

# Wage differences among workers in the same job and establishment

*Employers commonly pay more than one wage rate to workers in a particular job; spreads between the highest and lowest rates in a job are typically wider among white- than blue-collar occupations*

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Establishments employing two workers or more in an occupation often pay these workers at different rates. How frequent is such pay variation? How wide is the resulting spread in rates? Does the degree of pay dispersion differ by occupation? This article explores these issues using data collected in the Bureau of Labor Statistics' 1983 Area Wage Survey program. Where an establishment had two workers or more in a job, the percent by which the salary of the highest paid incumbent exceeded that of the lowest paid incumbent was calculated. Percentage differences for individual establishments were then averaged over all establishments providing such comparisons.

Rate structures were clearly different for white- and blue-collar workers. More than three-fourths of the workers employed in the 40 white-collar occupations studied were in establishments paying more than one rate for their job. Fewer than half of the workers in the 28 blue-collar occupations studied were employed in multi-rate situations. The remainder were either the only incumbents in the job or were paid at the same rate as the other incumbents of the job.

Among workers employed in establishments paying more than one rate for a job, the pattern was again different for white- and blue-collar occupations. Average wage spreads

between highest and lowest paid workers in the white-collar occupations studied ranged from 17 percent for industrial nurses to 42 percent for intermediate electronics technicians. For the 12 skilled maintenance occupations, average wage spreads for all but two were between 7 and 14 percent. Among unskilled plant occupations, ranges were as small as 13 percent for power-truck operators (other than forklift) and as large as 45 percent for lower level guards.

These differing structures reflect differences in pay systems in U.S. industry. Employers commonly adopt formal pay systems, establishing either a single rate for a job classification or a range of rates in which the minimum, maximum, or both of these rates are specified. Pay of individual workers within a specified range depends on performance (merit), length of service, or both. In the absence of a formal pay system, rates in a given job are determined largely by the employer's appraisal of individual workers. Data are not available from the Area Wage Survey program to distinguish between the effects of formal and informal systems.

Pay spreads among workers in the same job and establishment cannot be determined from the pay variations typically published in occupational wage survey reports. Because of differences in pay levels among employers, industries, and localities, these reports show considerably wider ranges of pay rates in a job than would be expected in a single establishment. It is not unusual for BLS area wage surveys covering a variety of industries to find the highest paid worker in an occupation earning twice as much as the lowest

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paid. In nationwide studies, the highest paid worker may earn more than three times as much as the lowest paid. In contrast, the average pay spreads found in this study ranged from 7 to 45 percent.

Information on pay spreads within establishments can be used for a variety of purposes. For example, it is important to those establishing and administering rate-range pay plans. It is also useful in analyzing wage structures in that it helps to explain overall patterns of pay differentials. In addition, it indicates the extent to which pay may be increased without promotion to another job.

### Computing wage differences

Information for this review of pay spreads within the same job and establishment comes from data collected in more than 11,200 establishments located in 70 metropolitan areas throughout the country.<sup>1</sup> For each of 68 BLS occupational classifications surveyed in 1983,<sup>2</sup> the percent by which the highest rate paid exceeded the lowest rate was calculated where an establishment employed two workers or more at different rates. These percentage differences were averaged, after weighting the pay spread for each establishment by the number of workers it employed in the occupation.<sup>3</sup> Establishments paying the same rate to all workers, as well as those with single incumbents in a job, were excluded from the calculations.

A standard set of occupational descriptions was used in all establishments. In some cases, a single BLS occupation or level covered more than one company job. For example, the wide average pay spread shown in table 1 for level I accounting clerks in unionized establishments is partly explained by the existence in some transportation and utilities companies of two pay grades which fit the BLS description for this occupational classification. In other cases, the company job was barely broad enough to fit within the BLS description. This narrow span of duties could restrict any related pay range.

This study of wage rate dispersion is limited to spreads between highest and lowest rates *actually paid* to incumbents by individual employers. It does not measure the full spread of formal rate ranges.<sup>4</sup> This topic, however, was covered in a recent study by Martin Personick. In a review of formal pay systems for white-collar workers in medium and large firms, Personick noted that “. . . differences between the highest and lowest rates actually paid are generally much smaller than differences between the maximum and minimum rates specified for a range.”<sup>5</sup> Personick also found that workers tended to be clustered in the lower half of the rate range.

