# HARMONY

Novel tools for test evaluation and disease prevalence estimation

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EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

COST ACTION CA18208

## Introduction to Bayesian Disease Measurement (BDM) for Health scientists

**Location: Faculty of Medicine, Biopolis, Larissa, Greece**

**Dates: 22-24 April 2024**



The event is a training school, part of the HARMONY COST Action 18208 training activities, with introductory didactic teaching and hands-on practical sessions on Bayesian methods for true prevalence estimation & diagnostic test evaluation.

The following core topics will be covered:

1. Running basic models in JAGS
2. Apparent & true prevalence estimation
3. How to choose a prior distribution?
4. Diagnostic test evaluation with Hui-Walter models

Pre-course preparation work will also be provided as a prerequisite for attending the course. Prior experience of Bayesian statistics or latent class methods is not expected, but basic statistical knowledge and R programming skills are expected. Participants will have to bring their own-laptops.

The primary learning objective of the school is that participants understand how to implement these methods on their own data, both in terms of the practice of Markov chain Monte Carlo (MCMC) and how to interpret the results.

**Trainees**
The training school is organized under funding from COST Association and financial support is provided according to COST rules*.

**Participants will receive an official invitation from e-COST.**

Where to Register: https://forms.gle/wDfY927Rmv37KDtR8

**Deadline to Register: Friday 12 April 2024**

For further details of the program and information about financial support please contact Eleftherios Meletis (emeletis@outlook.com).

*Financial support
The reimbursement of incurred accommodation, meals, and local travel expenses in the meeting country is paid as one item known as daily allowance **[Greece 193 EUR/day]**. During the training school all participants have to sign the attendance list both days. More information on transport expenses (car travel, airplane/train/bus/ferry travel) can be found in Appendix 1 – Section 3.1. COST Annotated rules document.

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| Date | Start | End | Session Type | Title |
|---|---|---|---|---|
| | | | | **Room 4** |
| **Mon, 22 April** | 9:00 | 09:30 | Didactic Teaching | A simple introduction to Bayesian analysis and Bayesian Markov Chain Monte Carlo (MCMC) – summary of pre-course work |
| | 09:30 | 10:15 | Practical session and Discussion | |
| | 10:15 | 10:45 | | Coffee break |
| | 10:45 | 11:15 | Didactic Teaching | Running basic models in JAGS – R |
| | 11:15 | 12:00 | Practical session and Discussion | |
| | 12:00 | 12:30 | | Coffee break |
| | 12:30 | 13:00 | Didactic Teaching | Bayesian estimation for proportions – apparent & true prevalence estimation |
| | 13:00 | 14:00 | Practical session and Discussion | |
| | 14:00 | 15:00 | | Lunch break |
| **Tues, 23 April** | 9:00 | 09:30 | Didactic Teaching | How the priors affect the posteriors? Examples with apparent & true prevalence estimation |
| | 09:30 | 10:15 | Practical session and Discussion | |
| | 10:15 | 10:45 | | Coffee break |
| | 10:45 | 11:15 | Didactic Teaching | Sensitivity and Specificity estimation without a gold standard (Part one) |
| | 11:15 | 12:00 | Practical session and Discussion | |
| | 12:00 | 12:30 | | Coffee Break |
| | 12:30 | 13:00 | Didactic Teaching | Sensitivity and Specificity estimation without a gold standard (Part two) |
| | 13:00 | 14:00 | Practical session and Discussion | |
| | 14:00 | 15:00 | | Lunch break |
| **Wed, 23 April** | 09:00 | 09:30 | Didactic Teaching | Real examples of when to use Bayesian analysis – STARD-BLCM guidelines |
| | 09:30 | 10:30 | Practical session and Discussion | |
| | 10:30 | 11:00 | | Coffee Break |
| | 11:00 | 11:30 | Didactic Teaching | Diagnostic test evaluation without cut-offs: Case study of test measured on a continuous scale |
| | 11:30 | 12:30 | Practical session and Discussion | |
| | 12:30 | 13:00 | | Event Closure - Lunch box |