



GEO 2HU3

INSTRUCTIONS FOR USING ARCVIEW

ArcView software is available for this assignment in the UTS computer labs (Burke Science Building Rooms 248 & 249), in the Map Collection (Mills Library Room 110) and in the Gateway Data/GIS Lab (Mills Library Room 111A).

When working in the UTS Labs in Burke Science Building:

If you wish to print in the labs, you must put money on your printer account (purchase vouchers in Titles Bookstore) 24 hours before you need to print your maps.

Log on to a computer. Select the **Course Folders** icon from the desktop, then click on **Science**, then click on **geo2HU3**. Double click on the **ArcView icon** to start the software.

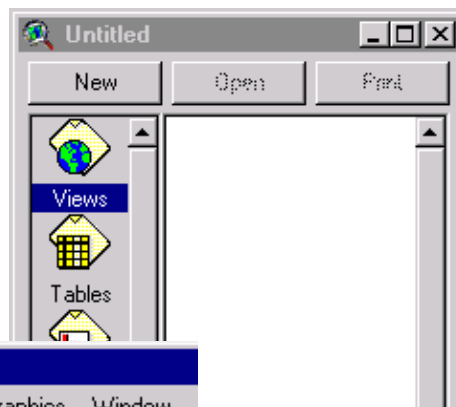
**** You must enter the folders in this sequence to load the map files. ****

When working in the Library:

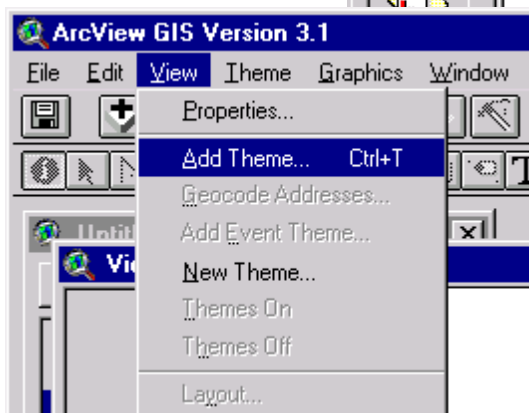
Click on **Start, Programs, Maintenance**

Click on "Initialize map data", then "Courses", then "Geo2hu3" to load a fresh set of boundary files.

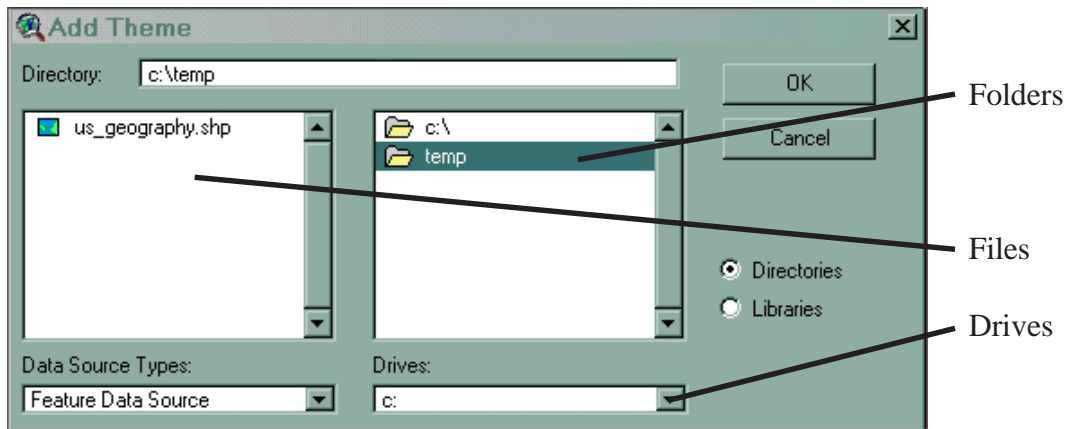
Click on **Start, Programs, ArcView GIS 3.2** to start the software. (In the Gateway Data/GIS Lab, you will be prompted for your LibAccess or MacID).



Click on the word **Views** and then on the **New** button.



Click on the word **View** at the top of the screen, and then on **Add Theme...**



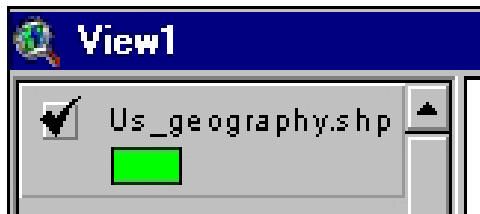
Under **Drives**, click on the drop down menu and select

C: if you are in the UTS Lab. In the upper right box (**Folders**), double click on the **temp** folder.