### Single and multiple pay rates

In establishments with two workers or more in a job, the relative importance of single and multiple pay rates varied by occupational group. (See table 1.) The generally lower incidence of blue-collar employment in multiple-rate estab-

lishments partly mirrors the greater extent of collective bargaining among these workers than among white-collar workers. Negotiated pay structures are more likely to contain single rates than are non-negotiated structures. As explained by David Belcher: “Unions often favor the single-rate principle because it eliminates judgment-based differentials in individual pay.”<sup>6</sup>

Among plant jobs, guards and janitorial workers were most likely to be in multiple-rate establishments, partly because many of the survey’s guards and janitors worked in protective or janitorial service firms. In these firms, almost all workers are employed in the same occupation. While most may be paid at or near the minimum wage, at least some receive higher pay in recognition of length of service or proficiency in the job. Often, higher rates are also required because of a customer’s special needs.

About 10 percent of the workers whose wages were surveyed in the 1983 Area Wage Survey program were the only incumbents in their job. This percentage, however, varied considerably by job classification—from 1 percent for millwrights to 83 percent for switchboard operator-receptionists.

### Differences in pay

Among establishments paying multiple rates to workers in the same job, average spreads between highest and lowest rates varied by occupation, industry, and establishment size category. These factors and their relationship to union status are considered in turn.<sup>7</sup>

**Occupation.** White-collar jobs, which commonly include a broad range of duties, provide an opportunity to demonstrate superior performance. Where promotion to a higher grade is inappropriate, a range of pay rates can be used to reward superior performance within a job or pay grade. Conversely, it has been argued that the working environment of employees in certain blue-collar jobs—for example, those in assembly line operations—offers limited opportunity to deviate from established performance standards;<sup>8</sup> under such conditions, a single rate or narrow rate-range system may be more appropriate. Furthermore, single rates or narrow rate ranges are generally favored by labor unions, whose current strength is in the blue-collar area.

These differences between white- and blue-collar jobs are reflected in the results of this study. In establishments with more than one rate for a job, the percent by which the highest rate exceeded the lowest was generally larger in white- than blue-collar jobs. The roughly 30 percent average wage spread in white-collar jobs was more than twice as wide as the average spread in skilled blue-collar jobs, but only moderately wider than the average for material movement and custodial jobs. Among the blue-collar occupations studied, the potential for performance variation is smallest in the skilled maintenance jobs, which are restricted by definition to workers who have achieved journeyman status. Also,

skilled maintenance workers, on average, are more concentrated in unionized establishments than are material movement and custodial workers.

Among the individual white-collar jobs studied, mid-level electronics technicians had the widest average wage spread (42 percent), followed by entry-level electronics technicians (39 percent). These spreads are affected by the fairly broad range of duties and responsibilities in the BLS job descriptions for the various levels of electronics technicians. Nurses and switchboard operator-receptionists—jobs that often have few incumbents within an establishment—had the narrowest

average wage spreads in the white-collar group, 17 percent for the former and 19 percent for the latter. Excluding these extremes, spreads ranged from 22 to 35 percent among office clerical job classifications and from 24 to 33 percent among the professional and technical jobs.

Except for guards and janitors, average wage spreads for blue-collar jobs ranged from 7 percent for maintenance pipefitters and millwrights to 30 percent for material handling laborers. Maintenance trades helper—a more broadly defined job—was the only maintenance, toolroom, or powerplant occupation studied with a spread of more than 20

**Table 1. Workers in establishments paying one rate or more to incumbents in a job, and intra-occupational pay spreads within establishments with multiple rates, all metropolitan areas, 1983**

