
Appendix H: Nonresponse Analysis

Nonresponse in the O*NET Data Collection Program can occur from any of three sources. Establishments can cause nonresponse when a business fails to participate at the verification, screening, recruiting, or sampling stage of selection. This type of nonresponse is referred to as *establishment nonresponse*. A second 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 22-24.¹ Data from the Occupation Expert (OE) Method do not lend themselves 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.

H.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 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 equation

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

¹ A total of 24 analysis cycles have been completed through June 2023. An analysis of nonresponse in Analysis Cycles 1–3 was included in the September 2005 Office of Management and Budget submission (Appendix D); an analysis of nonresponse in Cycles 4–8 was included in the December 2008 Office of Management and Budget submission (Appendix G); an analysis of nonresponse in Cycles 9–12 was included in the April 2012 Office of Management and Budget submission (Appendix D); an analysis of nonresponse in Cycles 13–15 was included in the August 2015 Office of Management and Budget submission (Appendix D); an analysis of nonresponse in Cycles 16–18 was included in the August 2018 Office of Management and Budget submission (Appendix D); and an analysis of nonresponse in Cycles 19–21 was included in the August 2021 Office of Management and Budget submission (Appendix I).

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. Substituting Equation (1) into Equation (2) gives

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

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

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

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. If important biases occur, usually 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 work activities, work context, or knowledge 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

H.2 Establishment Nonresponse

Appendix Exhibit H-1 displays the establishment eligibility and response rates for Analysis Cycles 22-24 by stage of data collection; Appendix Exhibit H-2 compares the distribution of respondents and nonrespondents across various establishment attributes. (All exhibits are at the end of this appendix.) The analysis population of establishments includes any establishment that had at least one of its assigned occupations published in Analysis Cycles 22-24, whether or not any of the occupations were eventually selected from that establishment.³ The rates and distributions are presented separately by various variables to allow examination of the possibility of nonresponse bias. These variables were selected because they were available for both respondents and nonrespondents and, on the basis of logistic regression modeling results of establishment-level response propensity, they were likely to be related to the primary outcome variables of the O*NET Program.

The following describes the major row headings in Appendix Exhibits H-1 and H-2:

- *Census Division* is assigned according to the address of the establishment.
- *Total Employees in Establishment* is the establishment total employment estimate on the sampling 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's) perceived level of burden.
- *Time Zone* and *Metropolitan Status* were assigned according to the establishment's ZIP code.

H.2.1 Establishment Final Unweighted Response Rates

Appendix Exhibit H-1 displays the establishment eligibility and response rates for Analysis Cycles 22-24 by stage of data collection.

The following describes the Appendix Exhibit H-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

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

³ Establishments that had employee sampling suspended for all assigned occupations are not included in the establishment nonresponse analysis. See Section B.1.1 for a description of these procedures.

establishments that responded at the verification stage. Final rates are combined rates across all stages of data collection. All establishments were considered to be eligible at the verification stage. At subsequent stages, nonrespondents from the previous stage were 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. 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 were 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.
- **Resp** is the percentage of eligible establishments that were considered respondents; that is, they did not refuse to participate in the study. This includes participating establishments where none of the target occupations were present.

The data in Appendix Exhibit H-1 reveal that the final unweighted response rate for establishments was 49.6%. The final eligibility rate 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 (72.1%) and the lowest eligibility rate occurring at the verification stage (80.0%). These results are intuitive for the following reasons:

- Typically, it is not until the recruiting stage of data collection that the POC realized the burden involved in participation. Consequently, it is expected that most nonresponse would occur at this stage.
- The lowest eligibility rate is expected at the verification stage, when each establishment is first contacted and when establishments that closed or moved their businesses 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 source of nonresponse bias can be found in Appendix Exhibit H-1 under the column headed *Final Resp*. As mentioned above, low response rates indicate possible nonresponse bias. RTI assessed the response rate for each level of a specific attribute against the overall value to determine whether the difference was significant. This assessment was conducted separately for each stage of data collection. Differences statistically significant at the 0.05 level are indicated with an asterisk (*).⁵

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

⁵ The tests were conditioned on the overall rates because the objective was to identify any subgroups that differed from the observed overall rate.

Census Division. Establishments in the West North Central region (54.5%) had the highest significant final response rate, whereas the East North Central region (47.4%) had the lowest significant final response rate.

Total Employees in Establishment. For establishments with 5 to 1,000+ employees, a general 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 those in other literature (e.g., Willimack, Nichols, & Sudman, 2002).

SIC Division. Comparing the response rates of the different SIC divisions with the overall final response rate, one sees that Public Administration (64.3%) had a significantly higher final response rate, whereas the Finance, Insurance, Real Estate (36.1%) industry had the lowest significant final response rate.⁶

NAICS Sector. Comparing the response rates of the different NAICS sectors to the overall final response rate, one sees that Real Estate and Rental and Leasing (68.6%) had the highest significant final response rate, and Finance and Insurance (34.5%) had the lowest significant final response rate.⁶

Number of Occupations on Establishment Sampling List. The final response rate for establishments with one to five occupations on the sampling list was significantly higher than the overall final response rate (53.3%, as opposed to 49.6%), and establishments with nine occupations on the sampling list had the lowest significant final response rate (34.2%).

Time Zone. Establishments in the Hawaii Standard Time zone had the highest significant final response rate (56.9%). Establishments in the Pacific Standard Time zone had a significantly lower final response rate (47.6%).

Metropolitan Status. Rural establishments had a final response rate significantly higher than the overall response rate (57.3% vs 49.6%), whereas urban establishments had a significantly lower final response rate (47.9%).

H.2.2 Comparison of Establishment Respondents and Nonrespondents

Appendix Exhibit H-2 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 the nonresponse bias formula (Equation 4). An estimate of the nonresponse bias across an attribute (see Equation 2) is shown under the final column, *Percent Difference (Resp vs. Overall)*. As discussed above, a potential source of nonresponse bias occurs when this difference becomes large. In the final column, differences marked with an asterisk are

⁶ Response rate patterns by SIC Division and NAICS Sector 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 different analysis cycles.

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 establishment nonresponse, the differences between respondents and the overall sample do not appear to be meaningful: 71.0% of the attributes had an absolute difference of less than 1 percentage point, 14.5% had an absolute difference of at least 1 but less than 2 percentage points, and 14.5% had an absolute difference of 2 or more percentage points (with a maximum difference of 5.7 percentage points).⁷

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. The effect size, w , is calculated using the following formula:

$$w = \sqrt{\sum_{i=1}^m \frac{(p_{oi} - p_{1i})^2}{p_{oi}}}, \quad (5)$$

where m represents the number of categories (e.g., Census division), p_{oi} is the overall distribution, and p_{1i} represents the distribution among the respondents.

According to the guidelines suggested by Cohen, an effect size is classified 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 Appendix Exhibit H-2, all of the effect sizes were small, with the largest effect size being equal to 0.17 for NAICS Sector. These results suggest that the distribution of the variables for respondents and nonrespondents are quite similar (i.e., $X_R - X_N$ is small).

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

H.3 Employee Nonresponse

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.

⁷ Absolute difference is the absolute value of the final column of Exhibit H-2.

Appendix Exhibit H-3 displays the unweighted response rates for employees; Appendix Exhibit H-4 compares the distribution of respondents and nonrespondents across various employee attributes from Establishment Method data collection for occupations published in Analysis Cycles 22-24.⁸

In addition to the categories displayed in Appendix Exhibits H-1 and H-2, Appendix Exhibits H-3 and H-4 also display response rates by the following employee-level characteristics (rows):

- **Total Selected Employees in Establishment** is the number of employees who were selected from the establishment. Note that this value ranges only from 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. There are three questionnaire types: Work Activities, Work Context, and Knowledge.
- **Occupation 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, on the basis of logistic modeling results of both establishment-level and employee-level response propensity, they were likely to be related to the primary outcome variables of the O*NET Program.

H.3.1 Employee Final Unweighted Response Rates

An estimate of the second source of nonresponse bias can be found in Appendix Exhibit H-3 under the column headed *Response Rate*. As discussed in Section H-1, low response rates may indicate nonresponse bias. RTI assessed the response rate for each level of a specific covariate against the overall value to determine whether the difference was significant. Differences statistically significant at the 0.05 level are indicated with an asterisk (*).⁹

Census Division. Employees in the West North Central region had the highest significant response rate (53.9%) compared to the overall response rate (51.3%), whereas employees in the Pacific region had the lowest significant response rate (49.4%) compared to the overall response rate.

