CMBI

Power BI Samples

Power BI Samples

Australian Federal Election 2019

Release Notes

POWER BI SAMPLE RELEASE NOTES

Overview and acknowledgements

CMBI present this Power BI sample using the Australian Federal Election 2019 AEC data.

Download the sample at

http://www.cmbi.com.au/Power_BI_and_Power_Pivot_Samples.html

View the source data at

https://tallyroom.aec.gov.au/HouseDownloadsMenu-24310-Csv.htm

View the source GIS data at

https://www.aec.gov.au/Electorates/gis/gis_datadownload.htm

Thanks to Map Shaper for their conversion tool for GIS data

https://mapshaper.org/

Thanks to the Australian Electoral Commission for making the data available in an accessible format.

About the data

The ***Australian_Federal_Election_2019_PowerBI_CMBI_Sample_V1.0.pbix*** Power BI model imports various data sets from the Australian Electoral Commission (AEC) website. The AEC update these data sets throughout the day as electoral divisions are declared. When we ***Refresh*** the Power BI model we get the latest data published by the AEC.

Election results

The model imports data for the House of Representatives (lower house).

MPs for the House of Representative s represent a Division. A candidate becomes an MP if they win the vote for that Division. For a quick explanation of how the AEC determine the Division winner, see

https://www.aec.gov.au/voting/counting/hor_count.htm

Using the model

CMBI provide this model as an engaging Power BI sample using real-world data. We have performed basic unit testing of the data but we do not intend this to be a source of reference for those interested in electoral statistics. If your primary interest is electoral statistics then please visit https://tallyroom.aec.gov.au/HouseDefault-24310.htm to validate any insights you gain from this model.

POWER BI SAMPLE FEATURES

The ***Australian_Federal_Election_2019_PowerBI_CMBI_Sample_V1.0.pbix*** Power BI model demonstrates a number of useful Power BI features. We will briefly outline some of highlights in the sections below.

Visualisation features

- Custom Tooltips
- Drillthrough
- Slicers
- Conditional formatting
- Shape Map

Model features

- Calculated Columns - DAX
- Measures – DAX
- Data model

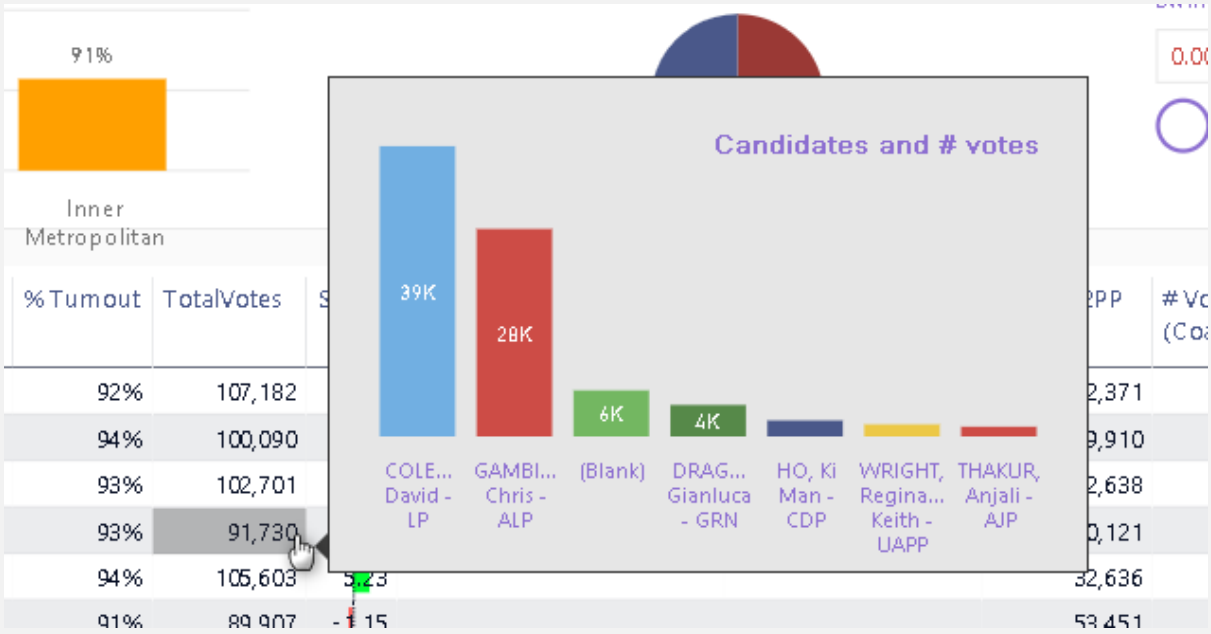
Power Query features

- Refreshing the model
- Privacy setting (to avoid issues refreshing the model)
- Power Query custom functions

