Cartography and GIS

- Cartography is the science and art of making and using maps
- Maps are means of communication (Visualizing) GIS data
- Important to know how to communicate large amounts of data efficiently.
- Important to know how to read a map
- Maps are subjective, important to realize strengths and weaknesses

Topographic maps

Display physical landscape and man-made features

1:250 000

Overview map

1:50 000

Topographic map

1:10 000

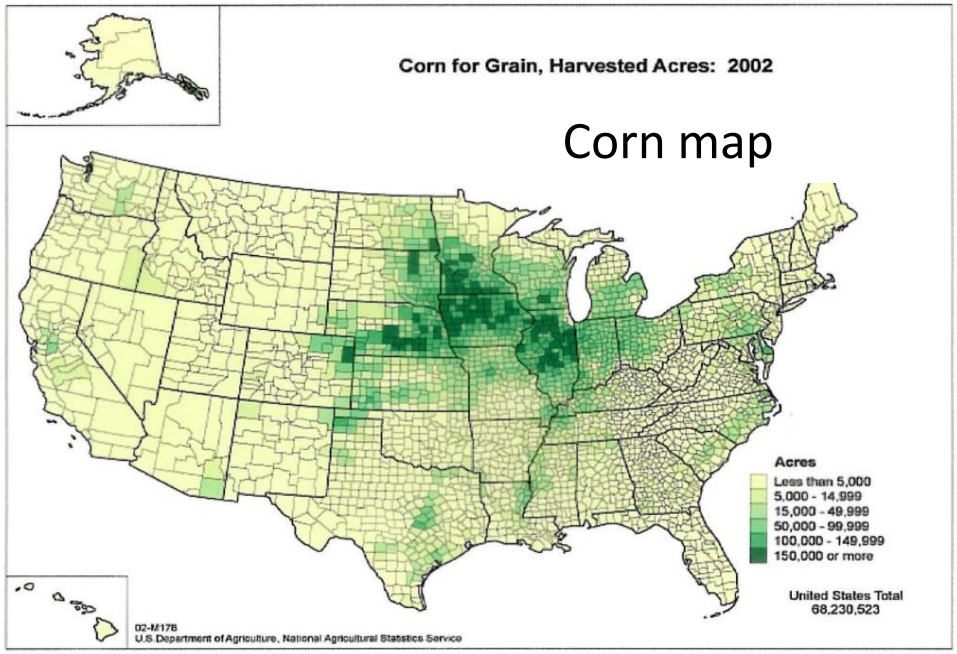
Property map

Thematic maps: Choropleth map

A thematic map is a type of map designed to show a particular theme connected with a specific geographic area