Occupation and level	Percent of workers in establishments with—			Percent by which highest paid worker exceeded lowest paid worker in same job and establishment <sup>1</sup>									
	One worker in job	Two workers or more in job		All establishments				Mean (average)					
		All at same rate	Paid at two rates or more	Mean (average)	First quartile <sup>2</sup>	Second quartile <sup>2</sup> (median)	Third quartile <sup>2</sup>	Manufacturing establishments	Nonmanufacturing establishments	Union establishments	Non-union establishments	Establishments with under 500 workers	Establishments with 500 workers or more
<b>Office clerical</b>													
Stenographers I . . . . .	8	6	86	35	12	31	51	35	35	37	34	15	38
Stenographers II . . . . .	5	5	90	34	15	28	47	30	37	30	35	28	35
Transcribing-machine typists . . . . .	17	8	78	27	14	25	36	21	28	—	27	23	32
Typists I . . . . .	10	5	85	32	18	29	44	23	34	39	31	28	36
Typists II . . . . .	8	5	87	35	18	34	50	25	39	41	34	32	37
File clerks I . . . . .	15	6	79	22	11	20	30	19	22	—	22	19	27
File clerks II . . . . .	17	4	78	28	12	25	40	21	29	—	29	19	34
File clerks III . . . . .	19	3	79	22	11	19	31	—	24	—	22	—	25
Messengers . . . . .	16	7	77	29	12	26	39	35	28	36	29	24	31
Switchboard operators . . . . .	28	15	57	22	9	16	31	19	22	15	22	17	24
Switchboard operator-receptionists . . . . .	83	1	15	19	10	17	27	18	20	—	19	19	20
Order clerks I . . . . .	9	9	82	29	13	23	40	21	33	—	29	28	30
Order clerks II . . . . .	11	6	84	30	15	24	41	25	34	—	30	31	27
Accounting clerks I . . . . .	15	6	79	30	13	24	38	21	32	60	27	22	37
Accounting clerks II . . . . .	12	7	81	29	13	24	39	24	31	31	28	21	38
Accounting clerks III . . . . .	16	6	78	27	11	24	38	24	28	32	26	20	33
Accounting clerks IV . . . . .	20	7	73	29	12	25	39	26	30	19	31	29	29
Payroll clerks . . . . .	47	5	47	23	11	19	32	22	24	20	24	22	24
Key entry operators I . . . . .	9	7	84	31	14	25	42	22	33	35	30	27	35
Key entry operators II . . . . .	11	6	83	27	13	25	37	21	29	25	27	22	29
<b>Professional and technical</b>													
Computer systems analysts (business) I . . . . .	7	1	92	32	20	30	41	31	32	—	31	28	33
Computer systems analysts (business) II . . . . .	6	1	93	32	20	31	43	30	32	33	32	24	34
Computer systems analysts (business) III . . . . .	7	1	92	30	18	30	40	30	29	27	30	22	31
Computer programmers (business) I . . . . .	17	4	79	32	15	29	49	21	34	—	31	21	35
Computer programmers (business) II . . . . .	12	3	86	32	17	29	43	25	34	38	30	24	35
Computer programmers (business) III . . . . .	29	2	69	31	18	29	41	27	32	—	30	23	33
Computer operators I . . . . .	21	6	74	28	11	21	39	28	29	—	25	18	34
Computer operators II . . . . .	18	6	76	25	11	22	35	22	27	29	25	20	28
Computer operators III . . . . .	16	5	80	25	10	23	35	24	26	29	24	16	28
Peripheral equipment operators . . . . .	6	5	89	31	16	28	41	—	31	—	31	—	32
Computer data librarians . . . . .	32	4	64	24	11	21	33	15	26	—	24	—	24
Drafters I . . . . .	22	11	67	30	10	24	58	—	—	—	32	—	14
Drafters II . . . . .	19	7	74	27	12	22	34	22	32	—	25	25	29
Drafters III . . . . .	13	5	81	25	12	21	36	21	32	35	25	22	29
Drafters IV . . . . .	10	4	86	24	11	22	30	21	30	25	24	21	27
Drafters V . . . . .	6	4	90	29	15	26	41	27	31	15	30	27	30
Electronics technicians I . . . . .	4	6	90	39	20	31	60	43	31	—	40	28	42
Electronics technicians II . . . . .	2	10	87	42	20	35	58	33	48	53	35	27	46
Electronics technicians III . . . . .	2	18	80	33	16	27	44	32	33	—	35	36	31
Registered industrial nurses . . . . .	41	6	53	17	7	16	23	16	20	16	17	—	17

**Table 1. Continued—Workers in establishments paying one rate or more to incumbents in a job, and intra-occupational pay spreads within establishments with multiple rates, all metropolitan areas, 1983**