**** If you do not see your files, close ArcView and start again, following the sequence for logging in on the first page--you must enter through these folders to load the data files. ****

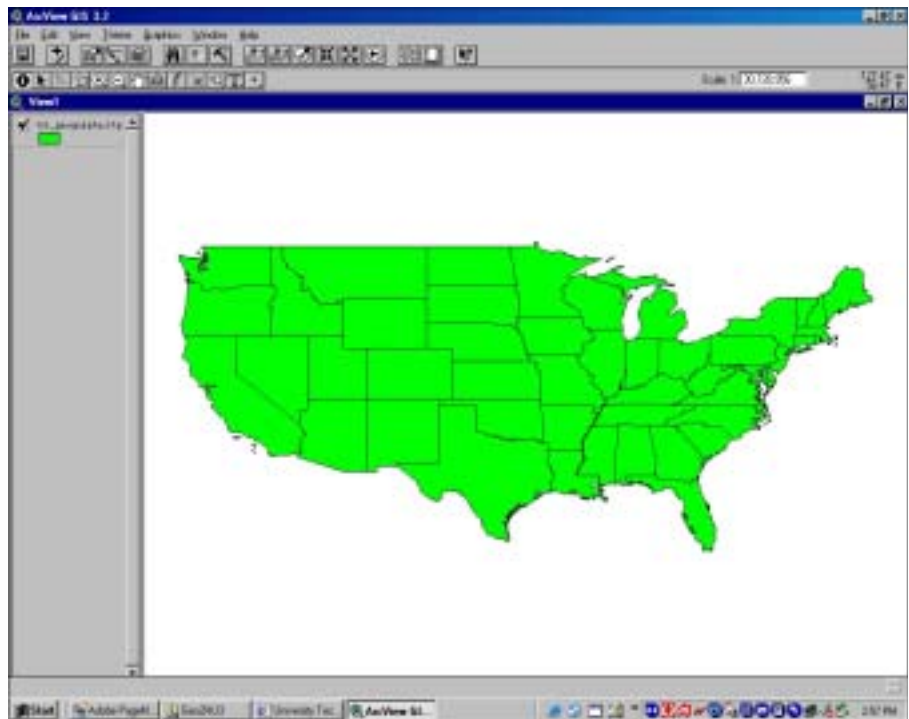
or H: if you are in the Library. In the upper right box (**Folders**), double click on the folder for **courses** and then on the folder for **Geo2hu3**.

**** If you do not see the courses folder, double click on H: to get to the root directory first. ****



Click on the gray box to the left of the word **us_geography.shp** to turn on that theme.

An outline map of the 48 conterminous states of the United States should appear.

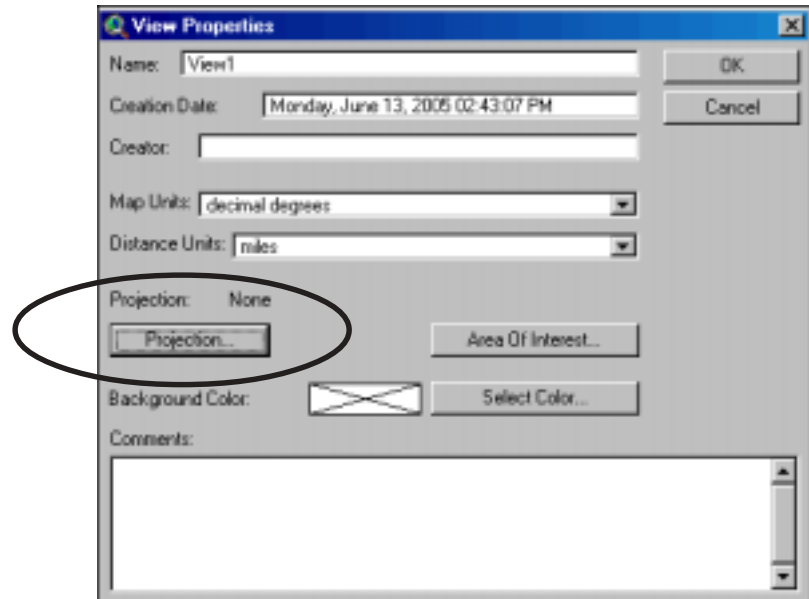


This map is distorted because it was created from a flat map, rather than a map with the usual curvature (projection).

To remove this distortion, click on **View** at the top of the screen, then on **Properties**.



Click on the **Projection** button.



In the dropdown menu beside **Category**, select **Projections of the United States**.



The **Type** should now read **Albers Equal-Area (Conterminous U.S.)**. If it does not, click on the dropdown menu beside **Category**, and select **Albers Equal-Area**.

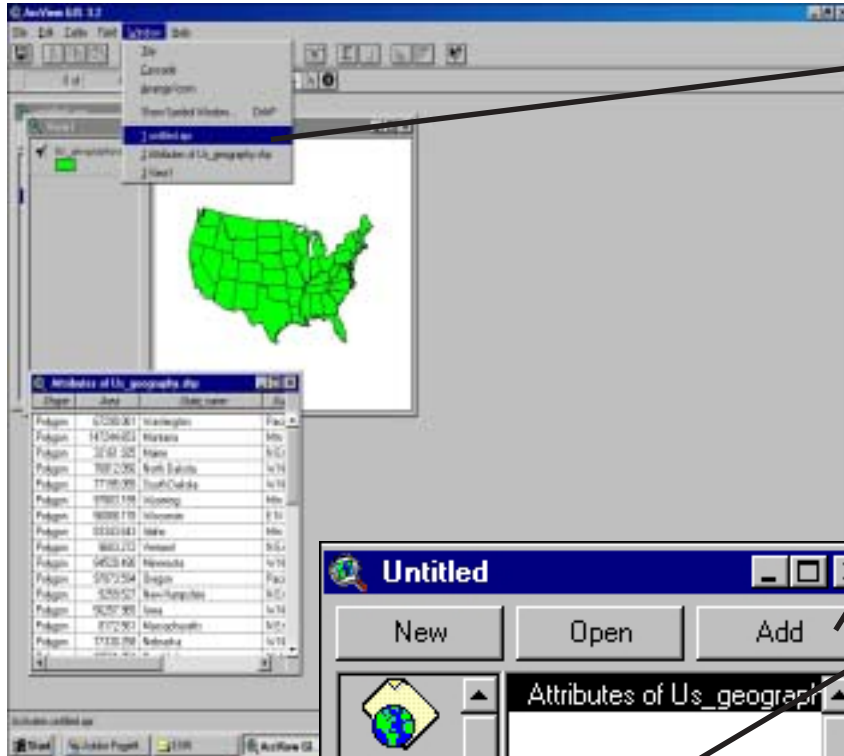


Click two **OK** buttons to confirm.



