

# UNIT ELIGIBILITY AND RESPONSE RATES IN THE 1994 NEHIS

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## 1. Introduction

This paper describes the eligibility and response rates for sample units in the National Employer Health Insurance Survey (NEHIS). These findings can be of general utility for those planning other establishment surveys, especially in the health insurance arena. NEHIS was conducted in 1994 by Westat, Inc., under contract to the National Center for Health Statistics. The purpose of the NEHIS was to collect information on the health care insurance that U.S. businesses and governments provide for their employees. The survey collected information from employers on the names and types of health insurance plans (if any) offered to their employees, enrollments in these plans, the characteristics of the plans, the money paid for claims in the preceding year, and other related data.

This paper describes how eligibility and response rates were derived in advance of the study to be used in determining the necessary sample size for the NEHIS. It then provides the actual eligibility and response rates resulting from the NEHIS data collection. This information is provided for both the private and public sector, at the establishment and plan level. It also describes the results found for a separate NEHIS survey of self-employed with no employees. It does not cover the Federal and state governments, which were all included in NEHIS and by definition are all eligible, and practically all of which responded. The last section lists some of the conclusions that could be applied to future studies.

## 2. Assumed Eligibility and Response Rates

When selecting the sample for NEHIS, it was necessary to make assumptions regarding the eligibility and response rates that would be observed during data collection. These assumptions helped determine the initial sample size. If the assumptions had been incorrect, the number of completed interviews might not have been sufficient to achieve the desired level of accuracy.

For the private sector survey the establishment-level assumptions were based on the health insurance survey recently conducted in 10 states by Westat for the Robert Wood Johnson Foundation (RWJF). In eight of the states the Duns Market Identifiers (DMI) frame was used that also was to be the source of the sample for NEHIS. The definition of eligibility used for RWJF was quite similar to that used for NEHIS: one or more employees at a location, the same address and same business as listed on the frame, and in the private sector

sample the establishment could not be part of a government. (Thus for RWJF before sample selection all establishments with a standard industrial classification (SIC) code beginning with 9 (public administration) were eliminated from the frame.)

The RWJF eligibility and response rates were examined by establishment size and by state. Eligibility rates were very consistent across states (from 62% to 68%), but did show marked differences by size. Establishments with 10 or more employees had eligibility rates of approximately 80 percent, while 5-9 employee establishments only had 70 percent eligibility, and 2-4 employee establishments 45 percent eligibility. Eligibility rates for NEHIS were anticipated to be slightly higher than for RWJF since businesses that had moved locally were considered eligible for NEHIS. Therefore for NEHIS it was assumed that 80 percent of all sampled establishments with 25 or more employees (on the frame) would be eligible, 75 percent of those with 6 to 24 employees, and 50 percent of those with 1 to 5 employees. Further, it was assumed that 75 percent of those with unknown size on the frame would be eligible, since in RWJF most of these were found to have less than 25 employees. Also, a sample of establishments was included in the NEHIS sample that on the frame only had one employee and no other locations (which, if true, would make them ineligible). It was assumed that 30 percent of these were eligible, that is, they either had more employees or locations.

Response rates in the RWJF survey were approximately 70 percent for all establishment sizes. For seven of the states the response rate was between 65 and 76 percent, but for New York it was only 58 percent. Thus for NEHIS it was assumed that all states would have a 70 percent response rate except New York, where it would be 60 percent.

There was no comparable recent survey of the public sector from which eligibility and response rates could be estimated. However, given the greater stability of governments over private establishments, it was assumed that both their eligibility and response rates would exceed those of the private sector. In particular, it was assumed that 95 percent of governments with 6 or more employees would be eligible, along with 85 percent of those with 1 to 5 employees and 30 percent of those with no employees on the frame. It was assumed that the public sector response rate for NEHIS would be 80 percent.

## 3. Frames and Stratification

NEHIS is to produce estimates by state and by firm and establishment size for the private sector, and

by state for the public sector. It is therefore necessary for the private sector frame to be of establishments, not firms. Since local governments do not cross state boundaries (with a very few exceptions), the public sector frame need only be a list of governments.

DMI was used as the sampling frame for the private sector. Both the Bureau of the Census and the Bureau of Labor Statistics maintain frames of business establishments, but due to confidentiality requirements, neither of these was available to be used for NEHIS. After discussions with numerous government agencies and state-level comparisons with the Census and BLS frames, it was decided that the DMI frame would be acceptable for the purposes of NEHIS.

