Pop Statistics Books and Statistical Education

Kaiser Fung

JSM, Miami Beach, August 2011

THE UPSIDE OF IRRATIONALITY
The Unexpected Benefits of Defying Logic at Work and at Home
PREDICTABLY IRRATIONAL
The Hidden Forces That Shape Our Decisions
DAN ARIELY
HOW TO LIE WITH STATISTICS
Darrell Huff
Illustrated by Irving Geis
Over Half a Million Copies Sold—An Honest-to-Goodness Bestseller
CHANCES ARE...
ADVENTURES IN PROBABILITY
Michael Kaplan and Ellen Kaplan
POP
FREAKONOMICS
A ROGUE ECONOMIST EXPLORES THE HIDDEN SIDE OF EVERYTHING
"Prepare to be dazzled."
— Malcolm Gladwell, author of The Tipping Point and Blink
STEVEN D. LEVITT AND STEPHEN J. DUBNER
THE EXPLOSIVE FOLLOW-UP TO FREAKONOMICS
SUPER FREAKONOMICS
GLOBAL COOLING, PATRIOTIC PROSTITUTES AND WHY SUICIDE BOMBERS SHOULD BUY LIFE INSURANCE
STEVEN D. LEVITT & STEPHEN J. DUBNER
STRUCK BY LIGHTNING
the curious world of probabilities
JEFFREY S. ROSENTHAL
#1 NATIONAL BESTSELLER
The TIPPING POINT
How Little Things Can Make a Big Difference
MALCOLM GLADWELL
"A fascinating book that makes you see the world in a different way." —FORTUNE
blink
By the author of THE TIPPING POINT
Thin-Slicing, Snap Judgments, and the Power of Thinking Without Thinking
Malcolm Gladwell
Outliers
THE STORY OF SUCCESS
MALCOLM GLADWELL
STATISTICS
THE BLACK SWAN
The Impact of the HIGHLY IMPROBABLE
Nassim Nicholas Taleb
'One of the smartest books of all time' Fortune
Fooled by Randomness
The Hidden Role of Chance in Life and in the Markets
THE INTERNATIONAL BESTSELLER
Nassim Nicholas Taleb
PROOFINESS
The Dark Arts of Mathematical Deception
CHARLES SEIFE
author of ZERO
WHY WE UNDERESTIMATE RISK IN THE FACE OF UNCERTAINTY
THE FLAW OF AVERAGES
SAM L. SAVAGE
The Drunkard's Walk
How Randomness Rules Our Lives
Leonard Mlodinow
"A wonderfully readable guide to how the laws of randomness affect our lives."
STEPHEN HAWKING
author of A BRIEF HISTORY OF TIME
THE HIDDEN INFLUENCE OF PROBABILITY AND STATISTICS ON EVERYTHING YOU DO
NUMBERS RULE YOUR WORLD
KAISER FUNG
"Groundbreaking. Not only is it fun to read, it may just change the way you think."
STEVEN D. LEVITT, co-author of Freakonomics
WHY THINKING-BY-NUMBERS IS THE NEW WAY TO BE SMART
SUPER CRUNCHERS
IAN AYRES
Dicing with Death
Chance, Risk and Health
Stephen Senn

Offering readers not only a tour of randomness, chance, and probability but also a new way of looking at the world, this original, unexpected journey reminds us that much in our lives is about as predictable as the steps of a stumbling man fresh from a night at the bar. -- **The Drunkard's Walk**

