
Appendix D: Nonresponse Analysis

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Nonresponse in the O*NET Data Collection Program can occur from any of three sources. Establishments can cause nonresponse when they fail 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 16–18.¹ 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.

D.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 18 analysis cycles have been completed through June 2017. An analysis of nonresponse in Analysis Cycles 1–3 was included in the September 2005 Office of Management and Budget submission (Appendix E); an analysis of nonresponse in Cycles 4–8 was included in the December 2008 Office of Management and Budget submission (Appendix H); an analysis of nonresponse in Cycles 9–12 was included in the April 2012 Office of Management and Budget submission (Appendix E); and an analysis of nonresponse in Cycles 13–15 was included in the August 2015 Office of Management and Budget submission (Appendix E).

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

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

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

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

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. 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

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

D.2 Establishment Nonresponse

Exhibit D-1 displays the establishment eligibility and response rates for Analysis Cycles 16–18 by stage of data collection; Exhibit D-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 16–18, 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 were likely to be related⁴ to the primary outcome variables of the O*NET Program.

The following describes the major row headings within Exhibits D-1 and D-2:

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

D.2.1 Establishment Final Unweighted Response Rates

Exhibit D-1 displays the establishment eligibility and response rates for Analysis Cycles 16–18 by stage of data collection.

The following describes the Exhibit D-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

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.

⁴ Based on logistic regression modeling results of establishment-level response propensity.

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.
- **Resp** is the percentage of eligible establishments that are 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 Exhibit D-1 reveal that the final unweighted response rate for establishments was 70.6%. The final eligibility rate was 80.8%.⁵ The data also indicate that response rates varied for the four data collection stages, with the lowest response rate occurring at the recruiting stage (82.4%) and the lowest eligibility rate occurring at the verification stage (83.5%). 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 was first contacted and when establishments that closed or moved their businesses were 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 Exhibit D-1 under the column headed *Final Resp*. As mentioned above, low response rates indicate possible nonresponse bias. The response rate for each level of a specific attribute was compared 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 (*).⁶

Census Division. Establishments in the West North Central region (74.1%) had the highest significant final response rate, whereas the Middle Atlantic region (67.7%) had the lowest significant final response rate.

Total Employees in Establishment. Across all establishment size categories except Unknown, 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,

⁵ Unweighted rates were used because appropriate weights were not available for ineligible or nonresponding establishments.

⁶ The tests were conditioned on the overall rates because the objective was to identify any subgroups that differed from the observed overall rate.

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 different SIC divisions with the overall final response rate, one sees that Public Administration (83.0%) had the highest significant final response rate, whereas the Retail Trade (59.4%) industry had the lowest significant final response rate.⁷

NAICS Sector. Comparing the different NAICS sectors to the overall final response rate, one sees that Public Administration (83.0%) had the highest significant final response rate, and Accommodation and Food Service (51.6%) had the lowest significant final response rate.⁷

Number of Occupations on Establishment Sampling List. The final response rate for establishments with 1–5 occupations on the sampling list was significantly higher than the overall final response rate (74.4%, as opposed to 70.6%), and establishments with 10 occupations on the sampling list had the lowest significant final response rate (52.0%). A decreasing trend in response rates appears to be generally correlated with an increase in the number of occupations on the establishment sampling list.

Time Zone. Establishments in the Alaska Standard Time zone had the highest significant final response rate (83.0%). No time zones were significantly lower than the overall rate of 70.6%.

Metropolitan Status. Rural establishments had a final response rate significantly higher than the overall response rate (76.3% vs 70.6%), whereas urban establishments had a significantly lower final response rate (69.3%).

D.2.2 Comparison of Establishment Respondents and Nonrespondents

Exhibit D-2 compares the distribution of respondents with 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. Differences in the final column 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 establishment nonresponse, the differences between respondents and the overall sample do not appear to be meaningful: 84.1% of the attributes had an absolute difference of less than 1 percentage point, 12.7% had an absolute difference of 1–2 percentage points, and 3.2% had an absolute difference of 2 or more percentage points.⁸

⁷ 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 another analysis cycle.

⁸ Absolute difference is the absolute value of the final column of Exhibit D-2.

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.

Under 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 Exhibit D-2, all of the effect sizes were small, with the largest effect size being equal to 0.11 for Number of Occupations on 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).

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

D.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.

Exhibit D-3 displays the unweighted response rates for employees; Exhibit D-4 compares the distribution of respondents and nonrespondents across various employee attributes from Establishment Method data collection for occupations published in Analysis Cycles 16–18.⁹

In addition to the categories displayed in Exhibits D-1 and D-2, Exhibits D-3 and D-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.

⁹ Unweighted rates were used because appropriate weights were not available for nonresponding employees.

- *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 were likely to be related¹⁰ to the primary outcome variables of the O*NET Program.

D.3.1 Employee Final Unweighted Response Rates

An estimate of the second source of nonresponse bias can be found in Exhibit D-3 under the column headed *Response Rate*. As discussed in Section D-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 (*).¹¹

Census Division. Employees in the East South Central region had the highest significant response rate (67.8%), whereas employees in the Pacific region had the lowest significant response rate (59.0%). The overall response rate was 62.9%.

Total Employees in Establishment. The response rate for employees from establishments with 1–4 employees had the highest significant response rate (69.5%). The lowest significant response rate was for employees from establishments with 1,000–4,999 employees (59.5%). The overall response rate was 62.9%.

SIC Division. Employees in the Finance, Insurance, Real Estate industry had the highest significant response rate (68.5%). Employees from the Transportation, Communication, Electric, Gas, and Sanitary Services industry had the lowest significant response rate (54.8%).

NAICS Sector. Employees in the Other Services, Except Public Administration sector had the highest significant response rate (71.9%).¹² Employees in the Transportation and Warehousing sector had the lowest significant response rate (49.4%).

Total Selected Employees in Establishment. The highest significant response rate was for employees from establishments with only 1 selected employee (73.4%). The lowest significant response rate was for employees from establishments with 19 employees selected (40.2%).

Questionnaire Type. The Work Context questionnaire had a significantly higher response rate (64.9%) than the overall response rate of 62.9%. The Work Activities questionnaire had the lowest significant response rate (61.6%).

¹⁰ Based on logistic regression modeling results of both establishment-level and employee-level response propensity.

¹¹ The tests were conditioned on the overall rates because the objective was to identify any subgroups that differed from the observed overall rate.

¹² The response rate for NAICS Sector Management of Companies and Enterprises was 100%, but because only three employees were sampled, this figure was not considered a reliable estimate.

Number of Occupations on Establishment Sampling List. None of the response rates for the Number of Occupations on the Establishment Sampling List were significantly different from the overall rate.

Occupation Class. Community and Social Services Occupations had a significantly higher response rate (73.0%) than the overall response rate (62.9%). Healthcare Support Occupations had the lowest significant response rate (41.4%).¹³

Time Zone. The response rate in the Eastern Standard Time zone (64.4%) was significantly higher than the overall response rate (62.9%). The response rate in the Pacific Standard Time zone (58.5%) was significantly lower than the overall response rate.

Metropolitan Status. The response rate for employees in a rural area was significantly higher than the overall response rate (65.3% and 62.9%, respectively), and the response rate for employees in an urban area was significantly lower (62.1%).

D.3.2 Comparison of Employee Respondents and Nonrespondents

Exhibit D-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. *Resps 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; for example, 92.5% of the attributes had an absolute difference of less than 1 percentage point, and the remaining 7.5% had an absolute difference of 1–2 percentage points.¹¹

Another measure of potential nonresponse bias is the effect size, as defined by (Cohen, 1988). See Section D.2.2 for a full explanation. The combination of small absolute differences and very small effect sizes indicates a low likelihood of bias due to employee nonresponse.

D.4 Item Nonresponse

Exhibits D-5 through D-11 display unweighted item response rates by item, item type, and occupation for Establishment Method data included in Analysis Cycles 16–18. These tables include questionnaire data from employee respondents in the occupations published in Analysis Cycles 16–18 and completed under the Establishment Method. Only items from those questionnaires that satisfied all

¹³ Because no Military Specific Occupations were included among the occupations in Analysis Cycles 16–18, the response rate of 0% is not applicable to this analysis.

completeness and quality requirements were evaluated. Cases that did not satisfy such requirements were included as employee nonrespondents.