Occupation and level	Percent of workers in establishments with—			Percent by which highest paid worker exceeded lowest paid worker in same job and establishment <sup>1</sup>									
	One worker in job	Two workers or more in job		All establishments				Mean (average)					
		All at same rate	Paid at two or more rates	Mean (average)	First quartile <sup>2</sup>	Second quartile <sup>2</sup> (median)	Third quartile <sup>2</sup>	Manufacturing establishments	Nonmanufacturing establishments	Union establishments	Non-union establishments	Establishments with under 500 workers	Establishments with 500 workers or more
<b>Maintenance, toolroom, and powerplant</b>													
Maintenance carpenters . . . . .	17	43	40	11	3	7	14	10	12	8	16	—	10
Maintenance electricians . . . . .	6	51	42	10	3	7	13	10	13	9	14	—	10
Maintenance painters . . . . .	18	47	35	14	3	8	15	13	15	10	19	—	12
Maintenance machinists . . . . .	5	63	32	10	3	8	13	11	—	9	13	9	11
Maintenance mechanics (machinery) . . . . .	3	56	41	11	4	7	13	10	17	8	16	13	10
Maintenance pipefitters . . . . .	2	58	40	7	3	3	10	7	—	7	—	—	7
Millwrights . . . . .	1	48	51	7	3	4	12	7	—	7	—	—	7
Motor vehicle mechanics . . . . .	6	51	42	14	4	10	20	11	16	10	21	15	14
Maintenance trades helpers . . . . .	12	35	53	21	5	14	34	18	26	22	19	—	24
Machine-tool operators (toolroom) . . . . .	6	24	70	9	3	4	7	8	—	8	13	—	8
Tool and die makers . . . . .	3	36	61	10	2	4	14	10	—	6	19	17	8
Stationary engineers . . . . .	6	53	41	17	3	7	18	8	31	10	30	—	18
<b>Material movement and custodial</b>													
Truckdrivers, light truck . . . . .	19	35	46	26	10	21	35	33	24	—	24	24	33
Truckdrivers, medium truck . . . . .	6	58	36	25	7	21	36	25	25	23	26	24	27
Truckdrivers, heavy truck . . . . .	4	60	37	26	6	22	41	19	29	17	30	26	—
Truckdrivers, tractor-trailer . . . . .	3	68	29	14	3	8	19	14	14	10	19	15	12
Shippers . . . . .	26	36	39	19	5	14	26	16	24	8	25	17	22
Receivers . . . . .	28	26	46	29	7	17	50	19	33	22	32	23	34
Shippers and receivers . . . . .	28	30	42	24	6	19	35	21	28	14	28	20	32
Warehousemen . . . . .	4	44	52	28	6	21	40	26	28	20	33	28	28
Order fillers . . . . .	2	44	54	24	5	17	36	22	25	14	31	24	24
Shipping packers . . . . .	4	44	51	24	7	19	37	21	31	18	29	27	20
Material handling laborers . . . . .	4	49	47	30	6	22	49	20	38	18	37	28	32
Forklift operators . . . . .	2	61	37	15	2	7	20	11	24	10	21	19	12
Power-truck operators (other than forklift) . . . . .	2	44	54	13	1	5	16	8	—	12	—	—	12
Guards I . . . . .	3	12	85	45	19	40	64	20	46	38	48	42	52
Guards II . . . . .	2	13	85	38	14	33	58	26	41	34	38	34	40
Janitors, porters, and cleaners . . . . .	8	19	73	42	15	35	65	19	46	45	42	41	45

<sup>1</sup>Limited to establishments reporting two rates or more paid to incumbents in a job.

<sup>2</sup>The quartiles, which designate position, are calculated from arrays of workers by size of establishment pay spread. Half the observations are more and half less than the second quartile (median), one-fourth of the observations are below the first quartile, and another

fourth are above the third quartile. Thus, the difference between the first and third quartiles indicates the range of establishment pay spreads applying to the middle half of workers in an occupational classification.

NOTE: Dashes indicate that data do not meet publication criteria.

percent. Conversely, 12 of 16 material movement and custodial job classifications had spreads exceeding 20 percent.

