Visual Estimation of Trend in Bivariate Visualizations

ABSTRACT

Observing trends in bivariate data, or predicting the future values of data, is a common task for viewers of visualizations. Yet, designs do not always explicitly draw trend lines and other relevant statistical modeling information in charts. Thus, viewers must often perform regression âĂIJby eye:âĂİ they estimate the trend of data through the values alone. Different design choices may aid or hamper this ability to estimate trends in data. In this work, we present a series of crowd-sourced experiments examining regression by eye, investigating both viewer performance at estimation of trends in bivariate data, and potential sources of bias in these estimations. Our findings indicate that viewers can accurately and robustly estimate trends in bivariate visualizations, but that certain features of both the data and the visual design of the visualization (such as outliers, asymmetry, and trend complexity) can negatively impact this accuracy.

ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous

Author Keywords

Information Visualization, Graphical Perception, Regression

INTRODUCTION

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Omitted for review.