Week 4

DISPLAYING GIS DATA WITH ARCGIS

topics of the week

- **The ArcMap interface**

- **Layers**

- **Maps**

- **Layer symbology**

- **Displaying, classifying layers**
  - **Qualitative values**
  - **Quantitative values**

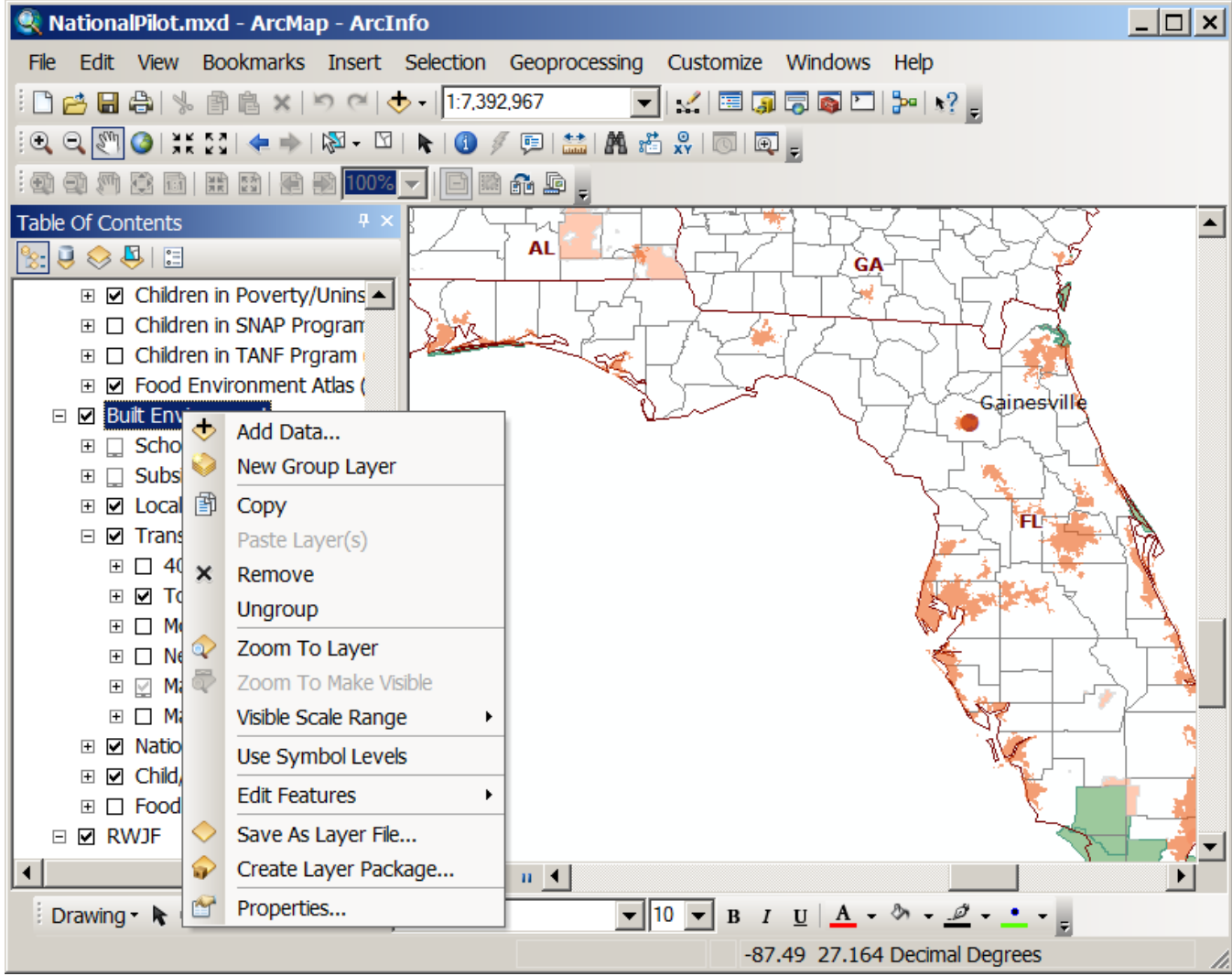# The ArcMap interface

Title Bar
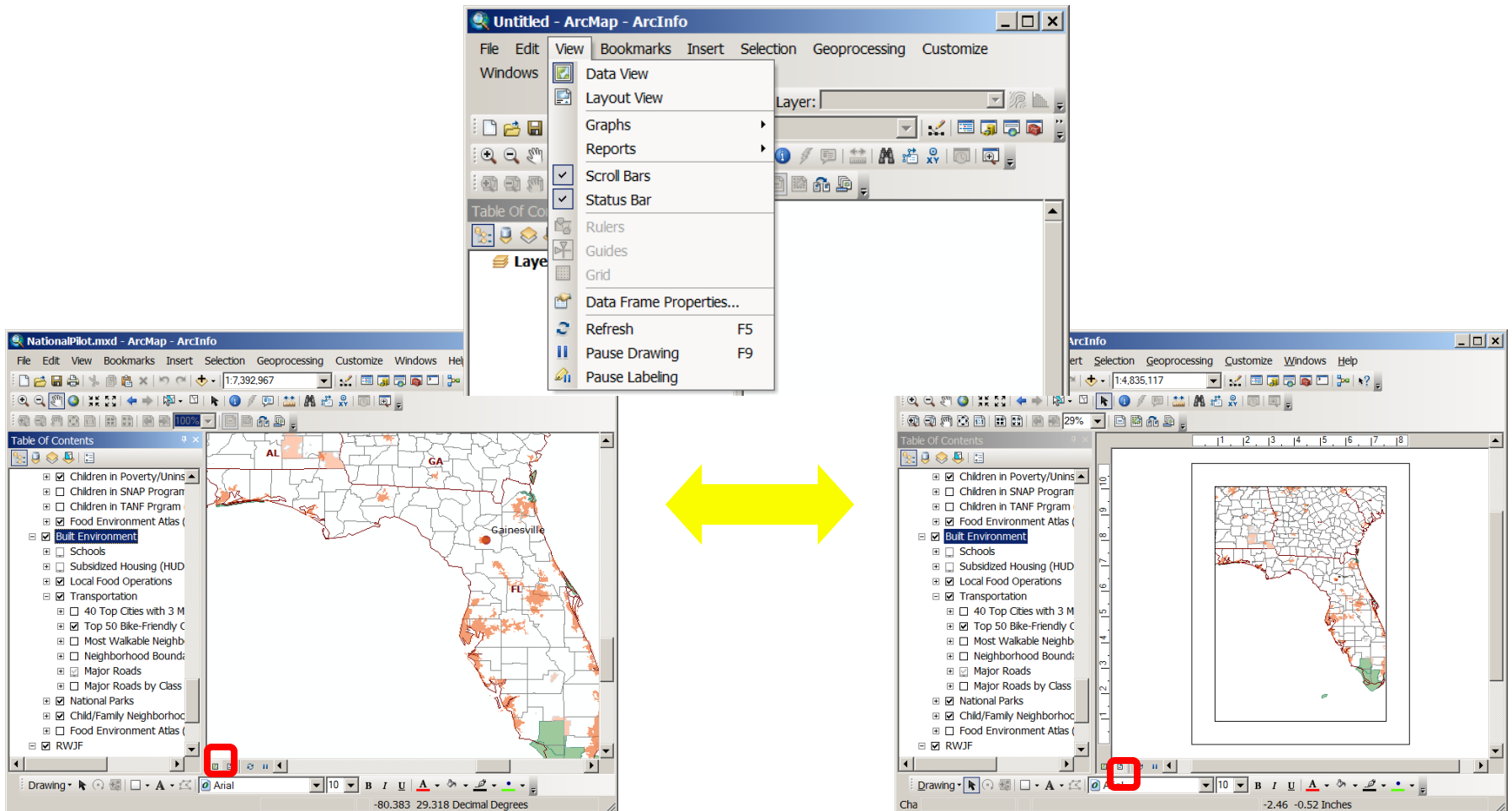
