



FIELDS INSTITUTE Research in Mathematical Science

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D I S T I N G U I S H E D

LECTURE SERIES IN STATISTICAL SCIENCE

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November 14-15 at the Fields Institute



Thursday, November 14, 2013 at 11:00 a.m.

Trivial Mathematics but Deep Statistics: Simpson's Paradox and Its Impact On Your Life

Few paradoxes have impacted everyday life more than Simpson's Paradox has. Yet paradoxically, Simpson's paradox is not even a paradox in the mathematical sense. Simple arithmetic can easily show that it is possible for a surgeon to have the highest overall success rate, and yet have the lowest success rates for each type of surgeries he performed. The fact that you may feel this phenomenon counterintuitive is precisely the reason that the Simpson's paradox has led to many erroneous conclusions and decisions that affect people's life, particularly those from social and medical studies, where comparisons using aggregated data are routinely performed. This talk demonstrates the danger of Simpson's paradox via a number of real-life examples, from the famous Berkeley sex bias case to measuring disparity in mental health service based on the recently released National Latino and Asian American Study (NLAAS), and from batting averages and to a recent debate on unemployment rates (Wall Street Journal, December 2, 2009). No statistical background is required to understand this talk, but only some common sense and a desire to think deeply beyond formulas.

(This is also G-rated talk because it is a "gadged" seminar. Never heard of it? Well, this is your chance ...)

Friday, November 15, 2013 at 11:00 a.m.

Who is Crazier: Bayes or Fisher?

Objective statistical inference has been an object of desire as early as inference itself. Some consider it an illusion; others counter that while mirages may make distant goals appear near, they ultimately reflect reality. Most approaches share a common oddity: in order to obtain "objective" inference, one seems have to do something a bit crazy, at least to those who take probability theory seriously. Objective Bayesians advocate the use of improper prior distributions that have no probabilistic reality, and Fisher's fiducial inference apparently violates the most basic probabilistic laws. But while one illegality (objective Bayes) gains ever greater popularity, fiducial inference still languishes under an old nickname "Fisher's biggest blunder". Does this mean Fisher was crazier than Bayes, or is madness a mask for innovation? If you cannot infer objectively the answer to this non-objective question, this talk will provide a subjective answer from a missing-data perspective.

(This is joint work with Keli Liu.)

The Distinguished Lecture Series in Statistical Science was established in 2000 and takes place annually. It consists of two lectures by a prominent statistical scientist. The first lecture is intended for a broad mathematical sciences audience.

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