

SALARY SURVEY METHODOLOGY

Overview

The Salary survey is an annual survey, which was mailed to 3,962 institutions in 1998-99; 2,240 were sent to 4-year institutions; 1,722 were sent to 2-year institutions. Beginning in 1998-99 there were no less-than-2-year institutions included in the Salary mailout universe. However, table A indicates that 7 institutions changed sector¹ type after mailout. While they are included on the final data file, the report does not include data for those institutions.

Beginning in 1996, the subset of all postsecondary institutions that were eligible to participate in Title IV federal financial aid programs was validated by matching the IPEDS universe with the Postsecondary Education Participation System (PEPS) file which contains the Title IV status of postsecondary institutions. This file is maintained by the Office of Postsecondary Education (OPE). Using the PEPS file as the source for determining eligibility, 3,962 institutions were mailed the Salary Survey forms in 1998.

In addition, institutions were excluded from the survey based on responses to questions on the IPEDS Institutional Characteristics survey. The exclusions apply if:

- a. All of the instructional faculty at the institution are employed on a part-time basis;
- b. All of the instructional faculty at the institution are military personnel;
- c. All of the instructional faculty at the institution contribute their services (e.g., are members of a religious order); or
- d. All of the instructional faculty at the institution teach preclinical or clinical medicine.

Institutional Universe and Response Rates

The forms were mailed out on August 17, 1998. The survey results were collected from November 15, 1998 through April 15, 1999. During this time period institutions were added to the universe and other institutions were deleted from the universe. Institutions were added if NCES was notified that an institution did not receive a survey form but met the requirements to be included in the Salary universe. Schools were deleted as a result of formal notification from IPEDS state coordinators, a change in the Department of Education eligibility status and follow-up telephone calls. Included in the deletions were: (1) duplicates of other institutions on the file; (2) institutions that closed or had merged with another institution; (3) institutions that no longer offered postsecondary programs; or (4) schools that did not conform to the IPEDS definition of an institution or branch. At the conclusion of this process, 3933 institutions comprised the final 1998-99 salary universe. The final universe was also adjusted to reflect institutions that changed from one sector to another subsequent to survey mailout by reassigning the institutions.

The overall response rate was calculated as the ratio of the number of completed questionnaires divided by the number of schools in the final universe. The final universe is derived by subtracting the number of institutions determined to be out-of-scope from the number of surveys mailed and adding in schools new to the universe. A summary of the universe and response rates are provided in table A below:

¹ Sector is defined as one of nine institutional categories resulting from dividing the universe according to control and level. Control categories are public, private not-for-profit and private for-profit. Level categories are 4-year and higher (4-year), 2-but-less-than-4-year (2 year), and less than 2-year. For example: public, 4-year institution; public, 2-year; etc.

Table A.—IPEDS Salaries survey eligibility and response totals: 1998-99

Level	Mailed	Final universe	Number responded	Percent responded
Total	3,962	3,933	3,743	95.2
4-year	2,240	2,257	2,173	96.3
Public	619	624	615	98.6
Private, not-for-profit	1,477	1,478	1,408	95.3
Private, for-profit	144	155	150	96.8
2-year	1,722	1,669	1,566	93.8
Public	1,089	1,071	1,027	95.9
Private, not-for-profit	171	156	137	87.8
Private, for-profit	462	442	402	91.0
Less-than-2-year	0	7	4	57.1
Public	0	5	3	60.0
Private, for-profit	0	2	1	50.0

NOTE: There were no less-than-2-year institutions included in the Salary mailout universe. However, 7 institutions changed sector type after mailout. While they are included on the final data file, the report does not include data for those institutions.

