Map Reading and Interpretation PowerPoint Notes

Slide 1:
Title Slide

Slide 2:
• There are many different types of maps that can be produced through a community mapping process.

• The most common starting point is to create a map that shows the location of something. Such maps are often referred to as reference maps, because they identify the location of particular features in a community that one can use as a reference for wayfinding or other spatial tasks.

Location can be expressed in absolute or relative terms. Absolute location refers to a geographic coordinate, such as an address or intersection of a street. Relative location refers to the location of something in relation to some other location or landmark. For example, the smaller map on the upper left side of the reference map shows the location of these communities within the larger Denver metro area with a small red box.

Slide 3:
This is another example of a location or reference map. This map shows the absolute location of North City Park/Skyland’s community assets and neighborhood organizations.

Note that each map has common elements: 1) a title, 2) a legend (to indicate what symbols on the map represent), 3) a north arrow to show readers which direction is north for orientation purposes, 4) a scale (to indicate the distance represented on the map), and 5) references to the data sources being used on the map and year the map was created.

Slide 4:
Thematic maps are the most common types of maps produced for community or neighborhood level analysis. A thematic map is one in which a topic or theme is displayed in visual format using color coded shading or symbols to differentiate between something that is either qualitatively or quantitatively different from each other in space.

For example, this map explores the theme, “crime rate per 1,000 persons” by neighborhoods for the city of Denver. The darker the shading of blue in a particular neighborhood, the greater the crime rate. One would read or interpret this map by stating that “the crime rate per 1,000 persons is higher in central Denver, and portions of north and northeast Denver.”

This thematic map shows differences in areas in quantitative terms (crime rate expressed as a percentage) as indicated by the map legend on the upper left hand corner. This map was created using an online system from a local Denver foundation, so it does not have all the required elements of a cartographically sound map (it is missing a north arrow and scale bar).

Slide 5:

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Thematic maps tell powerful stories, especially when compared to one another. This slide and the next show the percentage of various race/ethnic groups in Denver. When shown as a series, evidence of racial segregation is indisputable. Click to the next two slides and back and forth to see the spatial patterns in this series of maps.

Slide 6:
Having said that, maps can also lie. If you notice, the darkest shade of purple for non-Latino white population represents a range from 79.12% to 94.39%. The same darkest shade of purple for the African American population ranged from 9.85% to 68.5% (from the previous slide). This is because the legend is based on quantiles (the natural breaks in the data set to have even groupings), rather than even interval splits of the data (0-10, 11-20…for ease of comparison).

Slide 7:
And here the darkest shade represents a range from 52.47% to 83.02%. The point of quantiles (a statistical term) is to get the highest degree of variation in the data to see differences among spatial categories (in this case, neighborhoods). The data is split into four equal groups, each containing 1/4 of the data depending on the racial category.

Therefore, one must be cautious in how to interpret information on maps. Carefully read the legend to understand what the data is representing. In this case, quantiles are exaggerating the degree of racial segregation in Denver.

Slide 8:
Community mapping as conducted in Umap projects is:

• A tool for analyzing spatial information about a community or neighborhood
• Relies on data that has geographic coordinates (latitude, longitude, street address)
• Shows the significance of place in social relations
• Facilitates dialogue on local knowledge about a topic, yet produces a graphic visual that protects identity of individuals
• A powerful way to tell a story in a visual format

One of the goals of a Umap project is to engage young people in creating their own maps to represent their everyday lives, rather than relying upon information collected by the city. Young people’s use, perceptions and value about a particular neighborhood are brought the the forefront in the Umap process.

Slide 9:
This is another example of a thematic map that relies on children’s self-reports of where they play in the neighborhood. Types of play places are used to create sub-topics for this theme, in this case, understanding the type of land use or facility in relation to children’s play preferences. The symbols are both color coded and ‘graduated’, a term that refers to the gradual increase in size of the symbol to reflect a greater number of proportion of a given topic.

