



Terna Engineering College, Nerul, Navi Mumbai
Computer Engineering Department
Assignment- 4 (FH 2021)

Subject: Human Machine Interaction (CSC801) Sem:VIII

Roll No	Question
43	Describe choosing colors for statistical graphical screens.

Ans: Color is an integral element of graphical displays in general, and many statistical graphics in particular. It is easy to create color graphics with any statistical software package and color images are therefore virtually omnipresent in electronic publications such as technical reports, presentation slides and increasingly also in printed journals. However, more often than not, color choice in such displays is suboptimal because selecting colors is not a trivial task and there is relatively little guidance about how to choose appropriate colors for a particular visualization. When selecting colors for a statistical graphic, there are three main obstacles to overcome:

- 1) The colors in a statistical graphic should cooperate with each other: The typical purpose of color in a statistical graphic is to distinguish between different areas or symbols in the plot—to distinguish between different groups or between different levels of a variable. This means that there will typically be several colors, or a palette of colors, used within a plot and that those colors should be related to each other.
- 2) The colors should not be unappealing: It is not necessary for the colors in a statistical plot to reflect fashion trends, but basic principles such as avoiding large areas of fully saturated colors should be adhered to. The requirement is not that the user should have a degree in graphic design, but that the software should provide users with an intuitive way to select colors and control their basic properties. Thus, it is necessary to employ a color model or color space that describes colors in terms of their perceptual properties: hue, brightness, and colorfulness.
- 3) The colors should work everywhere: The final issue to deal with is that, in an ideal situation, colors should be selected so that they continue to work in any context. For example, different areas of a plot should still be distinguishable when the graphic is displayed on an LCD projector rather than a computer screen, or when it is printed on a grayscale printer, or

when the person viewing the graphic is color-blind. These goals cannot always be attained, but attention should be paid to these issues and in many situations it is also possible to resolve any problems.

Statistical graphics are often augmented by the use of color coding information contained in some variable. When this involves the shading of areas (and not only points or lines)—e.g., as in bar plots, pie charts, mosaic displays or heatmaps—it is important that the colors are perceptually based and do not introduce optical illusions or systematic bias. Based on the perceptually-based Hue-Chroma-Luminance (HCL) color space suitable color palettes are derived for coding categorical data (qualitative palettes) and numerical variables (sequential and diverging palettes).