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 Exhibits D-5 through D-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 93.2% for Work Activities Questionnaire Item 40 (Level), 97.7% for Work Context Questionnaire Item 49, and 88.2% for Knowledge Questionnaire Item 8 (Level). In addition, as seen in Exhibit D-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 D-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., 51-9194.00, Etchers and Engravers, accounted for 3 of the top 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. 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 D-9, the item response rates appear to be nearly constant and high (nearly 93% or greater), with the exception of Item 4 (88.7%), which elicits information from the respondent about working in a family business.

Item Type. All the response rates by item type were 95.5% or higher (Exhibit D-10).

Occupation. Item response rates are provided in Exhibit D-11 for all occupations completed in Analysis Cycles 16–18. The overall item response rate was 97.6%, with the lowest response rate, 90.3%, coming from Pressers, Textile, Garment, and Related Materials (occupation code 51-6021.00). The highest response rate, 99.4%, came from Actors (occupation code 27-2011.00).

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

D.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 D-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	56,002	83.5	98.3	97.8	91.6	99.5	82.4	100.0	95.5	80.8	70.6
Census Division											
New England	3,861	83.0	98.1	97.3	91.4	99.5	83.4	100.0	96.1	80.0	71.5
Middle Atlantic	8,781	82.1*	98.3	97.7	90.2*	99.4	80.4*	99.9	95.4	79.2*	67.7*
East North Central	8,329	85.4*	98.5	98.0	91.5	99.5	81.9	99.9	95.7	82.9*	70.4
West North Central	4,157	87.4*	98.5	98.1	93.4*	99.6	84.5*	100.0	95.5	85.1*	74.1*
South Atlantic	8,713	82.4*	98.3	97.7	92.3	99.6	83.3	100.0	95.7	79.8*	72.1*
East South Central	2,777	85.7*	99.0*	98.0	93.9*	99.4	81.0	99.9	95.0	83.2*	71.4
West South Central	5,329	83.5	98.4	98.0	90.9	99.5	81.0*	100.0	94.5*	81.0	68.3*
Mountain	4,203	83.1	98.1	97.7	93.8*	99.4	84.4*	99.9	95.4	80.2	73.8*
Pacific	9,418	82.2*	98.0	97.5	90.4*	99.6	82.8	100.0	95.5	79.3*	69.9
Total Employees in Establishment											
Unknown	1,654	76.4*	98.4	95.1*	94.2*	99.4	90.1*	99.8	97.0*	71.3*	80.8*
1–4	7,131	60.6*	93.2*	94.3*	92.2	99.1*	87.6*	100.0*	99.1*	56.4*	73.9*
5–9	2,305	77.7*	97.2*	97.6	93.8*	99.7	88.3*	100.0*	98.3*	75.1*	78.9*
10–49	13,612	84.5*	98.6*	98.1*	93.3*	99.6	85.7*	99.9	96.9*	81.9*	76.2*
50–99	10,323	88.0*	99.1*	98.4*	91.5	99.6	82.3	100.0	95.4	86.0*	71.0
100–249	6,198	89.0*	99.0*	98.3*	90.2*	99.5	80.5*	99.9	93.5*	86.8*	67.0*
250–499	8,436	89.6*	99.2*	98.2*	90.7*	99.6	78.2*	100.0	93.2*	87.4*	65.4*
500–999	3,476	90.1*	99.0*	98.1	89.2*	99.3	76.1*	99.8	93.8*	87.5*	62.7*
1,000–4,999	2,383	91.2*	98.9*	97.8	89.7*	99.4	75.2*	99.9	91.6*	88.4*	60.8*
5,000+	50	96.0*	97.9	100.0*	87.2	100.0*	70.7	100.0*	78.6*	95.9*	46.8*
SIC Division											
Agriculture, Forestry, Fishing	1,045	80.4*	96.8*	97.0	89.4*	99.6	74.9*	100.0*	94.2	77.6*	60.9*
Mining	976	81.7	99.0	96.2*	90.8	98.8	83.8	99.8	95.6	77.5*	71.7
Construction	4,048	78.4*	95.9*	97.8	90.7	99.4	76.8*	99.9	93.9*	75.7*	62.4*
Manufacturing	13,878	85.1*	98.8*	98.2*	90.7*	99.6	81.8	100.0	94.5*	82.9*	69.1*
Transportation, Communication, Electric, Gas, and Sanitary Services	7,426	81.5*	98.0	97.0*	93.3*	99.4	86.9*	99.9	96.3*	77.9*	76.2*
Wholesale Trade	1,298	85.7*	98.8	98.3	92.2	99.5	81.8	99.9	96.1	83.0*	71.2
Retail Trade	4,175	85.8*	98.4	98.2*	86.0*	99.7	75.0*	100.0	94.0*	83.6*	59.4*
Finance, Insurance, Real Estate	3,281	79.3*	98.2	96.8*	84.7*	99.2	77.1*	100.0*	95.9	75.8*	61.2*
Services	14,777	82.8	98.3	97.5	93.2*	99.6	83.4*	100.0	96.0*	79.9*	73.0*
Public Administration	4,664	89.8*	99.4*	98.6*	97.3*	99.5	88.7*	99.9	96.9*	88.0*	83.0*

(continued)

Exhibit D-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	843	77.7*	96.5*	97.0	91.0	99.6	78.5*	100.0*	94.4	75.0*	64.9*
Mining	964	81.4	99.0	96.1*	90.6	98.8	83.9	99.8	95.5	77.3*	71.7
Utilities	1,704	89.9*	98.8	97.7	94.6*	99.3	87.4*	99.9	96.8*	86.8*	78.8*
Construction	3,973	78.7*	96.0*	97.8	90.6	99.4	77.0*	99.9	94.1*	76.0*	62.7*
Manufacturing	13,024	85.2*	98.8*	98.1*	90.7*	99.6	82.0	100.0	94.6*	83.0*	69.3*
Wholesale Trade	1,339	85.9*	98.9	98.0	92.3	99.5	81.8	99.9	95.9	83.0*	71.3
Retail Trade	3,505	85.6*	98.6	98.4*	87.5*	99.7	77.6*	99.9	95.5	83.4*	63.6*
Transportation and Warehousing	3,844	79.9*	98.0	96.6*	94.5*	99.4	88.7*	99.9	96.3*	75.5*	78.7*
Information	1,834	77.5*	97.0*	97.6	88.0*	99.7	77.9*	100.0*	95.6	74.9*	63.3*
Finance and Insurance	2,871	79.5*	98.1	96.7*	84.2*	99.2	76.3*	100.0*	95.7	76.0*	60.1*
Real Estate and Rental and Leasing	481	80.5	98.7	97.3	92.2	99.4	81.7	100.0*	95.8	77.1	71.1
Professional, Scientific, and Technical Services	2,821	78.9*	97.3*	98.0	89.8*	99.8*	86.5*	100.0*	97.6*	77.0*	73.6*
Management of Companies and Enterprises	24	87.5	100.0*	95.2	85.0	100.0*	82.4	100.0*	100.0*	83.3	70.0
Administrative and Support and Waste Management and Remediation Services	2,300	70.1*	96.0*	97.0	91.6	99.7	82.8	100.0*	95.5	67.1*	69.1
Educational Services	2,023	93.8*	99.9*	97.6	95.3*	99.5	81.7	100.0*	95.2	90.9*	73.9*
Health Care and Social Assistance	3,034	91.5*	99.6*	98.1	95.3*	99.6	85.3*	100.0	96.2	89.1*	77.8*
Arts, Entertainment, and Recreation	2,446	77.3*	97.1*	96.7*	96.3*	99.4	85.7*	99.9	96.2	73.5*	76.8*
Accommodation and Food Services	1,386	89.8*	98.6	98.4	85.6*	99.7	70.1*	100.0*	87.5*	87.9*	51.6*
Other Services, Except Public Administration	2,505	81.5*	98.3	97.3	89.5*	99.2	78.6*	99.9	95.6	78.1*	65.7*
Public Administration	4,647	89.8*	99.4*	98.6*	97.3*	99.5	88.7*	99.9	96.9*	88.0*	83.0*

(continued)

