What is a Thematic Map? 6 Types of Thematic Maps

Maps have come a long way from the general reference maps of the past. While they were once only used for directions and getting from point A to point B, today's maps display all kinds of data and findings.

This is where thematic maps come in. If you're looking to use a map to tell a specific story then you'll likely need to utilize some kind of thematic map to do so.

Keep reading to learn everything you need to know about this useful map variation.

What is a Thematic Map?

Thematic maps are single-topic maps that focus on specific themes or phenomena, such as population density, rainfall and precipitation levels, vegetation distribution, and poverty. This differs from reference maps which include a number of different elements like roads, topography, and political boundaries.

Thematic maps have attributes that make spatial patterns more clear, shedding new light on the theme in questions and allowing for further insights.

Why Use a Thematic Map?

These maps are very useful when you want to analyze the spatial distribution of your information, or look for any geographic patterns and trends contained within your data sets. They are also an excellent way to search for correlations between data in two different locations.

There are likely a number of important insights contained in your data that may not be evident when viewing it in a spreadsheet. Thematic maps let you visualize your location-based information and bring it to life, making those insights much easier to spot.

Examples of Thematic Maps

There are many different types of thematic maps available through GIS software. Here are six map types you should be familiar with:

Choropleth Maps

Choropleth maps represent data values in geographic areas with different colors and patterns. Data is categorized into classes, with each class assigned a unique color or pattern.

For example, if you're mapping sales data you could classify any sales amount under $5000, yellow, amounts between $5000 and $10,000 orange, and amounts over $15,000 red. Those colors are then used for different sales territories so users instantly know which category a territory falls into.

Choropleth Maps Are Best Used For:

- Measuring Population Density and Total Population
- Visualizing Sales Volume and Revenue
- Measuring Demographics (Education, Housing, Per Capita Income, Labor, etc.)

Advantages of Choropleth Maps

- Choropleth maps color-code your data into classes, making it a snap to **understand large volumes of data quickly**—even when visualizing data for multiple regions.
- Because they are so widely-used, choropleth maps mean virtually **no time wasted on explanation or specialized training**.
- Choropleth maps are **fast and simple to prepare**, especially with software like Maptive.

Disadvantages of Choropleth Maps

- Choropleth maps are better suited for generalized data and breadth than specific figures.
- Because data classes are determined by the map's creator, choropleth maps can manipulate data to mislead people in the wrong hands.

What are Bivariate Choropleth Maps?

Bivariate Choropleth maps allow creators to visualize **two variables** of data into color-coded or patterned classes at the same time.

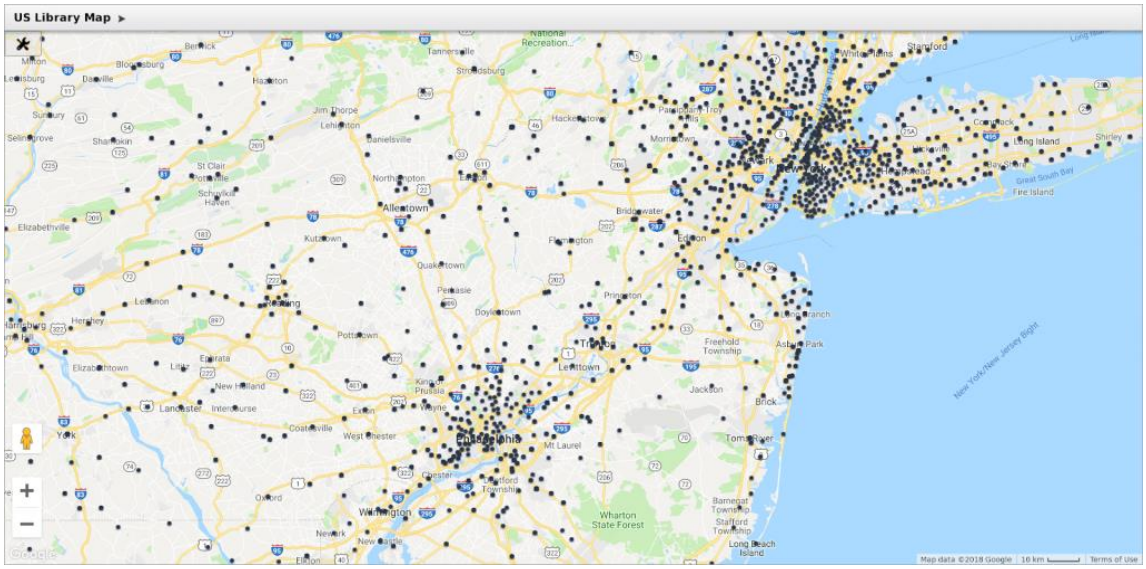
This type of thematic map is best for businesses or organizations looking to analyze contrasting data sets, run competitor analysis, compare year-to-year performance, and more. However, Bivariate Choropleth maps are inherently more complex than traditional Choropleth maps, making them more likely to become cumbersome or difficult to read.

