
***Appendix E: Nonresponse Analysis for Analysis
Cycles 9 Through 12***

Appendix E: Nonresponse Analysis

Establishments can cause nonresponse in the O*NET Data Collection Program at the verification, screening, recruiting, or sampling stage of selection. This nonresponse is referred to in this report as *establishment nonresponse*. Another type of nonresponse, referred to as *employee nonresponse*, occurs at the employee level when a selected employee fails to complete and return a questionnaire. Finally, employees who return their questionnaires may inadvertently or intentionally skip one or more items on the questionnaire. This type of missing data is known as *item nonresponse*. These three types of nonresponse are discussed here.

The data analyzed here come from the Establishment Method data included in Analysis Cycles 9–12.¹ Data from the Occupation Expert (OE) Method does not lend itself to this type of analysis: OE Method respondents are not sampled through establishments and are often volunteer respondents not related to a target population from which bias can be measured.

E.1 How Nonresponse Is Related to Bias

Nonresponse bias is the expected difference between an estimate from the responding cases and an estimate from all cases originally selected from the target population. The extent to which nonresponse bias occurs ultimately depends on (1) the extent of missing data and (2) the difference in an estimate between respondents and nonrespondents. For example, consider the following equation:

$$\bar{X} = p_R \bar{X}_R + p_N \bar{X}_N, \quad (1)$$

which says that an overall population estimate, \bar{X} , depends on the proportion of respondents and nonrespondents (denoted p_R and p_N , respectively, with $p_R + p_N = 1$) and the mean response from both respondents and nonrespondents (denoted \bar{X}_R and \bar{X}_N). Bias due to nonresponse is given by the following equation:

$$Bias(\bar{X}_R) = \bar{X}_R - \bar{X}, \quad (2)$$

demonstrating that bias varies as a function of the overall population estimate and the mean response from respondents. In the estimate the bias due to nonresponse increases as the difference between \bar{X}_R and \bar{X} increases. Now, substituting Equation (1) into Equation (2) gives

$$Bias(\bar{X}_R) = \bar{X}_R(1 - p_R) - p_N \bar{X}_N, \quad (3)$$

¹ A total of twelve analysis cycles have been completed through June 2011. An analysis of nonresponse in Analysis Cycles 1–3 was included in the September 2, 2005, Office of Management and Budget submission (Appendix E); An analysis of nonresponse in Analysis Cycles 4–8 was included in the December 10, 2008, Office of Management and Budget submission (Appendix H).

and because $1 - p_R = p_N$, Equation (3) can be expressed as

$$\text{Bias}(\bar{X}_R) = p_N (\bar{X}_R - \bar{X}_N). \quad (4)$$

Equation (4) reveals that the components of nonresponse bias depend on the proportion of nonrespondents in the eligible sample and the difference between mean responses for respondents and those for nonrespondents. If either or both components are small, then the bias should also be small. Important biases occur usually when a substantial proportion of nonrespondents (p_N) exists and there is a large difference between the mean responses (Kish, 1965). When one uses sample data to approximate bias, the components p_N , \bar{X}_R , and \bar{X}_N can be estimated with sample data across attributes that can be measured for both respondents and nonrespondents. Unless a special nonresponse follow-up study is conducted, it is rarely possible to measure any of the primary study outcome variables on the nonrespondents; if any such data existed, they would be on respondents. Thus, to obtain surrogates for the primary outcome variables, it is necessary to turn to other variables, those available for both respondents and nonrespondents. If respondent data indicate that the surrogate variables are related to the primary outcome variables, then any nonresponse bias, or lack thereof, observed in the surrogate variables can be inferred to the primary outcome variables. Such approximations are not deterministic but can evince potential nonresponse bias.

The likelihood of missing data may be related to an observed variable, such as the number of employees in a business establishment. For example, employees from larger establishments may be less likely to respond than employees from smaller establishments. Analyzing skills across jobs within an occupation could therefore be subject to bias if the work performed differs systematically by establishment size—that is, if employees in larger establishments tend to respond differently from employees in smaller establishments. In this hypothetical example, employees in larger establishments may be less likely to respond, and if they do respond, they may respond differently from employees in smaller establishments. This situation would cause both components of nonresponse bias (p_N and $\bar{X}_R - \bar{X}_N$) to be magnified.

In general, restricting an analysis to only those cases that are observed may introduce bias into the results unless the missing-data mechanism is accounted for in the analysis (Graham, Hofer, & Piccinin, 1994; Little & Rubin, 1987; Schafer, 2000). Weighting is one common method of adjusting for nonresponse patterns on the basis of observed values (Little & Rubin, 1987). The O*NET Data Collection Program incorporates weighting as one method for protecting against the influence of nonresponse bias.²

E.2 Establishment Nonresponse

Exhibit E-1 (at the end of this appendix) displays the establishment eligibility and response rates for Analysis Cycles 9-12 by stage of data collection. The analysis population of establishments included each establishment that had at least one of its assigned occupations published in these analysis cycles, whether or not any of the occupations were eventually selected from that establishment. The response rates are presented separately by various variables to allow examination of the possibility of nonresponse

² For a discussion of weighting, see Section B.1.1 in the main body of the Supporting Statement.

bias. These variables were selected because they were available for both respondents and nonrespondents and were likely to be related to the primary outcome variables of the O*NET Program. Rates marked with an asterisk (*) are significantly different from the overall rates (where the overall rates are assumed to be fixed quantities).³

The following describes the Exhibit E-1 column headings:

- *Total Estab* is the total number of selected establishments at the verification stage.
- *Verification, Screening, Recruiting, and Sampling* refer to the four stages of data collection used in recruiting establishments. Only those establishments that responded at the previous stage were used in the computation of rates. For example, screening rates reflect only establishments that responded at the verification stage. Final rates are combined rates across all stages of data collection. All establishments are considered to be eligible at the verification stage. At subsequent stages, nonrespondents from the previous stage are removed from the denominator of the eligibility rate; therefore, the final eligibility rate, defined as the total number of eligible establishments divided by the total establishments in the sample, is not equivalent to the product of the eligibility rates at each stage. Similarly, establishments that were identified as ineligible in the previous stage are not included in the denominator of the response rate for a particular stage. Thus, the final response rate, defined as the total number of responding establishments divided by the total number of eligible establishments in the sample, is not the product of the response rates at each stage.
- *Elig* is the percentage of establishments that are considered eligible. Establishments are considered survey eligible if they are classified as (1) at the same street address or building as in the sampling frame, (2) in business (permanently or temporarily), (3) able to be located, and (4) not a duplicate. Establishments that have no employees in the list of occupations asked about during data collection are not considered survey ineligible but instead are considered to be sampling-stage respondents.
- *Resp* is the percentage of eligible establishments that are considered respondents; that is, they did not refuse to participate in the study.

The following describes the Exhibit E-1 row headings:

- *Census Division* is assigned according to the address of the establishment.
- *Total Employees in Establishment* is the establishment total employment estimate on the sample frame. The category *unknown* for total employees in an establishment is an actual frame classification.
- *SIC Division* is the Standard Industry Classification of the establishment.
- *NAICS Sector* is the North American Industry Classification System of the establishment.
- *Number of Occupations on Establishment Sampling List* is the number of occupations linked to an establishment's sampling list. This number may be viewed as a measure of the point of contact's (POC) perceived level of burden.

³ The tests were conditioned on the overall rates because the objective was to identify any subgroups that differed from the observed overall rate.

- *Time Zone* and *Metropolitan Status* were assigned according to the establishment's zip code.

E.2.1 Establishment Final Unweighted Response Rates

The data in Exhibit E-1 reveal that the final unweighted response rate for establishments was 77.5%. The final eligibility was 75.7%.⁴ The data also indicate that response rates varied for the four data collection stages, with the lowest response rate occurring at the recruiting stage (87.7%) and the lowest eligibility rates occurring at the verification stage (87.4%). These results are intuitive for the following reasons:

- Typically, it was not until the recruiting stage of data collection that the POC realized the burden involved in participation. Consequently, it was expected that most nonresponse would occur at this stage.
- The lowest eligibility rate was expected at the verification stage, when each establishment is first contacted and when establishments that closed their business are first identified.

Using frame information, one can compare the respondents and nonrespondents across various attributes to approximate nonresponse bias. An estimate of the first component of nonresponse bias can be found in Exhibit E-1 under the column headed *Final Resp.* As already discussed, low response rates indicate possible nonresponse bias. Treating the final unweighted response rate as a fixed quantity with no variance, RTI assessed the response rate for each level of a specific attribute against the overall value to determine whether the difference was significant. Differences statistically significant at the 0.05 level are indicated with an asterisk (*).

Census Division. Establishments in the West North Central region (82.1%) had the highest significant final response rate, while the Middle Atlantic region (74.7%) had the lowest significant final response rate.

Total Employees in Establishment. For establishments with 5 to 4,999 employees, a decreasing trend appears in the final response rates as the size of the establishment increases. This pattern suggests that the perceived burden on the POCs in smaller establishments may have been lower than the perceived burden on the POCs in larger establishments. In addition, in larger organizations participation may not be at the discretion of the POC but instead may require corporate approval. This observation is consistent with other literature (e.g., Willimack, Nichols, & Sudman, 2002).

SIC Division. Comparing the different SIC divisions with the overall final response rate, one sees that Public Administration (86.7%) had the highest significant final response rate, while the Finance, Insurance, and Real Estate industry (66.8%) had the lowest significant response rate. Response rate patterns by industry were highly dependent on the occupations included in a particular collection of occupations; therefore, these findings would not necessarily apply to a different set of occupations in another set of analysis cycles.

⁴ Unweighted rates were used because appropriate weights were not available for ineligible or nonresponding establishments.

NAICS Sector. Comparing the different NAICS sectors to the overall final response rate, one sees that Agriculture, Forestry, Fishing, and Hunting (93.1%) had the highest significant final response rate, while Finance and Insurance (66.6%) had the lowest significant final response rate. Response rate patterns by industry were highly dependent on the occupations included in a particular collection of occupations. These findings would not, therefore, necessarily apply to a different set of occupations in another set of analysis cycles.

Number of Occupations on Establishment Sampling List. At the recruiting stage, the response rate for establishments with one to five occupations on the sampling list was significantly higher than the overall response rate (91.4% as opposed to 77.5%), and establishments with ten occupations on the sampling list had the lowest significant response rate (78.9%). There is no discernible trend in response rates based on the number of occupations on the establishment sampling list.

Metropolitan Status. Rural establishments had a final response rate significantly higher than the overall response rate (83.7%, as opposed to 77.5%), while urban establishments had a significantly lower final response rate (76.0%).