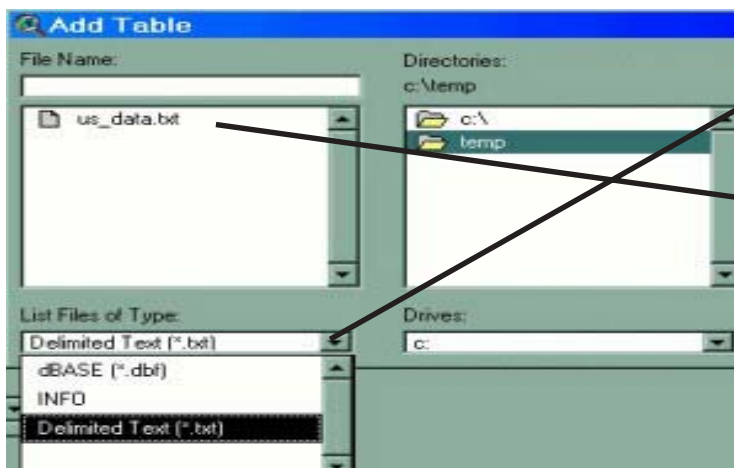
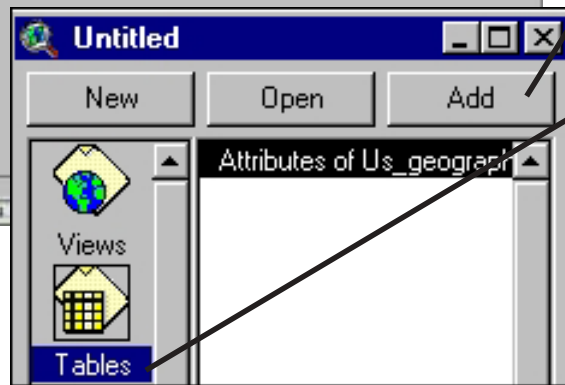
Click on the **Open Theme Table** button.

Use the **Resize Window** button to shrink the table to a more manageable size. Pull the sides of the table inwards if necessary to make it smaller.



At the top of the screen, click on **Window**, and then click on **Untitled**.

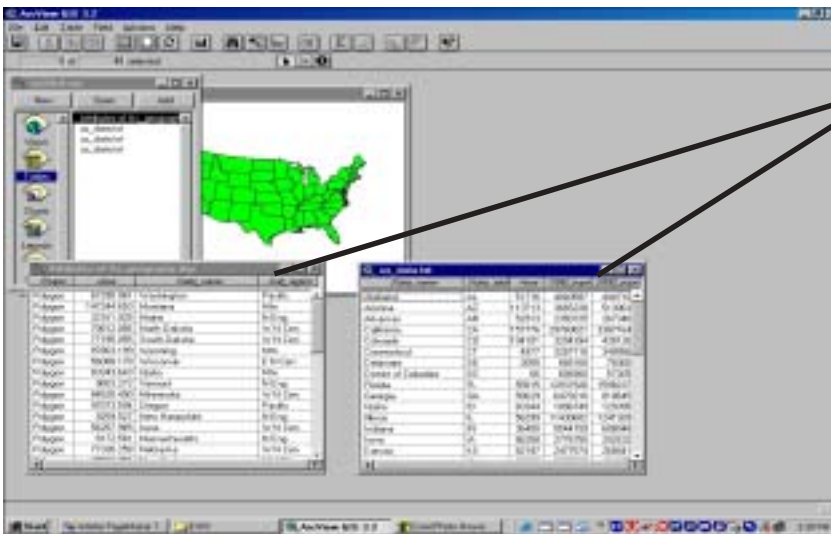
Click on the word **Tables**, and then on the **Add** button.



Click on the down arrow beside **List Files of Type:** and select **Delimited Text (.txt)**.

Click on the filename **us_data.txt**.

Click the **OK** button.



Resize and move the two table windows until you have them positioned side by side.

The **Attributes of us_geography.shp** table must be on the left side.

The **us_data.txt** table must be on the right.

us_data.txt	
State_name	State_abbr
Alabama	AL
Arizona	AZ
Arkansas	AR

Click on the title bar of the **us_data.txt** table.

And then click on the label at the top of the column called **State_name**.

Attributes of Us_geography.shp		
Shape	Area	State_name
Polygon	67290.061	Washington
Polygon	147244.653	Montana
Polygon	32161.925	Maine
Polygon	70812.056	North Dakota

Click on the title bar of the **Attributes of us_geography.shp** table.

Then click on the label at the top of the column called **State_name**.