DMI maintains separate records for every business establishment Dun & Bradstreet can identify. D&B's methods for frame construction include reviewing public records, secretaries of state, bankruptcy courts, Departments of Motor Vehicles, newspapers, yellow pages, records of businesses dealing with governments, unemployment insurance records, and accounts receivable from some large companies. While the resulting list of 10.1 million establishments (as of late 1993) is thought to be quite complete (except for some relatively new or small establishments and some farms), it contains some governments that need to be eliminated from the private sector sampling frame.

As with RWJF, all records whose SIC code began with a 9 (public administration) were eliminated from the frame. DMI also contains subcodes for each SIC code, from which it was possible to identify combinations that were believed to contain only public sector establishments (see Table 1). A total of 20 different codes were identified and removed from the list. This eliminated 200,000 records, only half of which had a SIC code beginning with a 9. Public schools and post offices were large contributors to the 200,000 eliminations.

Private sector records were stratified by establishment size and firm size, since proposed health care reforms have been a function of both sizes. Ideally, the firm used for stratification purposes would correspond to the definition used by the firm to determine its health benefits. Unfortunately, there are no lists identifying firms by this definition. Frequently, health benefits are not the same throughout a large corporation; for example, the automotive departments of General Motors would not be expected necessarily to have the same available benefits as the Hughes Aircraft and EDS subsidiaries. It was therefore decided to group together as a "firm" all establishments that reported to the same major subsidiary of a corporation, as long as this subsidiary reported directly to the main headquarters or through at most one intermediary subsidiary. Those branches that report directly to the ultimate headquarters were grouped together into a single firm. This stratification was

performed using variables on the DMI frame identifying the corporate hierarchy.

The frame for the public sector was the Census of Governments (COG) compiled by the Bureau of the Census. The list of governments was available from the 1992 COG, but the data reporting number of employees were not available from that cycle. Therefore the measure of size for the public sector frame came from the 1987 COG. This produced a frame with 87,568 local governments, of which only 7,312 were new since 1987 and therefore did not have an estimated size.

Many local governments have formed purchasing units (PUs) to increase their buying power when contracting for health benefits. In such cases the data requested for NEHIS would be identical for all members of the PU. Thus, to the extent possible, it was desired to collapse all local governments in a PU into a single record before sampling. Phone calls were made in each state to at least one central contact for State, County, Municipal, Special District, and School District employees to try to identify the principal PUs. Not all PUs were identified in this manner, but as a result of this effort, the final sampling frame for the public sector contained only 77,691 local governments and PUs. These were stratified by type of government (County, Town/Municipality, Special District, and School District) and employment.

The final sampling frame was for the self-employed with no employees (SENEs). Employer-sponsored health insurance for these people means that they arrange for their own health insurance. Therefore the NEHIS questionnaire for the SENEs was entirely different from the other respondents, and required a separate sample. There are no national frames of SENEs, but the National Health Interview Survey (NHIS) contains a nationally representative sample of self-employed people (it does not ask number of employees). NEHIS selected every NHIS respondent from the last half of 1993 who had responded that he or she was self employed.

The remainder of this paper reports on the eligibility rates and response rates obtained in NEHIS for the private and public sectors, and for SENEs. It also reports on eligibility and response rates for health insurance plans.

#### **4. Establishment-Level Eligibility**

NEHIS eligibility was confirmed in a two-step process. A prescreener determined that the contacted establishment was indeed the business listed on the frame (and also identified the proper respondent for the main survey). A screener section at the beginning of the main survey determined final eligibility based on whether there were employees. All cases were therefore split into one of four groups: dead-end cases for which no contact was ever achieved, those for which the correct business was contacted but were not recontacted

to finalize eligibility, known eligibles, and known ineligibles.

It was believed that very few of the dead-end cases were eligible, since it is generally difficult to remain in business if people cannot contact you over the telephone. To test this assumption attempts were made to physically locate the 50 dead-ends whose frame address were in the Maryland suburbs of Washington DC. Only 3 of the 50 were found. Since only one-half of all very small establishments that were identified over the telephone were determined to have employees, it was assumed that only half of these located dead-ends would have employees. Therefore it was assumed that only 3 percent of the dead-ends were eligible for NEHIS.

Those who completed the prescreener but could not be recontacted to confirm eligibility were the other group with unknown eligibility. It was necessary to estimate what percent of these were likely to be eligible. The overwhelming majority of NEHIS cases completed the screener, thus it was possible to examine what percent of these cases were found to be eligible. This rate was then applied to those of unknown eligibility. This rate was computed for 22 cells based on state, firm size, and establishment size. Establishments in states with similar eligibility rates were grouped together, and larger establishments were grouped separately from smaller establishments. The public sector was grouped by government type.

