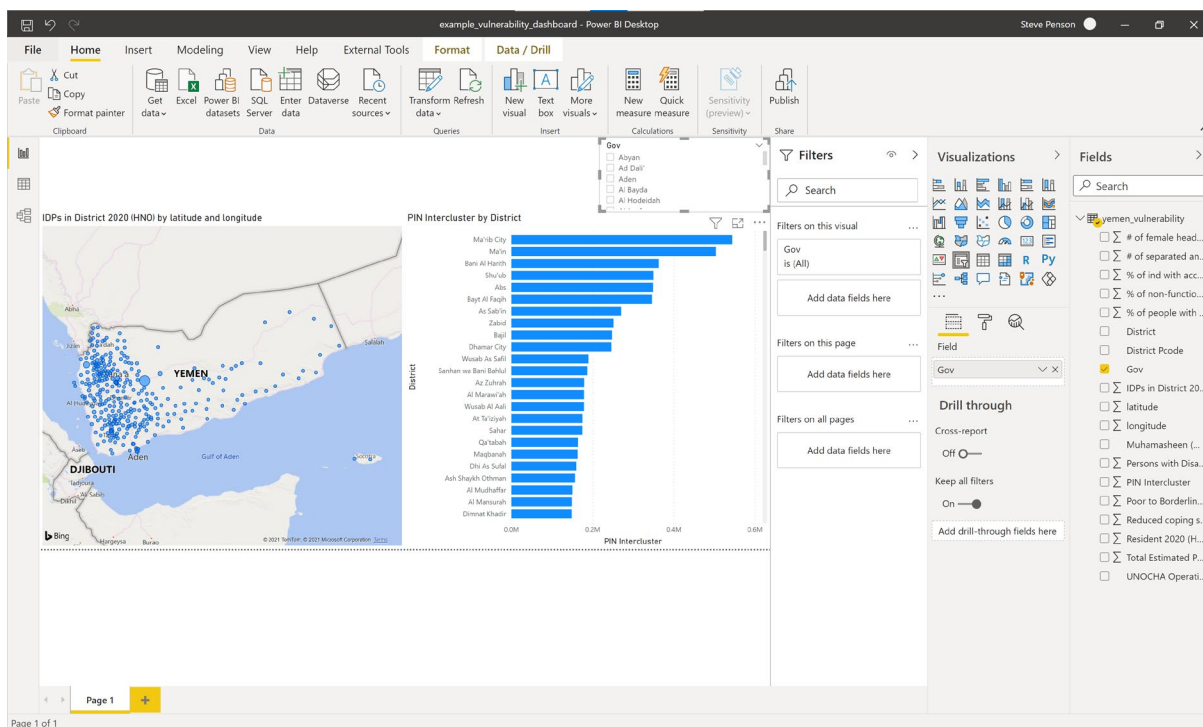
15. To adjust the bar graph from Governorate to District, click on the graph and drag and drop the District field into Axis section of the Visualisations panel. The graph will now show PIN per district rather than by governorate.