Exhibit D-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	43,333	81.7*	98.1*	97.6	92.7*	99.5	85.1*	99.9	96.5*	78.7*	74.4*
6	2,275	89.7*	98.6	98.6*	90.6	99.7	82.1	99.9	94.5	88.0*	69.2
7	2,113	90.3*	99.1*	98.2	89.8*	99.3	79.9*	99.9	94.8	88.0*	67.1*
8	1,172	87.5*	98.9	98.7*	89.1*	99.4	73.2*	99.8	93.1*	85.7*	59.9*
9	1,181	88.5*	99.4*	98.2	84.5*	99.4	72.0*	100.0*	92.0*	86.4*	55.5*
10	5,494	90.6*	99.1*	98.3*	87.5*	99.5	68.4*	100.0*	88.1*	88.6*	52.0*
Time Zone											
Eastern Standard Time	26,867	83.0	98.4	97.7	91.5	99.5	82.1	99.9	95.7	80.2	70.4
Central Standard Time	14,897	85.4*	98.5	98.0	92.0	99.5	82.0	100.0	95.0	82.9*	70.4
Mountain Standard Time	3,839	82.8	98.0	97.8	93.9*	99.5	84.8*	99.9	95.6	80.0	74.4*
Pacific Standard Time	9,431	82.2*	98.0*	97.5	90.4*	99.6	82.6	100.0	95.4	79.4*	69.6
Alaska Standard Time	295	85.8	99.2	97.2	96.7*	99.5	90.5*	100.0*	96.0	82.1	83.0*
Hawaii Standard Time	239	80.3	99.0	97.9	90.7	98.8	84.5	100.0*	97.1	77.3	73.3
Metropolitan Status											
Rural	10,237	86.6*	98.6	98.2*	95.1*	99.5	85.3*	100.0	95.5	84.3*	76.3*
Urban	45,331	82.8*	98.3	97.7	90.8*	99.5	81.7*	99.9	95.4	80.0*	69.3*

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 categories with 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 D-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	30,870	100.0	12,837	100.0	43,707	100.0	NA	NA
Census Division (effect size = 0.03)								
New England	2,152	7.0	857	6.7	3,009	6.9	0.3	0.1
Middle Atlantic	4,564	14.8	2,175	16.9	6,739	15.4	-2.2	-0.6*
East North Central	4,730	15.3	1,988	15.5	6,718	15.4	-0.2	-0.0
West North Central	2,558	8.3	893	7.0	3,451	7.9	1.3	0.4
South Atlantic	4,890	15.8	1,895	14.8	6,785	15.5	1.1	0.3
East South Central	1,611	5.2	645	5.0	2,256	5.2	0.2	0.1
West South Central	2,877	9.3	1,337	10.4	4,214	9.6	-1.1	-0.3
Mountain	2,420	7.8	861	6.7	3,281	7.5	1.1	0.3
Pacific	5,068	16.4	2,186	17.0	7,254	16.6	-0.6	-0.2
Total Employees in Establishment (effect size = 0.08)								
Unknown	921	3.0	219	1.7	1,140	2.6	1.3	0.4*
1-4	2,927	9.5	1,035	8.1	3,962	9.1	1.4	0.4
5-9	1,331	4.3	357	2.8	1,688	3.9	1.5	0.4*
10-49	8,200	26.6	2,567	20.0	10,767	24.6	6.6	1.9*
50-99	6,167	20.0	2,515	19.6	8,682	19.9	0.4	0.1
100-249	3,506	11.4	1,728	13.5	5,234	12.0	-2.1	-0.6*
250-499	4,696	15.2	2,488	19.4	7,184	16.4	-4.2	-1.2*
500-999	1,860	6.0	1,105	8.6	2,965	6.8	-2.6	-0.8*
1,000-4,999	1,240	4.0	798	6.2	2,038	4.7	-2.2	-0.6*
5,000+	22	0.1	25	0.2	47	0.1	-0.1	-0.0
SIC Division (effect size = 0.09)								
Agriculture, Forestry, Fishing	490	1.6	314	2.4	804	1.8	-0.9	-0.3*
Mining	540	1.7	213	1.7	753	1.7	0.1	0.0
Construction	1,865	6.0	1,124	8.8	2,989	6.8	-2.7	-0.8*
Manufacturing	7,774	25.2	3,475	27.1	11,249	25.7	-1.9	-0.6
Transportation, Communication, Electric, Gas, and Sanitary Services	4,243	13.7	1,325	10.3	5,568	12.7	3.4	1.0*
Wholesale Trade	731	2.4	296	2.3	1,027	2.3	0.1	0.0
Retail Trade	2,003	6.5	1,371	10.7	3,374	7.7	-4.2	-1.2*
Finance, Insurance, Real Estate	1,487	4.8	942	7.3	2,429	5.6	-2.5	-0.7*
Services	8,365	27.1	3,088	24.1	11,453	26.2	3.0	0.9*
Public Administration	3,372	10.9	689	5.4	4,061	9.3	5.6	1.6*

(continued)

**Exhibit D-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 = 0.10)								
Agriculture, Forestry, Fishing, and Hunting	407	1.3	220	1.7	627	1.4	-0.4	-0.1
Mining	531	1.7	210	1.6	741	1.7	0.1	0.0
Utilities	1,134	3.7	305	2.4	1,439	3.3	1.3	0.4*
Construction	1,846	6.0	1,097	8.5	2,943	6.7	-2.6	-0.8*
Manufacturing	7,319	23.7	3,238	25.2	10,557	24.2	-1.5	-0.4
Wholesale Trade	756	2.4	305	2.4	1,061	2.4	0.1	0.0
Retail Trade	1,794	5.8	1,027	8.0	2,821	6.5	-2.2	-0.6*
Transportation and Warehousing	2,157	7.0	584	4.5	2,741	6.3	2.4	0.7*
Information	848	2.7	492	3.8	1,340	3.1	-1.1	-0.3*
Finance and Insurance	1,283	4.2	853	6.6	2,136	4.9	-2.5	-0.7*
Real Estate and Rental and Leasing	253	0.8	103	0.8	356	0.8	0.0	0.0
Professional, Scientific, and Technical Services	1,583	5.1	567	4.4	2,150	4.9	0.7	0.2
Management of Companies and Enterprises	14	0.0	6	0.0	20	0.0	-0.0	-0.0
Administrative and Support and Waste Management and Remediation Services	1,038	3.4	464	3.6	1,502	3.4	-0.3	-0.1
Educational Services	1,311	4.2	462	3.6	1,773	4.1	0.6	0.2
Health Care and Social Assistance	2,043	6.6	584	4.5	2,627	6.0	2.1	0.6*
Arts, Entertainment, and Recreation	1,331	4.3	402	3.1	1,733	4.0	1.2	0.3*
Accommodation and Food Services	621	2.0	582	4.5	1,203	2.8	-2.5	-0.7*
Other Services, Except Public Administration	1,242	4.0	648	5.0	1,890	4.3	-1.0	-0.3*
Public Administration	3,359	10.9	688	5.4	4,047	9.3	5.5	1.6*
Number of Occupations on Establishment Sampling List (effect size = 0.11)								
1-5	24,591	79.7	8,454	65.9	33,045	75.6	13.8	4.1*
6	1,378	4.5	614	4.8	1,992	4.6	-0.3	-0.1
7	1,232	4.0	603	4.7	1,835	4.2	-0.7	-0.2
8	597	1.9	400	3.1	997	2.3	-1.2	-0.3*
9	564	1.8	453	3.5	1,017	2.3	-1.7	-0.5*
10	2,508	8.1	2,313	18.0	4,821	11.0	-9.9	-2.9*

(continued)

**Exhibit D-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 = 0.02)								
Eastern Standard Time	14,782	47.9	6,201	48.3	20,983	48.0	-0.4	-0.1
Central Standard Time	8,480	27.5	3,566	27.8	12,046	27.6	-0.3	-0.1
Mountain Standard Time	2,221	7.2	766	6.0	2,987	6.8	1.2	0.4
Pacific Standard Time	5,064	16.4	2,217	17.3	7,281	16.7	-0.9	-0.3
Alaska Standard Time	191	0.6	39	0.3	230	0.5	0.3	0.1
Hawaii Standard Time	132	0.4	48	0.4	180	0.4	0.1	0.0
Metropolitan Status (effect size = 0.04)								
Rural	6,452	20.9	2,007	15.6	8,459	19.4	5.3	1.5*
Urban	24,418	79.1	10,830	84.4	35,248	80.6	-5.3	-1.5*

Note: Because of rounding, the difference columns may not match their constituent parts. Statistical tests were conducted only for categories with 2 or more establishments.

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

*Statistically different from zero at the 0.05 level.

