Supporting Statement Part B

DD 1918 Establishment Information Form, DD 1919 Wage Data Collection Form, and DD
1919C Wage Data Collection Continuation Form
OMB Control Number: 3206-0036
Justification – Part B a statistical survey

Part B must be completed for any information collection that is a statistical survey, that is, a collection in which one of the sponsoring agency's purposes is to use the information for the description, estimation, or analysis of the characteristics of groups, segments, activities, or geographic areas. Surveys include both censuses (that is, all members of the group of interest are asked to submit information) and sample surveys (that is, only a subset of all members are asked to submit information but the intention is to describe, estimate, or analyze the characteristics of larger groups, segments, activities, or geographic areas). For more information, see OMB's Standards and Guidelines for Statistical Surveys.

1. Development of Concepts, Methods, and Design:

The potential respondent universe is all retail, service, recreational, manufacturing, transportation, communication, electric, gas, sanitary services, and wholesale trades establishments. As a result, statistical sampling is used. These surveys have been conducted since 1973 and yield a response of 21,760 establishments per year.

2. Collection of Data:

In 1988, OPM approved DOD's assumption of those statistical support functions for FWS wage surveys previously performed under contract by BLS. DOD establishes lists of private sector establishments for FWS wage surveys in the 130 appropriated fund and 118 nonappropriated fund local wage areas. In areas having a relatively small number of establishments within the scope of the survey (usually 100 or fewer), a universe listing of all area firms is provided. Where there is a large number of firms, DOD draws a statistical sample, stratifies companies by size and major industrial category, creates cells of companies, and assigns statistical weights. After the collection period, DOD reweights establishments, as necessary, to ensure statistical validity.

3. Processing and Editing of Data:

DOD selects the establishments to be surveyed. The respondents work directly with data collectors knowledgeable in the occupational areas of the survey, and questions are readily answered regarding any part of the survey. This ensures a maximized response rate from participants.

4. **Production of Estimates and Projections:**
   The sampling design used in the wage surveys is sampling proportionate to establishment employment. The universe is divided into groups based on the industry in which the establishment is engaged. These groups are in turn divided into subgroups based on the

establishment employment. These subgroups are called strata. Within each stratum, a sample of establishments is selected independently from the other strata. The number of selected establishments is allocated over the strata based on total stratum employment. The basic steps for the selection of sample establishments are:

Definition of certainty units, if any

Definition of additional industries to be in the scope of the universe for the wage survey, such as General Medical and Surgical Hospitals, NAICS 622110

Determination of sample size

Stratification of the universe by industry and employment size

Allocation of the sample over the strata based on the number of employees

Computation of the measure of size for each establishment to determine its probability of selection

Selection of establishments within each stratum

Computation of the weight for each selected unit

Listing of the selected establishments

As applicable, the methodology to measure sampling error and estimation error.

Agencies under the Federal Wage System are required by title 5, Code of Federal Regulations (CFR), Part 532 to design and conduct probability surveys according to accepted statistical principles. These principles provide the framework for calculating estimates of sampling error. Estimates from nonprobability surveys are difficult to evaluate because there is no accepted method for measuring the error associated with estimates from these surveys. This severely limits the use of the estimates. Statistical principles are also used to determine and select a sample which is consistent with survey goals and resources.

Ideally, designing a probability sample is an iterative process which starts with determining the resources available to the survey and identifying goals for the survey. The next step is to determine the sample size required to meet the survey goals using accepted statistical principles. In many cases the sample size may be too large for the survey resources. The survey planners must either find more resources or re-evaluate survey goals. Goals and resources for the survey must be managed so there is compatibility with the goals and resources of the agency.

In stratified sampling the population of N units is first divided into subpopulations of N_1, $N_2, \ldots, N_L$ units, respectively. These subpopulations do not overlap and together they comprise the whole of the population, so that

$$N_1 + N_2 + \ldots + N_L = N$$

The subpopulations are called strata. To obtain the full benefit from stratification, the value of the N_h, or total number of units, must be known. When the strata have been determined, a sample is drawn from each, the drawings being made independently in different strata. The sample sizes within the strata are denoted by $n_1, n_2, \ldots, n_L$, respectively.

If a simple random sample is taken in each stratum, the procedure is described as *stratified random sampling*.

