

Strengthening Causal Inference in Behavioral Obesity Research

| Mon 7/25/2016 | | |
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| 8:00 – 8:15 | Registration | |
| 8:15 – 8:45 | Welcoming & Introductory remarks – Allison & Fontaine | |
| 8:45 – 9:00 | Attendee introductions | |
| Module 1: Introduction to Basic Language, Terms, and Concepts in Statistics and Design. | | |
| 9:00 – 9:45 | Intro to Statistical Inference (mainly frequentist, with a little Bayesian; covariate and propensity score adjustment, etc.) | - David Redden |
| 9:45-10:00 | BREAK | |
| 10:00 – 10:45 | Intro to Energy Balance and Laws of Thermodynamics | - Diana Thomas |
| 10:45 – 11:30 | Study Designs & Quantifying Effect and Association Size | - Christopher Haddock |
| LUNCH | | |
| Module 2: Conventional Observational Studies: Advantages, Limits, and Best Practices | | |
| 12:30 - 1:15 | Best Practices – <i>Ethical Use</i> , Hill's Guidelines, Negative Controls, Meta-Analysis, Public Data Availability, etc. | - Douglas Weed |
| 1:15 – 1:45 | Advantages | - Emily Levitan |
| 1:45 – 2:15 | Limits I – Theory: Bias and Confounding | - Dominick Alexander |
| 2:15 – 2:30 | BREAK | |
| 2:30 – 3:30 | <i>Interactive Activity</i> - Causal inference on BMI change and mortality in humans. | - Tapan Mehta & Hailey Banack |
| 3:30 – 4:00 | Limits II – Empirical: Evidence & Cases Studies of Confirmation and Non-Confirmation of Observational Study-Generated Hypotheses | - Andrew Brown |
| 4:00 – 5:00 | Moderated Discussion and Wrap-up | |
| 6:30 Dinner – Short Course meet & greet (voluntary) | | |
| Tue 7/26/2016 | | |
| Module 3: Randomized Controlled Experiments – I | | |
| 9:00 – 9:10 | Theory: Potential Outcomes | - David B Allison |
| 9:10 – 10:00 | Methods for Randomization (including cluster randomization, stratified, choice of allocation ratios, adaptive, etc.) | - Scarlett Bellamy |
| 10:00 – 10:45 | Power & Sample Size Calculation | - Charity Morgan |
| 10:45 -11:15 | Choice of Control Condition based on Hypothesis and Anticipated Claims | - Kevin Fontaine |
| 11:15 -11:30 | BREAK | |
| 11:30 – 12:00 | Controlling for Expectancy and Non-Specific Effects | - Adam Leventhal |
| LUNCH | | |
| Module 4: Randomized Controlled Experiments – II | | |
| 1:00 -1:45 | <i>Interactive Activity Mini-Debates:</i> "ITT vs On Study" and "Replication crisis vs Not" | - Gary Cutter - George Howard |
| 1:45 - 2:30 | Practical Challenges: Measurement Error, Missing Data, Assumption Violations, etc. | - Diane Catellier |
| 2:30 - 2:45 | BREAK | |
| 2:45 - 3:45 | <i>Ethical Issues in RCEs</i> | - Theodore K. Kyle RPh MBA |
| 3:45 - 4:15 | Procedural Elements: Trial Registration, Reporting Guidelines | - Andrew Brown |
| 4:15 – 4:45 | Large Simple Trials & Cluster Randomized Trials | - J Michael Oakes |
| 4:45 - 5:30 | Moderated Discussion and Wrap-up | |
| 6:30 Dinner – Short Course meet & greet (voluntary) | | |
| Wed 7/27/2016 | | |
| Module 5: Quasi Experiments | | |
| 9:00 - 9:15 | Quasi-experiments – Their Importance in Evaluating Changes That Occur | - Matthew Maciejewski |
| 9:15 – 10:35 | Design & Analysis | - Matthew Maciejewski |
| 10:35-10:50 | BREAK | |
| 10:50 – 11:15 | <i>Ethical Issues</i> | - Greg Pavela |
| 11:15 -12:00 | Real World Case Studies | - Nir Menachemi |
| LUNCH | | |

