

# Chart junk? How pictures may help make graphs better

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Those oft-maligned, and highly embellished, graphs and charts in USA Today and other media outlets may actually help people understand data more effectively than traditional graphs, according to new research from North Carolina State University.

Newspapers and magazines often embellish charts or graphs to draw attention to them or to highlight information. Some experts describe these graphic embellishments as "chart junk," which they argue detracts from a [graph](#) or chart's effectiveness. So, can those graphics be too distracting, making it more difficult or time-consuming to read a graph accurately?

Researchers from NC State and the University of Idaho show that the answer is yes, and no.

When people look at charts or graphs, two things happen. In the first stage, a person quickly (and unconsciously) takes in all the elements of the image at the same time. In this stage any contrasting features "pop out" at the viewer, explains Dr. Doug Gillan, co-author of the study and professor and head of psychology at NC State. In the second stage, which is slower and requires some focused attention, the viewer examines each component of the graph or chart separately.

"Imagine a bar graph showing the number of ACC championships won by each school's basketball team," Gillan says. "In the second stage the viewer is examining each bar in the graph to see which team has won the

most championships."

To determine whether design elements - such as background pictures - affect a viewer's ability to read a graph, the researchers ran an experiment using rectangular bar graphs. They tested how accurately people could read the bar graph when it was presented against three different backgrounds: a blank background, a background filled with rectangles, and a background filled with circles.

The researchers found that people were most accurate when reading the bar graph against a background filled with circles - the contrast between the rectangular bars and the circles made the graph pop out during that first stage. People performed worse when the background was blank, and worst when the bar graph was displayed against a background that contained rectangular shapes.

In other words, background images can actually enhance one's ability to read a chart or graph - as long as the images contrast with the chart or graph itself. If the background image is too similar, it can actually make it more difficult to read the chart or graph accurately.

Are you listening, USA Today?

More information: The research, "Effects of Graph Backgrounds on Visual Search," was co-authored by Gillan and Dr. Douglas Sorenson of the University of Idaho. The work was presented Oct. 22 at the 53d Annual Meeting of the Human Factors and Ergonomics Society in San Antonio.

Source: North Carolina State University ([news](#) : [web](#))

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