E.2.2 Comparison of Establishment Respondents and Nonrespondents

Exhibit E-2 (at the end of this appendix) shows a comparison of the distribution of respondents and the distribution of nonrespondents across various establishment attributes. The column showing *Percent Difference (Resp vs. Nonresp)* gives an estimate of the second component of nonresponse bias. As already discussed, a potential source of nonresponse bias occurs when this difference becomes large. An estimate of the nonresponse bias across an attribute (see Equations [2] and [4]) is shown under the final column, *Percent Difference (Resp vs. Overall)*. Differences marked with an asterisk are statistically different from zero at the 0.05 level. Large positive or negative values indicate possible nonresponse bias. Although numerous statistically significant differences exist, large sample sizes tend to increase the likelihood that very small differences will be statistically significant. In this situation, it is important to determine if the differences are of sufficient magnitudes to be meaningful. For establishment nonresponse, the differences between respondents and the overall sample do not appear to be meaningful: 85.7% of the attributes had an absolute bias of less than 1 percentage point, 11.1% had an absolute bias between 1 and 2 percentage points, 1.6% had an absolute bias between 3 and 4 percentage points, and 1.6% had an absolute bias between 4 and 5 percentage points.⁵

Another measure of potential nonresponse bias is the effect size, as defined by Cohen (1988). In this case, the effect size is related to the chi-square test for comparing the equivalence of percentage distributions from respondents with those of the overall sample. Cohen classifies an effect size as “small” when it is about 0.10, as “medium” when it is about 0.30, and as “large” when it is about 0.50. For the variables in Exhibit E-2, all of the effect sizes were small, with the largest effect size being equal to 0.10 for the number of occupations on the Establishment Sampling List. These results suggest that the distribution of the variables for respondents and that for nonrespondents are quite similar (i.e., $\bar{X}_R - \bar{X}_N$ is small).

⁵ Absolute bias is the absolute value of the final column of Exhibit E-2.

The combination of relatively small absolute biases and small effect sizes indicates a low likelihood of bias due to establishment nonresponse.

E.3 Employee Nonresponse

Exhibit E-3 (at the end of this appendix) displays the unweighted response rates for employees from Establishment Method data collection for occupations published in Analysis Cycles 9-12.⁶ The columns in Exhibit E-3 are as follows:

- *Sampled* is the total number of selected employees.
- *Response Rate* is the unweighted percentage of selected employees from the employee analysis population. Employees are considered respondents if they returned a non-blank questionnaire.

In addition to the categories displayed in Exhibit E-1, Exhibit E-3 displays response rates by the following employee-level characteristics (rows):

- *Selected Employees in Establishment* is the number of employees who were selected from the establishment. Note that this value ranges from only 1 to 20. This range reflects the rule that no more than 20 employees may be selected from any single establishment per 12-month period.
- *Questionnaire Type* is the type of questionnaire that the employee was selected to complete. Exhibit E-3 contains three questionnaires (Work Activities, Work Context, and Knowledge).
- *Occupational Class* is derived from the first two digits of the O*NET occupation code.

The response rates are presented separately by the various row variables to reveal any possibility of nonresponse bias. These variables were selected because they were available for both respondents and nonrespondents and were likely to be related to the primary outcome variables of the O*NET Program.

E.3.1 Employee Final Unweighted Response Rates

Like establishment nonresponse, employee nonresponse is difficult to thoroughly characterize in the O*NET Data Collection Program because relatively little information is known about the nonrespondents (except for some descriptive frame characteristics). However, as with the establishment level, using information known about both responding and nonresponding employees enables indirect determination of whether the nonrespondents are different from the respondents across variables that may be highly correlated with the survey data being collected. In this way, potential sources of nonresponse bias can be approximated at the employee level.

An estimate of the first component of nonresponse bias can be found in Exhibit E-3, under the column headed *Response Rate*. As discussed in Section E.1, low response rates may indicate nonresponse bias. Treating the final unweighted response rate as a fixed quantity with no variance, RTI assessed the response rate for each level of a specific covariate against the overall value to determine whether the

⁶ Unweighted rates were used because appropriate weights were not available for nonresponding employees.

difference was significant. Differences statistically significant at the 0.05 level are indicated with an asterisk (*).⁷

Census Division. Employees in the East South Central division had the highest significant response rate (74.2%) and employees in the Pacific division had the lowest significant response rate (65.0%).

Total Employees in Establishment. The highest significant response rate was for employees from establishments with 1–4 employees (72.6%). The lowest response rate was for employees with establishments with 1,000–4,999 employees (61.5%).

SIC Division. Employees in the Wholesale Trade industry had a significantly higher response rate (81.7%) than the overall rate of 67.6%. Employees in Construction had the lowest significant response rate (62.1%).

NAICS Sector. Employees in the Wholesale Trade sector had the highest significant response rate (79.0%). Employees in the Accommodation and Food Services sector had the lowest significant response rate (59.5%).

Selected Employees. The highest significant response rate was for employees from establishments with only one selected employee (77.3%). The lowest significant response rate was for employees from establishments with 19 employees selected (58.4%) and establishments with 20 employees selected (58.6%).

Questionnaire Type. The Work Activities questionnaire had a significantly lower response rate (66.0%) than the overall response rate of 67.6%.

Number of Occupations on Establishment Sampling List. Employees from establishments with eight occupations on the sampling list had a significantly higher response rate (73.0%) compared with the overall response rate of 67.6% while those from establishments with nine occupations on the sampling list had the lowest significant response rate (61.6%).

Occupational Class. Compared with the overall response rate, Protective Service Occupations had the highest significant response rate (75.2%); Food Preparation and Serving Related Occupations had the lowest significant response rate (58.6%).

Time Zone. Establishments in the Central Standard Time Zone had a significantly higher response rate (69.3%) and establishments in the Pacific Standard Time Zone had a significantly lower response rate (64.8%) compared to the overall response rate of 67.6%.

⁷ The tests were conditioned on the overall rates because the objective was to identify any subgroups that differed from the observed overall rate.

Metropolitan Status. The findings at the employee level are similar to the findings at the establishment level. The employee response rate for establishments in rural areas is significantly higher (71.9%) and response rates in urban areas are significantly lower (66.5%) than the overall response rate.

E.3.2 Comparison of Employee Respondents and Nonrespondents

Exhibit E-4 (at the end of this appendix) presents a comparison of the distribution of respondents and nonrespondents across various employee attributes. The column *Percent Difference (Resp vs. Nonresp)* reveals an estimate of the second component of nonresponse bias. As already discussed, a potential source of nonresponse bias occurs when this difference becomes large. The column *Percent Difference (Resp vs. Overall)* shows an estimate of the nonresponse bias across an attribute (see Equations [2] and [4]). *Respondent Versus Overall* differences marked with an asterisk are statistically different from zero at the 0.05 level. Large positive or negative values indicate possible nonresponse bias. Although numerous statistically significant differences exist, large sample sizes tend to increase the likelihood that very small differences will be statistically significant. In this situation, it is important to determine whether the differences are of sufficient magnitudes to be meaningful. For employee nonresponse, the differences between respondents and the overall sample do not appear to be meaningful; for example, 93.5% of the attributes had an absolute bias of less than 1 percentage point⁸ and 6.5% of the attributes had an absolute bias between 1 and 2 percentage points.

Another measure of the possibility for nonresponse bias is the effect size, as defined by Cohen (1988). In this case, the effect size is related to the chi-square test for comparing the equivalence of percentage distributions from respondents and the overall sample for the variables listed in Exhibit E-4. Cohen classified an effect size as “small” when it is about 0.10, as “medium” when it is about 0.30, and as “large” when it is about 0.50. For the variables in Exhibit E-4, all of the effect sizes were small, with the largest equal to 0.06 for each of three categories: Total Selected Employees, NAICS Sector, and Occupational Class. As previously noted, a small effect size suggests that the distribution of the variables for respondents and nonrespondents is quite similar (i.e., $\bar{X}_R - \bar{X}_N$ is small). The combination of small absolute biases and very small effect sizes indicates a low likelihood of bias due to employee nonresponse.

E.4 Item Nonresponse

Exhibits E-5 through E-11 display unweighted item response rates by item, item type, and occupation for Establishment Method Demand Phase data included in Analysis Cycles 9-12. These tables include questionnaire data from employee respondents in the occupations published in Analysis Cycles 9-12 and completed under the Establishment Method. Only items from those questionnaires that satisfied all completeness and quality requirements were evaluated. Cases that did not satisfy such requirements were included as employee nonrespondents.

⁸ Absolute value of the final column in Exhibit E-4.

Item nonresponse is analogous to partial-information patterns in which some variables are observed and some are missing. Even though partial information is present, item nonresponse can still create biased parameter estimation if the missing values are systematically related to the outcome (e.g., wealthy respondents tend to leave an income question unanswered).

Skills, Work Activities, Work Context, and Knowledge. The data in Exhibits E-5 through E-7 suggest that, for the Work Activities, Work Context, and Knowledge Questionnaires, little item nonresponse exists with respect to any single item on any questionnaire. The lowest response rate for any specific item in each questionnaire is 95.6% for Work Activities Questionnaire Item 21 (Level), 97.6% for Work Context Questionnaire Item 49, and 91.3% for Knowledge Questionnaire Item 08 (Level). In addition, as seen in Exhibit E-10, item nonresponse is slightly more prevalent for Level items than for Importance items, regardless of questionnaire type.

Occupation-Specific Tasks. It appears from Exhibit E-8 that item nonresponse may be more serious for certain Frequency and Importance items than for other items. It should be noted, however, that the eligible sample size is small for these Frequency and Importance items because a responding employee is not required to respond to the corresponding Frequency and Importance item if he or she does not consider a task to be relevant. Most of the Frequency and Importance items with a low response rate were suppressed from publication because they were also found to be not relevant to the occupation (i.e., too few respondents rated the task as relevant).

Background Questionnaire. In Exhibit E-9, the item response rates appear to be nearly constant and high (at least 93%), with the exception of Item 4 (85.6%). This item elicits information from the respondent about working in a family business.

Item Type. All the response rates by item type were 96.0% or higher (Exhibit E-10).

Occupation. Item response rates are provided in Exhibit E-11 for all occupations completed in Analysis Cycles 9-12. The overall item response rate was 98.1%, with the lowest response rate, 94.5%, coming from Cement Masons and Concrete Finishers (occupation code 47-2051.00), and the largest, 99.4%, coming from the Geographic Information Systems Technicians (occupation code 15-1099.57), Mental Health and Substance Abuse Social Workers (occupation code 21-1023.00) and the Vocational Education Teachers, Secondary School (occupation code 25-2032.00).

The extremely high item response rates indicate a low likelihood of bias due to item nonresponse.

