

Seminar

on **Thursday January 7th 2016, 16:00** (seminar room 606, 1st floor)

Assistant Prof. Dr. Dimitris Mavridis

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Statistical models to explore and account for publication bias and small study effects in network meta-analysis. An example from a network of antipsychotics

There is a rich literature in statistical models used to account for publication bias (PB) and small-study effects (SSE) in simple meta-analysis. In network meta-analysis (NMA), there are more than two studies involved and the different comparisons may not suffer to the same extent by PB or SSE. For instance, it has been documented that SSE and PB distort evidence from placebo-control antidepressant trials but have less influence on studies comparing active antidepressants. This raises concerns about the validity of the results from NMA as biased evidence may contaminate the entire network. We aim to extend statistical models used in simple meta-analysis to NMA by allowing them to take the various comparisons into account. We illustrate these models by assessing the potential impact of SSE and PB on the recently estimated relative effectiveness and ranking of pharmacological treatments for schizophrenia. We found that small placebo-controlled trials exaggerated slightly the efficacy of antipsychotics and that PB operates on placebo-controlled trials. We used selection models and regression-based models to account for PB and SSE and we found that although effectiveness is slightly exaggerated, ranking of antipsychotics remained robust. This is happening because there are many head-to-head trials in this network that provide unbiased evidence which indirectly ‘washes-out’ some of the bias in the placebo-controlled trials.



Dimitris Mavridis, Ph.D. studied statistics at the Athens University of Economics and Business. He worked as a forensic statistician in the School of Mathematics in the University of Edinburgh from 2006 to 2009. He has been working as a post-doctoral research associate in biostatistics in the School of Medicine in the University of Ioannina since 2010. Since 2012, he is an assistant professor of statistics in the department of Primary Education in the University of Ioannina. He is mainly working on developing statistical models and techniques for network meta-analysis. More specifically, he has been working on developing statistical models to account for publication bias and missing outcome data in network meta-analysis.