

Designing More Efficient and Reliable Studies

WORKSHOP

Friday
29th Nov.
2019

09:00 - 17:00

Campus Biotech
Room H8.01 D
Chemin des Mines 9
1202 Geneva

- 09:00 – 09:15** Welcome and Introduction
- 09:15 – 11:00** Overview of hypothesis testing from a Neyman-Pearson Perspective. Which question does a hypothesis test answer? Explanation of Type 1 and Type 2 error rates.
Practical Assignment: Justifying error rates.
- 11:00 – 11:15** *Coffee break*
- 11:15 – 13:00** Why the scientific literature is biased, how we know this, and what an unbiased literature should look like.
Practical Assignment: Evaluating the evidence in mixed results. The Question: What would falsify your hypothesis? How can we specify falsifiable predictions? How do you determine your smallest effect size of interest based on just the sample size you can collect?
Practical assignment: Determining the Smallest effect size of interest.
- 13:00 – 14:00** *Lunch break*
- 14:00 – 15:30** Approaches to sample size justifications. Planning for Power. Simulation-based Power Analyses. Sequential analyses: How can you design studies by repeatedly collecting data without inflating error rates? Justifying error rates.
Practical Assignment: Simulation Based power analysis for ANOVA designs.
- 15:30 – 15:45** *Coffee break*
- 15:45 – 17:00** What are strong or weak hypothesis tests? How can you examine null effects? Equivalence tests, Bayesian Rope, Bayes factors.
Practical assignment: Equivalence testing: How do you perform an equivalence test? How do you calculate the power for a test aimed at showing the absence of a meaningful effect?

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