

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 “by eye”: 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

ACKNOWLEDGMENTS

Omitted for review.

Paste the appropriate copyright statement here. ACM now supports three different copyright statements:

- ACM copyright: ACM holds the copyright on the work. This is the historical approach.
- License: The author(s) retain copyright, but ACM receives an exclusive publication license.
- Open Access: The author(s) wish to pay for the work to be open access. The additional fee must be paid to ACM.

This text field is large enough to hold the appropriate release statement assuming it is single spaced.

Every submission will be assigned their own unique DOI string to be included here.