Survey Conduct and Editing

Follow-up for nonresponse began on January 9, 1999 by telephone and letter. Data were edited for major reporting errors. Generated totals were compared to the reported totals. If these were within an acceptable range, the generated totals replaced the reported totals; otherwise, institutions were contacted to resolve these discrepancies. Generated totals are indicated by an imputation flag variable. Also data were checked for consistency with their prior year's response. The final data file contains information for 3,921 institutions; there were 12 nonresponding institutions for which data were not imputed and these 12 are not included on the file.

Data Management and Imputation

Partially Responding Institutions

In 1998-99, Salary imputation procedures were developed for partially responding institutions. However, where possible, all missing data items were resolved during telephone follow-up with the institutions². Data for any partially responding institution reporting data for summary lines (7, 14, 15, 22 and 30) and column 4 and 5) but no corresponding detail data for lines (1-6, 8-14, 16-21 and 23-28) and columns (1, 2, 3 and 4) were imputed³.

Data were imputed for total nonresponding institutions i.e., those that did not return a survey form.

The following describes the imputation procedures for partially responding institutions:

- A. For institutions with prior year salary data the prior year data were prorated to reported totals for columns 1-3. Estimates were made at the lowest possible level and then aggregated.

² Partially responding institutions were those that reported, but included at least one cell with a "not reported" status code in Part A.

³ Line and column numbers refer to positions on the Salary survey form.

1. Columns 1-3 were added for each line to obtain imputations for column 4.
 2. Using prior year data, a salary/faculty ratio was computed by dividing column 5 (salary outlay) by column 4 (total number of faculty) for each non-summary line.
 3. Column 5 interim figures for non-summary lines were added to obtain interim totals for lines and to prorate the interim figures to the reported salary for column 5.
- B. For institutions without prior year salary data, the same procedure above was used, except the group means were substituted for the prior year data.
- C. For partially reporting institutions that provided summary lines and some detail, the detail were subtracted from the reported totals and then the same procedure as above was used for the remaining lines and the remaining summary line totals.

Nonresponding Institutions

Imputation procedures used for nonresponding institutions were as follows:

- I. Imputation groups used to impute 1998-99 Salary data.
 1. All responding institutions were grouped into IPEDS sectors and BEA Region⁴. If any group had fewer than 20 institutions, it was merged with a group from an adjacent BEA Region.
 2. Sectors 1 and 2 (4-year public and private not-for-profit) were further disaggregated into:
 - (a) schools granting 30 or more doctor's degrees
 - (b) schools granting 30 or more postbaccalaureate degrees, but not 30 or more doctor's degrees and
 - (c) all other schools (including schools with no Completions survey data)
 3. Sectors 3, 6, and 9 (for-profit 4-year, 2-year, and less-than-2-year) were in one imputation group.
 4. Sectors 4 and 7(public 2-year and less-than-2-year) were in one imputation group.
 5. Sectors 5 and 8 (not-for-profit 2-year and less-than 2-year) were in one imputation group.
- II. For institutions that responded in 1997-98 and not in 1998-99, the following method was used:
 - A. A group ratio by sector was calculated for institutions responding in both 1997-98 and 1998-99. For each 1998-99 nonrespondent institution, the group ratio was multiplied by the institution's reported 1997-98 data to get an estimate for 1998-99 salary outlays and number of faculty. Data based on prior year's response are indicated on the salary data file by an imputation flag code of 3.
 - B. For all the reporting schools in each of the identified groups, the ratio for the average number of full-time instructional faculty (9/10, 11/12 and other summed) per full-time-equivalent student (FTE) was computed (this was done for both the current and prior years). FTE was calculated by taking all of the full-time students plus one third of the part-time students as reported in the IPEDS Fall Enrollment survey.
 - C. The FTE enrollment for the nonresponding institutions was obtained from the IPEDS 1997 Fall

⁴Bureau of Economic Analysis.

Enrollment survey.

