

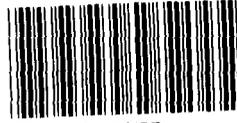


UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

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FEDERAL PERSONNEL AND
COMPENSATION DIVISION



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APRIL 5, 1982

The Honorable Raymond J. Donovan
The Secretary of Labor

Dear Mr. Secretary:

Subject: Additional Improvements Needed in the National Survey of Professional, Administrative, Technical, and Clerical Pay (FPCD-82-32)

This report summarizes the results of our review of the National Survey of Professional, Administrative, Technical, and Clerical (PATC) Pay. This survey is made annually by the Bureau of Labor Statistics (BLS) to collect private enterprise data for use by the President's Pay Agent in assessing and adjusting salary rates of Federal white-collar employees.

Our May 1973 report, "Improvements Needed in the Survey of Non-Federal Salaries Used as Basis for Adjusting Federal White-Collar Salaries" (B-167266), identified improvements that could be made to the PATC survey. BLS has made many changes since that time to maintain and improve the quality of the survey data; it is now considering several new approaches to further improve the survey process. We believe additional improvements can be made. Our objectives, scope, and methodology and the results of our work are discussed in the enclosure.

As with any statistical survey, the results of the PATC survey are subject to some uncertainty--sampling and nonsampling errors. The accuracy of the survey results depends on the extent of such errors.

Sampling errors occur because only a portion of the universe of private sector establishments is selected for analysis. BLS measures and reports sampling errors and has recently improved its method for measuring sampling errors.

Although the BLS sampling methodology meets generally accepted statistical methods, the impact of establishment refusals

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to provide data needs to be more fully disclosed in the published survey results. BLS makes a statistical adjustment to account for these establishments and believes the reduction in the reliability of the salary estimates is small. The adjustment used, however, is based on an assumption which BLS has not tested, i.e., that the nonrespondents do not differ significantly from establishments that do respond.

Nonsampling errors are all other errors that occur in the survey. Errors can occur in the editing, coding, and tabulating stages of a survey. Many variables, such as differences in interviewing techniques, field representatives' judgments, and respondents' knowledge, can affect the accuracy of the data.

To measure these variables, BLS established a quality measurement (QM) program. This program includes making annual re-visits by senior BLS regional staff to a sample of PATC survey respondents (421 in 1981); these staff members reinterview the respondents and recollect data for three to six occupations each year. At the time of their visits, the staff members compare their results with the PATC survey results and reconcile any differences. The two sets of data are then compared and statistically significant differences are noted.

The program has been successful in measuring nonsampling errors that occur during data collection and has shown that published salary levels are not significantly different from the survey results, but more use could have been made of this program. For example, the program has not isolated specific problems contributing to nonsampling errors, nor has it been used to prescribe remedial actions. Also, while BLS instructions recommend that QM visits be made between 30 to 60 days after the PATC survey visits, at least 50 percent of the 1981 QM visits were made 60 days or more after the survey visit. Further, long delays have occurred in calculating the program results (for example, the 1979 QM results were issued in November 1981); thus the results of the program cannot be used to help judge the reliability of the survey in the year it was made.

Because of budget constraints and lack of staff, BLS has suspended the QM program for the 1982 PATC survey. Meanwhile, BLS is evaluating improvements that can be made to expand it into a quality control program. In structuring this program, BLS is focusing on controlling the quality of job matches using existing financial resources.

PATC survey job matching entails a dialogue between a BLS field representative and an establishment official (respondent) in which they discuss duties, responsibilities, and skill levels of individuals in certain occupations to identify or match jobs in the establishment which are similar to jobs in the Government.

Our 1973 report pointed out that job-matching techniques varied widely and needed improvement. While BLS has directed attention to these matters by emphasizing proper job matching and documentation in PATC survey instructions and training, our observations of job matching during the 1981 PATC survey showed this area still needs improvement. In some instances, field representatives were not thoroughly using the job definitions in their job-matching interviews, were not fully using establishment records, and were not fully documenting their job-matching decisions.