VISUALISATIONS FEATURES

Custom tooltips

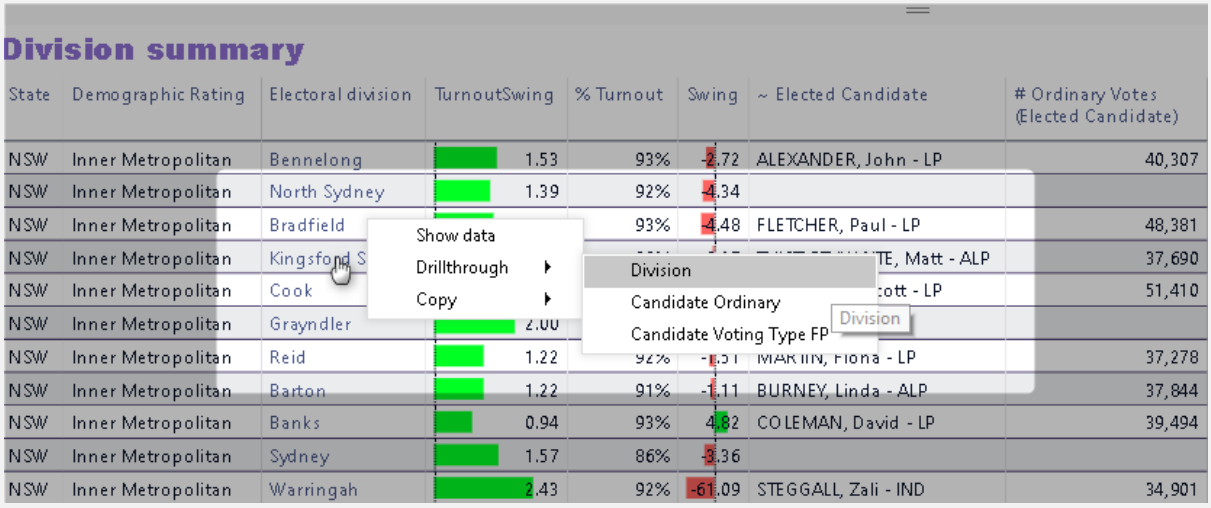
When you hover over a row in the Division tab table you should see a pop up graph showing the results by Candidate for that Division.



We define the Custom Tooltip in the Candidates tab and set it in the Tooltip option of the Table visualisation.

Drillthrough reports

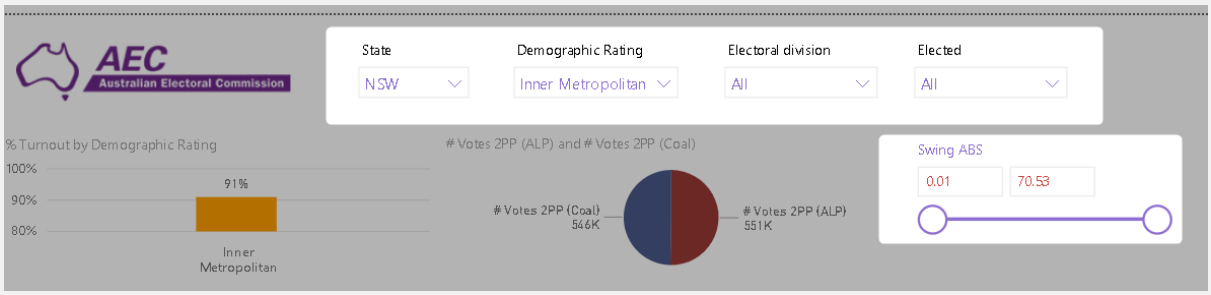
We can drillthrough from the table in the Division to various sub reports.



Right click on the row and navigate the sub menus to choose a Drillthrough report. It is a simple process to set up a Drillthrough report.

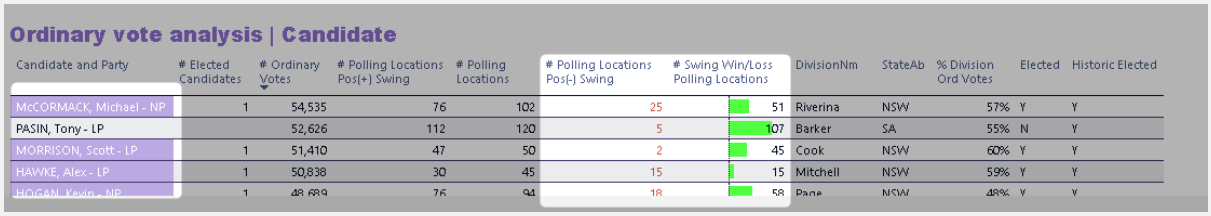
Slicers

We have added a couple of regular *Slicers* and a *Numeric Range Slicer* for the Swing. Use these to filter the results on each of the tabs.



