

Data Interaction and Exploration for New Insights

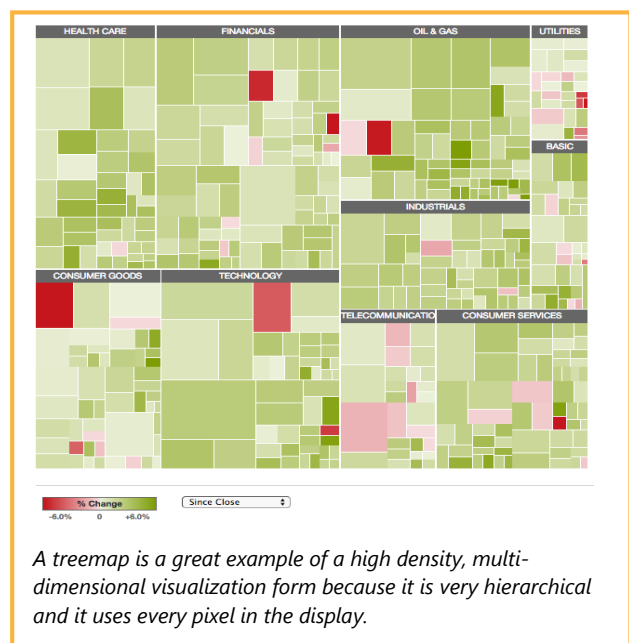
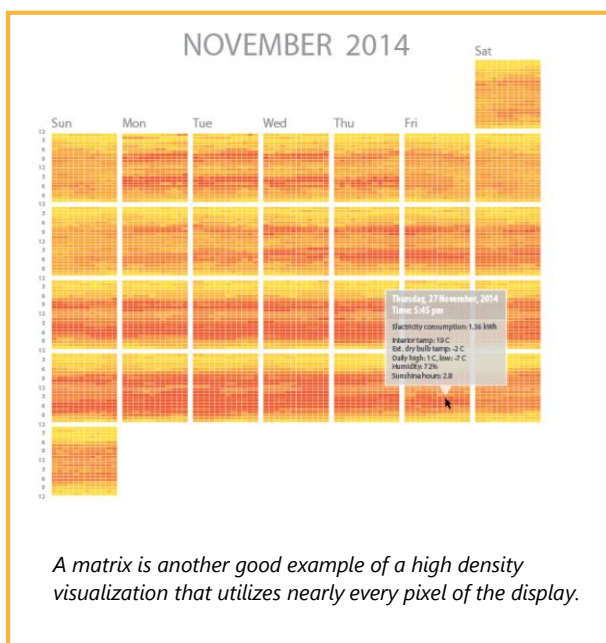
Today's visual analytics tools offer a wide array of sophisticated visualization forms, but also, importantly, hands-on data interaction and the possibility of real time (or near real time) data connections.

High Density Displays

Computer processing and high resolution digital displays make it possible to generate higher density and multi-dimensional data visualizations—either static or animated. Interactive visualizations combine high level overview with the ability to drill down into detail; they offer different ways to segment, filter, zoom, aggregate, analyze and extract the data; they make it possible to view the data set from different perspectives or scales simultaneously.

If you start with a high density visualization, you can always generate summary data, but if you start with summary data, it is impossible to go in the other direction.

High density displays also help establish the credibility of visualizations. As Edward Tufte wrote: *Data-rich designs give context and credibility to statistical evidence. Low information designs are suspect: what is left out, what is hidden, why are we shown so little?* (Edward Tufte)



Touch screen controls and direct manipulation make data interaction feel almost hands on—a very different user experience than with conventional static displays or off-screen query lists. In these ways, interaction, combined with high density, multi-dimensional data (as opposed to summary data) fosters data exploration leading to improved mental models of the data set at hand.

It is not so much the dazzling possibilities of computer generated data visualizations that lead to new insight into complex data sets but, rather, the combination of high density displays and live, hands-on data interaction that does so.

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