

**Strengthening Causal Inference in Behavioral Obesity Research**

<b>Mon 7/24/2017</b>		
8:00 – 8:15	Registration	
8:15 – 8:45	Welcoming & Introductory remarks – Allison & Fontaine	
8:45 – 9:00	Attendee introductions	
<b>Module 1: Introduction to Basic Language, Terms, and Concepts in Statistics and Design.</b>		
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		
<b>Module 2: Conventional Observational Studies: Advantages, Limits, and Best Practices</b>		
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	- Bertha Hidalgo
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 & David Allison
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	
<b>6:30 Dinner – Short Course meet &amp; greet (voluntary)</b>		
<b>Tue 7/25/2017</b>		
<b>Module 3: Randomized Controlled Experiments – I</b>		
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	- Peter Hendricks
LUNCH		
<b>Module 4: Randomized Controlled Experiments – II</b>		
1:00 -1:45	<i>Interactive Activity Mini-Debates:</i> “Intention to Treat (ITT) vs Per Protocol”	- 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	
<b>6:30 Dinner – Short Course meet &amp; greet (voluntary)</b>		
<b>Wed 7/26/2017</b>		
<b>Module 5: Quasi Experiments</b>		
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		

<b>Wed 7/26/2017</b>		
<b>Module 6: Natural Experiments</b>		
1:00 -1:45	The Role of Natural Experiments in Public Health Decision Making	- Ed Gregg PhD
1:45 - 2:15	<i>Interactive Activity – Pavela, Fontaine</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	Study Design and Practical Applications of Natural Experiments in Public Health	- Ed Gregg PhD
4:45 - 5:30	Moderated Discussion and Wrap-up	
<b>6:30 Dinner – Short Course meet &amp; greet (voluntary)</b>		
<b>Thu 7/27/2017</b>		
<b>Module 7: Genetically Informed Designs – Unmeasured Genotype Approaches</b>		
9:00 – 9:45	Co-Twin and Sibling Control Designs	- Matt McGue PhD
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		
<b>Module 8: Genetically Informed Designs – Measured Genotype Approaches</b>		
1:00-1:30	Causal Inference from Mendelian Randomization	- Nicholas Timpson
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	
<b>6:30 Dinner – Short Course meet &amp; greet (voluntary)</b>		
<b>Fri 7/28/2017</b>		
<b>Module 9: Mediating and Moderating Variables</b>		
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		
<b>Module 10: Group Roundtable Preparation, Presentation &amp; Discussion</b>		
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: <https://www.uab.edu/shp/home/energetics/courses/causal-inference-shortcourse/third>

Registration website: <http://www.uab.edu/shp/home/energetics/courses/causal-inference-shortcourse/third-registration>

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