What are Value by Alpha Maps?

Value by Alpha maps are a form of Bivariate Choropleth maps where two variables are color-coded or patterned on the same map—then weighted by transparency to reflect the concentration of data. The more opaque the data, the more data exists in that class.

Value by Alpha maps are often used to track elections, wherein counties are divided into red or blue classes based on votes by party, and voter turnout (the alpha variable) is measured by opacity.

Dot Density Maps



These maps represent each data point with a dot and are a great way to measure density. Regions with a large number of dots packed close to together are easily identified as high-density areas, whereas regions with few or no dots are clearly areas where your data is lacking.

Dot maps have been around for a long time but are still extremely popular due to their simplicity and wide range of applications.

Dot Density Maps Are Best Used For:

- Representing Large Quantities of Geographically-Dispersed Data
    - A Map of the United States Where. 1 Dot = 1,000 Acres of Public Land
- Analyzing Density and Spatial Patterns
- Printing or Presenting Black-and-White Maps

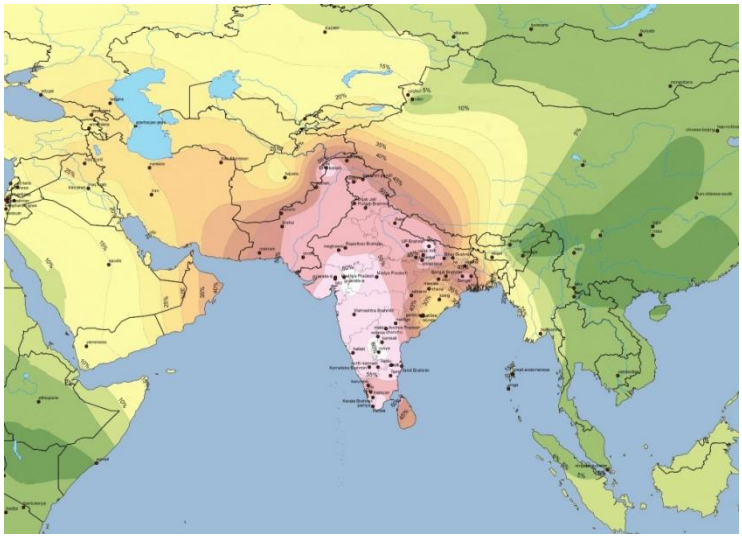
Advantages of Dot Density Maps

- Dot Density maps are **more accessible and easier to understand** for those who are color-blind or need black-and-white maps.
- Dot Density maps allow for more **precise visualization** than heat maps.
- Unlike choropleth maps, you can **visualize either exact figures or classes**.

Disadvantages of Dot Density Maps

- Dot Density maps require context. Therefore it becomes more important to consider legibility and boundary presentation when customizing your map.

Isopleth Maps



Isopleth maps use colors and shades to represent data, similar to choropleth maps. However, they differ in that data isn't grouped within predefined boundaries such as census tracts, counties, or states.

Instead, contoured lines divide the map into different areas and show where data levels change.

Isopleth Maps Are Best Used For:

- Mapping Weather and Climate Patterns
- Visualizing Data for Large Regions (Countries, Continents, etc.)
- Measuring Change Over Time or Distance

Advantages of Isopleth Maps

- Isopleth maps are well-suited for **large-scale analysis**, allowing you to map data without boundaries like state, county, zip code, etc..
- Isopleth maps are the **best thematic maps for natural data** like rainfall, temperature, elevation, and other climate variables.

