Statistics Literacy For Decision Makers

Chapter 3: Measurements

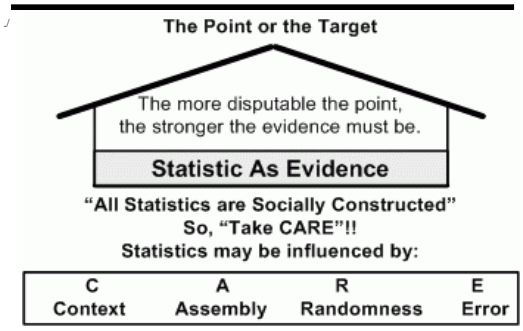
by
Milo Schield

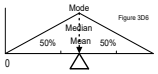
Half-Day Workshop
USCOTS May 16, 2019
www.StatLit.org/pdf/2019-Schield-USCOTS-Slides3.pdf

Measurements: Chapter 3 Outline

Distributions
Measures of center
Two-group comparisons of Means & Medians
Two-variable co-variation
Spread
Slope and simple regression

Stat Literacy: Study Statistics as Evidence in Arguments





Measures of Center

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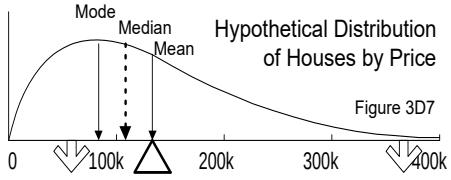

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4. Assume the mean exists. *1.8 kids per family.*
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CONTROL OF CONFOUNDERS			
Physical Control (Grade = Quality)			
Experiment		Observational Study	
A+	Scientific	C	Longitudinal
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Can do by hand		*Calculator/Computer*	
1	Select/Stratify	4	Linear Regression
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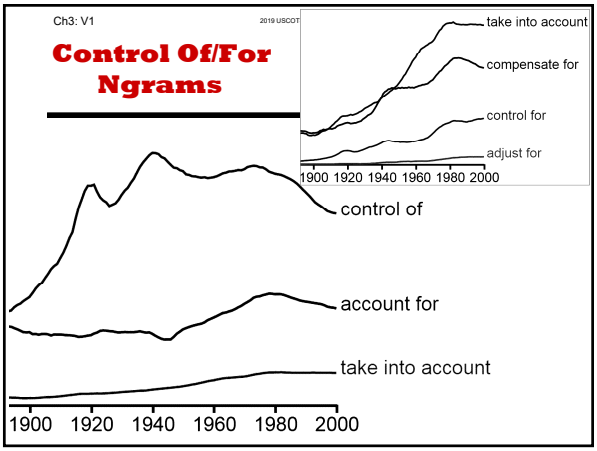
Control Of/For Ngrams



Crude Associations

A **crude association** is an association in which nothing else has been taken into account.

Less likely to get pregnant:

- Short young adults than tall.
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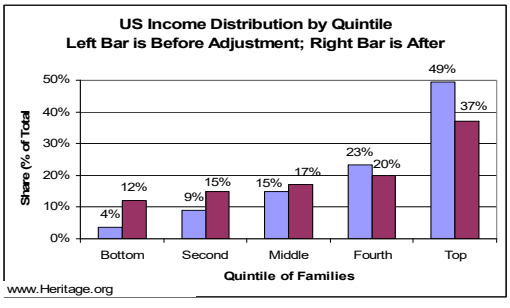
Crude Association versus an Adjusted Association



Prison Expense: Crude vs Adjusted Associations

State	Total	# Inmates	Per Inmate
CA	$2.9B	136K	$21,385
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Total ↑	Per Inmate ↓
50% more	25% less