Menu Bar

Button Bar

Table of Content

Drawing Toolbar

Status Bar

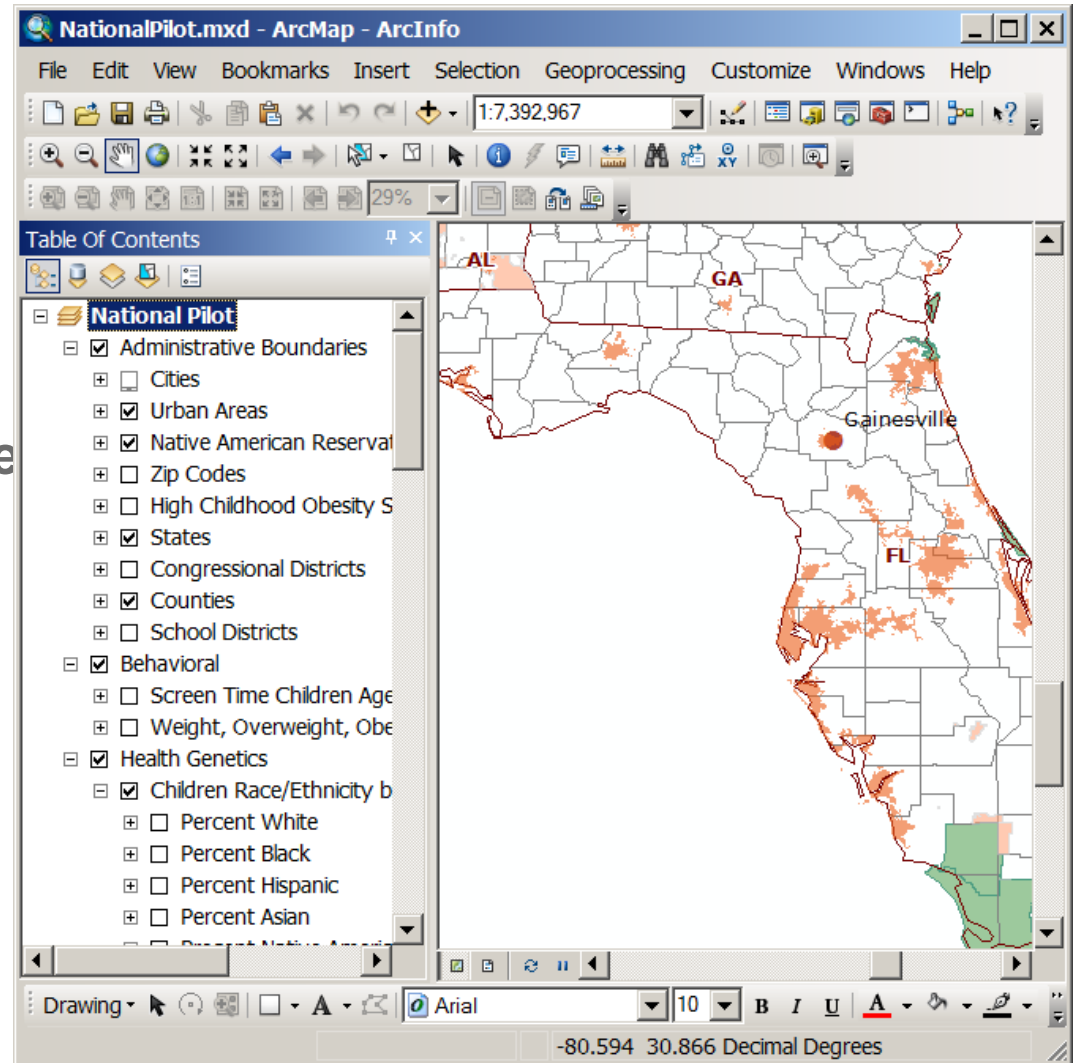**Context Menu**

Dockable Tool Bar

Data View vs. Layout View

❑ **Use *data view* for display, queries, editing and analysis**

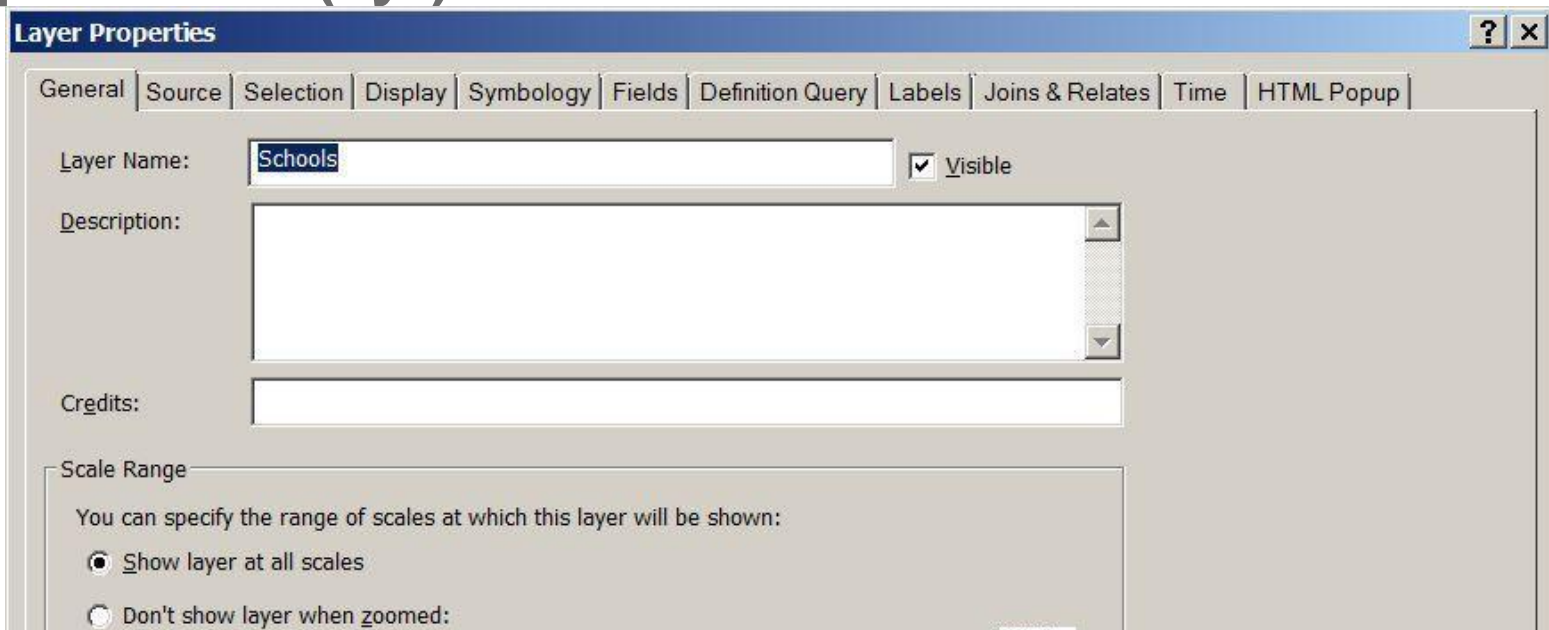❑ **Use *layout view* for creating map layouts**