Conditional formatting

The tables throughout the model make extensive use of conditional formatting. It is a great way to add a visual element to a table in a compact space.



Conditional formatting in this model includes

- Background colour
- Font colour
- Data bars

You can set conditional formatting independently for each column/field in the Power BI table.

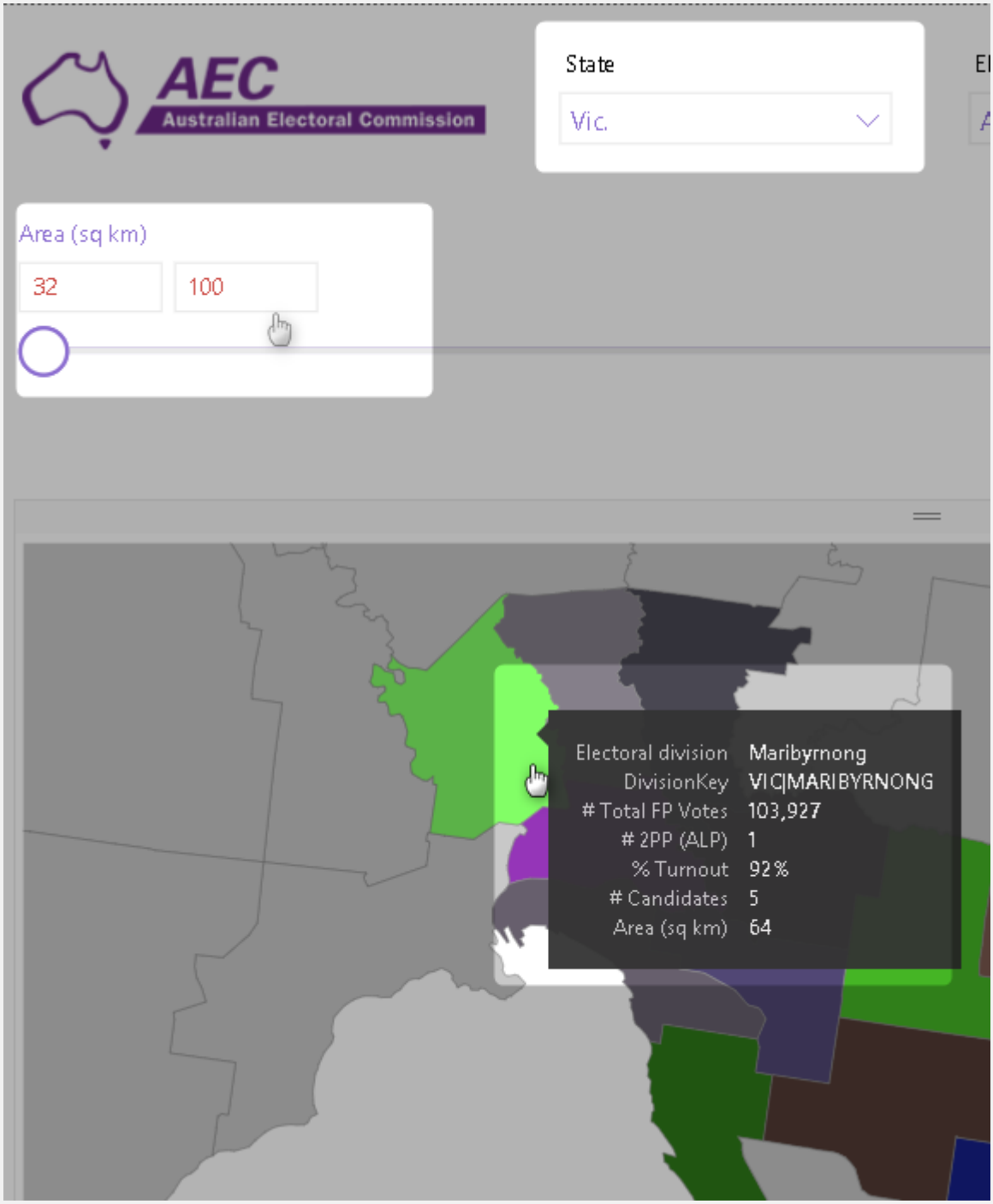
Shape map

The shape map requires a couple of steps to work correctly. Power BI by default only includes shape map boundaries for Australian States, not suburbs, electoral divisions or other more granular political boundaries.