Total Employees in Establishment. The response rate for employees from establishments with an unknown number of employees had the highest significant response rate (80.8%). The lowest significant response rate was for employees from establishments with 1,000+ employees (44.9%).

SIC Division. Employees in the Public Administration industry had the highest significant response rate (55.7%). Employees from the Finance, Insurance, and Real Estate industry had the lowest significant response rate (40.0%).

⁸ Unweighted rates were used because appropriate weights were not available for nonresponding employees.

⁹ The tests were conditioned on the overall rates because the objective was to identify any subgroups that differed from the observed overall rate.

NAICS Sector. Employees in the Real Estate and Rental and Leasing sector had the highest significant response rate (81.8%).¹⁰ Employees in the Finance and Insurance sector had the lowest significant response rate (35.1%).

Total Selected Employees in Establishment. The highest significant response rate was for employees from establishments with only one selected employee (62.3%). The lowest significant response rate was for employees from establishments with 17 employees selected (38.9%).

Questionnaire Type. The Work Context questionnaire had a significantly higher response rate (53.8%) than the overall response rate of 51.3%. The Work Activities questionnaire had a significantly lower response rate (49.7%).

Number of Occupations on Establishment Sampling List. The final response rate for establishments with seven occupations on the sampling list had the highest significant response rate (60.2%) compared to the overall response rate (51.3%), and establishments with nine occupations on the sampling list had the lowest significant final response rate (47.8%) compared to the overall response rate.

Occupation Class. Business and Financial Operations Occupations had the highest significant response rate (79.2%) compared to the overall response rate (51.3%). Education, Training, and Library Occupations had the lowest significant response rate (31.3%).¹¹

Time Zone. No time zones had a significantly higher response rate than the overall response rate. The Hawaii Standard Time zone had the lowest significant response rate (39.3%).

Metropolitan Status. The response rate for employees in a rural area was significantly higher than the overall response rate (55.3), whereas the response rate for employees in an urban area was significantly lower (50.1%).

H.3.2 Comparison of Employee Respondents and Nonrespondents

Appendix Exhibit H-4 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 the nonresponse bias formula (see Equation 4). The column *Percent Difference (Resp vs. Overall)* shows an estimate of the nonresponse bias across an attribute (see Equation 2). As discussed above, a potential source of nonresponse bias occurs when this difference becomes large. *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 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;

¹⁰ Because no Military Specific Occupations were included among the occupations in Analysis Cycles 22-24, the response rate of 0% is not applicable to this analysis.

for example, 80.0% of the attributes had an absolute difference of less than 1 percentage point, 19.0% had an absolute difference of at least 1 but less than 2 percentage points, and 1.0% had an absolute difference of 2 or more percentage points.¹⁰

Another measure of potential nonresponse bias is the effect size, as defined by Cohen (1988). See Section H.2.2 for a full explanation. For the variables in Appendix Exhibit H-4, all of the effect sizes were small, with the largest effect size being equal to 0.14 for Occupation Class. The combination of small absolute differences and very small effect sizes indicates a low likelihood of bias due to employee nonresponse.

H.4 Item Nonresponse

Appendix Exhibits H-5 through H-11 display unweighted item response rates by item, item type, and occupation for Establishment Method data included in Analysis Cycles 22-24. These tables include questionnaire data from employee respondents in the occupations published in Analysis Cycles 22-24 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 nonrespondents in the employee nonresponse analysis in Section H.3.

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).

Work Activities, Work Context, and Knowledge. The data in Appendix Exhibits H-5 through H-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 96.0% for Work Activities Questionnaire Item 2 (Level), 97.6% for Work Context Questionnaire Item 1, and 90.1% for Knowledge Questionnaire Item 8 (Level). In addition, as seen in Appendix Exhibit H-10, item nonresponse is slightly more prevalent for Level items than for Importance items, regardless of questionnaire type.

Occupation-Specific Tasks. It appears from Appendix Exhibit H-8 that item nonresponse may be more serious for certain Frequency and Importance items than for others and for some occupations more than others (e.g., five occupations had at least two Frequency and Importance items within the 10 lowest item response rates). 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.

Background Questionnaire. In Appendix Exhibit H-9, the item response rates appear to be nearly constant and high (nearly 94% or greater), with the exception of Item 4 (91.4%), which elicits information from the respondent about working in a family business.

Item Type. All the response rates by item type were 95.7% or higher (Appendix Exhibit H-10).

Occupation. Item response rates are provided in Appendix Exhibit H-11 for all occupations completed in Analysis Cycles 22-24. The overall item response rate was 97.9%, with the lowest response rate, 93.6%, coming from Dishwashers (occupation code 35-9021.00). The highest response rate, 99.5%, came from Electrical Engineers (occupation code 17-2071.00) and Forensic Science Technicians (occupation code 19-4092.00).

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

H.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.

H.6 References

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Appendix Exhibit H-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	60,320	80.0	93.8	96.2	77.4	98.7	72.1	100.0	96.7	75.7	49.6
Census Division											
New England	3,732	81.1	92.6*	96.4	75.4*	99.0	73.3	100.0*	96.7	77.2*	48.6
Middle Atlantic	9,132	79.4	94.1	95.7*	75.8*	98.9	71.4	100.0	96.7	74.6*	48.2*
East North Central	9,532	82.3*	93.5	96.5	75.4*	98.6	70.9	100.0	96.9	78.4*	47.4*
West North Central	4,837	83.6*	94.8*	96.5	82.2*	98.7	73.7	100.0	96.6	79.7*	54.5*
South Atlantic	9,138	78.6*	94.4*	96.2	79.3*	98.6	71.9	99.9	96.6	74.2*	51.1*
East South Central	2,696	84.5*	95.3*	96.4	79.8*	98.9	71.0	99.9	96.4	80.4*	51.2
West South Central	5,952	78.6*	95.0*	96.6	77.3	99.1	71.8	100.0*	96.1	74.9	49.9
Mountain	5,126	78.6*	93.0	96.3	79.8*	98.8	73.0	99.9	97.0	74.6	51.5*
Pacific	10,175	77.6*	92.3*	95.7	75.4*	98.5	72.7	99.9	97.2	73.0*	47.9*
Total Employees in Establishment											
Unknown	147	76.9	95.6	96.3	92.3*	100.0*	88.5*	100.0*	97.6	74.1	76.1*
1–4	8,831	59.8*	83.9*	93.1*	82.9*	99.0	80.4*	100.0	99.6*	55.1*	53.8*
5–9	3,746	76.3*	92.7*	96.2	82.8*	98.8	77.1*	100.0*	98.7*	71.7*	57.2*
10–49	14,684	82.7*	94.8*	96.8*	81.3*	98.9	74.6*	99.9	97.8*	78.6*	54.8*
50–99	10,601	83.9*	95.2*	96.5	77.8	98.7	72.8	100.0*	96.6	79.8*	51.4*
100–249	6,660	85.8*	93.8	96.8*	73.9*	98.6	68.5*	99.9	95.0*	82.0*	44.4*
250–499	9,046	84.8*	96.2*	96.5	73.9*	98.7	67.1*	99.9	94.5*	80.9*	44.6*
500–999	3,881	83.9*	96.0*	95.9	70.5*	98.5	65.4*	99.9	95.0*	79.5*	41.4*
1,000+	2,724	84.7*	95.0*	95.9	68.1*	97.7*	63.3*	100.0*	94.5*	79.4*	37.1*
SIC Division											
Agriculture, Forestry, and Fishing	260	76.9	86.5*	98.8*	81.7	99.2	74.4	100.0*	98.9	74.4	48.6
Mining	1,874	71.5*	93.0	95.9	81.8*	99.3	81.9*	100.0*	97.7	68.0*	60.4*
Construction	4,775	77.9*	91.2*	96.7	79.7*	98.6	67.9*	100.0*	94.8*	73.4*	45.4*
Manufacturing	14,088	78.6*	91.6*	96.5	73.0*	98.8	70.3*	100.0	95.8*	75.1	44.3*
Transportation, Communication, Electric, Gas, and Sanitary Services	6,216	78.3*	92.4*	96.3	81.5*	99.2*	76.6*	100.0	97.3	74.4*	54.1*
Wholesale Trade	1,094	80.5	93.5	97.2	71.7*	99.2	72.5	100.0*	95.8	77.0	45.5*
Retail Trade	2,976	83.8*	93.9	97.3*	75.3*	98.5	67.2*	99.9	96.2	80.4*	45.0*
Finance, Insurance, and Real Estate	906	73.6*	91.3*	95.0	54.5*	97.8	75.1	100.0*	98.3	69.3*	36.1*
Services	22,472	81.5*	95.4*	95.7*	77.2	98.6	70.1*	99.9	97.3*	76.6*	49.2
Public Administration	5,659	82.7*	96.8*	96.1	86.3*	98.5	79.8*	99.9	97.0	78.2*	64.3*