Layers, data frames, and maps

- **Data Frame**
  - **Container for layers**

- **Layer**
  - **Symbolizes data source**
  - **Stores path to data source**

- **Map**
  - **Contains data frames**
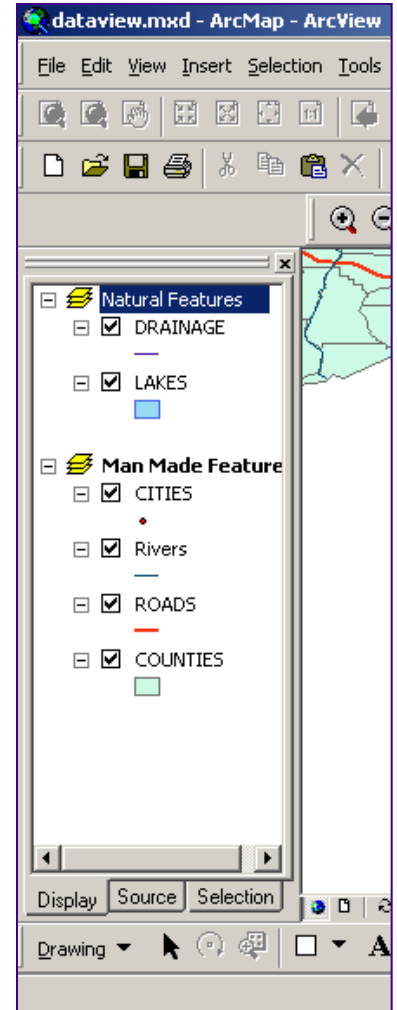 - **Layers**
  - **Map elements**

Layers

- **Reference spatial data sources**
- **Set symbols, labels and other properties**
- **Manipulated through the context menu**
- **Store paths to data source**
- **Stored inside ArcGIS project (.mxd) or outside as a separate file (.lyr)**

Layer Properties ? ×

General | Source | Selection | Display | Symbology | Fields | Definition Query | Labels | Joins & Relates | Time | HTML Popup

Layer Name: Schools   ☑ Visible

Description:

Credits:

Scale Range

You can specify the range of scales at which this layer will be shown:

◉ Show layer at all scales

○ Don't show layer when zoomed:

Data frames

- Data frames are containers for layers

- TOC can have many data frames

    - Index and inset maps

    - Arrange in layout view

- Add data frames from *Insert* menu

- Only one data frame active at a time

- Activate data frames from context menu

Group layers

- A *group layer* is composed of many layers that act as one

- Properties of a *group layer* override properties of its constituent layers

- One can still work with individual layers in the *group layer*

- One can save a *group layer* as a layer file [*.lyr]

- One data frame can have many *group layers*

- Right click on Data Frame to add a new *group layer*

- *OR,* Select several layers in the TOC, right click, then *Group*

- *OR,* a g*roup layer* can also be created in ArcCatalog

Layer files

- Save data interpretation for future re-use in other maps

  - .lyr extension

  - save the symbology for a layer without saving an entire map document

  - can load into another map document in ArcMap (.mxd)

  - can preview in ArcCatalog

  - can not read from outside of ArcGIS

  - works with both vector and raster formats

Maps

- **Holds layers, data frames, graphics, map elements**
- **Store information in a map document (.mxd) file**
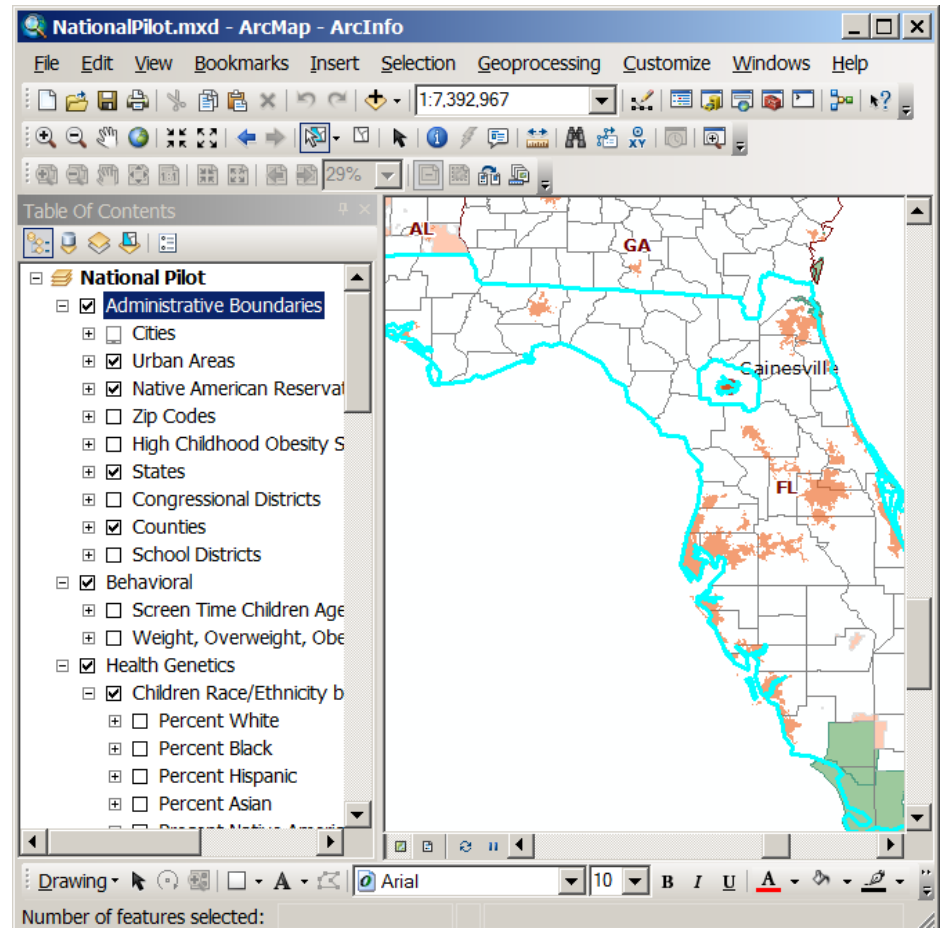
Working with the Table of Contents