Disadvantages of Isopleth Maps

- Since Isopleth maps visualize trends over large regions, they are prone to over-generalization and lack the ability to account for sudden or atypical results.

Heat Maps

Heat maps measure density across a map. Like many other map types, they represent data using color. Darker shades indicate higher density areas while lighter shades show lower density areas.

This type of map doesn't use geographic boundaries. Instead, it works similarly to a dot density map. Plot individual data points on the map with colors assigned based on the distribution and number of points in a given area.

Heat Maps Are Best Used For:

- Sales and Marketing Analysis, Including Market Research & Strategy
- Measuring the Density, Concentration, and Intensity of Your Data
- Discovering Market Opportunities and Underserved Regions

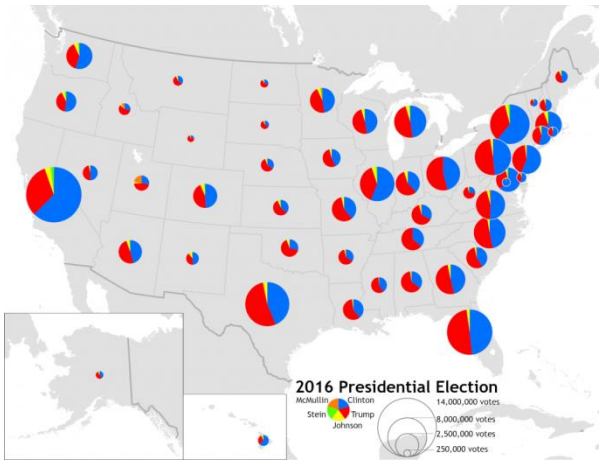
Advantages of Heat Maps

- Heat maps are the **best** thematic **maps for outbound sales and marketing**.
- **Market analysis**, including sales trends, market penetration, and coverage, **becomes a breeze** with heat maps.
- Heat maps help **reveal sales opportunities** hidden in your data.

Disadvantages of Heat Maps

- Heat maps are designed to visualize the concentration of data, meaning they lose their efficacy when used for data with low variance.
- Like other types of thematic maps, incomplete data can interfere with results. However, heat maps are more vulnerable to skewed perceptions when given incomplete data.

Graduated Symbol Maps



These maps show data using varying sizes of symbols. Larger symbols represent higher concentrations of data while smaller symbols represent lower concentrations of data.

Similar to choropleth maps, data is placed into different categories. However, instead of color or shades representing data, different symbol sizes stand in for data categories. The number of symbol sizes depends on the number of categories you decide to create.

If you don't want to divide your data into classes you can use a proportional symbol map, which scales the size of its symbols with an absolute magnitude.

Graduated Symbol Maps Are Best For:

- Visualizing Concentration and Categorization of Data Simultaneously
- In-Depth Analysis for Sales Teams, Political Campaigns, Government Agencies, etc.
- Presenting Demographic Make-Up with Population Density

Advantages of Graduated Symbol Maps

- Graduated Symbol maps **present two variables of data simply.**
- **Turn your markers into comprehensive data points** featuring magnitude, classifications, and raw quantities.
- Graduated Symbol maps **reduce distraction and clutter** without sacrificing the depth of your data.

Disadvantages of Graduated Symbol Maps

- While meant to represent the concentration of data in an area, some people may have a hard time accurately measuring the difference in magnitude between markers.
- Without software that prioritizes fluency and ease-of-use like Maptive, Graduated Symbol maps can become cluttered and hard to read.

What About Cartograms?

Cartograms visualize the concentration of data in a boundary by distorting its shape and size relative to other geographic areas on a map. While good for presenting the variance in density of data, cartograms tend to be hard to read and aesthetically displeasing.

Cartograms provide a great value. However, the types of thematic maps listed above also measure the density of your data without sacrificing your map's legibility and realism. Therefore, cartograms are not good for thematic mapping if you require an accurate representation of your chosen geographic area.