

# Parish maps in ArcGIS

*(Adapted from notes prepared by David Brooke, Diocese of Durham)*

The Church of England Research and Statistics unit has shared a parish mapping tool, released in April 2016. The tool can be found here: <http://arcg.is/00ieuz> and is linked from the Research & Statistics web page:

<https://www.churchofengland.org/more/policy-and-thinking/research-and-statistics>

The map shows parishes, churches, schools, and ecclesiastical boundaries. Each parish has census and deprivation information attached.

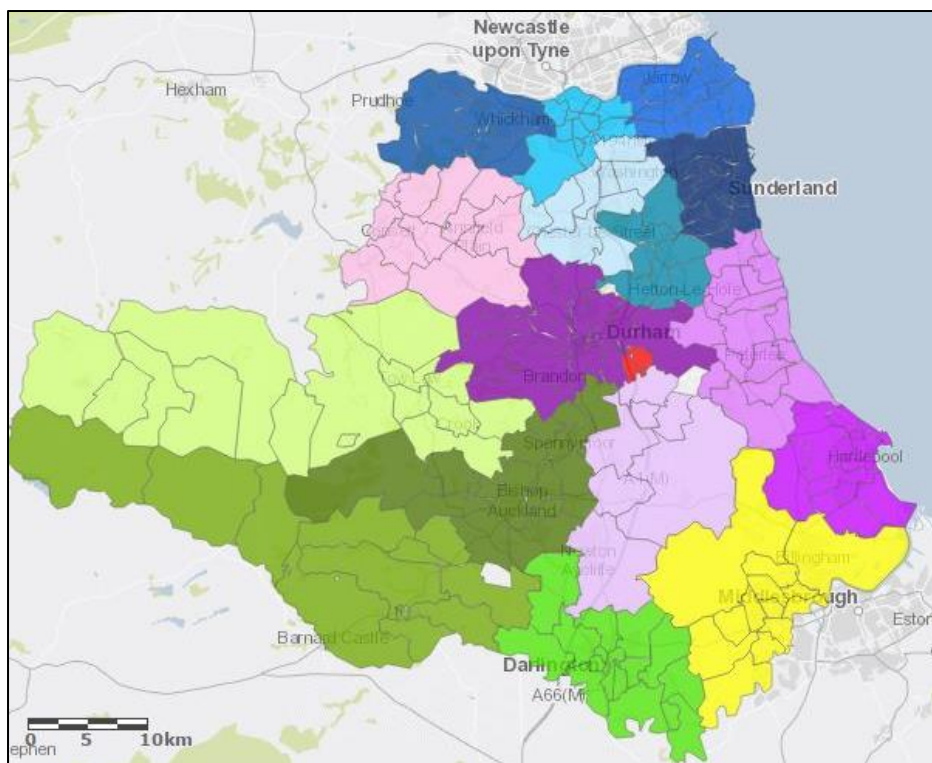
- Parish boundary data on the map are updated periodically, typically every 6 months;
- Census statistics are from the 2011 census;
- Deprivation statistics are from the 2015 indices of multiple deprivation;
- School locations are from the Department for Education's public database.

For census and deprivation statistics, updates consist of mapping the datasets onto the latest parish boundaries (which change periodically as parish reorganisations take place).

The map uses the ArcGIS mapping platform. The map is public and free to use. It can be edited to show different things in different ways. Anyone who wants to register for a free public account can do so (see section 3 below), which will allow them to save their changes and add their own data.

## General tips:

- Clicking on things and seeing what happens is a good way of learning how to use the tool;
- Hovering over any icons usually prompts a little explanatory note to pop up.