(continued)

**Appendix Exhibit H-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
NAICS Sector											
Agriculture, Forestry, Fishing, and Hunting	248	73.4*	83.5*	98.6*	81.1	99.0	81.6*	100.0*	100.0*	70.5	50.9
Mining	1,857	71.5*	93.0	95.9	81.8*	99.3	82.2*	100.0*	97.7	68.0*	60.6*
Utilities	1,212	80.4	95.0	95.6	87.3*	99.9*	84.9*	100.0*	98.8*	76.5	64.7*
Construction	4,792	77.8*	91.2*	96.7	79.7*	98.6	67.9*	100.0*	94.9*	73.3*	45.4*
Manufacturing	13,494	78.9*	91.6*	96.5	72.7*	98.8	70.1*	100.0	95.8*	75.3	44.0*
Wholesale Trade	996	80.0	93.2	97.1	69.6*	99.1	68.8	100.0*	94.9	76.4	41.3*
Retail Trade	2,700	83.7*	93.4	97.2*	74.0*	98.3	66.9*	99.9	96.1	80.2*	43.8*
Transportation and Warehousing	3,644	78.1*	92.6*	96.4	83.0*	99.3*	75.3*	99.9	97.1	74.1*	54.4*
Information	1,467	73.7*	88.2*	95.8	73.4*	98.8	71.1	100.0*	96.7	70.0*	43.8*
Finance and Insurance	855	73.2*	91.1*	94.9	53.2*	97.5	74.5	100.0*	97.6	68.8*	34.5*
Real Estate and Rental and Leasing	364	81.6	92.3	96.2	84.0*	99.0	90.0*	100.0*	100.0*	77.0	68.6*
Professional, Scientific, and Technical Services	2,456	76.1*	88.7*	95.4	73.1*	99.0	75.8*	100.0*	98.2*	72.3*	47.3
Management of Companies and Enterprises	11	72.7	100.0*	87.5	85.7	100.0*	60.0	100.0*	100.0*	60.0	50.0
Administrative and Support and Waste Management and Remediation Services	2,244	68.1*	88.8*	94.9*	76.4	98.1	72.0	100.0*	97.6	64.1*	46.3*
Educational Services	2,671	87.4*	98.0*	95.3	86.7*	98.6	83.4*	99.7	97.9*	82.2*	68.0*
Health Care and Social Assistance	12,162	84.8*	97.9*	95.9	75.3*	98.6	64.6*	100.0	96.9	79.6*	45.2*
Arts, Entertainment, and Recreation	902	79.8	91.4*	96.8	79.0	98.6	75.4	100.0*	98.4*	76.5	52.8
Accommodation and Food Services	961	88.4*	98.0*	97.3*	80.2*	98.6	67.6*	100.0*	93.5*	84.8*	49.2
Other Services, Except Public Administration	1,696	71.8*	90.1*	95.9	78.8	98.9	71.6	100.0*	97.7	68.3*	49.1
Public Administration	5,588	82.8*	96.8*	96.0	86.4*	98.5	80.3*	99.9	97.0	78.3*	64.7*

(continued)

**Appendix Exhibit H-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	47,587	78.6*	92.9*	96.1	79.1*	98.9	76.0*	100.0	97.7*	74.3*	53.3*
6	2,967	83.3*	95.6*	96.2	70.3*	97.8*	62.8*	99.9	96.0	79.0*	40.1*
7	2,440	83.8*	96.5*	95.7	73.7*	97.3*	58.7*	100.0*	93.4*	78.7*	38.6*
8	1,729	84.4*	97.2*	97.3*	74.3*	98.7	60.0*	100.0*	92.3*	81.4*	39.8*
9	1,865	85.7*	95.8*	96.5	69.4*	98.6	56.6*	99.7	91.8*	82.0*	34.2*
10	3,732	87.3*	98.2*	96.3	72.0*	98.9	56.3*	100.0*	89.3*	83.4*	35.4*
Time Zone											
Eastern Standard Time	28,081	80.2	94.0	96.1	77.0	98.8	71.7	100.0	96.7	75.8	49.2
Central Standard Time	16,699	81.6*	94.5*	96.6*	78.5*	98.8	72.1	100.0	96.5	77.8*	50.7*
Mountain Standard Time	4,691	78.4*	92.7*	96.4	80.1*	98.8	73.2	100.0*	97.1	74.5	51.9*
Pacific Standard Time	10,350	77.4*	92.4*	95.6*	75.1*	98.6	72.4	99.9	97.2	72.8*	47.6*
Alaska Standard Time	239	84.1	95.0	96.8	82.9	97.3	73.4	100.0*	97.1	79.3	55.4
Hawaii Standard Time	260	80.0	93.3	98.4*	83.6*	98.7	78.5	100.0*	94.9	77.4	56.9*
Metropolitan Status											
Rural	10,460	83.8*	95.4*	96.7*	84.0*	98.8	75.2*	100.0	96.9	80.0*	57.3*
Urban	49,860	79.2*	93.4*	96.1	75.9*	98.7	71.3*	99.9	96.7	74.9*	47.9*

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. For each stage, 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. Establishments for which all data collection efforts were stopped because all MAS target cells were met are included in the Total Estab column but excluded from any rate calculations. Counts of final responding establishments can be seen in the "Respondents" column in Exhibit H-2. Statistical tests were conducted only for categories with two or more establishments. As of 2017, RTI is no longer sampling under the category of 5,000 or more Total Employees in an Establishment. The category of 1,000-4,999 employees and 5,000 or more employees has been collapsed to 1,000+ to reflect the updated employee categories provided by Dun and Bradstreet, the frame vendor.

SIC = Standard Industrial Classification. NAICS = North American Industry Classification System.

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

Appendix Exhibit H-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	21,976	100.0	22,333	100.0	44,309	100.0	N/A	N/A
Census Division (effect size = 0.04)								
New England	1,356	6.2	1,435	6.4	2,791	6.3	-0.3	-0.1
Middle Atlantic	3,148	14.3	3,380	15.1	6,528	14.7	-0.8	-0.4
East North Central	3,460	15.7	3,832	17.2	7,292	16.5	-1.4	-0.7*
West North Central	2,055	9.4	1,718	7.7	3,773	8.5	1.7	0.8*
South Atlantic	3,351	15.2	3,210	14.4	6,561	14.8	0.9	0.4
East South Central	1,078	4.9	1,027	4.6	2,105	4.8	0.3	0.2
West South Central	2,158	9.8	2,169	9.7	4,327	9.8	0.1	0.1
Mountain	1,915	8.7	1,801	8.1	3,716	8.4	0.6	0.3
Pacific	3,455	15.7	3,761	16.8	7,216	16.3	-1.1	-0.6
Total Employees in Establishment (effect size = 0.12)								
Unknown	83	0.4	26	0.1	109	0.2	0.3	0.1*
1-4	2,563	11.7	2,203	9.9	4,766	10.8	1.8	0.9*
5-9	1,463	6.7	1,096	4.9	2,559	5.8	1.7	0.9*
10-49	6,035	27.5	4,974	22.3	11,009	24.8	5.2	2.6*
50-99	4,229	19.2	3,995	17.9	8,224	18.6	1.4	0.7*
100-249	2,356	10.7	2,950	13.2	5,306	12.0	-2.5	-1.3*
250-499	3,220	14.7	4,004	17.9	7,224	16.3	-3.3	-1.7*
500-999	1,260	5.7	1,784	8.0	3,044	6.9	-2.3	-1.1*
1,000+	767	3.5	1,301	5.8	2,068	4.7	-2.3	-1.2*
SIC Division (effect size = 0.12)								
Agriculture, Forestry, and Fishing	89	0.4	94	0.4	183	0.4	-0.0	-0.0
Mining	758	3.4	497	2.2	1,255	2.8	1.2	0.6*
Construction	1,497	6.8	1,802	8.1	3,299	7.4	-1.3	-0.6*
Manufacturing	4,601	20.9	5,776	25.9	10,377	23.4	-4.9	-2.5*
Transportation, Communication, Electric, Gas, and Sanitary Services	2,423	11.0	2,054	9.2	4,477	10.1	1.8	0.9*
Wholesale Trade	365	1.7	437	2.0	802	1.8	-0.3	-0.1
Retail Trade	1,049	4.8	1,284	5.7	2,333	5.3	-1.0	-0.5*
Finance, Insurance, and Real Estate	225	1.0	399	1.8	624	1.4	-0.8	-0.4*
Services	8,170	37.2	8,433	37.8	16,603	37.5	-0.6	-0.3
Public Administration	2,799	12.7	1,557	7.0	4,356	9.8	5.8	2.9*

