

## Task 3: Create a choropleth map of Michigan with multiple layers

<b>To accomplish this task...</b>	<b>... Do these steps in ArcView for Windows or Macintosh...</b>	
	<b>... or do these special steps in ArcView for Windows</b>	<b>... or do these special steps in ArcView for Macintosh</b>

Set up the computer for these directions.	<b>(Win)</b> Start ArcView for Windows, assuming data is stored in <b>C:\ESRIDATA</b> .	<b>(Mac)</b> Start ArcView for Macintosh, assuming data is stored in <b>HD:\ESRIDATA</b> .
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### “I need a place to make the map.”

1. Create a base map.	Create a base map following the directions for <b>Task 2</b> . It will be easiest if you saved the completed project, as directed in the final steps of <b>Task 2</b> . In that case, start by choosing <b>File\Open</b> , navigating to where the project is stored, and double clicking <b>task2.apr</b> .	
2. Save the project under a new name.	From the opened project, choose the <b>Window</b> menu and select <b>task2.apr</b> to return to the Project window. Choose <b>File</b> , then <b>Save Project As...</b> to give a new name. Type <b>task3.apr</b> , and click <b>Save</b> . Return to the map by clicking one time on the menu bar for the view.	

### “I need to get some data to map.”

3. Indicate that you want to add a theme (a mapable layer of geographic features).	Click the <b>Add Theme</b> button (looks like a “plus” sign).	
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### “I need to go find the data.”

4. Navigate into the directory housing the needed data. (You need to know where to find the data and how to get there.)	<b>(Win)</b> In the central column of the <b>Add Theme</b> window, use the directory and drive pickers to click into the directory <b>C:\ESRIDATA\USA</b> .	<b>(Mac)</b> In the left column of the <b>Add Theme</b> window, use the folder picker to click into the folder <b>HD:\ESRIDATA\USA</b> .
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### “I need to make sure I’m getting the right type of data.”

5. Ensure that the data type sought is the correct format. (ArcView can display different kinds of data.)	In the bottom of the <b>Add Theme</b> window, click and hold on the <b>Data Source Type</b> and choose <b>Feature Data Source</b> .	
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### “I need to choose the right piece of data from the name available.”

6. Select the proper data source. (The correct item here will insert counties.)	<b>(Win)</b> In the left-hand column, double click the item <b>cities.shp</b> .	<b>(Mac)</b> In the right-hand column, double click the item <b>cities.shp</b> .
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### “I need to see what the stuff I added looks like.”

7. Display the map. (Turn on the newly added feature.)	In the <b>Table of Contents</b> , click the little checkbox at the left of the theme <b>Cities.shp</b> , making a black check mark appear.	
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“I need to restrict the features being displayed.”		
8. Select a theme, to focus the computer’s attention on that layer. (This is now the “selected” or “active” theme.)	In the <b>Table of Contents</b> , click one time directly on the name <b>Cities.shp</b> . The theme will look “raised” within the <b>Table of Contents</b> .	
9. Modify the theme properties. Call up the theme properties window.	From the <b>Theme</b> menu, choose <b>Properties...</b>	
10. Modify the theme properties. Make a definition.	The left column of the <b>Theme Properties</b> window contains several buttons. Highlight <b>Definition</b> , then click the <b>Query Builder</b> button (hammer with question mark).	
11. Modify the theme properties. Construct the definition.	In the <b>Query Builder</b> window, in the left-hand column showing <b>Fields</b> , double click <b>[State_name]</b> . In the central column, click =. Scroll down the right-hand column, find <b>“Michigan”</b> , and double click it. (Using the mouse to select items, rather than typing, helps ensure proper syntax.)	
12. Modify the theme properties. Check the definition.	The box in the bottom of the <b>Query Builder</b> window should read ( <b>[State-name] = “Michigan”</b> ). Note the presence and positions of parentheses, brackets, and quote marks. These need to be exact. If the statements don’t match, close the Query Builder and return to Step 10. When everything is correct, click <b>OK</b> .	
13. Modify the theme properties. Apply the definition.	Back in the <b>Theme Properties</b> window, click <b>OK</b> . The computer will think for a second, sorting cities, and then close the <b>Theme Properties</b> window. The map will redraw.	
“I need to see if a layer contains data I can map.”		
14. Bring up the active theme’s data table.	Click one time on the theme <b>Cities.shp</b> , then click one time on the <b>Table</b> button (looks like a page with a series of columns and rows).	
15. Explore the table. (This table contains the information about the features. It is formally called a Feature Attribute Table.)	At the bottom of the table document <b>Attributes of Cities.shp</b> , click on the right scroll arrow several times to explore all the columns of available data.	
“I need to add to the feature table some data to map.”		
16. Return to the Project window.	Click on the <b>Window</b> menu and select <b>task3.apr</b> , which is the current name of this project.	
17. Indicate you want to add a data table.	In the left column of icons, click one time on the icon for <b>Tables</b> . Then click the large <b>Add</b> button.	
“I need to find the data to add.”		
18. Navigate to the proper directory.	( <b>Win</b> ) Navigate to the correct directory, which is <b>C:\ESRIDATA\USA\TABLES</b> .	( <b>Mac</b> ) Navigate to the correct folder, which is <b>HD:\ESRIDATA\USA\TABLES</b> .

