



Tutorial 2: Modifying the Data Displayed in ArcGIS

For this tutorial, download the facilities listed in the Toxic Release Inventory from [TOXMAP](#) and the New Jersey county boundaries from the [New Jersey Geospaital Information Network](#). After you've downloaded the files that you need, extract, or unzip them. To complete this set of tutorial steps, you will need to use ArcGIS.

This tutorial will introduce you to the following:

- Working with the data view and layout view menus
- Comparing two different layers, using extant rectangles
- Editing map elements

You might find it easiest to read or skim through the instructions first, and then proceed step-by-step through the tutorial.

Part 1. Select Data for Map Design

Begin this tutorial by opening a new, blank map, in ArcGIS and adding the data layers of your choice (select file > Add Data, or the Add Data button). Include both the TOXMAP points of EPA facilities (also used in Tutorial 1) and the county boundaries for the state of New Jersey.

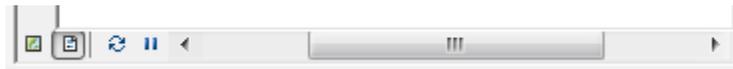
Part 2. Working with Data View and Layout View Menus

Though not formally introduced, I hope you are already familiar with some of the tools for viewing data in the data view of ArcGIS.



The magnifying glasses, allow you to either zoom in or out. The hand lets you pan, or move the view across the screen. The earth button is very helpful, this is called the Full Extent button, and it fits the complete view of the layer onto your screen. The arrows pointing inward or outward are also zoom buttons.

To change to layout view, you can click View > Layout View, or there is a tiny layout view button at the bottom of the screen.



There are a different set of tools that come with the layout menu. In fact, there are many tools in ArcGIS, and many toolbars. If you right click on the toolbar, you will see a long menu of toolbars. The standard new file, save, print, copy, paste buttons are part of the "Standard" toolbar. The toolbar shown above is the "Tools" tool bar. When you view your map in the layout view, the "Layout" toolbar will automatically open. As the course progresses, we will become more familiar with many of these toolbars, such as editing, georeferencing, 3D Analyst, etc.

Below is the layout toolbar.



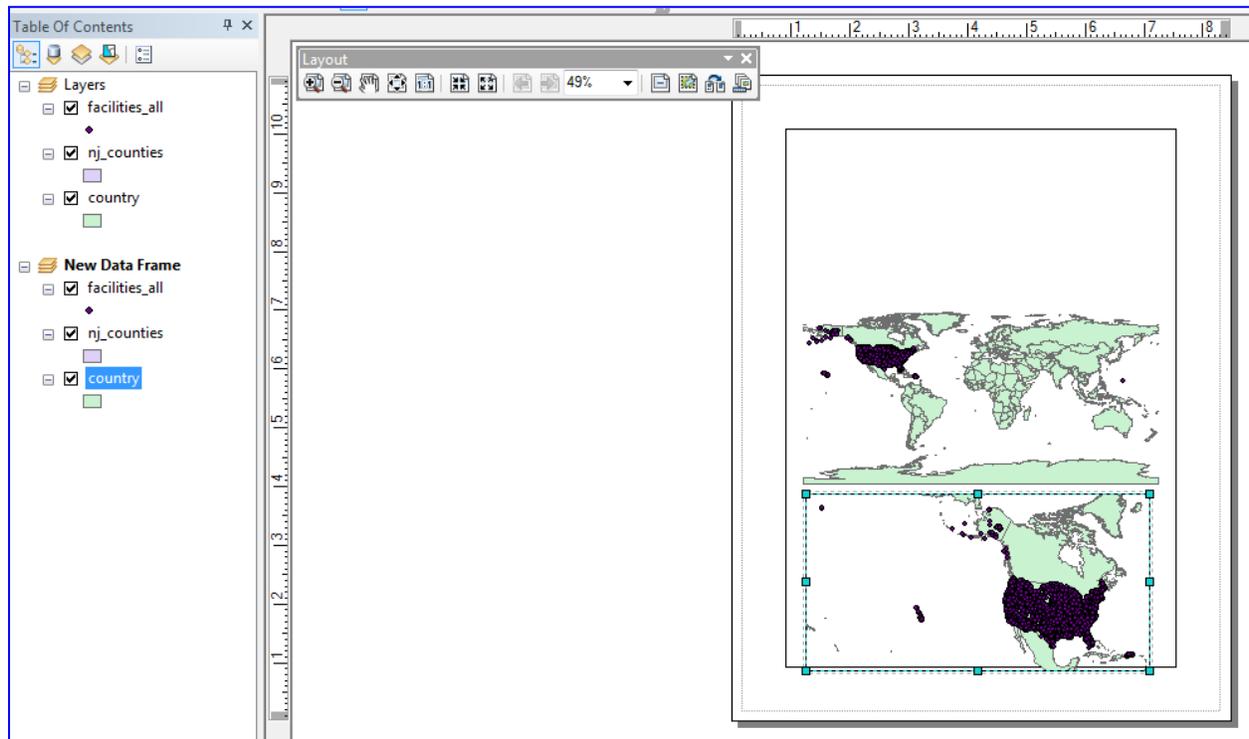
These button apply to the layout page, and not to the map data itself. You can use these buttons to zoom in and out of the page, and to pan across the page. You can also zoom to see the whole page, actual size of the page, and so forth. It is here in the layout view that you can edit your map output best, and export the image that you want to save as a .JPG. Stay in layout view for the remaining steps.