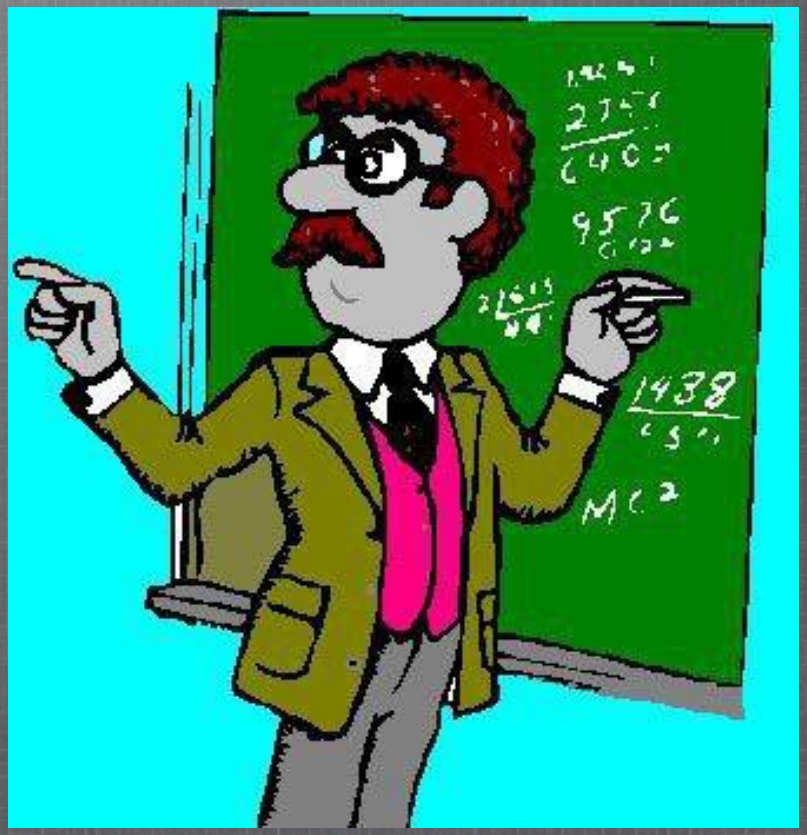
By thinking logically about the likelihood of various outcomes, we can make better decisions and understand our lives more deeply. -- **Struck by Lightning**

STATISTICAL

This book boasts no unifying theme... employs the best analytical tools that economics can offer, but it also allows us to follow whatever freakish curiosities may occur to us... The sort of stories told in this book are not often covered in Econ. 101, but that may change. -- **Freakonomics**

EDUCATION

Once you know the methods people use to turn numbers into falsehood, they are powerless against you. -- **Proofiness**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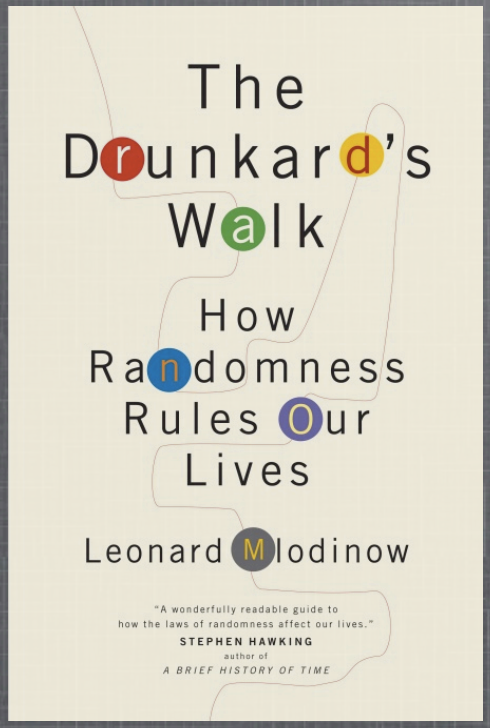
MC2

