Collecting Data on Human Capital Variables

A pilot test of the feasibility of collecting data on length of service, educational attainment, and job certification from employers participating in the National Compensation Survey in four metropolitan areas was disappointing.

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The Bureau of Labor Statistics' (BLS) National Compensation Survey (NCS) program conducted pilot studies in the mid-1990s in six metropolitan areas as part of a major shift in how it collects occupational pay data.[1] In four of the six areas—Allentown, Pennsylvania; New Orleans, Louisiana; Raleigh, North Carolina; and Rochester, New York—the Bureau collected and tabulated additional information on three types of human capital variables (HCV's): Length of service, educational attainment, and job certification. The goals of the HCV tests were two-fold: Determine the extent to which HCV's influence pay levels, and determine the availability and accessibility of HCV data from employer records.

Results of the HCV tests were less than satisfactory. For most items and areas, the data obtained did not meet BLS normal publication standards. For example, data on educational attainment were unavailable for about 70 percent of full-time employees in each area. (See table 1.) Data availability was better for length of service and job certification, but was still unsatisfactory. Due to the low response rates, no attempt was made to explore the relationship among these factors and others such as industry mix, unionization, establishment size, or incentive pay.

Broad results of the HCV tests are presented here for the record. Because the nonresponse rates exceed normal BLS publication standards, users should interpret the results cautiously. It should be noted that reliable information on HCV has long been available from household surveys.

TABLE 1. **Percent of full-time workers for which data on selected human capital variables were unavailable, selected areas, 1996**

Human capital variable	Allentown-Bethlehem-Easton	New Orleans	Raleigh-Durham-Chapel Hill	Rochester
Length of service ..	40	38	19	33
Educational attainment	71	73	66	71
Job certification	39	21	18	34

Length of service

Length of service in an occupation or establishment has long been observed as a pay factor, especially for workers not covered by labor-management agreements. (For workers covered by agreements, occupational pay is often a single rate regardless of length of service.) For this test, length of service was defined as the amount of time worked with a company or governmental organization regardless of changes in occupation. If an employee left the organization and returned, the time before and after the absence was combined.

The answers sought in this portion of the HCV tests involved the magnitude of the pay differentials associated with length of service and how length of service affected the pay of different occupational groups.

The average pay of full-time white-collar workers in New Orleans with 10-or-more-years of service was about double that of workers with under 1-year of service. (Compari-

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TABLE 2. **Relative pay levels of full-time workers for selected lengths of service, selected areas, 1996**

Occupational group	Allentown-Bethlehem-Easton				New Orleans				Raleigh-Durham-Chapel Hill				Rochester			
	Years of service															
	1 to 3	3 to 5	5 to 10	10 or more	1 to 3	3 to 5	5 to 10	10 or more	1 to 3	3 to 5	5 to 10	10 or more	1 to 3	3 to 5	5 to 10	10 or more
	Relative pay levels															
White collar	108	146	133	181	123	141	166	201	105	112	108	142	103	117	128	163
Blue collar	106	117	126	146	112	117	126	159	110	106	114	122	103	119	138	170
Service	117	144	150	165	130	120	136	164	121	117	122	167	113	138	183	225

NOTE: Relative pay levels are expressed as a percent of pay for workers with under 1 year of service (under 1 year = 100).

TABLE 3. **Relative pay levels of full-time workers by educational attainment, selected areas, 1996**

Educational attainment (degree)	All occupational groups combined			
	Allentown-Bethlehem-Easton	New Orleans	Raleigh-Durham-Chapel Hill	Rochester
High school	132	125	116	136
Associate	150	140	166	138
Bachelor	218	234	192	254
Master	311	264	273	366
Professional	217	277	209	361
Doctoral	352	415	423	517

NOTE: Relative pay levels are expressed as a percent of pay for workers with less than a high school degree (less than a high school degree = 100).

sons are based on all white-collar workers combined, reflecting the mix of different jobs and pay levels within the white-collar group.) White-collar workers in the 10-or-more-years category in Allentown and New Orleans had a wider relative pay advantage over their short-term (under 1-year of service) counterparts than did blue-collar and service workers. In Raleigh and Rochester, service workers with 10 or more years of service had a relative pay advantage over white- and blue-collar workers with comparable longevity. (See table 2.)

Although pay generally increased with each arbitrarily selected time segment, it did not increase in a straight line. In Allentown, for example, white-collar workers with 3- but less than 5-years of service had higher average pay than did workers with 5- but less than 10-years of service. These anomalies may reflect sampling and nonsampling errors such as the respondents' inability to provide correct information or mistakes in recording or coding the data.

