

07/08/2002

## Three Kinds of Statistical Literacy

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### Which Kind Will We Teach?

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## Statistical Literacy: Three Kinds To Teach

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Chance based



Fallacy based



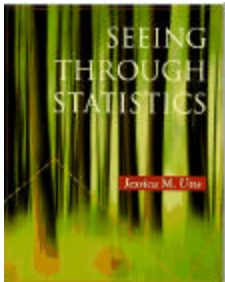
Association based

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## STATISTICAL Literacy CHANCE-Based

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Approximately 60% of US college students take chance-based statistics. Are these students statistically literate? Does "95% confidence" mean "a 95% chance that **this** 95% confidence interval includes the population parameter"?

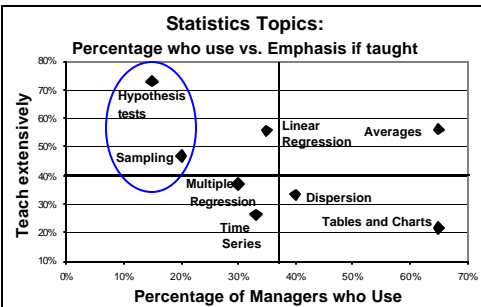


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## STATISTICAL Literacy CHANCE-Based

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**Statistics Topics: Percentage who use vs. Emphasis if taught**



Topic	Percentage of Managers who Use (X-axis)	Teach extensively (Y-axis)
Hypothesis tests	~15%	~70%
Linear Regression	~35%	~55%
Averages	~65%	~55%
Sampling	~15%	~45%
Multiple Regression	~30%	~35%
Dispersion	~40%	~35%
Time Series	~30%	~25%
Tables and Charts	~65%	~20%

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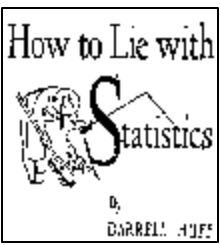
## Statistical Literacy FALLACY-Based

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Huff (1954)

- 81 stories
- **none** on inference

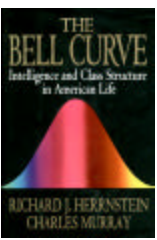
NO stories on confidence intervals or hypothesis tests.

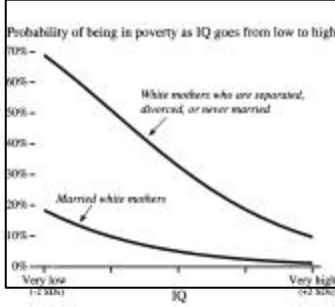


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## Statistical LITERACY Focuses on Associations

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**Statistical LITERACY**  
Focuses on Social Arguments

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Florence Nightingale

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



Nurses save lives;  
We need more nurses!

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**Statistical LITERACY**  
Focuses Heavily on Words

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*Q: Which sex is more able to withstand the loss of their spouse?*

**Suicide statistics “show” that men (widowers) are more able!**

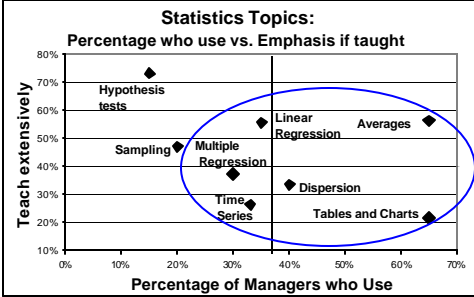
*“Among those committing suicide, widows (women) are more likely than widowers (men).”*

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**Statistical LITERACY**  
Focuses Heavily on What is Used

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**Statistics Topics: Percentage who use vs. Emphasis if taught**




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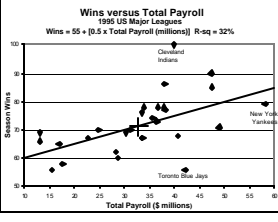
**Statistical LITERACY**  
is Taught in Two Versions

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Graph-based for Humanities



Modeling-based for Business



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**Statistical LITERACY**  
Adds More Perceived Value

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

- helped my critical thinking skills..... 44%
- is relevant to my major or work..... 39%
- is relevant to my personal or civic life.. 33%
- should be *required* for graduation..... 22%

\* Preliminary results (18 students)

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**Statistical LITERACY**  
Needs You!

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- Take the **Statistical LITERACY** survey. Tuesday/Thursday noon. Multiple choice on tables and graphs.
- Explore [www.StatLit.org](http://www.StatLit.org)
- Read relevant books and articles.
- Indicate your interest in helping in the W. M. Keck Statistical Literacy Project. Indicate your interest as editor, reviewer, teacher, etc.