1	2	3
Foundations		
	Insights	
		Actions

FIRST GENERATION



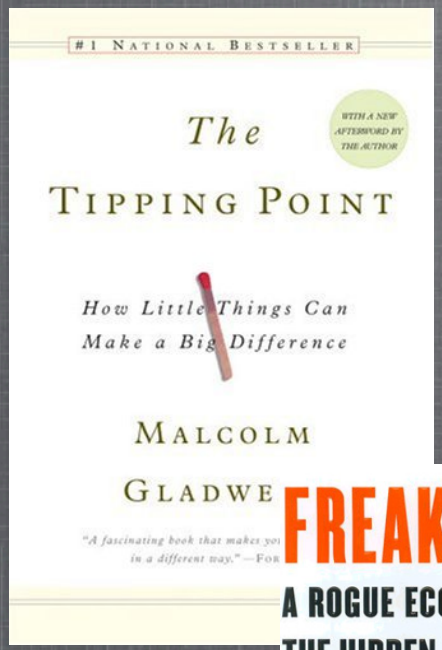
Chapters : *Key Concept*

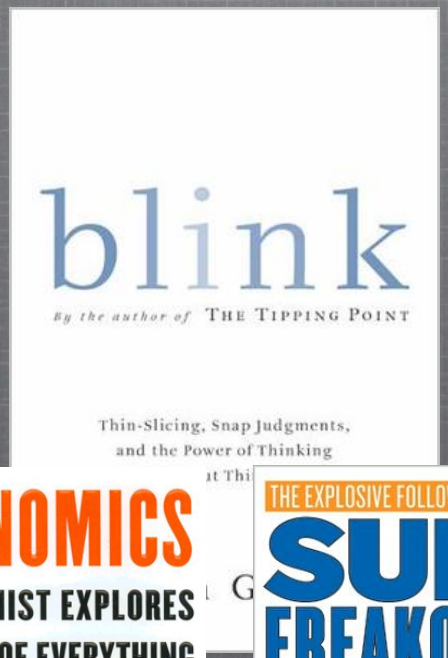
1: Introduction
2: Rules of probability
3: Sampling
4: Combinatorics
5: Law of Large Numbers
6: Conditional probability
7: Central Limit Theorem
8: Regression to the mean
9: Hypothesis testing
10: Conclusion

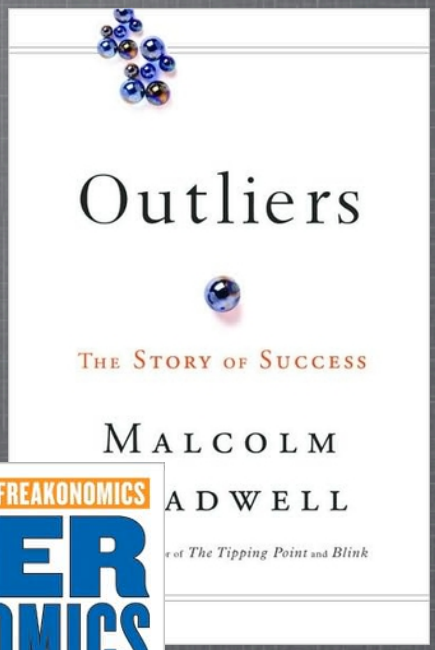
TEXTBOOK APPLICATIONS

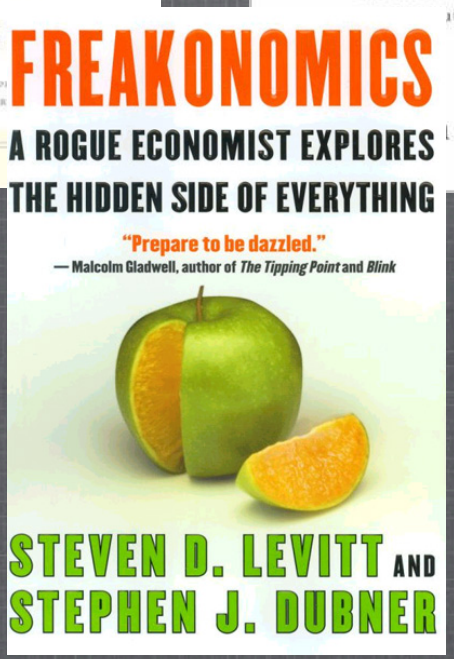
Conjunctive Fallacy
Prosecutor's Fallacy
Base Rate Bias
Linda Problem
Monty Hall Problem
Birthday Problem
Law of Small Numbers
Simpson's Paradox
Urn Problem

