Graphical Integrity

(Professor Dave)^2

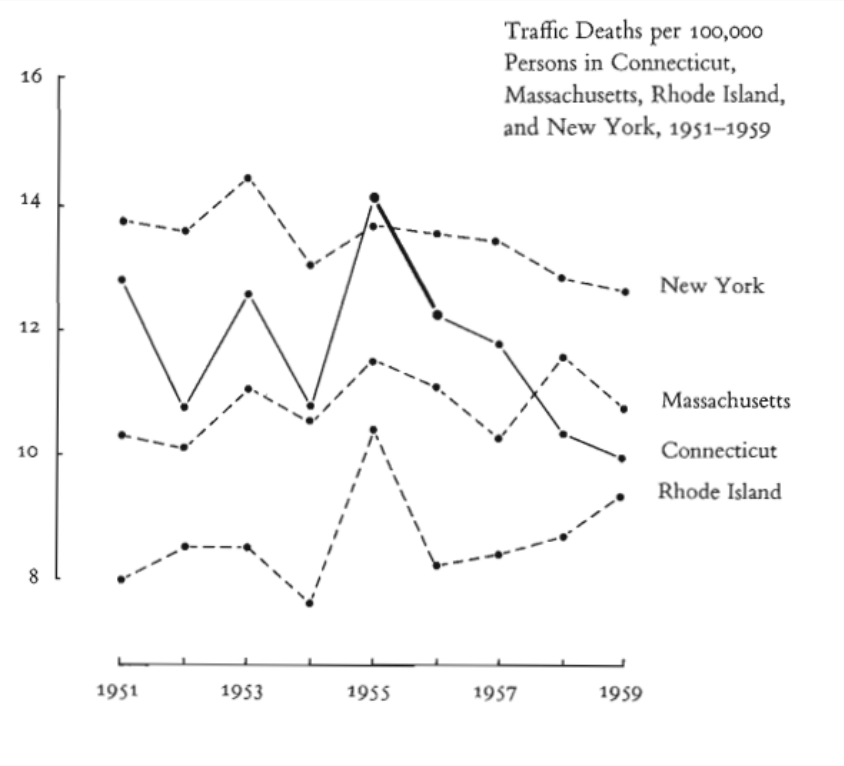
The University of Austin

Introduction

Most of the material comes from Chapter 2 of *"The Visual Display of Quantitative Information"* by Edward R. Tufte (2nd Edition, Graphics Press, 2007).

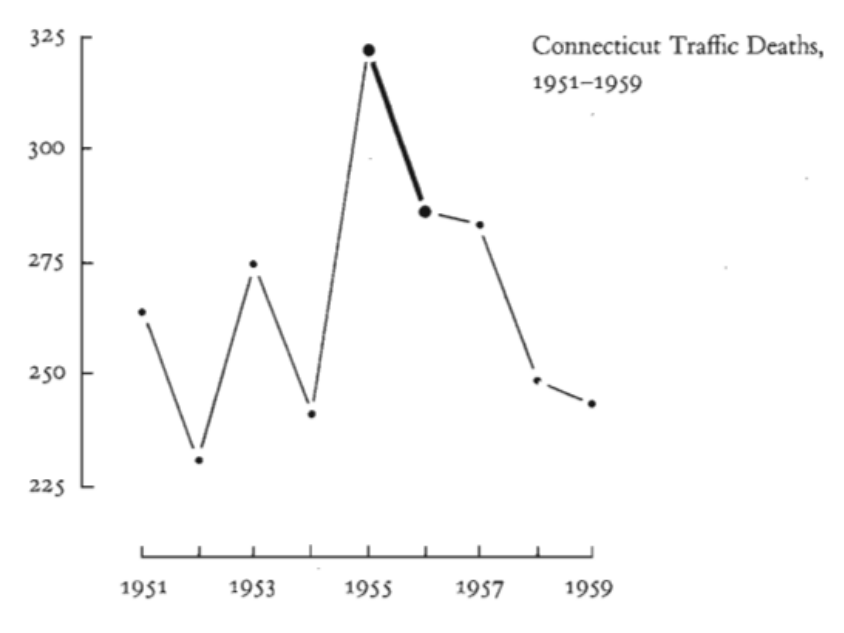
Integrity translates into telling the truth with a graph. Most graph users in the 20th century focused on catching lies rather than analyzing data.

