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In This Issue

BACKCALCULATION OF HIV RATES

Backcalculation is a method of estimating past rates of HIV infection based on numbers of AIDS cases together with information about the incubation distribution. (It is a "deconvolution" technique because the numbers of AIDS cases are determined by the convolution of the incubation distribution with the infection rate distribution.) Bacchetti, Segal and Jewell review the method with an emphasis on accounting for uncertainty in both the numbers of diagnosed AIDS cases (due to underreporting) and the incubation distribution. They provide estimates of infection rates using a penalized likelihood method with several sets of incubation data, allowing for seasonal variation in diagnosis rates and nonstationarity in the incubation and reporting-delay distributions. The authors conclude that backcalculation will continue to be useful for AIDS projections and prevalence estimation if reported estimates acknowledge important uncertainties.

The discussants raise several concerns including the difficulty in separating information about infection rates and the incubation distribution (Brookmeyer), the interpretability of nonstationarity effects (Carlin and Gelman; Karon and Satten) and the wisdom of combined modeling of various risk groups (Karon and Satten). In addition, Gail and Rosenberg supplement the article with further review of the applications of the backcalculation method; DeGruttola and Pagano, and also Solomon and Wilson, mention the possibility of modeling serial correlation; Karon and Satten indicate the use of a staged infection time distribution; and Solomon and Wilson contrast results using AIDS data from Australia. Brookmeyer, and also Karon and Satten, note that the new CDC definition of AIDS presents new challenges to statistical methodology.

LOCALLY WEIGHTED REGRESSION

Trevor Hastie and Clive Loader argue that locally weighted regression has much to recommend it as a smoothing technique, and it avoids difficulties encountered by kernel smoothing discussed in a 1991 *Statistical Science* article by Chu and Marron. In their discussions, J. Fan and J. S. Marron, and also Hans-Georg Müller, agree that the method has important strengths; Müller mentions the possibility of incorporating locally weighted regression within the kernel smoothing framework and continues to find alternative methods of interest. The discussants raise additional issues of practical concern (computation and bandwidth selection) and also indicate related problems in nonparametric function estimation.

FACULTY SALARY ADJUDICATION

Are statistical arguments convincing to nonstatisticians? Mary Gray discusses this question in the context of legal disputes over faculty salary inequities. She reviews both legal and statistical issues that arise when regression analyses are used in the courts, taking the point of view that the statistical arguments often ought to be convincing but fail to convince.

Delores Conway, Joseph Gastwirth and Harry Roberts all offer remarks based on their own experience and cite various difficulties in determining whether discrimination has produced unfair salary differentials. The general problem of concluding causation from observational studies is brought up by Roberts, and Conway mentions the lack of well-developed economic models for employment processes. (A related article by A. P. Dempster was published in the May 1988 issue of *Statistical Science*.) Gastwirth reviews additional relevant legal arguments and court decisions, and both Gastwirth and Roberts note the importance of initial job placements in subsequent salary determination.

LEWIS CARROLL'S "PILLOW PROBLEMS"

In addition to being the author of *Alice in Wonderland*, Lewis Carroll (Charles Dodgson) was a mathematician. In 1893, he wrote a book of "Pillow Problems" of which 13 were on probability. Eugene Seneta commemorates this book by discussing its probability content. His article aims to show that 100 years ago elementary concepts of probability were not well formulated and remained difficult to grasp, even for an Oxford mathematician.

DAVID FINNEY

In his conversation with Ian MacNeil, David Finney describes his statistical development which began at Cambridge University under Wishart and continued at Galton Laboratory with Fisher and Rothamstead Station with Yates. He reviews his subsequent career and travels and discusses the evolution of his interests in bioassay, computing and drug safety.

Robert E. Kass