

# THE EFFECT OF RESPONDENT LEVEL AND FUNCTION ON ITEM NONRESPONSE IN THE 1994 NEHIS

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## Introduction

Establishment survey practitioners have long understood the importance of respondent selection in obtaining complete and accurate survey responses (e.g., Federal Committee on Statistical Methodology, 1988). Since much of the information needed to answer questions in an establishment survey is available from records or an "information system" within the establishment, it follows that the best survey respondent is someone who has access to and understands the system or systems containing the needed information. Often, an establishment survey includes questions that call for information from more than one system, such as payroll and production reports. In such cases, more than one respondent may be needed to obtain the desired information.

Lawler and Rhode (1976) proposed one typology for the relationship of employees to information systems within an organization: persons measured and controlled by the system, persons who maintain the system, and decision-makers who use the system's output. An individual may have more than one relationship to a given system, e.g., the payroll clerk also gets a paycheck. Some survey questions ask for only very basic information that anyone at all familiar with the relevant information system may answer, e.g., "Does your business offer health insurance as a benefit to employees?" Other questions ask for straightforward detail that would be routinely available to system maintainers (technical or clerical staff), while still other questions require the respondent to interpret or modify information from records, which would best be answered by decision makers used to using the system's output. Ideally, respondent selection procedures could

target the appropriate kind of respondent for each question type. In practice, the survey organization cannot exert this level of control over respondent selection (particularly in mail surveys), and, even if they could, identifying persons with the appropriate relationships to the appropriate systems is itself a complex task.

Edwards and Cantor (1991) suggested that respondent level and function within an organization may be a proxy for their relationship to particular systems, and that considerable information about level and function is contained in job titles. For example, a payroll clerk is probably a maintainer of the payroll system, and a benefits manager is probably a decision maker using information about employee benefits to make decisions. Since the respondent's job title is often collected in an establishment survey, it may be possible to use this information to identify the best respondent for key survey items, or to evaluate responses after the fact. This paper examines the relationship between one measure of data quality -- item nonresponse -- and respondent level and function as inferred from job titles for the 1994 National Employer Health Insurance Survey (NEHIS). If respondent level and function are related to item nonresponse, it may be worthwhile to alter respondent selection procedures accordingly.

## Methods

The 1994 NEHIS was a telephone survey of approximately 39,000 establishments and government entities, asking primarily about the health benefits offered employees as of the end of 1993. Several preceding papers in this volume have described the NEHIS sample design and questionnaire, and have provided an overview of item nonresponse. The analysis here will control for establishment characteristics related to item nonresponse -- whether a

government or private employer, whether single or multi-establishment firm, and number of employees in firm.

The NEHIS questionnaire was a complex CATI instrument divided into a number of different sections. The questionnaire design and management system were intended to allow maximum flexibility in identifying and contacting multiple respondents if needed for different data items. A byproduct of this design is that individual respondents can most often be matched to individual item responses. Each respondent was asked for his or her job title. These job titles were coded for level and function as shown in Table 1. The codes were subsequently collapsed in some analyses.

Table 1. Codes for Respondent Function and Level	
	Function
1.	Health insurance, health benefits
2.	Benefits, risk management
3.	Personnel, human resources
4.	General administration, finance, payroll
5.	Line functions (e.g., marketing, production)
	Level
1.	Secretary, clerk
2.	Analyst, technician, specialist, consultant
3.	Supervisor
4.	Manager
5.	Owner, CEO, partner
6.	Professional (e.g., physician, attorney, engineer)

Respondent function codes are arrayed according to decreasing role specialization with regard to health benefits. Respondent level codes are arrayed in increasing level of responsibility.

## Results

Figure 1 shows the distribution of respondent function by case type. "Case type" includes governments, single-establishment firms

