Introduction and Advanced on Bayesian Disease Mapping using WinBUGS (and R)

09th -10th July 2012 (IBDM) & 12th -13th July 2012 (ABDM)
11th July - half day open revision tutorial
Faculty of Computer Science, "Alexandru Ioan Cuza" University of Iasi
Romania

Description

These courses are designed to provide a comprehensive introduction to the area of Bayesian disease mapping in applications to Public Health and Epidemiology. The IBDM course will run on July 09th – 10th 2012 and the ABDM course will run on July 12th – 13th 2012, with a half day open revision tutorial on July 11th 2012.

The IBDM two-day course consists of sessions dealing with:

DAY 1

- Basic concepts of Bayesian methods and disease mapping
- Bayesian computation and MCMC
- Basic R and WinBUGS use
- Demonstration of risk estimation and cluster detection using WinBUGS

DAY 2

- Hands-on with simple WinBUGS models: Poisson-gamma; convolution models for risk estimation
- Ecological analysis, cluster models and space-time analysis
- Infectious disease models and veterinary data

This is designed for those who want to cover more advanced mapping methods, and includes ecological analysis and the use of WinBUGS software.

The course will include theoretical input, but also practical elements and participants will be involved hands-on in the use of R and WinBUGS in disease mapping applications. Both human and veterinary examples will be covered in the course as well as simple infectious disease space-time modelling. Examples will range over congenital anomaly birth data, influenza in South Carolina, foot-and-mouth disease in the UK and oral cancer in Georgia.

The ABDM course consists of:

DAY 1 Spatial topics

- Spatial models and simple variants: convolution, proper CAR, full MVN
- Special application: Case event modelling
- Special applications: sparse count data: zip and factorial regression
- Special applications: latent structure (L&C and mixtures)
- Spatial survival modelling

DAY 2 Measurement Error, Multivariate and Spatio-temporal modelling topics

- Measurement error, SEMS and Joint modelling. CPO and pseudo Bayes factor
- Multiple disease analysis
- Basic ST models: Bernardinelli, Knorr-Held, Waller; seasonal effects
- ST Kalman-filtering
- Clustering in ST data; surveillance and infectious disease models
- INLA

This is designed for those who want to cover advanced BDM methods, and includes advanced use of WinBUGS. The course will include theoretical input, but also practical elements and participants will be involved hands-on in the use of R and WinBUGS in disease mapping applications. Both spatial and spatio-temporal analyses will be considered. Examples will range over childhood asthma data from Georgia, influenza in South Carolina, foot-and-mouth disease in the UK and Ohio respiratory cancer.

Intended Audience

The courses are intended for epidemiologists and public health workers who need to analyse geographical disease incidence. In addition, the courses may be of interest to statisticians or geographers and planners who deal with spatial disease data. Some statistical/epidemiological background would be beneficial but is not essential.

Why Attend

Participants will gain an in-depth understanding of the basic issues, methods and techniques used in the analysis of spatial health data using a Bayesian approach. They will gain insight into the detailed analysis of practical problems in risk estimation and cluster detection. The course is presented by a leading researcher in the field of disease mapping and spatial epidemiology.

Invited Professor

Andrew B. Lawson, Ph.D.

Medical University of South Carolina (MUSC), Charleston SC, U.S.A.

Biographic Details

Professor Andrew B. Lawson (Division of Biostatistics & Epidemiology, College of Medicine, Medical University of South Carolina) is a World Health Organization (WHO) advisor on Disease Mapping and organized with the WHO an International workshop on this topic which has led to an edited volume "Disease Mapping and Risk Assessment for Public Health". He has published a number of books focused on disease mapping and spatial epidemiology. In particular, the volume entitled **Bayesian Disease Mapping** is available at a discounted price and covers the material of the courses in depth.

Registration (the fees will be used to cover the course costs):

ISCB member/UMF member/UAIC member: 210 Euro

Non-ISCB member: 250 Euro

Online version available: 190 Euro

Deadline for registration: 15th June 2012

Interested participants can confirm the course attendance at the address: avitcu@yahoo.com or avitcu@info.uaic.ro

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