Material and instruction for preparation of workshop “Prevalence estimation on depression data with BLCMs”

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In this hands-on-workshop, we will estimate a Bayesian Latent Class Model to data from the European Health Interview Survey, where a single test with imperfect sensitivity and specificity has been collected.

Software

We will use stan to implement the Bayesian models. Stan is free software and has an efficient interface with R (“rstan”). RStudio also supports the stan language, so that .stan files can be directly edited in RStudio. For more information see: https://mc-stan.org/rstan/

To save time during the practical sessions, please try to install rstan in advance of the course. There have been some problems with R version 4.2 on Windows machines. If you experience issues using R 4.2 together with rstan, please try to downgrade to R 4.1. For more information see: https://blog.mc-stan.org/2022/04/26/stan-r-4-2-on-windows/

In case you cannot get rstan running on your computer, you can also resort to other environments to implement BLCMs, such as JAGS or BUGS. Please note that in the workshop, we might not be able to address issues in these environments.

Data

You can find the data and models we will be using at: https://osf.io/w7fj2/ (in particular blcm_model_fischer_et_al_one_country.stan and blcm_model_fischer_et_al_one_country.R).

Reading material

The workshop will mainly focus on the content of the following publication:

Fischer, Felix, et al. "Prevalence estimates of major depressive disorder in 27 European countries from the European Health Interview Survey: accounting for imperfect diagnostic accuracy of the PHQ-8." *BMJ Ment Health* 26.1 (2023).

The following reference will be useful to understand the *status quo* of the prevalence estimation in depression:

Arias-de la Torre, Jorge, et al. "Prevalence and variability of current depressive disorder in 27 European countries: a population-based study." *The Lancet Public Health* 6.10 (2021): e729-e738.