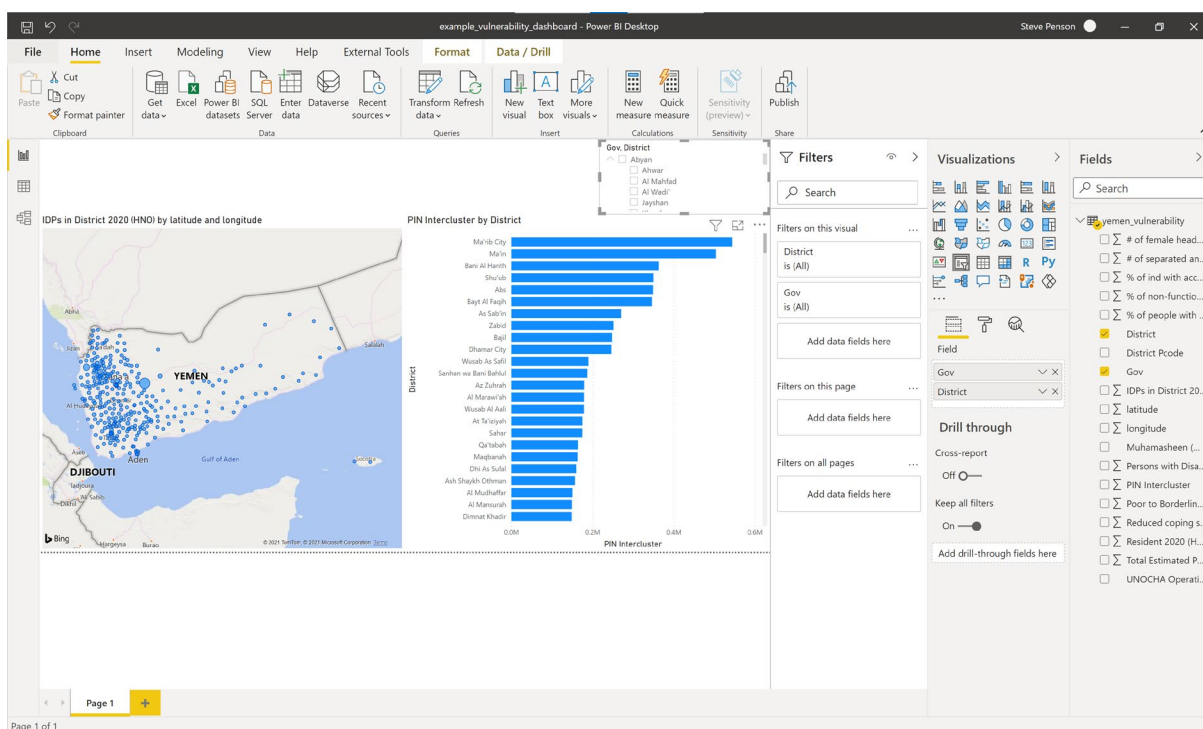
16. To be able to filter the data by governorate and district, click on the dashboard window away from the graph and map and select the Slicer icon . A blank slicer panel will appear on the dashboard window.