- **Drag layers up or down to change display order**

  - **Smart defaults for layer draw order**

    - **Point, lines on polygons**

  - **Layers draw in the Table of Contents order, from the bottom-up**

- **Rename data frames and layers**

- **Remove layers**

- **Display, Source, Selection tabs**
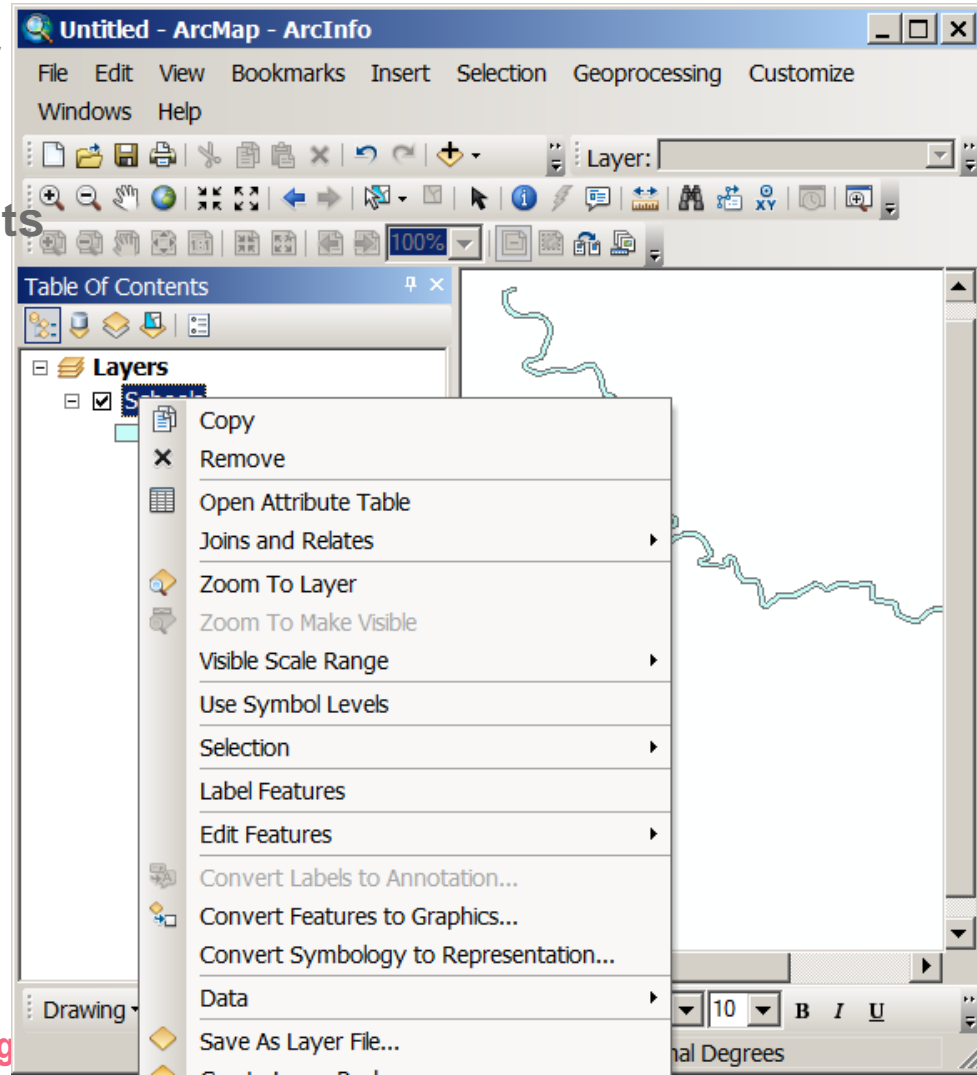
Source vs. Display Tabs: re-setting the source

❑ **The table of content keeps track of the path to the source data**

❑ **The table of content displays the name of the layer**

❑ **The table of content warns when source data moves**

❑ **To re-set the data source for a layer:**

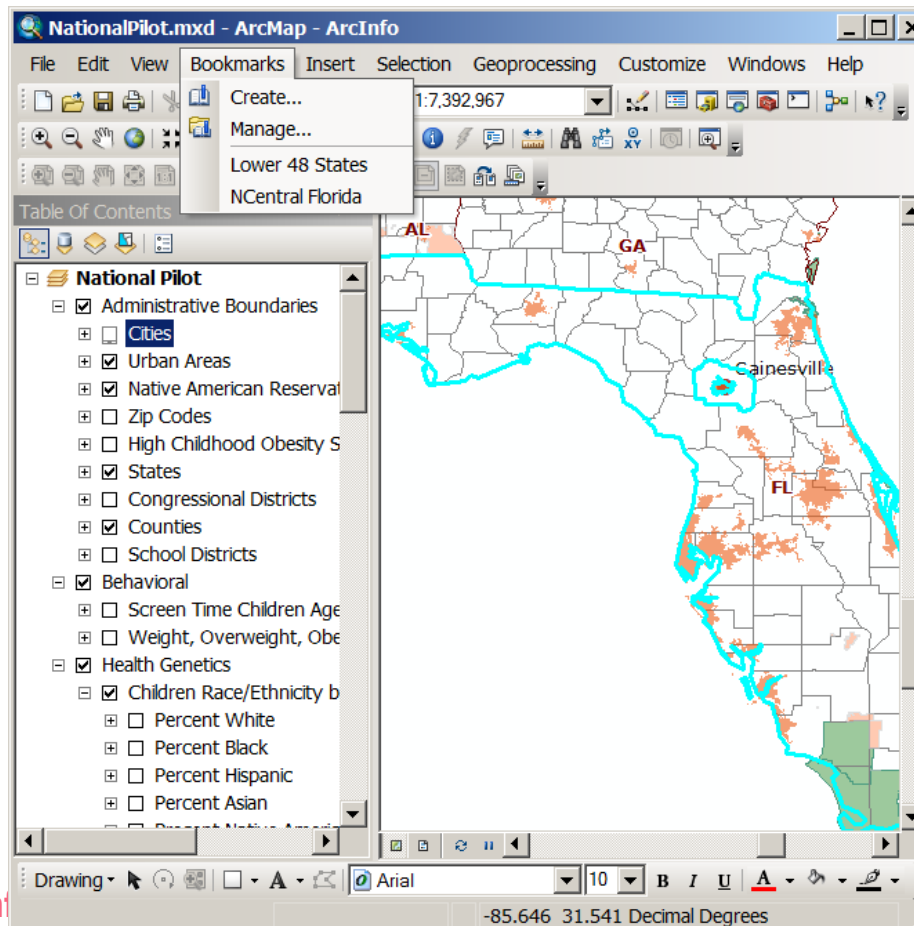*Highlight, Right-click the layer > Data > Repair Data Source*
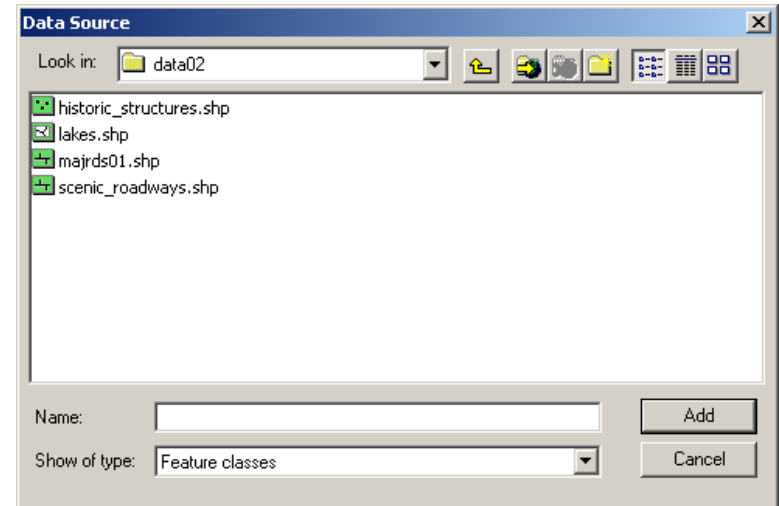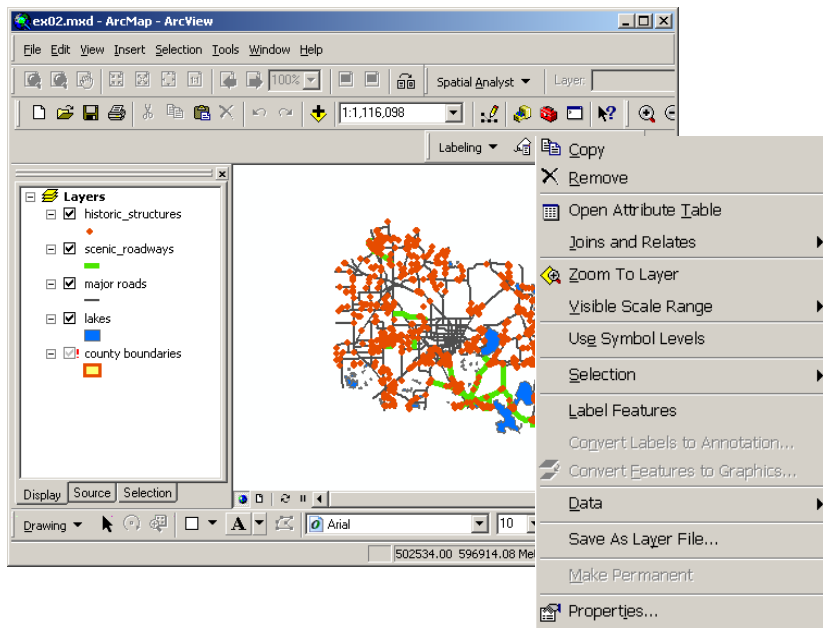
Navigating the map