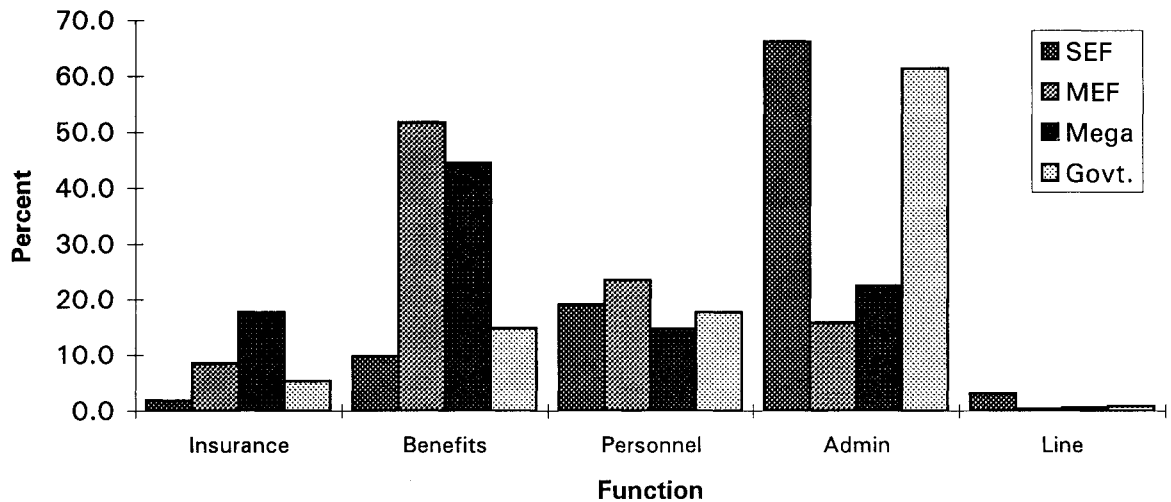
(SEFs, that is, private employers with only one establishment in the sample), and multi-establishment firms (MEFs, or private employers with more than one establishment in the sample). MEFs with more than 12 establishments in the sample received special treatment in data collection; these are referred to as "mega-MEFs." Figure 1 shows, nor surprisingly, that role specialization is more predominant in MEFs than in SEFs and governments. More than half of respondents in SEFs and governments were in administrative roles, while about half of MEF and mega-MEF respondents were in benefits.

Figure 2 shows the distribution of respondent level by case type. For all case types, the modal respondent was a manager. For SEFs, more than 20 percent of respondents were owners or professionals. These tended to be the smallest establishments. Government respondents were distributed somewhat differently than those in the private sector, but this difference is partly an artifact of differences in job titles between the sectors.

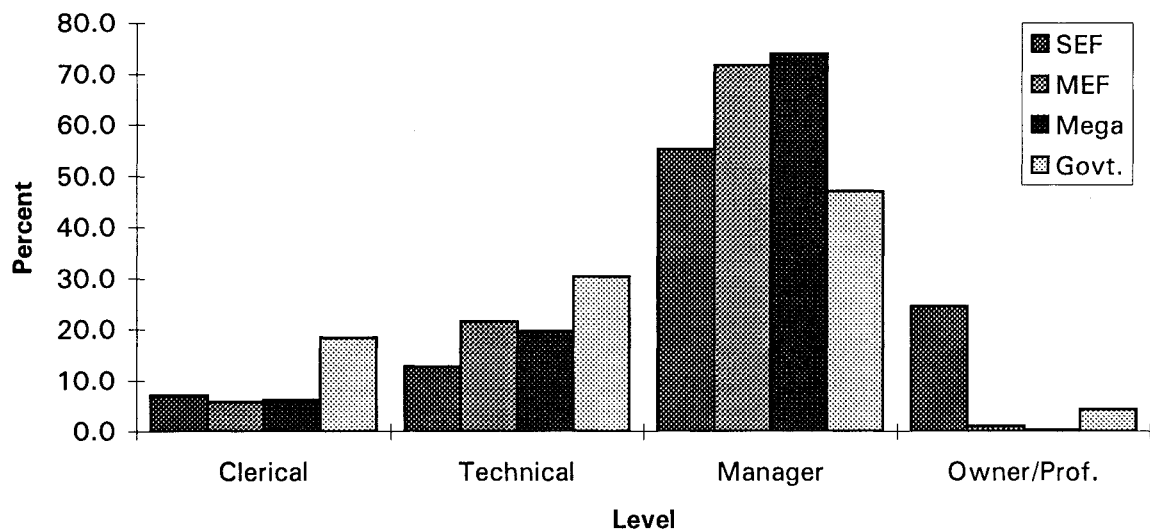
Item nonresponse by level and function was examined for four NEHIS variables -- the number of employees in the establishment eligible for health benefits, whether retirees were eligible for health benefits, the number of employees enrolled in a particular plan at the establishment, and the monthly premium for single coverage for a particular plan. These variables represent different levels within the NEHIS database (firm, establishment, plan, and plan/establishment) and potentially different information systems within an organization. Item nonresponse for these variables was compared by respondent level and function for SEF respondents only.