Stratification is a common technique. There are many reasons for using this technique; the principal ones are:

1. If data of known precision are wanted for certain subdivisions of the population, it is advisable to treat each subdivision as a "population" in its own right.

2. Administrative convenience may dictate the use of stratification; for example, the agency conducting the survey may have field offices, each of which can supervise the survey for a part of the population.

3. Sampling problems may differ markedly in different parts of the population. With human populations, people living in institutions (e.g., hotels, hospitals, prisons) are often placed in a different stratum from people living in ordinary homes because of a different approach to the sampling is appropriate for the two situations. In sampling businesses we may possess a list of the large firms, which are placed in a separate stratum. Some type of area sampling may have to be used for the smaller firms.

4. Stratification may produce a gain in precision in the estimates of characteristics of the whole population. It may be possible to divide a heterogeneous population in subpopulations, each of which is internally homogeneous. This is suggested by the name *strata*, with its implication of a division into layers. If each stratum is homogeneous, in that the measurements vary little from one unit to another, a precise estimate of any stratum mean can be obtained from a small sample in that stratum. These estimates can then be combined into a precise estimate for the whole population.

The theory of stratified sampling deals with the properties of the estimates from a stratified sample and with the best choice of the sample sizes n_h to obtain maximum precision. In this development it is taken for granted that the strata have already been constructed.

The Wage and Salary Division use the following sampling error formula to measure the inaccuracy of the sample's statistical characteristics from that of the population since the sample does not include all members of the population. Data on sampling error is for internally use only.

Sampling Error = $Z * \sqrt{(p * (1 - p) / n]} * [1 - \sqrt{(n / N)})$

The weights applied to the survey data to calculate target population estimates; or if an alternative method of sample design is utilized (for example, ratio estimation), any evaluations to ensure the method results in population estimates of high quality.

Each establishment selected has a weight assigned. The weight is a whole number and indicates the number of establishments in the same stratum that the selected establishment represents. For example, if there are three companies in the universe in a particular stratum

and one is selected for the survey, it will be given a weight of 3 because it represents itself and two other companies. All companies in a universe survey have a weight of one since each represents only itself. The sum of the weights for selected establishments in a stratum must equal the number of establishments in the stratum.

The computation of the weight is as follows:

a. The quantity $\dfrac{N}{n}$ is calculated: $\dfrac{N}{n} = W \dfrac{r}{n}$ where N is the number of establishments in the stratum; n is the number of selected establishments in the stratum; W is the integer, whole number part of the quotient; r is the remainder part of the quotient.

b. Since the sum of the weights must equal the number of establishments in the stratum, r establishments are given a weight of $W + 1$ and $n - r$ establishments are given a weight of W. The weights are assigned randomly among the selected establishments

After data collection is complete, the appropriate Wage and Salary regional office enters the data into the survey database. This data includes the total employment and the collection status (DAC, REF, OOB, etc.) for each establishment on the establishment survey list. This data is then used to adjust the weights.

Other activities (for example, use of auxiliary data) that will be utilized in conjunction with the survey data to improve the quality of the estimates.

Not applicable. No other activities will be used at this time.

If the survey data are collected with an intention of developing model-based estimates of target population characteristics or projections of future values, explain the methods/models that will be applied to the survey data.

Not applicable. The data collected will not be used to create model-based estimates.

5. **Data Analysis: Describe the plans for analyzing the data including methods to be used for statistical tests to address the needs and uses of the information as described in Part A, section 2.**

The lead agency reviews all material and wage survey data forwarded by the local wage survey committee or other local survey organization. The review includes: (1) General review of all survey materials to: (a) Assure that the survey was conducted within the prescribed procedures and specifications. (b) Consider matters included in the narrative report and recommendations of the local wage survey committee or other local survey organization. (c) Note reasons for nonparticipation of establishments in the sample. (d) Exclude discriminatory rates, whether for an individual or for a group of employees, which apparently are set in consideration of religious or political affiliations, marital status, race, color, national origin, age, or sex, or of a physical handicap if the duties of the position involved may be performed efficiently by a person with the physical handicap. If, after review of the local wage survey committee recommendation, it is found that a firm does have discriminatory hiring or other discriminatory rate-setting practices, the lead agency shall exclude all data obtained from that firm. (e) Resolve questions of comparability of

establishment jobs with survey jobs arising from recommendations of the local wage survey committee or other local survey organization. (f) Question and verify comparability of job matches when rate data show marked deviations from those for other jobs in the same establishment or from other establishments in the survey. Such a deviation raises a question of comparability and should be cause for further investigation of the job match. (g) Exclude data that were reported for trainees and apprentices. (h) Resolve questions involving the use of data from unacceptable sources, e.g., from an industry not in the survey specifications for the area, or from establishments which do not meet the minimum-size-of-establishment criterion in S5-6b(3)(a). (i) Verify all computations reported on wage data collection forms.