Table 2 shows the observed NEHIS eligibility rates for the private sector. As the table indicates, the assumed eligibility rates were very close to the actual rates. Only the rates for those establishments with unknown size or which on the frame reported one employee and no other locations had actual rates which were far below the assumed rates. Thus the lack of a good size measure on the frame was itself an indicator of a high likelihood of ineligibility.

Table 2 shows that small establishments in small firms are, not surprisingly, less likely to be eligible than other establishments. Many such establishments do not stay in business long. The surprising finding in Table 2 is that almost one-quarter of the largest establishments in the largest firms are ineligible (76.9 percent eligible). To investigate this more carefully, the data were examined by whether or not multiple establishments within the same firm were included in the sample. Multi-establishment firms (MEFs) in the sample generally were larger firms than firms from which only one establishment was sampled (single-establishment firms, or SEFs) and collection of data from them was more complicated. The very large sampled firms, with over 12 sampled locations are referred to as mega-MEFs. Figure 1 shows the eligibility rates by firm and establishment size along one dimension, and by sampled firm type on the other dimension. It is clear from this picture that the eligibility problem is most pronounced among SEFs in firms with over 1,000 employees. An examination of

these cases found that many of these sampled SEFs were actually governments, which had not been cleaned out through the elimination of certain SIC codes. For example, the book store of a state university listed its primary SIC code as a book store, not a public university, and therefore was not eliminated from the frame. Future surveys using the DMI frame for such purposes might examine secondary SIC codes, whereas NEHIS only examined the primary SIC code.

Table 3 shows the observed NEHIS eligibility rates for the public sector. Again the assumed rates tracked the observed rates fairly closely. Almost all governments shown on the frame to have more than 25 employees were eligible for NEHIS. The rates were 90 percent for 6 to 24 employees, 60 percent for 1 to 5 employees and 20 percent for the special districts that seven years earlier had not had any employees. The major finding that had not been anticipated was that only slightly more than half of all special districts, or 1 to 5 employee governments, were eligible.

Eligibility rates were also examined by state and found to have little variation. With the exception of two very small public sector states, all had eligibility rates of at least 60 percent.

Fifty-five percent of the NHIS sample of SENEs were found to be ineligible for NEHIS. Most of these were self-employed with employees. Another 18.5 percent could not be contacted and therefore were of unknown eligibility. It was assumed that 33 percent of these were eligible since that was the proportion for those whose eligibility was determined.

## 5. Establishment-Level Response Rate

Establishment-level response rate is defined as the number of completes divided by the sum of the number of completes, number of eligible nonrespondents, and the assumed eligible proportion of the nonrespondents with unknown eligibility. A completed establishment had to complete the interview sections on establishment characteristics plus the health plan sections for at least one of its health plans, assuming it offered insurance (establishments not offering insurance only had to answer the sections relating to the establishment). Three-quarters of all nonresponse took place during the screener, before determination of final eligibility. Thus only a proportion of these were assumed to be eligible nonrespondents, as described in the previous section.

For the private sector, nonresponse patterns by state appeared to be randomly distributed between 62 (New York) and 86 (Montana) percent. While New York did indeed have the lowest response rate (as predicted), it did not appear to be an outlier from the distribution of all states (three other states had response rates under 65 percent). The overall private sector response rate was 70.6 percent, almost exactly the predicted 70 percent. Figure 2 examines response rates

by firm and establishment size. It is clear that response rates were lowest among establishments in large firms. This is not surprising given the more dispersed management structure in such firms (requiring additional phone calls and respondents) and the larger number of health care plans. Similarly, response rates for SEFs were above 70 percent, while for MEFs of all sizes the rates were at least 10 percent lower. Additional factors affecting the lower MEF response rate were that, due to operational constraints, MEF interviewing did not begin until mid-July, and the data collection period was shortened from 7 months for SEFs to 5 months for MEFs.

Public sector establishment-level response rates ranged from 67 (District of Columbia) to 100 percent (Hawaii and Vermont), with a national rate of 87 percent. This was better than had been anticipated. The high response rate did not appear to vary by type of government.

## **6. Plan-Level Eligibility and Response Rate**

Eligible health plans included major medical health plans and single-service health plans. Major health plans include conventional indemnity, HMO, and PPO; eligible single-service plans include dental, vision, and prescription drug. Ineligible plans are life insurance and other types of plans that are not health insurance. To minimize respondent burden a maximum of five health plans were sampled from all health plans offered at the establishment. From a MEF, no more than 13 health plans were sampled across all establishments. Thus the only available data on plan-level eligibility is for sampled plans at responding establishments that offered insurance. Only three percent of such plans were found to be ineligible.