In the menu at the top of the screen, click on **Table**.

Then click on **Join**.

Attributes of Us_geography.shp				
Sub_region	State_abbr	Area	1990_popn	2000_popn
Pacific	WA	67290	4866692	5894121
Mtn	MT	147245	799065	902195
N Eng	ME	32162	1227928	1274923
W N Cen	ND	70812	638800	642200
W N Cen	SD	77195	696004	754844
Mtn	WY	97803	453588	493782
E N Cen	WI	56088	4891769	5363675
Mtn	ID	83344	1006749	1293953
N Eng	VT	9603	562758	608827
W N Cen	MN	84520	4375099	4919479
Pacific	OR	97074	2842321	3421399
N Eng	NH	9260	1109252	1235786
W N Cen	IA	56258	2776755	2926324
N Eng	MA	8173	6016425	6349097

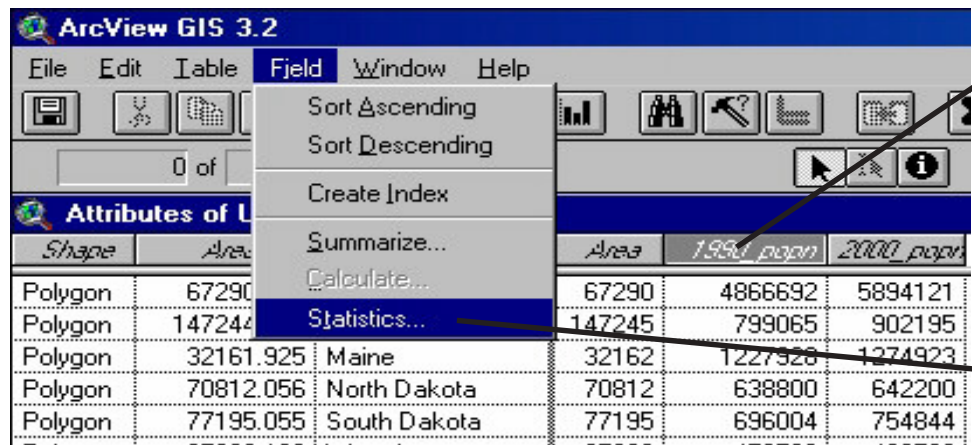
The **us_data.txt** table should close.

The **Attributes of us_geography.shp** table should now display the columns of data from the **us_data.txt** table.

Look at the fields available in the table and determine whether you must calculate to produce a map of your chosen variable.

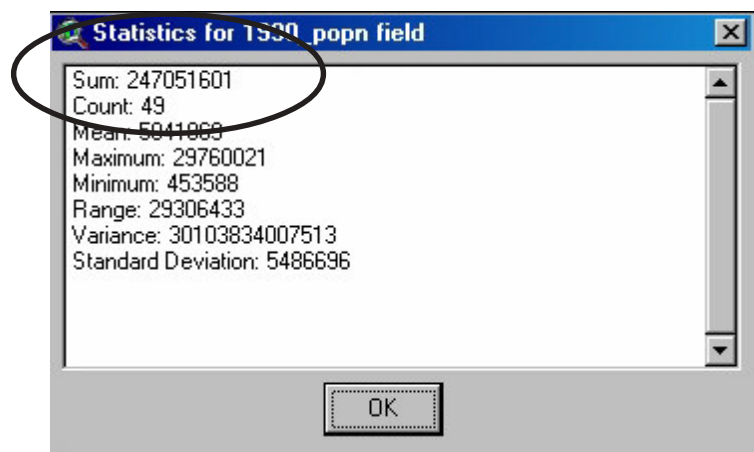
Some variables may create a ratio or percentage using a numerator and a denominator which already exist in the table. Some variables require you to determine the total for all states so that this information can be as the denominator. Some variables may already be a rate or percentage and these can be mapped without further calculation.

If you must sum data in the table for your variable, follow the steps on this page.
If you do not need to sum, then go on to page 6.



Click first on the name at the top of the column to select the correct field. (*Selected field should appear as a darker gray.)

At the top of the screen, select **Field** then **Statistics...**



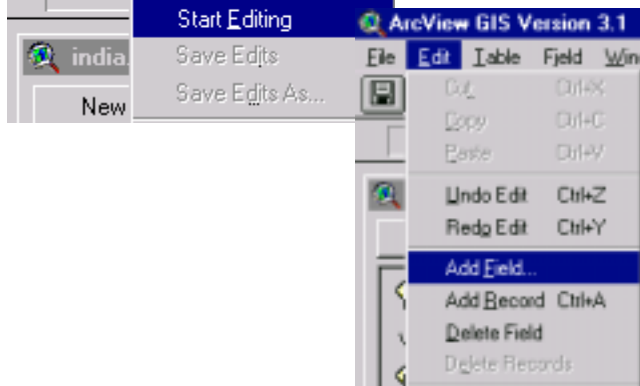
The **Sum** of the data in this field appears at the top of the displayed window.

Copy down this number to use later as the denominator in your calculation.



In the menu at the top of the screen, click on **Table**.