CONCLUSIONS

As a result of budget constraints, BLS has suspended its 1982 QM program. Because of the President's use of alternative plans, the cost of the survey, and the burden on the private sector, we have questioned the need for an annual PATC survey and have recommended interim year pay adjustments using the BLS Employment Cost Index. So long as the survey is conducted and used in the pay comparability adjustment process, BLS needs a quality control program. According to BLS, the 1980 QM program cost about \$250,000; however, the potential returns from an improved quality control program could far outweigh the costs. For example, a 1-percent error in the annual comparability adjustment could result in erroneous payments of over \$500 million.

RECOMMENDATIONS TO THE SECRETARY OF LABOR

We recommend that, as long as the PATC survey is conducted, the Secretary require BLS to establish a quality control program to measure and better control nonsampling errors that occur in job-matching. The program should be structured to

- identify the source and reasons for nonsampling errors, prescribe remedial actions, and evaluate the effectiveness of such actions;
- provide prompt feedback to field representatives on their data collection performance; and
- report program results with the PATC survey results or insure that this information is subsequently reported to survey users.

To provide complete information on the survey, the Commissioner reports information on establishments refusing to provide data. In this connection, we further recommend that the Secretary require BLS to test the statistical assumption used to account for these establishments. If the statistical assumption cannot be verified, the opinion of the effect of these refusals on the survey salary estimates should be better qualified.

We discussed a draft of the report with BLS officials. They generally agreed with our findings on job matching and the QM program. In regard to our recommendations, BLS has established a PATC Quality Control Team to address ways to better measure, interpret, and control the consistency of job matches among field representatives and at the same time to recognize the budgeting and staffing limitations being faced by BLS. With regard to the statistical assumption on nonrespondents, BLS stated that this is a widely accepted statistical procedure but is considering alternatives for testing this assumption.

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As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations. This written statement must be sent to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report. A written statement must also be sent to the House and Senate Committees on Appropriations with an agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Directors, Office of Management and Budget and Office of Personnel Management; the Commissioner of Labor Statistics; and other interested persons.

We appreciate the cooperation our staff received during this review and look forward to working with your staff in the future. If you have any questions on our work, we would be glad to discuss these matters further with you.

Sincerely yours,


Clifford I. Gould
Director

Enclosure

ADDITIONAL IMPROVEMENTS NEEDED IN THE NATIONAL
SURVEY OF PROFESSIONAL, ADMINISTRATIVE,
TECHNICAL, AND CLERICAL PAY

OBJECTIVES, SCOPE, AND METHODOLOGY

The objectives of our review were to assess improvements in the National Survey of Professional, Administrative, Technical, and Clerical (PATC) Pay since issuance of our 1973 report and to identify further opportunities for improvements. Our work was performed in accordance with our Office's "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions." We reviewed the conduct of the 1981 PATC survey and selected aspects of the 1980 survey. Our review covered the period from January through November 1981.

To evaluate and gain knowledge of the survey process, we reviewed PATC survey policies, procedures, records, and studies. We interviewed personnel responsible for planning and making the survey at the Bureau of Labor Statistics (BLS) headquarters and at four of the eight BLS regional offices--Atlanta, Chicago, Kansas City, and Philadelphia. These four regions were selected because they provided coverage for about half of the 3,436 establishments studied in the 1981 PATC survey and also represented a range from small to large BLS regions.

To assess the process used to collect survey data, we observed 25 BLS field representatives from the four regional offices during their visits to 55 private sector establishments. The establishments were selected to allow us to observe the job-matching process for a cross-section of type and size of establishments and experience levels of field representatives. In addition to reviewing the documentation of the information obtained during the 55 visits, we reviewed the results of another 60 visits of field representatives in 7 of the 8 BLS regional offices to further assess job matching and the documentation of information obtained. Our review of the results of the field representatives' visits did not include the Kansas City Regional Office which was covered in our job-matching observations.

To assess the data review process, we observed senior regional office personnel making the review. We also interviewed BLS headquarters personnel on the nature of their reviews of completed field work.

To assess improvements made to training programs, we attended four PATC training courses held prior to the 1981 survey. We also interviewed field representatives and senior personnel

in the four regional offices to obtain their opinion on PATC training and suggestions for improvements.