Significant patterns emerged when comparing item nonresponse by respondent function. For eligible employees in the establishment and employees covered by a plan, item nonresponse was directly related to level of specialization -- the more specialized the role, the higher the item nonresponse. However, for whether retirees were eligible and premium amount, respondents with specialized roles (health insurance, benefits, or personnel) had

**Figure 1. Distribution of Respondent Function by Case Type**



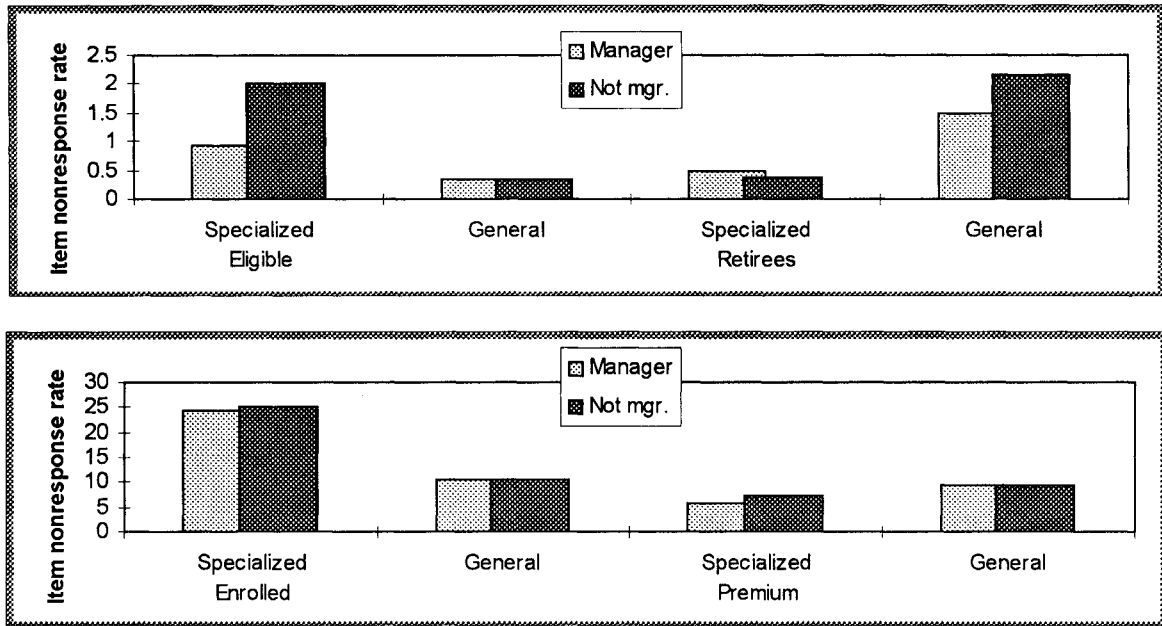
**Figure 2. Distribution of Respondent Level by case Type**



lower item nonresponse than persons in general administrative or line functions. Thus, there were significant differences in item nonresponse by function for each variable examined, but the direction of the difference varied. For three of the variables, the difference between the relative rates was large, i.e., the item nonresponse rate for non-specialized respondents was less than half or more than double the rate for specialized respondents.

Similar but less striking patterns appeared when comparing item nonresponse by respondent level. However, these differences largely disappear when controlling for function. Figure 3 examines item nonresponse for the same four variables by collapsed respondent function (specialized vs. non-specialized) and level (manager, including owners and professionals, vs. non-manager). In Figure 3, examining the two bars in a pair compares level

**Figure 3. Item Nonresponse by Level and Function**



while controlling for function. Examining adjacent bars with the same shading compares function while controlling for level. Most of the level comparisons show no difference, while all of the function comparisons show significant differences. Again, the direction of the differences varies by survey variable.

A final analysis, not shown, examined the interaction between function and firm size. Although there is a large effect of firm size on item nonresponse as described in the previous paper, the effect by respondent function holds across firm sizes.

### Discussion

This paper has examined the relationship between respondent level and function and item nonresponse for selected variables in the 1994 NEHIS. Respondent function (role specialization) does seem to be related to item nonresponse for the selected variables, but the direction of the relationship is different for different variables. The theory described earlier in this paper does not readily account for these differences. Respondent level, on the other hand, does not seem to be related to item nonresponse for the four variables examined.

This analysis requires many caveats. Item nonresponse is only one measure of data quality; no analysis of response accuracy was attempted. Only four variables were examined, and the coding of respondent titles is of uncertain robustness. Some titles could not be coded for level, for function, or for either. The NEHIS data are complex, and the analysis must be viewed as preliminary.

Certainly, there is insufficient evidence here to support recommending changes in respondent selection procedures to reduce item nonresponse. However, to the extent that this conclusion is news, it may be viewed as good news. The NEHIS contact procedures attempted to explain what information was required and leave selection of the best respondent up to persons contacted at each establishment. One explanation for the lack of a relationship by respondent level is that these procedures worked reasonably well.

## References

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