(continued)

Appendix Exhibit H-2. Comparison of Establishment Respondents and Nonrespondents (continued)

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
NAICS Sector (effect size = 0.17)								
Agriculture, Forestry, Fishing, and Hunting	84	0.4	81	0.4	165	0.4	0.0	0.0
Mining	753	3.4	490	2.2	1,243	2.8	1.2	0.6*
Utilities	583	2.7	318	1.4	901	2.0	1.2	0.6*
Construction	1,502	6.8	1,808	8.1	3,310	7.5	-1.3	-0.6*
Manufacturing	4,391	20.0	5,581	25.0	9,972	22.5	-5.0	-2.5*
Wholesale Trade	300	1.4	427	1.9	727	1.6	-0.5	-0.3*
Retail Trade	931	4.2	1,194	5.3	2,125	4.8	-1.1	-0.6*
Transportation and Warehousing	1,404	6.4	1,177	5.3	2,581	5.8	1.1	0.6*
Information	442	2.0	568	2.5	1,010	2.3	-0.5	-0.3*
Finance and Insurance	202	0.9	383	1.7	585	1.3	-0.8	-0.4*
Real Estate and Rental and Leasing	181	0.8	83	0.4	264	0.6	0.5	0.2*
Professional, Scientific, and Technical Services	828	3.8	924	4.1	1,752	4.0	-0.4	-0.2
Management of Companies and Enterprises	3	0.0	3	0.0	6	0.0	0.0	0.0
Administrative and Support and Waste Management and Remediation Services	662	3.0	768	3.4	1,430	3.2	-0.4	-0.2
Educational Services	1,479	6.7	696	3.1	2,175	4.9	3.6	1.8*
Health Care and Social Assistance	4,132	18.8	5,007	22.4	9,139	20.6	-3.6	-1.8*
Arts, Entertainment, and Recreation	361	1.6	323	1.4	684	1.5	0.2	0.1
Accommodation and Food Services	389	1.8	402	1.8	791	1.8	-0.0	-0.0
Other Services, Except Public Administration	562	2.6	582	2.6	1,144	2.6	-0.0	-0.0
Public Administration	2,787	12.7	1,518	6.8	4,305	9.7	5.9	3.0*
Number of Occupations on Establishment Sampling List (effect size = 0.14)								
1-5	18,111	82.4	15,887	71.1	33,998	76.7	11.3	5.7*
6	939	4.3	1,403	6.3	2,342	5.3	-2.0	-1.0*
7	741	3.4	1,178	5.3	1,919	4.3	-1.9	-1.0*
8	561	2.6	847	3.8	1,408	3.2	-1.2	-0.6*
9	523	2.4	1,006	4.5	1,529	3.5	-2.1	-1.1*
10	1,101	5.0	2,012	9.0	3,113	7.0	-4.0	-2.0*

(continued)

Appendix Exhibit H-2. Comparison of Establishment Respondents and Nonrespondents (continued)

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Time Zone (effect size = 0.03)								
Eastern Standard Time	10,108	46.0	10,452	46.8	20,560	46.4	-0.8	-0.4
Central Standard Time	6,413	29.2	6,243	28.0	12,656	28.6	1.2	0.6
Mountain Standard Time	1,761	8.0	1,635	7.3	3,396	7.7	0.7	0.3
Pacific Standard Time	3,481	15.8	3,837	17.2	7,318	16.5	-1.3	-0.7*
Alaska Standard Time	102	0.5	82	0.4	184	0.4	0.1	0.0
Hawaii Standard Time	111	0.5	84	0.4	195	0.4	0.1	0.1
Metropolitan Status (effect size = 0.07)								
Rural	4,678	21.3	3,486	15.6	8,164	18.4	5.7	2.9*
Urban	17,298	78.7	18,847	84.4	36,145	81.6	-5.7	-2.9*

Note: The percentages shown for each domain for Respondents, Nonrespondents, and Overall may not sum to 100% because of rounding. Because of rounding, the difference columns may not match their constituent parts.

Statistical tests were conducted only for categories with two or more establishments. Percent differences are not calculated for the Total row. As of 2017, RTI no longer samples under the category of 5,000 or more Total Employees in an Establishment. The category of 1,000-4,999 employees and 5,000 or more employees has been collapsed to 1,000+ to reflect the updated employee categories provided by Dun and Bradstreet, the frame vendor.

NA = not applicable. SIC = Standard Industrial Classification. NAICS = North American Industry Classification System.

*Statistically different from zero (0) at the 0.05 level.

Appendix Exhibit H-3. Unweighted Employee Response Rates

Category	Sampled	Response Rate
Total	20,694	51.3
Census Division		
New England	1,185	52.7
Middle Atlantic	2,547	52.2
East North Central	3,539	51.4
West North Central	2,052	53.9*
South Atlantic	3,303	50.2
East South Central	1,198	51.9
West South Central	2,169	52.4
Mountain	1,943	49.2
Pacific	2,758	49.4*
Total Employees in Establishment		
Unknown	26	80.8*
1-4	810	52.2
5-9	847	57.6*
10-49	5,549	52.6
50-99	3,734	54.5*
100-249	2,565	51.3
250-499	4,284	47.6*
500-999	1,671	50.1
1,000+	1,208	44.9*
SIC Division		
Agriculture, Forestry, and Fishing	119	52.1
Mining	325	51.4
Construction	1,389	42.8*
Manufacturing	4,838	53.5*
Transportation, Communication, Electric, Gas, and Sanitary Services	2,842	51.3
Wholesale Trade	314	55.4
Retail Trade	1,032	44.8*
Finance, Insurance, and Real Estate	85	40.0*
Services	7,546	51.0
Public Administration	2,204	55.7*
NAICS Sector		
Agriculture, Forestry, Fishing, and Hunting	106	54.7
Mining	325	51.4
Utilities	469	67.4*
Construction	1,390	42.8*
Manufacturing	4,816	52.9*
Wholesale Trade	296	54.4

(continued)

Appendix Exhibit H-3. Unweighted Employee Response Rates (continued)

Category	Sampled	Response Rate
Retail Trade	865	46.8*
Transportation and Warehousing	1,970	48.2*
Information	313	66.1*
Finance and Insurance	74	35.1*
Real Estate and Rental and Leasing	44	81.8*
Professional, Scientific, and Technical Services	570	60.2*
Management of Companies and Enterprises	—	—
Administrative and Support and Waste Management and Remediation Services	385	49.6
Educational Services	894	44.6*
Health Care and Social Assistance	4,500	49.0*
Arts, Entertainment, and Recreation	352	52.0
Accommodation and Food Services	544	42.1*
Other Services, Except Public Administration	593	63.4*
Public Administration	2,188	55.8*
Total Selected Employees in Establishment		
1	1,238	62.3*
2	1,380	58.6*
3	1,422	56.1*
4	1,406	51.1
5	1,356	53.0
6	1,188	52.8
7	1,081	54.4*
8	7,171	47.2*
9	657	56.8*
10	553	50.8
11	359	58.5*
12	401	49.6
13	684	52.9
14	308	40.6*
15	193	50.8
16	1,098	41.8*
17	108	38.9*
18	36	63.9
19	—	—
20	55	49.1
Questionnaire Type		
Work Activities	7,013	49.7*
Work Context	6,723	53.8*
Knowledge	6,958	50.5

(continued)

Appendix Exhibit H-3. Unweighted Employee Response Rates (continued)