To create an effective Australian Shape Map in Power BI you often need to get a Shape file from a government website and then convert that Shape File to a JSON format using Map Shaper or similar service. You then import the GeoJSON file into the Power BI model.

https://mapshaper.org/

In this shape map, we also include numeric slicer for Swing and Division area.


AEC
Australian Electoral Commission
State
Vic.
Area (sq km)
32
100
Electoral division Maribyrnong
DivisionKey VIC|MARIBYRNONG
Total FP Votes 103,927
2PP (ALP) 1
% Turnout 92%
# Candidates 5
Area (sq km) 64

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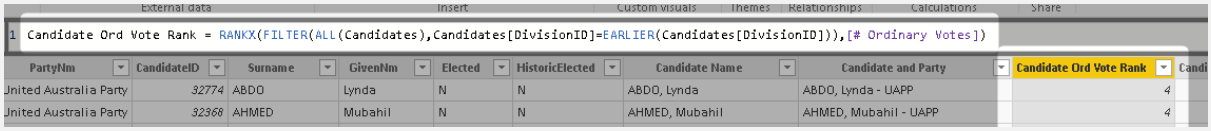
MODEL FEATURES

Calculated columns – DAX

We augment the basic data model with calculated columns that we can then use in Slicers or further DAX measures. The Candidate table has a couple of calculated columns

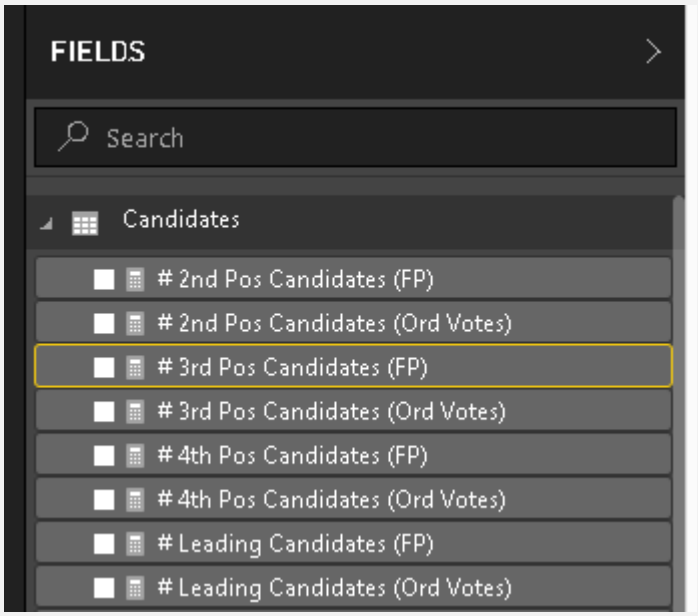



```
Candidate Ord Vote Rank =
RANKX(FILTER(ALL(Candidates),Candidates[DivisionID]=EARLIER(Candidates[DivisionID])),[#
Ordinary Votes])
```

The Candidate Ord Vote Rank column calculates the rank by number of ordinary votes.