17. With the Slicer panel selected, from the Fields panel click Gov.

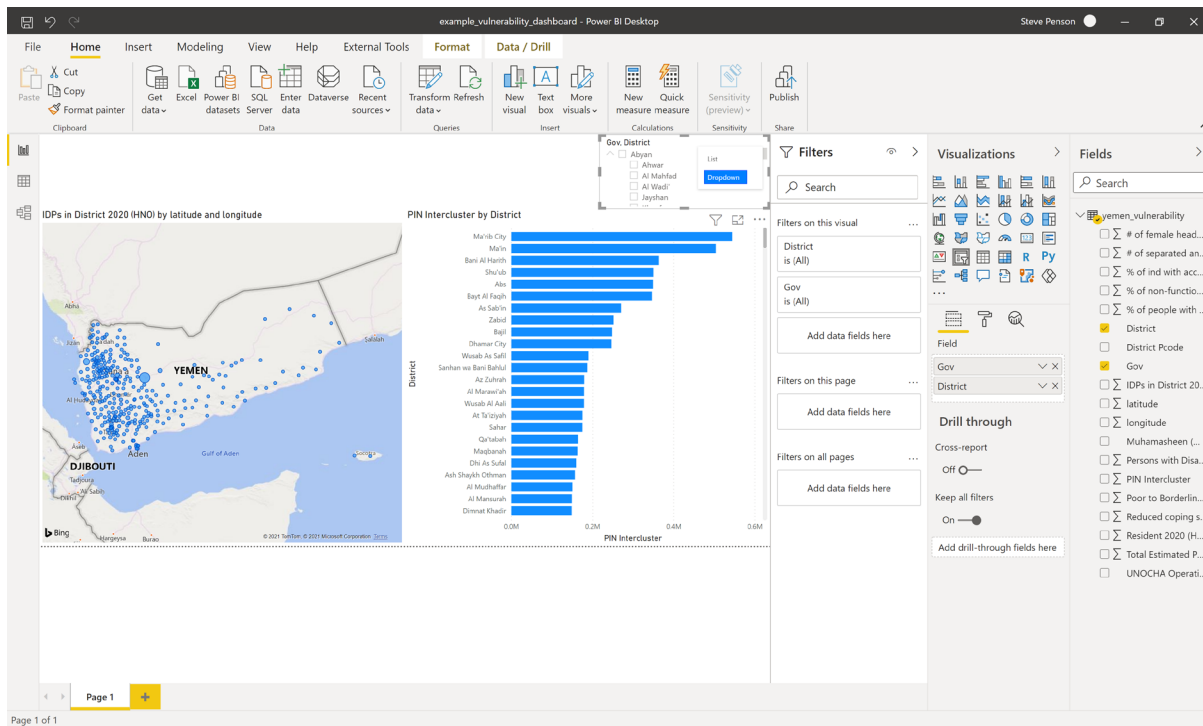


18. Click District. Both governorate and district will now be available in the slicer, giving the user to 'drill-down' the select the geography.