Category	Sampled	Response Rate
Number of Occupations on Establishment Sampling List		
1-5	14,439	50.8
6	1,608	51.6
7	1,193	60.2*
8	773	55.0*
9	1,227	47.8*
10	1,454	50.1
Occupation Class		
Management Occupations	1,108	61.5*
Business and Financial Operations Occupations	96	79.2*
Computer and Mathematical Occupations	524	46.4*
Architecture and Engineering Occupations	368	50.8
Life, Physical, and Social Science Occupations	1,103	60.0*
Community and Social Service Occupations	537	61.8*
Legal Occupations	108	50.0
Education, Training, and Library Occupations	160	31.3*
Arts, Design, Entertainment, Sports, and Media Occupations	376	53.7
Healthcare Practitioners and Technical Occupations	3,005	46.2*
Healthcare Support Occupations	1,018	48.9
Protective Service Occupations	353	39.9*
Food Preparation and Serving Related Occupations	318	36.8*
Building and Grounds Cleaning and Maintenance Occupations	263	49.8
Personal Care and Service Occupations	190	62.1*
Sales and Related Occupations	408	53.7
Office and Administrative Support Occupations	2,105	59.3*
Farming, Fishing, and Forestry Occupations	214	46.7
Construction and Extraction Occupations	1,676	39.9*
Installation, Maintenance, and Repair Occupations	1,869	57.0*
Production Occupations	2,669	50.4
Transportation and Material Moving Occupations	2,226	49.0*
Military Specific Occupations	—	—
Time Zone		
Eastern Standard Time	9,289	52.5
Central Standard Time	6,640	51.2
Mountain Standard Time	1,664	49.6
Pacific Standard Time	2,869	49.2*
Alaska Standard Time	110	52.7
Hawaii Standard Time	122	39.3*
Metropolitan Status		
Rural	4,782	55.3*
Urban	15,912	50.1*

**Appendix H:
Nonresponse Analysis**

Note: Statistical tests conducted only for categories with two or more employees. As of 2017, RTI is no longer sampling under the category of 5,000 or more Total Employees in an Establishment. The category of 1,000-4,999 employees and 5,000 or more employees has been collapsed to 1,000+ to reflect the updated employee categories provided by Dun and Bradstreet, the frame vendor.

A dash (—) indicates that estimates do not apply because sample was not observed.

NA = not applicable, SIC = Standard Industrial Classification. NAICS = North American Classification System.

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

Appendix Exhibit H-4. Comparison of Employee Respondents and Nonrespondents

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Total	10,618	100.0	10,076	100.0	20,694	100.0	N/A	N/A
Census Division (effect size = 0.03)								
New England	624	5.9	561	5.6	1,185	5.7	0.3	0.2
Middle Atlantic	1,330	12.5	1,217	12.1	2,547	12.3	0.4	0.2
East North Central	1,820	17.1	1,719	17.1	3,539	17.1	0.1	0.0
West North Central	1,107	10.4	945	9.4	2,052	9.9	1.0	0.5
South Atlantic	1,659	15.6	1,644	16.3	3,303	16.0	-0.7	-0.3
East South Central	622	5.9	576	5.7	1,198	5.8	0.1	0.1
West South Central	1,137	10.7	1,032	10.2	2,169	10.5	0.5	0.2
Mountain	956	9.0	987	9.8	1,943	9.4	-0.8	-0.4
Pacific	1,363	12.8	1,395	13.8	2,758	13.3	-1.0	-0.5
Total Employees in Establishment (effect size = 0.06)								
Unknown	21	0.2	5	0.0	26	0.1	0.1	0.1
1-4	423	4.0	387	3.8	810	3.9	0.1	0.1
5-9	488	4.6	359	3.6	847	4.1	1.0	0.5*
10-49	2,917	27.5	2,632	26.1	5,549	26.8	1.4	0.7
50-99	2,034	19.2	1,700	16.9	3,734	18.0	2.3	1.1*
100-249	1,315	12.4	1,250	12.4	2,565	12.4	-0.0	-0.0
250-499	2,041	19.2	2,243	22.3	4,284	20.7	-3.0	-1.5*
500-999	837	7.9	834	8.3	1,671	8.1	-0.4	-0.2
1,000+	542	5.1	666	6.6	1,208	5.8	-1.5	-0.7*
SIC Division (effect size = 0.06)								
Agriculture, Forestry, and Fishing	62	0.6	57	0.6	119	0.6	0.0	0.0
Mining	167	1.6	158	1.6	325	1.6	0.0	0.0
Construction	594	5.6	795	7.9	1,389	6.7	-2.3	-1.1*
Manufacturing	2,588	24.4	2,250	22.3	4,838	23.4	2.0	1.0
Transportation, Communication, Electric, Gas, and Sanitary Services	1,459	13.7	1,383	13.7	2,842	13.7	0.0	0.0
Wholesale Trade	174	1.6	140	1.4	314	1.5	0.2	0.1
Retail Trade	462	4.4	570	5.7	1,032	5.0	-1.3	-0.6*
Finance, Insurance, Real Estate	34	0.3	51	0.5	85	0.4	-0.2	-0.1
Services	3,850	36.3	3,696	36.7	7,546	36.5	-0.4	-0.2
Public Administration	1,228	11.6	976	9.7	2,204	10.7	1.9	0.9*

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

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
NAICS Sector (effect size = 0.11)								
Agriculture, Forestry, Fishing, and Hunting	58	0.5	48	0.5	106	0.5	0.1	0.0
Mining	167	1.6	158	1.6	325	1.6	0.0	0.0
Utilities	316	3.0	153	1.5	469	2.3	1.5	0.7*
Construction	595	5.6	795	7.9	1,390	6.7	-2.3	-1.1*
Manufacturing	2,549	24.0	2,267	22.5	4,816	23.3	1.5	0.7
Wholesale Trade	161	1.5	135	1.3	296	1.4	0.2	0.1
Retail Trade	405	3.8	460	4.6	865	4.2	-0.8	-0.4
Transportation and Warehousing	950	8.9	1,020	10.1	1,970	9.5	-1.2	-0.6
Information	207	1.9	106	1.1	313	1.5	0.9	0.4*
Finance and Insurance	26	0.2	48	0.5	74	0.4	-0.2	-0.1
Real Estate and Rental and Leasing	36	0.3	8	0.1	44	0.2	0.3	0.1*
Professional, Scientific, and Technical Services	343	3.2	227	2.3	570	2.8	1.0	0.5*
Management of Companies and Enterprises	0	0.0	0	0.0	0	0.0	—	—
Administrative and Support and Waste Management and Remediation Services	191	1.8	194	1.9	385	1.9	-0.1	-0.1
Educational Services	399	3.8	495	4.9	894	4.3	-1.2	-0.6*
Health Care and Social Assistance	2,206	20.8	2,294	22.8	4,500	21.7	-2.0	-1.0
Arts, Entertainment, and Recreation	183	1.7	169	1.7	352	1.7	0.0	0.0
Accommodation and Food Services	229	2.2	315	3.1	544	2.6	-1.0	-0.5*
Other Services, Except Public Administration	376	3.5	217	2.2	593	2.9	1.4	0.7*
Public Administration	1,221	11.5	967	9.6	2,188	10.6	1.9	0.9*

(continued)

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

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Total Selected Employees in Establishment (effect size = 0.10)								
1	771	7.3	467	4.6	1,238	6.0	2.6	1.3*
2	809	7.6	571	5.7	1,380	6.7	2.0	1.0*
3	798	7.5	624	6.2	1,422	6.9	1.3	0.6*
4	719	6.8	687	6.8	1,406	6.8	-0.0	-0.0
5	719	6.8	637	6.3	1,356	6.6	0.4	0.2
6	627	5.9	561	5.6	1,188	5.7	0.3	0.2
7	588	5.5	493	4.9	1,081	5.2	0.6	0.3
8	3,388	31.9	3,783	37.5	7,171	34.7	-5.6	-2.7*
9	373	3.5	284	2.8	657	3.2	0.7	0.3
10	281	2.6	272	2.7	553	2.7	-0.1	-0.0
11	210	2.0	149	1.5	359	1.7	0.5	0.2
12	199	1.9	202	2.0	401	1.9	-0.1	-0.1
13	362	3.4	322	3.2	684	3.3	0.2	0.1
14	125	1.2	183	1.8	308	1.5	-0.6	-0.3
15	98	0.9	95	0.9	193	0.9	-0.0	-0.0
16	459	4.3	639	6.3	1,098	5.3	-2.0	-1.0*
17	42	0.4	66	0.7	108	0.5	-0.3	-0.1
18	23	0.2	13	0.1	36	0.2	0.1	0.0
19	0	0.0	0	0.0	0	0.0	—	—
20	27	0.3	28	0.3	55	0.3	-0.0	-0.0
Questionnaire Type (effect size = 0.03)								
Work Activities	3,488	32.8	3,525	35.0	7,013	33.9	-2.1	-1.0*
Work Context	3,614	34.0	3,109	30.9	6,723	32.5	3.2	1.5*
Knowledge	3,516	33.1	3,442	34.2	6,958	33.6	-1.0	-0.5
Number of Occupations on Establishment Sampling List (effect size = 0.05)								
1-5	7,330	69.0	7,109	70.6	14,439	69.8	-1.5	-0.7
6	830	7.8	778	7.7	1,608	7.8	0.1	0.0
7	718	6.8	475	4.7	1,193	5.8	2.0	1.0*
8	425	4.0	348	3.5	773	3.7	0.5	0.3
9	587	5.5	640	6.4	1,227	5.9	-0.8	-0.4
10	728	6.9	726	7.2	1,454	7.0	-0.3	-0.2