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Crude Ratio Associations
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NAEP Math 8	Internet Access at Home		
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SAT-Verbal	---- Scores ----			---- Distribution ----		
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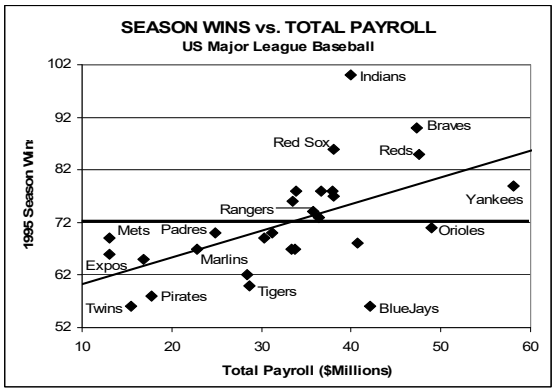
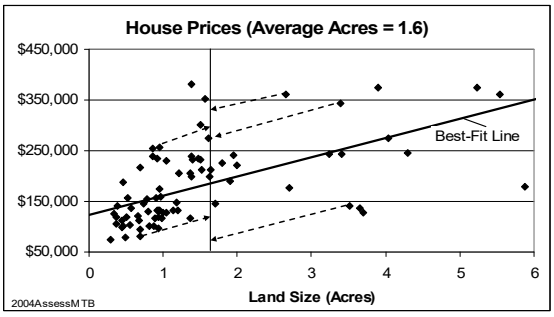
Cornfield's conditions are one of the three biggest contributions of statistics to human knowledge.



Regression Standardizes



Regression Standardizes
An Example:

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Time to Double given Growth Rate

If a child's risk of Attention Deficit Disorder increases by 10% for every extra hour of watching TV, how many hours do they have to watch to double their risk?

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How to Relate this to Math Colleagues

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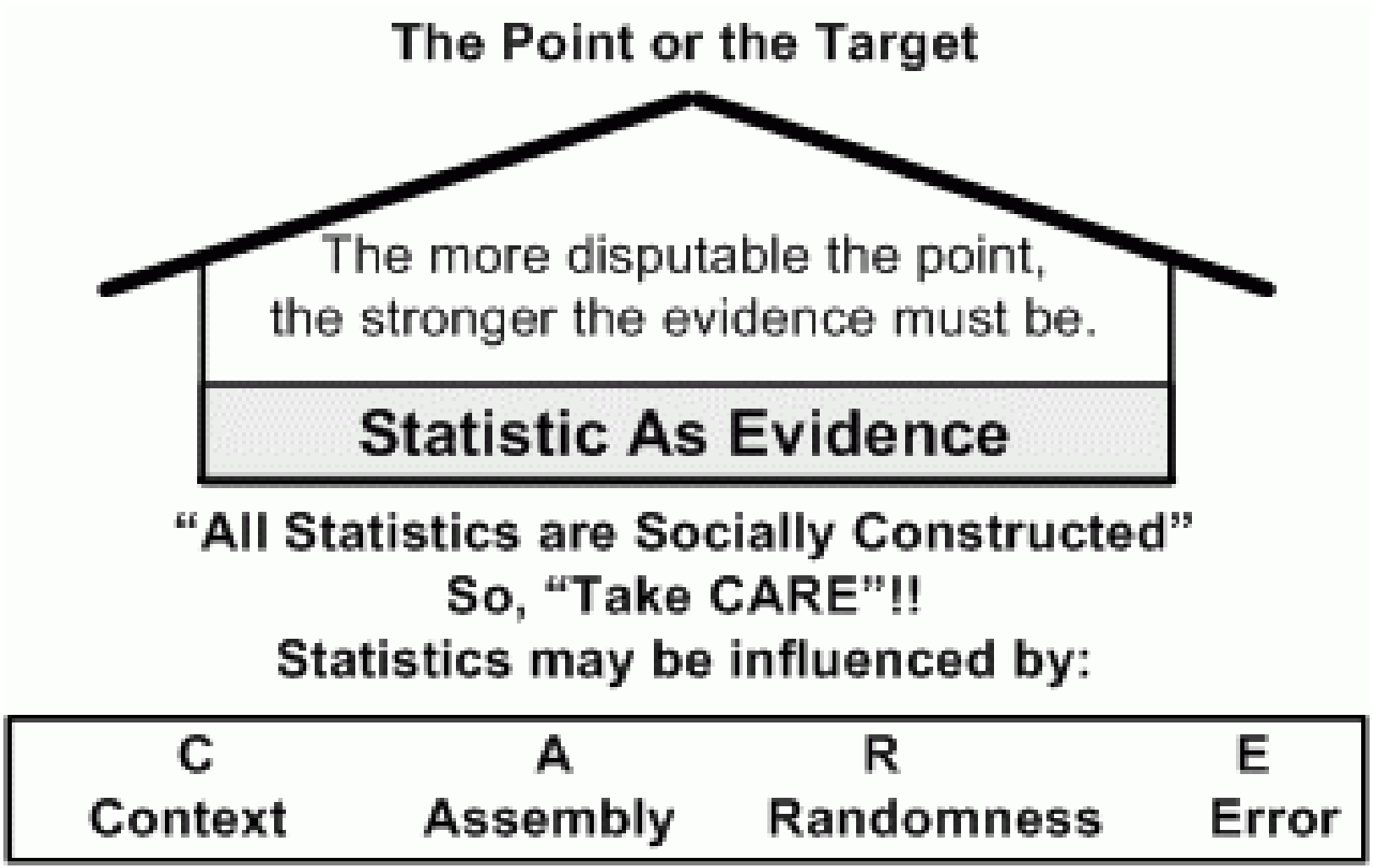