Types of thematic map

mapping statistical



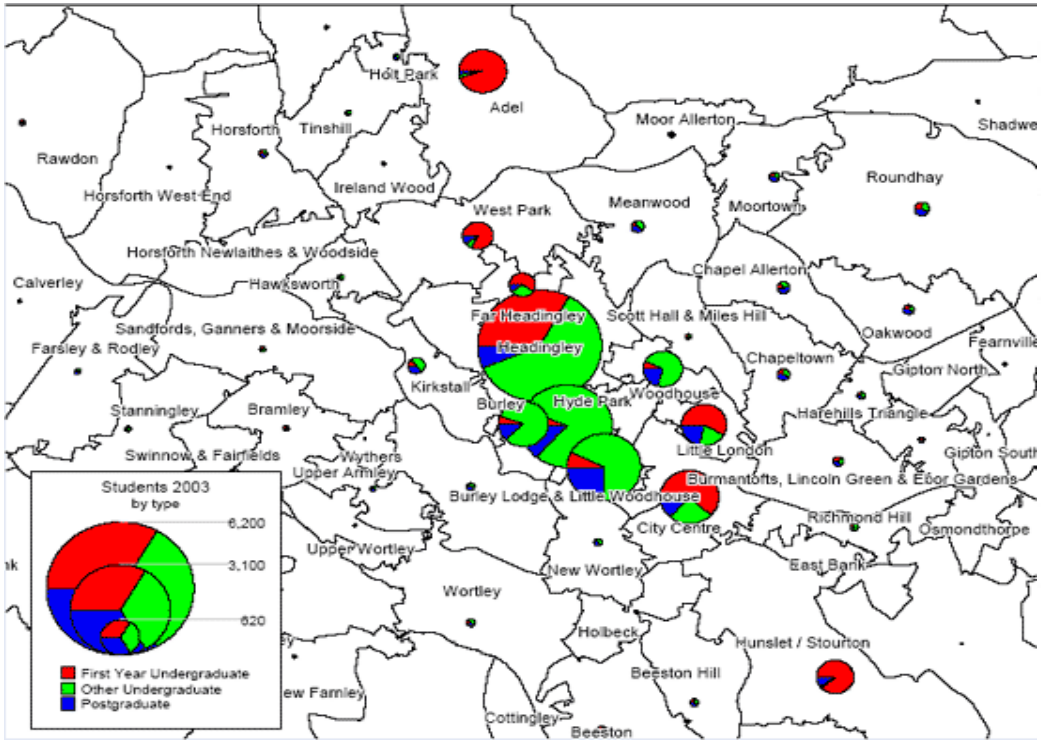
Corn map

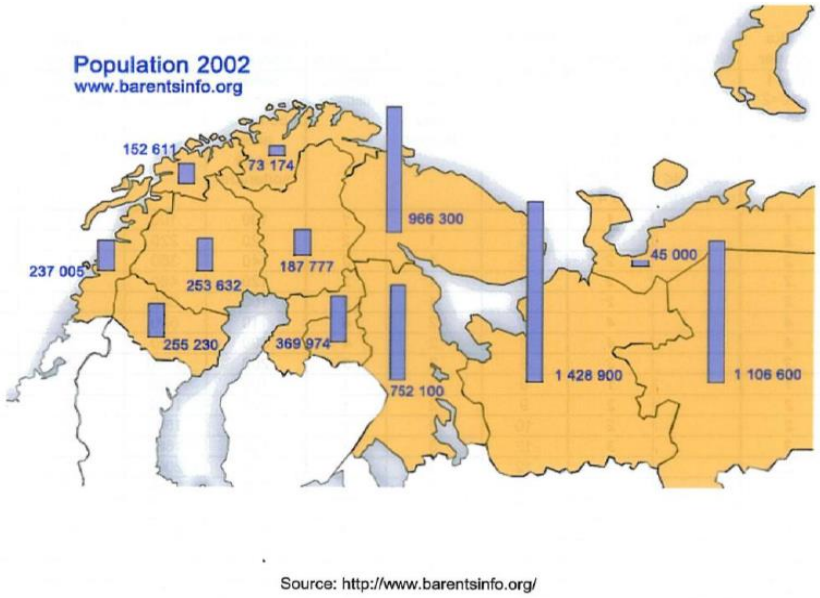
Source: agricultural maps of the US: http://www.nass.usda.gov/research/atlas02/atlas-crops.html

