Cartography. MOOC

Exercise

Exploring Data for Classification

Section 2 Exercise 2

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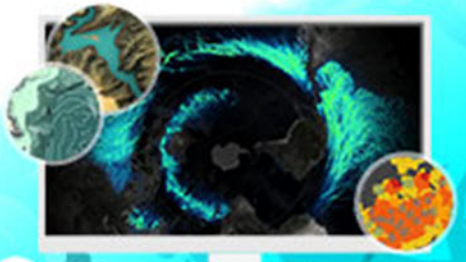


Exploring Data for Classification

Instructions

Use this guide and ArcGIS Pro to reproduce the results of the exercise on your own.

Note: The version of ArcGIS Pro that you are using for this course may produce slightly different results from the screen shots that you see in the course materials.

Time to complete

Approximately 10-20 minutes

Software requirements

ArcGIS Pro 2.5
ArcGIS Pro Standard license (or higher)

Note: The MOOC provides a separate ArcGIS account (user name and password) that you will need to use to license ArcGIS Pro and access other software applications used throughout the MOOC exercises. This account (user name ending with _cart) provides the appropriate ArcGIS Online role, ArcGIS Pro license, ArcGIS Pro extensions, and credits. We strongly recommend that you use the provided course ArcGIS account to ensure that you have the appropriate licensing to complete the exercises. Exercises may require credits. Using the provided course ArcGIS account ensures that you do not consume your organization's credits. Esri is not responsible for any credits consumed if you use a different account. Moreover, Esri will not provide technical support to students who use a different account.

Introduction

All maps are made from data. Part of making a good map is being able to understand and work with numbers and to appreciate how your manipulation of the data plays a vital role in the message that your map communicates.

For a lot of topographic mapping, you are symbolizing data that has been surveyed, which encodes meaning into the coordinates by symbolizing them as points, lines, and areas, often of different types.

For thematic mapping (a map designed to focus on a particular theme in a geographic area), you are often dealing with a dataset that represents a variable of interest. Your map will likely show certain trends, such as where the place with the highest or lowest value is, or where certain areas share similar characteristics. The key is understanding that how you manipulate

the data can tell different stories. It is important to ensure that you are not inadvertently telling a false story.

This exercise uses ArcGIS Pro to explore alternative methods of classifying numerical data for thematic mapping. Data classification is not unique to thematic mapping, but the techniques explored here can be used to understand and classify data more generally. You will create a range of choropleth maps (https://bit.ly/3bhpqmn) to illustrate how changing the classification changes the map.

The first step of classifying your data is understanding the data itself. In this exercise, you will explore the data that you will be using, familiarizing yourself with the attributes and what they represent.

Step 1: Download the exercise data file

In this step, you will download and save the exercise data file.

a. Open a new web browser tab or window.

b. Go to https://bit.ly/34QcS2M and click Download to download the exercise data file.

Note: The complete URL to the exercise data file is https://www.arcgis.com/home/item.html?id=e35c85c2f9be43bf97036a4dc3d330f8. The file size is 14 MB.

c. Save the file in a location that you will remember.