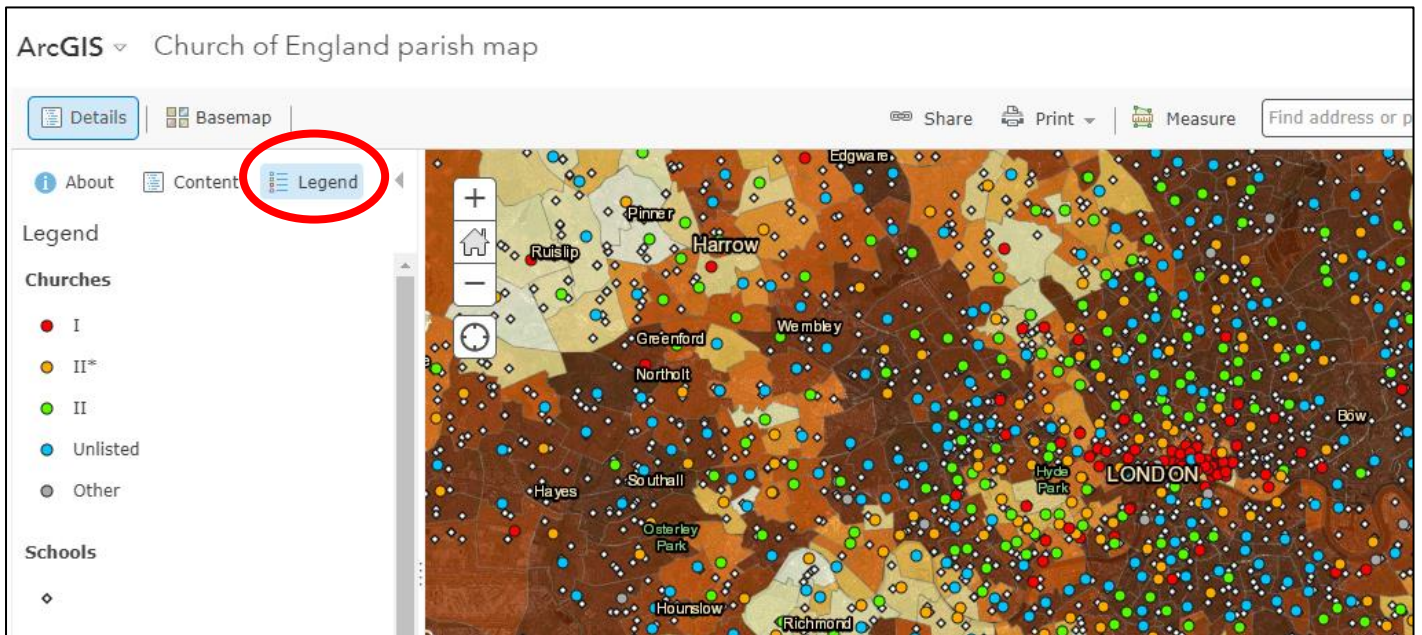


The map on the left shows parishes in the Diocese of Durham, colour-coded by Deanery.

Starting with the existing online map, it has been created using some of the tips below.

## I. Getting started with the map

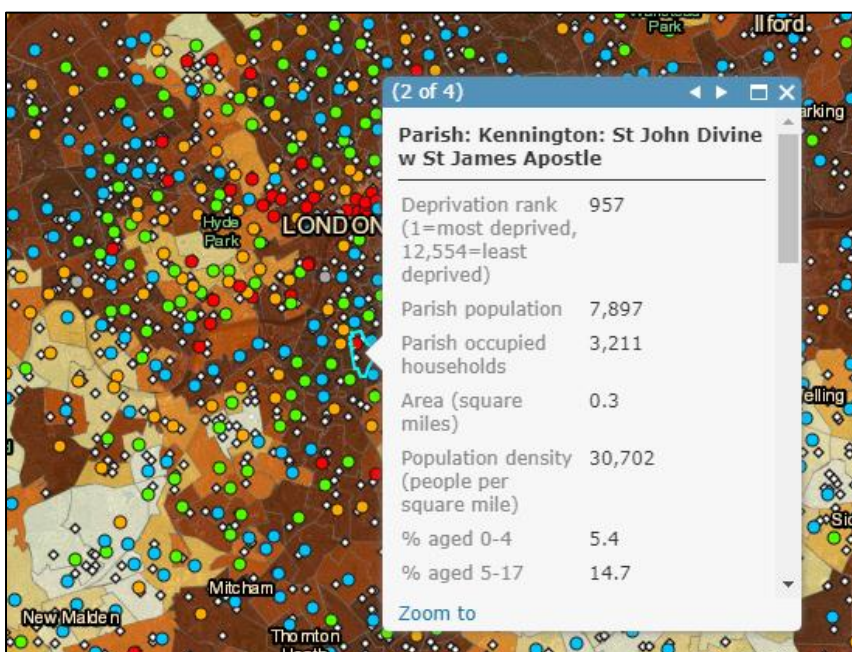
The **Legend** button near the top left (see screenshot below) is a good starting place.



