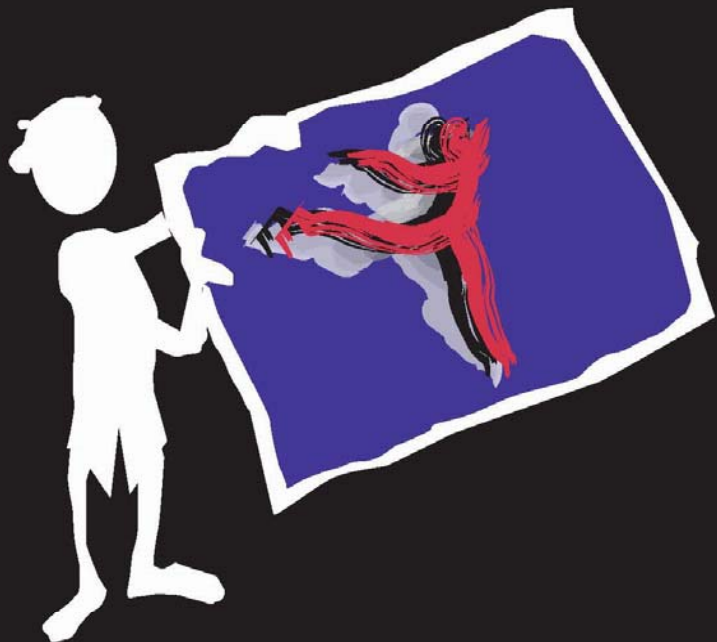Statistical Literacy is to Statistics
as Art Appreciation is to Art.

www.StatLit.org

Milo Schield is a professor of Business Administration at Augsburg College in Minneapolis, MN and director of the W. M. Keck Statistical Literacy Project. He has started two small businesses, worked as a senior consultant for a national consulting firm and worked for 10 years as a senior Operations Research analyst for a large property casualty company.

For the past ten years, Dr. Schield has been developing teaching techniques and materials in the new field of Statistical Literacy. This is a graphical approach to analyzing numeric data. His methods provide tools for the non-statistician to understand and evaluate tables, graphs, and similar materials. Examples and exercises are taken from real life.

Cynthia Shuman Schield has thirty years of experience as a human resources director and compensation manager and consultant. She has worked in both the public and private sectors and understands the numeric and human challenges one encounters in business. Organizations for which she has provided services include University of California, Transamerica Life, W.R. Grace, Omnicare Health Services, R&G Sloane Manufacturing Co. Inc., Arter & Hadden, Beverly Hills National Bank, City of Los Angeles.

They are developing a statistical literacy course for students in majors that don't require a math course for their major. Humanities majors need not be statisticians but they must have a solid appreciation for the value of statistics in understanding the human condition.

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STATISTICAL LITERACY FOR HUMANITIES MAJORS

Humanities Majors

Today's society is awash in numbers. To understand the arguments in the social sciences, students in the humanities must be statistically literate. These students need to evaluate the use of numbers as evidence and make decisions involving risk. They must understand these issues:

- What is a statistical graph or table really saying?

- Do school test scores evaluate school or teacher performance?

- Are the results of observational studies evidence for causal connections?

- Can the social sciences, using observational studies, help one understand the human condition?

Students who are statistically literate can make better decisions about numeric data, spot confounding, understand chance and critique statistically-based arguments.

Spot Confounding

To evaluate data obtained from observational studies, students must be aware of how the issues are connected, tangled up in a snarl or confounded.

Statistically literate readers recognize that "association is not causation." Two things may be related yet changing one does not change the other.

For example, school performance may increase after the teachers complete a new training course. Yet the course itself may be worthless.

In an observational study, group A may have a better result than B, but that difference may be due to a common cause or a confounder.

Statistically literate students don't assume; they learn to evaluate and re-evaluate data, to untangle the relations and to separate association from causation.

Understand Chance

A great deal of data is based on random samples so understanding chance is vital. If one is 95% confident, is there a 95% chance that the fixed population parameter lies in the fixed 95% confidence interval?

If a poll of size 1000 shows candidate A has 52% of the vote and B has 48%, can we say the result is a "statistical tie" if the 95% margin of error is 3.2 points? Is there is a 98% chance that A is leading B?

If an association is statistically significant, can taking into account the influence of a confounder make that relationship statistically insignificant?

If the data is statistically significant but the alternate is extremely unlikely (ESP), should one reject the assumption that no relationship exists?

Students must be statistically literate to deal with these issues.