This map also shows green spaces or parks in the area and a local school where children did the Umap project. When paper maps of young people’s perceptions are translated into Geographic Information Software (GIS) to produce a digital map, their
self-reported use can be layered with other information like the location of parks to determine if there are spatial correlations or mismatches.

On this map there is a cluster of use of the largest green space on the map (City Park), while other green spaces or parks are not used at all by the children. The question then becomes, why? Why are some green spaces not used, while others are? Is there something about the quality of the park or green space that is not attractive to young people? Is a particular green space deemed unsafe by parents or not accessible to the public?

Slide 10:
The power of thematic mapping comes in layering different types of data or themes together to see if there is any correlation between the two themes. In this case, children identified and mapped what they considered to be risks in their communities. After completing this map, I located spatial data from a local foundation which includes the location of what the foundation considered to be neighborhood level risks.

Layering both types of risks in GIS software reveals a spatial correlation between children’s identified risks of drugs and abandoned buildings, as well as a correlation between drunk people and the location of liquor stores (see circles in black on the map). I know there is a spatial correlation between abandoned buildings and drugs because these two symbols are located next to each other in many cases on the map. In addition, the map shows a concentration or ‘hot spots’ of youth identified risk that are not associated with the foundation identified risks. The map also shows a high concentration or clustering of abandoned buildings in the western portion of these communities.

Note the use of color and black symbols to visually distinguish between the two datasets: existing neighborhood risks vs. youth identified risks. Color and symbol selection are some of the easiest ways to visually distinguish between different themes on the map.

Slide 11:
Another type of map that is commonly used at the community level to examine trends in crime and other variables is a density map. A density map provides color coded shading over the entire geographic area being examined to calculate the ‘density’ or number of incidents of a given topic. This map shows the relative density of reported incidents of crime in various north central Denver neighborhoods over a certain time period. The map depicts the areas of greatest concentration of incidents with the colors orange and red. Another common type of density map is a weather map, showing variations in the severity of rain, ice or snow using different colors over a select geographic area.

The map also has a layer of data showing graduated symbols to show the number of youth identified risks in relation to crime density. The larger the number of youth that identified a location as a risk, the larger the circle. What this layering reveals is there is largely no spatial correlation between youth identified risk and density of reported crime. You can tell there is largely no spatial correlation because children’s identified risks (graduated circles) are mostly separate from the shaded blue, purple and red areas (density shading). This is in part due to the type of crimes reported to the city (such as aggravated assault) and how this data differs from children’s own perceptions of risks (such as attack dogs).
The question then becomes, what is the importance of children’s perception of risk vs. the information the city collects about crime in the neighborhood, and how does this influence children’s decisions to use their neighborhood for play, socialization physical activity.

Slide 12: One final map type is one that shows movement or connection between places or in space. Typically types of movement maps are airline routes and other transportation networks such as a subway map. This map series shows the routes children use to go to school by walking or by car using different color shaded lines.

Data on children’s routes to school is then layered with graduated symbols to indicate the relative risk or bad places identified by children surrounding their school. The map also has three concentric circles to indicate the relative distance of routes to school and distance of risk from the school. The map series is also showing all these layers by gender.

The first thing we notice is that where youth perception of risk is higher, the less likely they are to walk to school. We know this because the purple lines (routes to school by car) show greater spatial clustering of bad places identified by children (blue graduated symbols). On the other hand, less bad places are spatially clustered around yellow lines (routes to school by walking). Therefore, children tend to walk to school more if their perceived risk is less along their routes to school.

This is particularly the case for girls. We can also say that the girls identified a greater number of risks in closer proximity to the school than the boys. We might also draw some conclusions about a ‘zone of risk’ for girls and boys, by stating that most risk occurs between 500 and 1000m from the school for girls, and from 1,000 to 1,500m from the school for boys.