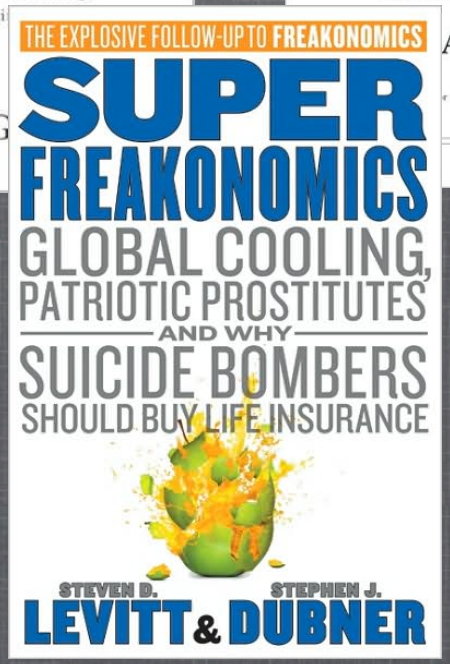
SECOND GENERATION

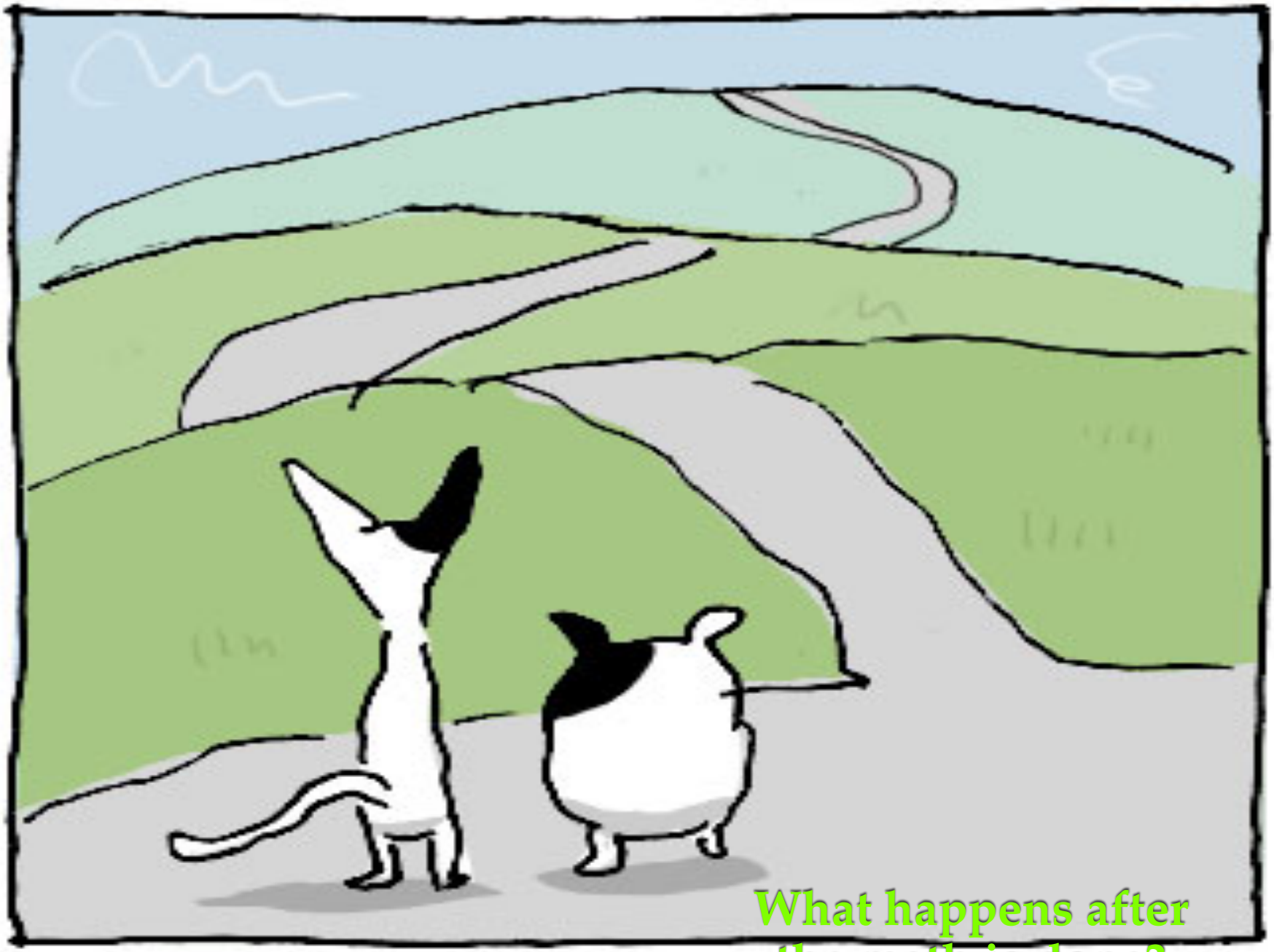




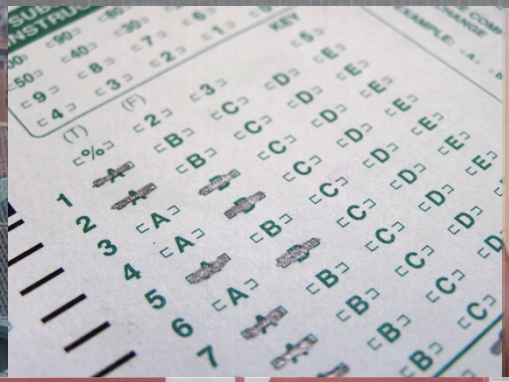


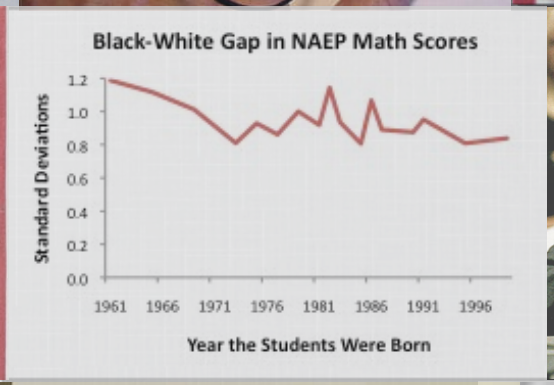





What happens after
the math is done?

NUMBERS RULE YOUR WORLD





Introductory Statistics
circa 2007

