DAVID WOLFSON, Department of Mathematics and Statistics, McGill University, 805 Sherbrooke Street West, Montreal, QC, H3A 2K6
The Statistical Analysis of Survival Data from Prevalent Cohort Studies with Follow-up

Estimation of the incidence rate of a disease generally entails the follow-up of a disease-free cohort until a sufficient number of incident cases of the disease have been observed. Sometimes it is possible, however, to avoid the time and cost of carrying out an incidence study by following prevalent cases with the disease forward for a relatively short time period. That is, we may identify prevalent cases through a cross-sectional survey and follow them forward as part of what is known as a prevalent cohort study with follow-up. In this presentation we show how one may find the maximum likelihood estimator of the age-specific constant incidence rate from a prevalent cohort study with follow-up. Our key expression is related to the well-known epidemiological relationship between incidence, prevalence and disease duration. We apply our results to estimate the incidence rate of dementia in Canada.

Joint work with Victor Addona (Macalester College, St. Paul, MN) and Masoud Asgharian (McGill University).