Integrating Probability and Nonprobability Surveys
A Bayesian Approach

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03.06.2020, 16.00 (c.t.)

Online via Zoom
(Meeting-ID: 913-2473-4411; Password: StatsCol20)

Due to high data collection costs researchers and polling companies are increasingly abandoning probability-based sample surveys in favor of less expensive (online) nonprobability sample surveys. The literature suggests that this strategy may be suboptimal for multiple reasons, among them that probability samples tend to outperform nonprobability samples on accuracy when assessed against population benchmarks. Instead of forgoing probability sampling entirely, we propose a method of integrating parallel probability and nonprobability samples in a way that exploits their strengths to overcome their weaknesses within a Bayesian inferential framework. Using simulations and an empirical application, we evaluate supplementing inferences based on small probability samples with prior distributions derived from nonprobability data. The informative priors based on nonprobability data are shown to reduce variances and mean squared errors for linear model coefficients. A discussion of these findings, their implications for survey practice, and possible research extensions are provided in conclusion.