- **Zooming in and out**

- **Panning around the map**

- **Zooming to full extent of single or multiple layers**

- **Back or forward to last zoom in display**

- **Zoom to specific layer's extent**
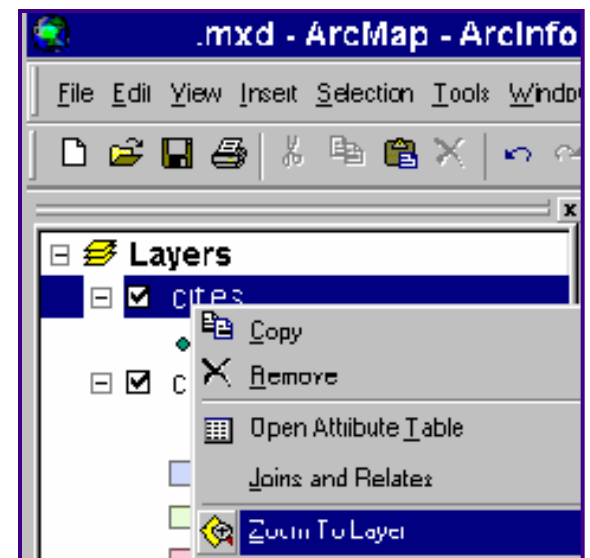
The Bookmark

❑ **Spatial bookmarks**

    ❑ **Set a location extent and name it**
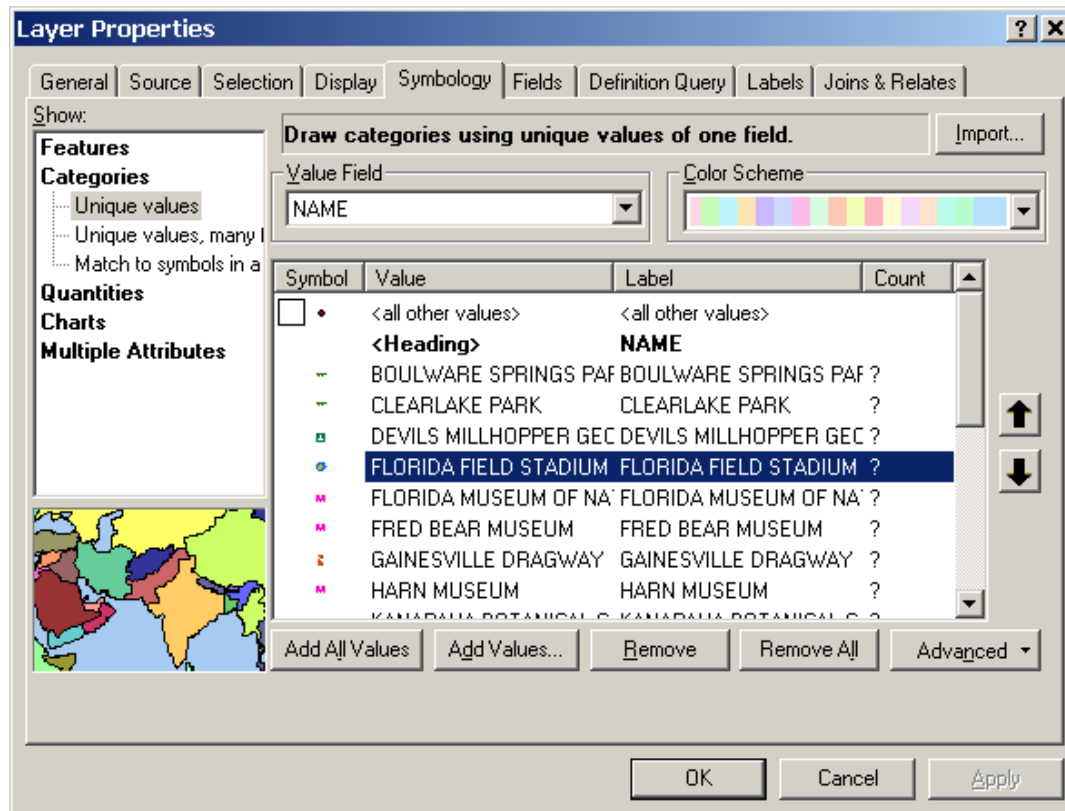
    ❑ **Store it, so that you can return to it at any time**

Overview and Magnifier

❑ **Explore detail or overview without changing display**
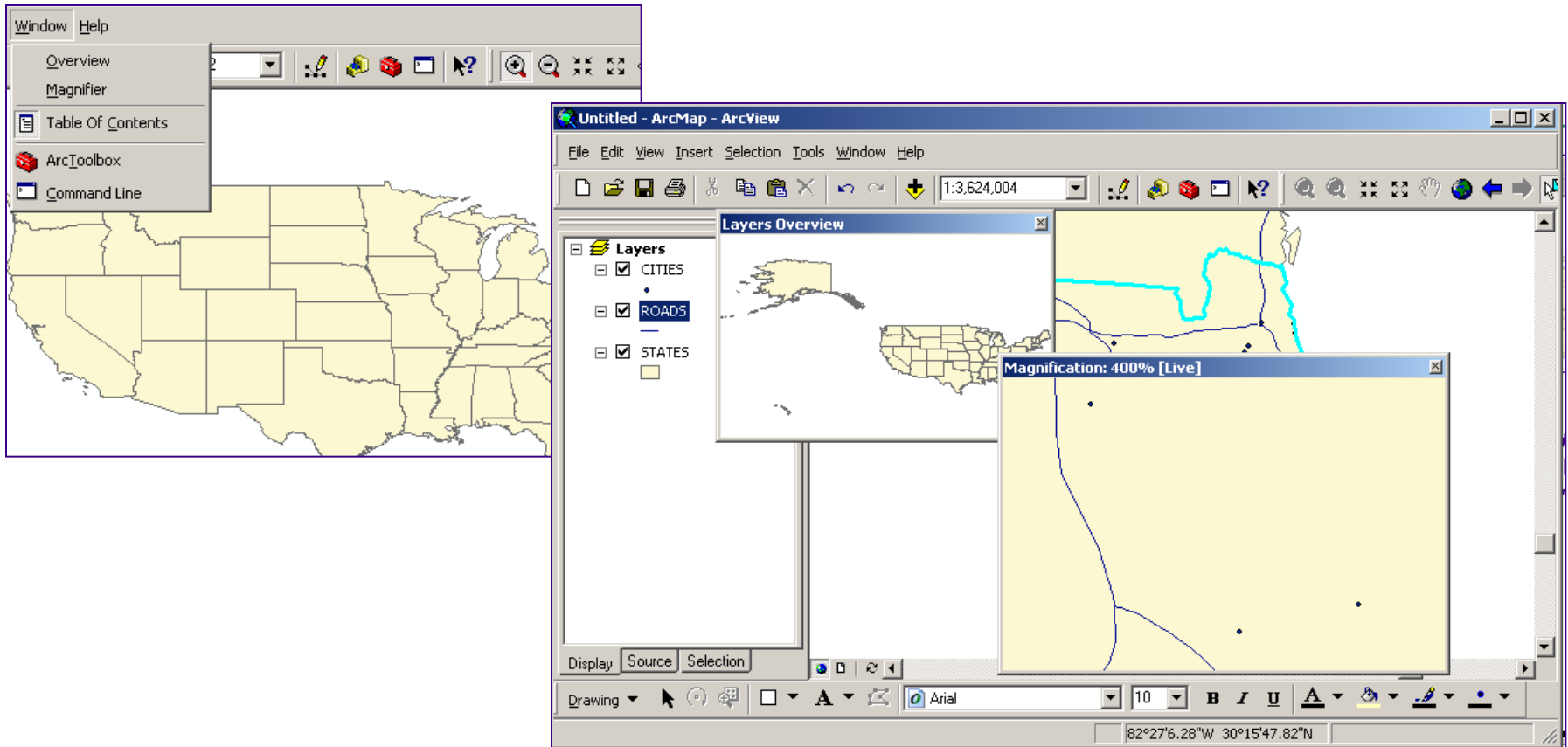
Symbology for layers in ArcMap