Measures - DAX

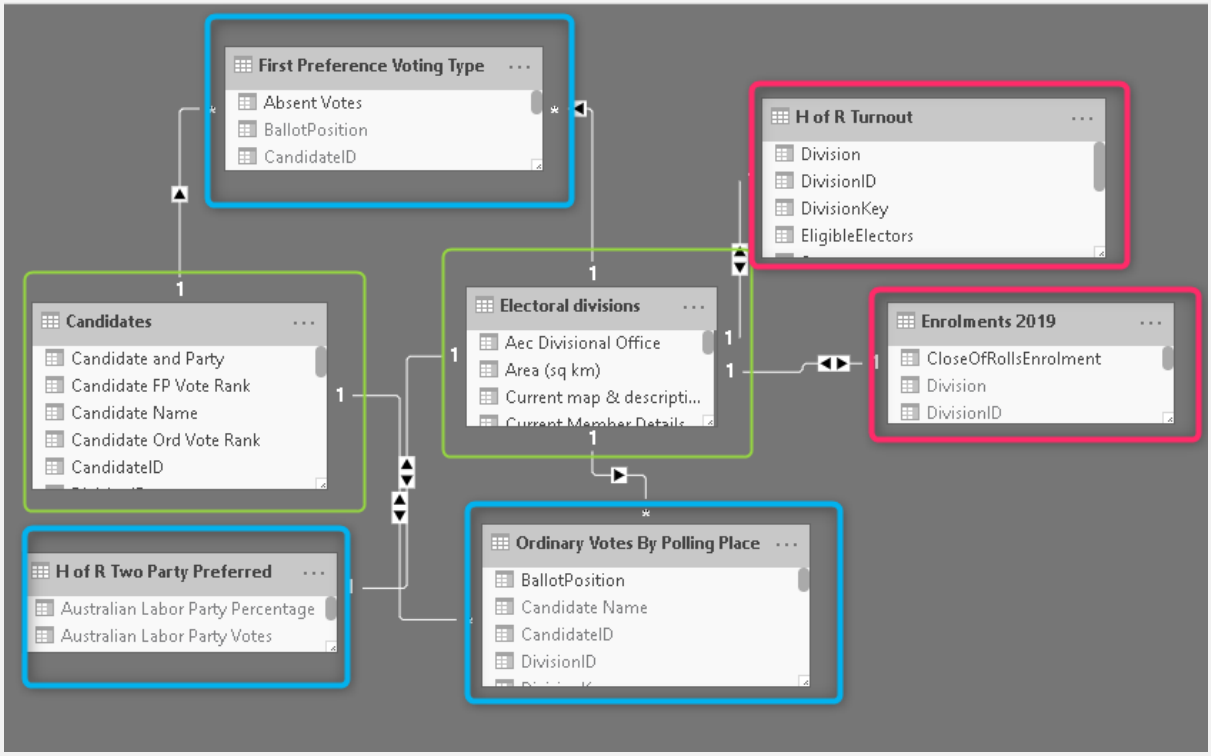
The model includes various DAX measures to provide further insight. You can inspect the measure formulae by selecting a measure in the FIELDS pane and




```
# 3rd Pos Candidates (FP) = COUNTROWS(FILTER(Candidates,Candidates[Candidate FP Vote
Rank]=3))
```

Data model

The data model defines the relationships between the individual data imports.



The data model view shows the links between the various AEC data sets.

- Green highlighted reference tables (Electoral Division, Candidates)
- Blue highlighted data tables that link to both reference tables
- Red highlighted data tables that link to just the Electoral Division

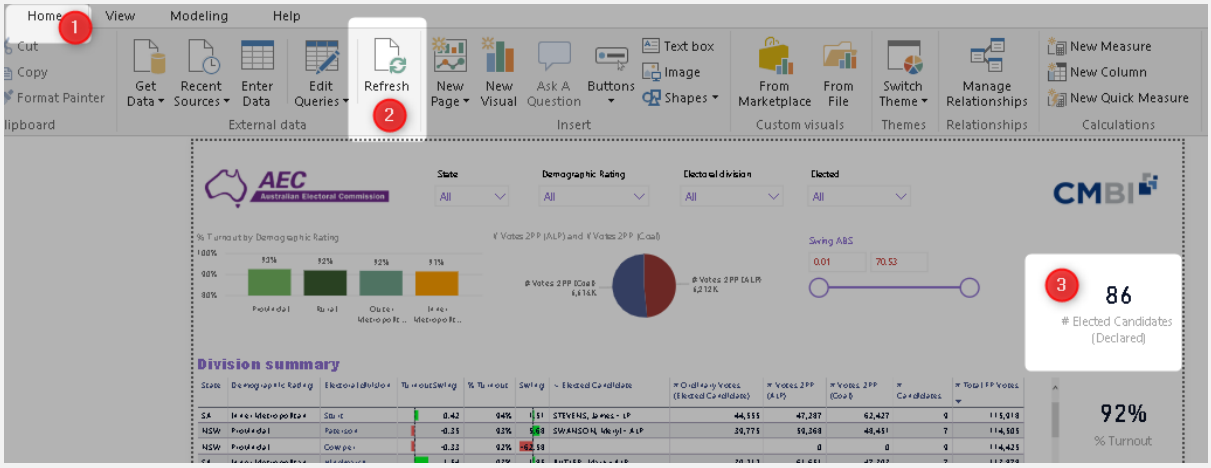
POWER QUERY FEATURES

We can refresh the model to get the latest data from the AEC. The model uses a number of relatively simple and more complex data import routines.