To determine the statistical soundness of the survey design, we reviewed the BLS methodologies and compared them to generally accepted sampling methodologies.

BACKGROUND

The survey provides estimates of the national average of salary rates in the private sector. The President's Pay Agent 1/ uses the survey results to construct a payline--a series of rates, with one rate for each General Schedule grade up through GS-15--and, ultimately, as the basis for making recommendations to the President on Federal white-collar salary levels. Also, the survey results provide the private sector establishments with a source of information for administering wage and salary plans.

Survey data is gathered primarily by about 120 field staff by personally visiting sample private sector establishments. Personal visits permit the use of a job-matching technique which is commonly used in both the public and private sectors. This job-matching technique is a dialogue between the BLS field representative and an establishment official (respondent) in which they discuss duties, responsibilities, and skill levels of individuals in certain occupations to identify or match jobs in the establishment which are similar to jobs in the Government. Jobs are matched using the PATC survey job definitions and the establishment's job descriptions, organization charts, and records. When an establishment job is matched to a similar Government job, the actual salaries for workers in the matched job are obtained from the respondent.

The results of any statistical survey are subject to uncertainties--both sampling and nonsampling errors. When these errors are measured and reported, the President's Pay Agent and other users are better informed about factors that may affect the reliability of the survey results.

Sampling errors (or variability) occur because only a portion of the universe of establishments is selected for analysis. BLS recently improved the method used to estimate the PATC survey sampling error and can now calculate a sampling error estimate which meets generally accepted statistical criteria.

1/The President has designated the Directors, Office of Management and Budget and Office of Personnel Management, and the Secretary of Labor to act jointly as his agent in the white-collar comparability process.

Nonsampling errors can occur in any sample survey. For example, they can occur because questions are not worded properly, survey interviewers make mistakes, or respondents provide inaccurate information. Errors can also occur in the editing, coding, and tabulating stages of a survey. During the past several years, BLS has devoted considerable efforts to measure nonsampling errors that occur during the job-matching process.

The data obtained during job matching is affected by many variables, such as differences in interview techniques, field representatives' judgments, availability and use of establishment documents, and the involvement and knowledge of respondents.

BLS has a review process to identify and correct errors that are made in job matching. BLS regional office staff are required to make desk reviews of all job-matching schedules to evaluate job-matching decisions. Also, the BLS headquarters PATC program office reviews selected schedules as a further check on data quality. These reviews, however, rely largely on written documentation.

Recognizing the limitations of desk reviews, BLS has a quality assurance program to evaluate the performance of field representatives (especially less experienced staff) who collect survey data. This program consists of both personal observations of the field representatives' work and revisits to selected establishments to verify the data the field representatives have collected. The most important objective of this program is to provide the field representatives with prompt feedback on problems or errors noted in the observations or revisits. However, many of the regions' revisits for this purpose in the 1981 survey were made near the end, or after the data collection period. Thus, the lessons learned from these revisits are disseminated too late to benefit the field representatives in the current year's survey.

In 1973, BLS initiated a quality measurement (QM) program to measure nonsampling errors that occur during job matching. However, this program has not isolated specific problems contributing to nonsampling errors, nor has it been used to identify sources of errors or to prescribe corrective action. BLS has suspended this program for 1982 because of budget constraints.

OPPORTUNITIES TO IMPROVE THE QM PROGRAM

A QM survey is made under the QM program as part of BLS efforts to measure the reliability of survey results. This survey is a reinterview of respondents for a subsample of establishments in the PATC survey. Establishments are revisited by BLS senior field staff, and some of the initial data (e.g., selected job matches and salary data) are collected again. BLS instructions recommend that the revisit be made between 30 and 60 days

after the original visit to avoid collection problems that may be caused by the lapse of time. Data is recollected for a few selected occupations each year; 1/ occupations are rotated so that all PATC occupations will be studied over a 4-year cycle. BLS attempts to control the variables which affect nonsampling errors by (1) limiting the number of occupations in the QM survey so that more time can be spent in establishments doing comprehensive job matching and data collecting and (2) assigning only experienced regional staff. Thus, BLS assumes that the QM visit has produced the correct data. When a comparison between the original visit and QM visit shows differences (e.g., in job matches or salary data), BLS requires that the discrepancies be identified and the causes be reconciled if possible. This reconciliation is a key phase of the QM effort since it can isolate specific problems contributing to nonsampling errors.

