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Statistical Literacy: Harper's Index

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November 2010
Slides at www.StatLit.org/pdf/
2010-Schield-Harpers-Index-Slides.pdf

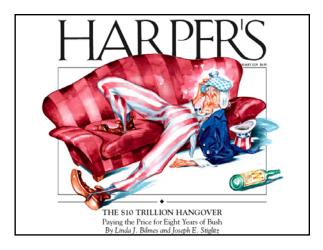Fall 2010   2

Statistical Literacy

Statistical literacy is the ability to read and interpret summary statistics in everyday life.

Statistical Literacy studies
(1) relation between association and causation,
(2) kinds of influence on a statistic
(3) devices used to describe counts or measures

Harper's index is a source of everyday statistics.

THE $10 TRILLION HANGOVER
Paying the Price for Eight Years of Bush
By Linda J. Bilmes and Joseph E. Stiglitz

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Association vs. Causation

1. Exposure to cell-phone radiation (a) **hampers** one's ability to fall asleep. (b) **makes** one sleepy. (c) **has no effect** on sleep patterns.

2. Cell-phone radiation (a) **slows** one's cognitive reaction time, (b) **makes** one think faster, (c) **has no effect**.

3. Exposure to cell-phone radiation (a) **leads to** single- and double-strand breaks in DNA, (b) **has no significant effect** on DNA.

4. Most studies on cell phones and health have received funds from the telecommunications industry. Industry-funded studies are *significantly* more likely than independent studies to show that cell phones are *safe*.

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Harper's Index

For more than 30 years, Harper's Magazine has featured "Harper's Index."

Harpers Index is a collection of one-line statements that present interesting statistics.

Example: *Average amount spent on direct advertising to U.S. children in 1983 and 1998, respectively, per child : $2.68, $36.60*

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Ratio

1. 7/08 Ratio of 1980 NIH grants given scientists under 30 to number given those over 70: **17:1** (2006: **1:13**)

2. 3/08 Ratio in 1980 of U.S. spending in grocery stores to that in restaurants: **2:1** (2008 **1:1**)

3. 1/08 Ratio of the number of Latinos in Iowa to the number of full-time farmers: **7:4**

4. 5/05 Ratio in America of mobile homes to homes in gated communities: **1:1**

5. 4/05 Ratio of ultra-Orthodox jaywalkers in Israel to secular jaywalkers: **3:1**

Factor by which …
Fall 2010   7

1. 4/04 Factor by which Florida's white defendants are more likely than blacks to get a plea bargain blocking felony conviction: **1.5**

2. 8/05 Factor by which unemployment rate of Jewish immigrants to Germany exceeds national average: **3.5**

3. 8/05 Factor by which expulsion rate in preschools last year exceeded the US rate in grades K–12: **3**

4. 5/04 Factor by which the unemployment rate of African-American college graduates exceeds that of whites: **1.9**

Per
Fall 2010   8

1. 11/01 Number of turkeys raised in the United States last year, **per** American: **0.95**

2. 1/02 Pounds of dust blown into the air each year worldwide, **per** capita: **769**

3. 12/05 Average number of credit cards **per** U.S. household: **12.7**

4. 3/03 Number of active-duty members of the U.S. military, **per** structure it owns, worldwide: **2**

Percentage
Fall 2010   9

3/08 Percentage of US full-time university faculty in 1992 who taught less than four hours/week: **15%** (**30%** in 2008).

3/09 Percentage of residents of former Communist-bloc nations who say they live better now than in 1989: **30%**

2/09 Percentage of unfaithful female multimillionaires who say they plan to spend less on their paramours this year: **15%** (of males…: **82%**)

8/08 Percentage of U.S. children who think kids who wear glasses are smarter than those who do not: **66%**

Points
Fall 2010   10

4/96 Average amount by which the I.Q. of an 8-year-old who was breast-fed exceeds that of one who was not, in percentage points: **8**

5/00 Points by which the percentage of U.S. college students who are "frequent binge drinkers " has changed since 1993: +**3**

[Points by which the percentage who are abstainers has changed: +**4**]

11/99 Percentage points by which voter turnout for Russia's last national election exceeded U.S. turnout in 1996: **21**

Miscellaneous
Fall 2010   11

4/89 Average number of points a student **gains** on the math section of the SAT per 100 hours of preparatory classes: **39**

7/08 Average percentage by which a bar-smoking ban in a U.S. county **increases** the rate of drunk-driving fatalities: **13%**

6/07 Rank of New Orleans among cities with the highest per-capita murder rate last year: **1**

6/04 Ratio of the average number of television sets to the number of children: **7:2**

Conclusion
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Statistical literacy is an art as well as a science.

- Distinguishing association from causation requires is a skill that requires training.

- Seeing assembly as a major influence on statistics is a skill that requires training

- Understanding the various devices by which data is summarized is critical.

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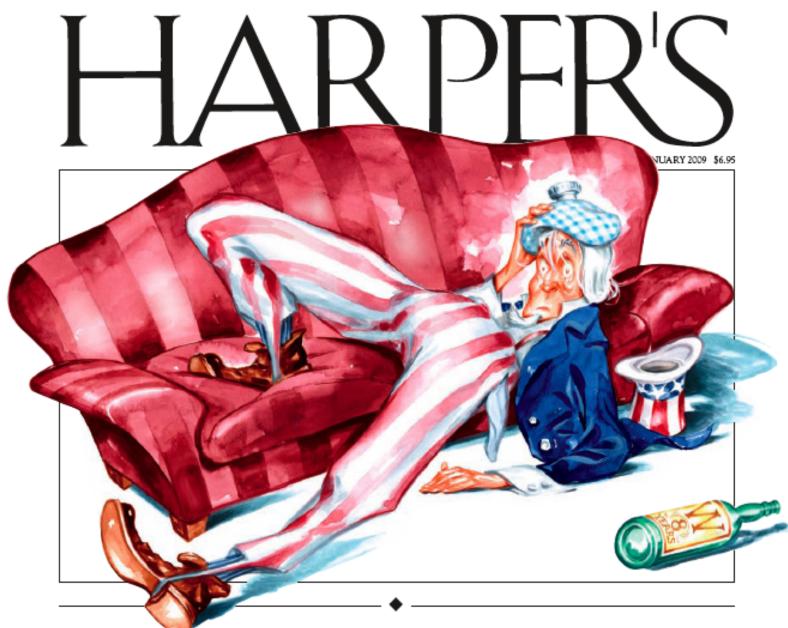
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