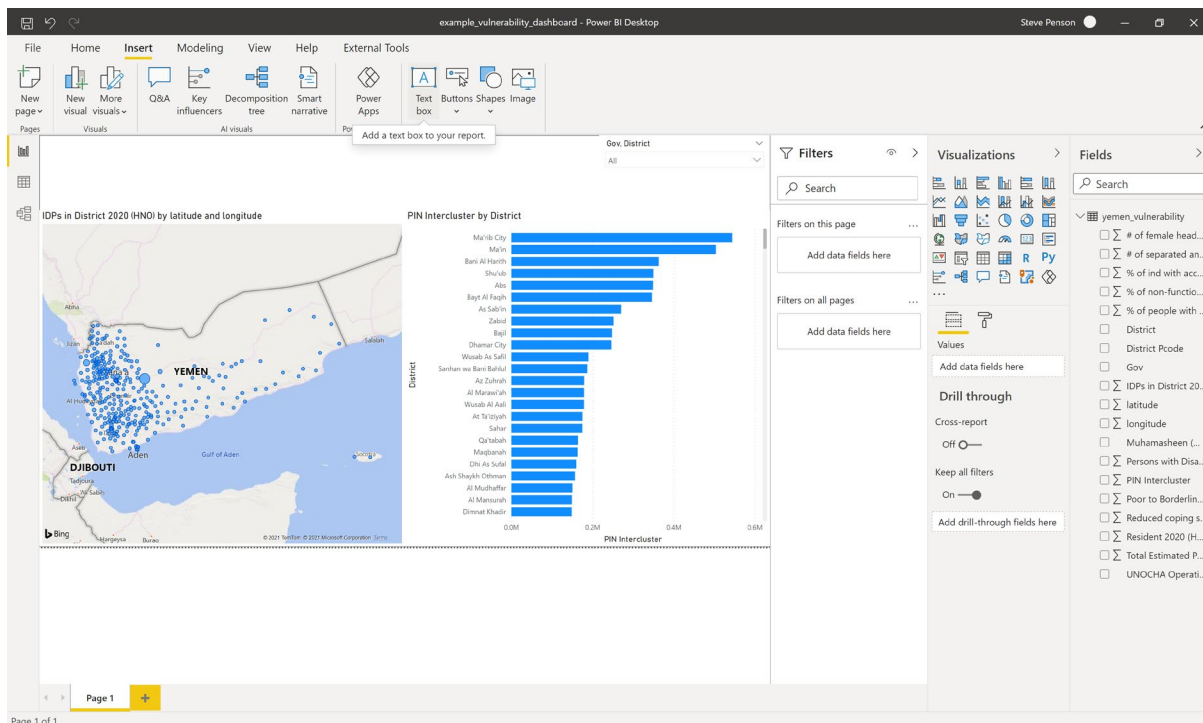




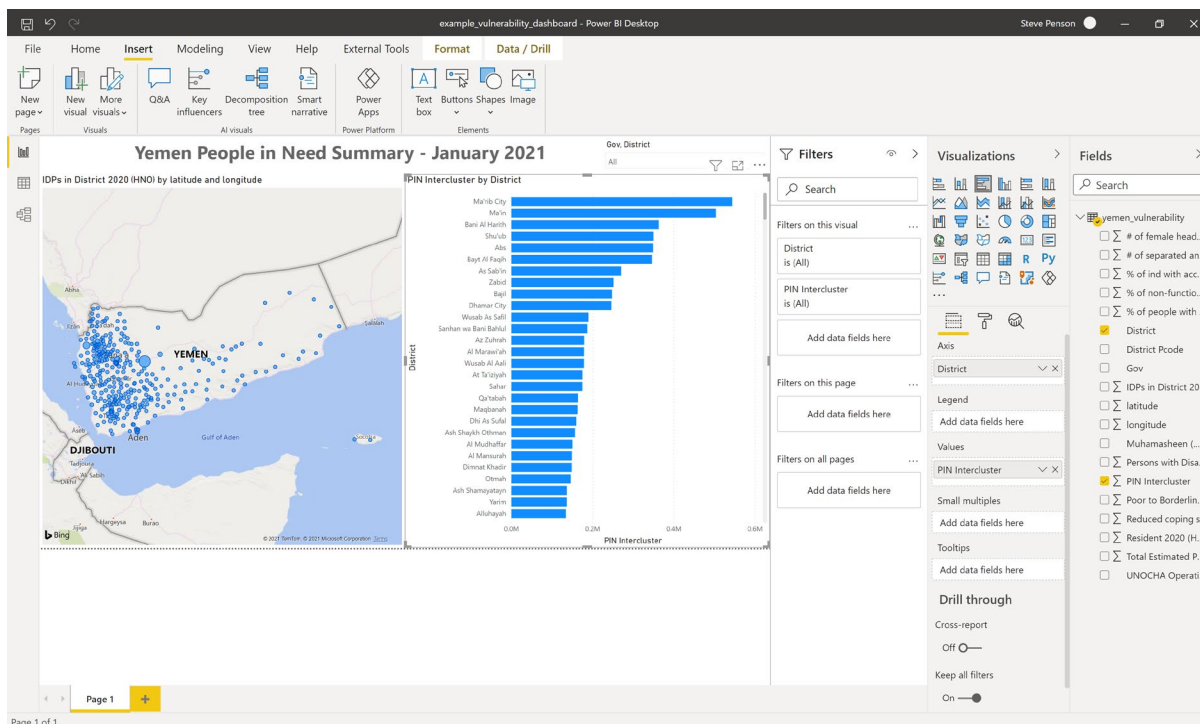
19. To the top right of the Slicer box, click the dropdown and select Dropdown option – this will change the Slicer from a filter list to a dropdown filter.



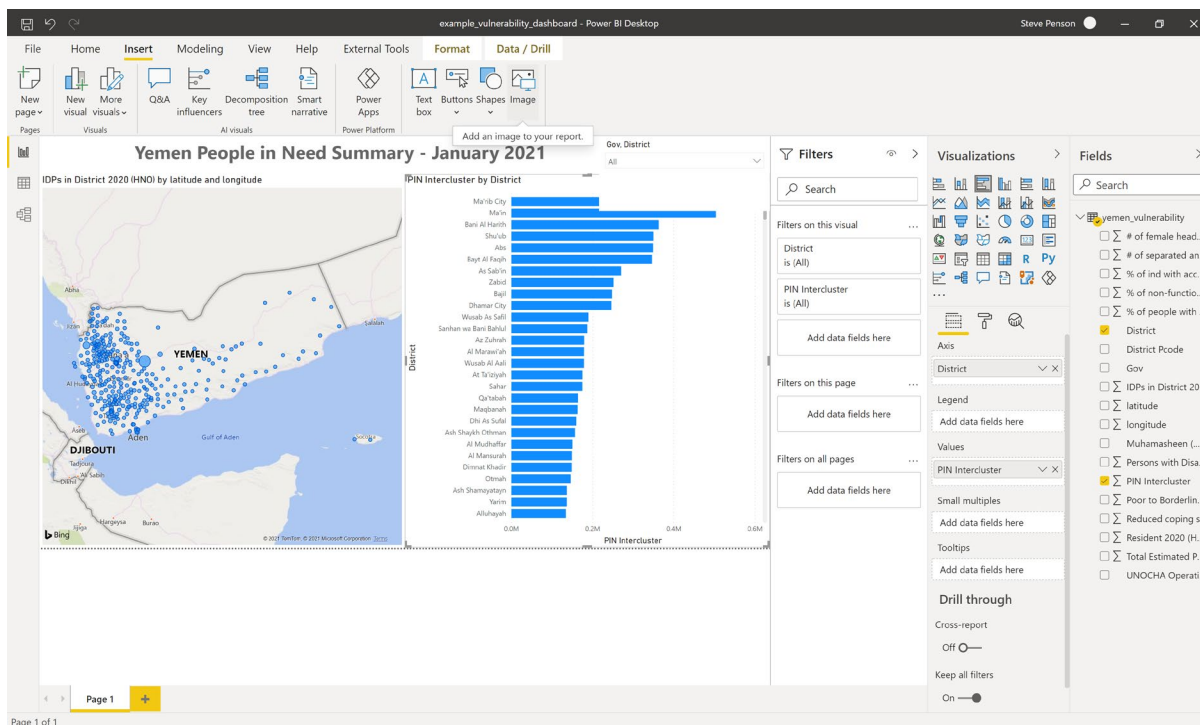
20. To add a title to your dashboard, under the Insert menu click Text box. Draw a text box within the dashboard window.