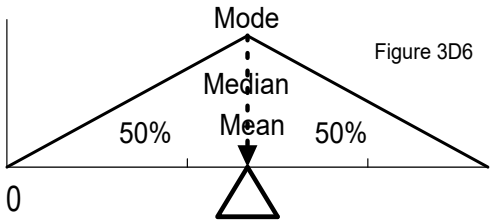

Figure 3D6

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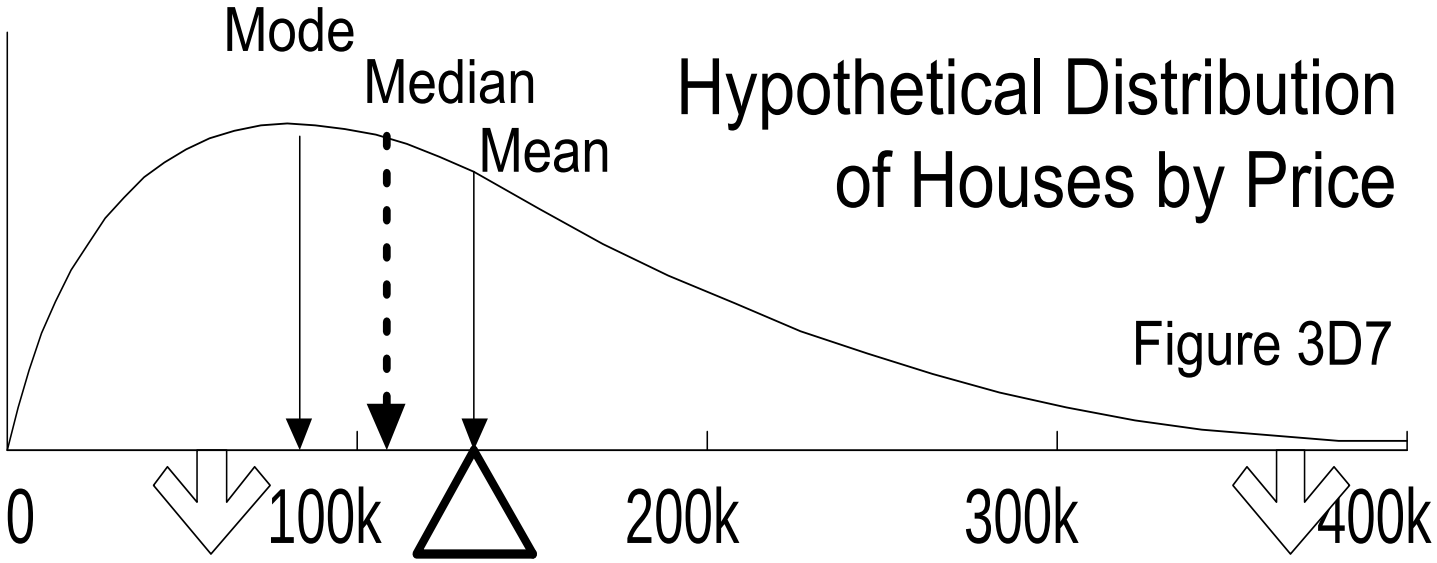