(continued)

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

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Occupation Class (effect size = 0.14)								
Management Occupations	681	6.4	427	4.2	1,108	5.4	2.2	1.1*
Business and Financial Operations Occupations	76	0.7	20	0.2	96	0.5	0.5	0.3*
Computer and Mathematical Occupations	243	2.3	281	2.8	524	2.5	-0.5	-0.2
Architecture and Engineering Occupations	187	1.8	181	1.8	368	1.8	-0.0	-0.0
Life, Physical, and Social Science Occupations	662	6.2	441	4.4	1,103	5.3	1.9	0.9*
Community and Social Service Occupations	332	3.1	205	2.0	537	2.6	1.1	0.5*
Legal Occupations	54	0.5	54	0.5	108	0.5	-0.0	-0.0
Education, Training, and Library Occupations	50	0.5	110	1.1	160	0.8	-0.6	-0.3*
Arts, Design, Entertainment, Sports, and Media Occupations	202	1.9	174	1.7	376	1.8	0.2	0.1
Healthcare Practitioners and Technical Occupations	1,387	13.1	1,618	16.1	3,005	14.5	-3.0	-1.5*
Healthcare Support Occupations	498	4.7	520	5.2	1,018	4.9	-0.5	-0.2
Protective Service Occupations	141	1.3	212	2.1	353	1.7	-0.8	-0.4*
Food Preparation and Serving Related Occupations	117	1.1	201	2.0	318	1.5	-0.9	-0.4*
Building and Grounds Cleaning and Maintenance Occupations	131	1.2	132	1.3	263	1.3	-0.1	-0.0
Personal Care and Service Occupations	118	1.1	72	0.7	190	0.9	0.4	0.2
Sales and Related Occupations	219	2.1	189	1.9	408	2.0	0.2	0.1
Office and Administrative Support Occupations	1,249	11.8	856	8.5	2,105	10.2	3.3	1.6*
Farming, Fishing, and Forestry Occupations	100	0.9	114	1.1	214	1.0	-0.2	-0.1
Construction and Extraction Occupations	668	6.3	1,008	10.0	1,676	8.1	-3.7	-1.8*
Installation, Maintenance, and Repair Occupations	1,066	10.0	803	8.0	1,869	9.0	2.1	1.0*
Production Occupations	1,346	12.7	1,323	13.1	2,669	12.9	-0.5	-0.2
Transportation and Material Moving Occupations	1,091	10.3	1,135	11.3	2,226	10.8	-1.0	-0.5
Military Specific Occupations	0	0.0	0	0.0	0	0.0	—	—

(continued)

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

Category	Respondents		Nonrespondents		Overall		Percent Difference Resp vs. Nonresp	Percent Difference Resp vs. Overall
	No.	%	No.	%	No.	%		
Occupation Class (effect size = 0.14)								
Time Zone (effect size = 0.03)								
Eastern Standard Time	4,873	45.9	4,416	43.8	9,289	44.9	2.1	1.0
Central Standard Time	3,402	32.0	3,238	32.1	6,640	32.1	-0.1	-0.0
Mountain Standard Time	826	7.8	838	8.3	1,664	8.0	-0.5	-0.3
Pacific Standard Time	1,411	13.3	1,458	14.5	2,869	13.9	-1.2	-0.6
Alaska Standard Time	58	0.5	52	0.5	110	0.5	0.0	0.0
Hawaii Standard Time	48	0.5	74	0.7	122	0.6	-0.3	-0.1
Metropolitan Status (effect size = 0.04)								
Rural	2,646	24.9	2,136	21.2	4,782	23.1	3.7	1.8*
Urban	7,972	75.1	7,940	78.8	15,912	76.9	-3.7	-1.8*

Notes: The percentages shown for each domain for Respondents, Nonrespondents, and Overall may not sum to 100% because of rounding. Because of rounding, the difference columns may not match their constituent parts. Statistical tests conducted only for categories with two or more employees. Percent differences are not calculated for the Total row. As of 2017, RTI is no longer sampling under the category of 5,000 or more Total Employees in an Establishment. The category of 1,000-4,999 employees and 5,000 or more employees has been collapsed to 1,000+ to reflect the updated employee categories provided by Dun and Bradstreet, the frame vendor.

A dash (—) indicates that estimates do not apply because sample was not observed for either respondents or nonrespondents.

NA = not applicable, NAICS = North American Classification System, SIC = Standard Industrial Classification.

*Statistically different from zero (0) at the 0.05 level.

Appendix Exhibit H-5. Ten Lowest Item Response Rates, Work Activities Questionnaire

	Item and Description	Sampled	Response Rate
B02-Level	Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.	2,946	96.0
B25-Level	Translating or explaining what information means and how it can be used.	2,678	96.2
B40-Level	Recruiting, interviewing, selecting, hiring, and promoting employees in an organization.	1,617	96.2
B05-Level	Estimating sizes, distances, and quantities; or determining time, costs, resources, or materials needed to perform a work activity.	2,537	96.3
B06-Level	Assessing the value, importance, or quality of things or people.	2,686	96.4
B14-Level	Scheduling events, programs, and activities, as well as the work of others.	2,613	96.4
B13-Level	Establishing long-range objectives and specifying the strategies and actions to achieve them.	2,577	96.5
B22-Level	Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.	1,790	96.6
B32-Level	Performing for people or dealing directly with the public. This includes serving customers in restaurants and stores, and receiving clients or guests.	2,121	96.6
B03-Level	Monitoring and reviewing information from materials, events, or the environment, to detect or assess problems.	2,882	96.7
B11-Level	Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions.	2,712	96.7
B04-Level	Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.	2,675	96.8
B09-Level	Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.	2,693	96.9
B36-Level	Providing guidance and direction to subordinates, including setting performance standards and monitoring performance.	2,356	96.9
B41-Level	Monitoring and controlling resources and overseeing the spending of money.	2,133	96.9
B08-Level	Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.	2,818	97.1

(continued)

**Appendix Exhibit H-5. Ten Lowest Item Response Rates, Work Activities
Questionnaire (continued)**

Item and Description		Sampled	Response Rate
B10-Level	Analyzing information and evaluating results to choose the best solution and solve problems.	2,951	97.1
B20-Level	Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or watercraft.	1,973	97.1
B33-Level	Getting members of a group to work together to accomplish tasks.	2,622	97.1

*Note: 19 items are shown because of ties in response rates.

Appendix Exhibit H-6. Ten Lowest Item Response Rates, Work Context Questionnaire

	Item and Description	Sampled	Response Rate
D01	How often do you have to have face-to-face discussions with individuals or teams in this job?	3,228	97.6
D05	How often does the job require written letters and memos?	3,228	97.8
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?	3,228	98.1
D09	How important is it to coordinate or lead others in accomplishing work activities in this job?	3,228	98.2
D45	How serious would the result usually be if the worker made a mistake that was not readily correctable?	3,228	98.2
D49	How automated is the job?	3,228	98.2
D03	How often do you have telephone conversations in this job?	3,228	98.3
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?	3,228	98.4
D33	How often does this job require exposure to minor burns, cuts, bites, or stings?	3,228	98.5
D39	How much does this job require keeping or regaining your balance?	3,228	98.5
D46	What results do your decisions usually have on other people or the image or reputation or financial resources of your employer?	3,228	98.7
D53	To what extent does this job require the worker to compete or to be aware of competitive pressures?	3,228	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.)	3,228	98.7
D07	How important is it to work with others in a group or team in this job?	3,228	98.8
D13	How frequently does the worker have to deal with unpleasant, angry, or discourteous individuals as part of the job requirements?	3,228	98.8
D15	How often does this job require working indoors in environmentally controlled conditions?	3,228	98.8
D21	To what extent does this job require the worker to perform job tasks in close physical proximity to other people?	3,228	98.8
D25	How often does this job require working exposed to contaminants (such as pollutants, gases, dust or odors)?	3,228	98.8
D11	How responsible is the worker for work outcomes and results of other workers?	3,228	98.9

(continued)

**Appendix Exhibit H-6. Ten Lowest Item Response Rates, Work Context
Questionnaire (continued)**

	Item and Description	Sampled	Response Rate
D23	How often does this job require working in very hot (above 90 F degrees) or very cold (below 32 F degrees) temperatures?	3,228	98.9
D26	How often does this job require working in cramped work spaces that requires getting into awkward positions?	3,228	98.9
D41	How much does this job require bending or twisting your body?	3,228	98.9

*Note: 22 items are shown because of ties in response rates.

