Mappable Data

Between deciding what you want to map and mapping it lies the important task of acquiring mappable data. The data you need to make your map may or may not be easily available, or in a usable form. When making maps, budget both time and money for data, and leave sufficient time for acquiring and processing the data. Understanding mappable data involves eight issues:

1 Phenomena & data

Maps display data, and data distill human and physical phenomena. It is vital to distinguish data from phenomena when making maps.

2 Data layers

Some data layers provide the backdrop for other data on a map. Data may come from different sources, and must be processed to work together.

3 Getting data

We acquire data directly from the environment, or use already collected data from an existing source.

4 Data organization

Mappable data are organized as either raster or vector format. Your goals for your map and the software you are using determine which format you should use.

5 Quantifying data

Data can be qualitative or quantitative, and there are several different kinds of each. The level of quantification will shape how you symbolize your data.

6 Transforming data

Common processing of data makes them more mappable, including averages, densities, and ratios.

7 Data accuracy

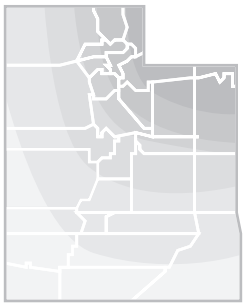
Accuracy is complicated! There are many aspects of data accuracy you must assess when working with mappable data.

8 Digital data and GIS

Digital data require understanding issues of metadata and copyright.

1 Phenomena & data

Phenomena are all the stuff out in the real world. Data capture specific phenomena. Keep in mind that maps do not directly display phenomena: they display data. Some maps are designed to mimic phenomena, and other maps are designed to mimic the data. The surface map (below) shows temperature in a manner that mimics the phenomena. The population map (bottom) reveals more about the data (one value for each county) than the phenomena (people are not evenly spaced in a county).

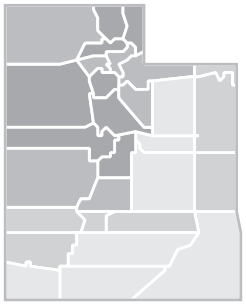


Phenomenon: temperature is found everywhere in varying degree.

Data: known temperatures at a few locations.

Map: shows semicontinuous change in temperatures, extrapolated from known temperatures at a few locations.

Comment: map suggests the phenomenon of temperature.



Phenomenon: people in Utah (low to high).

Data: U.S. Census count of how many people are in each county.

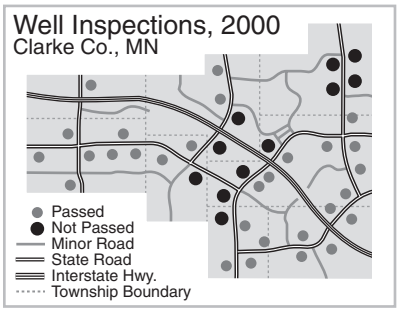
Map: map may suggest an even spread of people throughout each county.

Comment: map displays the character of the data (total number *by county*) rather than the phenomenon (where people actually live).

2 Data layers

Some data layers provide context and reference for other data layers on a map. Road and municipal boundary data may serve as the backdrop on a map showing variations in zoning in a town (created for a meeting about proposed zoning changes). In this case the zoning data are of most importance, and the road and boundary data are included to help understand the zoning data. Data layers often come from different sources, and coordinate systems and projection may have to be adjusted for the data to work together.

Poor data choice & design:



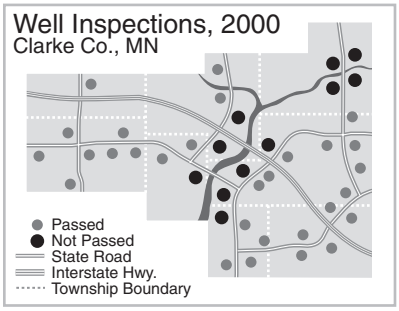
Map intent: to show well inspections for 2000 and whether they passed inspection for a county commissioners' meeting.

Vital data: well locations and status of the well inspections.

Background data: roads, county outline, and township boundaries.

Problem: background data visually overwhelm the vital well data; too many roads, and the river (which seems to be related to well failure) is missing.

Good data choice & design:



Data and design adjustments: the map needs to effectively show the well inspection data. Data layers which *do not* help understand the well data, such as minor roads, can be removed. Data which *do* help to understand the well inspection data, such as rivers in this case, need to be included. Other data can be redesigned to be less noticeable, such as the township boundaries and roads.