E.5 Conclusion

Unit and item nonresponse can lead to biased inferences if the nonresponse rates are high and respondents and nonrespondents differ with regard to the characteristics of interest. An examination of both establishment and employee response rates revealed that nonresponse patterns were somewhat related to essentially all variables considered in the analyses; however, when examined, the distribution of respondents and nonrespondents across various frame attributes showed that the overall potential for nonresponse bias at both the establishment and employee levels was negligible. Because nonresponse patterns for both establishments and employees are related to the substantive variables measured in the

study, using these variables for nonresponse adjustments to the analysis weights should be effective in reducing the minimal effects, if any, due to nonresponse bias in the analysis.

At the item level, it was found that different questionnaire types and questions exhibited varying response rates, and in most cases the response rates were extremely high. This finding coincides with the findings at the establishment and employee levels—that is, that the potential for significant nonresponse bias due to item nonresponse is negligible.

Exhibit E-1. Establishment Eligibility and Response Rates (Percent)

Category	Total Estab	Verification		Screening		Recruiting		Sampling		Final	
		Elig	Resp	Elig	Resp	Elig	Resp	Elig	Resp	Elig	Resp
Total	40,402	87.4	98.1	92.3	94.0	94.3	87.7	99.1	96.2	75.7	77.5
Census Division											
New England	2,886	86.9	98.0	90.6*	93.8	93.3	87.8	99.0	96.0	73.1*	77.2
Middle Atlantic	7,518	86.9	97.6*	90.1*	93.0*	92.9*	86.1*	98.9	96.0	72.3*	74.7*
East North Central	5,841	88.7*	98.5*	93.1*	94.2	94.3	88.1	99.4*	96.9*	77.7*	79.0*
West North Central	3,196	91.1*	98.6*	92.9	95.9*	94.8	90.1*	98.9	96.4	79.4*	82.1*
South Atlantic	5,957	86.9	98.1	93.4*	94.9*	95.1*	87.4	99.1	95.8	76.5	77.9
East South Central	1,806	88.0	98.3	93.8*	94.8	95.8*	86.8	99.0	96.9	78.2*	78.4
West South Central	3,723	87.8	98.0	93.2*	93.4	95.1	87.7	99.1	96.1	77.3*	76.9
Mountain	2,916	86.7	98.1	93.1	94.8	94.4	88.0	99.2	96.2	75.9	78.4
Pacific	6,559	85.8*	97.7	92.5	92.9*	94.4	87.8	99.4*	96.1	74.7	76.4
Total Employees in Establishment											
Unknown	2,467	79.9*	97.4*	87.7*	95.7*	92.5*	91.9*	99.3	98.0*	63.7*	84.8*
1–4	5,095	73.8*	92.1*	88.3*	94.2	93.0*	91.1*	99.9*	99.0*	60.8*	78.0
5–9	2,104	85.9*	98.0	90.3*	94.4	91.9*	90.8*	99.6*	98.0*	71.5*	81.7*
10–49	10,130	87.1	98.2	91.4*	95.4*	93.6*	89.8*	99.5*	97.7*	74.4*	81.9*
50–99	5,577	89.8*	99.2*	93.9*	94.4	95.0*	88.2	99.2	96.7	79.8*	79.7*
100–249	3,651	92.4*	99.4*	94.0*	94.4	94.9	88.6	99.1	95.6	82.0*	79.2*
250–499	6,139	92.3*	99.2*	94.7*	92.9*	95.5*	84.8*	98.5*	93.8*	82.7*	72.9*
500–999	2,883	93.4*	99.3*	93.9*	92.3*	95.2	84.1*	98.0*	92.9*	82.4*	71.0*
1,000–4,999	2,201	94.0*	99.1*	94.2*	90.2*	95.8*	77.5*	98.3*	92.4*	84.1*	63.4*
5,000+	155	94.2*	99.3	91.0	85.6*	98.2*	73.9*	98.8	95.1	83.9*	59.2*
SIC Division											
Agriculture, Forestry, Fishing	598	85.6	96.9	91.9	96.5*	96.8*	89.9	99.2	97.9*	76.1	81.8*
Mining	932	82.2*	97.9	96.0*	95.8*	97.5*	90.3*	99.8*	98.0*	76.9	83.0*
Construction	2,401	85.3*	95.2*	86.5*	93.3	93.2	84.2*	99.6*	94.6*	69.3*	69.9*
Manufacturing	4,776	89.4*	98.1	94.8*	91.6*	96.5*	85.9*	99.2	95.2*	81.2*	73.4*
Transportation, Communication, Electric, Gas, and Sanitary Services	2,526	85.5*	98.3	90.6*	92.4*	93.8	86.5	99.1	95.7	72.2*	75.0*
Wholesale Trade	530	88.3	98.5	92.0	94.1	92.5	88.3	97.9	95.3	73.8	77.7

continued

Exhibit E-1. Establishment Eligibility and Response Rates (Percent) (continued)

Category	Total Estab	Verification		Screening		Recruiting		Sampling		Final	
		Elig	Resp	Elig	Resp	Elig	Resp	Elig	Resp	Elig	Resp
Retail Trade	2,406	87.5	97.9	95.6*	90.1*	96.5*	85.6*	99.3	95.7	80.2*	72.2*
Finance, Insurance, Real Estate	1,313	79.4*	97.9	94.0*	90.7*	93.0	81.5*	99.2	93.3*	69.5*	66.8*
Services	20,358	87.4	98.1	92.3	94.7*	93.6*	87.7	99.1	96.6*	75.1*	78.5*
Public Administration	4,562	91.0*	99.4*	91.0*	97.0*	94.3	93.0*	99.0	97.1*	77.5*	86.7*
NAICS Sector											
Agriculture, Forestry, Fishing, and Hunting	463	86.0	97.5	93.0	98.9*	97.8*	97.7*	99.4	98.8*	77.8	93.1*
Mining	921	82.4*	98.0	96.1*	95.7*	97.5*	90.0*	99.8*	98.0*	77.3	82.4*
Utilities	388	88.9	99.4*	91.8	95.9	95.4	85.8	98.4	95.9	77.1	77.9
Construction	2,480	85.8*	95.6*	87.0*	93.1	93.1	85.0*	99.5	94.8*	69.9*	70.9*
Manufacturing	3,895	89.0*	98.3	93.8*	91.8*	95.7*	87.0	99.2	95.6	79.6*	74.7*
Wholesale Trade	582	88.3	97.9	91.1	94.1	93.0	88.0	98.9	95.7	73.7	77.9
Retail Trade	1,605	88.6	98.8*	95.1*	92.5*	97.2*	86.9	98.9	96.6	80.9*	76.8
Transportation and Warehousing	783	82.9*	98.3	85.9*	93.6	92.4	85.9	99.5	95.8	65.6*	75.5
Information	2,093	83.1*	97.5	95.2*	92.3*	96.4*	86.2	99.3	96.2	75.8	74.5*
Finance and Insurance	1,325	79.1*	97.8	94.3*	90.6*	92.8	81.1*	99.1	93.6*	69.3*	66.6*
Real Estate and Rental and Leasing	424	86.1	98.6	97.2*	97.7*	99.1*	90.9*	99.7	96.7	82.1*	85.3*
Professional, Scientific, and Technical Services	3,911	82.1*	95.6*	92.5	92.4*	92.8*	86.6	99.2	96.4	70.7*	73.0*
Management of Companies and Enterprises	8	87.5	100.0	85.7	100.0	100.0	100.0	100.0	100.0	75.0	100.0
Administrative and Support and Waste Management and Remediation Services	1,005	82.7*	96.4*	84.8*	93.7	87.7*	92.1*	98.8	97.2	60.2*	81.7*
Educational Services	4,036	92.0*	99.2*	91.5*	96.7*	94.3	89.5*	99.2	97.3*	78.4*	83.8*
Health Care and Social Assistance	6,760	89.7*	99.2*	95.2*	93.6	94.8	84.6*	99.1	95.4*	80.6*	74.6*
Arts, Entertainment, and Recreation	1,833	86.1	97.7	90.9*	97.5*	93.5	91.5*	99.2	98.1*	72.5*	85.6*
Accommodation and Food Services	2,017	87.7	97.6	95.5*	90.5*	92.6*	83.9*	98.6	94.5*	76.8	69.6*
Other Services, Except Public Administration	1,393	89.1*	96.4*	85.6*	94.1	93.7	90.9*	98.9	96.7	70.7*	79.7
Public Administration	4,480	91.0*	99.3*	90.4*	96.9*	93.8	92.8*	98.9	97.0*	76.5	86.3*

continued

Exhibit E-1. Establishment Eligibility and Response Rates (Percent) (continued)

Category	Total Estab	Verification		Screening		Recruiting		Sampling		Final	
		Elig	Resp	Elig	Resp	Elig	Resp	Elig	Resp	Elig	Resp
Number of Occupations on Establishment Sampling List											
1-5	27,392	85.8*	97.7*	89.7*	95.4*	92.3*	91.4*	99.3*	97.9*	70.7*	83.1*
6	2,561	89.0*	98.1	98.4*	91.5*	97.8*	81.7*	99.4	92.7*	85.5*	67.7*
7	1,299	90.7*	98.9*	98.5*	93.3	97.8*	85.3*	99.2	95.8	86.6*	75.4
8	880	90.3*	99.1*	99.1*	92.6	97.8*	85.9	99.0	95.3	86.9*	74.9
9	854	88.8	99.3*	97.7*	92.4	94.0	87.2	97.7*	97.8*	80.2*	77.7
10	7,416	91.7*	99.0*	96.9*	90.8*	98.8*	78.9*	98.7*	91.4*	86.9*	64.7*
Time Zone											
Eastern Standard Time	20,112	87.2	98.0	91.7*	93.9	94.0	87.2	99.1	96.1	74.7*	76.9
Central Standard Time	10,390	89.0*	98.3	93.2*	94.5	94.9*	88.1	99.0	96.5	78.1*	78.7*
Mountain Standard Time	2,903	87.5	98.0	93.1	95.6*	94.9	88.6	99.4	96.5	77.1	79.9*
Pacific Standard Time	6,525	85.9*	97.8	92.5	92.6*	94.3	87.5	99.3	96.0	74.6*	75.7*
Alaska Standard Time	269	83.3	97.8	94.1	96.1	93.9	93.5*	98.9	100.0	73.2	87.3*
Hawaii Standard Time	203	86.2	98.3	91.3	94.9	90.6	91.1	100.0	96.7	71.4	82.1
Metropolitan Status											
Rural	7,371	89.5*	98.6*	93.3*	97.0*	95.4*	90.5*	99.3	96.8*	79.2*	83.7*
Urban	33,031	87.0*	97.9	92.1	93.3*	94.0	87.0*	99.1	96.1	74.9*	76.0*

Note: Response rates were calculated from those establishments that were classified as eligible at each step. Final rates are combined rates across all stages of data collection. All establishments are considered to be eligible at the verification stage. At subsequent stages, nonrespondents from the previous stage are removed from the denominator of the eligibility rate; therefore, the final eligibility rate, defined as the total number of eligible establishments divided by the total establishments in the sample, is not equivalent to the product of the eligibility rates at each stage. Similarly, establishments that were identified as ineligible in the previous stage were not included in the denominator of the response rate for a particular stage. Consequently, the final response rate, defined as the total number of responding establishments divided by the total number of eligible establishments in the sample, is not the product of the response rates at each stage. Statistical tests were conducted only for two or more establishments. SIC = Standard Industrial Classification. NAICS = North American Industry Classification System.