Refreshing the Power BI data

We refresh the model with the following steps

1. Navigate to Home tab
2. Press Refresh
3. Watch the # Elected Candidates (Declared) : it may update as more Divisions are declared



Privacy settings

If you get errors on the refresh, it may be for two reasons

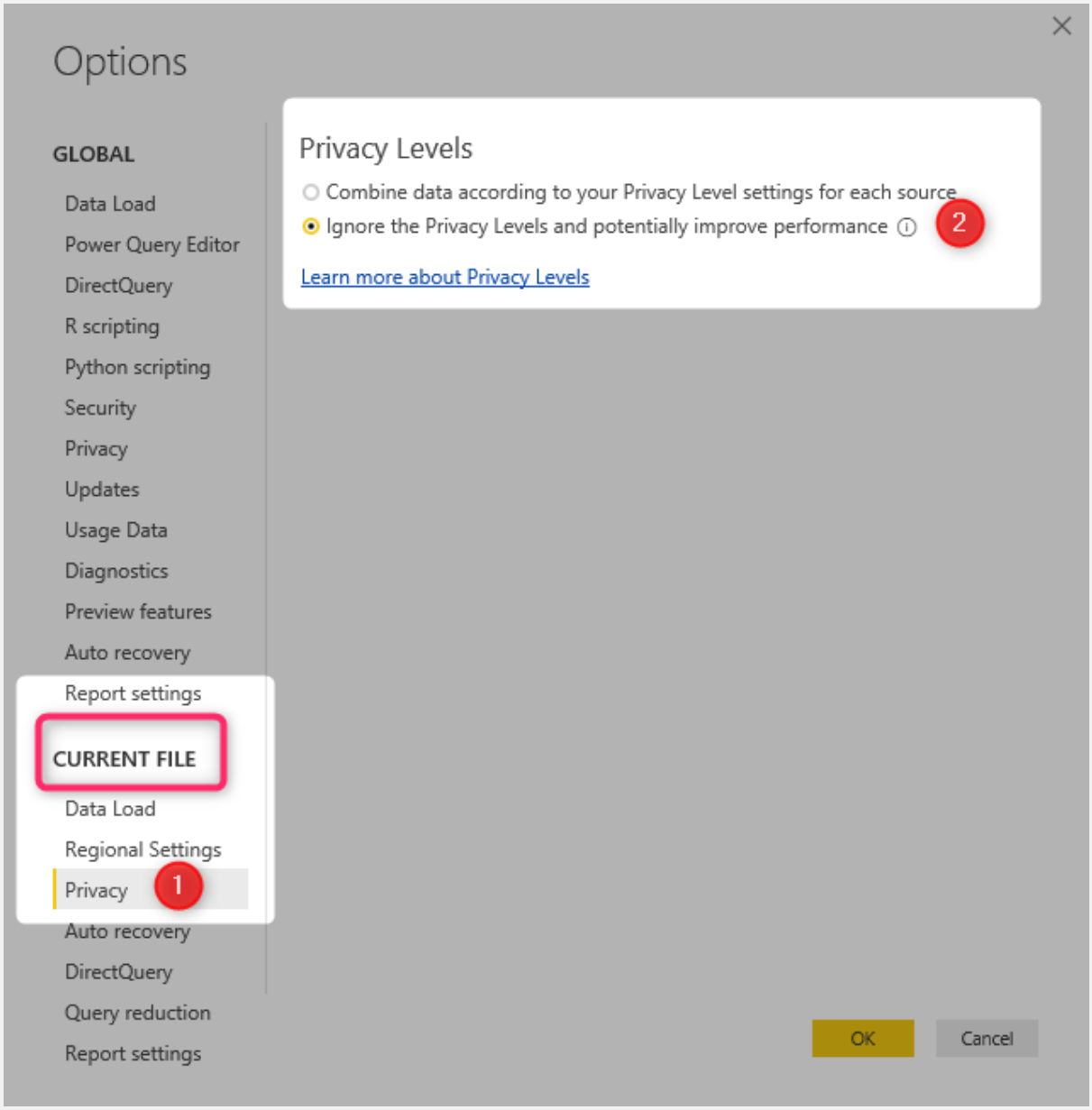
1. Internet or firewall issues with your location/PC
2. Privacy settings on the workbook (which you can easily fix)

Fixing privacy setting

This model uses Public data so we have no issues ignoring Privacy setting (which can cause refresh issues on more complex Power Query).