Dot distribution map

Various statistical symbols

Education map





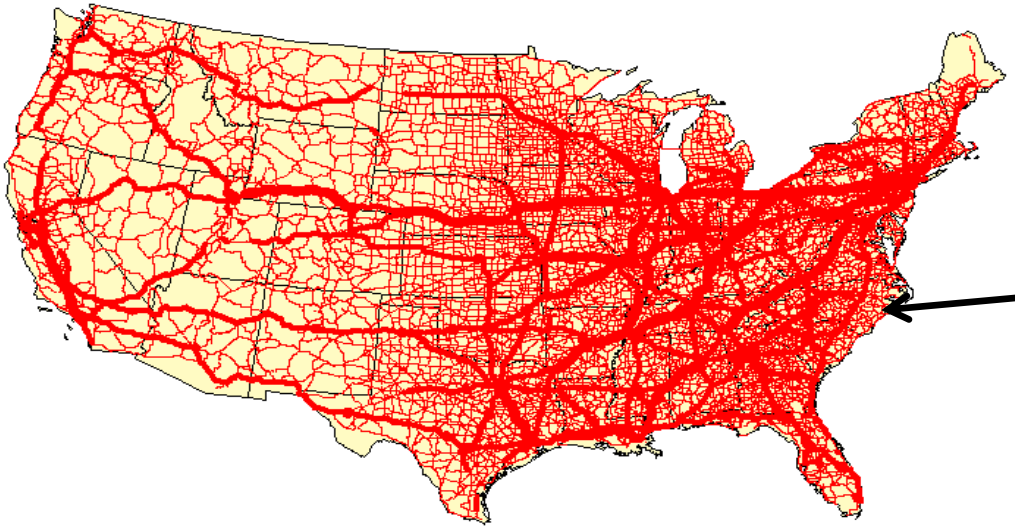
Bars

Circles, pies

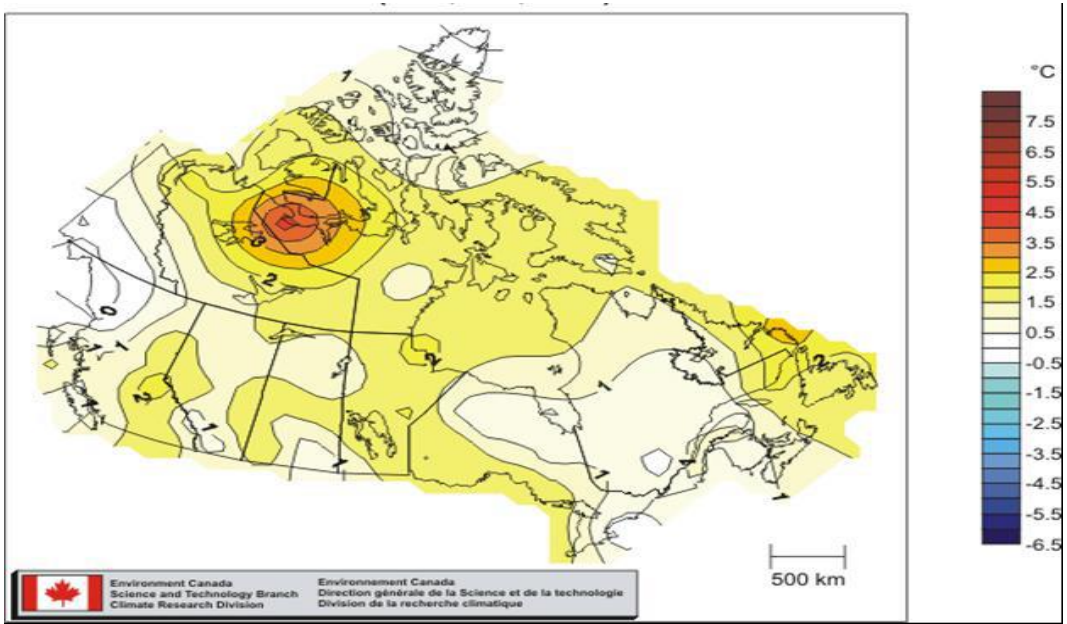
map type for absolute numbers

Flow maps

Flows represented with lines



Line thickness represents attribute



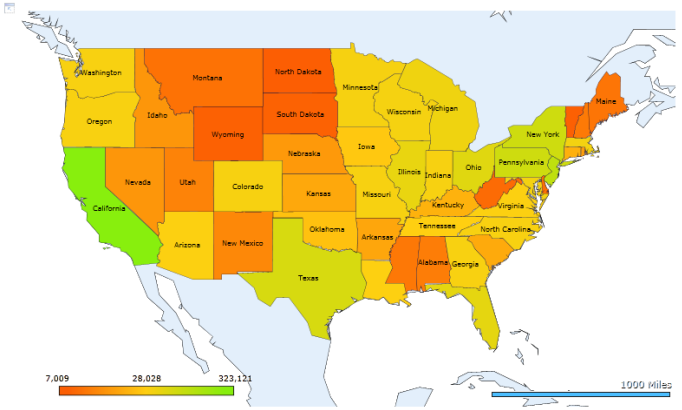
Isolines map

Isolines connect points with equal value

Choosing map type

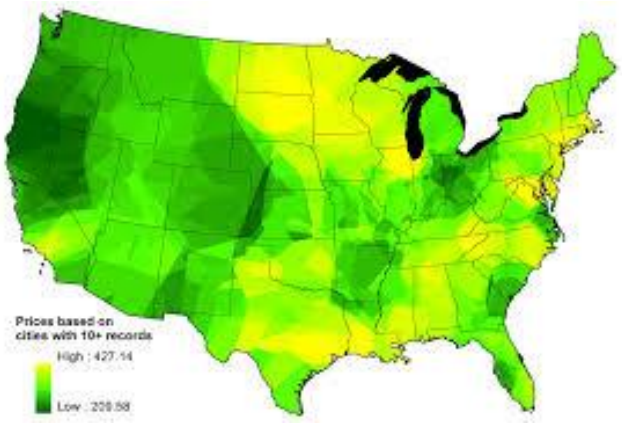
1- Geometric element type

Points



Polygons

Lines



Continuous surface

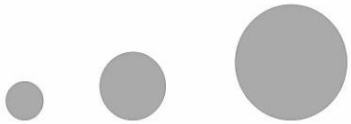
Choosing map type

2- **Input attribute data**

- **Categorical** (nominal, qualitative): classes, types of objects (examples: houses, churches, roads… forest, grassland, agriculture)
- **Quantitative** (interval or ratio): absolute numbers (examples: temperature… no. of inhabitants…)
- **Ranked** (ordinal): sorted in groups (examples: 0-10, 11-20, 21-30… small, medium, large)

Graphical variables

Size



Useful for Representing absolute numbers

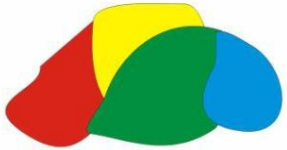
Shape

Separating classes

Brightness/ darkness

Showing gradients

Color



Separating classes

Texture / pattern

Separating classes (black-white maps)