While reconciling differences is a key phase of the QM effort, senior field staff making the revisits do not (or cannot) always determine the cause of discrepancies between the original visit and the QM visit. Also, the QM visits are often not timely, which has also hampered the usefulness of the QM survey. Many QM visits are not made within the recommended 30- to 60-day time frame. We estimated that, for the 1981 QM survey, at least 50 percent of the completed QM revisits were made 60 or more days after the original visit.

Long delays have also occurred in reporting QM results. For example, the 1978 QM survey results were not reported until August 1981, and the 1979 survey results were not reported until November 1981. Because of the long delays, the QM results cannot be used by BLS to help judge the reliability of the PATC survey in the same year it was conducted.

The QM survey has been useful to BLS in showing that published BLS salary levels for specific occupations are generally not significantly different from corresponding figures produced by the QM survey. However, the survey has not been used to isolate specific problems contributing to nonsampling errors, nor has it identified sources of errors or been used to prescribe remedial action. Moreover, a BLS official told us that QM results had not been reported to the President's Pay Agent or others outside BLS.

The QM survey has been suspended for the 1982 PATC survey because of budget constraints and lack of staff; however, a BLS internal report has suggested implementing a new quality control

1/For example, the engineer, chemist, and computer operator occupations were selected for the 1981 QM survey.

program which would include the QM survey. This quality control program would try to identify as many sources and reasons for nonsampling errors as possible, prescribe remedial action, and evaluate the effectiveness of remedial action. The program could improve future PATC surveys by influencing decisions on data collection procedures, sample design, and training programs.

JOB-MATCHING TECHNIQUES
NEED CONTINUING ATTENTION

The BLS field representative and the respondent are the keys to successful job matching. The representative's ability to ask the right questions and use available records and the respondent's knowledge of the establishment employees' duties and responsibilities are vital to obtaining quality data.

Job-matching techniques we observed at the 55 establishments varied widely. In some instances, field representatives made job-matching decisions only after thorough discussions, but, in other instances, they used job-matching practices that were not as thorough. Senior field representatives made similar observations during revisits for the QM survey.

Use of PATC job definitions varied

Field representatives interview respondents to obtain information on employees' job duties and responsibilities. PATC job definitions describe the general characteristics of the job, typical duties and responsibilities, direction received, and responsibility for directing others. BLS requires that all elements in each occupational work level be considered in making a job match. The importance of sound interviewing techniques is addressed in PATC training and survey instructions.

BLS has taken several steps to help field representatives interpret and apply PATC survey definitions. Each year field representatives receive from BLS headquarters a document which answers specific questions and discusses comments raised by field representatives in their end-of-survey reports. This material is incorporated in the annual PATC training. Some training sessions also use nongovernmental experts to discuss the role, duties, and responsibilities of a particular PATC occupation in the private sector.

We noted that field representatives on many occasions deviated from recommended procedures by not covering a definition in its entirety. Occasionally, the field representative read, or the respondent reviewed, the PATC definition, but the representatives we observed usually gave an abbreviated description or used a key phrase to reach a common understanding with the respondent of the specific work level of the occupation. Reliance on brief

descriptions, however, may cause important elements of the definition to be ignored and result in inaccurate job matches.

Many PATC survey definitions identify certain duties and responsibilities which, if performed by individuals in establishment positions, would preclude them from being matched. Field representatives at times tried to exclude rather than match occupations (particularly for more complex definitions); but, while doing so, they did not apply the survey definition properly. For example, an establishment's director of personnel is excluded if the position includes responsibility for actual contract negotiation with labor unions as the principal company representative and is a significant aspect of the job, that is, a responsibility which serves as a primary basis for qualification requirements and compensation.