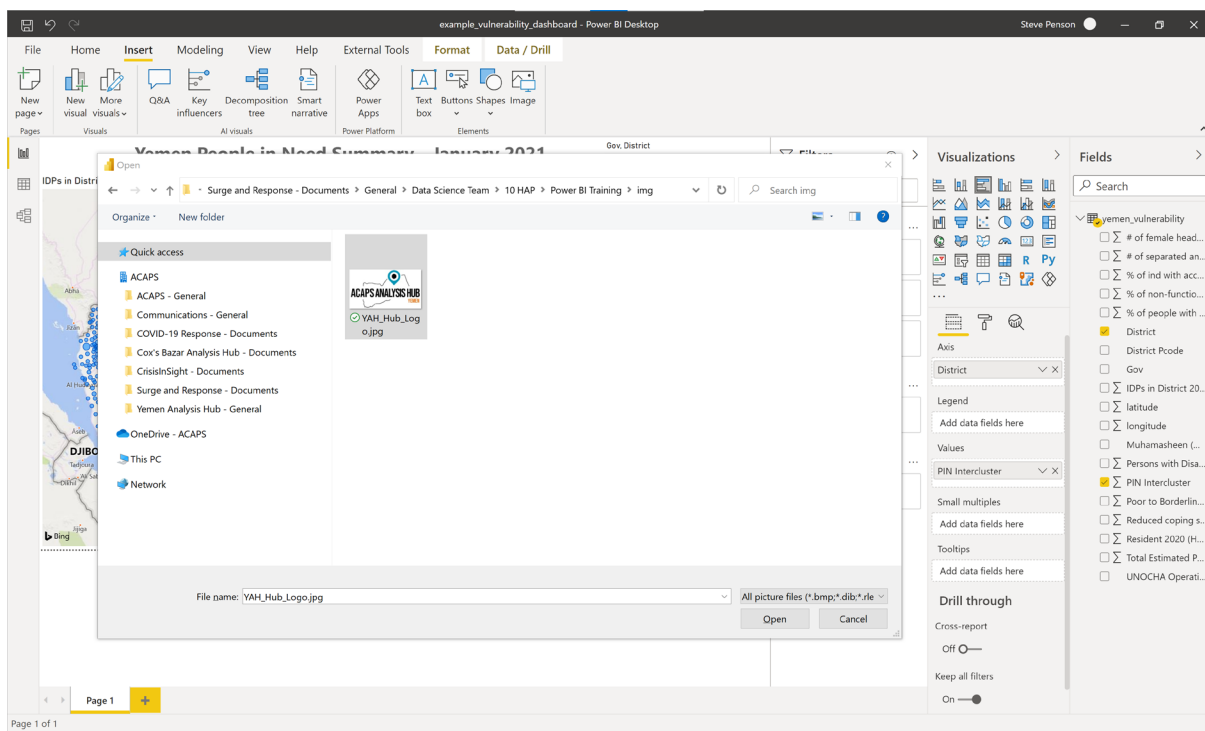
21. Into the text box type a title such as 'Yemen People in Need Summary – January 2021'.



