# Minutes of the Population-Level Estimation Workgroup

June 29, 2016

Present: Ajou University students, SooYeon Cho, Nicole Pratt, Martijn Schuemie

Martijn presented the caseControl package in the OHDSI Methods Library. The package supports matching on calendar time, age, gender, provider, and visit date, as well as nesting in a cohort of interest and including covariates in the logistic regression. Evaluation of residual bias shows that the case-control design performs poorly even when including all adjustments. Despite its shortcomings, the case-control design is used very frequently, with over 3,000 papers published each year. Martijn is working with David Madigan and Marc Suchard on a paper to call for people to no longer use this design.

Nicole mentions that for exposures that are not binary, such as when considering cumulative dosing, it is easier to program this as a case-control study. This might be one reason why people still use this design so often.

It was suggested that it would be very powerful if we could show that a recent high-profile case-control study is wrong because of its design. Martijn’s example of benzodiazepine and AD might be a good example. Nicole warns that AD is a tricky outcome because its onset is not clearly defined, so maybe another topic would be better.

Martijn continues to discuss database network studies, and the standards that have been developed in OHDSI. One challenge is how to combine evidence across databases in the face of database heterogeneity. Martijn proposes we first and foremost deal with study bias (systematic error) by either showing the results are unbiased (using negative controls), or by calibrating the confidence intervals. Once bias has been dealt with, we can perform a meta-analysis assuming random effects as well as random intercepts (random background rates). This is a topic of ongoing research in OHDSI.