

There are three kinds of lies

LIES

DAMNED LIES

STATISTICS

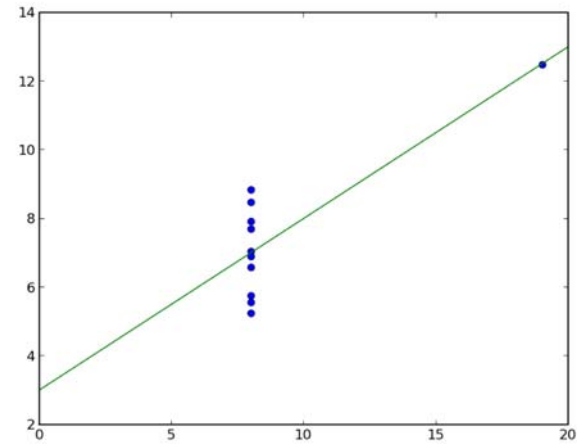
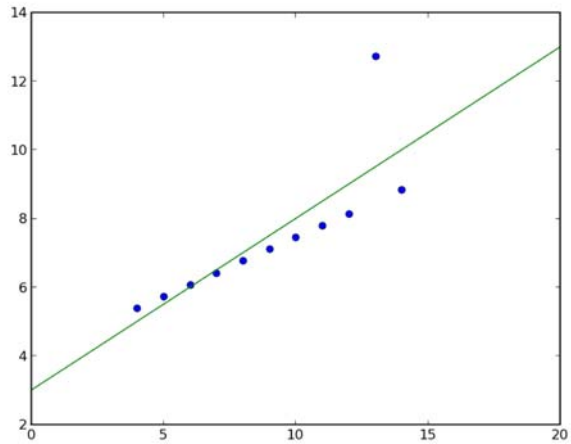
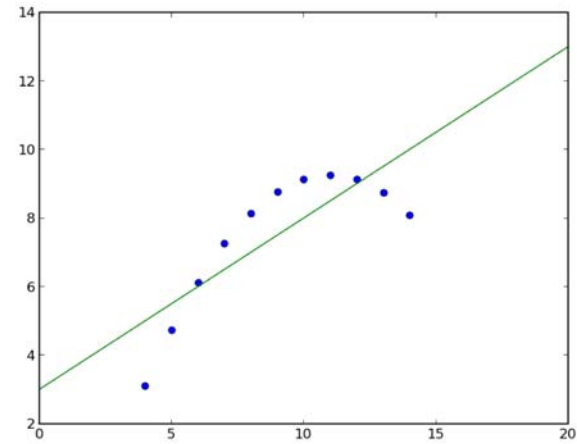
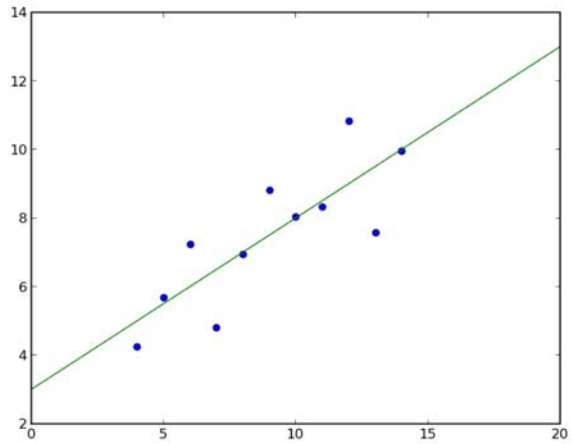
“If you can't prove what you want to prove, demonstrate something else and pretend they are the same thing. In the daze that follows the collision of statistics with the human mind, hardly anyone will notice the difference.”