| Wed 7/27/2016 | | |
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| Module 6: Natural Experiments | | |
| 1:00 -1:45 | Theory & Concepts | - Ed Gregg PhD |
| 1:45 - 2:15 | <i>Interactive Activity – Pavela, Fontaine, Goldsby</i> | David Allison moderator |
| 2:15 – 3:00 | Packet Randomized Experiments: Adoption Example | - Greg Pavela |
| 3:00 - 3:45 | Analysis | - Bisakha Sen |
| 3:45 – 4:00 | BREAK | |
| 4:00 - 4:45 | Practical and <i>Ethical Issues</i> in Accessing Natural Randomization | - Ed Gregg PhD |
| 4:45 - 5:30 | Moderated Discussion and Wrap-up | |
| 6:30 Dinner – Short Course meet & greet (voluntary) | | |
| Thu 7/28/2016 | | |
| Module 7: Genetically Informed Designs – Unmeasured Genotype Approaches | | |
| 9:00 – 9:45 | Co-Twin and Sibling Control Designs | - Matt McGue |
| 9:45 – 10:45 | Structural Equation Modeling of Twin and Family Data to Assess Causal Effects. | - Michael Neale |
| 10:45 -11:00 | BREAK | |
| 11:00 – 11:45 | Study of Behavioral Phenotypes of Obesity in Children: <i>Ethical Considerations</i> | - Tanja Kral |
| LUNCH | | |
| Module 8: Genetically Informed Designs – Measured Genotype Approaches | | |
| 1:00-1:30 | Linkage and TDT Methods: Special Cases of Packet Randomization and Utility in Testing Fetal Sire Effects | - David Allison |
| 1:30 – 2:30 | <i>Interactive Activity – prepare for Friday roundtable</i> | David Allison & Kevin Fontaine |
| 2:30-3:15 | Methodological issues in Testing for Gene by Environment or Gene by Behavior Interaction | - Ruth Loos PhD |
| 3:15-3:30 | BREAK | |
| 3:30-4:15 | <i>Social, behavioral, and ethical issues</i> | - Diane Tucker |
| 4:15-4:45 | Real World Case Studies - Causal Inference and Counterfactuals in Obesity Research: Obesity and the Gut Microbiome. | - Andrew Heath |
| 4:45-5:30 | Moderated Discussion and Wrap-up | |
| 6:30 Dinner – Short Course meet & greet (voluntary) | | |
| Fri 7/29/2016 | | |
| Module 9: Mediating and Moderating Variables | | |
| 9:00 – 09:45 | Conceptual Models (the mediator moderator distinction, environmental, behavioral, psychological, physiological, and molecular mediators and moderators) | - Francesca Filbey |
| 9:45 – 10:30 | Testing in General Linear Models | - Amanda Fairchild |
| 10:30-10:45 | BREAK | |
| 10:45 – 11:30 | Testing in Structural Equation Models | - Michael Neale |
| 11:30 – 12:00 | Real Life Examples & <i>Ethical Issues</i> | - Amanda Fairchild |
| LUNCH | | |
| Module 10: Group Roundtable Preparation, Presentation & Discussion | | |
| 1:00-3:00 | Group Roundtable Preparation | |
| 3:00-5:00 | 5 Roundtable Groups Presentations (10 minutes each) Followed by Discussion | |
| 5:00-5:10 | Closing Remarks | - David Allison & Kevin Fontaine |

Course Website: http://www.soph.uab.edu/energetics/causal_inference_shortcourse/second
http://www.soph.uab.edu/energetics/causal_inference_shortcourse/second/application

We would like to thank our sponsors for their support:



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