Figure 3D7

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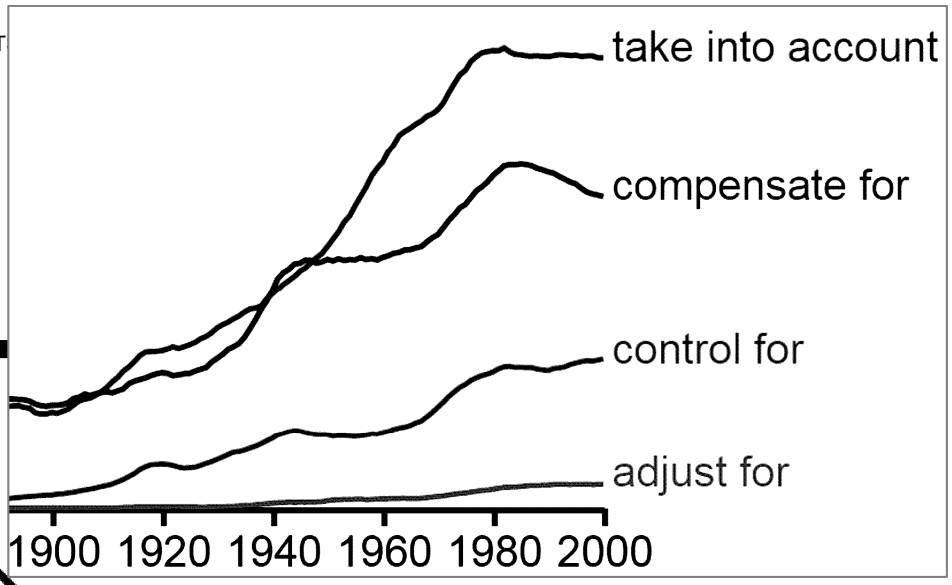

