

# Dissertation Defense

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300 ISR Perry

and

2208 LeFrak

Adaptive Survey Design to Reduce Nonresponse Bias

This dissertation is concerned with methods for measuring and dealing with nonresponse bias. An alternative measure for the risk of nonresponse bias is proposed – the fraction of missing information – as a supplement to the response rate. It measures our uncertainty about the values we would impute for current nonresponders. Under this guiding indicator, the goal of data collection would be to monitor and maximize the information in the final dataset. Dynamic protocols are proposed for identifying how to obtain response from cases that have the maximum impact on this measure. This approach is motivated by clinical trials that employ dynamic treatment regimes. These methods tailor the survey protocol to the characteristics of the potential respondent, including the history of previous attempts to collect data. Several observational datasets are used to evaluate these methods. Finally, a new rule for stopping data collection is proposed that attempt to account for the uncertainty due to nonresponse.