- The coloured dots on the map show churches, colour-coded by listed building status;
- The coloured patches show parishes, coloured according to deprivation decile (darker=more deprived);
- The small white dots show school locations.

Clicking on a parish on the map opens a pop-up box (see screenshot below) containing additional information, including:

- Summary census data;
- The parish's deprivation rank;
- Church of England structural information (e.g. deanery, archdeaconry);
- A link to zoom to parish level.





Clicking on a church's dot on the map opens a pop-up box containing additional information, including:

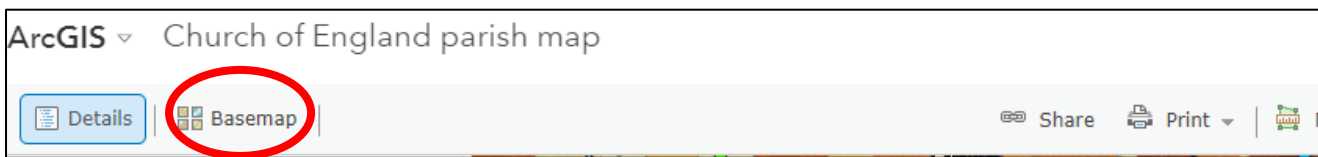
- Listed building status;
- A link to the church's entry on the "A Church Near You" website;
- Church of England structural information (e.g. parish, deanery, archdeaconry);
- A link to the heritage record.

The legend can be hidden to see more of the map by clicking on the triangle at the top right of the legend panel or clicking on the **Details** button. To see a full screen map, put your browser in full screen mode (e.g. by pressing F11).