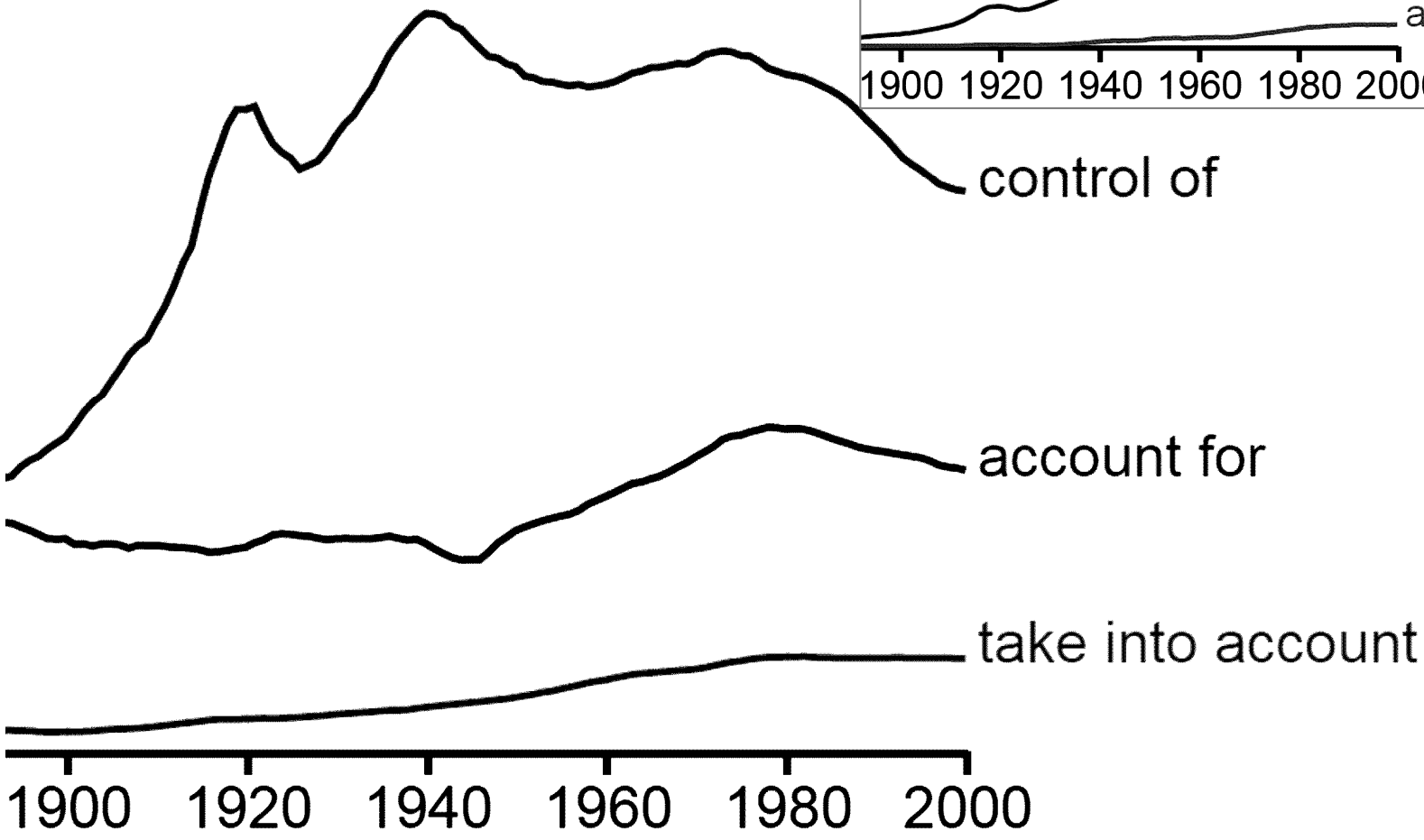

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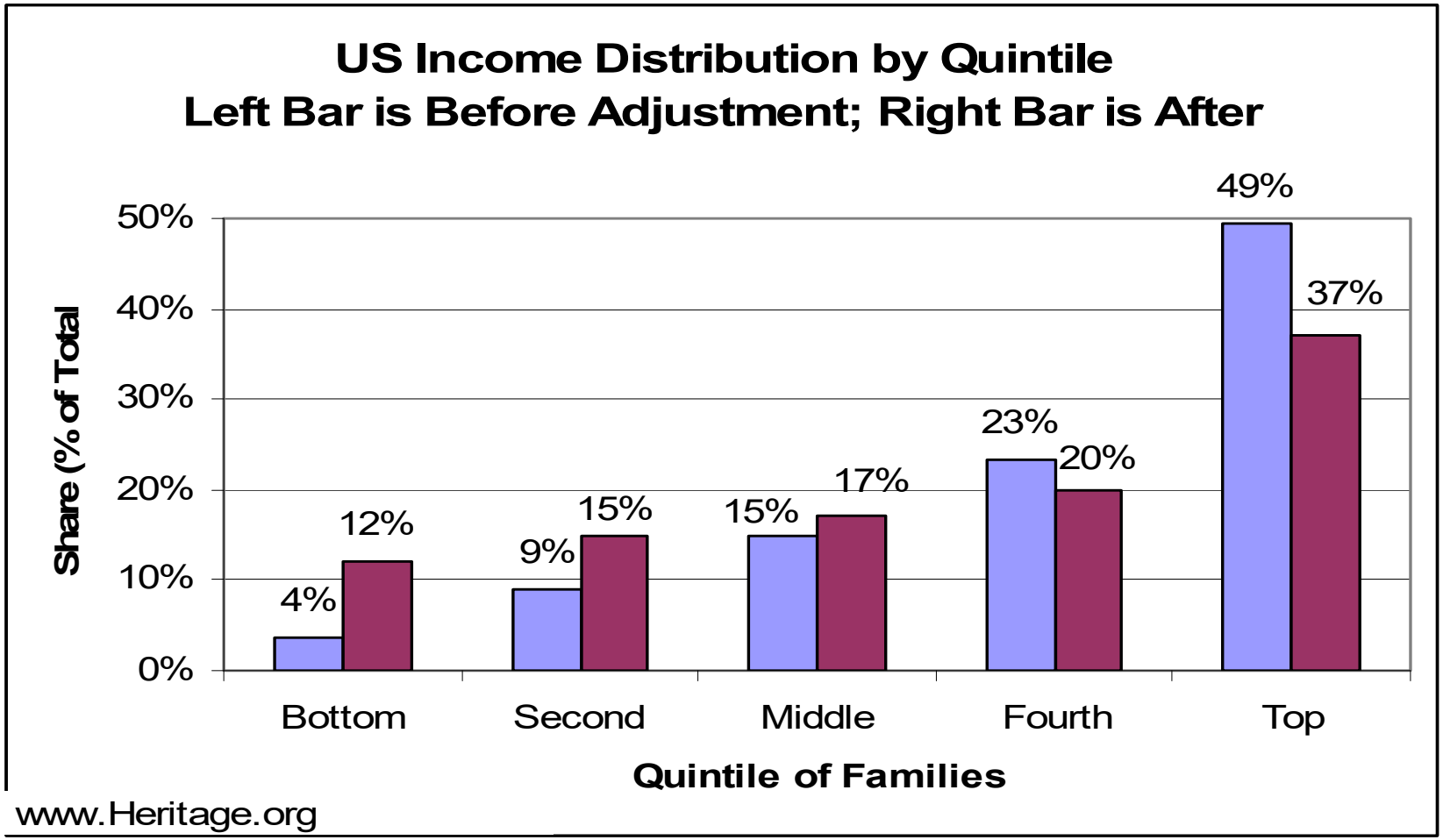