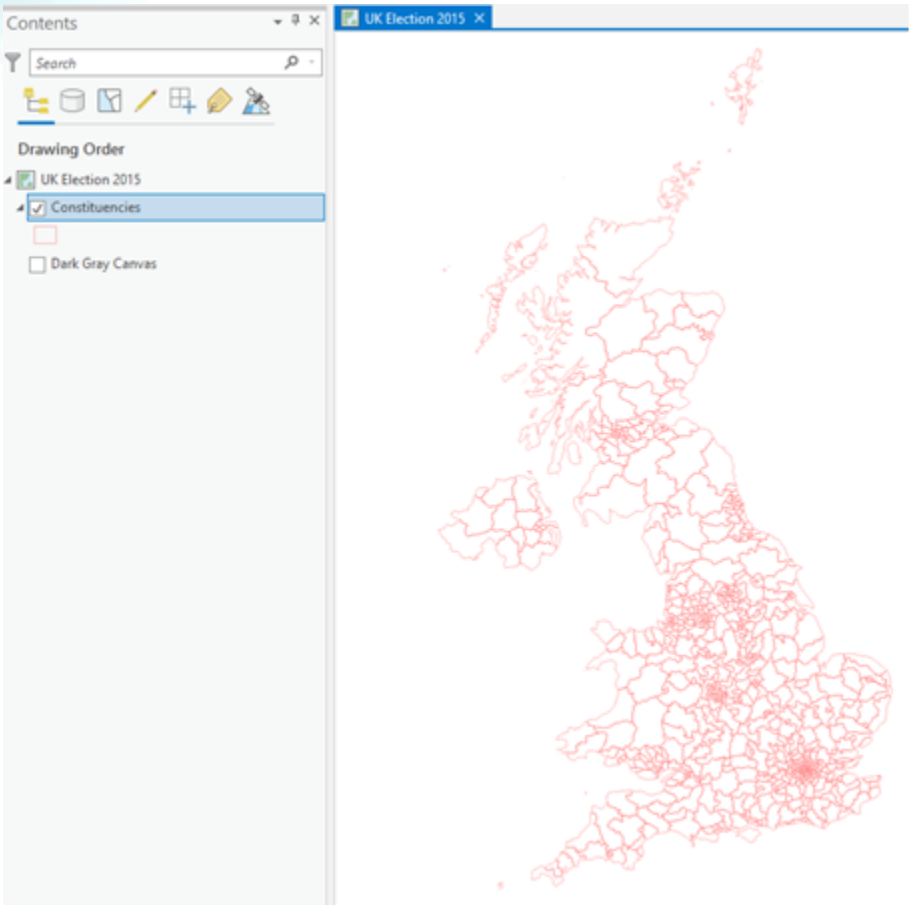
Step 2: Open an ArcGIS Pro project

You will open the exercise project in ArcGIS Pro to get started.

a. Start ArcGIS Pro and, if necessary, sign in using your provided course ArcGIS credentials (user name ending with _cart).

b. From the main ArcGIS Pro start page, click Open Another Project.

c. Browse to the location where you saved the exercise data file and open the ExploringDataClassification.ppkx project package.



The project opens to the UK Election 2015 election map, which includes a single layer showing the electoral constituencies for the United Kingdom of Great Britain and Northern Ireland and the Dark Gray Canvas basemap layer (which is not turned on).

The project also contains numerical election data for each of the constituencies. You will classify this data using a variety of methods to visualize the results of the 2015 UK election.

d. From the Project tab, click Save As and type a name for your project, such as **ExploringDataClassification_<your first and last name>**.aprx.

e. Save the project to the folder on your computer where you are saving your work.

Note: It is important to save your work regularly in ArcGIS Pro. Remember to save periodically as you go through this exercise.