For a plan to be considered as having responded, the questionnaire sections on enrollment and/or premiums must have been completed. The only plans that were considered respondents or nonrespondents were sampled plans at completed establishments. The overall plan response rate was 93 percent. This number was consistent across both the private and public sectors, across firm size, government type, and plan type.

## **7. Conclusions**

A number of lessons can be learned from the NEHIS eligibility and response rate experience. These lessons can be applied to future establishment surveys, especially in the area of health studies.

Private sector eligibility was most affected by whether or not the establishment was the only one in

the sample from that firm. (The underlying factor is probably whether it is a single-establishment firm, regardless of sampling.) Only half of the SEF establishments were eligible, while almost all MEF establishments were eligible. Small SEFs (less than 6 employees) were particularly likely to be ineligible. SEFs that are part of large firms are quite likely to be governments. To minimize this problem the primary and secondary SIC code should be examined prior to sampling.

The only governments with significant eligibility problems were special districts and governments with less than 25 employees. If more recent size measures had been available at the time of sampling (for NEHIS, the data were 7 years old) this problem might have been reduced.

A number of factors influenced private sector response rates. Private sector rates varied by state, but without any noticeable pattern. New York was indeed lowest, but not by a great amount. Large firms had much worse response rates (55 versus 76 percent), and MEF rates were worse than SEFs (52 to 77 percent). Earlier fielding of MEF interviews might have helped these numbers, but when an interview requires multiple hours to complete with multiple respondents for large firms (as with NEHIS), there is always going to be a relationship between size and response rate.

Public sector response rates were fairly consistent. Plan-level response rates were very consistent across sector, size, and plan type.

A major conclusion from NEHIS has been that the three sampling frames all performed well. The DMI frame contains some dead wood, particularly among the smaller establishments, that results in some low eligibility rates in some strata. Many governments were contained within the DMI frame, but most can be eliminated with careful examination of SIC codes. There is also some undercoverage of newer and smaller establishments, but this did not appear to be a major limitation.

The COG frame also worked well, even with 7 year old measures of size. This frame, however, needs significant manipulation before it can be used for a survey of health insurance due to problems with PUs and other issues.

The NHIS provides a good sample of self-employed. Unfortunately for NEHIS, many of them had employees, and others were no longer self-employed one year after the NHIS data collection. This led to a significant number of ineligibles, but did allow for the production of national estimates for self-employed with no employees.

Table 1. SIC codes dropped from the DMI file to reduce overlap with local governments

SIC code	First DMI subcode	Description	Number of records
4311		United States Postal Service	33,113
8211	03xx	Public elementary and secondary schools	60,653
8211	9905	School Board	4,731
8351	9902	Head Start Center, except in conjunction with school	4,770
9xxx		Public Administration	96,145
		15 other combinations	2,671
		Total with duplications	202,083
		Less duplications*	1,076
		Total without duplications	201,007

\*1,076 records were in both 8211 03 and 8211 9905

Table 2. Private sector eligibility rate by firm size and establishment size

Firm size	Establishment size								Total
	Unknown	1 no other	1-5	6-24	25-49	50-249	250-999	1,000+	
< 50	36.4	16.4	46.7	79.3	81.9	--	--	--	49.0
50 - 999	75.0	--	77.8	87.5	80.6	83.1	86.1	--	83.2
1000+	70.0	--	77.6	84.8	79.6	79.8	80.2	76.9	79.9
Total	36.4	16.4	49.4	81.4	80.9	81.9	82.4	76.9	61.2
Assumed	75	30	50	75	80	80	80	80	

Table 3. Public sector eligibility rate by government type and size

Government type	Size							Total
	0	1-5	6-24	25-49	50-249	250-999	10,000+	
County	--	--	100.0	100.0	99.4	100.0	97.4	99.6
Municipal	--	67.6	89.2	98.6	99.1	100.0	100.0	89.0
Special District	20.0	54.0	88.8	91.5	76.6	88.2	83.3	55.5
School District	--	69.1	94.3	98.7	99.4	95.7	97.4	97.5
Total	20.0	59.2	89.9	98.2	98.0	97.5	97.5	83.4
Assumed	30	85	95	95	95	95	95	