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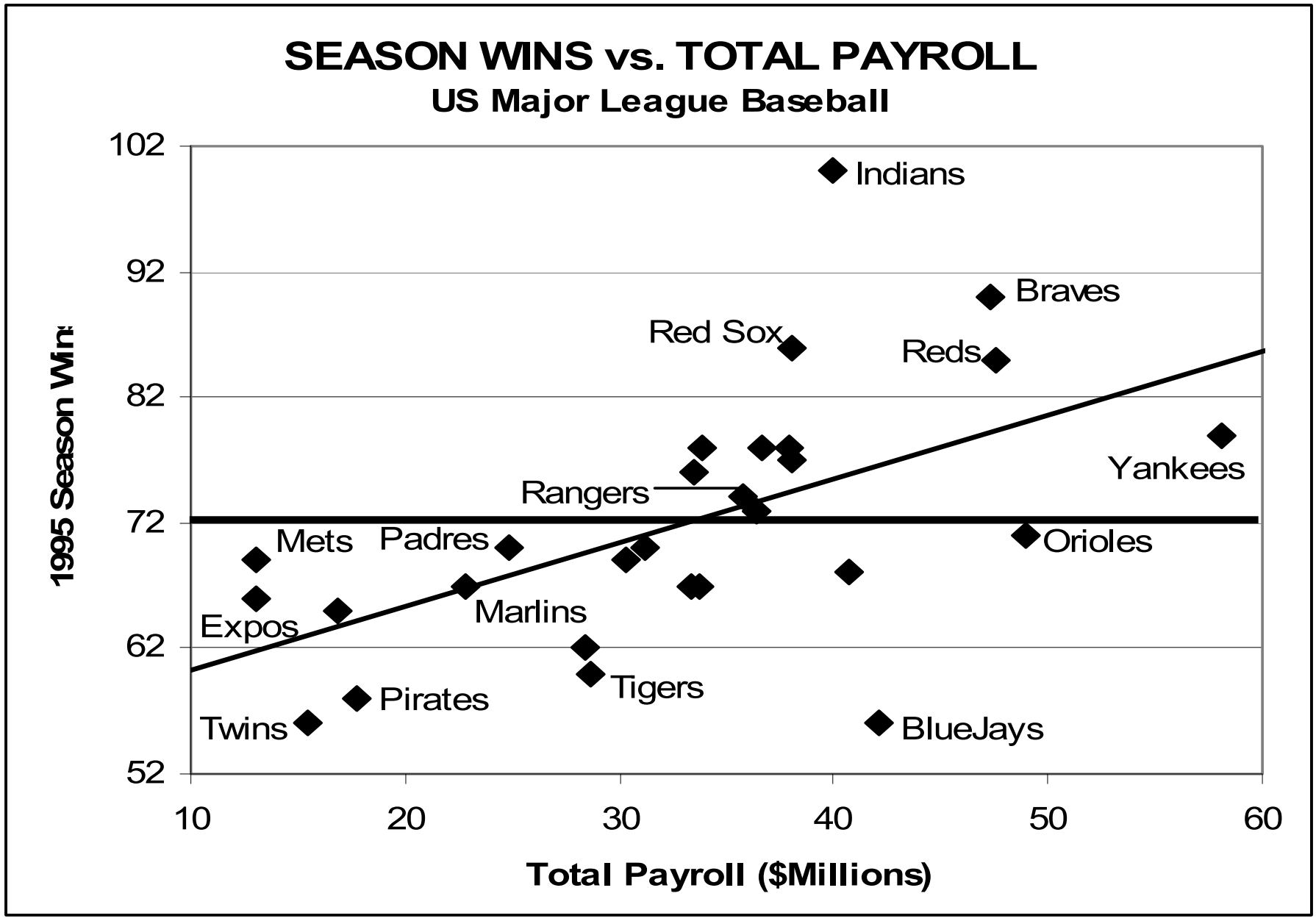
SEASON WINS vs. TOTAL PAYROLL
US Major League Baseball
1995 Season Wins
102
92
82
72
62
52
10
20
30
40
