Lecture by Professor Raymond J. Carroll

Thursday, May 31, 2012, 14:00

«Auditoire Socrate 11», Place du Cardinal Mercier, 10

What Percentage of Children in the U.S. are Eating a Healthy Diet? A Statistical Approach

In the United States the preferred method of obtaining dietary intake data is the 24-hour dietary recall, yet the measure of most interest is usual or long-term average daily intake, which is impossible to measure. Thus, usual dietary intake is assessed with considerable measurement error. Also, diet represents numerous foods, nutrients and other components, each of which have distinctive attributes. Sometimes, it is useful to examine intake of these components separately, but increasingly nutritionists are interested in exploring them collectively to capture overall dietary patterns and their effect on various diseases. Consumption of these components varies widely: some are consumed daily by almost everyone on every day, while others are episodically consumed so that 24-hour recall data are zero-inflated. In addition, they are often correlated with each other. Finally, it is often preferable to analyze the amount of a dietary component relative to the amount of energy (calories) in a diet because dietary recommendations often vary with energy level.

We propose the first model appropriate for this type of data, and give the first workable solution to fit such a model. After describing the model, we use survey-weighted MCMC computations to fit the model, with uncertainty estimation coming from balanced repeated replication. The methodology is illustrated through an application to estimating the population distribution of the Healthy Eating Index-2005 (HEI-2005), a multi-component dietary quality index involving ratios of interrelated dietary components to energy, among children aged 2-8 in the United States. We pose a number of interesting questions about the HEI-2005, and relate it also to the risk of developing colorectal cancer.

Lecture by Professor Paul Embrechts

Thursday, May 31, 2012, 15:00

«Auditoire Socrate 11», Place du Cardinal Mercier, 10

Risk, Regulation and Statistics

Since the early nineties, regulators of financial institutions worldwide (the Basel Committee) have hard-wired the calculation of extreme risk measures into the national laws on banking and insurance regulation. A prominent example is the so-called Value-at-Risk (VaR), a quantile based risk measure to be calculated far in the loss tail of the Profit-&-Loss (P&L) distribution. Standard quantile levels are 95%, 99%, 99.9% even 99.97%, hence EXTREME quantiles. In this talk I will review some of the methods from extreme value theory used for the estimation of such risk measures and this for typical financial time series. Besides giving an overview of some of the underlying methodological and practical issues, I will also show how questions of the above type may lead to interesting research in statistics. The latter will be based, for instance, on the recent: Chavez-Demoulin, V., Embrechts, P. and Sardy, S. (2011). Extreme-quantile tracking for financial time series, Journal of Econometrics, to appear.