Select Options and settings in the Power BI File Menu. Then

1. Select Privacy option in CURRENT FILE section
2. Select Ignore the Privacy Levels…



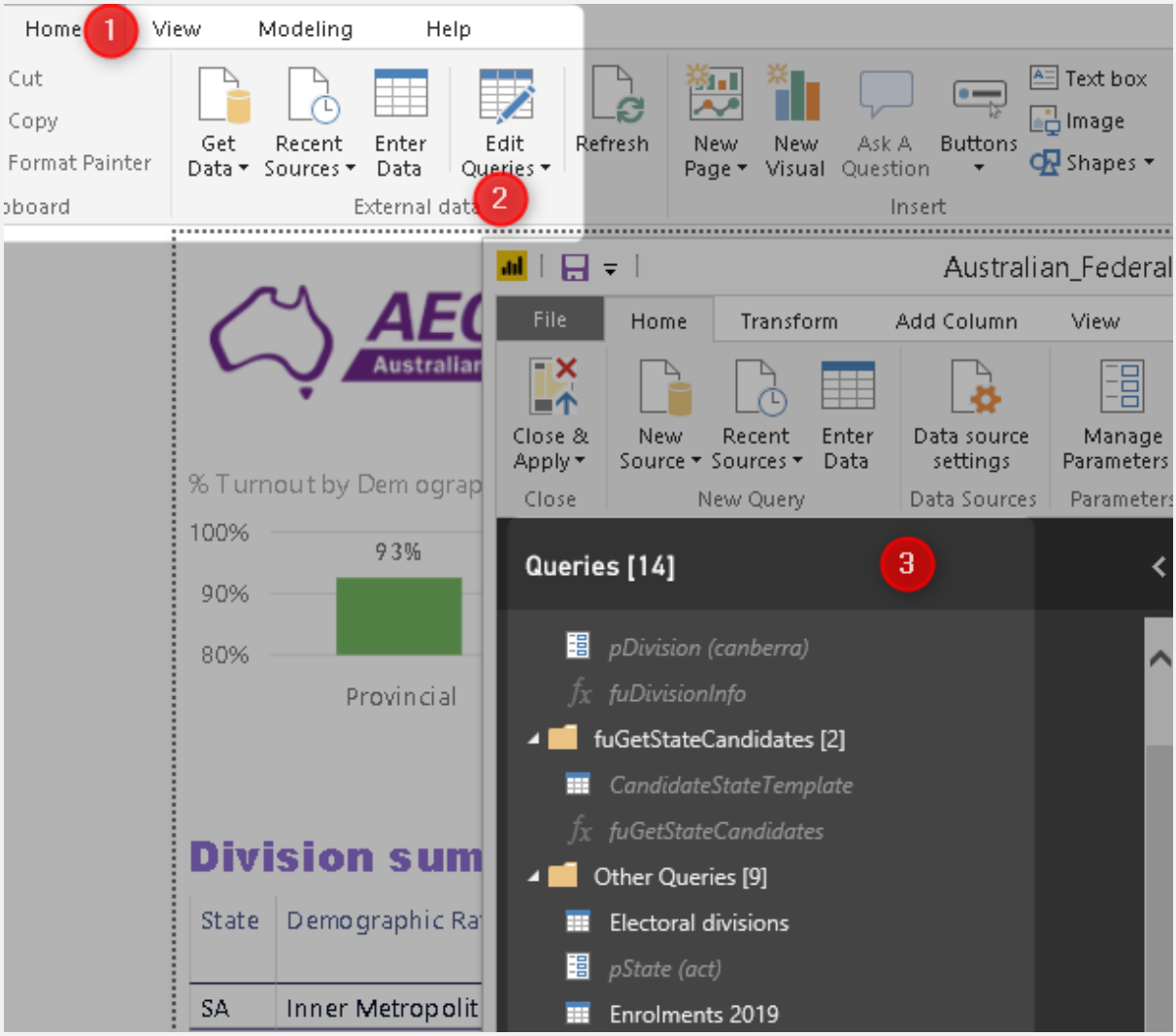
Power Query custom functions

The model uses two custom functions. These are invaluable where you have many individual files, web pages, or other discrete data sources that you need to merge into a single data set.