Darrell Huff, *How to Lie with Statistics*, 1954

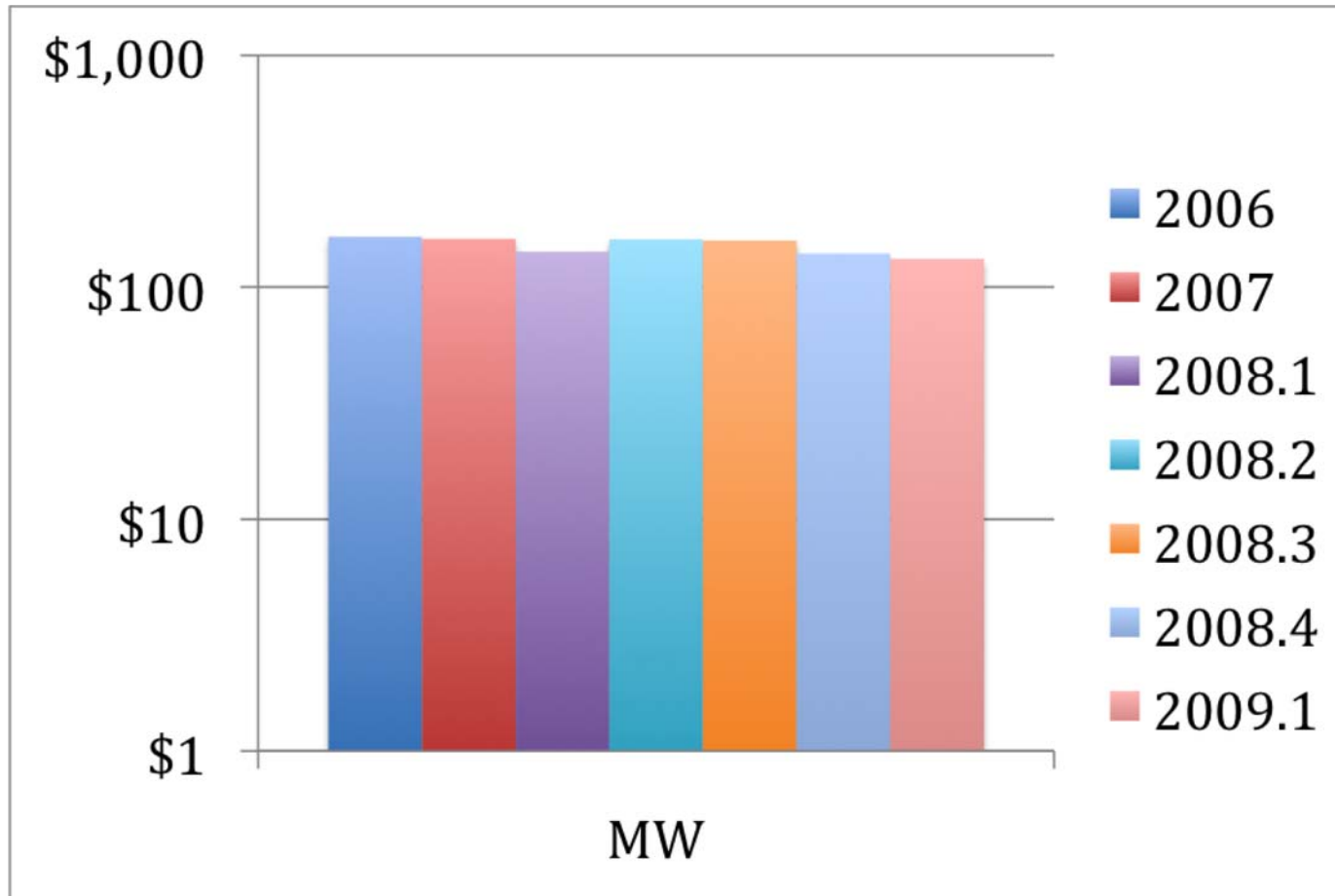
Anscombe's Data

x	y	x	y	x	y	x	y
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89