*Statistically different from the total category at the 0.05 level.

Exhibit E-2. Comparison of Establishment Respondents and Nonrespondents

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Total	23,704	100.0	6,879	100.0	30,583	100.0	-	-
Census Division (effect size = 0.03)								
New England	1,628	6.9	482	7.0	2,110	6.9	-0.1	-0.0
Middle Atlantic	4,060	17.1	1,377	20.0	5,437	17.8	-2.9	-0.6
East North Central	3,582	15.1	954	13.9	4,536	14.8	1.2	0.3
West North Central	2,084	8.8	455	6.6	2,539	8.3	2.2	0.5*
South Atlantic	3,548	15.0	1,007	14.6	4,555	14.9	0.3	0.1
East South Central	1,108	4.7	305	4.4	1,413	4.6	0.2	0.1
West South Central	2,214	9.3	664	9.7	2,878	9.4	-0.3	-0.1
Mountain	1,735	7.3	478	6.9	2,213	7.2	0.4	0.1

continued

**Exhibit E-2. Comparison of Establishment Respondents and Nonrespondent
(continued)**

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Pacific	3,745	15.8	1,157	16.8	4,902	16.0	-1.0	-0.2
Total Employees in Establishment (effect size = 0.07)								
Unknown	1,332	5.6	239	3.5	1,571	5.1	2.1	0.5*
1-4	2,415	10.2	683	9.9	3,098	10.1	0.3	0.1
5-9	1,230	5.2	275	4.0	1,505	4.9	1.2	0.3
10-49	6,175	26.1	1,363	19.8	7,538	24.6	6.2	1.4*
50-99	3,543	14.9	905	13.2	4,448	14.5	1.8	0.4
100-249	2,370	10.0	622	9.0	2,992	9.8	1.0	0.2
250-499	3,700	15.6	1,374	20.0	5,074	16.6	-4.4	-1.0*
500-999	1,688	7.1	688	10.0	2,376	7.8	-2.9	-0.6*
1,000-4,999	1,174	5.0	677	9.8	1,851	6.1	-4.9	-1.1*
5,000+	77	0.3	53	0.8	130	0.4	-0.4	-0.1
SIC Division (effect size = 0.06)								
Agriculture, Forestry, Fishing	372	1.6	83	1.2	455	1.5	0.4	0.1
Mining	595	2.5	122	1.8	717	2.3	0.7	0.2
Construction	1,163	4.9	501	7.3	1,664	5.4	-2.4	-0.5*
Manufacturing	2,846	12.0	1,030	15.0	3,876	12.7	-3.0	-0.7*
Transportation, Communication, Electric, Gas, and Sanitary Services	1,367	5.8	456	6.6	1,823	6.0	-0.9	-0.2
Wholesale Trade	304	1.3	87	1.3	391	1.3	0.0	0.0
Retail Trade	1,392	5.9	537	7.8	1,929	6.3	-1.9	-0.4*
Finance, Insurance, Real Estate	610	2.6	303	4.4	913	3.0	-1.8	-0.4*
Services	11,988	50.6	3,291	47.8	15,279	50.0	2.7	0.6
Public Administration	3,067	12.9	469	6.8	3,536	11.6	6.1	1.4*
NAICS Sector (effect size = 0.08)								
Agriculture, Forestry, Fishing, and Hunting	335	1.4	25	0.4	360	1.2	1.0	0.2*
Mining	587	2.5	125	1.8	712	2.3	0.7	0.1
Utilities	233	1.0	66	1.0	299	1.0	0.0	0.0
Construction	1,230	5.2	504	7.3	1,734	5.7	-2.1	-0.5*
Manufacturing	2,314	9.8	785	11.4	3,099	10.1	-1.6	-0.4
Wholesale Trade	334	1.4	95	1.4	429	1.4	0.0	0.0
Retail Trade	997	4.2	302	4.4	1,299	4.2	-0.2	-0.0
Transportation and Warehousing	388	1.6	126	1.8	514	1.7	-0.2	-0.0
Information	1,181	5.0	405	5.9	1,586	5.2	-0.9	-0.2

continued

**Exhibit E-2. Comparison of Establishment Respondents and Nonrespondent
(continued)**

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Finance and Insurance	611	2.6	307	4.5	918	3.0	-1.9	-0.4*
Real Estate and Rental and Leasing	297	1.3	51	0.7	348	1.1	0.5	0.1
Professional, Scientific, and Technical Services	2,018	8.5	748	10.9	2,766	9.0	-2.4	-0.5*
Management of Companies and Enterprises	6	0.0	0	0.0	6	0.0	0.0	0.0
Administrative and Support and Waste Management and Remediation Services	494	2.1	111	1.6	605	2.0	0.5	0.1
Educational Services	2,652	11.2	513	7.5	3,165	10.3	3.7	0.8*
Health Care and Social Assistance	4,066	17.2	1,384	20.1	5,450	17.8	-3.0	-0.7*
Arts, Entertainment, and Recreation	1,137	4.8	192	2.8	1,329	4.3	2.0	0.5*
Accommodation and Food Services	1,079	4.6	471	6.8	1,550	5.1	-2.3	-0.5*
Other Services, Except Public Administration	785	3.3	200	2.9	985	3.2	0.4	0.1
Public Administration	2,960	12.5	469	6.8	3,429	11.2	5.7	1.3*
Number of Occupations on Establishment Sampling List (effect size = 0.10)								
1-5	16,101	67.9	3,272	47.6	19,373	63.3	20.4	4.6*
6	1,482	6.3	707	10.3	2,189	7.2	-4.0	-0.9*
7	848	3.6	277	4.0	1,125	3.7	-0.4	-0.1
8	573	2.4	192	2.8	765	2.5	-0.4	-0.1
9	532	2.2	153	2.2	685	2.2	0.0	0.0
10	4,168	17.6	2,278	33.1	6,446	21.1	-15.5	-3.5*
Time Zone (effect size = 0.02)								
Eastern Standard Time	11,549	48.7	3,468	50.4	15,017	49.1	-1.7	-0.4
Central Standard Time	6,388	26.9	1,728	25.1	8,116	26.5	1.8	0.4
Mountain Standard Time	1,788	7.5	450	6.5	2,238	7.3	1.0	0.2
Pacific Standard Time	3,688	15.6	1,182	17.2	4,870	15.9	-1.6	-0.4
Alaska Standard Time	172	0.7	25	0.4	197	0.6	0.4	0.1
Hawaii Standard Time	119	0.5	26	0.4	145	0.5	0.1	0.0
Metropolitan Status (effect size = 0.04)								
Rural	4,884	20.6	951	13.8	5,835	19.1	6.8	1.5*
Urban	18,820	79.4	5,928	86.2	24,748	80.9	-6.8	-1.5*

Note: Because of rounding, the difference columns may not match their constituent parts. Statistical tests were conducted only for 2 or more establishments. NA = not applicable. SIC = Standard Industrial Classification. NAICS = North American Industry Classification System.

*Statistically different from the total category at the 0.05 level.

Exhibit E-3. Unweighted Employee Response Rates

Category	Sampled	Response Rate
Total	45,400	67.6
Census Division		
New England	2,689	66.8
Middle Atlantic	6,334	68.5
East North Central	7,420	68.9
West North Central	4,327	70.6*
South Atlantic	7,079	65.5*
East South Central	2,453	74.2*
West South Central	4,673	67.0
Mountain	3,794	65.8
Pacific	6,631	65.0*
Total Employees in Establishment		
Unknown	2,001	67.7
1–4	1,612	72.6*
5–9	1,595	70.0
10–49	8,856	71.6*
50–99	6,475	70.6*
100–249	4,931	66.8
250–499	9,847	66.3
500–999	5,285	63.9*
1,000–4,999	4,463	61.5*
5,000+	335	57.9
SIC Division		
Agriculture, Forestry, Fishing	596	73.5
Mining	385	66.5
Construction	2,029	62.1*
Manufacturing	4,895	69.8*
Transportation, Communication, Electric, Gas, and Sanitary Services	2,628	65.6
Wholesale Trade	344	81.7*
Retail Trade	2,724	62.4*
Finance, Insurance, Real Estate	1,139	73.4*
Services	24,990	67.1
Public Administration	5,670	70.9*
NAICS Sector		
Agriculture, Forestry, Fishing, and Hunting	232	69.8
Mining	385	66.5
Utilities	966	64.3
Construction	2,107	61.7*
Manufacturing	4,167	70.4*
Wholesale Trade	409	79.0*

continued

Exhibit E-3. Unweighted Employee Response Rates (continued)

Category	Sampled	Response Rate
Retail Trade	1,650	65.6
Transportation and Warehousing	558	70.6
Information	1,986	68.9
Finance and Insurance	1,174	72.7*
Real Estate and Rental and Leasing	283	69.6
Professional, Scientific, and Technical Services	3,016	72.9*
Management of Companies and Enterprises	11	63.6
Administrative and Support and Waste Management and Remediation Services	448	77.2*
Educational Services	8,634	66.0
Health Care and Social Assistance	8,776	66.3
Arts, Entertainment, and Recreation	1,311	65.4
Accommodation and Food Services	2,568	59.5*
Other Services, Except Public Administration	1,025	67.7
Public Administration	5,694	71.3*
Selected Employees in Establishment		
1	2,147	77.3*
2	2,326	72.4*
3	2,598	72.0*
4	2,700	69.8
5	2,520	68.2
6	2,724	68.0
7	2,387	70.2
8	11,464	67.0
9	1,377	66.4
10	1,390	71.1
11	1,177	67.1
12	1,104	66.8
13	1,456	66.7
14	1,246	65.3
15	975	67.5
16	2,752	63.6*
17	663	64.7
18	414	69.6
19	380	58.4*
20	3,600	58.6*
Questionnaire Type		
Work Activities	15,389	66.0*
Work Context	14,775	69.6*
Knowledge	15,236	67.3

continued

Exhibit E-3. Unweighted Employee Response Rates (continued)