Exhibit D-3. Unweighted Employee Response Rates

Category	Sampled	Response Rate
Total	37,339	62.9
Census Division		
New England	2,485	63.3
Middle Atlantic	4,801	64.3*
East North Central	6,129	63.4
West North Central	3,778	62.5
South Atlantic	6,032	65.5*
East South Central	2,040	67.8*
West South Central	3,260	60.4*
Mountain	3,043	61.0*
Pacific	5,771	59.0*
Total Employees in Establishment		
Unknown	751	66.3*
1-4	1,218	69.5*
5-9	928	66.9*
10-49	8,860	64.1*
50-99	7,671	62.8
100-249	5,288	61.3*
250-499	7,464	62.9
500-999	3,041	60.0*
1,000-4,999	2,076	59.5*
5,000+	42	52.4
SIC Division		
Agriculture, Forestry, Fishing	538	58.6*
Mining	463	60.3
Construction	2,424	58.6*
Manufacturing	10,334	63.9*
Transportation, Communication, Electric, Gas, and Sanitary Services	5,270	54.8*
Wholesale Trade	722	62.0
Retail Trade	2,238	62.7
Finance, Insurance, Real Estate	1,077	68.5*
Services	9,552	65.6*
Public Administration	4,721	66.0*
NAICS Sector		
Agriculture, Forestry, Fishing, and Hunting	428	56.8*
Mining	455	60.4
Utilities	1,083	63.6
Construction	2,349	58.2*
Manufacturing	9,935	64.2*
Wholesale Trade	742	62.3

(continued)

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

Category	Sampled	Response Rate
Retail Trade	1,775	64.8
Transportation and Warehousing	3,317	49.4*
Information	992	66.2*
Finance and Insurance	892	67.8*
Real Estate and Rental and Leasing	171	70.2*
Professional, Scientific, and Technical Services	868	66.1*
Management of Companies and Enterprises	3	100.0*
Administrative and Support and Waste Management and Remediation Services	1,117	67.6*
Educational Services	2,457	61.7
Health Care and Social Assistance	1,889	63.1
Arts, Entertainment, and Recreation	1,196	67.0*
Accommodation and Food Services	1,283	57.8*
Other Services, Except Public Administration	1,664	71.9*
Public Administration	4,723	66.0*
Total Selected Employees in Establishment		
1	2,116	73.4*
2	2,456	69.8*
3	2,379	66.4*
4	2,516	67.4*
5	2,260	61.0
6	2,610	62.5
7	2,114	64.9*
8	11,016	61.5*
9	1,314	66.7*
10	1,090	60.8
11	957	59.8*
12	924	59.7*
13	1,092	53.7*
14	714	65.4
15	690	57.5*
16	1,280	57.0*
17	272	65.8
18	270	57.8
19	209	40.2*
20	1,060	48.5*
Questionnaire Type		
Work Activities	12,658	61.6*
Work Context	12,141	64.9*
Knowledge	12,540	62.2

(continued)

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

Category	Sampled	Response Rate
Number of Occupations on Establishment Sampling List		
1-5	24,852	62.8
6	1,598	60.7
7	1,846	62.1
8	928	62.9
9	1,313	63.1
10	6,802	63.9
Occupation Class		
Management Occupations	1,987	65.3*
Business and Financial Operations Occupations	1,177	65.6*
Computer and Mathematical Occupations	898	59.8
Architecture and Engineering Occupations	1,465	64.4
Life, Physical, and Social Science Occupations	983	60.7
Community and Social Services Occupations	267	73.0*
Legal Occupations	256	61.3
Education, Training, and Library Occupations	872	64.1
Arts, Design, Entertainment, Sports, and Media Occupations	1,201	65.0
Healthcare Practitioners and Technical Occupations	139	58.3
Healthcare Support Occupations	239	41.4*
Protective Service Occupations	2,506	66.3*
Food Preparation and Serving Related Occupations	891	54.7*
Building and Grounds Cleaning and Maintenance Occupations	593	65.9
Personal Care and Service Occupations	1,297	70.3*
Sales and Related Occupations	672	69.3*
Office and Administrative Support Occupations	5,004	58.1*
Farming, Fishing, and Forestry Occupations	625	60.8
Construction and Extraction Occupations	2,415	57.6*
Installation, Maintenance, and Repair Occupations	2,693	65.9*
Production Occupations	8,304	63.7
Transportation and Material Moving Occupations	2,855	62.8
Military Specific Occupations	0	0.0
Time Zone		
Eastern Standard Time	17,401	64.4*
Central Standard Time	11,007	63.0
Mountain Standard Time	2,749	62.2
Pacific Standard Time	5,768	58.5*
Alaska Standard Time	206	64.1
Hawaii Standard Time	208	61.5
Metropolitan Status		
Rural	9,075	65.3*
Urban	28,264	62.1*

Note: Statistical tests conducted only for categories with 2 or more employees. SIC = Standard Industrial Classification. NAICS = North American Classification System.

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

Exhibit D-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	23,477	100.0	13,862	100.0	37,339	100.0	NA	NA
Census Division (effect size = 0.04)								
New England	1,574	6.7	911	6.6	2,485	6.7	0.1	0.0
Middle Atlantic	3,086	13.1	1,715	12.4	4,801	12.9	0.8	0.3
East North Central	3,888	16.6	2,241	16.2	6,129	16.4	0.4	0.1
West North Central	2,363	10.1	1,415	10.2	3,778	10.1	-0.1	-0.1
South Atlantic	3,952	16.8	2,080	15.0	6,032	16.2	1.8	0.7*
East South Central	1,383	5.9	657	4.7	2,040	5.5	1.2	0.4*
West South Central	1,968	8.4	1,292	9.3	3,260	8.7	-0.9	-0.3
Mountain	1,857	7.9	1,186	8.6	3,043	8.1	-0.6	-0.2
Pacific	3,406	14.5	2,365	17.1	5,771	15.5	-2.6	-0.9*
Total Employees in Establishment (effect size = 0.03)								
Unknown	498	2.1	253	1.8	751	2.0	0.3	0.1
1-4	847	3.6	371	2.7	1,218	3.3	0.9	0.3*
5-9	621	2.6	307	2.2	928	2.5	0.4	0.2
10-49	5,679	24.2	3,181	22.9	8,860	23.7	1.2	0.5
50-99	4,818	20.5	2,853	20.6	7,671	20.5	-0.1	-0.0
100-249	3,239	13.8	2,049	14.8	5,288	14.2	-1.0	-0.4
250-499	4,694	20.0	2,770	20.0	7,464	20.0	0.0	0.0
500-999	1,824	7.8	1,217	8.8	3,041	8.1	-1.0	-0.4*
1,000-4,999	1,235	5.3	841	6.1	2,076	5.6	-0.8	-0.3
5,000+	22	0.1	20	0.1	42	0.1	-0.1	-0.0
SIC Division (effect size = 0.06)								
Agriculture, Forestry, Fishing	315	1.3	223	1.6	538	1.4	-0.3	-0.1
Mining	279	1.2	184	1.3	463	1.2	-0.1	-0.1
Construction	1,420	6.0	1,004	7.2	2,424	6.5	-1.2	-0.4*
Manufacturing	6,606	28.1	3,728	26.9	10,334	27.7	1.2	0.5
Transportation, Communication, Electric, Gas, and Sanitary Services	2,890	12.3	2,380	17.2	5,270	14.1	-4.9	-1.8*
Wholesale Trade	448	1.9	274	2.0	722	1.9	-0.1	-0.0
Retail Trade	1,404	6.0	834	6.0	2,238	6.0	-0.0	-0.0
Finance, Insurance, Real Estate	738	3.1	339	2.4	1,077	2.9	0.7	0.3*
Services	6,262	26.7	3,290	23.7	9,552	25.6	2.9	1.1*
Public Administration	3,115	13.3	1,606	11.6	4,721	12.6	1.7	0.6*

(continued)

