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Graphicacy skills across ages and cultures: a new assessment tool of intuitive statistics' abilities

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Abstract

Graphical representations such as scatterplots have become the elective tool to transmit quantitative information in an efficient manner. However, little is known about the way humans extract statistical information from graphs, and if these abilities correlate with higher level cognition, such as numerical skills. We proposed a new assessment tool of intuitive statistics: the judgment of trends in noisy scatterplots with varying slope, noise and number of points. We found that human performance is beautifully predicted by the t-value associated with the regression of the scatterplot; our findings reveal a remarkable human ability at performing visual statistics tasks fast and accurately, close to an optimal observer model. Crucially, we found that these "graphicacy" skills are present in both educated (n=4000) and uneducated adults living in non-industrialized societies (n=50), and even in preschoolers (n=23); furthermore, they correlate with numerical skills.

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