Part 3. Comparing Two Different Layers with Extant Rectangles



Though you might not be familiar with the term extant rectangles, it is very likely that you have seen them before. These are map pullouts that show a close up view of a larger reference map. To make an extant rectangle, we will need to work with multiple data frames. To create a data frame, click Insert > Data Frame.

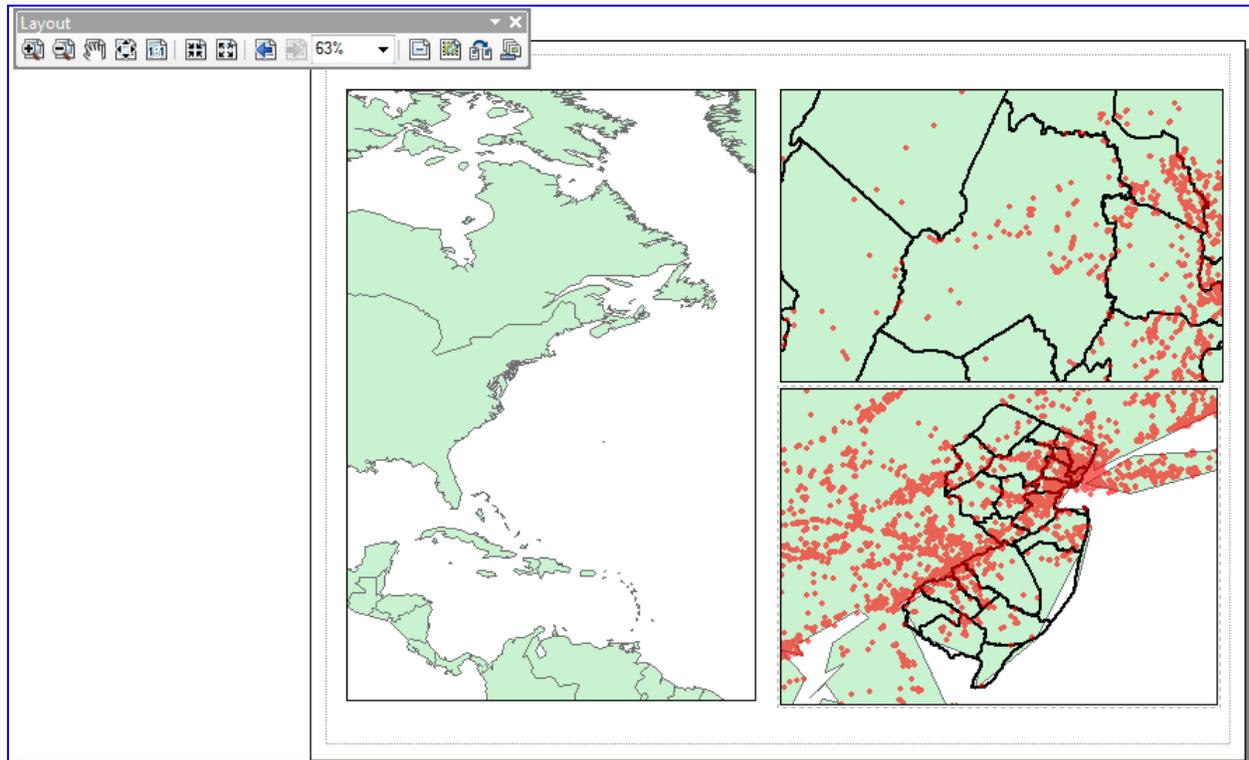
Using the “list by drawing order view” (first button in the table of contents), you can simply drag and drop both layers from the first data frame to the new data frame.