Moore: The Basic Practice of Statistics, 4e

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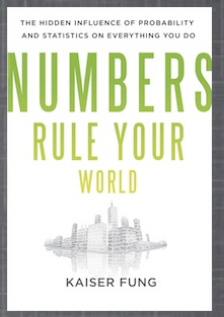
STATISTICAL THINKING FOR EVERYONE



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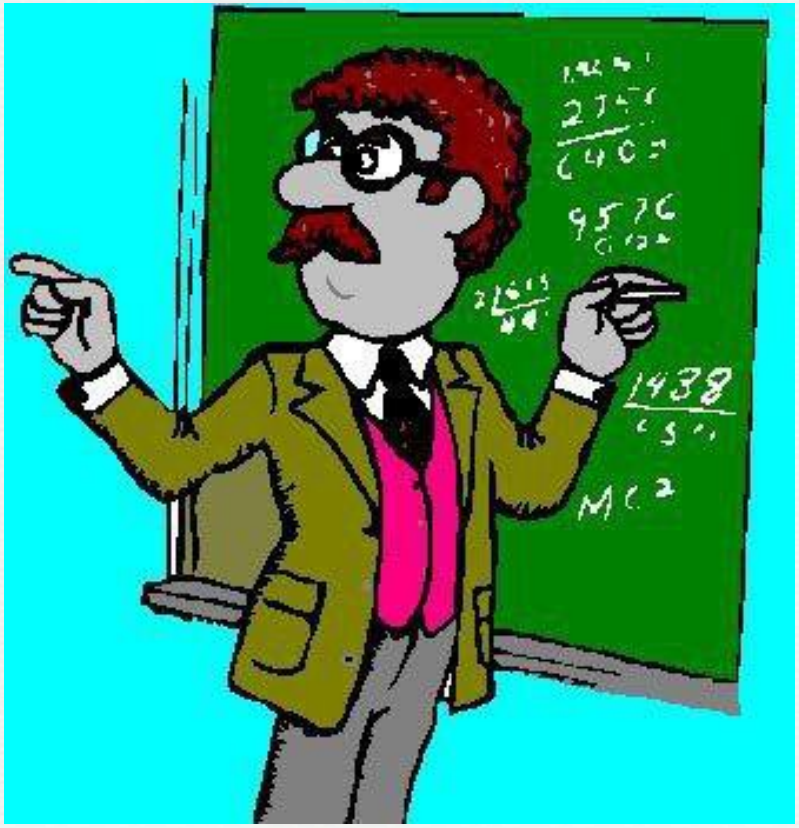
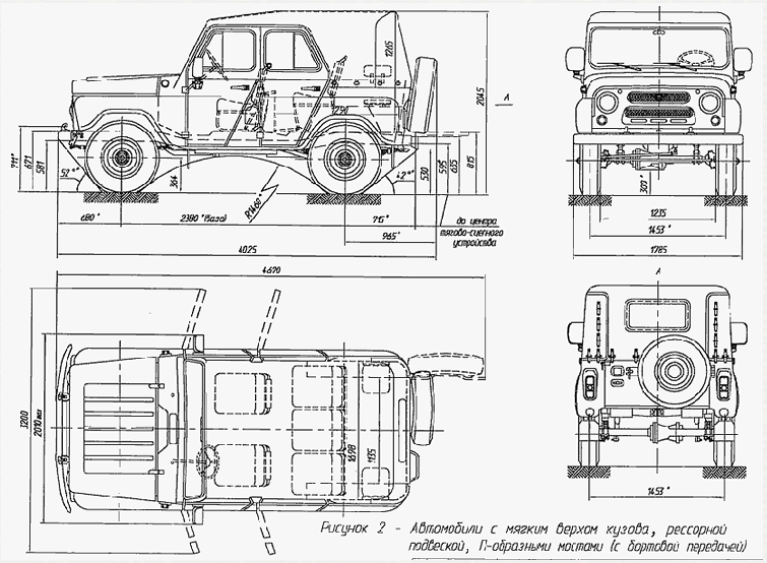
THE *FREAKONOMICS* FRANCHISE

