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Workshop: Applying quantitative sensitivity analysis to epidemiologic data

Faculty
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**Boston University
School of
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Audience

Epidemiologists familiar with threats to validity (selection bias, misclassification, and confounding), basic algebra, and statistical computing.

Description

Observational epidemiologic studies yield estimates of effect that differ from the true effect because of random error and systematic error. Epidemiologists design studies and analyses to minimize both sources of error. When presenting results, epidemiologists conventionally use statistics to quantify the impact of random error on estimates of effect, but only qualitatively describe residual systematic error (uncontrolled bias). Sensitivity analysis provides one method of quantifying residual systematic error. Participants in this workshop will learn how to use simple and probabilistic sensitivity analyses to account for systematic as well as random error in their estimates of effect.

The interactive workshop will present topics that address the objectives described below. After each segment, participants will interactively solve problems in a notebook that illustrate the preceding segment's objective. All of the presentation materials and the problems will be provided in the notebook, as will a bibliography of primary literature citations to the methods literature.

Participants should expect to gain new skills, as the emphasis of the workshop will be on the implementation and conduct of sensitivity analysis, rather than statistical theory.

Objectives

Participants who complete the workshop will be able to:

1. Determine settings in which quantitative estimates of uncertainty due to systematic error ought to be calculated, describe methods to estimate that systematic error, and compare the advantages and disadvantages of these methods.
2. Quantify error arising from confounding, from selection bias, or from misclassification of exposure, disease, or a covariate, using simple sensitivity analysis.
3. Use multidimensional analyses to calculate ranges of uncertainty in estimates of effect.
4. Use Monte Carlo methods of sensitivity analysis that (a) impute data to calculate a distribution of estimates of effect, or (b) apply bias parameters to the original estimates of effect.

Date: September 18, 2007, Schedule: 9:00-12:30, Lunch break, 13:30-17:00

Course Fees: 100 €