

Visual attention and visual complexity: implications for communicating data in graphics

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Scientific graphics, such as graphs, that make use of the human perceptual system can be effective devices to communicate data. However, if certain features of the visual are not attended to, they cannot be drawn on to support comprehension. Visual attention is influenced by visual design through ‘bottom-up’ processing, and by prior knowledge and context through ‘top-down’ processing. We present results from a study demonstrating that text accompanying time-series graphs can influence encoding to memory of the long-term trend by acting on top-down attentional processes. Furthermore, we consider the potential influence of visual clutter (as a proxy for visual complexity) on the ease of comprehending graphics. In a correlational study we found a positive association between the degree of visual clutter of climate science graphics produced by the Intergovernmental Panel on Climate Change and their perceived comprehension difficulty as ranked by non-experts. Findings will be discussed in the context of designing and using scientific graphics with cognitive principles in mind to support communication.