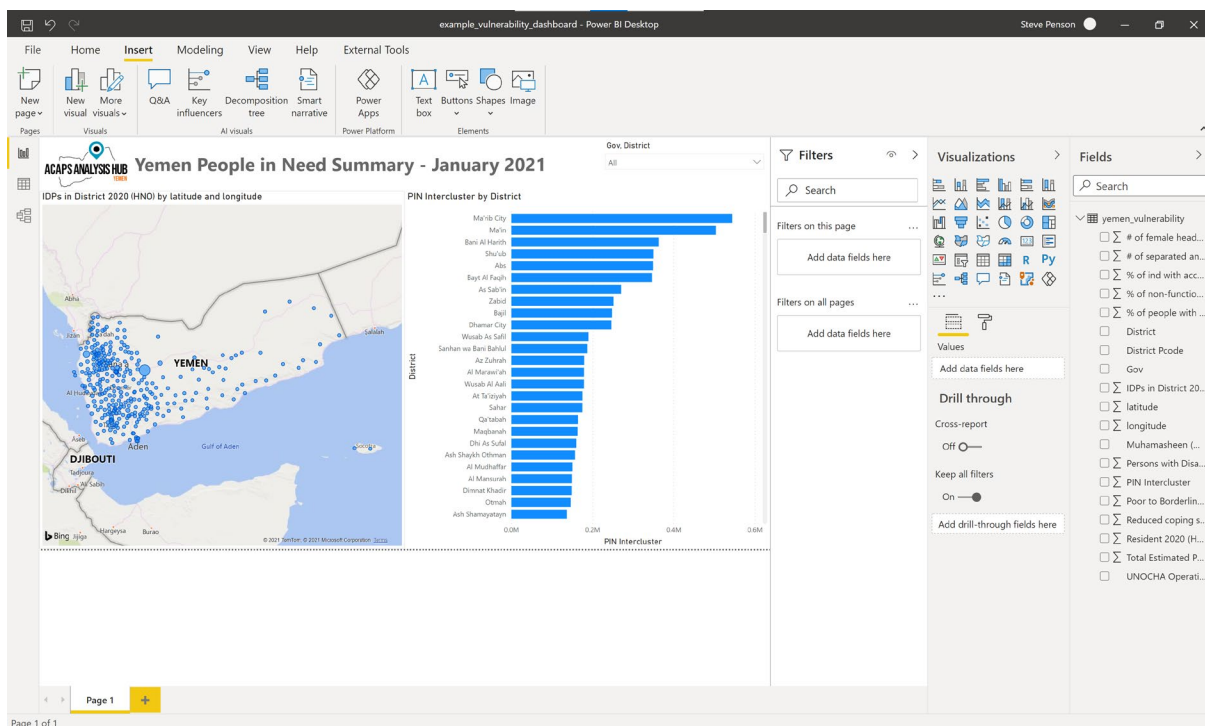
22. To add an logo to your dashboard, under the Insert menu click Image. Draw a Image box within the dashboard window.