50
60
Total Payroll ($Millions)
Indians
Braves
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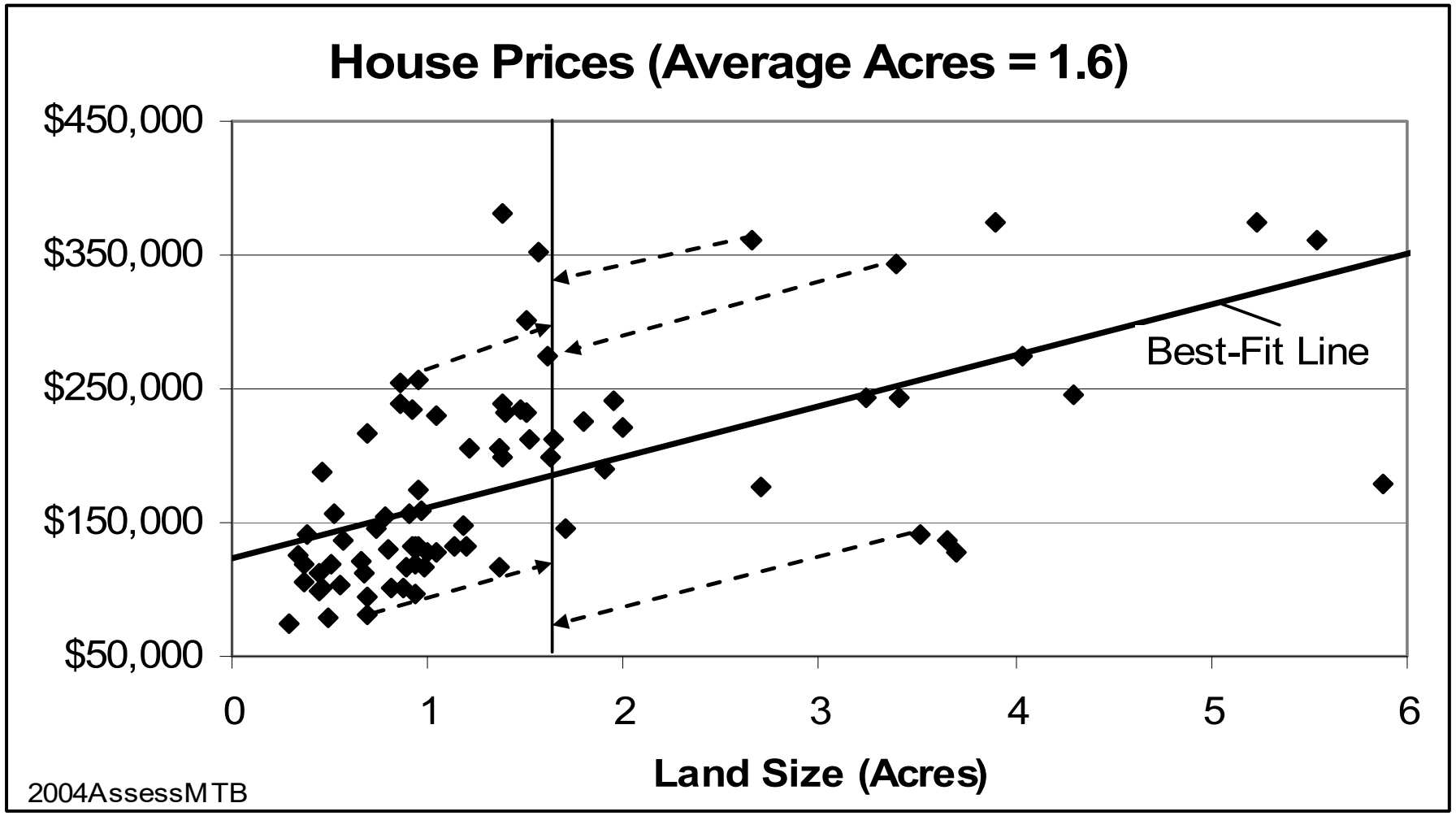

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