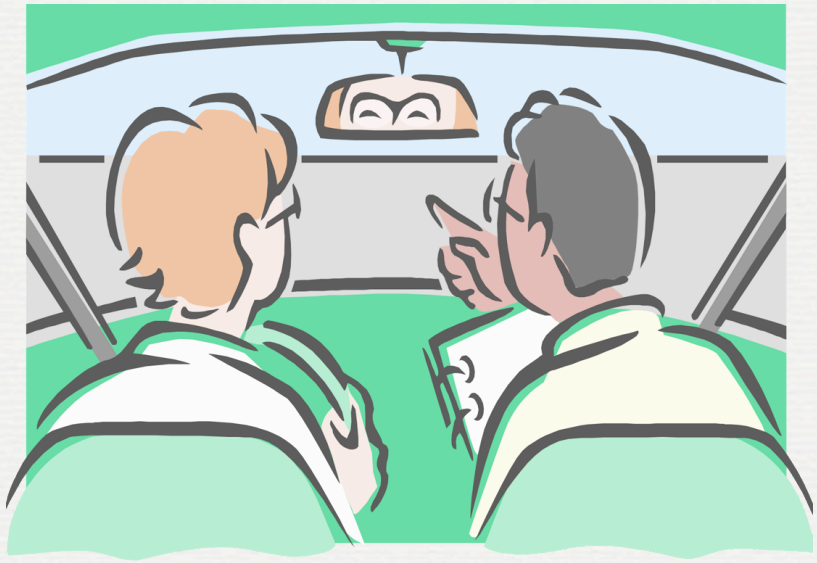


Dull
Hard
Incomprehensible
Strange
Confusing
Sexy.
Nerdy
Dangerous
Lying
Wrong

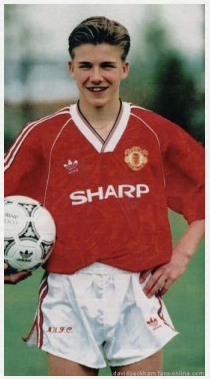
Build a Car



Drive a Car



CUTE & COUNTER-INTUITIVE



On recent English teams, half of the elite teenage soccer players were born in January, February or March... the insights of [Anders] Ericsson and his Expert Performance compatriots can ***explain the riddle*** *of why... Since youth sports leagues are organized by age bracket, teams inevitably have a cutoff birth date... those January-born players are the ones who, year after year, receive the training, the deliberate practice and the feedback... that* ***will turn them into elites****.*

Horsley was able to generate a list of about 30 highly suspicious individuals. According to his rather conservative estimate, at least 5 of those 30 are almost certainly involved in terrorist activities. ***Five out of 30 isn't perfect*** *-- the algoirthm misses many terrorists and still falsely identified some innocents -- but* ***it sure beats 495 out of 500,495****.*

FREAKONOMICS: WHAT WENT WRONG?

