

## **Paper 1: A Study on Dual-Scale Data Charts – IEEE Visweek 2011**

This paper is mainly about the design space for Dual-Scale data charts. Dual-Scale data charts incorporate two different data resolutions into one chart in order to emphasize data in regions of interest or to enable the comparison of data from distant.

Firstly, this paper gives out a 5 different kinds of Dual-Scale charts, which are regular charts, Bifocal Charts, Lens Charts, Broken Charts and Superimposed Charts.

Secondly, the author of this paper did experiments on 4 Dual-Scale Charts. The purpose of their experiment is to determine how well different representations of Dual-Scale charts will perform for elementary graphical perception tasks. In their experiment they found that the cut-out chart generally outperformed the other charts for elementary graphical perception tasks. They also found that the broken and lens chart are both competitive alternatives.

Based on their experiment they recommend using the broken chart as an alternative to the cut-out chart in practice. They also discourage the use of superimposed charts as participants performed worst with this chart and ranked it lowest in terms subjective preference.

All in all, this paper gives out different types of Dual-Scale Charts, shows experiment on them, and finally gives recommendation on using the charts.

## **Paper 2: Visualizing and Understanding Bird Populations – IEEE Visweek 2011**

This paper is about visualizing and understanding bird populations. The purpose of doing this is explore and understand relative habitat preferences suggested by a species distribution model over space, time and across species. The data set is provided by the eBirds project, which has been collecting bird observation record since 2002.

The paper first gives out the background of eBirds Project. The eBirds data set contains observations of 9091 species, over 90% of the world's bird species, and submissions from 225 countries.

The paper then gives out visualizing bird distribution models in space, time and across species. And gave out different visualization ideas such as interactively visualizing bird occurrence, zooming into habitats using tag cloud lenses, comparing species. Based on the ideas above, the researchers created a tool called BirdVis. The researcher also gave out the environments such as single species environment, single species environment with occurrence variation maps and multi-species environment.

The basic components of the visualization are map view, temporal trajectory summary view, colormap widget, tools panel, information Area and tag cloud view.

To implement the visualization, they mainly used C++, and used OpenGL and Qt to create the graphical user interface. In the data file user can define two kinds of variables that are queried by the tag cloud lenses. And in the input file the user can configure the spatial and temporal resolution of the data sets. Results of model evaluation in different scales can be visualized and compared.