❑ **Single symbol for all features**

❑ **Various classified symbols based on attribute values**

Displaying qualitative values

□ **Features**

Features
Single symbol
Categories
Quantities
Charts
Multiple Attributes
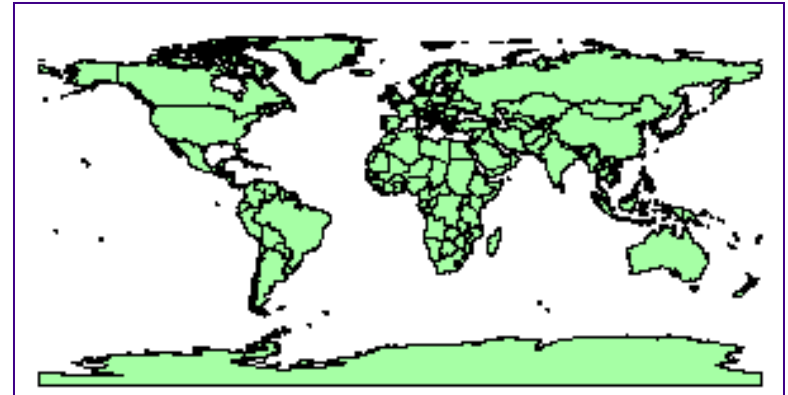
□ **Categories**

Features
Categories
Unique values
Unique values, many I
Match to symbols in a
Quantities
Charts
Multiple Attributes
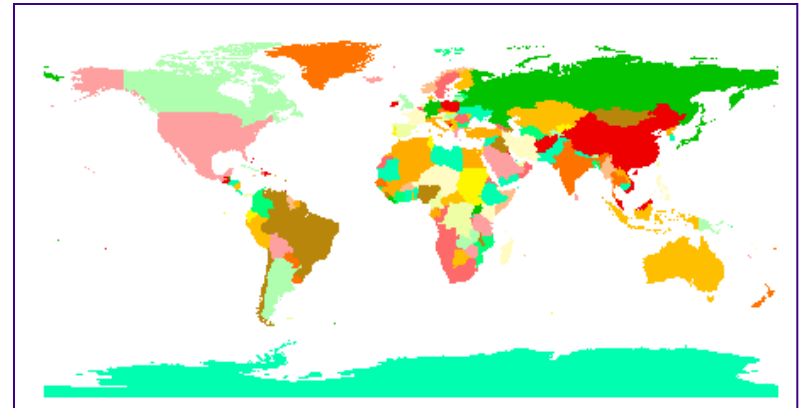
Displaying quantitative values

❑ **Quantities**

Features
Categories
Quantities
    — Graduated colors
    — Graduated symbols
    — Proportional symbols
Charts
Multiple Attributes
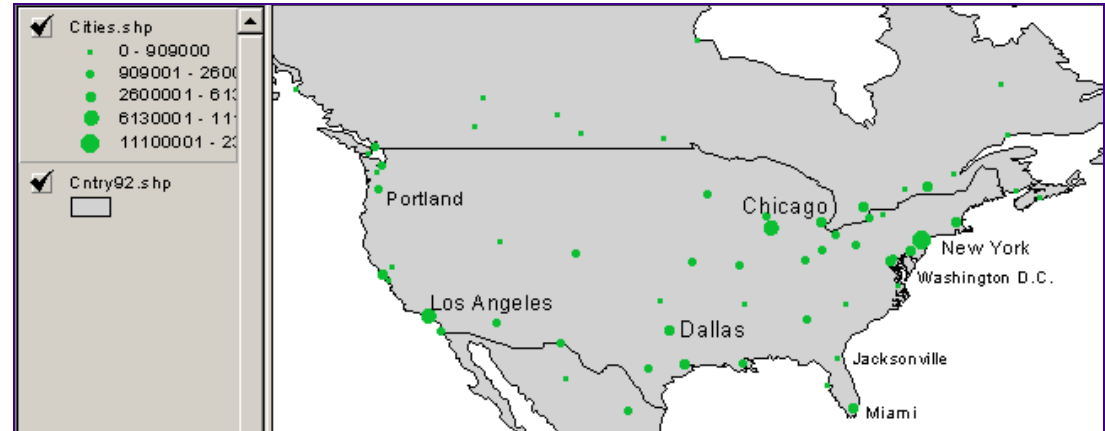
❑ **Charts**

