

SISCER Module 15 – Propensity Scores

Methods, Models and Adjustment

In this module, I have tried to address the motivation for, and construction of, the propensity score from first principles, to demonstrate why it is needed and where it comes from. When I first started working in the area of causal inference, I found that much of the literature did not address these fundamental components adequately, and often assumed knowledge on behalf of the reader that I did not have. Therefore this module attempts to discuss the key background mathematical ideas as well as the widely used statistical methods.

Schedule: Each day, the two sessions will be separated by a 30 minute interval, and each session will have a 5 minute break.

Monday 31st July	Session 1	<i>The need for adjustment: confounding in observational studies.</i> - experimental and observational studies - causal quantities of interest - graphical representations - confounding - the need for balance - basic tools & computations
	Session 2	<i>Manufacturing balance: the propensity score.</i> - balancing constructions - the propensity score for binary treatments - beyond the binary case
Tuesday 1st August	Session 3	<i>Statistical tools utilizing the propensity score.</i> - stratification - matching - regression methods - inverse weighting
	Session 4	<i>Examples and extensions.</i> - simulation study - NHANES example (knitr) - longitudinal extensions - practical considerations - new developments

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