One-day Workshop on Spatio-temporal Models in Epidemiology and Health
Lisbon, June 20^{th} 2014

Invited Talk

Bayesian projections: routine analysis without Markov chain Monte Carlo

Andrea Riebler
Norwegian University of Science and Technology, Norway, andrea.riebler@math.ntnu.no

Joint work with Leonhard Held from the University of Zurich

Summary: The projection of age-stratified cancer incidence and mortality rates (and cases) is of great interest due to demographic changes, but also therapeutical and diagnostic developments. Although (Bayesian) age period cohort (APC) models are generally accepted for this purpose, they are not used in routine practice of epidemiologists. Reasons might be on one side misunderstandings caused by the so called identifiability problem but on the other side the lack of good stand-alone software. Here, we present a novel R-package, called BAPC, which which uses integrated nested Laplace approximations (INLA) to forecast future cancer rates and expected cases. The applied scientist can intuitively specify prior distributions using the new framework of penalised complexity priors, and directly obtains graphics and output of interest. BAPC provides age-standardised quantities to facilitate the comparison of trends between countries or gender, and also age-specific quantities, so that patterns masked in the age-adjusted projection, can be inspected.