Category	Sampled	Response Rate
Number of Occupations on Establishment Sampling List		
1-5	17,963	70.7*
6	3,649	66.4
7	2,685	68.3
8	1,601	73.0*
9	1,480	61.6*
10	18,022	64.6*
Occupation Class		
Management Occupations	2,236	73.5*
Business and Financial Operations Occupations	1,654	71.5*
Computer and Mathematical Occupations	1,698	65.7
Architecture and Engineering Occupations	2,433	71.4*
Life, Physical, and Social Science Occupations	1,719	71.7*
Community and Social Services Occupations	1,041	70.3
Legal Occupations	1,166	62.1*
Education, Training, and Library Occupations	7,708	65.5*
Arts, Design, Entertainment, Sports, and Media Occupations	1,881	65.9
Healthcare Practitioners and Technical Occupations	5,012	64.7*
Healthcare Support Occupations	1,688	65.8
Protective Service Occupations	2,234	75.2*
Food Preparation and Serving Related Occupations	1,680	58.6*
Building and Grounds Cleaning and Maintenance Occupations	176	77.3
Personal Care and Service Occupations	1,743	67.5
Sales and Related Occupations	1,286	67.7
Office and Administrative Support Occupations	3,478	73.7*
Construction and Extraction Occupations	2,084	61.4*
Installation, Maintenance, and Repair Occupations	1,959	66.5
Production Occupations	1,446	67.0
Transportation and Material Moving Occupations	1,078	66.7
Time Zone		
Eastern Standard Time	20,990	67.6
Central Standard Time	13,382	69.3*
Mountain Standard Time	3,951	66.8
Pacific Standard Time	6,547	64.8*
Alaska Standard Time	295	67.1
Hawaii Standard Time	235	63.0
Metropolitan Status		
Rural	9,385	71.9*
Urban	36,015	66.5*

Note: Statistical tests conducted only for 2 or more employees. NA = not applicable, SIC = Standard Industrial Classification. NAICS = North American Classification System.

*Statistically different from the total category.

Exhibit E-4. Comparison of Employee Respondents and Nonrespondents

Category	Respondents		Nonrespondents		Overall		Percent Difference Resps vs. Nonresps	Percent Difference Resps vs. Overall
	No.	%	No.	%	No.	%		
Total	30,693	100.0	14,707	100.0	45,400	100.0	-	-
Census Division (effect size =0.04)								
New England	1,797	5.9	892	6.1	2,689	5.9	-0.2	-0.1
Middle Atlantic	4,336	14.1	1,998	13.6	6,334	14.0	0.5	0.2
East North Central	5,111	16.7	2,309	15.7	7,420	16.3	1.0	0.3
West North Central	3,057	10.0	1,270	8.6	4,327	9.5	1.3	0.4*
South Atlantic	4,634	15.1	2,445	16.6	7,079	15.6	-1.5	-0.5*
East South Central	1,821	5.9	632	4.3	2,453	5.4	1.6	0.5*
West South Central	3,129	10.2	1,544	10.5	4,673	10.3	-0.3	-0.1
Mountain	2,498	8.1	1,296	8.8	3,794	8.4	-0.7	-0.2
Pacific	4,310	14.0	2,321	15.8	6,631	14.6	-1.7	-0.6*
Total Employees in Establishment (effect size = 0.05)								
Unknown	1,354	4.4	647	4.4	2,001	4.4	0.0	0.0
1-4	1,171	3.8	441	3.0	1,612	3.6	0.8	0.3*
5-9	1,117	3.6	478	3.3	1,595	3.5	0.4	0.1
10-49	6,339	20.7	2,517	17.1	8,856	19.5	3.5	1.1*
50-99	4,572	14.9	1,903	12.9	6,475	14.3	2.0	0.6*
100-249	3,295	10.7	1,636	11.1	4,931	10.9	-0.4	-0.1
250-499	6,528	21.3	3,319	22.6	9,847	21.7	-1.3	-0.4
500-999	3,377	11.0	1,908	13.0	5,285	11.6	-2.0	-0.6*
1,000-4,999	2,746	8.9	1,717	11.7	4,463	9.8	-2.7	-0.9*
5,000+	194	0.6	141	1.0	335	0.7	-0.3	-0.1
Total Selected Employees in Establishment (effect size = 0.06)								
1	1,660	5.4	487	3.3	2,147	4.7	2.1	0.7*
2	1,684	5.5	642	4.4	2,326	5.1	1.1	0.4*
3	1,870	6.1	728	5.0	2,598	5.7	1.1	0.4*
4	1,884	6.1	816	5.5	2,700	5.9	0.6	0.2
5	1,719	5.6	801	5.4	2,520	5.6	0.2	0.0
6	1,851	6.0	873	5.9	2,724	6.0	0.1	0.0
7	1,676	5.5	711	4.8	2,387	5.3	0.6	0.2
8	7,677	25.0	3,787	25.7	11,464	25.3	-0.7	-0.2
9	915	3.0	462	3.1	1,377	3.0	-0.2	-0.1
10	988	3.2	402	2.7	1,390	3.1	0.5	0.2
11	790	2.6	387	2.6	1,177	2.6	-0.1	-0.0
12	738	2.4	366	2.5	1,104	2.4	-0.1	-0.0
13	971	3.2	485	3.3	1,456	3.2	-0.1	-0.0
14	814	2.7	432	2.9	1,246	2.7	-0.3	-0.1
15	658	2.1	317	2.2	975	2.1	-0.0	-0.0

continued

Exhibit E-4. Comparison of Employee Respondents and Nonrespondents (continued)

Category	Respondents		Nonrespondents		Overall		Percent Difference Resps vs. Nonresps	Percent Difference Resps vs. Overall
	No.	%	No.	%	No.	%		
16	1,750	5.7	1,002	6.8	2,752	6.1	-1.1	-0.4*
17	429	1.4	234	1.6	663	1.5	-0.2	-0.1
18	288	0.9	126	0.9	414	0.9	0.1	0.0
19	222	0.7	158	1.1	380	0.8	-0.4	-0.1
20	2,109	6.9	1,491	10.1	3,600	7.9	-3.3	-1.1*
Questionnaire Type (effect size = 0.02)								
Work Activities	10,154	33.1	5,235	35.6	15,389	33.9	-2.5	-0.8*
Work Context	10,281	33.5	4,494	30.6	14,775	32.5	2.9	1.0*
Knowledge	10,258	33.4	4,978	33.8	15,236	33.6	-0.4	-0.1
SIC Division (effect size = 0.04)								
Agriculture, Forestry, Fishing	438	1.4	158	1.1	596	1.3	0.4	0.1
Mining	256	0.8	129	0.9	385	0.8	-0.0	-0.0
Construction	1,260	4.1	769	5.2	2,029	4.5	-1.1	-0.4*
Manufacturing	3,416	11.1	1,479	10.1	4,895	10.8	1.1	0.3*
Transportation, Communication, Electric, Gas, and Sanitary Services	1,725	5.6	903	6.1	2,628	5.8	-0.5	-0.2
Wholesale Trade	281	0.9	63	0.4	344	0.8	0.5	0.2*
Retail Trade	1,701	5.5	1,023	7.0	2,724	6.0	-1.4	-0.5*
Finance, Insurance, Real Estate	836	2.7	303	2.1	1,139	2.5	0.7	0.2*
Services	16,761	54.6	8,229	56.0	24,990	55.0	-1.3	-0.4
Public Administration	4,019	13.1	1,651	11.2	5,670	12.5	1.9	0.6*
NAICS Sector (effect size = 0.06)								
Agriculture, Forestry, Fishing, and Hunting	162	0.5	70	0.5	232	0.5	0.1	0.0
Mining	256	0.8	129	0.9	385	0.8	-0.0	-0.0
Utilities	621	2.0	345	2.3	966	2.1	-0.3	-0.1
Construction	1,299	4.2	808	5.5	2,107	4.6	-1.3	-0.4*
Manufacturing	2,934	9.6	1,233	8.4	4,167	9.2	1.2	0.4*
Wholesale Trade	323	1.1	86	0.6	409	0.9	0.5	0.2*
Retail Trade	1,083	3.5	567	3.9	1,650	3.6	-0.3	-0.1
Transportation and Warehousing	394	1.3	164	1.1	558	1.2	0.2	0.1
Information	1,368	4.5	618	4.2	1,986	4.4	0.3	0.1
Finance and Insurance	854	2.8	320	2.2	1,174	2.6	0.6	0.2*
Real Estate and Rental and Leasing	197	0.6	86	0.6	283	0.6	0.1	0.0
Professional, Scientific, and Technical Services	2,199	7.2	817	5.6	3,016	6.6	1.6	0.5*

Continued

Exhibit E-4. Comparison of Employee Respondents and Nonrespondents (continued)

Category	Respondents		Nonrespondents		Overall		Percent Difference Resps vs. Nonresps	Percent Difference Resps vs. Overall
	No.	%	No.	%	No.	%		
Management of Companies and Enterprises	7	0.0	4	0.0	11	0.0	-0.0	-0.0
Administrative and Support and Waste Management and Remediation Services	346	1.1	102	0.7	448	1.0	0.4	0.1*
Educational Services	5,695	18.6	2,939	20.0	8,634	19.0	-1.4	-0.5*
Health Care and Social Assistance	5,818	19.0	2,958	20.1	8,776	19.3	-1.2	-0.4
Arts, Entertainment, and Recreation	857	2.8	454	3.1	1,311	2.9	-0.3	-0.1
Accommodation and Food Services	1,529	5.0	1,039	7.1	2,568	5.7	-2.1	-0.7*
Other Services, Except Public Administration	694	2.3	331	2.3	1,025	2.3	0.0	0.0
Public Administration	4,057	13.2	1,637	11.1	5,694	12.5	2.1	0.7*
Occupation Class (effect size = 0.06)								
Management Occupations	1,643	5.4	593	4.0	2,236	4.9	1.3	0.4*
Business and Financial Operations Occupations	1,183	3.9	471	3.2	1,654	3.6	0.7	0.2*
Computer and Mathematical Occupations	1,116	3.6	582	4.0	1,698	3.7	-0.3	-0.1
Architecture and Engineering Occupations	1,738	5.7	695	4.7	2,433	5.4	0.9	0.3*
Life, Physical, and Social Science Occupations	1,233	4.0	486	3.3	1,719	3.8	0.7	0.2*
Community and Social Services Occupations	732	2.4	309	2.1	1,041	2.3	0.3	0.1
Legal Occupations	724	2.4	442	3.0	1,166	2.6	-0.6	-0.2*
Education, Training, and Library Occupations	5,048	16.4	2,660	18.1	7,708	17.0	-1.6	-0.5*
Arts, Design, Entertainment, Sports, and Media Occupations	1,240	4.0	641	4.4	1,881	4.1	-0.3	-0.1
Healthcare Practitioners and Technical Occupations	3,245	10.6	1,767	12.0	5,012	11.0	-1.4	-0.5*
Healthcare Support Occupations	1,111	3.6	577	3.9	1,688	3.7	-0.3	-0.1
Protective Service Occupations	1,679	5.5	555	3.8	2,234	4.9	1.7	0.5*
Food Preparation and Serving Related Occupations	984	3.2	696	4.7	1,680	3.7	-1.5	-0.5*
Building and Grounds Cleaning and Maintenance Occupations	136	0.4	40	0.3	176	0.4	0.2	0.1
Personal Care and Service Occupations	1,177	3.8	566	3.8	1,743	3.8	-0.0	-0.0