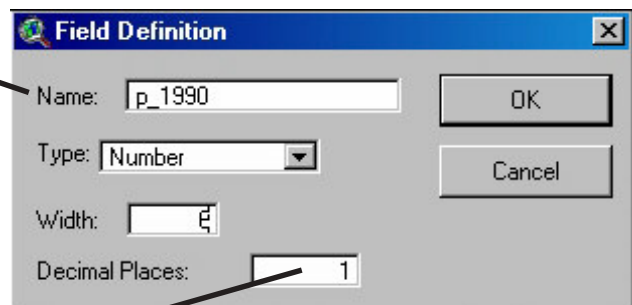
Then click on **Start Editing**.



In the menu at the top of the screen, click on **Edit**.

Then click on **Add Field...**

In the **Field Definition** dialogue window, click on the **Name** box and type a name for the new field which will contain your calculated data - the name must be 8 characters or less. (* This example uses **p_1990** for a field which will contain percentage of the total population in each state in 1990.)



Leave Type set at **Number**. Set field **Width** to accommodate the largest possible result of your calculation. (* This example uses Width = 6, including 1 decimal place.)

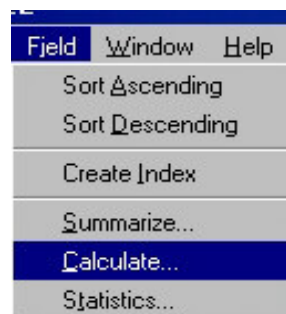
Click the **OK** button.

1990_popn	2000_popn	p_1990
4866692	5894121	
799065	902195	
1227928	1274923	
638800	642200	
696004	754844	

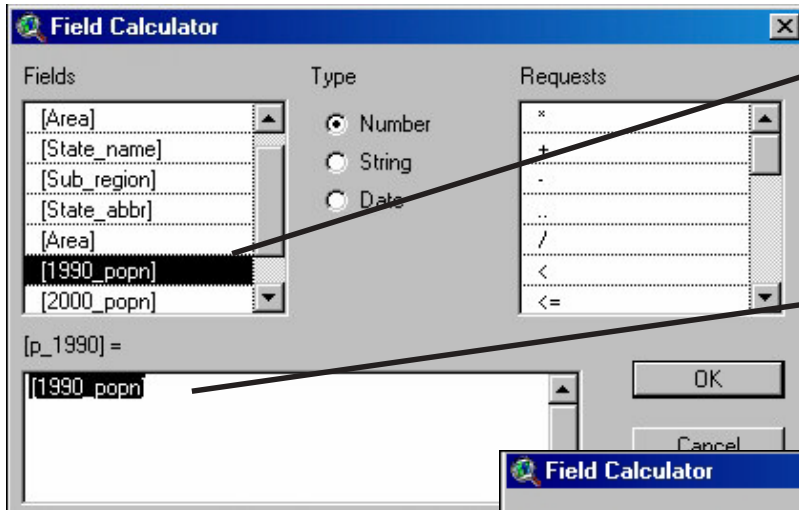
A new column with this name should be displayed in the **Attributes of us_geography.shp** table.

To calculate the values for this field, click on **Field** at the top of the screen.

Then click on **Calculate...**



The following example shows how to calculate the percentage of the total population in each state:
 State Population in 1990 divided by Total Population in 1990 multiplied by 100 = percentage



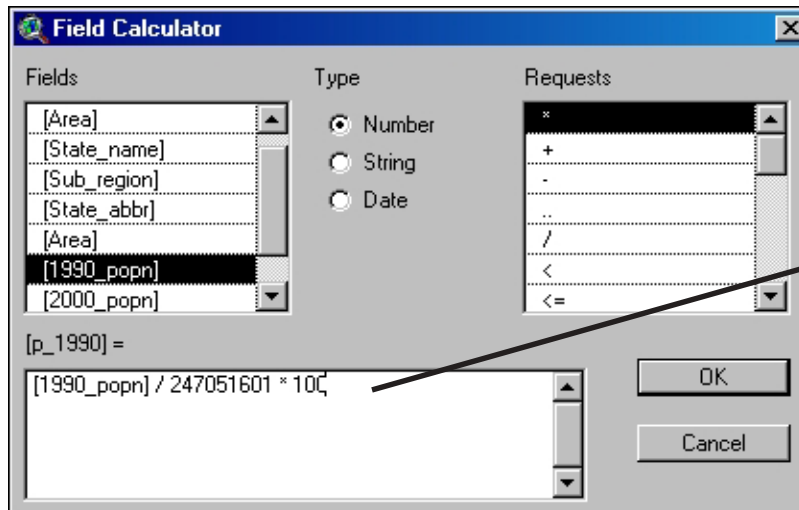
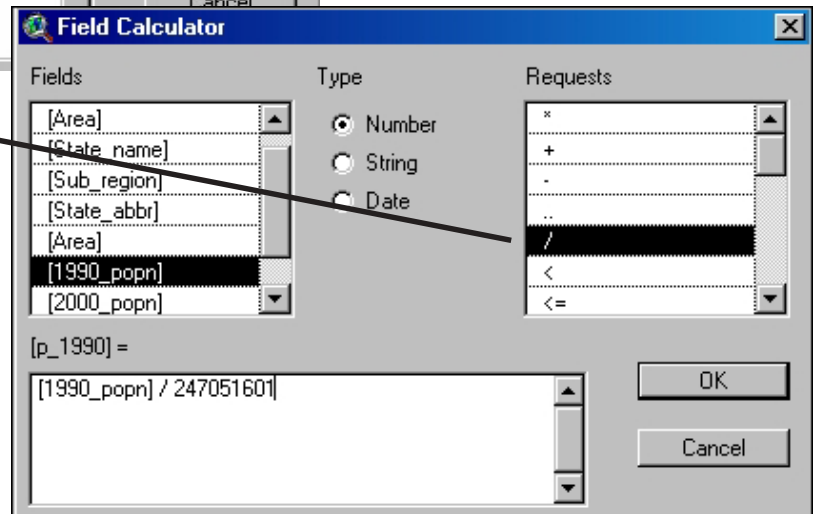
In the Field Calculator dialogue window, scroll down the **Fields** list and double click on the name of your **numerator**. (* This example uses **1990_popn**.)