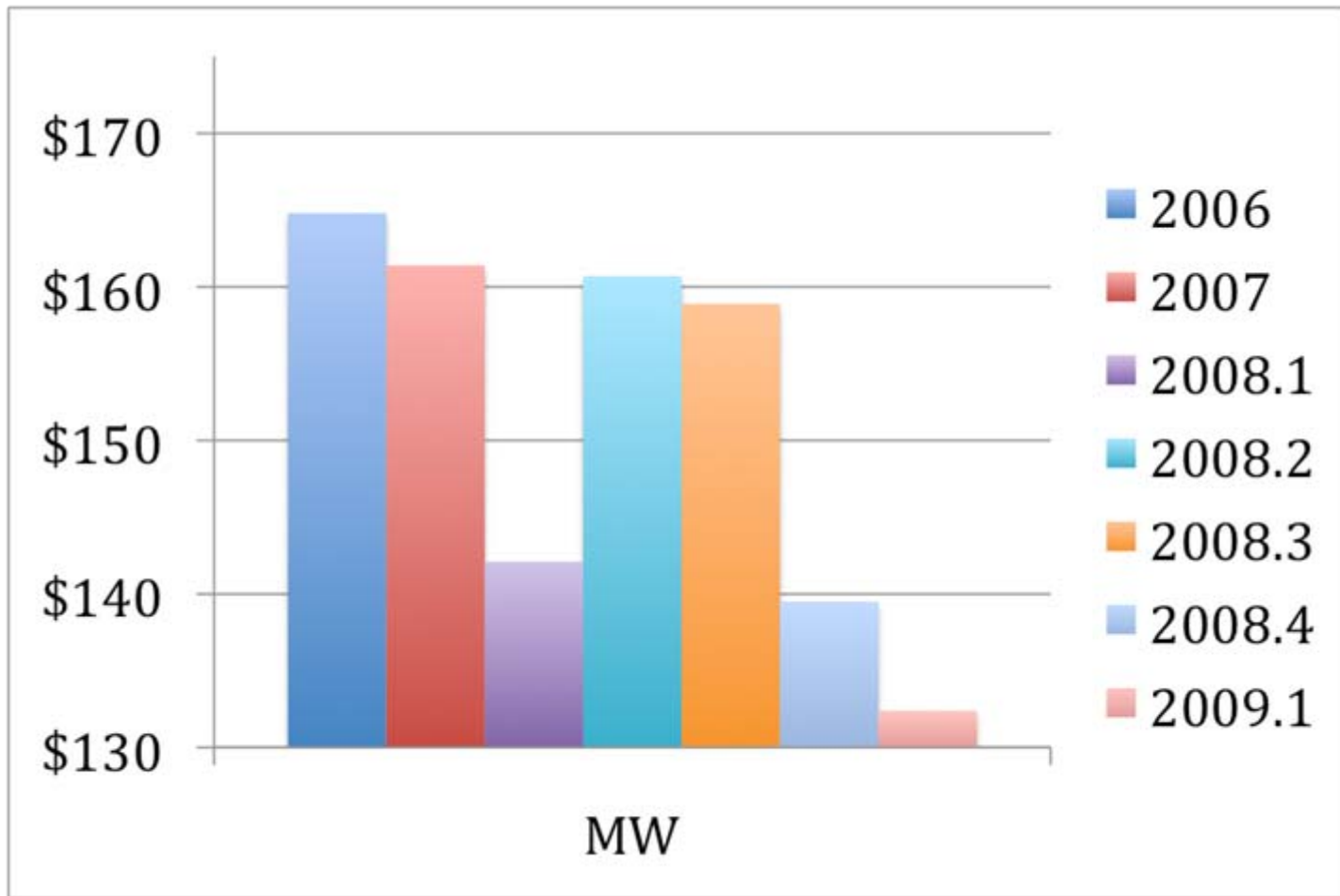
Anscombe's Plots



Housing Prices in Midwest



Housing Prices in Midwest



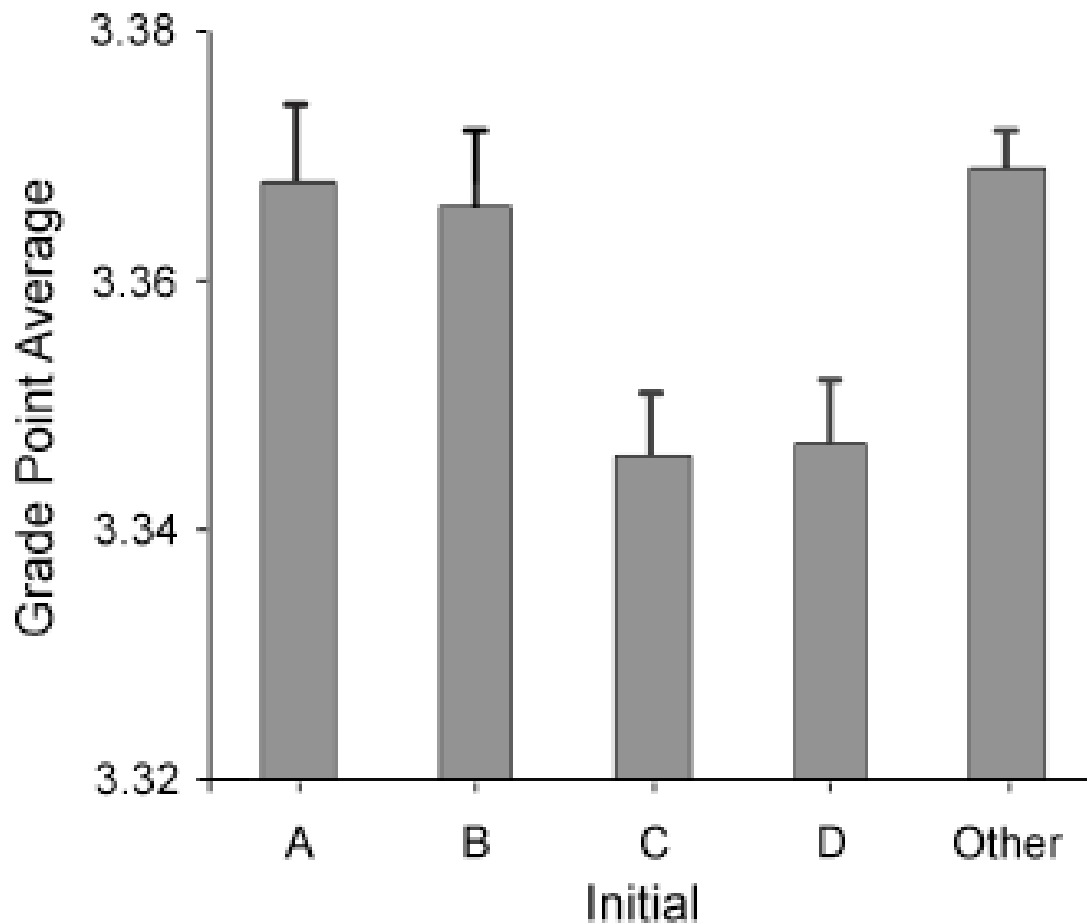
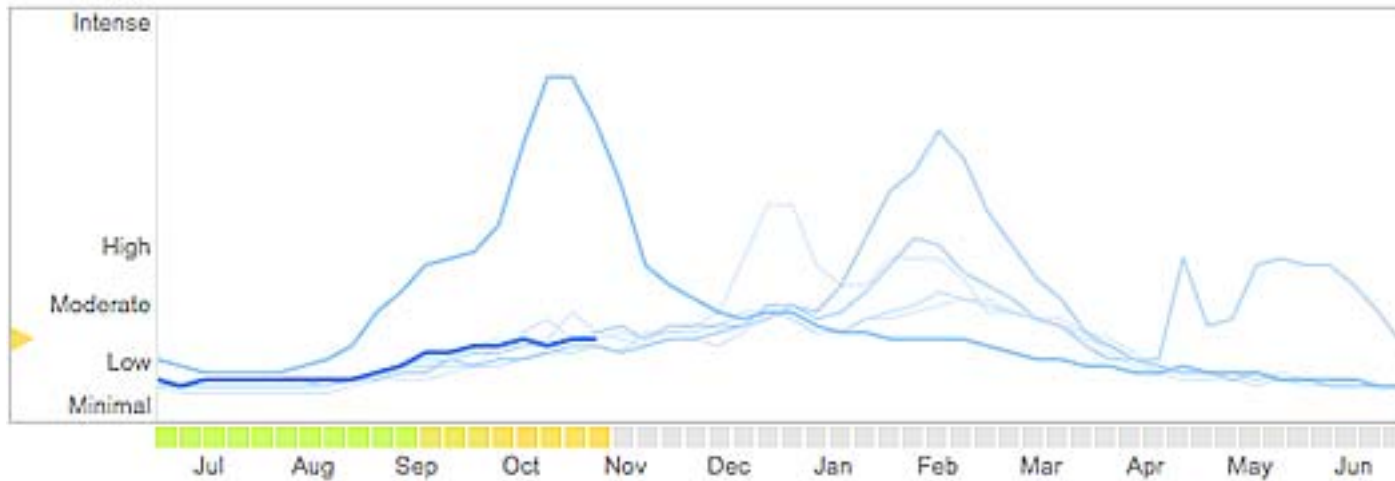


Figure 1 from Nelson, Leif D. and Joseph P. Simmons. "Moniker Maladies: When Names Sabotage Success." Working paper, March 17, 2007. Available at SSRN: <http://ssrn.com/abstract=946249>