Lying with Graphs



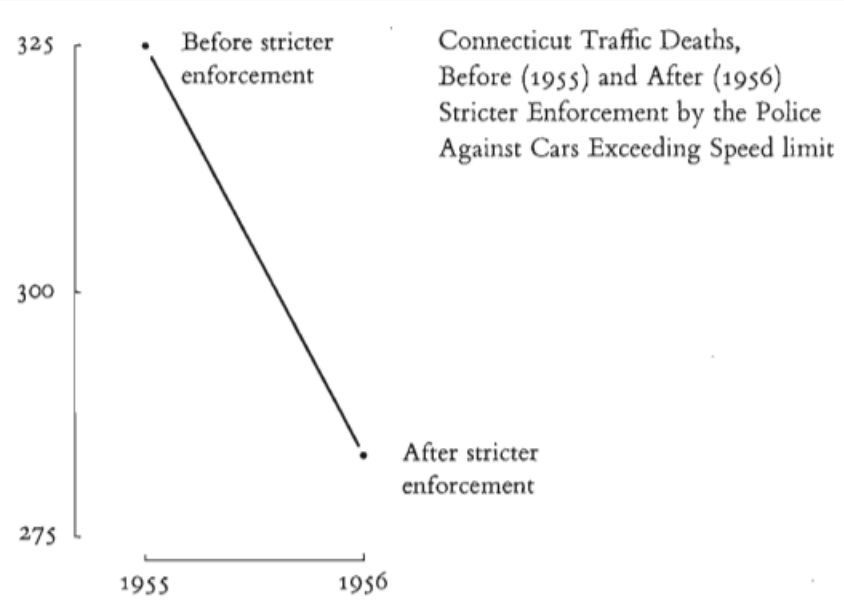
Let's start with some examples of how graphs can lie.

Negative Income Example



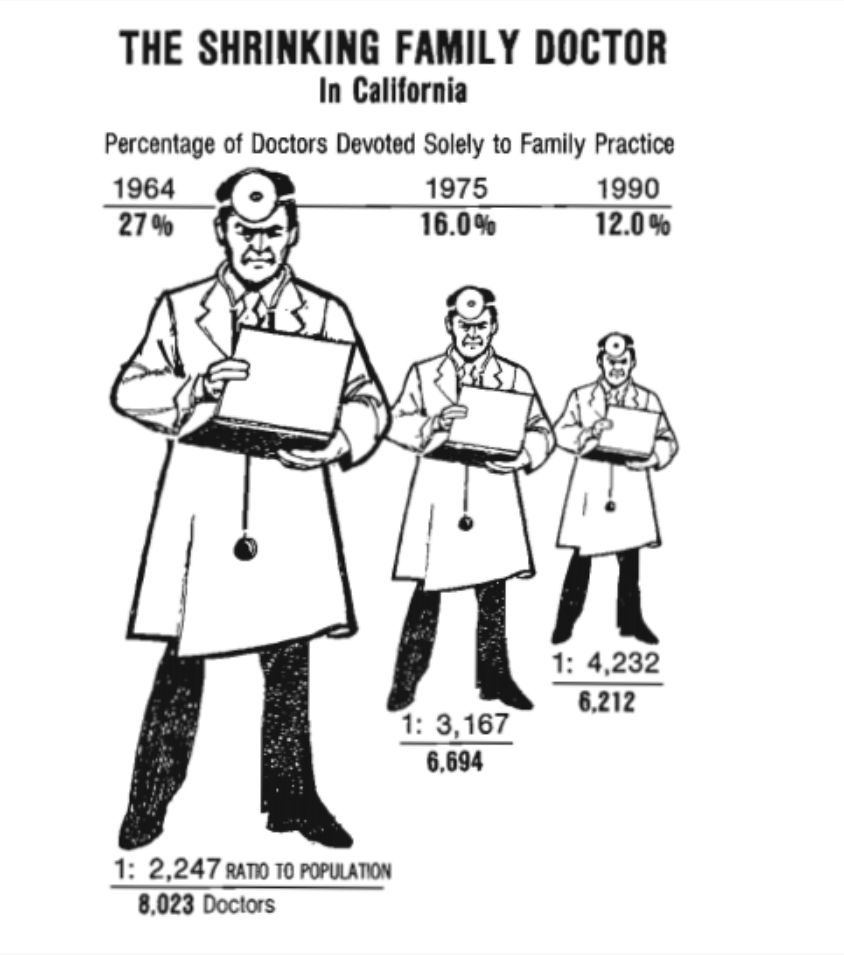
Negative income: Bars begin at a value of negative $4.2M.

Time Period Misrepresentation



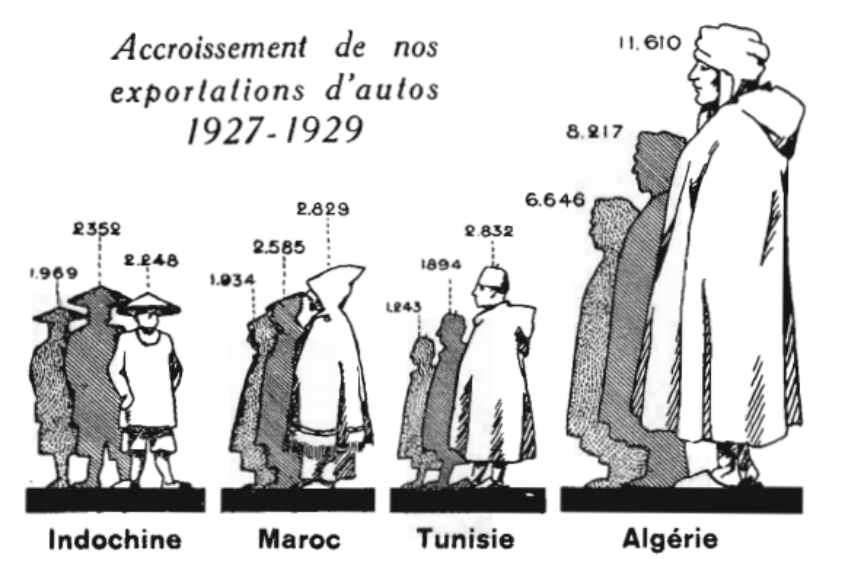
Periods correspond to 1976, 1977, and six months of 1978! The lie is repeated four times to conclude a decline in commission payments.