Appendix Exhibit H-7. Ten Lowest Item Response 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.	545	90.1
E26-Level	Knowledge of the theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.	449	90.4
E27-Level	Knowledge of historical events and their causes, indicators, and effects on civilizations and cultures.	722	94.6
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.	1,171	95.6
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.	1,017	95.6
E17-Level	Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.	1,184	95.7
E19-Level	Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures, and their history and origins.	1,390	95.9
E04-Level	Knowledge of principles and methods for showing, promoting, and selling products or services. This includes marketing strategy and tactics, product demonstration, sales techniques, and sales control systems.	1,561	96.3
E03-Level	Knowledge of economic and accounting principles and practices, the financial markets, banking, and the analysis and reporting of financial data.	1,730	96.5
E15-Level	Knowledge and prediction of physical principles, laws, their interrelationships, and applications to understanding fluid, material, and atmospheric dynamics, and mechanical, electrical, atomic and sub-atomic structures and processes.	1,556	96.5
E20-Level	Knowledge of principles and methods for describing the features of land, sea, and air masses, including their physical characteristics, locations, interrelationships, and distribution of plant, animal, and human life.	1,323	96.5

(continued)

**Appendix Exhibit H-7. Ten Lowest Item Response Rates, Knowledge
 Questionnaire (continued)**

Item	Item Description	Sampled	Response Rate
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.	1,413	96.6
E06-Level	Knowledge of principles and procedures for personnel recruitment, selection, training, compensation and benefits, labor relations and negotiation, and personnel information systems.	2,121	96.7
E22-Level	Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.	1,364	96.7

*Note: 14 items are shown because of ties in response rates.

Appendix Exhibit H-8. Ten Lowest Item Response Rates, Task Questionnaire

Item	Item Description	Sampled	Response Rate
43-4111.00, Interviewers, Except Eligibility and Loan: T15-Frequency	Recruit participants for focus groups.	12	41.7
37-2011.00, Janitors and Cleaners, Except Maids and Housekeeping Cleaners: T17-Frequency	Clean and restore building interiors damaged by fire, smoke, or water, using commercial cleaning equipment.	11	45.5
13-2081.00, Tax Examiners and Collectors, and Revenue Agents: T18-Frequency	Recommend criminal prosecutions or civil penalties.	8	50.0
47-2211.00, Sheet Metal Workers: T20-Frequency	Construct components for high-performance wind turbine systems.	9	55.6
53-7081.00, Refuse and Recyclable Material Collectors: T16-Frequency	Provide quotes for refuse collection contracts.	9	55.6
43-4111.00, Interviewers, Except Eligibility and Loan: T15-Importance	Recruit participants for focus groups.	12	58.3
37-2011.00, Janitors and Cleaners, Except Maids and Housekeeping Cleaners: T16-Frequency	Mow or trim lawns or shrubbery, using mowers or hand or power trimmers, and clear debris from grounds.	17	58.8
29-1213.00, Dermatologists: T16-Importance	Provide liposuction treatment to patients.	5	60.0
29-1213.00, Dermatologists: T16-Frequency	Provide liposuction treatment to patients.	5	60.0
53-7051.00, Industrial Truck and Tractor Operators: T1-Frequency	Hook tow trucks to trailer hitches and fasten attachments, such as graders, plows, rollers, or winch cables to tractors, using hitchpins.	10	60.0
53-7051.00, Industrial Truck and Tractor Operators: T7-Frequency	Signal workers to discharge, dump, or level materials.	15	60.0
53-3033.00, Light Truck Drivers: T3-Frequency	Drive trucks equipped with public address systems through city streets to broadcast announcements for advertising or publicity purposes.	18	61.1
37-2011.00, Janitors and Cleaners, Except Maids and Housekeeping Cleaners: T17-Importance	Clean and restore building interiors damaged by fire, smoke, or water, using commercial cleaning equipment.	11	63.6
47-2211.00, Sheet Metal Workers: T7-Frequency	Install green architectural sheet metal components, such as cool roofs or hot or cold walls.	11	63.6
49-9097.00, Signal and Track Switch Repairers: T5-Frequency	Maintain high tension lines, de-energizing lines for power companies when repairs are requested.	14	64.3
53-7061.00, Cleaners of Vehicles and Equipment: T20-Frequency	Collect and test samples of cleaning solutions or vapors.	14	64.3

*Note: 16 items are shown because of ties in response rates.

Appendix Exhibit H-9. Response Rates, Background Questionnaire

	Item and Description	Sampled	Response Rate
2	How long at job?	9,451	99.1
3	Employment sector	9,451	96.7
4	Family business	9,451	91.4
5	Age group	9,451	94.8
6	Gender	9,451	97.9
7	Ethnicity	9,451	97.1
8	Race	9,451	93.7
9	Education level	9,451	98.8
Items Added to Match the Disability Questions in the American Community Survey			
10	Deafness or serious difficulty hearing	9,451	98.8
11	Blind or serious difficulty seeing even when wearing glasses	9,451	98.5
12A	Serious difficulty concentrating, remembering, or making decisions	9,451	98.1
12B	Serious difficulty walking or climbing stairs	9,451	98.5
12C	Difficulty dressing or bathing	9,451	98.3
13	Difficulty doing errands alone because of a physical, mental, or emotional condition	9,451	98.5

Appendix Exhibit H-10. Item Response Rates by Item Type

Item Type	Questions	Response Rate
TOTAL	1,199,772	97.9
B--Work Activities--Importance	126,772	98.8
B--Work Activities--Level	103,870	97.2
D--Work Context	183,996	99.0
E--Knowledge--Education and Training	18,572	99.4
E--Knowledge--Importance	103,323	98.9
E--Knowledge--Level	58,657	97.0
E--Knowledge--Work Styles Background	50,096	99.5
Background	75,608	96.2
Task--Relevance	188,010	98.8
Task--Importance	145,434	96.9
Task--Frequency	145,434	95.7

Appendix Exhibit H-11. Item Response Rates by Occupation

SOC Code	SOC Title	Questions	Response Rate
TOTAL		1,199,772	97.9
35-9021.00	Dishwashers	5,134	93.6
35-9011.00	Dining Room and Cafeteria Attendants and Bartender Helpers	7,274	95.3
51-3092.00	Food Batchmakers	7,737	95.4
53-7051.00	Industrial Truck and Tractor Operators	5,073	95.5
13-2081.00	Tax Examiners and Collectors, and Revenue Agents	7,736	95.7
53-7061.00	Cleaners of Vehicles and Equipment	7,274	95.8
29-2051.00	Dietetic Technicians	5,560	96.0
53-5022.00	Motorboat Operators	5,826	96.1
31-9092.00	Medical Assistants	7,694	96.2
43-4111.00	Interviewers, Except Eligibility and Loan	6,338	96.2
51-6041.00	Shoe and Leather Workers and Repairers	6,042	96.2
51-6063.00	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	8,111	96.2
51-3093.00	Food Cooking Machine Operators and Tenders	6,785	96.3
53-3033.00	Light Truck Drivers	8,554	96.3
37-2011.00	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	7,953	96.4
47-2111.00	Electricians	7,791	96.6
43-3041.00	Gambling Cage Workers	7,428	96.8
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	12,044	96.8
51-9022.00	Grinding and Polishing Workers, Hand	6,415	96.8
27-3091.00	Interpreters and Translators	7,221	96.9
31-1122.00	Personal Care Aides	5,802	96.9
31-2011.00	Occupational Therapy Assistants	7,525	96.9
31-9094.00	Medical Transcriptionists	5,539	96.9
43-2011.00	Switchboard Operators, Including Answering Service	8,929	96.9
43-4171.00	Receptionists and Information Clerks	10,827	96.9
43-5011.00	Cargo and Freight Agents	6,480	96.9
51-4035.00	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	6,695	96.9
51-6061.00	Textile Bleaching and Dyeing Machine Operators and Tenders	6,318	96.9
51-9081.00	Dental Laboratory Technicians	7,716	96.9
53-3032.00	Heavy and Tractor-Trailer Truck Drivers	15,971	96.9