Continued

Exhibit E-4. Comparison of Employee Respondents and Nonrespondents (continued)

Category	Respondents		Nonrespondents		Overall		Percent Difference Resps vs. Nonresps	Percent Difference Resps vs. Overall
	No.	%	No.	%	No.	%		
Sales and Related Occupations	870	2.8	416	2.8	1,286	2.8	0.0	0.0
Office and Administrative Support Occupations	2,565	8.4	913	6.2	3,478	7.7	2.1	0.7*
Construction and Extraction Occupations	1,279	4.2	805	5.5	2,084	4.6	-1.3	-0.4*
Installation, Maintenance, and Repair Occupations	1,302	4.2	657	4.5	1,959	4.3	-0.2	-0.1
Production Occupations	969	3.2	477	3.2	1,446	3.2	-0.1	-0.0
Transportation and Material Moving Occupations	719	2.3	359	2.4	1,078	2.4	-0.1	-0.0
Number of Occupations on Establishment Sampling List (effect size = 0.05)								
1-5	12,706	41.4	5,257	35.7	17,963	39.6	5.7	1.8*
6	2,422	7.9	1,227	8.3	3,649	8.0	-0.5	-0.1
7	1,834	6.0	851	5.8	2,685	5.9	0.2	0.1
8	1,169	3.8	432	2.9	1,601	3.5	0.9	0.3*
9	911	3.0	569	3.9	1,480	3.3	-0.9	-0.3*
10	11,651	38.0	6,371	43.3	18,022	39.7	-5.4	-1.7*
Time Zone (effect size = 0.02)								
Eastern Standard Time	14,187	46.2	6,803	46.3	20,990	46.2	-0.0	-0.0
Central Standard Time	9,277	30.2	4,105	27.9	13,382	29.5	2.3	0.7*
Mountain Standard Time	2,638	8.6	1,313	8.9	3,951	8.7	-0.3	-0.1
Pacific Standard Time	4,245	13.8	2,302	15.7	6,547	14.4	-1.8	-0.6*
Alaska Standard Time	198	0.6	97	0.7	295	0.6	-0.0	-0.0
Hawaii Standard Time	148	0.5	87	0.6	235	0.5	-0.1	-0.0
Metropolitan Status (effect size = 0.03)								
Rural	6,751	22.0	2,634	17.9	9,385	20.7	4.1	1.3*
Urban	23,942	78.0	12,073	82.1	36,015	79.3	-4.1	-1.3*

Notes: Because of rounding, the difference columns may not match their constituent parts. Statistical tests conducted only for 2 or more employees. NA = not applicable, SIC = Standard Industrial Classification. NAICS = North American Classification System.

*Statistically different from zero at the 0.05 level.

Exhibit E-5. Ten Lowest Item Completion Rates, Work Activities Questionnaire

Item and Description		Sampled	Response Rate
B21-Level	Providing documentation, detailed instructions, drawings, or specifications to tell others about how devices, parts, equipment, or structures are to be fabricated, constructed, assembled, modified, maintained, or used.	3,863	95.6
B22-Level	Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.	3,928	95.7
B40-Level	Recruiting, interviewing, selecting, hiring, and promoting employees in an organization.	4,434	95.9
B23-Level	Servicing, repairing, calibrating, regulating, fine-tuning, or testing machines, devices, and equipment that operate primarily on the basis of electrical or electronic (not mechanical) principles.	4,292	96.1
B05-Level	Estimating sizes, distances, and quantities; or determining time, costs, resources, or materials needed to perform a work activity.	7,393	96.3
B32-Level	Performing for people or dealing directly with the public. This includes serving customers in restaurants and stores, and receiving clients or guests.	7,033	96.5
B41-Level	Monitoring and controlling resources and overseeing the spending of money.	5,996	96.7
B20-Level	Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft.	4,411	96.7
B06-Level	Assessing the value, importance, or quality of things or people.	8,094	96.8
B18-Level	Using either control mechanisms or direct physical activity to operate machines or processes (not including computers or vehicles).	5,816	96.8

Exhibit E-6. Ten Lowest Item Completion Rates, Work Context Questionnaire

Item and Description		Sampled	Response Rate
D49	How automated is the job?	9,501	97.6
D45	How serious would the result usually be if the worker made a mistake that was not readily correctable?	9,501	97.7
D53	To what extent does this job require the worker to compete or to be aware of competitive pressures?	9,501	98.4
D47	How frequently is the worker required to make decisions that affect other people, the financial resources, and/or the image and reputation of the organization?	9,501	98.6
D51	How important is repeating the same physical activities (e.g., key entry) or mental activities (e.g., checking entries in a ledger) over and over, without stopping, to performing this job?	9,501	98.7
D39	How much does this job require keeping or regaining your balance?	9,501	98.7
D55	How important is it to this job that the pace is determined by the speed of equipment or machinery? (This does not refer to keeping busy at all times on this job.)	9,501	98.7

continued

**Exhibit E-6. Ten Lowest Item Completion Rates, Work Context Questionnaire
(continued)**

Item and Description		Sampled	Response Rate
D09	How important is it to coordinate or lead others in accomplishing work activities in this job?	9,501	98.8
D25	How often does this job require working exposed to contaminants (such as pollutants, gases, dust or odors)?	9,501	98.8
D40	How much does this job require using your hands to handle, control, or feel objects, tools or controls?	9,501	98.9

Exhibit E-7. Ten Lowest Item Completion Rates, Knowledge Questionnaire

Item	Item Description	Sampled	Response Rate
E08-Level	Knowledge of techniques and equipment for planting, growing, and harvesting food products (both plant and animal) for consumption, including storage/handling techniques.	1,579	91.3
E26-Level	Knowledge of the theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.	2,152	94.1
E12-Level	Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.	2,934	95.6
E17-Level	Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.	3,612	95.9
E27-Level	Knowledge of historical events and their causes, indicators, and effects on civilizations and cultures.	3,252	96.1
E07-Level	Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.	4,802	96.4
E21-Level	Knowledge of the information and techniques needed to diagnose and treat human injuries, diseases, and deformities. This includes symptoms, treatment alternatives, drug properties and interactions, and preventive health-care measures.	4,274	96.4
E22-Level	Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.	4,556	96.6
E25-Level	Knowledge of the structure and content of a foreign (non-English) language including the meaning and spelling of words, rules of composition and grammar, and pronunciation.	4,157	96.7
E28-Level	Knowledge of different philosophical systems and religions. This includes their basic principles, values, ethics, ways of thinking, customs, practices, and their impact on human culture.	4,116	96.8

Exhibit E-8. Ten Lowest Item Completion Rates, Task Questionnaire

Item	Item Description	Sampled	Response Rate
19-4051.01, Nuclear Equipment Operation Technicians: T2-Importance	Control laboratory compounding equipment enclosed in protective hot cells in order to prepare radioisotopes and other radioactive materials.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T2-Frequency	Control laboratory compounding equipment enclosed in protective hot cells in order to prepare radioisotopes and other radioactive materials.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T6-Importance	Review experiment schedules in order to determine specifications, such as subatomic particle energy, intensity, and repetition rate parameters.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T6-Frequency	Review experiment schedules in order to determine specifications, such as subatomic particle energy, intensity, and repetition rate parameters.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T8-Importance	Direct the work of accelerator support service personnel.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T8-Frequency	Direct the work of accelerator support service personnel.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T15-Importance	Test physical, chemical, or metallurgical properties of experimental materials according to standardized procedures, using test equipment and measuring instruments.	2	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T20-Importance	Notify experimenters in target control rooms when particle beam parameters meet specifications.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T20-Frequency	Notify experimenters in target control rooms when particle beam parameters meet specifications.	1	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T24-Importance	Collaborate with accelerator and beamline physicists in order to make experimental measurements.	2	0.0
19-4051.01, Nuclear Equipment Operation Technicians: T24-Frequency	Collaborate with accelerator and beamline physicists in order to make experimental measurements.	2	0.0

Exhibit E-9. Completion Rates, Background Questionnaire

Item and Description	Sampled	Response Rate
2 How long at job?	28,211	99.3
3 Employment sector	28,211	96.9
4 Family business	28,211	85.6
5 Age group	28,211	96.5
6 Gender	28,211	98.3
7 Ethnicity	28,211	96.9
8 Race	28,211	93.9

Continued

Exhibit E-9. Completion Rates, Background Questionnaire (continued)

Item and Description	Sampled	Response Rate
9A Blindness, deafness, or other severe vision or hearing impairment	28,211	98.3
9B A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying	28,211	98.2
10A Difficulty learning, remembering, or concentrating	28,211	95.7
10B Difficulty bathing, or getting around inside the home	28,211	95.7
10C Going outside the home alone to shop or visit the doctor's office	28,211	95.7
10D Working at a job or business	28,211	95.6
11 Education level	28,211	99.1

Exhibit E-10. Item Completion Rates by Item Type

Item Type	Questions	Response Rate
TOTAL	3,792,134	98.1
B--Work Activities--Importance	380,193	99.0
B-Work--Activities--Level	302,982	97.4
D--Work Context	541,557	99.1
E--Knowledge--Education and Training	47,185	98.7
E--Knowledge--Importance	311,421	99.0
E--Knowledge--Level	179,149	97.3
E--Knowledge--Work Styles Background	150,992	99.5
Background	394,954	96.1
Task--Relevance	585,805	99.0
Task--Importance	448,948	97.6
Task--Frequency	448,948	96.9