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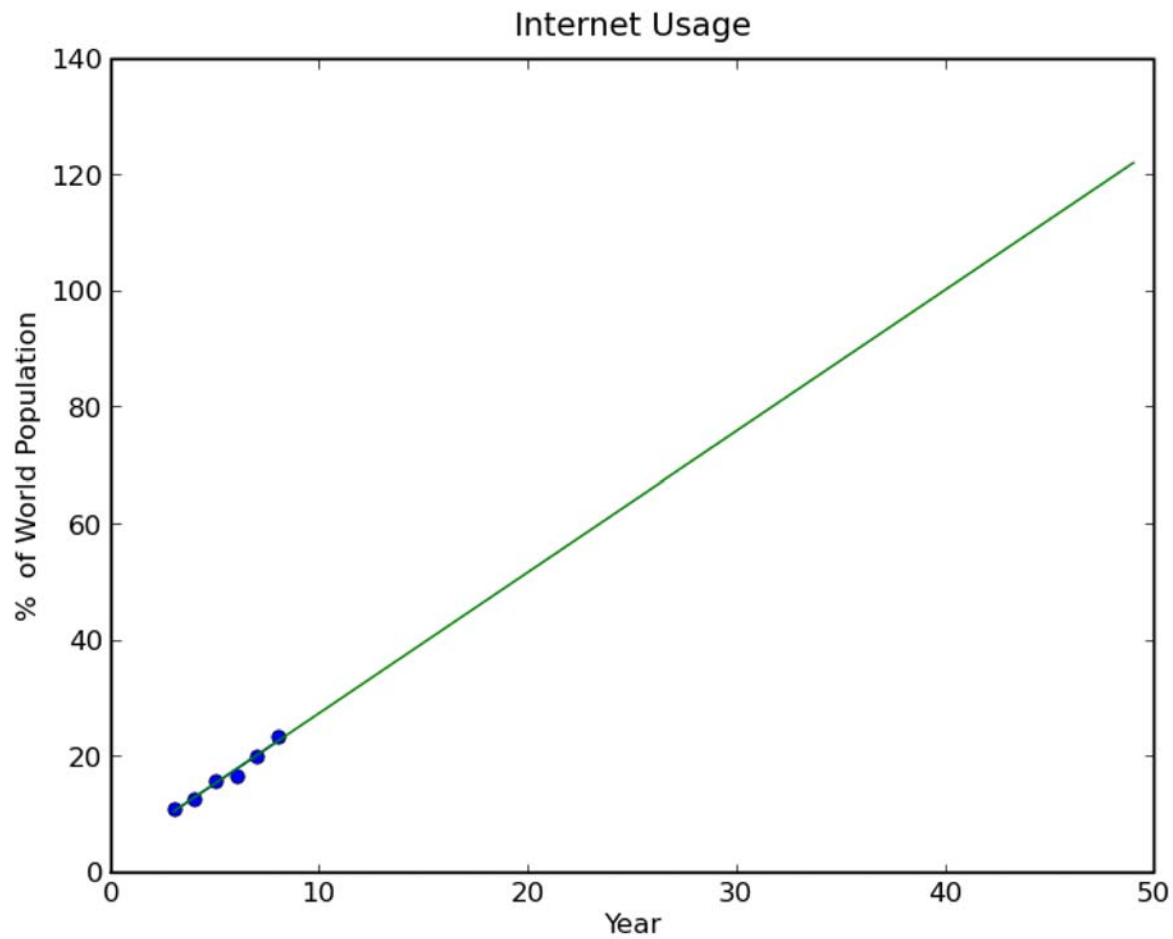
- “there were so many errors they balanced one another, and led to the same conclusion as if they were all correct.” – John C. Calhoun
- “the measurement errors are unbiased and independent of each other, and therefore almost identically distributed on either side of the mean”



Cases of flu in NYS in recent years.
Dark blue line 2010. Early peak 2009 (H1N1).

Does the opening of schools contribute to the spread of flu?
Does the spread of flu contribute to the opening of schools?

Extrapolation



"This study confirms what most of us already know,
which is that the quality of Cornell's graduate fields is outstanding."

--Cornell's Provost

NRC Rankings of Universities

- GIGO
 - 0% of UW's CS students had “academic plans” for 2001-2005. (40% took faculty positions)
 - 0% of MIT's EECS faculty engage in interdisciplinary work
- Bad sampling leading to strange regressions
 - More international students => better quality
 - Fewer female faculty => better quality

The Smell Test

<http://chronicle.com/article/NRC-Rankings-Overview-/124707/>

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<http://ocw.mit.edu>

6.00SC Introduction to Computer Science and Programming
Spring 2011

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