## 2. Customising the map

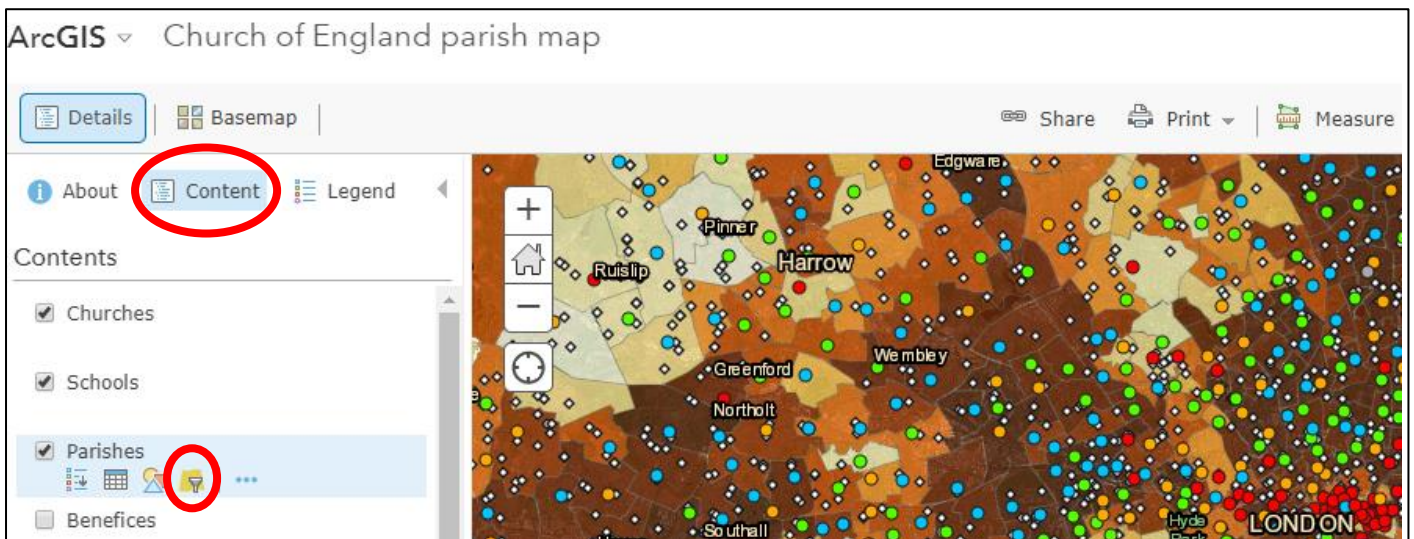
### Changing the basemap

There are two buttons near the top left. If you click on **Basemap** (see screenshot below) you can change what lies underneath the data layers. For example you can change to a street map rather than a satellite image.



### Layers on the map

Data are contained in layers. To see which layers are available, click on the **Details** button near the top left, then on **Content** just beneath it (see screenshot below). Three layers are loaded when you open the map – Churches, Parishes, and Schools. You can turn layers on or off (tick or untick the box next to them); add new layers from public data on the ArcGIS system; change the order of layers; and customise what is shown from each layer.



### Selecting data to show from a layer

If you hover over a layer's name (e.g. **Parishes**), four icons will appear, followed by a "..." symbol to click on for more actions (the actions vary according to the layer).

The fourth icon – **Filter** (see screenshot above) – allows you to select which data in a layer are displayed. You can build simple filter expressions, or more complex filter sets. A template for a filter expression appears by default.

As an example, the filter below would display only those parishes in the Diocese of Durham - the basemap would be unchanged, so you would see a map of the country with Durham parishes overlaid on top. If you select the **Unique** option, the filter will provide you with a drop-down list to choose from.

The screenshot shows the 'Filter: Parishes' dialog box. At the top, there is a 'Create' tab and two buttons: '+ Add another expression' and 'Add a set'. Below this, it says 'Display features in the layer that match the following expression'. The main area contains a single filter expression: 'Diocese' in a dropdown, 'is' in another dropdown, and 'Durham' in a text input field. Below the text input are three radio buttons: 'Value', 'Field', and 'Unique', with 'Unique' selected. There is also an 'Ask for values' checkbox. At the bottom, there are three buttons: 'APPLY FILTER', 'APPLY FILTER AND ZOOM TO', and 'CLOSE'. A red circle highlights the 'Unique' radio button.

You can **Add another expression** to your filter set, and can build more complex filters if you **Add a set**. A filter set simply consists of several filter expressions, and an option to apply **All** or **Any** of them. For example, the two-expression filter set below, using the **Any** option, would show all the parishes of Stockton deanery as well as the Upper Skerne parish.

The screenshot shows the 'Filter: Parishes' dialog box with two filter expressions. The first expression is 'Deanery is STOCKTON' and the second is 'Parish local name is Upper Skerne'. Both expressions have 'Unique' selected as the radio button. Between the two expressions, there is a dropdown menu set to 'Any', which is circled in red. At the top, the '+ Add another expression' and 'Add a set' buttons are also circled in red. At the bottom, there are three buttons: 'APPLY FILTER', 'APPLY FILTER AND ZOOM TO', and 'CLOSE'.

The filter set below using the **All** option would show the Grade I listed churches in Auckland archdeaconry.

Filter: Churches

Create

+ Add another expression  Add a set

Display features in the layer that match **All** of the following expressions

Listed building status is I  Value  Field  Unique  Ask for values

Archdeaconry is AUCKLAND  Value  Field  Unique  Ask for values

APPLY FILTER APPLY FILTER AND ZOOM TO CLOSE

### Formatting layers (including showing boundaries only)

Beneath the **Basemap** and **Details** buttons are three more options. Click on **Content** to access a range of ways of customising what is shown on the map. **N.B. These changes can't be saved unless you are a registered user (see section 3 below).**

If you hover over a layer's name (e.g. **Parishes**), the third icon (an picture of coloured shapes) – **Change Style** – allows you to change formatting options and display different attributes. There is huge scope for different display options here – your best way to explore the possibilities is to try things out.