Relative pay levels reflect a mix of different jobs within the three occupational groups examined (white collar, blue collar, and service). The white-collar group, for example, includes: Professional specialty; technical; executive, administrative, and managerial; sales; and administrative support (including clerical) occupations. The pay advantage of long-term workers over their short-term counterparts differed considerably among individual occupations. In New Orleans, the pay advantage for white-collar workers with 10-or-more-years of service (over those with less than 1-year of service) ranged from about 60 percent for professional specialty occupations to about 125 percent for technical occupations. The overall white-collar advantage in New Orleans was 101 percent (relative pay level of 201).

Educational attainment

The pay spread as measured by educational attainment varied considerably among the four test areas. In the Allentown area, workers with doctoral degrees earned about three and one-half times the average rate for Allentown workers with less than a high school degree. This difference was the smallest among the four areas. In Rochester, the area with the largest spread, the difference was about five to one. (See table 3.) When comparisons are made using workers with high school degrees as the base, Rochester employers generally paid a higher premium for educational attainment than employers in the other three areas, but by a lesser margin.

Except for New Orleans, employees in the other three areas holding professional degrees—law, medical, or dental— had lower average pay than did employees with master degrees in such disciplines as business, education, engineering, and computer sciences. Differences, however, were minor in New Orleans and Rochester. In Allentown, the average wage of workers with master degrees was about 43 percent higher than that of workers with professional degrees; in Raleigh, the average was about 31 percent higher.

Educational attainment did not necessarily equate with the educational requirements for the job. Even when the degree was unrelated to the job, information was captured on the highest degree obtained.

Job certification

For this study, job certification is defined as any licensing or test completion requirement associated with an occupation that is administered outside the company and is a significant factor in the hiring, retention, or earnings for that occupation. Information was captured on the existence, but not on the type, of certification. Examples of certification include accountancy and bar examinations; medical

TABLE 4. **Relative pay levels of full-time workers meeting certification requirements, selected areas, 1996**

Occupational group	Allentown-Bethlehem-Easton	New Orleans	Raleigh-Durham-Chapel Hill	Rochester
White collar	158	141	123	181
Blue collar	116	127	115	122
Service	123	107	168	134

NOTE: Relative pay levels are expressed as a percent of pay for workers without certification in the same occupational group (no certification = 100).

board certification; and real estate, stationary engineers', and commercial drivers' licenses.

Certification was an important pay factor among the three occupational groups studied, especially in Rochester where certified white-collar employees' earnings averaged 181 percent of non-certified white-collar employees' earnings. Among the three occupational groups, the certification/non-certification pay gap was widest for white-collar workers, except in Raleigh where the gap for service employees was considerably wider than for the two other groups. (See table 4.) In three of the four areas (New Orleans being the exception), the pay gap was narrowest for blue-collar workers.

Summary

The unwillingness or inability of NCS respondents to provide sufficient details on human capital variables calls into question the feasibility of seeking to measure such variables using only data collected from the employer without interviewing an employee sample.[2] Beyond confirming broad results of national household surveys[3] that earnings increase with higher educational attainment, these tests of establishments in four metropolitan areas produced little useful data.[4] ■

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[1] The establishments surveyed in these areas were selected from among all private and State and local government establishments with at least one employee. For more information on survey changes, see Kenneth Hoffmann, "New Approach to Measuring Occupational Wages," and Beth Levin Crimmel, "COMP2000: Designing a New Wage Survey," *Compensation and Working Conditions*, December 1996, pp. 4-8 and 9-11, respectively. The COMP2000 survey title was later changed to the National Compensation Survey.

[2] See Harley Frazis, Maury Gittleman, Michael Horrigan, and Mary Joyce, "Results from the 1995 Survey of Employer-Provided Training," *Monthly Labor Review*, June 1998, pp. 3-13. In this study, in addition to collecting data from establishments, BLS field economists interviewed randomly-selected employees in the establishments that responded to the survey.

[3] See *Report on the American Workforce*, U. S. Department of Labor, 1997, p. 35. Chapter 1 of an earlier (1995) report on the *American Workforce* discusses the relationship between earnings and job tenure, citing studies that show a positive relationship between tenure and wages. However, other researchers maintain that the higher earnings of long-tenured workers is not because of greater seniority.

[4] For results of 1989-1990 tests of human capital variables, see Elizabeth Dietz and John Steinmeyer, "Testing Joint Collection of Wage and Demographic Data," *Compensation and Working Conditions*, October 1994. pp. 7-11.