The 45 percent average spread for lower level guards was the broadest among all of the jobs studied; janitors followed closely with an average wage spread of 42 percent. Many workers in these two classifications had earnings at or near the Federal minimum wage and, as with other relatively low paid workers, a modest dollar spread in their pay produced a relatively large percentage spread. An establishment, for example, with one janitor at \$3.35 an hour and another at \$4.35 records a 30-percent spread; the same dollar difference between two electricians who earn \$13 and \$14 an hour produces an 8-percent spread. More importantly, perhaps, was the employment of many of the survey's guards

and janitors in protective or janitorial service firms. As noted, these firms often pay workers different rates based on the specific contract under which the service is performed.

Eleven of the white-collar occupations in the study are divided into two work levels or more, based on duties and responsibilities. In general, the average percentage spreads of wages were similar for all work levels of an occupation. Major exceptions were file clerks (a 28-percent spread in level II compared with 22 percent in levels I and III) and drafters (24 percent in level IV and 30 percent in level I). In the blue-collar area, average spreads were similar for forklift operators and other power-truck operators. Tractor-trailer drivers, however, had considerably narrower spreads

(14 percent) than the three other truckdriver categories (25 to 26 percent). The two levels of guards surveyed had a 7-percentage point spread.

*Industry.* Wage spreads between the highest and lowest paid worker in a job were generally narrower in manufacturing than in nonmanufacturing industries. This pattern applied to both white- and blue-collar occupations. Among the 59 occupations for which comparisons between the manufacturing and nonmanufacturing sectors could be made,<sup>9</sup> the average spread in manufacturing was narrower in 52 jobs, of equal size in three, and wider in four. For three jobs—stationary engineer, lower level guard, and janitor—the average spread was 23 to 27 percentage points narrower in manufacturing.

Among blue-collar jobs, the generally narrower average pay spreads in manufacturing industries are partly traced to the greater degree of unionization in this industrial sector. For 1982—the most recent year for which unionization data are available from the Area Wage Survey program—63 percent of the manufacturing production workers were in unionized establishments,<sup>10</sup> compared with 43 percent of the blue-collar workers in nonmanufacturing industries. Table 1 shows, for all industries combined, that blue-collar jobs generally had narrower average spreads in unionized establishments. Maintenance trades helpers and janitors—jobs with relatively wide average wage spreads for the maintenance and custodial occupational categories—were the only exceptions to this pattern.

In 33 of the 37 white-collar comparisons that could be made between industry sectors, average pay spreads were narrower in manufacturing, but unionization is not a major explanation. Unionized establishments in the 1982 Area Wage Survey program employed 9 percent of the nonsupervisory office clerical workers in manufacturing and 15 percent in nonmanufacturing. Considering this limited degree of unionization, collective bargaining could not produce significant white-collar pay structure differences between these two industry sectors. Moreover, considering all industries combined, average pay spreads were *wider* in union than in nonunion establishments in 15 of 23 white-collar occupational classifications that were compared. Differences in the nature of the job and prevailing pay systems are reflected in the wider rate ranges that unions have negotiated for white-collar than for blue-collar workers.

*Establishment size.* The average wage spread was wider in establishments employing 500 workers or more than in smaller units in all but three of the white-collar classifications compared—order clerk II, accounting clerk IV, and electronics technician III. This may result from the relatively greater use of formal rate-range pay systems in large establishments. It may, however, also reflect increased diversity in pay because of greater numbers of job incumbents

in the larger establishments; that is, the more workers an employer has in a job, the greater the likelihood of having incumbents at or near the bottom and top of the rate range for the job.<sup>11</sup>

Among blue-collar occupations, the pattern was mixed. Few establishments with fewer than 500 workers paid more than one rate, or had more than one employee, in maintenance, toolroom, and powerplant occupations. Consequently, establishment-size comparisons were possible in only 5 of 12 of these skilled worker jobs. In 4 of the 5 jobs, average pay spreads were wider in the smaller establishments. This result—which is contrary to the general findings for white-collar occupations—may reflect a greater incidence of skilled maintenance worker unionization in the larger establishments. Among the less skilled material movement and custodial jobs, however, average wage spreads generally were wider in the larger establishments, although the reverse occurred in 3 of the 14 jobs studied (tractor-trailer truckdriver, shipping packer, and forklift operator).

*Other factors.* Data collected in the Area Wage Survey program permit analysis of variations in pay spreads by type of occupation, industry, union status, and size of employer. Several other factors, however, may influence the spread of pay rates within individual occupations in an establishment. Although this study cannot measure the extent of their influence, some of these factors can be noted. For example, a company in a low wage industry, and with a formal rate-range pay system, may be located in a high wage area. As a result, hiring rates may be near the top of the range to attract employees,<sup>12</sup> forcing a narrow spread in rates paid. The rate of worker turnover and the degree of difficulty in recruiting new employees also affect the location of hiring rates within established rate-range pay systems.

### Variations among establishments

Averages of establishment pay spreads for individual job classifications conceal significant variations among the establishments. Table 1 sheds some light on establishment variations by presenting the range of pay spreads for the middle half of the employees in multiple rate situations. (The boundaries of this range are defined by the first and third quartiles.) For example, the middle half of the stenographers I were employed in establishments with pay spreads between 12 and 51 percent.

For white-collar occupational classifications, considerable variation is evident among the pay spreads within individual establishments. In all but four classifications, the difference between the first and third quartiles—the interquartile range—was 20 percentage points or more. The narrowest interquartile range applied to registered industrial nurses (16 percentage points) and the widest to drafters I (48 percentage points). Among material movement and custodial jobs, establishment variations in wage spreads were

similar to those in white-collar classifications, but the variations were not as pronounced among skilled maintenance, toolroom, and powerplant jobs.

For white- and blue-collar jobs combined, variations among establishments tended to be greater in occupational classifications with relatively wide average wage spreads. To

account for this relationship, the interquartile range for each classification was standardized by dividing it by the median pay spread for that job, producing an index of relative dispersion. The indexes—which are not shown in table 1 but can be calculated from quartile data presented—were generally higher for blue- than for white-collar jobs. □

—FOOTNOTES—

<sup>1</sup> These are establishments surveyed in the Bureau's Area Wage Survey program. Data are weighted to represent all Standard Metropolitan Statistical Areas of the country, excluding Alaska and Hawaii.

Establishments employing 50 workers or more are surveyed in six broad industry divisions: manufacturing; transportation, communication, and other public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and selected services. In the 13 largest areas, the minimum establishment size is 100 in manufacturing; transportation, communication, and other public utilities; and retail trade. Major exclusions from the survey are construction, extractive industries, and government.

<sup>2</sup> Descriptions for these occupations appear in the Bureau's Area Wage Survey reports. See, for example, the July 1984 report for Hartford, CT (Bulletin 3025-35), pp. 16-28.

<sup>3</sup> The Area Wage Survey program samples both establishments and metropolitan areas. Therefore, pay spreads in each surveyed establishment were also weighted by establishment and area sampling weights to provide estimates for all workers in metropolitan area establishments within the scope of the program.

<sup>4</sup> For a discussion of the prevalence of formal pay plans among office and plant workers, see John Howell Cox, "Time and incentive pay practices in urban areas," *Monthly Labor Review*, December 1971, pp. 53-56.

<sup>5</sup> See Martin E. Personick, "White-collar pay determination under range-of-rate systems," *Monthly Labor Review*, December 1984, pp. 25-30.

<sup>6</sup> David W. Belcher, *Compensation Administration* (Englewood Cliffs, NJ, Prentice-Hall, Inc., 1974), p. 276. See also Richard B. Freeman and James L. Medoff, *What Do Unions Do?* (New York, Basic Books, Inc., 1984), pp. 79-82.

<sup>7</sup> Geographic variations in pay spreads were also examined, but no consistent patterns were observed.

<sup>8</sup> See Belcher, *Compensation Administration*, p. 276.

<sup>9</sup> The analysis excluded instances where comparisons for an occupation were possible in fewer than 50 establishments.

<sup>10</sup> That is, establishments in which a majority of the production workers were covered by labor-management agreements.

<sup>11</sup> For office clerical, professional-technical, and material movement-custodial jobs, there was a positive correlation between the average number of workers per establishment in an occupational classification and the average percentage pay spread for that classification. For maintenance, toolroom, and powerplant jobs—with only 12 observations—the correlation was negative.

<sup>12</sup> See Belcher, *Compensation Administration*, p. 231.