- D. The average number of full-time instructional faculty per FTE enrollment for the sector was then multiplied by the FTE enrollment of the nonresponding institution. This yielded an estimate for full-time instructional faculty for the nonresponding school.
 - E. To distribute the estimated total full-time instructional faculty across the various academic ranks, the total full-time faculty from each school's prior year Salary report was computed. The total full-time faculty equals the sum of rows 15, 30 and 31 in column 4 of the Salary form.
 - F. Each institution's ratio of total full-time faculty to FTE enrollment for the prior year was computed. The prior year full-time faculty was then multiplied by the current year's FTE enrollment to obtain the imputation for the current year's total full-time faculty.
 - G. To compute the imputations for the nonsummary cells in columns 1-3, each cell in columns 1-3 in the institution's prior year Salary report was multiplied by the ratio computed above in Step F.
 - H. The imputations were rounded to units and details were added to obtain imputations for the nonsummary cell in column 4 and then for summary cells in columns 1-4.
 - I. The prior year salary/faculty ratios were multiplied by the corresponding nonsummary faculty imputations in column 4 to obtain interim salary imputations for nonsummary cells. Details were then added to obtain interim salary imputations for summary cells.
 - J. Final imputations were obtained by multiplying each interim salary imputation computed in Step I by the group ratio of current year average salary to prior year average salary computed in Step A.
- III. For nonresponding institutions that reported Salary data in the prior year but are not on the Fall Enrollment file in either the current or prior year, the prior year's response was used as final imputes for columns 1-4 and interim imputes for column 5. To obtain the final imputes for column 5; the interim figures were multiplied by the group ratio of the current year average salary to prior year average salary.
- IV. The imputation method below was used for nonresponding institutions **without** prior year Salary data, but with data on the Fall Enrollment file:
- A. Using institutions that reported data for Salary and Fall Enrollment, the following aggregates were computed:
 - 1. The aggregate FTE on the Fall Enrollment file.
 - 2. The aggregate for each cell of Part A on the Salary survey.
 - 3. The total full-time faculty - men plus women for all contract lengths. (Column 4, rows 15 + 30 + 31)
 - B. The group average for each cell on the Salary form was computed by dividing the cell aggregate by the number of institutions in the group.
 - C. The group ratio of aggregate total full-time faculty from Step A-3 was compared to the aggregate full-time-equivalent enrollment from Step A-1.
 - D. A group mean of total full-time faculty was computed by dividing the aggregate total full-time faculty from Step A-3 by the number of institutions in the group.

- E. The FTE for each nonresponding institution was obtained from the Fall Enrollment Survey.
- F. The imputation for the total full-time faculty for each nonresponding institution was calculated, by multiplying the group ratio of aggregate total full-time faculty to aggregate full-time-equivalent enrollment (Step C) by each institution's FTE (Step E).
- G. The ratio of the imputed total full-time faculty in the nonresponding institution from Step F was multiplied to the group mean total full-time faculty from Step D.
- H. The ratio of the imputed total full-time faculty in the nonresponding school to the group mean total full-time faculty was multiplied by the group average for each nonsummary cell in column 1- 3 by the group average (Step B) to obtain faculty imputations for the nonresponding institution.
- I. The imputations were rounded to units and added to obtain imputations for nonsummary cells in column 4 and then for summary cells in columns 1-4 for the nonresponding institutions.
- J. For each nonsummary line in the group means (Step B) the ratio of salary to faculty was computed.
- K. The group mean salary/faculty ratios were multiplied by the corresponding nonsummary faculty imputations in column 4 for the nonresponding school to obtain salary imputations for nonsummary cells. The details were added to obtain salary imputations for summary cells.

For totally nonresponding institutions, without prior year Salary data, not on the current year Fall Enrollment file, the group means were used as imputations.

- V. Part B was not imputed for any nonresponding institution.