The field name [1990_popn] should appear in the lower box.

In the **Requests** box, double click on the division sign (/).

In the **Fields** box, double click on the name of your **denominator field** or **type in the sum** which you obtained (page 6). (* This example uses the sum of the 1990_popn field.)

These should be added to the query in the lower box.



In the **Requests** box, double click on the multiplication sign (*).

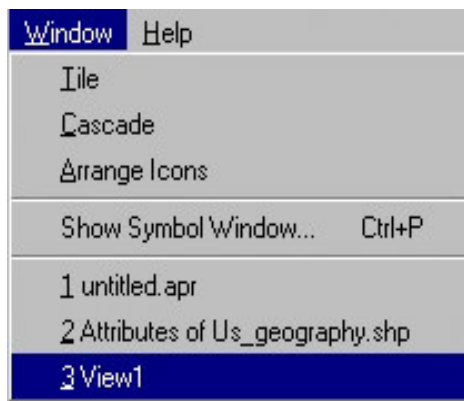
Then type the number 100.

The final query should read **[1990_popn] / 247051601 * 100**.

Click the **OK** button.

The new field should now show values.

p_1990
2.0
0.3
0.5
0.3
0.3
0.2



In the menu at the top of the screen, click on **Window**.

And then click on **View1**, to bring your map window to the front. You may wish to maximize the window size for easy viewing.



In the menu at the top of the screen, click on **Theme**.

Then click on **Properties...**

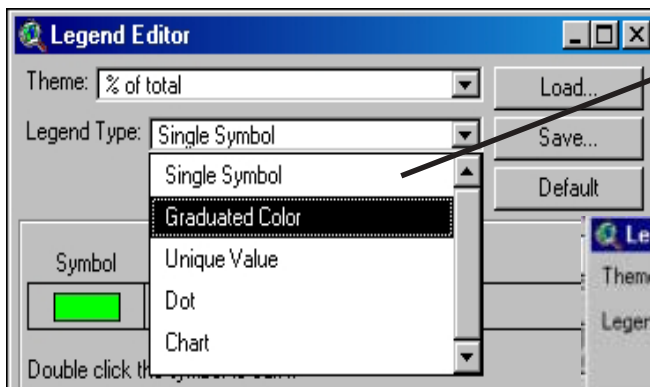


In the **Theme Name** box, type a name for this variable. This is the label that will appear above the legend on your map. Keep it short.

Click the **OK** button.

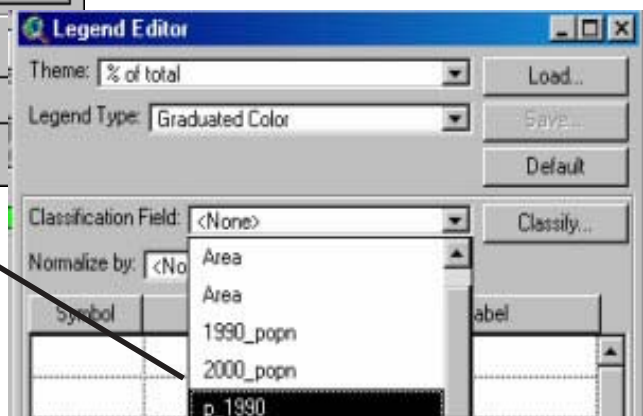
In the menu at the top of the screen, click on **Theme**.

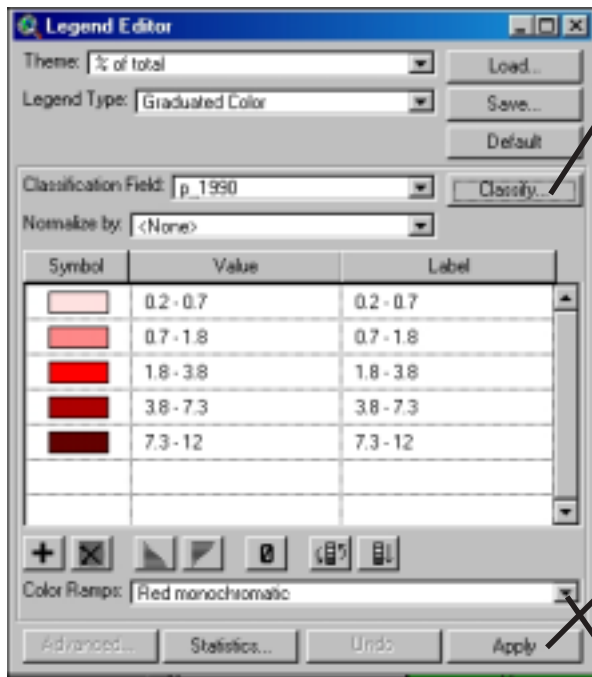
Then click on **Edit Legend**.