**Exhibit D-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.	%		
NAICS Sector (effect size = 0.08)								
Agriculture, Forestry, Fishing, and Hunting	243	1.0	185	1.3	428	1.1	-0.3	-0.1
Mining	275	1.2	180	1.3	455	1.2	-0.1	-0.0
Utilities	689	2.9	394	2.8	1,083	2.9	0.1	0.0
Construction	1,367	5.8	982	7.1	2,349	6.3	-1.3	-0.5*
Manufacturing	6,374	27.1	3,561	25.7	9,935	26.6	1.5	0.5
Wholesale Trade	462	2.0	280	2.0	742	2.0	-0.1	-0.0
Retail Trade	1,150	4.9	625	4.5	1,775	4.8	0.4	0.1
Transportation and Warehousing	1,639	7.0	1,678	12.1	3,317	8.9	-5.1	-1.9*
Information	657	2.8	335	2.4	992	2.7	0.4	0.1
Finance and Insurance	605	2.6	287	2.1	892	2.4	0.5	0.2
Real Estate and Rental and Leasing	120	0.5	51	0.4	171	0.5	0.1	0.1
Professional, Scientific, and Technical Services	574	2.4	294	2.1	868	2.3	0.3	0.1
Management of Companies and Enterprises	3	0.0	0	0.0	3	0.0	0.0	0.0
Administrative and Support and Waste Management and Remediation Services	755	3.2	362	2.6	1,117	3.0	0.6	0.2
Educational Services	1,515	6.5	942	6.8	2,457	6.6	-0.3	-0.1
Health Care and Social Assistance	1,192	5.1	697	5.0	1,889	5.1	0.0	0.0
Arts, Entertainment, and Recreation	801	3.4	395	2.8	1,196	3.2	0.6	0.2*
Accommodation and Food Services	742	3.2	541	3.9	1,283	3.4	-0.7	-0.3*
Other Services, Except Public Administration	1,197	5.1	467	3.4	1,664	4.5	1.7	0.6*
Public Administration	3,117	13.3	1,606	11.6	4,723	12.6	1.7	0.6*

(continued)

**Exhibit D-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.	%		
Total Selected Employees in Establishment (effect size = 0.08)								
1	1,554	6.6	562	4.1	2,116	5.7	2.6	1.0*
2	1,715	7.3	741	5.3	2,456	6.6	2.0	0.7*
3	1,580	6.7	799	5.8	2,379	6.4	1.0	0.4*
4	1,697	7.2	819	5.9	2,516	6.7	1.3	0.5*
5	1,378	5.9	882	6.4	2,260	6.1	-0.5	-0.2
6	1,631	6.9	979	7.1	2,610	7.0	-0.1	-0.0
7	1,373	5.8	741	5.3	2,114	5.7	0.5	0.2
8	6,774	28.9	4,242	30.6	11,016	29.5	-1.7	-0.6*
9	876	3.7	438	3.2	1,314	3.5	0.6	0.2
10	663	2.8	427	3.1	1,090	2.9	-0.3	-0.1
11	572	2.4	385	2.8	957	2.6	-0.3	-0.1
12	552	2.4	372	2.7	924	2.5	-0.3	-0.1
13	586	2.5	506	3.7	1,092	2.9	-1.2	-0.4*
14	467	2.0	247	1.8	714	1.9	0.2	0.1
15	397	1.7	293	2.1	690	1.8	-0.4	-0.2
16	729	3.1	551	4.0	1,280	3.4	-0.9	-0.3*
17	179	0.8	93	0.7	272	0.7	0.1	0.0
18	156	0.7	114	0.8	270	0.7	-0.2	-0.1
19	84	0.4	125	0.9	209	0.6	-0.5	-0.2
20	514	2.2	546	3.9	1,060	2.8	-1.7	-0.6*
Questionnaire Type (effect size = 0.02)								
Work Activities	7,794	33.2	4,864	35.1	12,658	33.9	-1.9	-0.7*
Work Context	7,882	33.6	4,259	30.7	12,141	32.5	2.8	1.1*
Knowledge	7,801	33.2	4,739	34.2	12,540	33.6	-1.0	-0.4*
Number of Occupations on Establishment Sampling List (effect size = 0.01)								
1-5	15,600	66.4	9,252	66.7	24,852	66.6	-0.3	-0.1
6	970	4.1	628	4.5	1,598	4.3	-0.4	-0.1
7	1,146	4.9	700	5.0	1,846	4.9	-0.2	-0.1
8	584	2.5	344	2.5	928	2.5	0.0	0.0
9	828	3.5	485	3.5	1,313	3.5	0.0	0.0
10	4,349	18.5	2,453	17.7	6,802	18.2	0.8	0.3

(continued)

**Exhibit D-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.	%		
Occupation Class (effect size = 0.06)								
Management Occupations	1,298	5.5	689	5.0	1,987	5.3	0.6	0.2
Business and Financial Operations Occupations	772	3.3	405	2.9	1,177	3.2	0.4	0.1
Computer and Mathematical Occupations	537	2.3	361	2.6	898	2.4	-0.3	-0.1
Architecture and Engineering Occupations	944	4.0	521	3.8	1,465	3.9	0.3	0.1
Life, Physical, and Social Science Occupations	597	2.5	386	2.8	983	2.6	-0.2	-0.1
Community and Social Services Occupations	195	0.8	72	0.5	267	0.7	0.3	0.1*
Legal Occupations	157	0.7	99	0.7	256	0.7	-0.0	-0.0
Education, Training, and Library Occupations	559	2.4	313	2.3	872	2.3	0.1	0.0
Arts, Design, Entertainment, Sports, and Media Occupations	781	3.3	420	3.0	1,201	3.2	0.3	0.1
Healthcare Practitioners and Technical Occupations	81	0.3	58	0.4	139	0.4	-0.1	-0.0
Healthcare Support Occupations	99	0.4	140	1.0	239	0.6	-0.6	-0.2*
Protective Service Occupations	1,661	7.1	845	6.1	2,506	6.7	1.0	0.4*
Food Preparation and Serving Related Occupations	487	2.1	404	2.9	891	2.4	-0.8	-0.3*
Building and Grounds Cleaning and Maintenance Occupations	391	1.7	202	1.5	593	1.6	0.2	0.1
Personal Care and Service Occupations	912	3.9	385	2.8	1,297	3.5	1.1	0.4*
Sales and Related Occupations	466	2.0	206	1.5	672	1.8	0.5	0.2*
Office and Administrative Support Occupations	2,909	12.4	2,095	15.1	5,004	13.4	-2.7	-1.0*
Farming, Fishing, and Forestry Occupations	380	1.6	245	1.8	625	1.7	-0.1	-0.1
Construction and Extraction Occupations	1,391	5.9	1,024	7.4	2,415	6.5	-1.5	-0.5*
Installation, Maintenance, and Repair Occupations	1,775	7.6	918	6.6	2,693	7.2	0.9	0.3*
Production Occupations	5,291	22.5	3,013	21.7	8,304	22.2	0.8	0.3

(continued)

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

Category	Respondents		Nonrespondents		Overall		Percent Difference Resps vs. Nonresps	Percent Difference Resps vs. Overall
Occupation Class (effect size = 0.06) (cont.)								
Transportation and Material Moving Occupations	1,794	7.6	1,061	7.7	2,855	7.6	-0.0	-0.0
Military Specific Occupations	0	0.0	0	0.0	0	0.0	—	—
Time Zone (effect size = 0.03)								
Eastern Standard Time	11,198	47.7	6,203	44.7	17,401	46.6	2.9	1.1*
Central Standard Time	6,936	29.5	4,071	29.4	11,007	29.5	0.2	0.1
Mountain Standard Time	1,709	7.3	1,040	7.5	2,749	7.4	-0.2	-0.1
Pacific Standard Time	3,374	14.4	2,394	17.3	5,768	15.4	-2.9	-1.1*
Alaska Standard Time	132	0.6	74	0.5	206	0.6	0.0	0.0
Hawaii Standard Time	128	0.5	80	0.6	208	0.6	-0.0	-0.0
Metropolitan Status (effect size = 0.02)								
Rural	5,927	25.2	3,148	22.7	9,075	24.3	2.5	0.9*
Urban	17,550	74.8	10,714	77.3	28,264	75.7	-2.5	-0.9*

Notes: Because of rounding, the difference columns may not match their constituent parts. Statistical tests were conducted only for categories with two or more employees. A dash (—) indicates that estimates do not apply because the 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 at the 0.05 level.

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

Item and Description		Sampled	Response Rate
B40-Level	Recruiting, interviewing, selecting, hiring, and promoting employees in an organization.	3,247	93.2
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.	3,534	94.9
B32-Level	Performing for people or dealing directly with the public. This includes serving customers in restaurants and stores, and receiving clients or guests.	4,628	95.2
B25-Level	Translating or explaining what information means and how it can be used.	5,769	95.3
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.	3,867	95.4
B41-Level	Monitoring and controlling resources and overseeing the spending of money.	4,652	95.4
B05-Level	Estimating sizes, distances, and quantities; or determining time, costs, resources, or materials needed to perform a work activity.	5,739	95.7
B13-Level	Establishing long-range objectives and specifying the strategies and actions to achieve them.	5,527	95.7
B02-Level	Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.	6,576	95.9
B30-Level	Convincing others to buy merchandise/goods or to otherwise change their minds or actions.	4,228	95.9
B22-Level	Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.	4,118	96.1
B09-Level	Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.	5,870	96.2
B06-Level	Assessing the value, importance, or quality of things or people.	6,058	96.3
B36-Level	Providing guidance and direction to subordinates, including setting performance standards and monitoring performance.	5,061	96.3
B39-Level	Performing day-to-day administrative tasks such as maintaining information files and processing paperwork.	5,210	96.3

Note: 15 items are shown because of ties in response rates.