## 23. Locate the image location and click Open

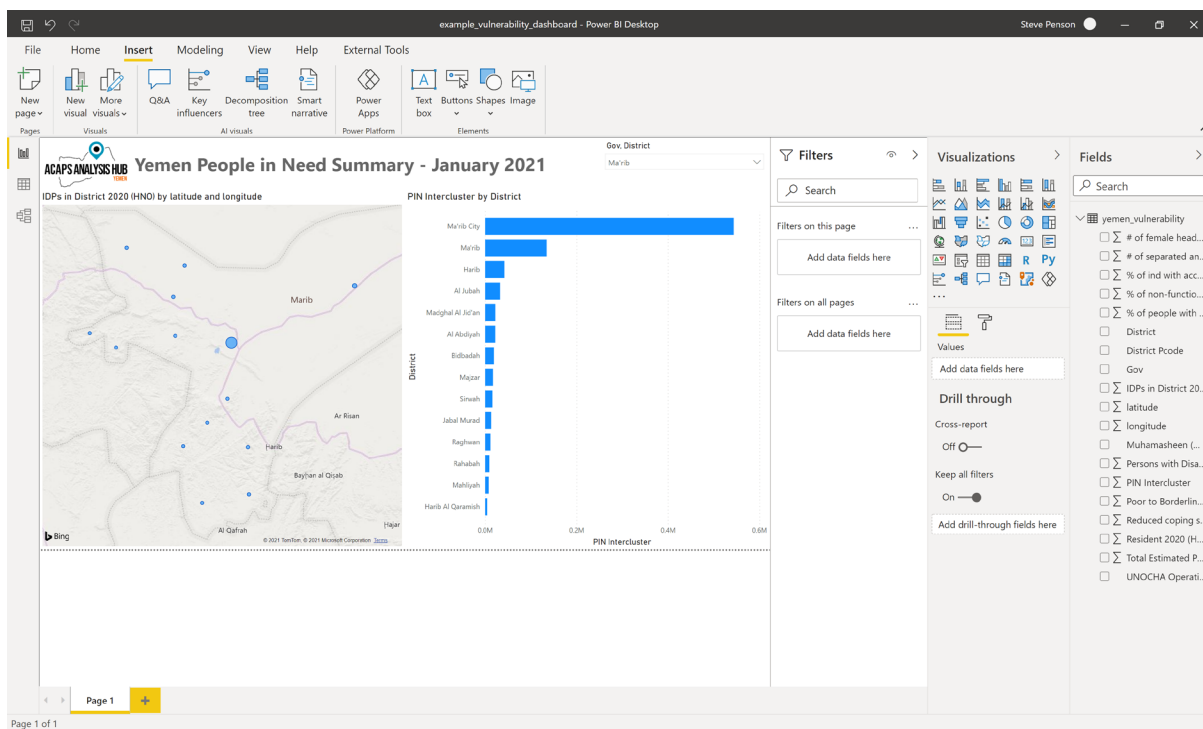


## 24. Rearrange the dashboard objects as required.

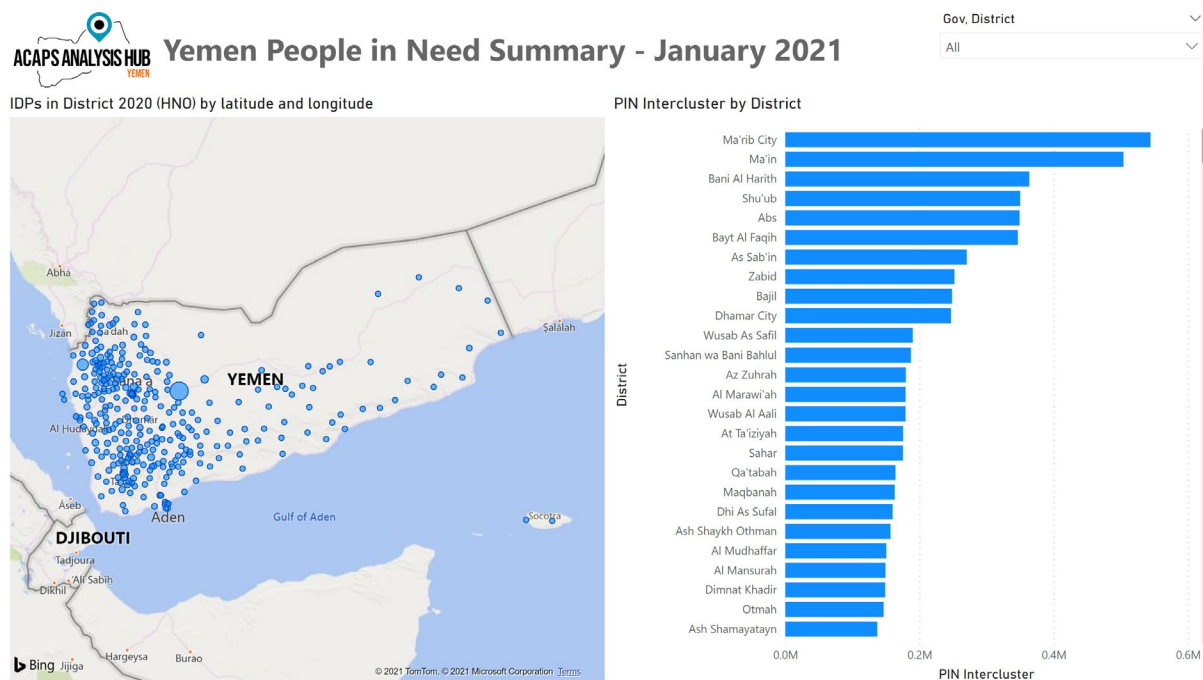




25. You can use the slicer, points on the map or graph to filter the dashboard.



26. The dashboard is now complete. It is now possible to analyse and filter PIN numbers by district using both the map and the graph.



27. To save your dashboard, click File -> Save As and save in a suitable location. Power BI files are saved as .pbix files.

## Additional exercises

Now you have completed your first operational dashboard, attempt to answer the following questions by adding additional functionality and analysis to your dashboard:

1. Using fields 'IDPs in District 2020 (HNO)' and 'Total Estimated Population 2020 (HNO)', identify which district has the highest number of IDPs as a percentage of population?  
Note: Total Estimated Population = IDPs in District + Resident. Any Districts where this does not add up suggests incorrect data and should be flagged or removed from the analysis
2. Using fields '% of people with access to a regular income' and 'Total Estimated Population 2020 (HNO)', calculate the 5 top districts which have the highest estimated population without access to a regular income. What might be the limitations with this methodology?
3. Using the 'Muhamasheen (Minority Group Presence)' field, create a table, map and filter visualising which districts have Muhamasheen present and which districts do not.

## Further training resources

Further training resources can be found at <https://powerbi.microsoft.com/en-us/learning/>.



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

## Appendix 1 – Data review

Field	Description
<b>District Pcode</b>	PCODES are unique admin area codes use to define a geographical area such as an governorate or district boundary. Using PCODES helps to ensure consistency between datasets as using a unique code mitigates against issues of different place names spellings and ensures datasets can be joined easily. PCODES are assigned by UNOCHA and are part of the Common Operational Datasets.