Orientation

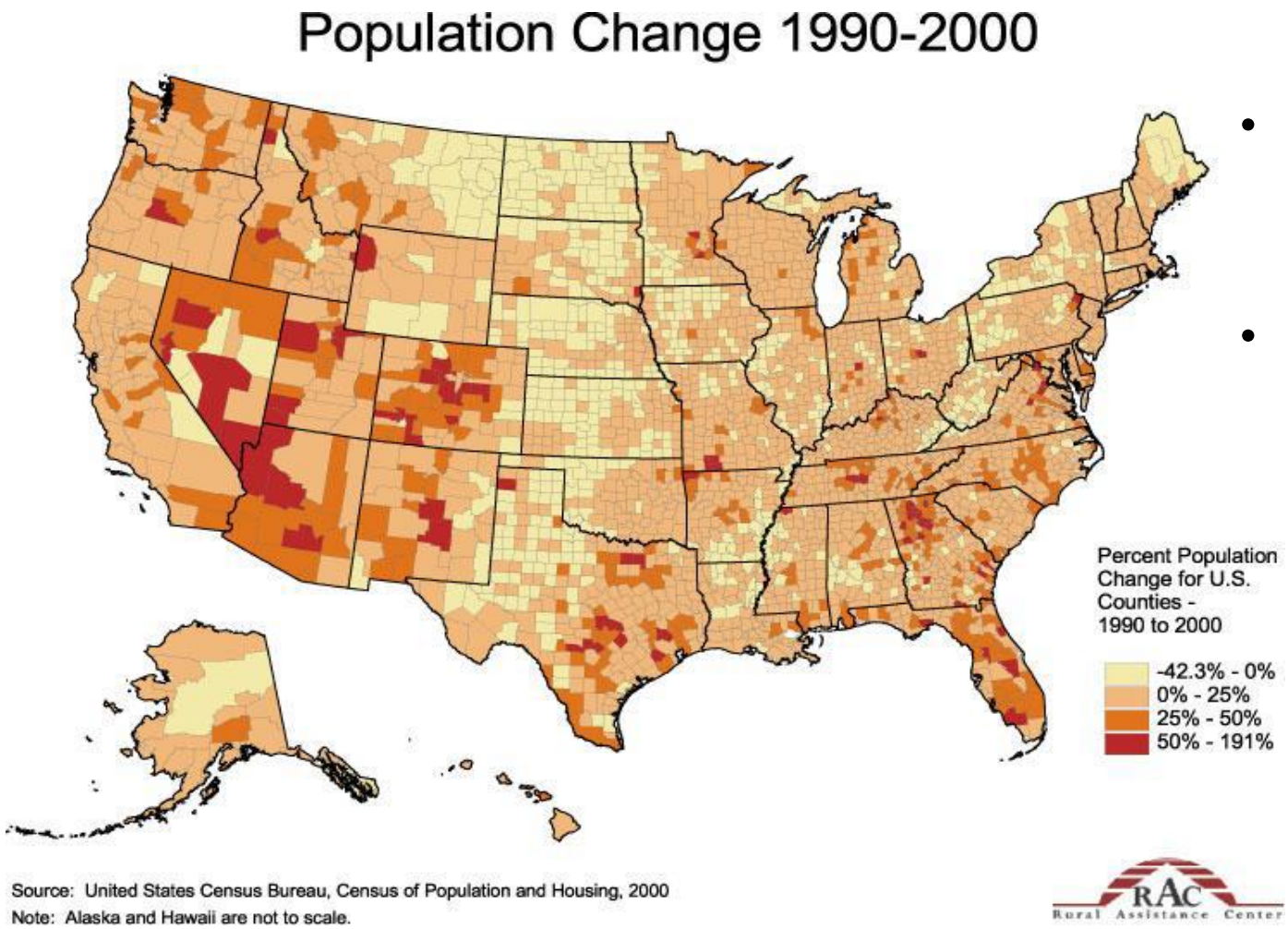
Showing orientation

Visual variables with categorical data

- **Shape** and **color** used for point symbols
- **Color** used for area symbols

Aim: to clearly differentiate the classes

Quantitative, ranked data



- Brightness/ darkness for area symbols
- Only one color (possible two as in this case, or more)
- **Aim:** to show the gradient from low to high

Reference

- Rolf A. de, Principles of Geographic Information Systems (2001), ITC (International Training Center) Educational, textbook series1, Twenty University, Netherlands.

- Michael F. Worboys (1995), GIS Computing perspective, UK, follow link: http://books.google.iq/books?id=duT2fcnQeJMC&printsec=frontcover&dq=GIS:+A+Computing+Perspective+1997+pdf&hl=en&sa=X&ei=RZJGUqCoN4fIsgbb_YGADA&ved=0CD0Q6AEwBA#v=onepage&q&f=false

- Paul A. Longley, et al (2005),*Geographical Information Systems and Science,* 2nd Edition, UK.

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