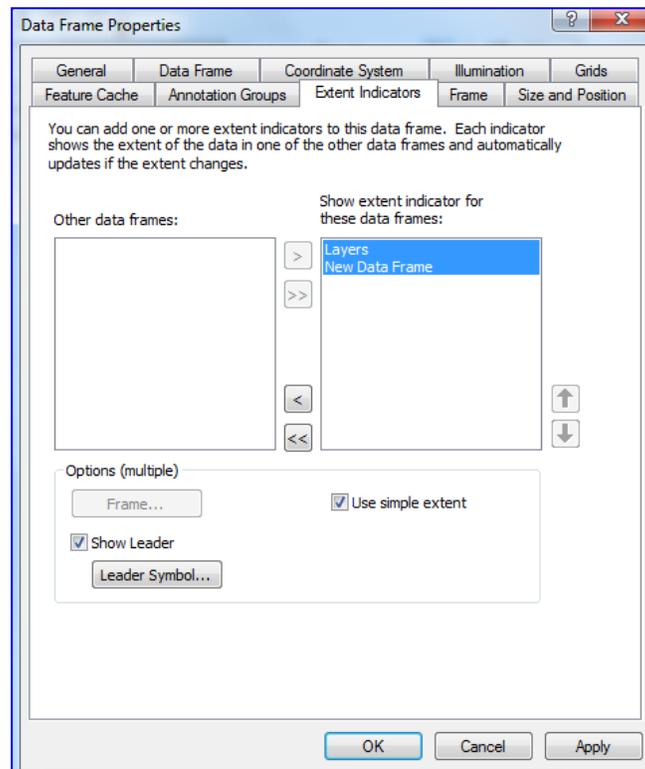
The new data frame automatically lays directly on top of the old data frame in the layout view. To see both views, click on the new frame in the layout view, and drag it away from the first data frame. This way you can see both frames.

In the layout view, rearrange the rectangles of the two data frames so that they do not overlap. Note: when you are in the layout view, you are able to see both data frames, but when you are in the data view, you are only able to see the active data frame.

Next, using the tools described above, change the data frame views so that one is focused on the larger geographic extent and one is focused on the smaller geographic extent. If you would like, you can also add a third data frame that is at another geographic extent (see image below).