We noted several instances when the field representative determined that the establishment incumbent was responsible for contract negotiations with labor unions and decided to exclude the position without first using the rest of the definition to determine if that negotiation responsibility served as a primary basis for qualification requirements and compensation. We observed similar abbreviated uses of survey definitions for the occupations of chief accountant (not identifying the importance of nonaccounting duties such as budgeting and forecasting) and secretary (not identifying legitimate matches when secretarial support is also provided "to the subordinate staff" of the supervisor).

Field representatives may not cover a definition in its entirety for many reasons. For example, field representatives may rely on the previous years' matching decision and satisfy themselves that it is still valid using key words or phrases. They may perceive that a respondent will not allow enough time to cover all survey definitions completely, or a field representative may have limited experience in applying a definition. A definition may be complex or not fully understood by field representatives. In their end-of-survey reports, field representatives frequently express difficulties distinguishing among various occupational levels, especially for higher levels of professional occupations. A regional office official, responsible for reviewing the quality of data collected by field representatives, noted that greater emphasis should be placed on the proper matching of higher level occupations. This official believes that field representatives do not always use these survey definitions properly or do not fully understand them.

More use of establishment records needed

Field representatives are encouraged to use, when available, establishment records, including job descriptions, organization

charts, and grade designations, to obtain a general understanding of the establishments' operations and to identify and confirm jobs to match. Field representatives are required to include most of these records as part of the documentation of job matching and data collection at establishments to assist in later surveys. Such documents are also useful in further review processes.

During our observations, field representatives usually identified and documented company job titles, grades, and rate ranges for matched jobs. We also observed some instances in which establishment job descriptions or organization charts were effectively used to match or exclude jobs. In most instances, however, field representatives did not request and use establishment organization charts and job descriptions. When job descriptions were used, field representatives did not always determine if they were current, although BLS requires that such a determination be made.

Establishment documents are a valuable aid in matching jobs, especially when a field representative does not have the benefit of job-matching data from the previous year's survey. We observed the job-matching process at 12 establishments new to the 1981 survey. At three of these establishments, field representatives did not discuss organizational structure or make an attempt to review and use organization charts and job definitions to aid them in the job-matching process.

More use could be made of knowledge
and involvement of respondents

The respondents' cooperation and knowledge of the duties and responsibilities of the establishment's employees can be of great value in obtaining quality data. During their visits, field representatives encountered different types of respondents; for example, those unfamiliar with employees' duties and responsibilities, those who have very little time to spend, and those interested in the survey and able and willing to provide good data. Most of the respondents we observed had knowledge of the establishment jobs, appeared to be interested in the survey, and were willing to spend time necessary to complete the matching process.

In certain situations, however, BLS field representatives could have allowed respondents to participate more in the job matching. For example, when field representatives make tentative job-matching decisions, they are encouraged to confirm these decisions with the respondent. BLS encourages this confirmation because, if a respondent disagrees, it may indicate that a match is incorrect. Field representatives we observed usually did not confirm matches with respondents. In some instances, field representatives asked respondents to read all or part of a PATC job definition before making a job-matching decision, and, in these instances, respondents did contribute to the matching process.

Job-matching decisions not
always properly documented

Field representatives are instructed to fully document job-matching decisions, including

- formal company job titles, rate ranges, and grade designations;
- reporting relationships for all professional and administrative occupations and for secretaries;
- changes in matching, for example, a large increase or decrease in the number of matches from the previous year; and
- explanations for positions which are not matched but which would be typically found in an establishment--for example, accountant in an establishment where the accounting function is present.

The purposes of such documentation are to insure that data is of good quality, that it supplies clarifying explanations needed for further review, and that it furnishes information useful for job matching in subsequent surveys.

BLS has taken several steps to encourage field representatives to adequately document their decisions. These steps include specifying in the collection instruments the documentation requirements of job matches, reviewing completed schedules of job-matching visits by senior staff to see if documentation is adequate, and devoting sections of annual training sessions to documentation requirements. Several field representatives stated that data was easier to collect in a subsequent year when the previous years' data was well documented and of consistently good quality.