When you first click on the icon, the selected attribute is the default – **Deprivation rank**. You can choose a wide range of other attributes, or **Show location only**. There are then many ways of tweaking the way the data are shown.

For example, to display only the parish boundaries, without any shading:

1. Choose **Show location only**,
2. Click on the large **OPTIONS** button under drawing style.
3. Click on **Symbols**, and then on the box with the red diagonal below the colour grid.
4. Click on **OUTLINE** above the colour grid and choose a colour and line style for the boundaries.
5. Click on **OK**, then **OK**, then **DONE**.

### Adding and re-ordering layers

ArcGIS hosts a huge library of public-domain datasets. These can be added to your map as layers.

First, click on **Modify Map** at the top right. Various additional options then appear. To add a layer, click on the **Add** button that has appeared next to **Basemap**, and choose **Search for Layers**. For example, to overlay the map with the UK rail network, search for "UK rail", then click **Add** for the **Railways** layer and finally click the large **Done Adding Layers** button.

To display the rail network *behind* the parishes, hover over the Railways layer, then drag the handle (three vertical dots) until the layer is below **Parishes** in the list.

### 3. Registering for an account

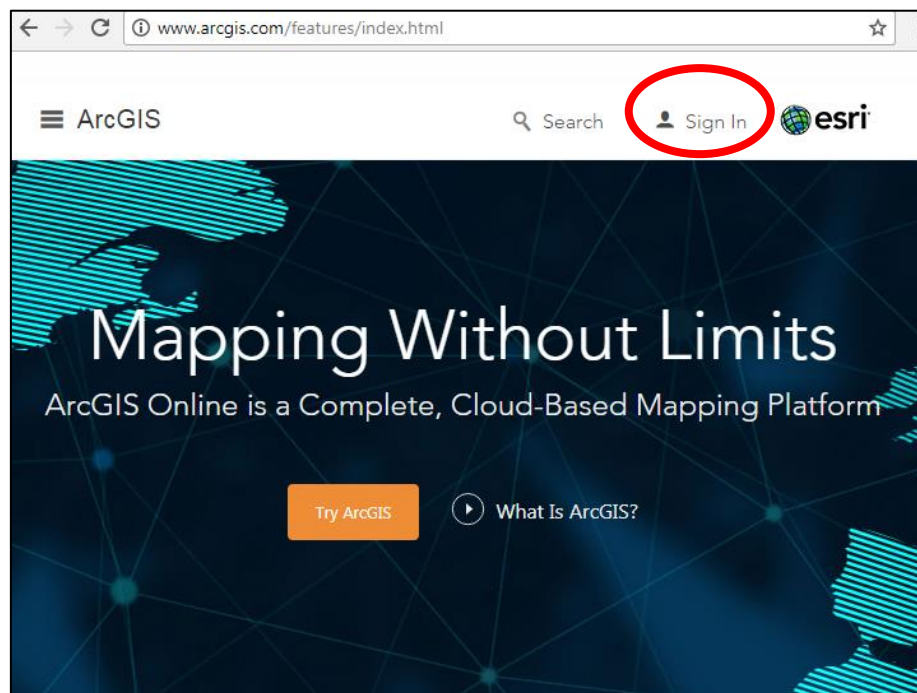
All the work described above can be carried out without an ArcGIS account, and without any need for logging in. However, if you have an ArcGIS account you can:

- Save your changes;
- Add data to existing maps;
- Create, save and share your own maps.