Slide 13: The great thing about transferring the mapped points from the paper mapping process of a Umap project into the computer and GIS software is that you can add and remove layers to see where spatial correlations occur, even if you are not sure you can anticipate a spatial relationship.

For example, this map indicates the locations of play places and risky places via graduated symbols to show spatial concentrations by gender. What is apparent through this layering and visual is that good places are also sometimes risky places, for both boys and girls, but more so for girls (you see overlap between the two symbols and colors in certain areas of the community).

This map can then be used to have a further, in-depth conversation with the children to get their understandings of how a place can be good and bad at the same time. When I did this with the children I worked with, the discussion revealed a number of different strategies they use to negotiate hazardous places in the community so they can still use parks, playgrounds and other public spaces they enjoy. These strategies included going to these places with friends and family members, carrying a cell phone in case of an emergency, and walking to places with a dog. The discussion also revealed that the
children were aware of the diurnal nature of risk, by telling me that certain places are bad during the night, but fine during the day when children play there.

Slide 14:
Two things need to be determined before making a map. The first is what topic or theme you would like to map. The second is how you would like to map the topic. Three basic symbols or features can be used: points, lines and areas. Points show location; lines indicate movement; and areas indicate territories or regions.

When conducting a Umap project, you should consider if what you want to map falls under a specific location or point, if you want to map movement or travel routes indicated by lines, or if you want to map areas, such as perceived neighborhood boundaries.

Slide 15:
Maps can be analyzed or interpreted in a number of ways. The following are the most common methods for spatial analysis:

• Clusters - any spatial concentration of points, lines or areas of something being mapped
• Distinctive patterns - is their any pattern to the clustering? A pattern like this one suggests there is something driving the shape of the spatial clustering, such as a road, stream or commercial district
• Exceptions to the rule - it is always interesting when a cluster is identified to examine places that are the exception to the cluster or rule. What is unique about this particular place? Is there something different going on at that place that makes it the exception to the rule?
• Zones of influence - sometimes it is important to know the extent to which a spatial clustering occurs, such as how far densely reported crime is from a church or school. Zones of influence enable you to understand distance in relation to spatial clustering.

Slide 16:
The point of showing you these maps was not only to explain the different types of maps that you would potentially produce, but also to show you the power of layering local knowledge and perceptions with data traditionally collected by the city. As an example, these are some comparisons you might want to consider for work with gangs. What is the relationship between reported crime and youth reported risk? What is the relationship between where graffiti was removed and gang territories? And so on… Such maps could help young people, your city agency or community group to develop strategies or interventions to combat gang violence.

Slide 17:
Just to underscore that anything can be mapped, think broad in terms of what you want to learn from the groups you work with. Mapping people’s perceptions might reveal something about their social networks; asking residents to map places they value could reveal places they feel a strong sense of affinity or attachment for, etc. Mapping where children go in the neighborhood reveals their geographic territories experienced first hand, and asking people to identify stereotypes or areas of racial tension or integration could reveal the larger cultural context in which social relations occur.

Slide 18:
Many cities have web-based online mapping systems in which city data can be viewed and analyzed. This is an example of an online mapping system for the City and County
of Denver. The power of Umap is that we are adding young people’s perceptions to data typically collected by the city to see if the information the city is using to determine service provision and to develop policy is accurately taking into consideration the realities of young people’s lives, as reported by them.

Slide 19:
If you want to experiment with mapping, consider downloading Google Earth (http://www.earth.google.com), a free software program that requires an Internet connection. Once you download the free program, you can fly around the world to look at aerial images around the world. You might use Google Earth to peak the interest of young people as a way to demonstrate the power of mapping and the influence a Umap project might have on getting youth voice into city decision-making processes.

Slide 20:
In Google Earth it is possible to create unique symbols and to annotate what those symbols represent. It’s a fun way to begin a mapping process. I hope this slide presentation has given you some creative ways to consider the power of mapping and it’s potential to influence policy based on youth voice.