

Zacks, J., Levy, E., Tversky, B., & Schiano, D. J. (1998). Reading bar graphs: Effects of extraneous depth cues and graphical context. *Journal of Experimental Psychology: Applied*, 4(2), 119-138.

Manipulating the way a graph is drawn influences viewers's ability to extract information from it. In a series of experiments with simple bar graphs, we varied the rendering characteristics and relative heights of the bars and asked participants to estimate the quantities portrayed. The addition of 3D perspective depth cues lowered accuracy. This accuracy disadvantage diminished when a short delay was introduced before judgments were reported. The height of the judged bar relative to nearby graphical elements also affected accuracy; this effect was about an order of magnitude larger and remained intact when the delay was introduced. Nearby elements also affected viewers's bias (under- or over-estimation). These effects do not seem to be due to mis-estimation of object depth. The results suggest that warnings about accuracy decrements due to 3D shading may be overstated, while distortions due to neighboring elements should be more of a concern.