# COST HARMONY Workshop Proposal for Summer 2021 - CPH

## Organizers / workshop leaders

Matt Denwood & Søren Nielsen (University of Copenhagen); Nils Toft (IQinAbox)

## Topic / Theme

Application of Bayesian latent class models to multi-test, multi-population datasets with a focus on medical and veterinary applications

## Date / Time / Format

June 28th – July 1st, 2021 from 9.00-12.30 OR 13.00-16.30 per day (3 hours + breaks x 4)

Online: 8 x 90-minute sessions with didactic teaching of new concepts (25 mins), hands-on practical sessions with online assistance from demonstrators (45 mins), and open-format discussion of lessons to take away from the session (20 mins). Pre-course preparation work will also be provided.

## Target audience / participants

Researchers from across the COST action working on any application, but particularly medical and veterinary applications, using imperfect diagnostic tests. Prior experience of Bayesian statistics or latent class methods is not expected, but basic statistical knowledge and R programming skills are expected (these will be reinforced using the preparation work).

## Session topics

1. A practical introduction to fitting simple Bayesian models using MCMC – June 28th

2. Basic Hui-Walter models (the influence of data quantity and priors) – June 28th

3. Multi-population Hui-Walter models (how and why to select different populations) – June 29th

4. Multi-test, multi-population models (correlation) – June 29th

5. How to interpret the latent class (a practical exploration of test correlations) – June 30th

6. Coping with missing data – June 30th

7. Calculating and interpreting a ROC curve – July 1st

8. Incorporating imperfect Se/Sp into more complex models – July 1st

The primary learning objective is that participants understand how to implement these methods on their own data, both in terms of the practice of MCMC and how to interpret the results. Use of participants’ own data during each of the 45-minute practical sessions is strongly encouraged, but substitute datasets will also be provided to fit the specific examples.

## Administration and financial issues

We will use the Zoom service of UCPH. Didactic and discussion sessions will be recorded and made available online along with the teaching material. Participation will be free of charge with a maximum of 20-25 participants, with priority given to applicants based on …..?

An honorarium (amount TBD) will be paid to Nils Toft from COST.