“I need to identify the correct type of data.”	
19. Choose the proper type of file.	In the bottom of the window, click on the <b>List Files of Type:</b> pull-down menu. Choose <b>dBASE (*.dbf)</b> .
“I need to add the correct data table.”	
20. Choose the proper table.	In the left-hand column file picker, double click the item <b>cidemog.dbf</b> .
“I need to join the new data table to the existing feature table.”	
21. Select the matching field in the source table.	In the field <b>cidemog.dbf</b> , click one time on the field name <b>State_city</b> . The field name will appear darkened. Click and hold on the menu bar for this table and slide the table off to the side, so the other windows are visible.
22. Navigate to the target table.	From the <b>Window</b> menu, choose <b>Attributes of Cities.shp</b> .
23. Select the matching field in the target table.	In the table <b>Attributes of Cities.shp</b> , click one time on the field name <b>State_city</b> . The field name will appear darkened.
24. Join the source data to the target feature table.	Click the <b>Join Table</b> button (looks like two tables kissing). The data from the source table will be appended to the appropriate records in the target table. The source table will disappear. Close the table <b>Attributes of Cities.shp</b> . Return to the map by clicking one time on the menu bar for the view.
“I need to edit the legend for the newly joined theme.”	
25. Adjust the city symbol. Engage the Legend Editor.	In the view’s <b>Table of Contents</b> , double click directly on the name itself (not on the checkbox) for the theme <b>Cities.shp</b> .
26. Adjust the cities symbol. Define the map style.	In the Legend Editor window, click the pull-down menu for <b>Legend type:</b> and <b>Graduated symbol</b> .
27. Adjust the city symbol. Define the mapped theme.	In the <b>Legend Editor</b> window, click the pull-down menu for <b>Classification Field:</b> and scroll down the list to select <b>Pop1990</b> . The computer will automatically divide the data into five categories.
28. Adjust the city symbol. Change the classification scheme.	Click the <b>Classify...</b> button. In the <b>Classification</b> window, leave the <b>Type</b> as <b>Natural Breaks</b> , and <b>Number of Classes</b> as <b>5</b> . Change <b>Round values</b> at to <b>d.ddd</b> . Click <b>OK</b> . The computer will re-divide the data, into five classes, each rounded to the nearest thousand.
29. Adjust the city symbol. Engage the symbol palette.	Near the bottom of the <b>Legend Editor</b> window, double click the colored dot symbol to bring up the symbol palette.
30. Adjust the city symbol. Set the color.	When the symbol palette appears, click the colored paintbrush to open the <b>Color Palette</b> . Select bright red. Close the <b>Symbol palette</b> window. Click <b>Apply</b> . Close the <b>Legend Editor</b> window. The map will re-draw.
31. Modify the theme name in the Table of Contents.	With <b>Cities.shp</b> still selected (looks “elevated”) in the <b>Table of Contents</b> , click on the <b>Theme</b> menu item and choose <b>Properties...</b> to bring up the <b>Theme Properties</b> window.

