Subsample ignorable likelihood methods for regression with missing values of covariates -- throwing data away can actually pay!

ABSTRACT
Two common approaches to regression with missing covariates are complete-case analysis (CC) and ignorable likelihood (IL) methods. We review these approaches, and propose a hybrid class, subsample ignorable likelihood (SSIL) methods, which applies an IL method to the subsample of observations that are complete on one set of variables, but possibly incomplete on others. Conditions on the missing data mechanism are presented under which SSIL gives consistent estimates, but both complete-case analysis and IL methods are inconsistent. We motivate and apply the proposed method to data from National Health and Nutrition Examination Survey, and illustrate properties of the methods by simulation. Extensions to non-likelihood analyses are also mentioned.

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Michael Hooker Research Center
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