Correlation Judgment as a Model of Weber's Law, Power Laws, and Visualization Features: A Comparative Study
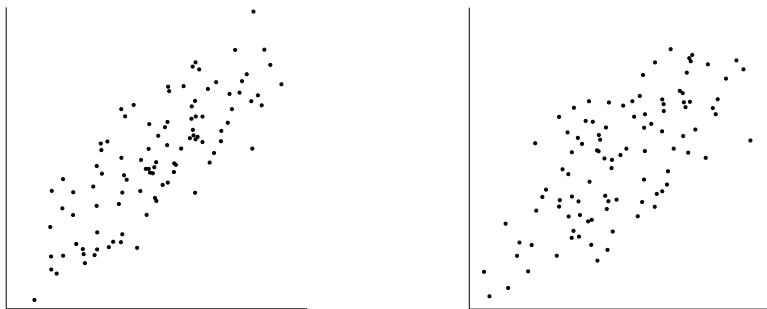
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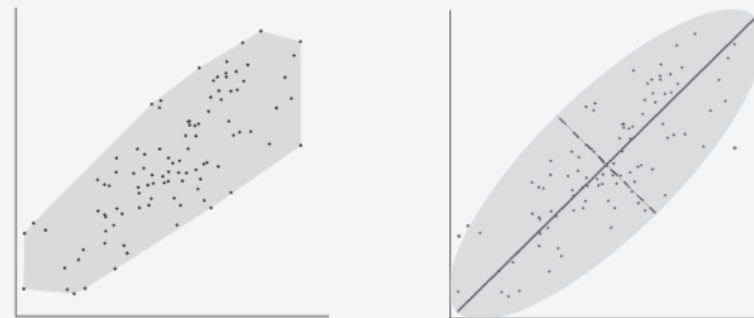Remco Chang | Tufts University | remco@cs.tufts.edu

**Discrimination task: which one is more correlated?
A function to model the perception of correlation**

Rensink et al 2010, 2014: the smallest amount of difference that people can tell between the two charts is a linear function of the base correlation value r (Weber's law)
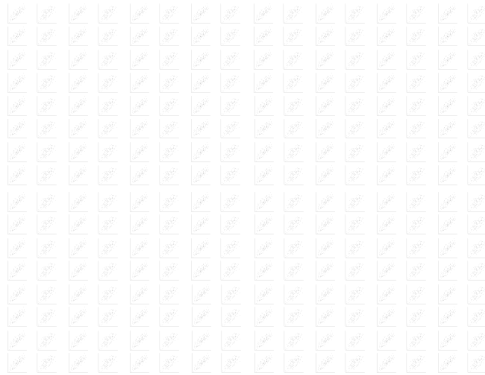
Harrison et al 2014: the phenomena applies to nine charts for both positive and negative correlation

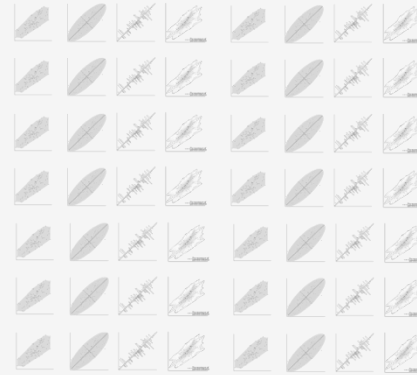Kay and Heer 2016: log-linear and participants effects can help refine the models

We: people rely on visual features to make the comparison and in turn visual features could help us refine the models

Vision science: the "visual properties" of scatterplots may affect how people view one correlation chart

19,000 judgments

48 candidate visual features

Standardized Weighted Logistic Regression
whether **visual features** can **better explain** these judgments

The four features that better "explain" correlation judgments are used to fit in the extant perceptual models of correlation by Rensink, Harrison, and Kay.

Visual features are as precise as correlation.

Appeal to other perceptual laws that models low level perception such as …

Stevens Power Law improves the model precision.

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