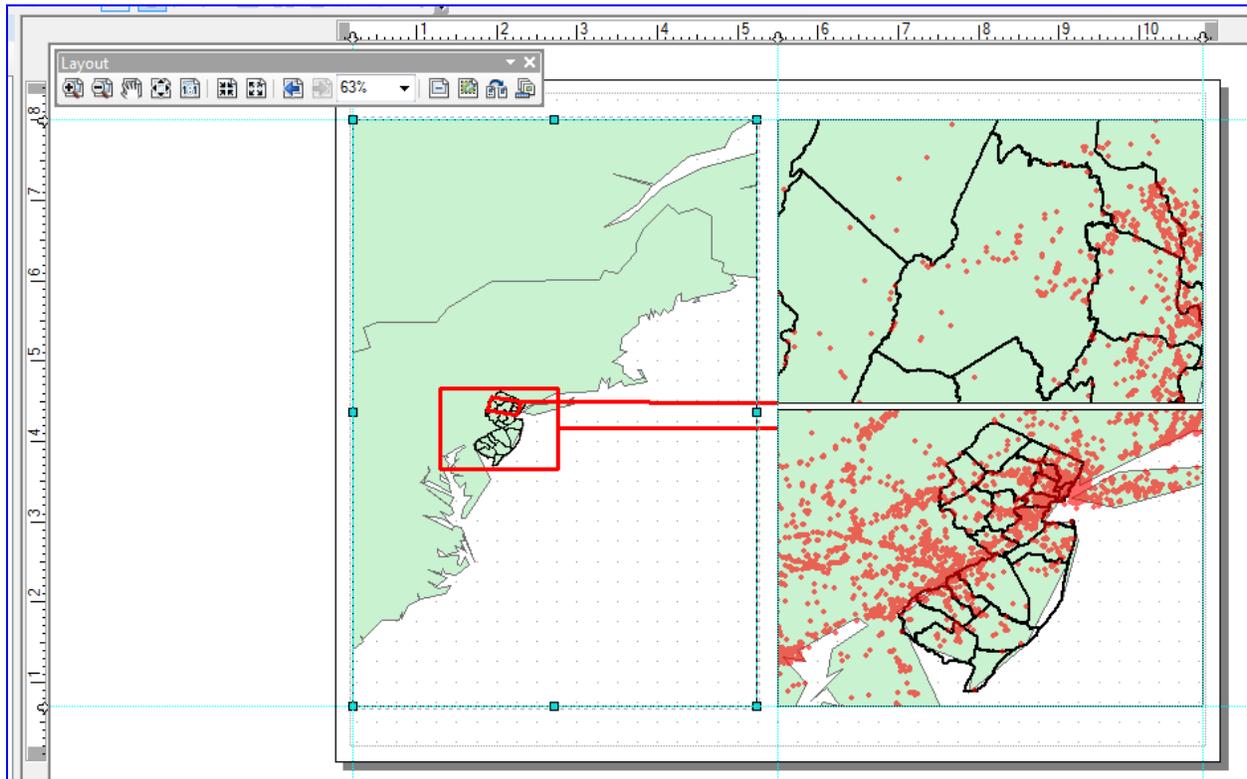


Now, you can add extend rectangles. Right-click on the **data frame** with the largest geographic extent (e.g. countries) in the table of contents, and select properties. In properties, click the Extant Indicators tab (shown below). Add the one or two data frames to show extant indicators (highlight the layers and choose the > or >> button). Check to use simple extent and check to show leader. Click OK.





You should now have a layout view with two or three maps: the large geographic extent, the smaller geographic extent, and another extent (optional). You should also be able to see extant rectangle(s) and line(s) that indicate the scope of the smaller extent(s). You may notice that if you zoom in or out or pan in any of the data frames, the extant rectangles will update to reflect the changes (example shown below).



Part 4. Editing Map Elements

Grids, Rulers, and Guides

First, you can modify the page layout using the tools under View > such as Grid, Rulers, and Guides. The rulers show the placement of items on the page, and the grid, viewed over the page, serves as a reference for data frame placement. By clicking along the ruler, new guides or vertical and horizontal lines are placed on the page, which can also be used for reference (this is also shown in the image above). Map elements and data frame boxes will automatically snap to guides.

Title

To add a title, select insert > title, and type an appropriate title for your map. To edit the font, right click the toolbar at the top and activate the drawing toolbar. Now, when you select the title text, you will see a toolbar that will allow you to change the text qualities.



Credits

Insert > text to add a text box with your name to the map. Move the textbox to an appropriate spot on the map (the default is to put it in the middle of the map). Also, insert Dynamic Text to add the date and coordinate system.



North Arrow

Insert > North arrow just for practice. You do not really need to add a North arrow, because all the map orientations have north pointed up. If you double click on the arrow element in the map, you can see that you can change the color and font of the arrow. All map elements may be edited by double clicking on them.

Scale Bars

Insert > Scale Bar will create a scale bar for the active data frame. In the layout view, to make a data frame active, just click on it. In data view, to make a data frame active, right click the data frame and select Activate. All the data frames will be at different scales. Double click the scale bar after it's created, and you will see that you can change the units (change it to miles). With the scale bar selected, you can change the font and size of the text with the Drawing toolbar.

Neatline

Insert > Neatline to draw a frame around your map and map elements to pull the map together. You can change the background to white or no fill. I think the default is blue. Note, if the neatline is not on the page, then it will to appear when you export the map.

An important map element not discussed here is the legend. We will work on legends in more detail next week.

You may add additional textboxes with any information that you believe will help the map reader understand the map that they are viewing. Once you have completed your layout, which should include the large geographic extent map, the smaller geographic extent map, another map, optional, all with extant rectangles, and several map elements (title, credits, North arrow, scale bars, and neatline), export the map as a .JPG (File > Export Map, and save as JPG file type). Now, upload your Lab #1 to Moodle, and you're done!

My example:

