

# A new look at occupational wages within individual establishments

*Analysis of wage structures shows that pay differences within individual establishments are generally smaller than those of the surveywide average*

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Reports containing results of occupational wage surveys generally emphasize average earnings of individual jobs. While these types of data are useful to those interested in levels of pay and overall relationships among occupational averages, they do not show occupational pay differentials within individual establishments. For example, according to a Bureau of Labor Statistics report on pay levels in metropolitan areas, janitors averaged \$4.87 an hour in July 1980 and tractor-trailer truckdrivers averaged \$9.63, or nearly twice as much.<sup>1</sup> But, the average pay differential within individual establishments having both janitors and tractor-trailer drivers was only about 30 percent.

Data on internal pay alignments are of special concern to wage and salary administrators, labor-management contract negotiators, and those who develop or analyze internal wage structures. Although not necessarily to the degree indicated by the comparison of janitors and truckdrivers, pay setters may find a conflict between the twin objectives of gearing occupational pay rates to local labor market conditions and, at the same time, maintaining appropriate internal pay structures. Reconciliation of these conflicting objectives can be a major issue in wage and salary administration.<sup>2</sup> To satisfy the need for information on internal pay alignments, the Bureau of Labor Statistics now reports average occupational pay relationships within establishments in its *Area Wage Survey* publications.<sup>3</sup> This article

presents an analysis of pay relatives for all metropolitan areas combined, and summarizes the within establishment differences among industry divisions, regions, and establishment size groups.<sup>4</sup>

## Method of analysis

A simple numerical example may sharpen the distinction between the two approaches to analyzing occupational wage relationships. The following tabulation uses hypothetical data to illustrate pay relationships of surveywide averages versus those within establishments:

	Establishment			All
	A	B	C	establishments
Surveywide:				
Job 1				
Number of workers . . .	5	1	3	9
Hourly pay . . . . .	\$4	\$7	\$6	\$5
Job 2				
Number of workers . . .	1	2	—	3
Hourly pay . . . . .	\$5	\$11	—	\$9
Within establishments:				
Number of workers . . .	6	3	—	9
Pay relative . . . . .	125	157	—	136

The traditional approach—comparison of published survey averages for individual jobs—is influenced by the numbers of workers in these jobs in establishments having different pay levels, as well as by differences in occupational pay levels. Using this approach, the survey average pay in all establishments for job 2 (\$9) exceeds that for job 1 (\$5) by 80 percent. However, when

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the focus shifts to the pay differentials *within* individual establishments, a 36-percent differential results. The differential is computed by averaging pay relatives (average earnings for job 2 as a percent of earnings for job 1) of all establishments, using combined employments of the two jobs as weights. The difference between within establishment and surveywide relationships is affected if an establishment has only one of the two jobs being compared. (Note that establishment C with only one of the jobs is not used in the computation.)

In this tabulation, the average pay difference within establishments (*intra-establishment* differential) is less than the difference between the survey averages for the two jobs (*inter-establishment* differential). However, this is not always the case. The inter-establishment differential would be smaller than the intra-establishment differential if a high-paying firm had a concentration of workers in a low-paying job, or if a low-paying firm had a concentration of workers in a high-paying job.

#### **Intra- versus inter-establishment relationships**

Both intra- and inter-establishment pay relationships are shown in table 1. These comprehensive matrices show average pay relationships between pairs of jobs. For example, reading across the row for tractor-trailer drivers, the pay relative of 129 in the janitors column means that the average pay advantage of the drivers over janitors in establishments with both these occupations was 29 percent. The figure in parenthesis, 198, means that the survey average for tractor-trailer drivers in all metropolitan areas was almost double that of janitors when data from all establishments (having either one or both of the jobs) were used in the calculation. Similarly, the data show intra- and inter-establishment pay advantages of tractor-trailer drivers over class B guards of 31 and 132 percent, respectively.<sup>5</sup> These differences between intra- and inter-establishment pay relatives are extreme cases. The comparisons were much closer for most occupational pairings.

A seeming inconsistency in the relationships among some occupations must be explained. For example, intra-establishment differences show a pay advantage of 5 percent for tractor-trailer drivers and of 7 percent for drivers of heavy trucks, when drivers of light trucks serve as a base. One might conclude that within individual establishments, drivers of heavy trucks earn more than drivers of tractor-trailers. However, direct comparisons between these two jobs show a 1-percent advantage in favor of tractor-trailer drivers. The incongruity is eliminated when it is recognized that establishments employing light-truck and tractor-trailer drivers are not necessarily the ones that employ both light- and heavy-truck drivers or both tractor-trailer and heavy-truck

drivers. Each comparison is based on a different set of observations.

Intra-establishment differentials were generally smaller, and substantially so in a number of instances, than inter-establishment differences for the same occupations. This is revealed most strikingly in the comparisons between material movement and custodial occupations, where 90 percent of the inter-establishment differentials exceeded intra-establishment differences. For example, overall survey averages show that material handling laborers earned 71 percent more than class B guards, while the average intra-establishment advantage for these laborers was only 4 percent. These findings can be related to the industrial incidence of the two jobs: many material handling laborers are employed in highly paid and heavily unionized industries; conversely, many guards are employed by protection agencies paying near the Federal minimum wage. This employment pattern tends to widen the difference between surveywide averages but has no effect on occupational pay differentials within individual establishments.

Similar findings appear when the analysis is limited to various levels or classifications of the same occupation. Based on inter-establishment comparisons, drivers of tractor-trailer trucks averaged more than drivers of other trucks, up to 50 percent more than drivers of light trucks. However, when the earnings of truck-drivers within the same establishment are compared, the average differential is lowered to a maximum of 5 percent.

Occupational earnings differentials—whether measured by inter- or intra-establishment differentials—were lower among maintenance, toolroom, and powerplant jobs than any other occupational group studied. The relative homogeneity among these occupations can be explained by several factors. First, almost all of the jobs studied were at the journeyman level of skill, and the workers often were under single-rate pay systems. Second, more than 80 percent of the workers were employed in a single industry division—manufacturing. Finally, these occupations are among the most heavily unionized of the occupations studied. As will be shown later, the findings of this study generally are consistent with the idea that inter-occupational wage differentials are narrower in the union sector.

Except for higher paid tool-and-die makers and lower paid boiler tenders and maintenance helpers, pay rates within establishments were almost identical for all the maintenance, toolroom, and powerplant jobs. Nevertheless, overall survey averages were not reliable indicators of intra-establishment relationships. For example, the overall average pay of millwrights was 4 percent above that for tool-and-die makers, while the intra-establishment pay relationship was reversed—millwrights averaged 4 percent less than tool-and-die makers. This type

**Table 1. Intra- and inter-establishment pay relationships between occupations, all metropolitan areas, July 1980**

[Inter-establishment pay relative in parenthesis]

Occupations for which earnings are compared	Occupations for which average earnings equals 100								
	Truckdrivers				Power-truck operators (other than forklift)	Forklift operators	Receivers	Shippers and receivers	Warehouse workers
	Tractor-trailer	Heavy truck	Medium truck	Light truck					
<b>Material movement and custodial</b>									
Truckdrivers, tractor-trailer	100	101 (116)	102 (115)	105 (156)	106 (127)	108 (124)	108 (144)	109 (147)	109 (135)
Truckdrivers, heavy truck	99 (86)	100	106 (100)	107 (135)	106 (110)	107 (107)	114 (124)	111 (127)	111 (117)
Truckdrivers, medium truck	98 (87)	94 (100)	100	106 (135)	102 (110)	105 (107)	103 (125)	104 (128)	105 (117)
Truckdrivers, light truck	95 (64)	94 (74)	95 (74)	100	98 (81)	102 (79)	97 (92)	98 (94)	103 (87)
Power-truck operators (other than forklift)	94 (79)	94 (91)	98 (91)	102 (123)	100	100 (97)	99 (113)	102 (116)	102 (107)
Forklift operators	93 (81)	93 (94)	96 (93)	98 (126)	100 (103)	100	99 (116)	99 (119)	100 (109)
Receivers	92 (69)	88 (81)	97 (80)	104 (108)	101 (88)	101 (86)	100	96 (102)	102 (94)
Shippers and receivers	92 (68)	90 (79)	96 (78)	102 (106)	98 (86)	101 (84)	104 (98)	100	102 (92)
Warehouse workers	92 (74)	90 (86)	95 (85)	97 (115)	98 (94)	100 (91)	98 (106)	98 (109)	100
Shippers	91 (70)	90 (81)	99 (81)	105 (110)	103 (89)	103 (87)	101 (101)	101 (104)	104 (95)
Material handling laborers	91 (74)	90 (85)	90 (85)	91 (115)	97 (94)	96 (91)	92 (106)	94 (109)	92 (100)
Order fillers	90 (68)	86 (79)	92 (79)	96 (107)	99 (87)	97 (85)	93 (99)	96 (101)	96 (93)
Guards, class A	84 (63)	92 (73)	87 (72)	99 (98)	96 (80)	96 (78)	98 (90)	101 (92)	94 (85)
Shipping packers	84 (61)	71 (71)	84 (70)	91 (95)	97 (77)	98 (75)	90 (88)	92 (90)	94 (82)
Janitors, porters, and cleaners	77 (51)	72 (59)	78 (58)	82 (79)	92 (64)	90 (63)	86 (73)	86 (75)	84 (69)
Guards, class B	76 (43)	65 (50)	75 (50)	92 (67)	93 (55)	94 (53)	91 (62)	93 (64)	89 (58)
<b>Maintenance, toolroom, and powerplant</b>									
Tool-and-die makers	100	103 (102)	104 (106)	104 (110)	105 (109)	104 (97)	104 (98)	104 (106)	104 (106)
Maintenance electricians	97 (98)	100	100 (104)	101 (108)	101 (107)	101 (96)	102 (97)	103 (105)	103 (105)
Maintenance machinists	96 (95)	100 (96)	100	102 (104)	102 (103)	101 (92)	102 (93)	103 (101)	103 (101)
Stationary engineers	96 (91)	99 (93)	98 (96)	100	100 (99)	100 (89)	101 (89)	101 (97)	101 (97)
Maintenance mechanics (machinery)	96 (92)	99 (94)	98 (97)	100 (101)	100	100 (90)	101 (91)	101 (98)	101 (98)
Maintenance sheet-metal workers	96 (103)	99 (105)	99 (109)	100 (113)	100 (112)	100	100 (101)	100 (109)	100 (109)
Maintenance pipefitters	96 (102)	98 (103)	99 (108)	99 (112)	99 (110)	100 (99)	100	100 (108)	100
Maintenance mechanics (motor vehicles)	96 (94)	97 (95)	97 (99)	99 (103)	99 (102)	100 (91)	100 (92)	100	100
Millwrights	96 (104)	98 (106)	97 (110)	99 (114)	99 (113)	100 (101)	100 (102)	100 (111)	100 (111)
Machine-tool operators (toolroom)	95 (99)	98 (100)	97 (104)	100 (108)	99 (107)	101 (96)	100 (97)	101 (105)	101 (105)
Maintenance carpenters	94 (90)	97 (92)	97 (96)	98 (99)	98 (98)	99 (88)	99 (89)	100 (96)	100 (96)
Maintenance painters	93 (87)	94 (88)	94 (92)	96 (96)	94 (94)	97 (85)	97 (85)	97 (93)	97 (93)
Boiler tenders	90 (79)	92 (80)	91 (83)	90 (86)	93 (85)	94 (77)	95 (77)	95 (84)	95 (84)
Maintenance trades helpers	77 (75)	80 (76)	82 (79)	83 (82)	82 (81)	84 (73)	85 (73)	82 (79)	82 (79)
<b>Professional and technical</b>									
Computer systems analysts (business)			Computer programmers (business)			Computer operators			
Class A	Class B	Class C	Class A	Class B	Class C	Class A	Class B	Class C	
Computer systems analysts, class A	100	119 (116)	141 (134)	129 (124)	149 (147)	175 (177)	162 (161)	190 (196)	220 (227)
Computer systems analysts, class B	84 (86)	100	120 (116)	111 (107)	129 (127)	149 (153)	137 (139)	161 (169)	188 (196)
Computer systems analysts, class C	71 (75)	84 (86)	100	94 (92)	112 (109)	128 (132)	117 (120)	136 (146)	156 (170)
Computer programmers analysts, class A	78 (81)	90 (94)	106 (108)	100	122 (119)	145 (143)	130 (130)	155 (158)	184 (184)
Computer programmers analysts, class B	67 (68)	78 (79)	89 (91)	82 (84)	100	122 (120)	109 (110)	131 (133)	155 (155)
Computer programmers analysts, class C	57 (57)	67 (66)	78 (76)	69 (70)	82 (83)	100	93 (91)	111 (111)	131 (129)
Computer operators, class A	62 (62)	73 (72)	86 (83)	77 (77)	92 (91)	107 (110)	100	121 (121)	141 (141)
Computer operators, class B	53 (51)	62 (59)	74 (69)	64 (63)	76 (75)	90 (90)	83 (82)	100	121 (116)
Computer operators, class C	45 (44)	53 (51)	64 (59)	54 (54)	64 (65)	77 (78)	71 (71)	83 (86)	100
Peripheral equipment operators	47 (48)	57 (55)	68 (64)	59 (59)	68 (70)	76 (84)	72 (77)	83 (93)	93 (108)
Computer data librarians	48 (45)	57 (53)	68 (61)	60 (56)	69 (67)	80 (80)	76 (73)	88 (89)	103 (103)
Electronics technicians, class A	76 (80)	91 (92)	109 (107)	90 (99)	106 (117)	127 (141)	116 (129)	139 (156)	162 (182)
Electronics technicians, class B	65 (70)	77 (81)	91 (94)	75 (87)	89 (103)	104 (124)	113 (113)	127 (137)	142 (159)
Electronics technicians, class C	54 (51)	64 (59)	76 (68)	61 (63)	74 (75)	85 (90)	88 (82)	106 (99)	119 (115)
Registered industrial nurses	65 (67)	74 (78)	87 (90)	79 (83)	92 (99)	108 (119)	97 (108)	115 (132)	130 (153)
<b>Office clerical</b>									
Secretaries			Stenographers			Transcribing-machine typists	Typists		
Class A	Class B	Class C	Class D	Class E	Senior	General	Class A	Class B	
Secretaries, class A	100	116 (109)	132 (119)	146 (133)	153 (144)	143 (123)	160 (133)	157 (165)	162 (149)
Secretaries, class B	86 (91)	100	117 (109)	129 (121)	137 (132)	131 (112)	142 (122)	142 (151)	141 (136)
Secretaries, class C	76 (84)	86 (92)	100	115 (111)	122 (121)	118 (103)	128 (112)	126 (139)	125 (125)
Secretaries, class D	69 (75)	78 (82)	87 (90)	100	113 (109)	111 (92)	120 (100)	116 (125)	118 (112)
Secretaries, class E	65 (69)	73 (76)	82 (83)	88 (92)	100	109 (85)	116 (92)	108 (115)	113 (104)
Stenographers, senior	70 (82)	77 (89)	85 (97)	90 (108)	92 (118)	100	117 (109)	111 (135)	109 (122)
Stenographers, general	63 (75)	71 (82)	78 (89)	83 (100)	86 (108)	86 (92)	100	99 (124)	99 (112)
Transcribing-machine typists	64 (60)	71 (66)	79 (72)	86 (80)	93 (87)	90 (74)	101 (81)	100	103 (90)
Typists, class A	62 (67)	71 (73)	80 (80)	85 (89)	88 (97)	92 (82)	101 (89)	97 (111)	100
Typists, class B	56 (54)	63 (60)	71 (65)	76 (72)	80 (79)	79 (67)	89 (73)	89 (90)	85 (81)

Occupations for which average earnings equals 100							Occupations for which earnings are compared			
Shippers	Material handling laborers	Order fillers	Guards, Class A	Shipping packers	Janitors, porters, and cleaners	Guards, Class B				
							<b>Material movement and custodial</b>			
110 (142)	110 (136)	111 (146)	119 (160)	119 (164)	129 (198)	131 (232)	Truckdrivers, tractor-trailer .....			
111 (123)	112 (117)	116 (126)	108 (138)	141 (142)	139 (171)	154 (200)	Truckdrivers, heavy truck .....			
101 (123)	111 (117)	109 (127)	114 (138)	119 (142)	128 (171)	133 (201)	Truckdrivers, medium truck .....			
95 (91)	110 (87)	104 (94)	101 (102)	110 (105)	121 (127)	109 (149)	Truckdrivers, light truck .....			
97 (112)	103 (107)	101 (115)	104 (126)	103 (129)	108 (156)	108 (183)	Power-truck operators (other than forklift) .....			
97 (115)	104 (110)	103 (118)	104 (129)	102 (133)	111 (160)	106 (187)	Forklift operators .....			
99 (99)	109 (94)	108 (102)	102 (111)	111 (114)	116 (137)	109 (161)	Receivers .....			
99 (96)	107 (92)	105 (99)	99 (108)	109 (111)	116 (134)	107 (157)	Shippers and receivers .....			
96 (105)	108 (100)	104 (108)	107 (118)	106 (121)	119 (146)	112 (171)	Warehouse workers .....			
100	109 (95)	106 (103)	103 (112)	111 (116)	115 (139)	112 (163)	Shippers .....			
91 (105)	100	100 (108)	99 (118)	100 (121)	109 (146)	104 (171)	Material handling laborers .....			
94 (97)	100 (93)	100	106 (109)	101 (112)	112 (135)	105 (159)	Order fillers .....			
98 (89)	101 (85)	95 (92)	100	103 (103)	109 (124)	120 (145)	Guards, class A .....			
90 (87)	100 (83)	99 (89)	97 (97)	100	106 (120)	100 (141)	Shipping packers .....			
87 (72)	91 (69)	89 (74)	92 (81)	95 (83)	100	99 (117)	Janitors, porters, and cleaners .....			
89 (61)	96 (58)	95 (63)	83 (69)	100 (71)	101 (85)	100	Guards, class B .....			
							<b>Maintenance, toolroom, and powerplant</b>			
<b>Millwrights</b>		<b>Machine-tool operators (toolroom)</b>	<b>Maintenance carpenters</b>	<b>Maintenance painters</b>	<b>Boiler tenders</b>	<b>Maintenance trades helpers</b>				
104 (96)	105 (101)	106 (111)	107 (115)	111 (127)	130 (134)	Tool-and-die makers .....				
102 (95)	102 (100)	103 (109)	106 (113)	108 (125)	124 (132)	Maintenance electricians .....				
103 (91)	103 (96)	104 (105)	107 (109)	110 (120)	123 (127)	Maintenance machinists .....				
101 (88)	100 (92)	102 (101)	104 (105)	111 (116)	121 (122)	Stationary engineers .....				
101 (89)	101 (93)	102 (102)	106 (106)	108 (117)	123 (123)	Maintenance mechanics (machinery) .....				
100 (99)	99 (104)	101 (114)	103 (118)	107 (131)	119 (138)	Maintenance sheet-metal workers .....				
100 (98)	100 (103)	101 (113)	103 (117)	106 (129)	117 (136)	Maintenance pipefitters .....				
100 (90)	99 (95)	100 (104)	103 (108)	105 (119)	121 (126)	Maintenance mechanics (motor vehicles) .....				
100	99 (105)	101 (115)	103 (120)	104 (132)	116 (139)	Millwrights .....				
101 (95)	100	101 (109)	103 (113)	106 (125)	118 (132)	Machine-tool operators (toolroom) .....				
99 (87)	99 (92)	100	104 (104)	106 (115)	118 (121)	Maintenance carpenters .....				
97 (84)	97 (88)	97 (96)	100	101 (111)	114 (117)	Maintenance painters .....				
96 (76)	94 (80)	95 (87)	99 (90)	100	111 (105)	Boiler tenders .....				
87 (72)	85 (76)	85 (83)	88 (86)	90 (95)	100	Maintenance trades helpers .....				
							<b>Professional and technical</b>			
<b>Peripheral equipment operators</b>		<b>Computer data librarians</b>	<b>Electronics technicians</b>			<b>Registered industrial nurses</b>				
			<b>Class A</b>	<b>Class B</b>	<b>Class C</b>					
212 (210)	210 (220)	132 (125)	154 (143)	186 (197)	155 (149)	Computer systems analysts, class A .....				
176 (181)	177 (190)	110 (108)	130 (123)	156 (170)	135 (128)	Computer systems analysts, class B .....				
147 (157)	148 (164)	91 (93)	109 (106)	131 (147)	116 (111)	Computer systems analysts, class C .....				
170 (170)	168 (178)	111 (101)	133 (115)	165 (159)	126 (120)	Computer programmers analysts, class A .....				
146 (143)	144 (150)	94 (85)	112 (97)	135 (134)	109 (101)	Computer programmers analysts, class B .....				
132 (119)	126 (125)	79 (71)	96 (81)	118 (111)	93 (84)	Computer programmers analysts, class C .....				
139 (130)	132 (136)	86 (78)	89 (88)	113 (122)	103 (92)	Computer operators, class A .....				
121 (107)	113 (112)	72 (64)	78 (73)	95 (101)	87 (76)	Computer operators, class B .....				
107 (92)	97 (97)	62 (55)	70 (63)	84 (87)	77 (65)	Computer operators, class C .....				
100	96 (105)	68 (60)	69 (68)	80 (94)	82 (71)	Peripheral equipment operators .....				
104 (95)	100	70 (57)	75 (65)	88 (90)	80 (68)	Computer data librarians .....				
148 (168)	143 (176)	100	119 (114)	142 (157)	115 (119)	Electronics technicians, class A .....				
146 (147)	133 (154)	84 (88)	100	122 (138)	104 (104)	Electronics technicians, class B .....				
126 (107)	114 (112)	70 (64)	82 (72)	100	85 (76)	Electronics technicians, class C .....				
122 (141)	125 (148)	87 (84)	96 (96)	118 (132)	100	Registered industrial nurses .....				
							<b>Office clerical</b>			
<b>File clerks</b>			<b>Messengers</b>	<b>Switch-board operators</b>	<b>Switchboard operator-receptionists</b>	<b>Order clerks</b>	<b>Payroll clerks</b>	<b>Key entry operators</b>		
<b>Class A</b>	<b>Class B</b>	<b>Class C</b>				<b>Class A</b>	<b>Class B</b>	<b>Class A</b>	<b>Class B</b>	
152 (147)	182 (188)	203 (214)	190 (187)	149 (166)	152 (171)	124 (122)	149 (160)	136 (139)	143 (139)	160 (165)
137 (135)	158 (172)	176 (195)	167 (171)	135 (152)	137 (156)	110 (112)	135 (146)	121 (127)	128 (127)	143 (151)
123 (124)	141 (158)	159 (180)	149 (157)	120 (139)	125 (143)	100 (103)	120 (134)	108 (117)	113 (117)	129 (139)
117 (111)	131 (142)	144 (161)	139 (141)	113 (125)	115 (129)	92 (92)	109 (120)	101 (105)	105 (105)	121 (125)
108 (102)	122 (131)	135 (148)	134 (130)	108 (115)	108 (119)	89 (85)	109 (111)	97 (96)	99 (97)	112 (115)
103 (120)	122 (154)	142 (175)	129 (152)	103 (135)	111 (139)	92 (100)	101 (130)	96 (113)	100 (114)	114 (135)
95 (111)	108 (141)	122 (160)	116 (140)	96 (124)	102 (128)	82 (92)	96 (120)	88 (104)	92 (105)	102 (124)
101 (89)	114 (114)	126 (129)	121 (113)	98 (100)	102 (103)	77 (74)	101 (96)	87 (84)	94 (84)	104 (100)
99 (99)	114 (126)	127 (143)	121 (125)	97 (111)	101 (114)	82 (82)	97 (107)	87 (93)	92 (93)	104 (111)
87 (80)	100 (103)	111 (116)	106 (102)	88 (90)	91 (93)	74 (67)	89 (87)	79 (76)	81 (76)	92 (90)
										Secretaries, class A .....
										Secretaries, class B .....
										Secretaries, class C .....
										Secretaries, class D .....
										Secretaries, class E .....
										Stenographers, senior .....
										Stenographers, general .....
										Transcribing-machine typists .....
										Typists, class A .....
										Typists, class B .....

**Table 1. Continued—Intra- and inter-establishment pay relationships between occupations, all metropolitan areas, July 1980**

(Inter-establishment pay relative in parenthesis)

Occupations for which earnings are compared	Occupations for which average earnings equals 100									
	Secretaries					Stenographers		Transcribing-machine typists	Typists	
	Class A	Class B	Class C	Class D	Class E	Senior	General		Class A	Class B
<b>Office clerical</b>										
File clerks, class A . . . . .	66 (68)	73 (74)	81 (81)	85 (90)	92 (98)	97 (83)	105 (90)	99 (112)	101 (101)	115 (125)
File clerks, class B . . . . .	55 (53)	63 (58)	71 (63)	76 (70)	82 (76)	82 (65)	92 (71)	87 (88)	88 (79)	100 (97)
File clerks, class C . . . . .	49 (47)	57 (51)	63 (56)	69 (62)	74 (67)	70 (57)	82 (62)	80 (77)	78 (70)	90 (86)
Messengers . . . . .	53 (54)	60 (59)	67 (64)	72 (71)	75 (77)	77 (66)	87 (71)	82 (89)	83 (80)	95 (98)
Switchboard operators . . . . .	67 (60)	74 (66)	83 (72)	89 (80)	93 (87)	97 (74)	104 (80)	102 (100)	103 (90)	114 (111)
Switchboard operator-receptionists . . . . .	66 (59)	73 (64)	80 (70)	87 (78)	92 (84)	90 (72)	98 (78)	98 (97)	99 (87)	110 (107)
Order clerks, class A . . . . .	81 (82)	91 (90)	100 (97)	109 (109)	113 (118)	109 (100)	123 (109)	129 (135)	123 (122)	135 (150)
Order clerks, class B . . . . .	67 (63)	74 (69)	84 (75)	92 (83)	92 (90)	99 (77)	105 (83)	99 (104)	103 (93)	112 (115)
Payroll clerks . . . . .	74 (72)	83 (79)	93 (86)	99 (96)	103 (104)	104 (88)	114 (96)	115 (119)	115 (107)	126 (132)
Key entry operators, class A . . . . .	70 (72)	78 (79)	88 (85)	95 (95)	101 (103)	100 (88)	109 (96)	107 (119)	108 (107)	124 (132)
Key entry operators, class B . . . . .	62 (60)	70 (66)	77 (72)	83 (80)	89 (87)	88 (74)	98 (81)	96 (100)	96 (90)	109 (111)

NOTE: See page 23 for a description of these pay relationships and method of computation.

of leadership reversal occurred in about a fifth of the observations.

Inter-establishment pay differences for the professional and technical group also were often poor indicators of intra-establishment pay differentials. Although a tenth of the comparisons between these two measures yielded identical results, differences were 10 points or more in almost a fourth of the observations.

The office clerical group—with five classes of secretaries, three classes of file clerks, and two classes each of stenographers, typists, order clerks, and key entry operators—provides an opportunity to examine wage relationships among workers in the same occupation, but with differing amounts of responsibility. For example, the five classes of secretaries are defined according to the secretary's responsibility and supervisor's position in the organization.<sup>6</sup> Within establishments, each level of secretary provided an average pay gain of from 13 to 17 percent; consequently, the highest level—secretary to board chairman or company president of a medium size firm—averaged 53 percent more than the lowest level—a secretary to a staff specialist or supervisor of a small unit.

In all of the comparisons among the secretaries, pay differentials within establishments exceeded those between surveywide averages. This relationship was also found among other occupations, mainly in the white-collar field. Intra-establishment differences were larger than inter-establishment differences in about two-fifths of the professional-technical and a fourth of the office clerical comparisons. In contrast, this pattern occurred in only 8 percent of both the material movement-custodial and maintenance-toolroom-powerplant comparisons.

As noted, average occupational pay differentials within establishments will exceed those between published averages where high-paying firms have a disproportionately large number of employees in less skilled jobs reported for the survey, or where low-paying firms

have a disproportionately large number of employees in more skilled jobs. These conditions may be more common among white-collar jobs, which are spread across industries with differing pay levels.<sup>7</sup>

### Differences by sector

Intra-establishment pay relationships differed among the industry divisions, regions, and establishment size groups studied separately. Within establishments, pay differentials between jobs were narrower in manufacturing, the North Central region, and large establishments, and were broader in nonmanufacturing, the South, and small establishments. (These findings, of course, are interrelated.)

To summarize these relationships, intra-establishment relatives were calculated for each industry, region, and establishment size group studied. The absolute difference for each occupational comparison was computed by subtracting the pay relative from 100. Ignoring the sign of the remainder, these differences were totaled and divided by the number of comparisons to find an average difference.<sup>8</sup> Therefore, a small average difference in table 2 indicates a narrow wage structure and a large difference indicates a broad wage structure.

Professional-technical and office clerical jobs had the highest average differences, 29 and 19 points, respectively. The average difference for maintenance, toolroom, and powerplant occupations was 5 points, and for material movement and custodial jobs, 8 points. These results are not surprising, considering the wide range of skill levels in the white-collar field. For example, professional and technical jobs ranged from highly skilled systems analysts responsible for complex problems to entry-level computer operators. These skill distinctions were not as pronounced among the blue-collar occupations.

Differences in occupational pay relationships were small but consistent among the industries, regions, and size-of-establishment groupings studied. These differ-

Occupations for which average earnings equals 100											Occupations for which earnings are compared
File clerks			Messengers	Switchboard operators	Switchboard operator-receptionists	Order clerks		Payroll clerks	Key entry operators		
Class A	Class B	Class C				Class A	Class B		Class A	Class B	
100	117 (128)	131 (145)	124 (127)	100 (113)	97 (116)	83 (83)	92 (108)	88 (94)	95 (95)	106 (112)	<b>Office clerical</b>
85 (78)	100	116 (113)	107 (99)	87 (88)	88 (91)	69 (65)	85 (85)	76 (74)	81 (74)	91 (88)	File clerks, class A
77 (69)	86 (88)	100	96 (87)	81 (78)	82 (80)	63 (57)	82 (75)	69 (65)	73 (65)	83 (77)	File clerks, class B
81 (79)	94 (101)	104 (114)	100	82 (89)	85 (91)	70 (65)	83 (85)	74 (74)	78 (75)	87 (89)	File clerks, class C
100 (89)	114 (114)	124 (129)	123 (113)	100	100 (103)	78 (74)	95 (96)	88 (84)	95 (84)	104 (100)	Messengers
104 (86)	114 (110)	123 (125)	118 (109)	100 (97)	100	78 (72)	94 (93)	88 (81)	93 (82)	103 (97)	Switchboard operators
20 (121)	145 (154)	160 (175)	143 (153)	127 (136)	128 (140)	100	128 (131)	106 (114)	112 (114)	133 (135)	Switchboard operator-receptionists
108 (92)	118 (118)	121 (134)	120 (117)	105 (104)	107 (107)	78 (77)	100	92 (87)	96 (87)	105 (104)	Order clerks, class A
114 (106)	132 (136)	146 (154)	134 (135)	113 (120)	113 (123)	94 (88)	109 (115)	100	106 (100)	117 (119)	Order clerks, class B
106 (106)	123 (135)	137 (153)	128 (134)	105 (119)	107 (123)	89 (88)	104 (115)	95 (100)	100	120 (119)	Payroll clerks
94 (89)	109 (114)	121 (129)	115 (113)	97 (100)	97 (103)	75 (74)	96 (96)	86 (84)	83 (84)	100	Key entry operators, class A
											Key entry operators, class B

ences were larger in nonmanufacturing than manufacturing industries for three of the occupational groups. (Because of insufficient data for nonmanufacturing industries, such a comparison could not be made for maintenance, toolroom, and powerplant jobs.)

Regional differences in occupational wage structures were relatively minor, as were the differences by size of establishment.<sup>9</sup> Nevertheless, the South had the largest differentials for 2 of the 4 occupational groups, and tied for the largest for a third group.<sup>10</sup> Among the other

three regions, the North Central area had the smallest occupational wage differentials for the two blue-collar groups and for office clerical workers. Occupational pay differences in large establishments, on average, were smaller for all occupational groups, except office clerical jobs—where no size-of-establishment variation was found.

Although the impact of unionization on wage structures could not be directly examined in this study, the data suggest the possibility that internal occupational pay differentials are smaller where labor-management agreements are in effect. Manufacturing, non-Southern regions, and large establishments generally had both smaller pay differences and a higher concentration of workers under labor-management agreements than did nonmanufacturing, the South, and small establishments. An earlier study of production worker earnings in 49 manufacturing and 6 mining industries also showed lower dispersion rates among highly unionized industries.<sup>11</sup> This earlier study, however, used the more traditional analysis of union impact by focusing on inter-establishment variations.<sup>12</sup>

Cost-of-living adjustment clauses found in many union contracts may contribute to a lower wage dispersion in the union sector.<sup>13</sup> These clauses provide for periodic wage adjustments in keeping with changes in a designated price index, such as the Bureau's Consumer Price Index. They usually call for uniform cents-per-hour wage adjustments to all covered employees, and thus tend to reduce percentage differences among occupational wages. □