Confidentiality of Data

The confidentiality of individuals' salaries was preserved in accordance with Title V, Section 501(a) of the Education Amendments of 1974 (P.L. 93-380, 93rd Congress, August 21, 1974) which amends Part A of the General Education Provisions Act by adding a new Section 406 specifically referring to NCES. Section (d)(2) of the Act is cited below:

"The Center shall develop and enforce standards designed to protect the confidentiality of persons in the collection, reporting, and publication of data under this section. This subparagraph shall not be construed to protect the confidentiality of information about institutions, organizations, and agencies receiving grants from or having contracts with the Federal Government."

Because the 1998-99 Salaries restricted use data file may contain information that could lead to the inadvertent disclosure of a faculty member's identity, this data file may be released only to users who have signed the NCES licensing agreement form. For more information, please write or telephone:

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User Guidelines for Processing the 1998-99 IPEDS Salaries Survey Data File

Overview

The primary purpose of this survey is to collect data on the salaries, tenure, and fringe benefits of full-time instructional faculty by contract length, gender, and academic rank. In order to permit analysis of the number and tenure status of full-time faculty members in relation to other IPEDS data including enrollment and number of degrees granted. The data may also be used to evaluate faculty compensation in relation to institutional financial resources for an indication of the economic status of institutions, and to conduct trend analysis of average full-time salaries for an evaluation of the economic status of full-time faculty.

The data collected are used by postsecondary institutions to establish competitive compensation packages; by state agencies to determine budgets for state-supported institutions and to make comparisons with other states. Also, federal agencies use these data in their analyses of the teaching profession as a whole, to contribute to occupational forecasting, and to develop financial indicators relating to postsecondary education. Finally, professional and educational associations use the data to evaluate the differences in salaries between men and women, and the general status of the profession.

Analyzing IPEDS Salary Data

From a programming perspective, you will have to explicitly subset the file for specific analyses. For example, you may want to know:

- a) What are the average faculty salaries for men or women;
- b) what fringe benefits are provided; or
- c) the salary data for any state.

A Sample Analysis

This section demonstrates how to subset the records for specific analyses. For example, suppose the following question is asked: "What are the average total (9/10-month) faculty salaries in Michigan as compared to Ohio and Illinois?"

Using SAS statements as an example, selecting the proper records could be performed as follows:

```
DATA ONE; SET IN.SA98;
KEEP SAA154 SAA155 FIPS;
IF (FIPS= 17 OR FIPS=26 OR FIPS= 39):
FIPS = State codes ;
PROC SUMMARY NWAY;
CLASS FIPS;
VAR SAA154 SAA155;
OUTPUT OUT=TOTAL SUM=;
DATA TWO; SET TOTAL;
AVERAGE=SAA155/SAA154;
PROC PRINT; VAR FIPS SAA154 SAA155 AVERAGE;
```

There are obviously many ways to subset the file. This sample analysis demonstrates the kind of logic needed to obtain the proper records for analysis. Remember that the ordering of the IF tests can dramatically affect processing time. The rule of thumb is to eliminate records as soon as possible, so structure the IF tests accordingly.

In our example, the above steps reduce the file to a simple matrix of records that can be tallied by column to obtain counts and averages, i.e.,

STATE	TOTAL FACULTY (A74)	TOTAL OUTLAY (A75)	AVERAGE SALARY
17	XX,XXX	XXX,XXX,XXX	\$XX,XXX
26	XX,XXX	XXX,XXX,XXX	XX,XXX
39	XX,XXX	XXX,XXX,XXX	XX,XXX

Column 1 represents the FIPS state code for a particular state, column 2 represents total number of faculty, column 3 represents total salary outlay, and column 4 represents average salary for full-time faculty on 9- and 10-month salary contracts.

Non-respondents

As the response rates indicate, not every postsecondary institution returned a survey form. As explained on page 5, data were imputed for nonresponding institutions for Part A only. See the record layout for imputation flags.

Cautionary Notes

The definitions and instructions for compiling IPEDS data have been designed to minimize comparability problems. However, postsecondary institutions differ widely among themselves. As a result of these differences, comparisons of data provided by individual institutions may be misleading.