

Dealing with Non-Response in a Two-Level Study

The issue arises in the context of a study of the effects of the organization of nursing practice on patient outcomes: The analysis takes place at the organizational level—that of the hospital, as per differences between hospitals—but data collection is based on a survey of nurses, in which each nurse serves as an indicator, of varying reliability, of the organizational situation. In so doing, we are able to effect an excellent representation of hospitals, in particular with respect to those hospitals that take care of practically all of the patients in the four large states that feature in our study (Table 1). This is a big plus in a context where hospital administrators may tend to participate—or not participate—in a survey such as ours in function of management styles and predilections that are strongly correlated with the primary focuses of our study (professional autonomy of nurses, levels of education required, and the use of registered nurses as opposed to less qualified personnel).

As a result, we avoid the non-response bias that plagues these types of studies, be they based on administrative data associated with responses of key informants, or, as with our study, founded on the responses of nurses associated with each hospitals. Except that, in this latter case, it is typically necessary to obtain *from each hospital* permission from the administration to access lists of nurses at the hospital to serve as the sampling frames at the secondary level (that of nurses as informants). However, nothing is free: In leaning on a large survey of nurses drawn from state-level lists of registered nurses, and then aggregating these nurse responses to obtain measures that pertain to the primary (hospital, organizational) level, we bump into the well-known problem of large-scale mail surveys: response rates that at best reach 40%. To deal with this issue, we have drawn samples from among the nurse non-respondents. Subsequent, intense surveys of these sub-samples of non-respondents yield response rates of 85-91%. This allows us a window on a population coverage in neighborhood of that obtained from initial response rates of 90-95%. Although the nurses do have differential tendencies to respond in function of several demographic characteristics (for example, national origin), we do not detect large tendencies for nurse evaluations of organizational practices within hospitals to be correlated with response probabilities (Table 2).

This paper is based on two large studies, from 2006 and 2016, including two sub-samples of nurses who did not respond in the initial surveys. These supplementary sub-samples of non-respondents (double samples) have previously been developed and explicated from a statistical standpoint (Smith 2008). Here we consider the subject in a more synthetic manner, emphasizing alternative perspectives on non-response, especially as viewed from the perspective of multi-level designs. We also reflect on the nature of non-response in studies of this type, because they have become more challenging between 2006 and 2016, in several respects.