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

Item and Description	Sampled	Response Rate
D49 How automated is the job?	7,111	97.7
D45 How serious would the result usually be if the worker made a mistake that was not readily correctable?	7,111	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?	7,111	98.0
D09 How important is it to coordinate or lead others in accomplishing work activities in this job?	7,111	98.1
D12 How often are there conflict situations the employee has to face in this job?	7,111	98.2
D11 How responsible is the worker for work outcomes and results of other workers?	7,111	98.4
D39 How much does this job require keeping or regaining your balance?	7,111	98.4
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?	7,111	98.4
D53 To what extent does this job require the worker to compete or to be aware of competitive pressures?	7,111	98.4
D10 How much responsibility is there for the health and safety of others in this job?	7,111	98.6
D46 What results do your decisions usually have on other people or the image or reputation or financial resources of your employer?	7,111	98.6
D15 How often does this job require working indoors in environmentally controlled conditions?	7,111	98.7
D16 How often does this job require working indoors in non-controlled environmental conditions (e.g., warehouse without heat)?	7,111	98.7
D28 How often does this job require exposure to radiation?	7,111	98.7
D33 How often does this job require exposure to minor burns, cuts, bites, or stings?	7,111	98.7
D42 How much does this job require making repetitive motions?	7,111	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.)	7,111	98.7
D13 How frequently does the worker have to deal with unpleasant, angry, or discourteous individuals as part of the job requirements?	7,111	98.8
D21 To what extent does this job require the worker to perform job tasks in close physical proximity to other people?	7,111	98.8
D23 How often does this job require working in very hot (above 90 F degrees) or very cold (below 32 F degrees) temperatures?	7,111	98.8
D40 How much does this job require using your hands to handle, control, or feel objects, tools or controls?	7,111	98.8
D41 How much does this job require bending or twisting your body?	7,111	98.8
D25 How often does this job require working exposed to contaminants (such as pollutants, gases, dust or odors)?	7,111	98.9
D29 How often does this job require exposure to disease/infections?	7,111	98.9
D34 How much does this job require sitting?	7,111	98.9
D37 How much does this job require walking and running?	7,111	98.9
D56 How regular are the work schedules for this job?	7,111	98.9

Note: 27 items are shown because of ties in response rates.

Exhibit D-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.	1,358	88.2
E26-Level	Knowledge of the theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.	1,219	89.7
E17-Level	Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.	1,895	92.8
E27-Level	Knowledge of historical events and their causes, indicators, and effects on civilizations and cultures.	1,814	93.1
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.	2,103	93.5
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.	2,301	94.4
E22-Level	Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.	2,399	94.4
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.	2,547	94.7
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.	2,864	95.4
E19-Level	Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures and their history and origins.	2,737	95.5
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.	3,101	95.6

Note: 11 items are shown because of ties in response rates.

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

Item	Item Description	Sampled	Response Rate
51-9194.00, Etchers and Engravers: T26-Importance	Reduce artwork to be used, using reduction cameras.	10	40.0
51-9194.00, Etchers and Engravers: T26-Frequency	Reduce artwork to be used, using reduction cameras.	10	40.0
45-2041.00, Graders and Sorters, Agricultural Products: T1-Frequency	Separate fiber tufts between fingers to assess strength, uniformity, and cohesive quality of fibers.	12	41.7
51-9194.00, Etchers and Engravers: T15-Frequency	Brush or smear abrasives on cutting wheels.	7	42.9
51-3021.00, Butchers and Meat Cutters: T6-Frequency	Total sales, and collect money from customers.	19	47.4
41-3031.53, Securities and Commodities Traders: T15-Importance	Buy, sell, or trade carbon emissions permits.	4	50.0
51-9151.00, Photographic Process Workers and Processing Machine Operators: T17-Frequency	Ink borders or lettering on illustrations using pens, brushes, or drafting instruments.	4	50.0
51-9194.00, Etchers and Engravers: T12-Importance	Select and mount wheels and miters on lathes, and equip lathes with water to cool wheels and prevent dust when grinding glass.	4	50.0
51-9194.00, Etchers and Engravers: T12-Frequency	Select and mount wheels and miters on lathes, and equip lathes with water to cool wheels and prevent dust when grinding glass.	4	50.0
51-9198.00, Helpers--Production Workers: T18-Frequency	Pack food products in paper bags or boxes and stack them in warehouses or coolers.	16	50.0
51-6021.00, Pressers, Textile, Garment, and Related Materials: T19-Frequency	Sew ends of new material to leaders or to ends of material in pressing machines, using sewing machines.	21	52.4
51-4193.00, Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic: T20-Frequency	Charge furnaces.	15	53.3
51-6011.00, Laundry and Dry-Cleaning Workers: T26-Frequency	Dye articles to change or restore their colors, using knowledge of textile compositions and the properties and effects of bleaches and dyes.	18	55.6
51-9121.00, Coating, Painting, and Spraying Machine Setters, Operators, and Tenders: T11-Frequency	Spray coated products with salt solutions to determine how they will resist corrosion.	9	55.6
51-6011.00, Laundry and Dry-Cleaning Workers: T13-Frequency	Rinse articles in water and acetic acid solutions to remove excess dye and to fix colors.	25	56.0
53-6061.00, Transportation Attendants, Except Flight Attendants: T9-Frequency	Collect fares from passengers and provide change in return.	7	57.1

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

Exhibit D-9. Response Rates, Background Questionnaire

Item and Description	Sampled	Response Rate
2 How long at job?	21,124	99.2
3 Employment sector	21,124	97.0
4 Family business	21,124	88.7
5 Age group	21,124	95.6
6 Gender	21,124	98.4
7 Ethnicity	21,124	96.9
8 Race	21,124	92.7
9 Education level	21,124	99.0
Items Added to Match the Disability Questions in the American Community		
10 Deafness or serious difficulty hearing	14,996	98.4
11 Blind or serious difficulty seeing even when wearing glasses	14,996	98.4
12A Serious difficulty concentrating, remembering, or making decisions	14,996	97.5
12B Serious difficulty walking or climbing stairs	14,996	98.4
12C Difficulty dressing or bathing	14,996	98.2
13 Difficulty doing errands alone because of a physical, mental, or emotional condition	14,996	98.2
Items Deleted to Match the Disability Questions in the American Community		
9A Blindness, deafness, or other severe vision or hearing impairment	6,128	98.5
9B A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying	6,128	98.1
10A Difficulty learning, remembering, or concentrating	6,128	96.4
10B Difficulty bathing, or getting around inside the home	6,128	96.3
10C Difficulty going outside the home alone to shop or visit the doctor's office	6,128	96.3
10D Difficulty working at a job or business	6,128	96.1

Exhibit D-10. Item Response Rates by Item Type

Item Type	Questions	Response Rate
TOTAL	2,694,379	97.6
B--Work Activities--Importance	286,795	98.7
B--Work--Activities--Level	228,256	96.6
D--Work Context	405,327	98.9
E--Knowledge--Education and Training	29,566	98.9
E--Knowledge--Importance	231,594	98.7
E--Knowledge--Level	126,380	96.4
E--Knowledge--Work Styles Background	112,288	99.2
Background	205,760	96.1
Task--Relevance	433,451	98.6
Task--Importance	317,481	96.5
Task--Frequency	317,481	95.5