Opening the Power Query window

The view and edit Power Query queries we open the Power Query window

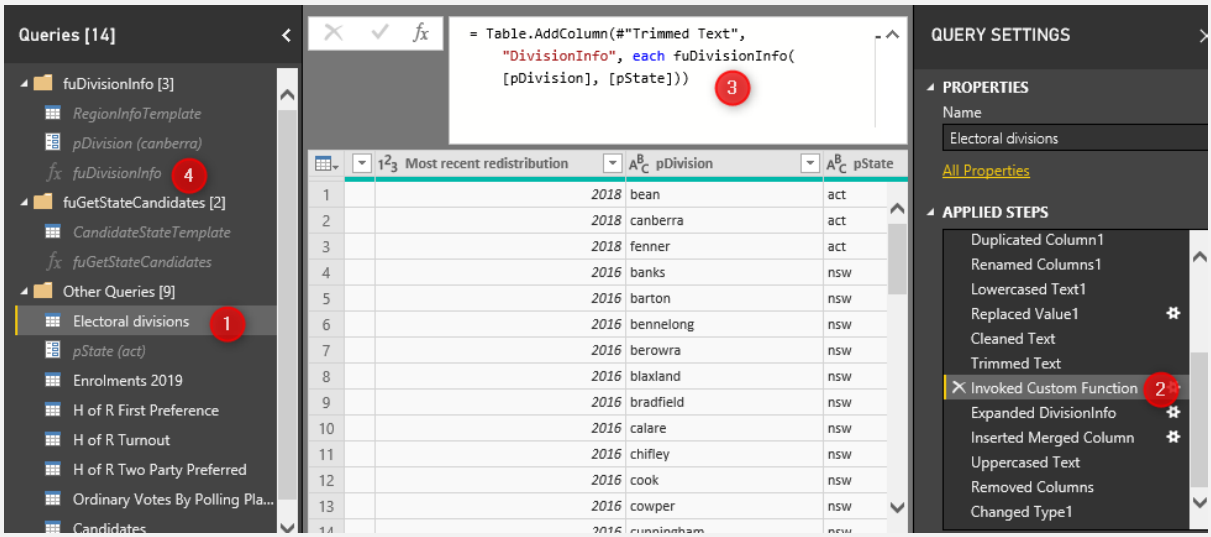
1. Home tab on the Power BI ribbon
2. Edit Queries


Home
1
View
Modeling
Help
Cut
Copy
Format Painter
Get Data
Recent Sources
Enter Data
Edit Queries
2
External data
Refresh
New Page
New Visual
Ask A Question
Buttons
Text box
Image
Shapes
Insert
Australian_Federal
File
Home
Transform
Add Column
View
Close & Apply
Close
New Source
Recent Sources
Enter Data
New Query
Data source settings
Data Sources
Manage Parameters
Parameters
% Turnout by Dem ograp
100%
90%
80%
93%
Provincial
Division sum
State
Demographic Ra
SA
Inner Metropolit
Queries [14]
3
pDivision (canberra)
fuDivisionInfo
fuGetStateCandidates [2]
CandidateStateTemplate
fuGetStateCandidates
Other Queries [9]
Electoral divisions
pState (act)
Enrolments 2019

Power Query custom function

We have two Power Query custom functions in the model. To inspect how they are used follow the steps below.

1. Click on the Electoral Divisions Power Query (left queries pane)
2. Click on the Insert Custom function step (right Applied Steps pane)
3. View the formula bar to see the Custom function we are using in this step
4. Select the ***fuDivisionInfo*** or ***RegionInfoTemplate*** to learn more about the steps in the custom function



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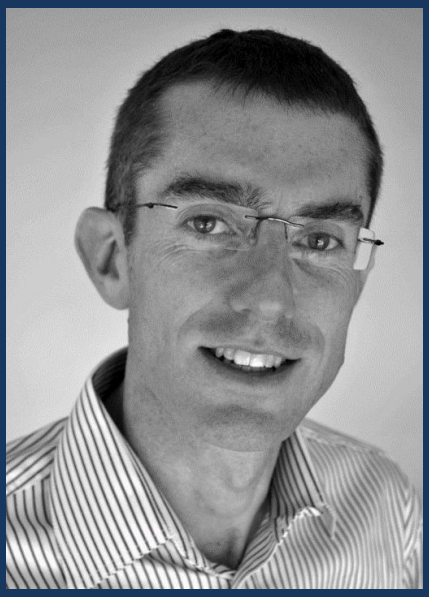
ABOUT CMBI

CMBI is a Sydney (NSW) based business intelligence and data analytics consultancy established in 2010. Our clients benefit from our extensive industry experience which spans all stages of the solution lifecycle from business analysis and facilitation through to development, testing and training.

Colin McGowan LL.B, PGDip Soft Dev, MSc Computing



For the last 15 years, Colin has worked as a solution architect and consultant designing BI and data warehouse solutions for multinational organisations in London (UK) and Sydney (Aus). The projects spanned over 50 organisations across a number of industries including banking and finance, market research, international law firms, online media, and government departments.

Connect with Colin McGowan on LinkedIn

Julie McGowan B.S. Computer Science (USyd)

Julie is a Sydney-based business analyst and training facilitator who has worked on a diverse array of data-driven business and technical projects within some of the world's most respected financial services organisa tions in both London and Sydney.

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