This [birthday effect] may be bad news if you are a rabid soccer mom or dad whose child was born in the wrong month. But ***keep practicing****: a child conceived on this Sunday in early May would probably be born by next February, giving you* ***considerably better chance*** *of watching the 2030 World Cup from the family section.*

A U.S.-born boy is roughly ***50 percent more likely to make the majors*** *if he is born in August instead of July. Unless you are a big, big believer in astrology, it is hard to argue that someone is* ***50 percent better at hitting a big-league curveball*** *simply because he is a Leo rather than a Cancer.*

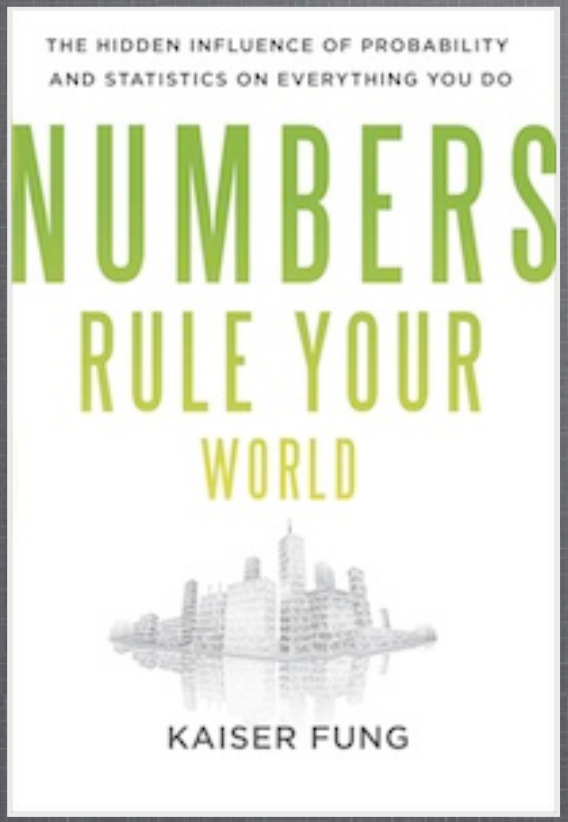
FREAKONOMICS: WHAT WENT WRONG?

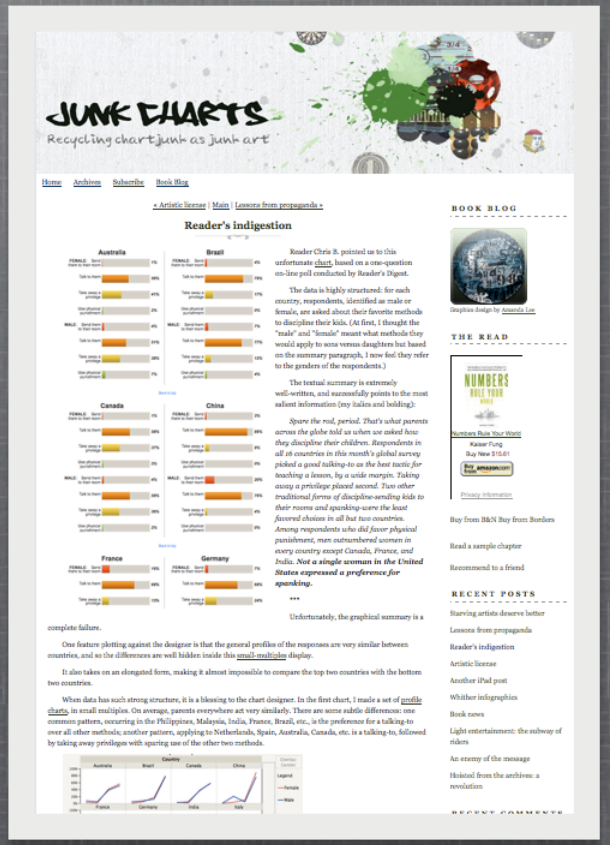
The casual computation kept under wraps the rate at which [the algorithm] failed at catching terrorists: ***with 500 terrorists at large, the "great" algorithm found only five of them, and let pass the other 495****. ... Had they carried the analysis to its full, they would have realized that the maligned straw-man algorithm, by contrast, would have correctly identified 495 of 500 terrorists.*

READ WITH CARE

Joint work with Andrew Gelman

Communicating statistical information to the general audience





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