Exhibit D-11. Item Response Rates by Occupation

SOC Code	SOC Title	Questions	Response Rate
TOTAL		2,694,379	97.6
11-1021.81	General and Operations Managers	19,760	98.4
11-2021.81	Marketing Managers	15,209	98.8
11-2031.00	Public Relations and Fundraising Managers	11,174	99.3
11-3011.00	Administrative Services Managers	14,821	98.5
11-3021.00	Computer and Information Systems Managers	9,582	99.3
11-3051.53	Biofuels Production Managers	8,133	98.7
11-3051.56	Hydroelectric Production Managers	11,441	99.0
11-9031.00	Education Administrators, Preschool and Childcare Center/Program	11,329	98.3
11-9051.00	Food Service Managers	13,374	97.5
11-9081.00	Lodging Managers	7,011	98.2
11-9131.00	Postmasters and Mail Superintendents	9,543	98.5
11-9199.59	Wind Energy Operations Managers	10,805	99.3
11-9199.60	Wind Energy Project Managers	6,557	98.3
13-1022.81	Wholesale and Retail Buyers, Except Farm Products	10,496	97.3
13-1032.00	Insurance Appraisers, Auto Damage	5,557	99.2
13-1041.02	Licensing Examiners and Inspectors	8,471	98.0
13-1041.03	Equal Opportunity Representatives and Officers	13,735	97.4
13-1041.04	Government Property Inspectors and Investigators	5,731	98.1
13-1121.00	Meeting, Convention, and Event Planners	8,597	98.9
13-2031.00	Budget Analysts	12,332	98.1
13-2051.00	Financial Analysts	7,163	98.7
13-2071.01	Loan Counselors	7,602	97.9
15-1121.00	Computer Systems Analysts	13,381	98.6
15-1132.00	Software Developers, Applications	9,988	98.0
15-1141.00	Database Administrators	6,142	98.6
15-1142.00	Network and Computer Systems Administrators	16,160	98.6
15-1151.00	Computer User Support Specialists	13,573	98.2
17-1021.00	Cartographers and Photogrammetrists	6,761	98.6
17-2011.81	Aerospace Engineers	8,666	99.0
17-2071.81	Electrical Engineers	19,621	99.1
17-2072.51	Radio Frequency Identification Device Specialists	10,129	99.1
17-2121.02	Marine Architects	7,747	98.3
17-2141.81	Mechanical Engineers	15,980	98.0
17-2199.56	Microsystems Engineers	8,233	99.0

(continued)

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

SOC Code	SOC Title	Questions	Response Rate
17-3013.00	Mechanical Drafters	9,468	98.4
17-3022.00	Civil Engineering Technicians	11,305	98.2
17-3024.00	Electro-Mechanical Technicians	8,046	98.0
19-1020.01	Biologists	7,450	98.9
19-1023.00	Zoologists and Wildlife Biologists	13,917	99.1
19-1031.03	Park Naturalists	7,636	99.2
19-1032.00	Foresters	10,737	98.5
19-3093.00	Historians	7,058	97.7
19-4021.00	Biological Technicians	8,536	98.1
19-4051.81	Nuclear Equipment Operation Technicians	12,141	99.3
21-2011.00	Clergy	12,643	98.5
21-2021.00	Directors, Religious Activities and Education	12,431	98.5
23-1011.00	Lawyers	13,191	98.6
23-2093.00	Title Examiners, Abstractors, and Searchers	5,469	98.3
25-1191.00	Graduate Teaching Assistants	12,741	98.5
25-2012.00	Kindergarten Teachers, Except Special Education	18,687	98.6
25-2052.00	Special Education Teachers, Kindergarten and Elementary School	19,592	98.3
25-4021.00	Librarians	20,609	98.7
25-4031.00	Library Technicians	14,900	98.2
27-1013.00	Fine Artists, Including Painters, Sculptors, and Illustrators	6,849	98.4
27-1023.00	Floral Designers	5,926	96.1
27-1026.00	Merchandise Displayers and Window Trimmers	9,475	96.5
27-2011.00	Actors	6,010	99.4
27-2021.00	Athletes and Sports Competitors	7,244	98.4
27-2041.01	Music Directors	9,414	98.1
27-2042.02	Musicians, Instrumental	11,066	98.1
27-3011.00	Radio and Television Announcers	10,823	98.0
27-3012.00	Public Address System and Other Announcers	5,750	99.2
27-3021.00	Broadcast News Analysts	6,234	97.9
27-3041.00	Editors	7,918	99.1
29-2099.52	Surgical Assistants	11,901	97.6
31-1015.00	Orderlies	11,415	95.2
33-1012.00	First-Line Supervisors of Police and Detectives	25,474	98.0
33-1021.01	Municipal Fire Fighting and Prevention Supervisors	21,493	98.4
33-2011.01	Municipal Firefighters	30,250	98.6

(continued)

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

SOC Code	SOC Title	Questions	Response Rate
33-2021.01	Fire Inspectors	11,416	98.0
33-3012.00	Correctional Officers and Jailers	18,032	98.5
33-3021.01	Police Detectives	25,935	97.1
33-3021.02	Police Identification and Records Officers	7,366	98.8
33-3041.00	Parking Enforcement Workers	11,092	98.0
33-3051.01	Police Patrol Officers	17,447	98.6
33-3052.00	Transit and Railroad Police	10,774	98.3
33-9021.00	Private Detectives and Investigators	10,325	98.1
33-9032.00	Security Guards	8,348	98.4
33-9091.00	Crossing Guards	9,885	95.3
35-1012.00	First-Line Supervisors of Food Preparation and Serving Workers	12,538	96.3
35-2021.00	Food Preparation Workers	13,354	93.8
35-3011.00	Bartenders	8,473	97.4
35-3021.00	Combined Food Preparation and Serving Workers, Including Fast Food	17,379	95.8
35-3022.51	Baristas	8,996	98.5
37-1012.00	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	9,879	96.9
37-2021.00	Pest Control Workers	14,050	97.7
37-3011.00	Landscaping and Groundskeeping Workers	13,733	95.0
37-3012.00	Pesticide Handlers, Sprayers, and Applicators, Vegetation	8,916	97.0
39-1012.00	Slot Supervisors	7,763	97.9
39-1021.00	First-Line Supervisors of Personal Service Workers	10,770	98.5
39-3031.00	Ushers, Lobby Attendants, and Ticket Takers	12,344	98.2
39-3092.00	Costume Attendants	14,591	99.0
39-4031.00	Morticians, Undertakers, and Funeral Directors	10,739	98.6
39-5012.00	Hairdressers, Hairstylists, and Cosmetologists	8,871	98.6
39-5092.00	Manicurists and Pedicurists	7,789	98.0
39-9011.00	Childcare Workers	26,796	97.1
39-9032.00	Recreation Workers	11,478	98.1
41-2022.00	Parts Salespersons	11,395	97.1
41-3031.01	Sales Agents, Securities and Commodities	10,475	98.7
41-3031.53	Securities and Commodities Traders	8,142	98.5
41-3041.00	Travel Agents	6,663	98.1
41-9011.00	Demonstrators and Product Promoters	7,270	98.5
41-9021.00	Real Estate Brokers	8,087	99.0

(continued)

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

SOC Code	SOC Title	Questions	Response Rate
43-1011.00	First-Line Supervisors of Office and Administrative Support Workers	19,462	98.6
43-3031.00	Bookkeeping, Accounting, and Auditing Clerks	18,124	97.5
43-3051.00	Payroll and Timekeeping Clerks	18,238	96.9
43-3061.00	Procurement Clerks	11,557	98.1
43-4021.00	Correspondence Clerks	13,155	97.1
43-4061.00	Eligibility Interviewers, Government Programs	11,640	97.6
43-4081.00	Hotel, Motel, and Resort Desk Clerks	17,141	97.5
43-4131.00	Loan Interviewers and Clerks	7,287	98.1
43-4151.00	Order Clerks	14,820	98.0
43-4161.00	Human Resources Assistants, Except Payroll and Timekeeping	12,070	98.3
43-5021.00	Couriers and Messengers	7,231	95.8
43-5031.00	Police, Fire, and Ambulance Dispatchers	15,206	98.0
43-5041.00	Meter Readers, Utilities	9,459	98.0
43-5051.00	Postal Service Clerks	12,041	98.0
43-5052.00	Postal Service Mail Carriers	14,236	97.5
43-5053.00	Postal Service Mail Sorters, Processors, and Processing Machine Operators	11,170	96.4
43-5081.01	Stock Clerks, Sales Floor	9,891	97.9
43-5081.03	Stock Clerks- Stockroom, Warehouse, or Storage Yard	17,153	97.8
43-5081.04	Order Fillers, Wholesale and Retail Sales	6,852	97.7
43-6011.00	Executive Secretaries and Executive Administrative Assistants	18,358	98.4
43-9022.00	Word Processors and Typists	11,240	98.0
43-9041.01	Insurance Claims Clerks	10,248	98.0
43-9051.00	Mail Clerks and Mail Machine Operators, Except Postal Service	11,905	96.9
43-9071.00	Office Machine Operators, Except Computer	6,396	96.5
43-9081.00	Proofreaders and Copy Markers	5,289	98.2
43-9111.00	Statistical Assistants	12,713	98.6
45-1011.08	First-Line Supervisors of Animal Husbandry and Animal Care Workers	8,474	96.6
45-2041.00	Graders and Sorters, Agricultural Products	4,592	94.8
45-2092.01	Nursery Workers	8,097	97.1
45-4022.00	Logging Equipment Operators	5,519	96.5
45-4023.00	Log Graders and Scalers	7,970	98.4
47-2011.00	Boilermakers	8,846	97.5

