

Statistical Literacy at Augsburg

What is it?

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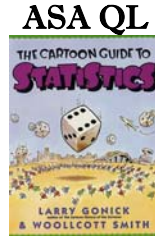
March 31, 2003

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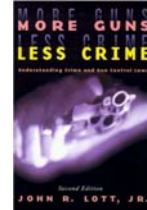
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Statistical LITERACY studies inductive arguments

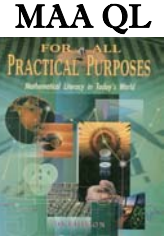
Stat Lit



Deductive



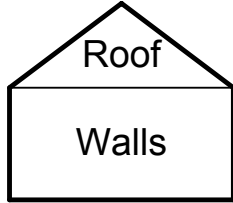
Inductive



Deductive

1. Studies Arguments using Statistics as Evidence

The Point

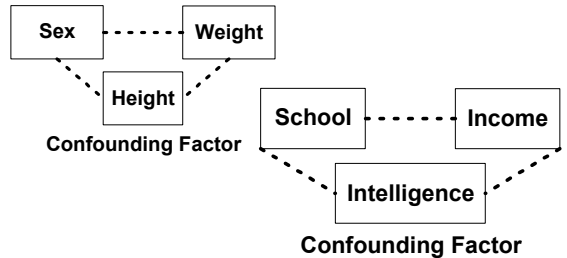


Strength of Statistic in supporting the Point assuming statistic is true

Truth of the statistic

2. Focuses on Statistics from Observational Studies

In observational studies, associations can be *confounded (tangled up)*.



3. Reading Tables Describing Ratios

Per ratios (rates and percentages) standardize counts.

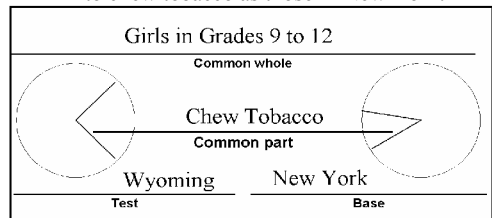
Percentage of infants with low birth weights				
MOTHERS	All	< 15	15-17	18-19
All	7.6	14.2	10.6	9.1
Smoker	12.2	15.2	12.0	10.9
Nonsmoker	6.8	14.1	10.3	8.7

Among moms who smoke and have low birth-weight babies, 10.9% are ages 18-19.

Among moms who smoke and are ages 18-19, 10.9% of their babies are low birth-weight.

4. Comparing Ratios

Girls grades 9-12 in Wyoming are 10 times as likely to chew tobacco as those in New York.



Comparisons of ratios standardize two ways

5a. Interpreting Ratios Choice of Base

Deaths due to birth defects can be

- *decreasing* (per 1,000 births) AND
- *increasing* (per 1,000 infant deaths)

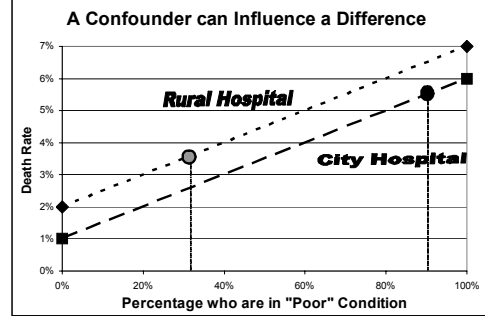
Air accidents can be

- *decreasing* (per million passenger miles) AND
- *increasing* (per million flights)

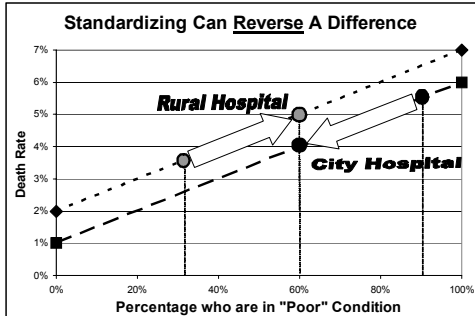
For a rare disease, a medical test can be

- *good at confirming* (> 90% accurate) AND
- *bad at predicting* (< 10% accurate).

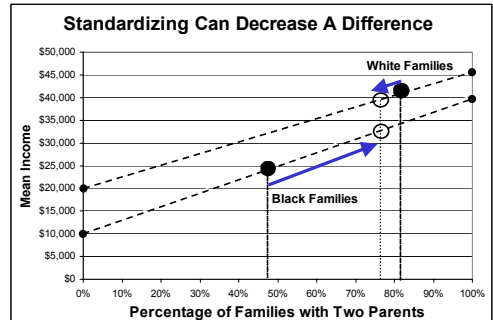
5b. Interpreting Ratios Confounders



5c. Interpreting Ratios Standardizing



6. Interpreting Measures Standardizing



Statistical LITERACY Focuses on Social Arguments

Florence Nightingale

“Seven times as many died after the battle as died in the battle.”

**Nurses save lives;
We need more nurses!**



Statistical LITERACY Adds Perceived Value

Percentage of 48 Statistical Literacy students*
who strongly agree that this course

- helped my critical thinking skills..... **48%**
- is relevant to my major or work..... **42%**
- is relevant to my personal or civic life.. **33%**
- should be *required* for graduation..... **23%**

* Preliminary results: 48 students 2001T4 & 2002T1 all taught by Schield