Features
Categories
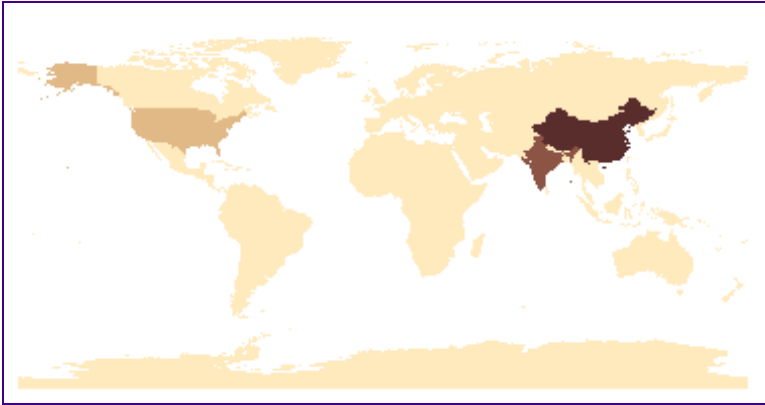**Quantities**
Charts
    — Pie
    — Bar/Column
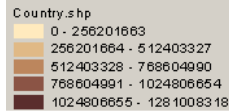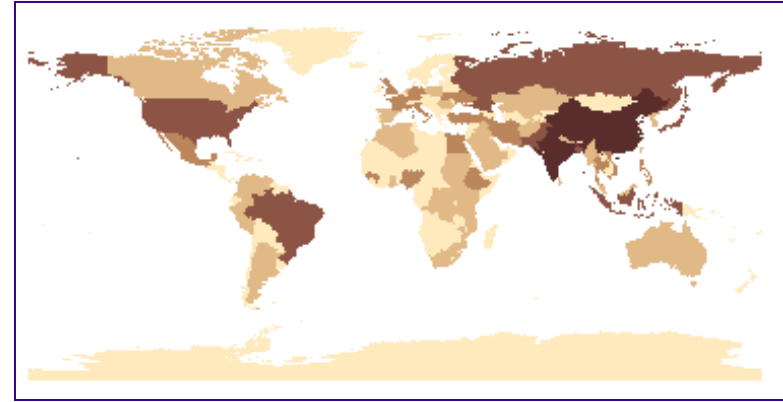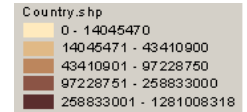   — Stacked
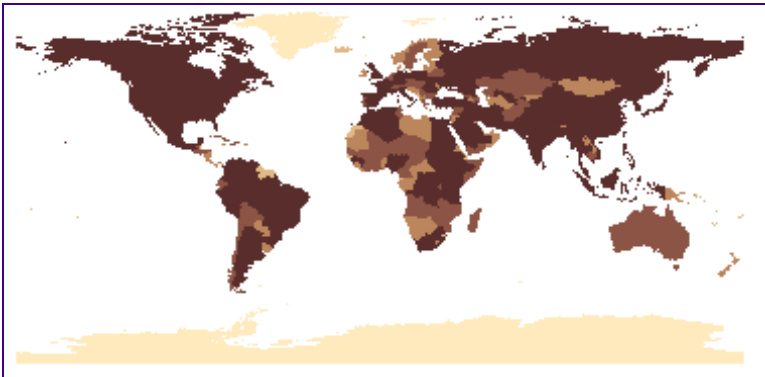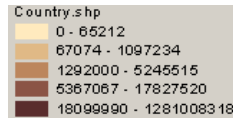**Multiple Attributes**
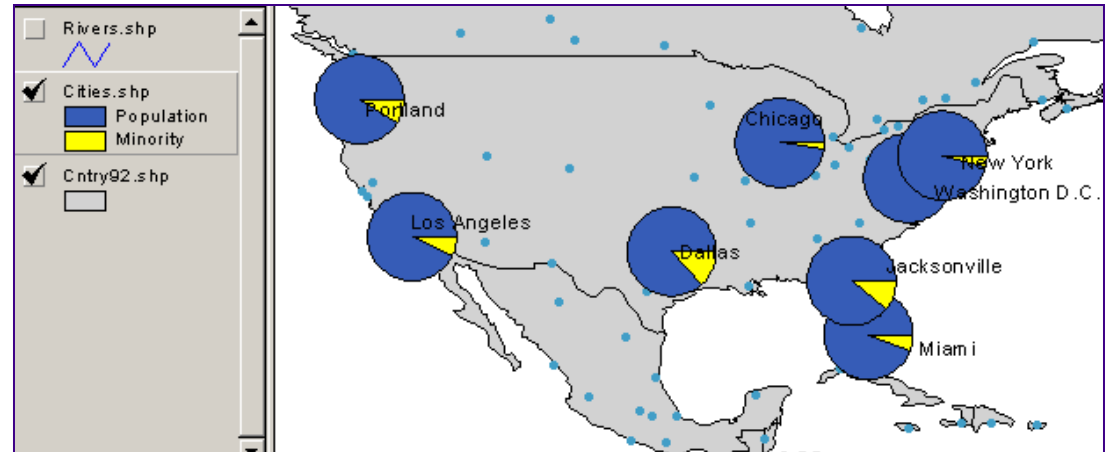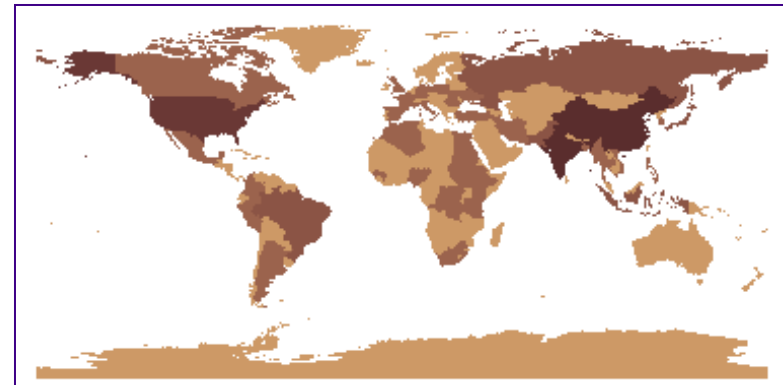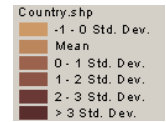
Four ways to classify quantitative values

Equal interval

Country.shp
- 0 - 256201663
- 256201664 - 512403327
- 512403328 - 768604990
- 768604991 - 1024806654
- 1024806655 - 1281008318

Natural breaks

Country.shp
- 0 - 14045470
- 14045471 - 43410900
- 43410901 - 97228750
- 97228751 - 258833000
- 258833001 - 1281008318

Quantile

Country.shp
- 0 - 65212
- 67074 - 1097234
- 1292000 - 5245515
- 5367067 - 17827520
- 18099990 - 1281008318

Standard deviation

Country.shp
- -1 - 0 Std. Dev.
- Mean
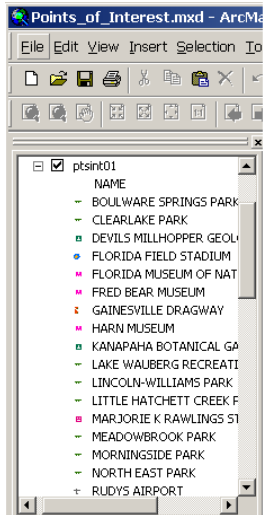- 0 - 1 Std. Dev.
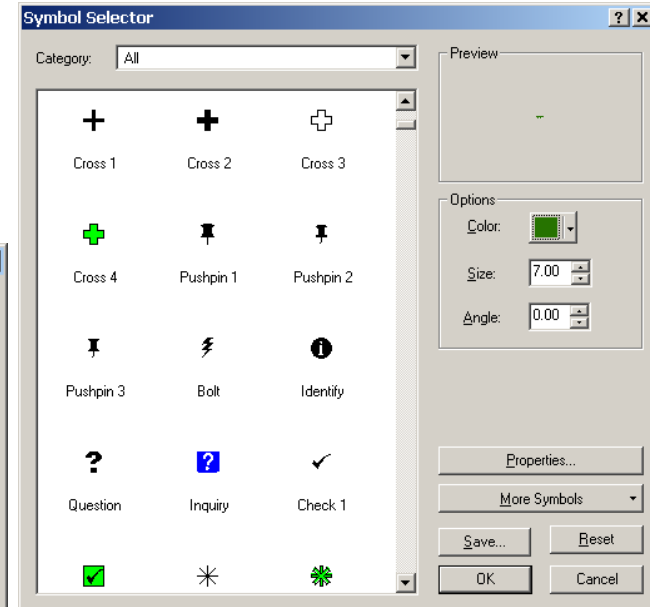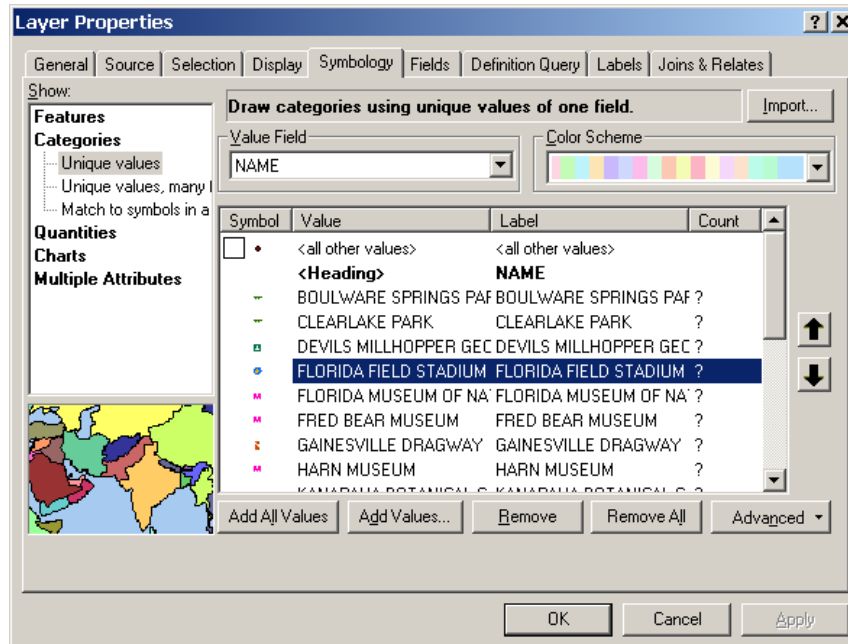- 1 - 2 Std. Dev.
- 2 - 3 Std. Dev.
- > 3 Std. Dev.