(continued)

Appendix Exhibit H-11. Item Response Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
43-4051.00	Customer Service Representatives	8,032	97.0
53-1043.00	First-Line Supervisors of Material-Moving Machine and Vehicle Operators	7,205	97.0
29-1141.00	Registered Nurses	12,930	97.1
29-2052.00	Pharmacy Technicians	10,334	97.1
31-9091.00	Dental Assistants	7,615	97.2
47-2211.00	Sheet Metal Workers	6,683	97.2
25-1113.00	Social Work Teachers, Postsecondary	6,945	97.3
33-9032.00	Security Guards	6,002	97.3
39-7012.00	Travel Guides	6,528	97.3
47-2121.00	Glaziers	11,394	97.3
51-4071.00	Foundry Mold and Coremakers	7,005	97.3
53-4041.00	Subway and Streetcar Operators	9,525	97.3
21-1011.00	Substance Abuse and Behavioral Disorder Counselors	7,393	97.4
29-2061.00	Licensed Practical and Licensed Vocational Nurses	13,705	97.4
47-5071.00	Roustabouts, Oil and Gas	6,277	97.4
49-2021.00	Radio, Cellular, and Tower Equipment Installers and Repairers	7,823	97.4
31-2022.00	Physical Therapist Aides	7,318	97.5
47-2044.00	Tile and Stone Setters	7,972	97.5
11-9071.00	Gambling Managers	9,387	97.6
27-1011.00	Art Directors	6,849	97.6
41-9012.00	Models	6,044	97.6
43-6013.00	Medical Secretaries and Administrative Assistants	9,661	97.6
47-2132.00	Insulation Workers, Mechanical	9,571	97.7
47-3013.00	Helpers--Electricians	10,615	97.7
19-1042.00	Medical Scientists, Except Epidemiologists	7,075	97.8
29-1213.00	Dermatologists	9,802	97.8
29-1229.01	Allergists and Immunologists	8,784	97.8
43-3061.00	Procurement Clerks	7,336	97.8
43-9031.00	Desktop Publishers	7,972	97.8
47-2043.00	Floor Sanders and Finishers	5,408	97.8
47-4021.00	Elevator and Escalator Installers and Repairers	7,253	97.8
49-2097.00	Audiovisual Equipment Installers and Repairers	6,095	97.8
51-8092.00	Gas Plant Operators	7,994	97.8
53-2022.00	Airfield Operations Specialists	10,001	97.8

(continued)

Appendix Exhibit H-11. Item Response Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
53-7081.00	Refuse and Recyclable Material Collectors	6,505	97.8
29-1218.00	Obstetricians and Gynecologists	6,792	97.9
43-3051.00	Payroll and Timekeeping Clerks	7,994	97.9
51-7032.00	Patternmakers, Wood	10,171	97.9
53-6051.01	Aviation Inspectors	5,742	97.9
31-1133.00	Psychiatric Aides	6,763	98.0
37-1012.00	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	8,552	98.0
49-1011.00	First-Line Supervisors of Mechanics, Installers, and Repairers	15,665	98.0
49-9097.00	Signal and Track Switch Repairers	5,278	98.0
51-4032.00	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	10,361	98.0
53-4013.00	Rail Yard Engineers, Dinkey Operators, and Hostlers	10,942	98.0
29-1127.00	Speech-Language Pathologists	10,111	98.1
41-9031.00	Sales Engineers	6,865	98.1
43-5031.00	Public Safety Telecommunicators	9,726	98.1
43-5032.00	Dispatchers, Except Police, Fire, and Ambulance	7,540	98.1
43-5061.00	Production, Planning, and Expediting Clerks	8,308	98.1
45-4011.00	Forest and Conservation Workers	7,824	98.1
51-8021.00	Stationary Engineers and Boiler Operators	9,436	98.1
51-8093.00	Petroleum Pump System Operators, Refinery Operators, and Gaugers	9,490	98.1
11-3051.00	Industrial Production Managers	13,350	98.2
15-1232.00	Computer User Support Specialists	8,923	98.2
17-2199.05	Mechatronics Engineers	7,847	98.2
21-1014.00	Mental Health Counselors	11,206	98.2
27-2012.03	Media Programming Directors	8,160	98.2
29-1241.00	Ophthalmologists, Except Pediatric	6,374	98.2
41-2022.00	Parts Salespersons	6,260	98.2
49-9051.00	Electrical Power-Line Installers and Repairers	10,297	98.2
51-4081.00	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	6,590	98.2
21-2021.00	Directors, Religious Activities and Education	7,313	98.3
29-1051.00	Pharmacists	8,004	98.3
43-4021.00	Correspondence Clerks	6,572	98.3

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Appendix Exhibit H-11. Item Response Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
15-1211.00	Computer Systems Analysts	8,668	98.4
29-2053.00	Psychiatric Technicians	8,236	98.4
31-9099.01	Speech-Language Pathology Assistants	5,528	98.4
43-4061.00	Eligibility Interviewers, Government Programs	9,407	98.4
49-9041.00	Industrial Machinery Mechanics	7,866	98.4
49-9071.00	Maintenance and Repair Workers, General	25,148	98.4
53-2031.00	Flight Attendants	10,670	98.4
11-1011.00	Chief Executives	14,676	98.5
11-9121.00	Natural Sciences Managers	8,590	98.5
29-1023.00	Orthodontists	7,086	98.5
29-1081.00	Podiatrists	7,762	98.5
43-4151.00	Order Clerks	7,328	98.5
49-9081.00	Wind Turbine Service Technicians	10,980	98.5
17-2072.00	Electronics Engineers, Except Computer	6,583	98.6
19-1032.00	Foresters	10,203	98.6
19-2031.00	Chemists	7,044	98.6
19-4031.00	Chemical Technicians	5,577	98.6
21-2011.00	Clergy	9,039	98.6
29-1292.00	Dental Hygienists	6,695	98.6
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	8,239	98.6
49-9062.00	Medical Equipment Repairers	9,211	98.6
53-7072.00	Pump Operators, Except Wellhead Pumpers	9,274	98.6
15-1242.00	Database Administrators	8,384	98.7
19-2041.00	Environmental Scientists and Specialists, Including Health	12,166	98.7
23-1012.00	Judicial Law Clerks	5,681	98.7
29-1216.00	General Internal Medicine Physicians	7,550	98.7
29-1224.00	Radiologists	11,133	98.7
29-9099.01	Midwives	11,927	98.7
51-4111.00	Tool and Die Makers	6,691	98.7
51-9023.00	Mixing and Blending Machine Setters, Operators, and Tenders	6,949	98.7
11-9121.01	Clinical Research Coordinators	8,530	98.8
11-9199.09	Wind Energy Operations Managers	7,892	98.8
33-3012.00	Correctional Officers and Jailers	12,029	98.8
41-9041.00	Telemarketers	5,137	98.8

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Appendix Exhibit H-11. Item Response Rates by Occupation (continued)

SOC Code	SOC Title	Questions	Response Rate
51-9161.00	Computer Numerically Controlled Tool Operators	14,857	98.8
19-4013.00	Food Science Technicians	6,842	98.9
11-3051.01	Quality Control Systems Managers	8,994	99.0
29-1229.03	Urologists	5,487	99.0
49-3052.00	Motorcycle Mechanics	5,950	99.0
11-1021.00	General and Operations Managers	9,764	99.1
19-1023.00	Zoologists and Wildlife Biologists	7,062	99.1
21-1023.00	Mental Health and Substance Abuse Social Workers	7,755	99.1
39-4011.00	Embalmers	8,329	99.1
19-1031.03	Park Naturalists	9,132	99.3
53-2011.00	Airline Pilots, Copilots, and Flight Engineers	10,504	99.3
29-9091.00	Athletic Trainers	7,820	99.4
17-2071.00	Electrical Engineers	7,462	99.5
19-4092.00	Forensic Science Technicians	10,649	99.5