Disorganized Graph



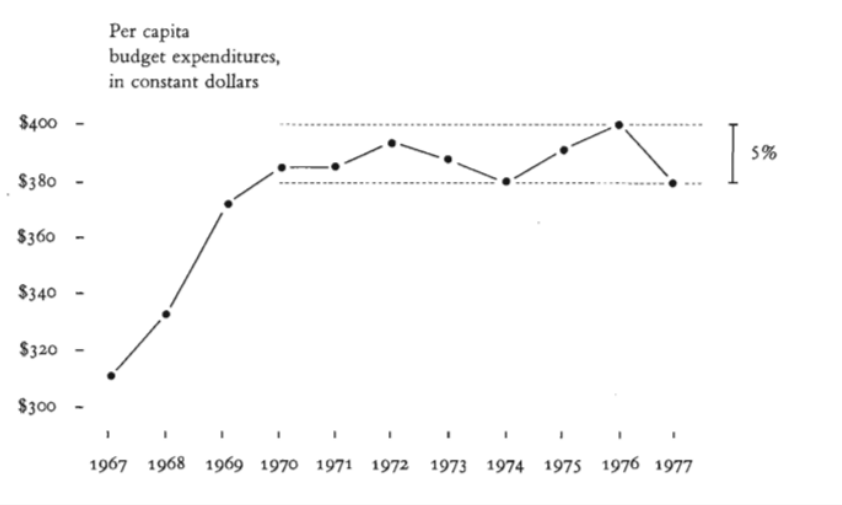
Notice the disorganized nature of this graph (order is ignored). Example: Pennsylvania State Hospitals.

Human Perception



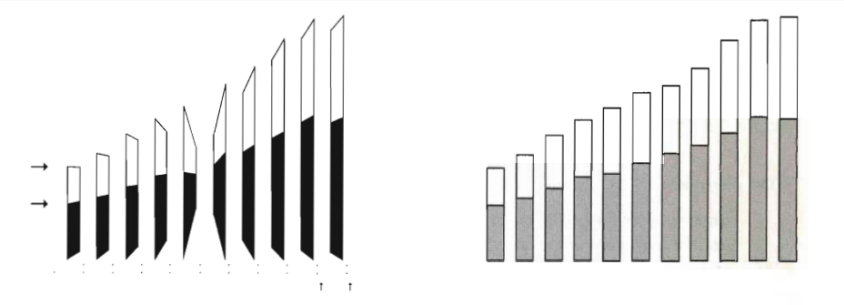
Humans perceive images differently according to context. They perceive area growth more slowly than actual growth.

The Lie Factor (LF)



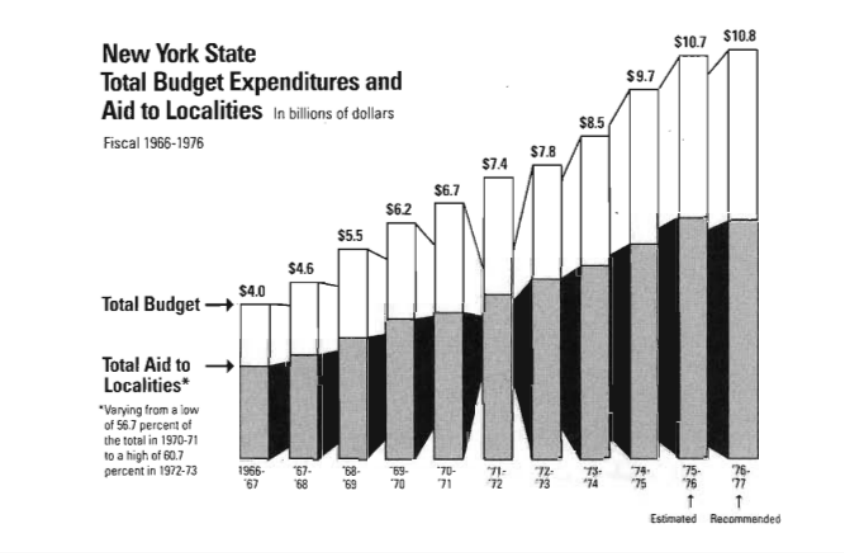
The Lie Factor (LF) aims for LF $= 1$. If LF > 1.05 or LF < 0.95, the graph is distorted. Using log(LF) helps identify overstating or understating errors.

Graphical Distortion



Example of graph distortion: Time moves in reverse order along the road to exaggerate the effect.

Simple Graphs



Choose simple graphs that are clear, precise, and don't lie.

Example: Baseline for comparison adds context.

The remaining slides will follow the same structure using the extracted figures.

(This template includes 9 slides, but the final output will contain the full sequence up to slide 26 with all figures.)