

Cartograms and Thematic Mapping

Subject: Geography CBCS (HONS)

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CC: 4T- Cartograms and Thematic Mapping

3. Representation of point data : Isopleths
4. Representation of area data : Choropleth.

Geographical studies entails the possibility to compare and draw a wide variety of maps which illustrate the spatial distribution of certain element to be studied and taken into consideration. There are different technical ways as to how we can represent the spatial distribution. Two of the most important ways are Isopleths and Choropleths.

1. ISOPLETHS

The term isopleth - isos + plethron; isos meaning same and plethron means measure. Isopleths are equal value lines in the form of quantity, intensity and density. It must be admitted that there is a considerable amount of confusion concerning the multiplicity of terms which have been coined to denote variant of their geographical terms. For example, to cover all lines representing constant values on maps, the terms isopleth, isarithm, isoline, isogram, isometric line have been used at various times. J.K. Wright (1944) proposed that isogram be used for all lines of quantity with two subdivisions - the

isometric lines (metron meaning measurement) that represent a constant value or intensity pertaining to every point through which it passes and isopleths that represent a quantity or enumeration assumed to be constant, pertaining to certain areas through which it passes.

Isopleth maps are three - dimension trend - surface maps. The spatial trend are indicated by the spacing of isopleths. Like contours, the closer the isopleths, the sharper is the spatial variation or the steeper is the horizontal gradient and vice versa. Regionalisation can be done based on the spatial geometry of the steepest zone. The precision of drawing of isopleths along with the resultant geometric pattern depends on the selected value intervals, the size and shape of the units for which statistics are available, the situation of the plotting points and the actual method of interpolation.

In fact, drawing of isopleth needs the data in details, and any paucity of data will give a highly generalised or erroneous picture of fact. If the variability is great, such as in the case of the distribution of population, the isopleth lose their significance. As such, this method is used for isotherm, isobar, isohyet maps because these elements are uniformly distributed over the area.

In fact, the actual principle of interpolation is based on the assumption that between any two

points there is an uniform increase of values; hence the isopleths are proportionally placed. Isoleth maps may be effectively drawn with both the absolute and the indexed values of any kind of information that involves spatial variation.

CHOROPLETH MAPS

Choropleth maps are technically quantitative areal maps that show the spatial distribution of intensity or density of any element with the help of a system of graded shadings or colour, drawn following the boundaries of the administrative units. The basic principle is that the intensity of shading is directly proportional to the density of elements. The lighter shades, show lower densities and deeper or darker shades, ~~show deeper~~ show higher densities. The shading generally follows the administrative boundaries, because the data pertains to that particular administrative boundary; the actual variation may not necessarily correspond to these boundaries so the boundary of different shading may not necessarily correspond to these boundaries, so the boundary of different ~~shades~~ shading may not follow the exact line of variation. Moreover, the element may not be distributed uniformly over large areas, so some very small areas showing a higher

density may be obliterated by areas of moderate density. This defect may, however, be minimised by increasing the no. of shades and thereby decreasing the gradation of scale so that the interval of variation becomes small. Further, little consideration is possible regarding unused or waste lands such as deserts, marshes, rugged and rocky areas, hills, mountains etc; they all disappear beneath the shading. Such lands have been called negative areas.

It is a three-step process which involves —

1. Drawing of worksheet with three columns (Area, Absolute value of an element and Density obtained by dividing absolute value by area) and rows equally equalling the administrative units.
2. Construction of choropleth table showing columns of density classes, shading system, administrative units. Choice of scale of densities may be based on arithmetical progression with uniform class interval, or geometrical progression with rapid increasing intervals, or quartile deviation/mean deviation/standard deviation of the dataset.
- 3.) Meticulous drawing of shades (lines/colours) following the administrative boundaries.

Choropleth maps are the basic tools of human geographers; the ~~smaller~~ the administrative unit, the more is the map precision.

References: —

1. Practical Geography — A Systematic Approach — Ashis Sarkar
2. Elements of Practical Geography — R.L. Singh