Completed schedules on the 55 establishments where we observed data collection usually included job titles, grades, and rate ranges, but there were many instances where the completed schedules did not fully meet BLS documentation standards. For example, in several of these schedules, there were large increases or decreases in the number of matches from the previous year with no documentation on the reasons for the changes (e.g., in one schedule, engineering technician, level IV matches, increased from 0 to 22; in another, computer operators, level II, increased from 8 to 17; and in still another, secretaries decreased from 40 to 20 with no explanation).

SAMPLING METHODOLOGY FOR PATC SURVEY
IS SOUND

We reviewed the sampling methodology BLS used for the PATC survey to determine its statistical validity. Overall, the BLS methodology meets generally accepted statistical methods. However, the effect of establishments' refusing to participate in the survey needs to be more fully disclosed.

Method used to measure sampling error has been improved

In 1978, BLS determined that the method it had been using to estimate sampling error had indicated only a 70-percent chance that the true value of the salary averages produced were within a range of plus and minus two standard errors. During our review, BLS made an improvement to the method used to estimate the survey's sampling error. Subsequent to reporting the 1981 PATC survey results, BLS used the improved method to provide a new estimate of sampling error at the 95-percent confidence level. As a result, BLS's sampling error estimate for the 1981 PATC survey meets generally accepted statistical criteria.

Impact of nonrespondents on the survey

Over the years, there has been a significant increase in the number of establishments refusing to participate in the survey. In 1972, about 5 percent of surveyed establishments refused to provide data. This percentage has risen over the years to 14 percent for the 1981 survey. This nonresponse rate could be a source of bias in the results of the survey.

BLS makes a statistical adjustment to account for these nonrespondents. In using the adjustment, BLS assumes that nonrespondents would have answered the survey questions in the same manner as those providing data for the survey. BLS discloses this adjustment procedure. BLS also gives its opinion of the effect on the survey estimates. For example, BLS reported with the 1981 PATC data that:

"Although no estimates of the effects of nonresponse are available, the reduction of the reliability of wage rate estimates should be small because of the nature of the data collected, the survey method, and high response rate."

It cannot be assumed that nonrespondents will have characteristics similar to those providing data for the survey. Because of these nonrespondents, BLS and other users of the data may not know how much confidence to place in the results, unless, by some means, information is obtained about the nonrespondents.

BLS has not tested the validity of its assumption or provided a full disclosure concerning the possible impact of the nonrespondents.

ONGOING BLS EFFORTS TO IMPROVE QUALITY
AND EFFICIENT CONDUCT OF THE SURVEY

BLS is researching several new approaches to the PATC survey. Some have been used to a limited extent in past surveys, some will be used in the 1982 survey, while others need further research. Some of the major approaches are summarized below.

- Off-season job matching. BLS headquarters personnel visit several large establishments and match jobs when the survey is not ongoing. During the actual survey period, a BLS regional field representative revisits the establishment, re-verifies the off-season matches, and collects the salary data. This approach was started 3 years ago.
- Telephone collection. Rather than personal visits, data was allowed to be collected by telephone for a few establishments in the 1981 survey. BLS will increase the use of telephone collection for the 1982 survey for some establishments that were in the 1981 survey and produced a small number of matches.
- Reduce the number of establishments sampled. As a result of implementing a better technique for estimating sampling error, BLS will be able to assess the impact of reducing the sample size on survey estimates. Research will be undertaken to determine if the size can be reduced and to what extent.
- Subsampling of workers. When a field representative matches a large number of establishment workers to a particular survey job level, salary data can be collected for a subsample of workers instead of collecting salary data for all matched workers. This technique will be used by one BLS regional office on a test basis for the 1982 survey.
- Subsampling of occupations. This technique, now being researched, would allow occupations that are frequently matched to be omitted from job matching at certain establishments. BLS field representatives are now required to job match all occupations in the PATC survey at each establishment.
- Upgrade regional office reviewers' skills. As discussed earlier, data is reviewed by both regional office and headquarters staff. The complexities of the PATC survey make it impossible to provide a formula approach to review data.

BLS is considering a training conference for regional reviewers coupled with a detail to the headquarters office to improve the consistency of reviewing data between headquarters and the regions.