<b>UNOCHA Operational Hub</b>	Name of the UNOCHA Operational Hub used to plan OCHA humanitarian programmes.
<b>Gov</b>	Governorate name.
<b>District</b>	District name.
<b>IDPs in District 2020 (HNO)</b>	Number of internally displaced people (IDPs) within district as taken from the 2020 Humanitarian Needs Overview.
<b>Resident 2020 (HNO)</b>	Number of non-IDP residents within district as taken from the 2020 Humanitarian Needs Overview.
<b>Total Estimated Population 2020 (HNO)</b>	Total number of IDPs and residents within district as taken from the 2020 Humanitarian Needs Overview.
<b>Persons with Disabilities (Physical and Mental 15%)</b>	Approimation of the number of persons with disabilities by district.
<b># of separated and unaccompanied children</b>	Number of separated and unaccompanied children by district.
<b># of female headed households</b>	Number of female headed households by district.
<b>Muhamasheen (Minority Group Presence)</b>	Whether the district contains vulnerable Muhamasheen communities.
<b>% of non-functional schools</b>	Percentage of non-functional schools within the district.
<b>% of people with access to a regular income</b>	Percentage of people with access to a regular income.
<b>Reduced coping strategies index</b>	The Reduced Coping Strategies Index (RCSI) is a proxy indicator of household food insecurity. The higher the rCSI score, the worse the food insecurity as people are deemed to be using more negative coping strategies.
<b>Poor to Borderline food consumptions scores (Jan 2019)</b>	Number of people deemed to be have poor or borderline food consumption as of January 2019 by district.
<b>% of ind with access to markets</b>	Percentage of individuals with access to market by district.
<b>PIN Intercluster</b>	Number of intercluster people in need by district.
<b>longitude</b>	Geographical longitude of the centre point of the district.
<b>latitude</b>	Geographical latitude of the centre point of the district.