

Population neuroscience: How to responsibly handle big data in the age of biobanks

Half Day Afternoon Course / 13:00-16:30

Organizers:

Ryan Muetzel

Erasmus MC, Netherlands

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Erasmus University Medical Centre, Netherlands

The UK-Biobank has recently released 10,000 neuroimaging datasets that are accompanied with deep phenotyping. Many researchers have already accessed these data, and have begun demonstrating that many significant associations can be derived from the dataset. The full potential of these data can be better realized with additional consideration of effect size, generalizability, bias, and confounding. For example, one clear example of confounding is the association between coffee consumption and heart disease; the relatively prominent association between coffee consumption and heart disease is driven towards the null when smoking status is considered. Another phenomenon, termed recall bias, can drive up (or down) the level of association when a given group (e.g., a subset of patients with a particular outcome) tend to report events from the past better than others (e.g., patients without a particular outcome) simply because of how they have experienced the event.

Course Schedule:

13:00-13:20

Population Neuroimaging: A brief introduction to combining neuroimaging with epidemiology

Tonya White, MD, PhD, Erasmus University Medical Centre, Netherlands

13:20-13:45

Introduction to epidemiology: Basic Epidemiology: What you need to know

Ryan Muetzel, Erasmus MC, Netherlands

13:45-14:30

Applied epidemiological concepts and analysis considerations

Annemarie Luik, Erasmus University Medical Centre, Netherlands

14:30-14:45

Break

14:45-15:30

Phenotypes, Genotypes & Voxels: A playground next to a nuclear power plant

Anqi Qiu, HBM, Singapore

15:30-16:15

Neuroinformatics and Replication: beyond BASH scripts and winner's curses

Xi-Nian Zuo, Chinese Academy of Sciences, China

16:15-16:30

Questions and Answers