

Title: Some interpretational issues connected with observational studies

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Abstract: We consider observational studies that aim to investigate data-generating processes that relate explanatory variables to one or more response or outcome variables of main interest. Such investigations are sometimes called analytical studies or quasi-experiments. Design aspects involve choice between prospective (cohort) studies and retrospective (case-control) studies or one of the composite forms of increasing interest in epidemiology. Cross-sectional designs involve strong not directly testable assumptions if they are to be interpreted in explanatory terms. The challenging problems of analysis are essentially three-fold: to avoid misinterpretation arising in particular from the impact of unobserved variables, to isolate interactions and nonlinearities that may be important for interpretation and to achieve adequate precision by error control. These issues are discussed with some emphasis on the first.