Exhibit E-11. Item Completion Rates by Occupation

SOC Code	SOC Title	Questions	Response Rate
TOTAL		3,792,134	98.1
11-1021.00	General and Operations Managers	14,822	98.1
11-2011.00	Advertising and Promotions Managers	9,006	98.5
11-2031.00	Public Relations Managers	13,455	98.8
11-3011.00	Administrative Services Managers	12,983	98.0
11-3021.00	Computer and Information Systems Managers	15,724	99.0
11-3051.00	Industrial Production Managers	15,534	98.9
11-3051.52	Geothermal Production Managers	6,820	98.2
11-9031.00	Education Administrators, Preschool and Child Care Center/Program	8,628	97.9
11-9032.00	Education Administrators, Elementary and Secondary School	15,575	98.4

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
11-9033.00	Education Administrators, Postsecondary	15,211	98.5
11-9041.00	Architectural and Engineering Managers	22,460	98.8
11-9051.00	Food Service Managers	10,559	97.7
11-9061.00	Funeral Directors	10,892	97.2
11-9081.00	Lodging Managers	9,064	98.3
11-9151.00	Social and Community Service Managers	9,186	98.2
11-9199.01	Clinical Research Coordinators	12,409	97.5
13-1022.00	Wholesale and Retail Buyers, Except Farm Products	8,868	97.8
13-1031.01	Claims Examiners, Property and Casualty Insurance	7,799	99.0
13-1031.02	Insurance Adjusters, Examiners, and Investigators	11,314	98.7
13-1071.02	Personnel Recruiters	13,430	98.5
13-1121.00	Meeting and Convention Planners	9,692	98.9
13-1199.02	Patient Representatives	8,029	97.7
13-2011.01	Accountants	21,978	99.0
13-2021.01	Assessors	10,441	97.9
13-2031.00	Budget Analysts	13,018	98.7
13-2072.00	Loan Officers	14,457	98.3
13-2081.00	Tax Examiners, Collectors, and Revenue Agents	15,327	96.2
15-1021.00	Computer Programmers	13,301	99.0
15-1031.00	Computer Software Engineers, Applications	9,790	99.2
15-1032.00	Computer Software Engineers, Systems Software	14,693	98.3
15-1041.00	Computer Support Specialists	17,641	98.1
15-1051.00	Computer Systems Analysts	16,692	98.2
15-1061.00	Database Administrators	10,910	98.6
15-1071.00	Network and Computer Systems Administrators	10,395	98.2
15-1071.01	Computer Security Specialists	8,572	98.9
15-1081.00	Network Systems and Data Communications Analysts	14,875	98.8
15-1099.57	Geographic Information Systems Technicians	6,809	99.4
17-1011.00	Architects, Except Landscape and Naval	7,755	99.1
17-1021.00	Cartographers and Photogrammetrists	12,685	98.3
17-2011.00	Aerospace Engineers	11,427	98.4
17-2071.00	Electrical Engineers	15,822	99.3
17-2072.00	Electronics Engineers, Except Computer	13,157	98.5
17-2081.00	Environmental Engineers	7,348	98.8
17-2112.00	Industrial Engineers	13,192	99.2
17-2141.00	Mechanical Engineers	16,731	99.2
17-2151.00	Mining and Geological Engineers, Including Mining Safety Engineers	9,315	99.2
17-2171.00	Petroleum Engineers	14,479	99.0
17-3011.01	Architectural Drafters	7,071	98.4

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
17-3013.00	Mechanical Drafters	12,100	99.1
17-3022.00	Civil Engineering Technicians	13,209	98.7
17-3023.01	Electronics Engineering Technicians	8,147	98.2
17-3023.03	Electrical Engineering Technicians	12,219	98.1
17-3026.00	Industrial Engineering Technicians	6,549	98.7
17-3027.00	Mechanical Engineering Technicians	16,582	98.0
19-1020.01	Biologists	7,326	98.8
19-1023.00	Zoologists and Wildlife Biologists	7,767	99.2
19-2031.00	Chemists	10,181	98.6
19-2041.00	Environmental Scientists and Specialists, Including Health	11,615	98.0
19-2042.00	Geoscientists, Except Hydrologists and Geographers	10,836	98.9
19-3031.01	School Psychologists	7,850	98.2
19-3051.00	Urban and Regional Planners	10,793	98.9
19-4011.01	Agricultural Technicians	9,910	97.8
19-4021.00	Biological Technicians	9,590	98.6
19-4031.00	Chemical Technicians	8,818	97.5
19-4051.01	Nuclear Equipment Operation Technicians	7,904	98.0
19-4051.02	Nuclear Monitoring Technicians	13,279	97.8
19-4091.00	Environmental Science and Protection Technicians, Including Health	13,060	98.8
19-4092.00	Forensic Science Technicians	12,781	98.3
21-1011.00	Substance Abuse and Behavioral Disorder Counselors	14,199	98.1
21-1012.00	Educational, Vocational, and School Counselors	20,825	98.9
21-1014.00	Mental Health Counselors	12,422	98.6
21-1021.00	Child, Family, and School Social Workers	11,904	97.5
21-1023.00	Mental Health and Substance Abuse Social Workers	9,566	99.4
21-1092.00	Probation Officers and Correctional Treatment Specialists	17,402	97.7
21-1093.00	Social and Human Service Assistants	10,096	97.3
23-1011.00	Lawyers	17,080	99.1
23-1021.00	Administrative Law Judges, Adjudicators, and Hearing Officers	11,064	98.3
23-1023.00	Judges, Magistrate Judges, and Magistrates	15,383	98.5
23-2011.00	Paralegals and Legal Assistants	13,476	98.6
23-2091.00	Court Reporters	13,115	98.3
23-2092.00	Law Clerks	9,004	98.3
25-1011.00	Business Teachers, Postsecondary	14,086	98.4
25-1021.00	Computer Science Teachers, Postsecondary	8,559	98.9
25-1022.00	Mathematical Science Teachers, Postsecondary	14,730	99.0
25-1031.00	Architecture Teachers, Postsecondary	10,993	98.1
25-1032.00	Engineering Teachers, Postsecondary	10,618	98.9

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
25-1041.00	Agricultural Sciences Teachers, Postsecondary	13,524	97.7
25-1042.00	Biological Science Teachers, Postsecondary	18,302	99.1
25-1043.00	Forestry and Conservation Science Teachers, Postsecondary	17,268	99.1
25-1051.00	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	10,097	97.9
25-1052.00	Chemistry Teachers, Postsecondary	15,699	99.1
25-1053.00	Environmental Science Teachers, Postsecondary	14,317	98.7
25-1054.00	Physics Teachers, Postsecondary	7,222	99.2
25-1061.00	Anthropology and Archeology Teachers, Postsecondary	8,718	99.0
25-1062.00	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	7,558	99.2
25-1063.00	Economics Teachers, Postsecondary	14,575	98.3
25-1064.00	Geography Teachers, Postsecondary	8,612	98.8
25-1065.00	Political Science Teachers, Postsecondary	9,112	98.5
25-1066.00	Psychology Teachers, Postsecondary	12,502	98.6
25-1067.00	Sociology Teachers, Postsecondary	11,012	99.0
25-1071.00	Health Specialties Teachers, Postsecondary	8,542	99.2
25-1072.00	Nursing Instructors and Teachers, Postsecondary	10,627	98.9
25-1081.00	Education Teachers, Postsecondary	13,795	98.6
25-1082.00	Library Science Teachers, Postsecondary	14,744	98.9
25-1111.00	Criminal Justice and Law Enforcement Teachers, Postsecondary	14,960	98.7
25-1112.00	Law Teachers, Postsecondary	8,495	98.5
25-1121.00	Art, Drama, and Music Teachers, Postsecondary	14,541	97.8
25-1122.00	Communications Teachers, Postsecondary	13,224	99.1
25-1123.00	English Language and Literature Teachers, Postsecondary	18,796	98.3
25-1124.00	Foreign Language and Literature Teachers, Postsecondary	10,062	98.7
25-1125.00	History Teachers, Postsecondary	12,862	98.4
25-1126.00	Philosophy and Religion Teachers, Postsecondary	13,256	98.3
25-1192.00	Home Economics Teachers, Postsecondary	12,262	97.6
25-1193.00	Recreation and Fitness Studies Teachers, Postsecondary	14,919	98.7
25-1194.00	Vocational Education Teachers, Postsecondary	10,771	98.4
25-2011.00	Preschool Teachers, Except Special Education	27,199	98.0
25-2012.00	Kindergarten Teachers, Except Special Education	9,351	99.1
25-2021.00	Elementary School Teachers, Except Special Education	23,340	99.0
25-2022.00	Middle School Teachers, Except Special and Vocational Education	20,287	98.1
25-2031.00	Secondary School Teachers, Except Special and Vocational Education	24,097	98.7
25-2032.00	Vocational Education Teachers, Secondary School	23,446	99.4

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
25-2041.00	Special Education Teachers, Preschool, Kindergarten, and Elementary School	23,189	98.1
25-2042.00	Special Education Teachers, Middle School	19,229	98.3
25-2043.00	Special Education Teachers, Secondary School	26,144	98.8
25-3011.00	Adult Literacy, Remedial Education, and GED Teachers and Instructors	12,248	97.5
25-3021.00	Self-Enrichment Education Teachers	14,258	99.0
25-4012.00	Curators	12,147	98.9
25-4013.00	Museum Technicians and Conservators	13,296	98.1
25-4021.00	Librarians	22,600	98.4
25-4031.00	Library Technicians	13,666	98.4
25-9011.00	Audio-Visual Collections Specialists	13,999	98.9
25-9031.00	Instructional Coordinators	12,079	98.5
25-9041.00	Teacher Assistants	18,876	98.1
27-1014.00	Multi-Media Artists and Animators	8,139	98.8
27-1021.00	Commercial and Industrial Designers	8,635	99.2
27-2012.01	Producers	8,779	99.0
27-2012.02	Directors- Stage, Motion Pictures, Television, and Radio	10,788	99.0
27-2012.05	Technical Directors/Managers	9,252	98.7
27-2022.00	Coaches and Scouts	17,174	98.5
27-3031.00	Public Relations Specialists	11,896	99.0
27-3041.00	Editors	12,532	98.6
27-3043.04	Copy Writers	8,917	98.4
27-4011.00	Audio and Video Equipment Technicians	12,758	98.4
27-4012.00	Broadcast Technicians	13,492	98.6
27-4031.00	Camera Operators, Television, Video, and Motion Picture	12,354	98.3
27-4032.00	Film and Video Editors	13,717	98.7
29-1021.00	Dentists, General	7,674	99.1
29-1051.00	Pharmacists	11,479	98.7
29-1062.00	Family and General Practitioners	7,515	98.2
29-1064.00	Obstetricians and Gynecologists	10,047	98.3
29-1066.00	Psychiatrists	10,398	98.2
29-1067.00	Surgeons	8,242	98.4
29-1069.08	Pathologists	7,984	98.9
29-1081.00	Podiatrists	6,509	97.7
29-1111.00	Registered Nurses	19,953	97.0
29-1123.00	Physical Therapists	15,898	98.7
29-1124.00	Radiation Therapists	9,799	99.2
29-1126.00	Respiratory Therapists	17,334	98.0
29-1127.00	Speech-Language Pathologists	14,236	98.9