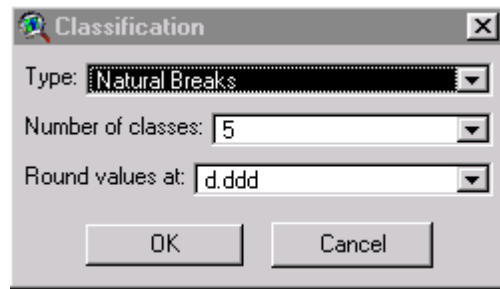
In the drop down menu for **Legend Type**, click on **Graduated Color**.

In the drop down menu beside **Classification Field**, click on the name of the field which you created.





Click on the **Classify** button.

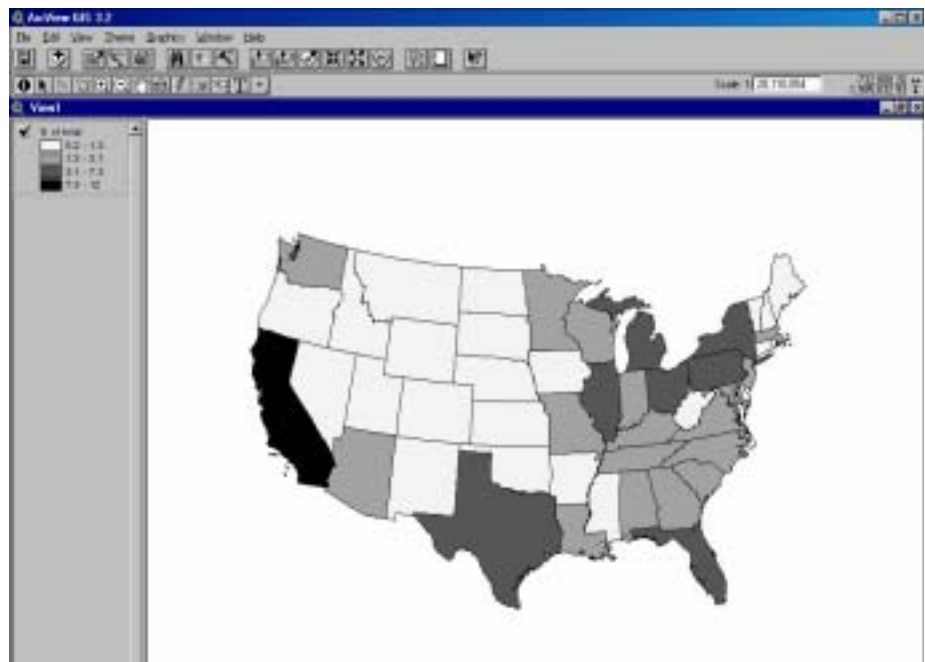


In the **Classification** window, experiment with different **Numbers of classes**.

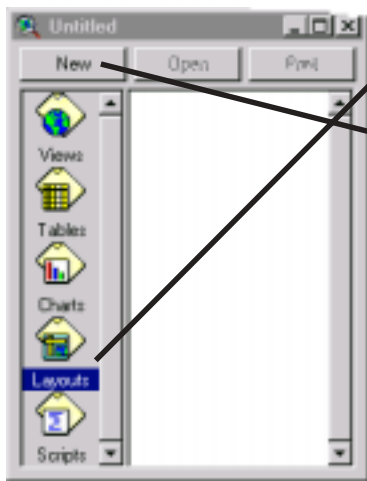
Click on the **Apply** button, to see what each change does.

To print in black and white, change the **Color Ramps** to **Gray monochromatic**.

Experiment with different numbers of classes until you have produced your final map. (Click on the X button in the upper right corner when you are ready to close the Legend Editor).



When you have your final map ready, go to the top of the screen and click on **Window**, then on **Untitled**.

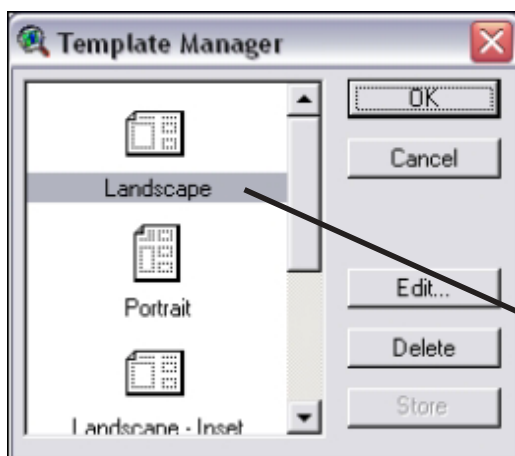
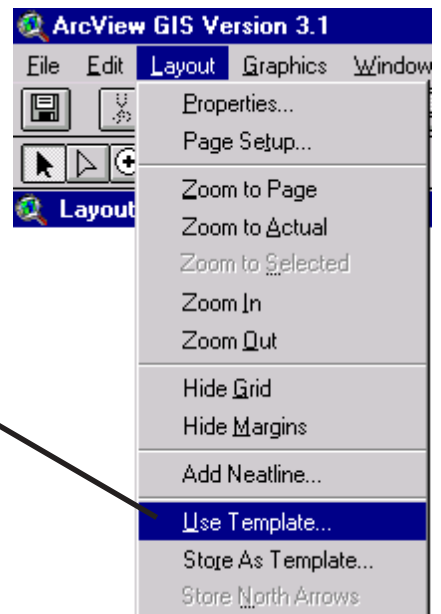


Click on the word **Layouts**.

