



Some useful functions in ArcView

Frequency/Summary Tables

We often want to summarize values for groups of observations in our theme. For example, in an administrative units coverage we would like to know the total population of each state when we only have the populations for the individual districts

- create a new view
- add the npadmin shapefile by using the 'Insert themes into the view' button 
- display the 75 districts of Nepal
- double click on this theme to get the legend editor
- choose DEVREG in the FIELD menu, and press apply; the random colors are o.k., since it is a nominal variable; close the legend editor
- open the attribute table of the theme 
- make DEVREG the active field
- in the top menu bar select the FIELD/SUMMARIZE option
- choose SUM in the SUMMARIZE BY menu
- Choose POP91 as the FIELD and press ADD
- do the same with sqkm (area in square kilometers)
- add other variables; for which ones would SUM be appropriate, for which ones AVERAGE; look at the other options available; when would you use those?
- use the SAVE AS option to navigate to your working directory and choose a meaningful file name; e.g., DEVPOP1.DBF
- press OK
- look at the resulting data file which will contain the aggregate information for the development regions.

Merging map features (MERGE or DISSOLVE operation)


Actually, it would be nice not only to have summary statistics for the development regions, but also a map that only contains those regions.

- go into the attribute table again and choose DEVREG as the active field
- choose FIELD/SUMMARIZE again
- choose SHAPE in the FIELD menu and MERGE in the SUMMARIZE menu; this

one step by choosing SHAPE/MERGE as well as specifying additional variables to be aggregated. But for the purposes of this exercise, we did this in separate steps.

Joining datafiles to map attribute tables

Since we have separate files for the attribute data (DEVPOP1.DBF) and for the geographic data (DEVREG.SHP), we now need to merge the two. So, we want to join the file we created earlier which contains the population by development regions with the shapefile of development regions that we just created.

- open the attribute table of the DEVREG.SHP file (it needs to be the active theme for this)
- open the table DEVPOP1.DBF - if it's not open anymore it can be accessed from the project window
- make the DEVREG field in the DEVPOP1.DBF table the active field
- move to the attribute table of DEVREG.SHP
- make the DEVREG field active here as well
- choose TABLE/JOIN or click on the 'appends the fields ...' button 

ArcView has now created a one-to-one relationship between the two files, and the fields in DEVPOP1.DBF are available for mapping or analysis. **The sequence in which the active fields are chosen is important!** Always choose the field in the external file first and then the field in the file that you want to append the new fields to.

Note that this is how you can add external databases (that you may have created in Excel) to the maps. For one-to-many relationships we need to use LINK (you might want to read the HELP entry for LINK).

Make fields invisible in tables and use aliases

in large attribute files, you sometimes want to hide certain fields that are not used very much.

- from the attribute table choose TABLE/PROPERTIES
- toggle visible on/off for any fields you want to hide
- field names can sometimes be hard to interpret; rather than using an abbreviation you can choose an alias that can consist of more letters and that will appear as the table heading

Adding fields to a table

We would like to add some fields to our DEVREG shapefile for example to calculate new values


- open the correct attribute table
- choose TABLE/START EDITING to allow for values in the table to be changed
- choose EDIT/ADD FIELD
- choose a name, e.g., POPDENS, a width of 10 and 2 decimal places, and press OK

Calculating new values

- make sure the new field is active (it should appear a bit darker than the others)
- choose FIELD/CALCULATE
- enter an expression in the menu (you need to double click on the fields for them to be copied to the expression builder area)
- After you are done adding and calculating fields, you need to save your changes using the TABLE/STOP EDITING function.

Selecting features in one theme using features in another

GIS is most useful in establishing relationships between features in a theme or between different features in two themes. For example, we might want to get a rough idea of how many people live in the South-Eastern portion of the Tarai in Nepal.

- import the NPPHYS shapefile
- add it to the view that contains the Nepal district boundaries and display it
- the Tarai is the Southern-most landscape belt in Nepal and we are interested in the South Eastern part
- make NPPHYS the active theme
- choose the 'selects features' button  -- the third from the left in the second button bar
- click on the South-Eastern Tarai region or create a small rectangle completely contained in that polygon (it should be the only one highlighted after your selection)
- make NPADMIN the active theme
- choose the THEME/SELECT BY THEME option

- choose FIELD/STATISTICS
- how many people live in the districts that intersect with the South Eastern Tarai? Would the results be much different if you chose a different option in SELECT BY THEME?

Hotlinks

In some applications it is useful to have a way of linking non-standard types of information such as text files, or images to a map display. ArcView lets you define hotlinks between features in a map and some external source of information. For example, if a user clicks on a map feature, a text file with descriptive information about that feature is displayed; or an image (e.g., a photograph) of that feature is displayed. Hotlinks can also be used to start a new view. For example, when a user clicks on a state in a state level map of India, ArcView starts a view that shows the districts for that state.

We'll define a simple hotlink now for the Nepal shapefile.

- using NOTEPAD in Windows, create a text file in your working directory and enter some text. E.g., "Kathmandu is a nice city". Save the file as 'kathmandu.txt'
- go to the view of districts of Nepal
- open the attribute table for that theme
- create a new field called HOTLINK (could be named anything): TABLE/START EDITING, EDIT/ADD FIELD
- search for the row that contains the data for Kathmandu (note: you can use the FIND tool - indicated by a pair of binoculars on the button)
- if it's not highlighted yet, select that row now
- move to the end of that row in the table to the HOTLINK field
- choose the 'changes cell values' tool in the lower right tool bar
- click on the cell in the HOTLINK field (column) in the Kathmandu row
- enter 'kathmandu.txt' and hit return
- choose TABLE/STOP EDITING
- make the map view the active window
- choose THEME/PROPERTIES
- choose HOTLINKS in the left panel
- choose HOTLINK as the FIELD, and 'LINK TO TEXT FILE', press OK
- go to the map view, choose the HOTLINK tool (indicated by a flash on the button)
- move the cursor to Kathmandu district (a little east of the center of Nepal) and click once
- watch what happens. If you can't find Kathmandu district immediately, just click on