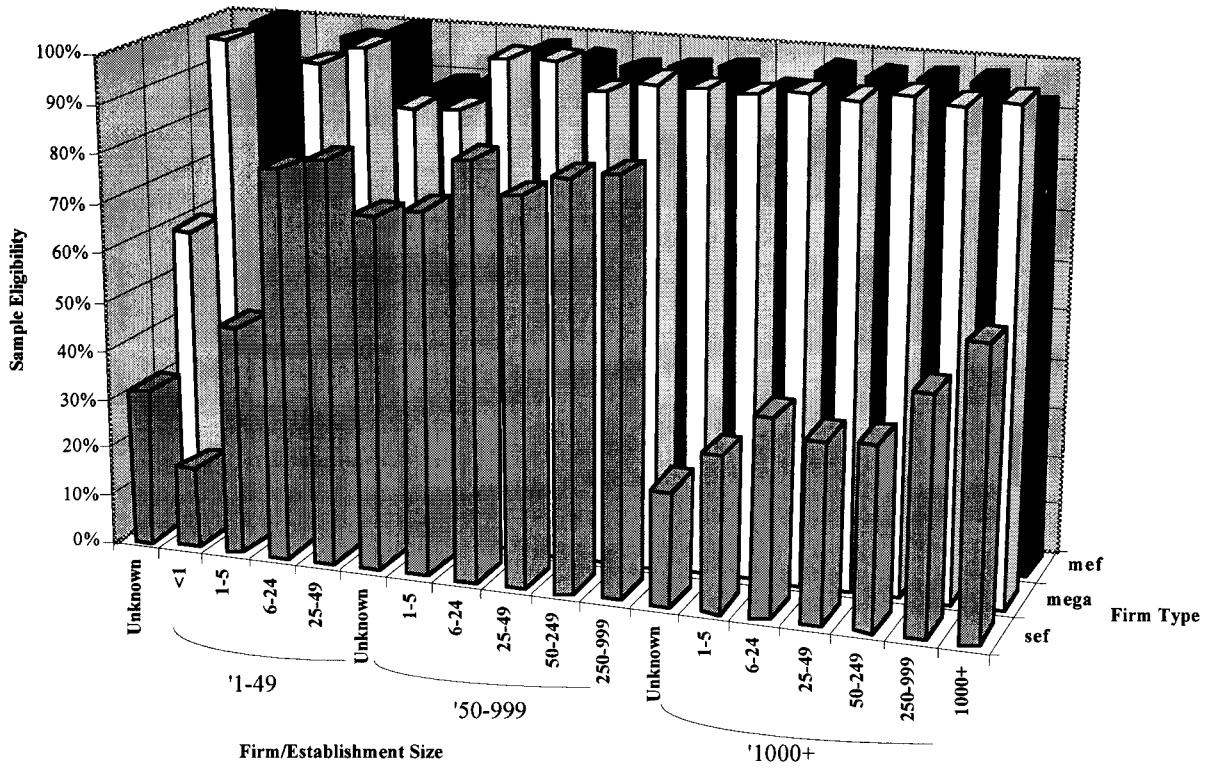


Figure 1. Sample eligibility rate by firm type, firm size and establishment size

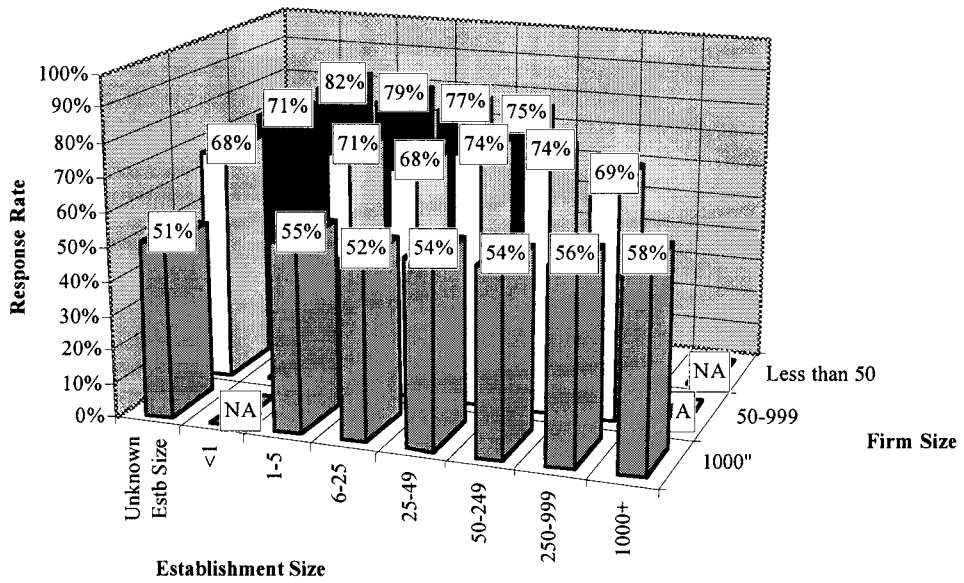


Figure 2. Establishment response rates by firm size and establishment size