32. Modify the theme name. Specify new name. Choose to display the field being mapped.	In the top row, next to <b>Theme Name:</b> , change “Cities.shp” to just “Cities”. In the box at the top right, next to <b>Use Suffix</b> , click the box to place an “X” within it. Click <b>OK</b> .	
<b>“I need to add more data.”</b>		
33. Indicate that you want to add a theme.	Click the <b>Add Theme</b> button (looks like a “plus” sign).	
<b>“I need to go find the data.”</b>		
34. Navigate into the directory housing the needed data.	(Win) Navigate into the directory <b>C:\ESRIDATA\USA.</b>	(Mac) Navigate into the folder <b>HD:\ESRIDATA\USA.</b>
<b>“I need to make sure I’m getting the right type of data.”</b>		
35. Ensure that the data type sought is the correct format.	In the bottom of the <b>Add Theme</b> window, click and hold on the <b>Data Source Type</b> and choose <b>Feature Data Source</b> .	
<b>“I need to choose the right pieces of data from the many available.”</b>		
36. Select the proper data source (the correct items here will add interstates).	(Win) In the left-hand column, double click the item <b>interst.shp</b> .	(Mac) In the right-hand column, double click the item <b>interst.shp</b> .
<b>“I need to see what the stuff I added looks like.”</b>		
37. Display the map. (Turn on the newly added feature.)	In the <b>Table of Contents</b> , click the little checkbox at the left of the theme <b>Interst.shp</b> , making a black check mark appear.	
<b>“I need to edit the legend for the new theme.”</b>		
38. Adjust the interstates symbol. Start by calling up the Legend Editor.	In the <b>Table of Contents</b> , double-click directly on the name itself (not on the checkbox) for the theme <b>Interst.shp</b> .	
39. Adjust the interst symbol. Specify no classification.	Click the <b>Legend type:</b> pull-down menu and choose <b>Single symbol</b> .	
40. Adjust the interstates symbol. Continue by calling up the symbol palette.	Double-click the colored line shown for the interstates layer (bottom half of window, first box, left-hand column). The <b>Symbol Palette</b> will appear, with the <b>Pen Palette</b> option visible. Move the <b>Pen Palette</b> window to the side of the <b>Legend Editor</b> window.	
41. Adjust the interstates symbol. Continue by specifying the line width.	In the <b>Pen Palette</b> window, click the <b>Size</b> pull-down menu and choose <b>2</b> .	
42. Adjust the interstates symbol. Continues by specifying the color palette.	In the first row of icons in the <b>Pen Palette</b> window, click the paintbrush to bring up the <b>Color Palette</b> .	
43. Adjust the interstates symbol. Continue by specifying the foreground.	In the pull-down menu beside <b>Color:</b> , select <b>Foreground</b> .	
44. Adjust the interstates symbol. Continue by selecting the foreground color.	In the color boxes, choose darkest red (second row, rightmost column). Close the <b>Color palette</b> window. Click <b>Apply</b> . Close the <b>Legend Editor</b> window. The map will re-draw.	

<b>“I need to add a context layer to the map.”</b>		
45. Indicate that you want to add a theme.	Click the <b>Add Theme</b> button (looks like a “plus” sign).	
<b>“I need to go find the data.”</b>		
46. Navigate into the directory housing the needed data.	<b>(Win)</b> Navigate into the directory C:\ESRIDATA\USA.	<b>(Mac)</b> Navigate into the folder HD:\ESRIDATA\USA.
<b>“I need to make sure I’m getting the right type of data.”</b>		
47. Ensure that the data type sought is the correct format.	In the bottom of the <b>Add Theme</b> window, click and hold on the <b>Data Source Type</b> and choose <b>Feature Data Source</b> .	
<b>“I need to choose the right pieces of data from the many available.”</b>		
48. Select the proper data source. (The correct item here will insert state boundaries.)	<b>(Win)</b> In the left-hand column, double click the item called <b>states.shp</b> . The theme will be added to the top of the <b>Table of Contents</b> window in the View.	<b>(Mac)</b> In the right-hand column, double click the item <b>states.shp</b> . The theme will be added to the top of the <b>Table of Contents</b> window in the View.
<b>“I need to see what the stuff I added looks like.”</b>		
49. Display the theme	In the <b>Table of Contents</b> , click the little checkbox at the left of the theme <b>States.shp</b> , making a black check mark appear.	
<b>“I need to change the order of the layers.”</b>		
50. Rearrange the order in which the themes display.	In the <b>Table of Contents</b> , click and hold the name <b>States</b> and drag the theme down to the bottom of the list and let go.	
<b>“I need to save the project.”</b>		
51. Indicate the need to save.	Click the <b>Project Save</b> button, on the top left.	
<b>“It’s all done!”</b>		