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

Appendix E: Nonresponse Analysis

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

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

E.1 How Nonresponse Is Related to Bias

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

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

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

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

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

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

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

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

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

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

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

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

E.2 Establishment Nonresponse

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

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

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

The following describes the Exhibit E-1 column headings:

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

The following describes the Exhibit E-1 row headings:

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

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

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

E.2.1 Establishment Final Unweighted Response Rates

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

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

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

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

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

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

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

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

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

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

E.2.2 Comparison of Establishment Respondents and Nonrespondents

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

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

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

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

E.3 Employee Nonresponse

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

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

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

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

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

E.3.1 Employee Final Unweighted Response Rates

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

E.3.2 Comparison of Employee Respondents and Nonrespondents

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

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

E.4 Item Nonresponse

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

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

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

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

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

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

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

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

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

E.5 Conclusion

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

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

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

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

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

continued

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

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

continued

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

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

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

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

Exhibit E-2. Comparison of Establishment Respondents and Nonrespondents

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

continued

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

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

continued

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

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

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

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

Exhibit E-3. Unweighted Employee Response Rates

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

continued

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

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

continued

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

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

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

*Statistically different from the total category.

Exhibit E-4. Comparison of Employee Respondents and Nonrespondents

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

continued

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

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

Continued

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

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

Continued

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

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

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

*Statistically different from zero at the 0.05 level.

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

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

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

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

continued

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

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

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

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

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

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

Exhibit E-9. Completion Rates, Background Questionnaire

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

Continued

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

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

Exhibit E-10. Item Completion Rates by Item Type

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

Exhibit E-11. Item Completion Rates by Occupation

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

continued

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

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

continued

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

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

continued

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

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

continued

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

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

continued

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

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

continued

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

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

continued

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

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

continued

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

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

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