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
29-1131.00	Veterinarians	10,766	99.1
29-1199.01	Acupuncturists	7,011	98.2
29-2011.00	Medical and Clinical Laboratory Technologists	17,240	98.2
29-2012.00	Medical and Clinical Laboratory Technicians	11,030	98.4
29-2021.00	Dental Hygienists	12,221	98.3
29-2031.00	Cardiovascular Technologists and Technicians	14,307	97.9
29-2032.00	Diagnostic Medical Sonographers	11,925	98.5
29-2033.00	Nuclear Medicine Technologists	9,691	98.1
29-2034.01	Radiologic Technologists	19,553	98.1
29-2034.02	Radiologic Technicians	20,619	97.8
29-2041.00	Emergency Medical Technicians and Paramedics	12,469	97.8
29-2051.00	Dietetic Technicians	5,999	95.8
29-2052.00	Pharmacy Technicians	12,230	98.5
29-2053.00	Psychiatric Technicians	13,563	97.7
29-2054.00	Respiratory Therapy Technicians	12,660	97.7
29-2055.00	Surgical Technologists	11,706	98.0
29-2056.00	Veterinary Technologists and Technicians	13,362	98.4
29-2061.00	Licensed Practical and Licensed Vocational Nurses	17,238	97.7
29-2071.00	Medical Records and Health Information Technicians	12,949	96.3
29-2099.06	Ophthalmic Medical Technologists and Technicians	9,164	98.1
31-1011.00	Home Health Aides	8,550	95.3
31-1012.00	Nursing Aides, Orderlies, and Attendants	15,249	96.1
31-1013.00	Psychiatric Aides	8,384	97.2
31-2011.00	Occupational Therapist Assistants	9,041	97.8
31-2021.00	Physical Therapist Assistants	9,887	98.9
31-2022.00	Physical Therapist Aides	10,572	98.1
31-9091.00	Dental Assistants	12,364	97.1
31-9092.00	Medical Assistants	14,457	98.1
31-9093.00	Medical Equipment Preparers	10,902	97.1
31-9095.00	Pharmacy Aides	10,655	98.0
31-9096.00	Veterinary Assistants and Laboratory Animal Caretakers	12,888	97.8
31-9099.03	Speech-Language Pathology Assistants	5,673	96.8
33-1012.00	First-Line Supervisors/Managers of Police and Detectives	17,484	98.0
33-1021.01	Municipal Fire Fighting and Prevention Supervisors	16,078	99.0
33-2011.01	Municipal Fire Fighters	21,395	98.6
33-2011.02	Forest Fire Fighters	11,452	98.5
33-2021.01	Fire Inspectors	17,165	98.9
33-2021.02	Fire Investigators	8,194	99.1
33-3011.00	Bailiffs	9,884	96.1

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
33-3012.00	Correctional Officers and Jailers	15,326	98.0
33-3021.01	Police Detectives	18,626	98.9
33-3021.02	Police Identification and Records Officers	18,272	98.4
33-3021.03	Criminal Investigators and Special Agents	14,236	98.7
33-3051.01	Police Patrol Officers	16,088	98.9
33-9031.00	Gaming Surveillance Officers and Gaming Investigators	9,037	97.9
33-9032.00	Security Guards	9,815	96.4
33-9092.00	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	13,787	98.4
35-1012.00	First-Line Supervisors/Managers of Food Preparation and Serving Workers	12,024	98.3
35-2011.00	Cooks, Fast Food	10,891	98.4
35-2014.00	Cooks, Restaurant	11,571	96.6
35-2015.00	Cooks, Short Order	9,134	96.5
35-2021.00	Food Preparation Workers	11,434	96.6
35-3011.00	Bartenders	13,938	97.2
35-3021.00	Combined Food Preparation and Serving Workers, Including Fast Food	8,494	94.9
35-3022.00	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	9,858	96.4
35-3031.00	Waiters and Waitresses	21,122	98.3
35-9031.00	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	10,422	98.0
37-1011.00	First-Line Supervisors/Managers of Housekeeping and Janitorial Workers	17,864	96.6
39-2021.00	Nonfarm Animal Caretakers	13,232	98.4
39-3011.00	Gaming Dealers	18,509	98.1
39-3091.00	Amusement and Recreation Attendants	7,700	97.8
39-3093.00	Locker Room, Coatroom, and Dressing Room Attendants	9,269	95.7
39-6011.00	Baggage Porters and Bellhops	12,617	97.3
39-6021.00	Tour Guides and Escorts	14,063	97.6
39-9011.00	Child Care Workers	12,034	96.9
39-9021.00	Personal and Home Care Aides	12,839	96.3
39-9032.00	Recreation Workers	23,338	97.5
39-9041.00	Residential Advisors	12,158	97.8
41-1011.00	First-Line Supervisors/Managers of Retail Sales Workers	17,703	97.3
41-2011.00	Cashiers	18,649	97.4
41-2012.00	Gaming Change Persons and Booth Cashiers	12,731	95.9
41-2021.00	Counter and Rental Clerks	9,130	97.2
41-2031.00	Retail Salespersons	20,525	96.7
41-3011.00	Advertising Sales Agents	13,315	98.3

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
41-3021.00	Insurance Sales Agents	11,185	99.0
43-3011.00	Bill and Account Collectors	17,040	97.5
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks	16,975	97.3
43-3051.00	Payroll and Timekeeping Clerks	14,350	98.1
43-3071.00	Tellers	13,127	96.5
43-4051.00	Customer Service Representatives	12,381	97.8
43-4081.00	Hotel, Motel, and Resort Desk Clerks	15,190	98.3
43-4111.00	Interviewers, Except Eligibility and Loan	10,702	97.4
43-4121.00	Library Assistants, Clerical	18,602	97.3
43-4141.00	New Accounts Clerks	9,066	98.9
43-4161.00	Human Resources Assistants, Except Payroll and Timekeeping	11,914	98.2
43-4171.00	Receptionists and Information Clerks	20,013	97.2
43-5031.00	Police, Fire, and Ambulance Dispatchers	18,686	98.7
43-5032.00	Dispatchers, Except Police, Fire, and Ambulance	7,064	97.8
43-5071.00	Shipping, Receiving, and Traffic Clerks	13,806	96.7
43-6011.00	Executive Secretaries and Administrative Assistants	21,891	98.0
43-6012.00	Legal Secretaries	14,571	97.9
43-6013.00	Medical Secretaries	10,076	97.9
43-9011.00	Computer Operators	7,922	99.0
43-9031.00	Desktop Publishers	8,464	98.9
43-9041.02	Insurance Policy Processing Clerks	9,203	98.2
43-9061.00	Office Clerks, General	19,702	97.6
47-2021.00	Brickmasons and Blockmasons	10,050	97.9
47-2031.01	Construction Carpenters	10,920	96.4
47-2031.02	Rough Carpenters	9,215	96.3
47-2041.00	Carpet Installers	10,961	99.2
47-2044.00	Tile and Marble Setters	10,796	95.8
47-2051.00	Cement Masons and Concrete Finishers	11,934	94.5
47-2071.00	Paving, Surfacing, and Tamping Equipment Operators	11,625	97.0
47-2111.00	Electricians	11,509	97.7
47-2152.01	Pipe Fitters and Steamfitters	8,619	97.6
47-2152.02	Plumbers	9,809	97.9
47-2211.00	Sheet Metal Workers	11,802	96.9
47-3013.00	Helpers--Electricians	11,521	97.6
47-3015.00	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	7,011	96.9
47-4051.00	Highway Maintenance Workers	9,080	96.6
47-5071.00	Roustabouts, Oil and Gas	7,591	97.2
49-1011.00	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	14,650	97.5

continued

Exhibit E-11. Item Completion Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	19,942	98.7
49-3021.00	Automotive Body and Related Repairers	11,055	97.0
49-3023.01	Automotive Master Mechanics	12,448	98.1
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	8,890	97.9
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	12,656	97.7
49-9021.01	Heating and Air Conditioning Mechanics and Installers	11,956	98.2
49-9021.02	Refrigeration Mechanics and Installers	16,675	98.0
49-9042.00	Maintenance and Repair Workers, General	18,058	98.4
49-9062.00	Medical Equipment Repairers	16,604	98.3
49-9098.00	Helpers--Installation, Maintenance, and Repair Workers	9,027	97.2
49-9099.51	Geothermal Technicians	13,276	97.6
51-1011.00	First-Line Supervisors/Managers of Production and Operating Workers	18,432	98.8
51-2092.00	Team Assemblers	8,475	96.8
51-3092.00	Food Batchmakers	17,021	96.1
51-3093.00	Food Cooking Machine Operators and Tenders	7,307	97.0
51-4041.00	Machinists	15,942	97.9
51-8011.00	Nuclear Power Reactor Operators	11,916	99.2
51-8031.00	Water and Liquid Waste Treatment Plant and System Operators	9,323	98.0
51-9081.00	Dental Laboratory Technicians	7,256	97.5
51-9111.00	Packaging and Filling Machine Operators and Tenders	14,713	97.0
53-3021.00	Bus Drivers, Transit and Intercity	10,252	97.0
53-3022.00	Bus Drivers, School	14,771	96.7
53-3032.00	Truck Drivers, Heavy and Tractor-Trailer	15,552	98.2
53-3041.00	Taxi Drivers and Chauffeurs	11,940	96.7
53-7051.00	Industrial Truck and Tractor Operators	11,463	98.4
53-7064.00	Packers and Packagers, Hand	12,728	97.1

References

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Graham, J. W., Hofer, S. M., & Piccinin, A. M. (1994). Analysis with missing data in drug prevention research. In L. M. Collins & L. A. Seitz (Eds.), *Advances in data analysis for prevention intervention research*. Bethesda, MD: National Institute on Drug Abuse.
- Kish, L. (1965). *Survey sampling*. New York: Wiley.
- Little, R. J. A., & Rubin, D. B. (1987). *Statistical analysis with missing data*. New York: Wiley.
- Schafer, J. L. (2000). *Analysis of incomplete multivariate data*. New York: Chapman & Hall.
- Willimack, D. K., Nichols, E., & Sudman, S. (2002). Understanding unit and item nonresponse in business surveys. In R. M. Groves, D. A. Dillman, J. L. Eltinge & R. J. A. Little (Eds.), *Survey nonresponse*. New York: Wiley.