Setting symbol properties

- **From the symbology tab or double-clicking**


Double-click

Double-click

Double-click

Labeling features

- Label features dynamically using attribute values

- Place text interactively on the feature

- Can set label display scale

- Convert labels to annotation features if need to edit labels

- Annotation is a separate feature class, can be loaded

- Feature linked annotation only in ArcEdit & ArcInfo
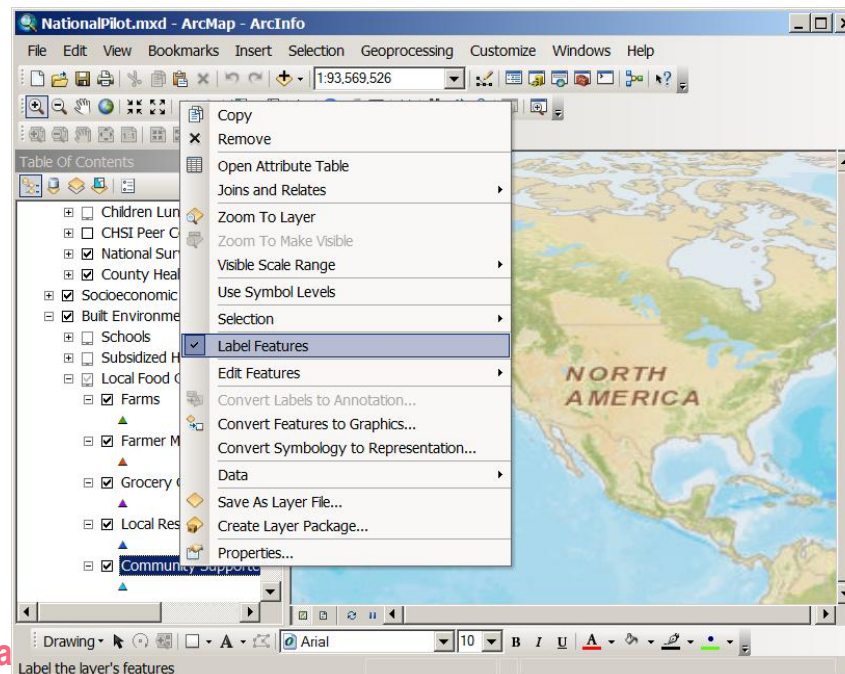
Visibility of layer based on scale

- **Display layers only at a specific scale range**

    - **Minimizes cartographic noise**

    - **Minimizes drawing time**

    - **Two ways to set it up**
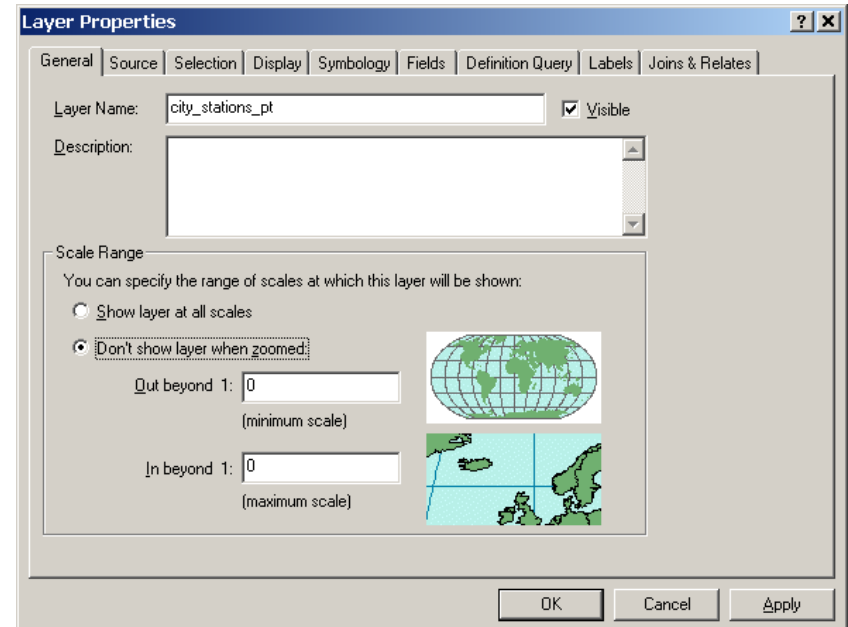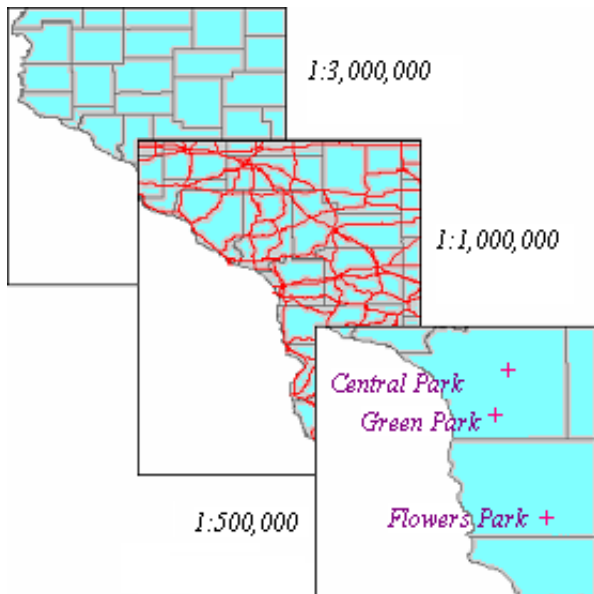
Displaying a subset of the data

❑ **Create a definition query**

❑ **Create the query based on attributes**

❑ **Remember, the source data remains as is, only the map display shows the subset**