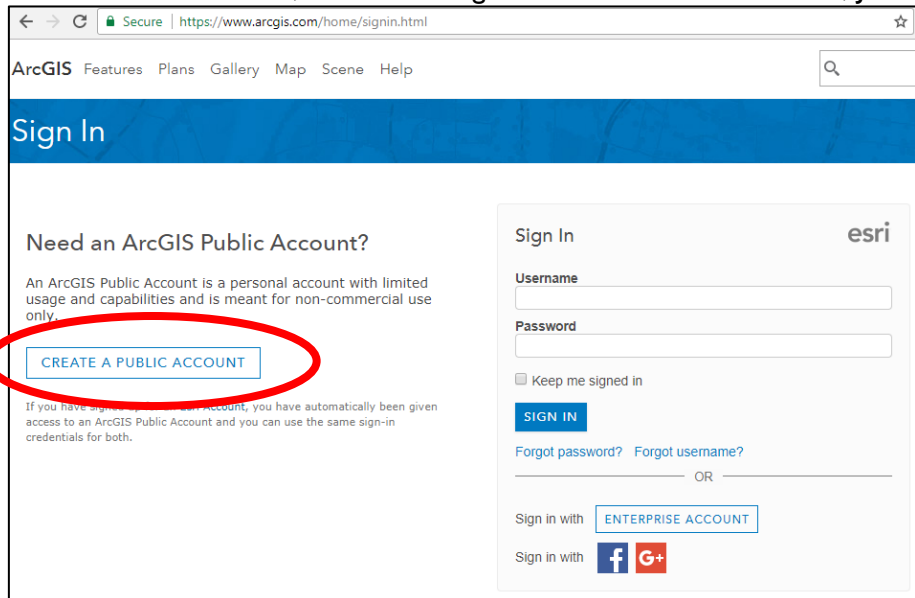
There are several options for accounts, including paying for a desktop license which has some added capabilities.

A good starting point – maybe all you will ever need – is to create a free public account. To do this, follow the steps below:

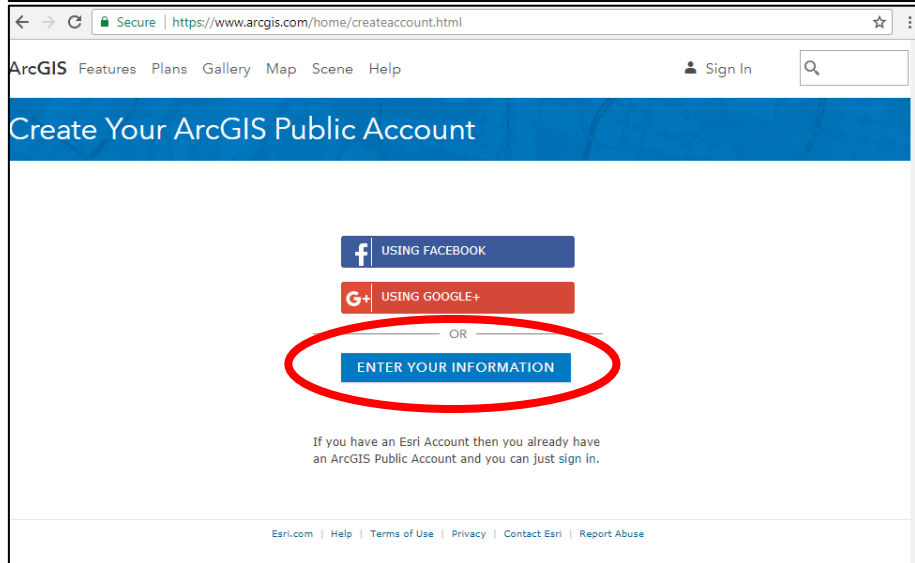
I. Click on **Sign In** on the ArcGIS home page (<http://www.arcgis.com>)



2. Click on **CREATE A PUBLIC ACCOUNT**



3. Click on **ENTER YOUR INFORMATION** and enter your details



4. Adding data to a map

Once you have logged in to your account, there are several ways to add data to a map. All of these can be done by choosing the **Add** option at the top right of the screen.

1. **Search for Layers** – adding a layer that is already on the ArcGIS system (as described in Section 2, above)
2. **Add Layer from Web** – e.g. adding a layer from an ArcGIS web server; this is what the Church of England Research and Statistics team uses to add country-wide church and parish data.
3. **Add Layer from File** – adding a layer that you have as a file, e.g. a shapefile of patches, or a csv file containing location information
4. **Add Map Notes** – drawing a set of points/lines/symbols on the map.

The 1<sup>st</sup> and 3<sup>rd</sup> options are likely to be the most useful, though for minor additions option 4 might be appropriate.