Step 3: Determine the spatial reference of the data

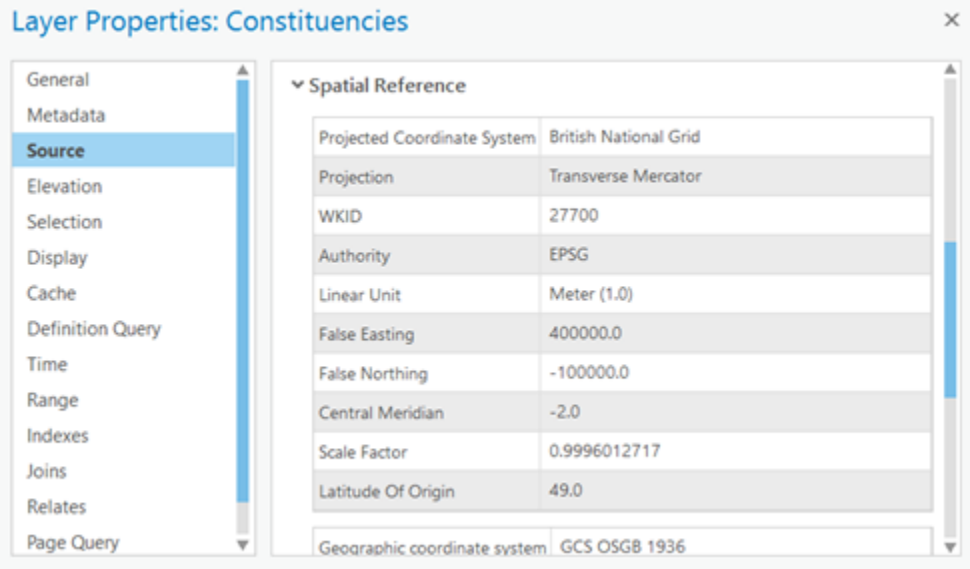
Before classifying the data, you should examine its spatial reference to determine which coordinate system and projection the data is specified in. This information often helps in later steps where the coordinate system and projection play an important part of analysis or cartography.

a. In the Contents pane, double-click the Constituencies layer to open the Layer Properties dialog box.

Note: You can also right-click the layer name and choose Properties.

b. Click Source and view the data source information for the layer.

c. Scroll down, if necessary, and click Spatial Reference to expand the section.



The spatial reference uses the British National Grid projected coordinate system based on a Transverse Mercator projection. This option is the most common coordinate system and projection used for UK data. If you looked at a map of a different part of the world, you would likely see a different coordinate system and projection being used, one that is more relevant to that specific area.

d. Close the Layer Properties dialog box.

Next, you will turn on the Dark Gray Canvas basemap layer to provide geographical context for the map.

e In the Contents pane, turn on the Dark Gray Canvas layer, and then, if necessary, zoom out to see all of the UK.

f Zoom out to see most of Western Europe.

Now you can see how the projected coordinate system that is being used warps the rest of the world map.

g In the Contents pane, right-click Constituencies and choose Zoom To Layer.

Step 4: Explore the data

To ensure that the message of your map is clear and accurate, you must understand the data before classifying it.

a Open the Constituencies layer attribute table.

Hint: In the Contents pane, right-click the Constituencies layer and choose Attribute Table.

b Examine the field names in the attribute table and use the field descriptions in the following table to learn more about the data.

Note: You can dock the attribute table pane in different parts of your window or make it larger or smaller by clicking and dragging the border.

Your goal here is to get familiar with the data, which is important before working with it or making a map.

Field name	Description
ID	Alphanumeric code used to identify individual constituencies
Constituency	The name of the electoral constituency
Headline	The result of the election, showing which political party won and by how much
Winning_MP	The name of the winning member of Parliament, who represents the winning political party
First	Abbreviated name of the winning political party in that constituency
First_Votes	The number of votes for the winning political party in that constituency
First_Share	The overall share of votes for the winning political party in that constituency (largest share wins)
Second	Abbreviated name of the political party that came second in that constituency
Second_Votes	The number of votes for the political party that came second in that constituency
Second_Share	The overall share of votes for the political party that came second in that constituency
Third	Abbreviated name of the political party that came third in that constituency
Third_Votes	The number of votes for the political party that came third in that constituency
Third_Share	The overall share of votes for the political party that came third in that constituency
Other_Votes	The number of votes for all other political parties combined in that constituency
Other_Share	The overall share of votes for all other political parties combined in that constituency
Turnout	The number of people who actually voted in the constituency
Electorate	The total number of eligible voters in the constituency

c After you have examined the data, close the attribute table.

Now that you have an idea of the data available in the layer, you will create several choropleth maps to see how changing the data classification changes the message of the map.

d. Save your project.

e. If you are continuing to the next exercise now, leave ArcGIS Pro open.

f. If you will continue to the next exercise at a later time, exit ArcGIS Pro.