Then click on the **New** button.

In the menu at the top of the screen, click on **Layout**.

Then click on **Use Template...**

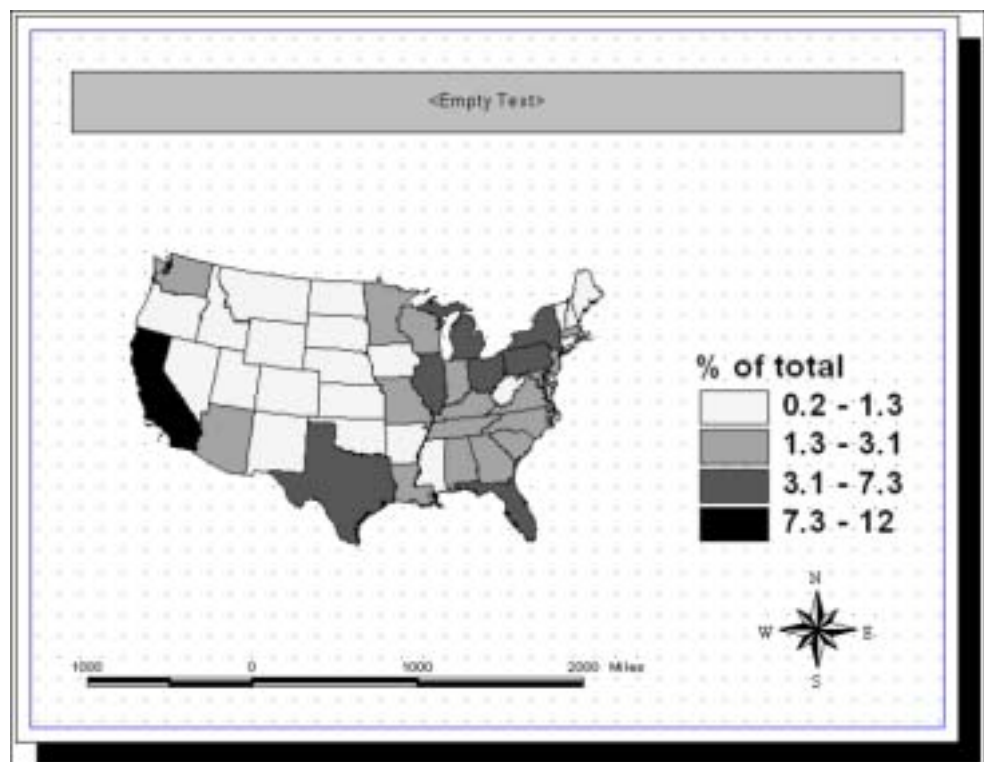


In the **Template Manager** window, click on **Landscape**.

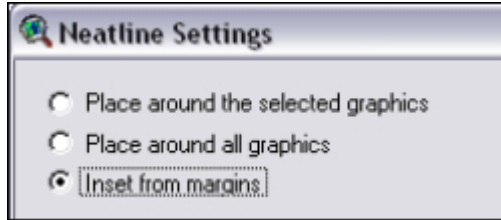
Click the **OK** button.

A Layout automatically loads your map, your legend, a north arrow and a scale bar.

There is also an <Empty Text> box for the map title.



To draw a neat line around the map, click on the **Layout** again, and this time select **Add Neatline...**





Click on the radio button beside **Inset from margins**.

Leave default settings at 0.25 inches in all boxes and click **OK**.

Double click on the <**Empty Text**> box, and type a title for your map. Click **OK**.

Click once on any element (title, map, legend, north arrow or scale bar) to select it. Black squares will appear in the corners of a selected object.

When you see a double-headed arrow , you can resize the object by pulling the corner black squares in or out.

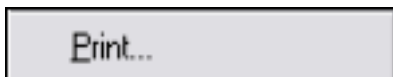
When you see a four-headed arrow , you can move the object by clicking in the centre and dragging.

To add a source or other additional text to the map, click on the **Text** tool and type the desired text.



After you have used the Text tool, you must turn it off by clicking the **Pointer** tool.

When you have finished your map completely, click on **File**.



Choose **Print...** to send the map to the printer.

Under **Setup**, select a printer and confirm that the paper orientation matches your layout.

The Library printers operate using the CopiCard system (about \$.10 for black & white, \$1.50 for colour). The UTS lab printers use an account system based on your student id.



Choose **Export...** to save the map as a file for printing at home or to email to yourself as an attachment.

Under **List Files by Type**, select the last option **JPEG**. Indicate a drive letter and filename. Click **OK**.

You can save to a USB keychain drive, to the **U:** drive in the Library or to **C:/temp** in the UTS Lab. Do not save to the Desktop on Library computers.

SHORTCUT FOR YOUR SECOND MAP: Click on Window at the top of the screen, reopen View1, select Theme, then Table, and repeat the process (starting at page 6) to create your second map. Use View1 and Layout 1 again and you will only need to change the title for the second map.