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

SOC Code	SOC Title	Questions	Response Rate
47-2053.00	Terrazzo Workers and Finishers	9,342	96.1
47-2081.00	Drywall and Ceiling Tile Installers	10,544	96.3
47-2082.00	Tapers	8,146	95.4
47-2131.00	Insulation Workers, Floor, Ceiling, and Wall	6,961	97.7
47-2151.00	Pipelayers	10,302	97.7
47-2161.00	Plasterers and Stucco Masons	8,484	97.5
47-2171.00	Reinforcing Iron and Rebar Workers	6,642	97.0
47-2181.00	Roofers	10,579	95.1
47-2221.00	Structural Iron and Steel Workers	13,640	97.6
47-4041.00	Hazardous Materials Removal Workers	9,121	96.9
47-4051.00	Highway Maintenance Workers	8,599	96.2
47-4061.00	Rail-Track Laying and Maintenance Equipment Operators	9,349	96.9
47-4071.00	Septic Tank Servicers and Sewer Pipe Cleaners	8,933	96.4
47-4099.52	Solar Thermal Installers and Technicians	7,374	98.1
47-5021.00	Earth Drillers, Except Oil and Gas	7,716	98.6
47-5041.00	Continuous Mining Machine Operators	8,828	98.2
47-5061.00	Roof Bolters, Mining	5,387	98.2
49-2011.00	Computer, Automated Teller, and Office Machine Repairers	10,124	98.6
49-2022.00	Telecommunications Equipment Installers and Repairers, Except Line Installers	11,162	98.0
49-2091.00	Avionics Technicians	10,293	98.7
49-2092.00	Electric Motor, Power Tool, and Related Repairers	11,178	95.8
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	9,253	98.6
49-2096.00	Electronic Equipment Installers and Repairers, Motor Vehicles	7,511	98.8
49-2098.00	Security and Fire Alarm Systems Installers	8,418	98.7
49-3041.00	Farm Equipment Mechanics and Service Technicians	11,563	98.0
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	20,296	97.8
49-3051.00	Motorboat Mechanics and Service Technicians	12,800	98.7
49-3091.00	Bicycle Repairers	5,724	98.5
49-3092.00	Recreational Vehicle Service Technicians	13,616	98.0
49-9011.00	Mechanical Door Repairers	16,270	97.7
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	14,649	96.2
49-9043.00	Maintenance Workers, Machinery	15,557	98.8

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

SOC Code	SOC Title	Questions	Response Rate
49-9052.00	Telecommunications Line Installers and Repairers	12,178	97.6
49-9061.00	Camera and Photographic Equipment Repairers	6,009	97.5
49-9091.00	Coin, Vending, and Amusement Machine Servicers and Repairers	8,446	96.5
49-9092.00	Commercial Divers	9,540	97.8
51-2011.00	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	14,653	96.7
51-2021.00	Coil Winders, Tapers, and Finishers	5,634	98.1
51-2023.00	Electromechanical Equipment Assemblers	7,497	98.7
51-3011.00	Bakers	10,617	96.0
51-3021.00	Butchers and Meat Cutters	8,508	95.2
51-3022.00	Meat, Poultry, and Fish Cutters and Trimmers	6,235	97.3
51-3023.00	Slaughterers and Meat Packers	5,206	96.2
51-3091.00	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	8,419	96.5
51-4012.00	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	8,258	98.0
51-4021.00	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	7,711	98.3
51-4022.00	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	5,270	98.4
51-4031.00	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	20,250	95.8
51-4033.00	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	9,932	97.8
51-4034.00	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	10,632	97.1
51-4035.00	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	7,906	97.4
51-4061.00	Model Makers, Metal and Plastic	7,013	97.7
51-4062.00	Patternmakers, Metal and Plastic	8,019	97.6
51-4071.00	Foundry Mold and Coremakers	8,826	95.9
51-4072.00	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	14,915	95.2
51-4121.07	Solderers and Brazers	7,602	97.6
51-4122.00	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	11,686	98.7
51-4191.00	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	9,640	98.1

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

SOC Code	SOC Title	Questions	Response Rate
51-4193.00	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	13,183	96.3
51-4194.00	Tool Grinders, Filers, and Sharpeners	8,372	97.3
51-5111.00	Prepress Technicians and Workers	12,768	97.7
51-5113.00	Print Binding and Finishing Workers	10,698	97.1
51-6011.00	Laundry and Dry-Cleaning Workers	11,687	90.8
51-6021.00	Pressers, Textile, Garment, and Related Materials	9,183	90.3
51-6031.00	Sewing Machine Operators	14,749	93.5
51-6092.00	Fabric and Apparel Patternmakers	7,088	97.3
51-6093.00	Upholsterers	7,123	96.8
51-7011.00	Cabinetmakers and Bench Carpenters	7,786	97.0
51-7021.00	Furniture Finishers	8,662	97.7
51-7042.00	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	12,974	96.6
51-8091.00	Chemical Plant and System Operators	13,337	97.5
51-8099.51	Biofuels Processing Technicians	10,177	98.1
51-8099.54	Hydroelectric Plant Technicians	26,187	97.9
51-9011.00	Chemical Equipment Operators and Tenders	9,579	99.1
51-9012.00	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	11,535	97.5
51-9021.00	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	14,150	96.9
51-9022.00	Grinding and Polishing Workers, Hand	10,647	94.3
51-9032.00	Cutting and Slicing Machine Setters, Operators, and Tenders	16,497	96.7
51-9041.00	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	14,528	96.7
51-9051.00	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	8,942	97.2
51-9082.00	Medical Appliance Technicians	11,229	97.1
51-9083.00	Ophthalmic Laboratory Technicians	11,131	97.1
51-9111.00	Packaging and Filling Machine Operators and Tenders	9,599	95.3
51-9121.00	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	6,157	96.8
51-9151.00	Photographic Process Workers and Processing Machine Operators	9,927	98.6
51-9191.00	Adhesive Bonding Machine Operators and Tenders	7,426	97.9
51-9192.00	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	5,510	96.9

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

SOC Code	SOC Title	Questions	Response Rate
51-9193.00	Cooling and Freezing Equipment Operators and Tenders	8,205	97.8
51-9194.00	Etchers and Engravers	8,641	96.0
51-9195.03	Stone Cutters and Carvers, Manufacturing	10,900	95.7
51-9195.04	Glass Blowers, Molders, Benders, and Finishers	7,716	98.9
51-9195.07	Molding and Casting Workers	10,278	97.6
51-9198.00	Helpers--Production Workers	13,714	94.6
53-1011.00	Aircraft Cargo Handling Supervisors	5,770	97.2
53-1021.00	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	14,004	98.5
53-2012.00	Commercial Pilots	14,846	98.4
53-3011.00	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	6,293	97.5
53-3041.00	Taxi Drivers and Chauffeurs	13,083	96.8
53-4011.00	Locomotive Engineers	7,911	97.4
53-5011.00	Sailors and Marine Oilers	10,761	96.5
53-5021.01	Ship and Boat Captains	15,867	97.3
53-5021.02	Mates- Ship, Boat, and Barge	8,433	97.5
53-5021.03	Pilots, Ship	8,032	97.0
53-5031.00	Ship Engineers	10,293	96.7
53-6021.00	Parking Lot Attendants	8,489	96.6
53-6031.00	Automotive and Watercraft Service Attendants	9,603	97.9
53-6041.00	Traffic Technicians	10,466	97.5
53-6051.07	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	6,773	97.7
53-6061.00	Transportation Attendants, Except Flight Attendants	6,118	96.9
53-7011.00	Conveyor Operators and Tenders	12,941	97.7
53-7021.00	Crane and Tower Operators	11,680	97.7
53-7063.00	Machine Feeders and Offbearers	12,113	97.3
53-7071.00	Gas Compressor and Gas Pumping Station Operators	5,561	97.5