**Adding a layer from a file**

This option lets you add csv files with up to 250 locations, or shapefiles of up to 1,000 features.

If you have a list of foodbanks in a diocese, for example, then so long as this contains some location information (coordinates or, more likely, postcodes) then you can add this as a csv file. If you want to add more than 250 locations, you will need to split your file into several different files, and add them individually.

Once you have added a layer, you can edit the way it is displayed as described above.

## 5. Changing pop-up boxes

Once you have logged in to your account, you can edit the pop-up boxes.

If you hover over a layer's name (e.g. **Parishes**), the final icon "...” – **More Options** – gives scope for other ways to change how the map looks. Again, the best way to explore the possibilities is to try things out and see what they do.

One useful option is to **Configure Pop-up**. This allows you to change which variables appear in the pop-up, what order they appear in, what they are called, and to format number fields (e.g. changing the number of decimal places).

### Adding charts and images to Pop-ups

Within the **Configure Pop-up** option, is the opportunity to include **Pop-up Media**. You can **Add** a range of charts, including **Pie Charts** and **Bar Charts**.

Here, we have added a pie chart showing the age distribution for each parish, and given this chart a title that includes the parish name and population size. The image on the right shows how the pie chart appears in the pop-up on the map. When you hover over a sector of the pie chart an additional box appears telling you what that sector shows.

### Configure Pie Chart

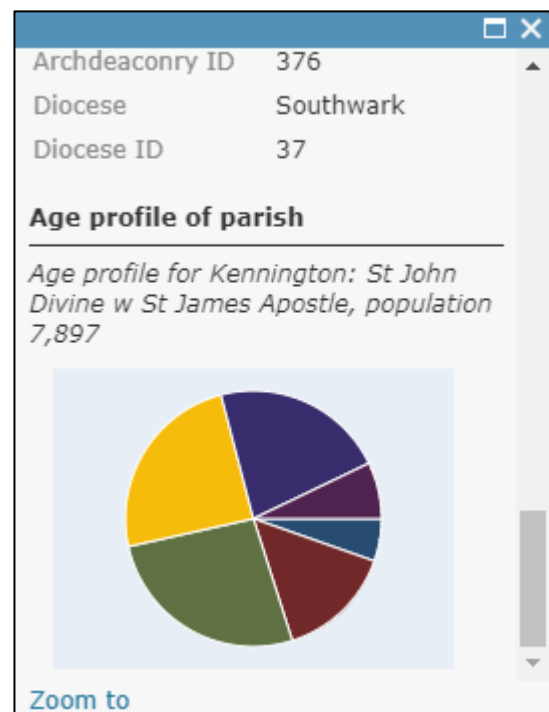
Specify the title, caption and fields to chart.

Title:

Caption

Field Alias	Field Name
<input type="checkbox"/> square mile)	{POP_DENS}
<input checked="" type="checkbox"/> % aged 0-4	{F0_4_pc}
<input checked="" type="checkbox"/> % aged 5-17	{F5_17_pc}
<input checked="" type="checkbox"/> % aged 18-29	{F18_29_pc}
<input checked="" type="checkbox"/> % aged 30-44	{F30_44_pc}

Normalize by:





## 6. Saving and sharing your map

Once you have logged in to your account, you can use the **Save** button to save your map.

Use the **Share** button to share your map. To share your map, you need to make it available to **Everyone (public)**. It can then be found on ArcGIS – but will be hard to find unless you tag it sensibly. Conveniently, ArcGIS provides a link so that anyone who has it can **Link to this map**.

Use **EMBED IN WEBSITE** to obtain html that can be pasted into webpages.

**CREATE A WEB APP** enables you to display your map in various interactive ways. The best way to explore this is to try some of the options (which are regularly updated).

## 7. Questions and comments

If you have any questions, comments, tips or suggestions, please get in touch: [statistics.unit@churchofengland.org](mailto:statistics.unit@churchofengland.org)

For more information about the work of the Research and Statistics unit, and links to other datasets, visit: <https://www.churchofengland.org/more/policy-and-thinking/research-and-statistics>