The lead agency computes a weighted average rate for each appropriated fund survey job having at least 10 unweighed matches and for each nonappropriated fund job having at least 5 unweighed matches. The weighted average rates shall be computed using the survey job data collected in accordance with 5 CFR §§532.235 and 532.247 and the establishment weight. The lead agency computes the unit and frequency paylines using the straight-line, least squares   regression formula: $Y = a + bx$, where Y is the hourly rate, x is grade, a is the intercept of the payline with the Y-axis, and b is the slope of the payline. The unit payline is computed using a weight of one for each of the usable survey jobs and the weighted average rates identified and computed. The frequency payline is computed using a weight equal to the number of weighted matches for each of the usable survey jobs and the weighted average rates identified and computed. The lead agency may compute midpoint paylines using the following formula: $Y = (au + af)/2 + ((bu + bf)/2)x$, where Y is the hourly rate, x is the grade, au is the intercept of the unit payline, af is the intercept of the frequency payline, bu is the slope of the unit payline, and bf is the slope of the frequency payline. A midpoint line may be computed using the paylines based on all of the usable survey job data, and a second midpoint line may be computed using the paylines based on limited survey job data authorized in 5 CFR §532.241 paragraph (b)(2).

The lead agency selects a payline and construct wage schedules for issuance as the regular wage schedules for the wage area, after considering all of the information, analysis, and recommendations made available to it pursuant to 5 CFR §532.245.

6. **Review and Evaluation Procedures: The statistical design is prescribed by law. OPM implemented the law with the advice of the Federal Prevailing Rate Advisory Committee. Survey methodology is updated as necessary.**

7. **Data Dissemination:**
   Procedures for releasing and disseminating statistics and microdata (that is, detailed responses for individual respondents) to the public. As applicable, also describe the disclosure limitation methods to be used to achieve the confidentiality discussed in Part A, section 10.

The lead agency develops and issues wage schedules based on its survey and pay determinations. Each area wage schedule consists of: Name of wage area; Nonsupervisory wage rates; Leader wage rates; Supervisory wage rates; Effective date; and Signature of authorizing official. The lead agency distributes copies of area wage schedules to the headquarters of each Federal agency having wage employees within the wage area as earlier

reported to the lead agency host installation by the agencies' activities within the wage area, and to the headquarters of labor organizations having exclusive recognition in the wage area and to the headquarters of other labor organizations upon request. One copy of each area wage schedule is forwarded directly to the central office and to each OPM regional office. The lead agency also provides copies of wage schedules to other agencies whenever requested to cover newly established local installations. Wage schedules established under the FWS are public information. A lead agency may make available to news media and to any other interested party such information as it considers pertinent concerning new or revised wage schedules for which it is responsible. Upon receipt of an authorized wage schedule from a lead agency, each employing agency takes immediate steps to place the schedule into effect. An employing agency: • Authorizes application of the pay schedule to its covered wage employees within the wage area; • Places schedules into effect in individual installations on the date specified on the area wage schedule by the lead agency.

After the publication of wage schedules, the Wage and Salary Division produces a survey summary that summarizes the results of the wage survey. The survey summary includes data on the number of observations, means, medians, and other data by survey job and industry group. To maintain confidentiality of participating establishments, company names are excluded from the survey summary, and data must be obtained from a minimum of three establishments to be included in the calculations. Survey summaries are only sent to participating establishments.

Documentation that will be released to the public to improve understanding of how to properly interpret, analyze, and evaluate information from the survey.

The survey summary that the Wage and Salary Division produces contains information on the geographic coverage, industry coverage, occupational coverage, wage area definition, and survey jobs. There is also a detailed section on how to interpret the survey data.

The following point of contact at DOD designates FWS wage survey data collectors:

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