**Table 2. Average intra-establishment pay differences among occupations, by selected characteristics, July 1980**

[in percentage points]

Characteristics	Material movement and custodial	Maintenance, toolroom, and powerplant	Professional and technical	Office clerical
All establishments	8	5	29	19
Industry:				
Manufacturing	7	5	26	17
Nonmanufacturing	11	( <sup>1</sup> )	32	20
Region:				
Northeast	9	6	31	20
South	9	7	32	20
North Central	8	5	26	18
West	10	6	29	19
Establishment size:				
Fewer than 1,000 workers	10	6	34	19
1,000 workers or more	7	5	27	19

<sup>1</sup> Data do not meet publication criteria.

NOTE: See page 25 for explanation of method of computation and footnote 4 of text for definitions of industry divisions and regions.

— FOOTNOTES —

<sup>1</sup> See *Occupational Earnings in All Metropolitan Areas, July 1980*, Summary 81-11 (Bureau of Labor Statistics, 1981), p. 3.

<sup>2</sup> See E. Robert Livernash, "The Internal Wage Structure," in George W. Taylor and Frank C. Pierson, eds., *New Concepts in Wage Determination* (New York, McGraw-Hill Book Co., 1957), pp. 155-58.

<sup>3</sup> See, for example, tables A-8 to A-11 of *Area Wage Survey: Chicago, Ill., Metropolitan Area, March 1982*, Bulletin 3015-9.

<sup>4</sup> All data in this article refer to the 262 Standard Metropolitan Statistical Areas of the United States (excluding Alaska and Hawaii), as defined by the Office of Management and Budget through February 1974. BLS surveys are conducted annually in a sample of 70 areas se-

lected and appropriately weighted to represent all 262 areas. 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 workers in manufacturing; transportation, communication, and other public utilities; and retail trade. Major exclusions from the survey are construction, extractive industries, and government. The regions are defined as follows: *Northeast*—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *South*—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; *North Central*—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; and *West*—Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

<sup>5</sup> Intra-establishment pay relationships were computed using the following procedures: (1) establishments employing workers in both of the paired occupations were identified; (2) establishment pay levels (averages) for the two occupations were weighted by the combined employment of both jobs to reflect each establishment's contribution to the totals used in the comparison; (3) the weighted pay levels of the two jobs were summed separately across establishments; and (4) each total was divided by the other and the quotients multiplied by 100 to produce the two intra-establishment pay relatives shown for each job pairing.

<sup>6</sup> Job descriptions for the occupations included in area wage surveys are available from the Bureau's regional offices listed on the front cover.

<sup>7</sup> An earlier Bureau study—which compared all occupations surveyed to janitors—had similar findings. In many cases, pay differences between white-collar jobs and janitors were larger when measured within establishments than when overall averages were compared. On the other hand, in almost all blue-collar comparisons,

intra-establishment differentials were smaller than those between survey averages. See Virginia L. Ward, "Measuring wage relationships among selected occupations," *Monthly Labor Review*, May 1980, pp. 21–25.

<sup>8</sup> For a further discussion of this technique, see Mark S. Sieling, "Interpreting pay structures through matrix application," *Monthly Labor Review*, November 1979, pp. 41–45.

<sup>9</sup> Regional patterns are composites of numerous individual areas, each with a distinct industrial and occupational pattern. For local pay setting purposes, data similar to those in table 1 are published annually for 70 areas in individual area wage survey bulletins.

<sup>10</sup> This confirms an earlier conclusion of H. M. Douty that "Wage differentials based on skill level tend to be greater within the South than in the remainder of the country. . . ." See H. M. Douty, "Wage Differentials: Forces and Counter Forces," *Monthly Labor Review*, March 1968, p. 76.

<sup>11</sup> Carl B. Barsky and Martin E. Personick, "Measuring wage dispersion: pay ranges reflect industry traits," *Monthly Labor Review*, April 1981, pp. 35–41.

<sup>12</sup> Unionism, of course, is only one of a number of influences on occupational wage differentials. Its impact is by no means a settled issue. For a sample of the literature on this subject, see Clark Kerr, "Wage Relationships—The Comparative Impact of Market and Power Forces," in John T. Dunlop, ed., *The Theory of Wage Determination* (New York, St. Martin's Press, 1957), pp. 173–93; Lloyd G. Reynolds and Cynthia H. Taft, *The Evolution of Wage Structure* (New Haven, Yale University Press, 1956); Sherwin Rosen, "Unionism and the Occupational Wage Structure in the United States," *International Economic Review*, June 1970, pp. 269–86; and Robert N. Schoepflein, "Secular Changes in the Skill Differential in Manufacturing, 1952–1973," *Industrial and Labor Relations Review*, April 1977, pp. 314–24.

<sup>13</sup> Cost-of-living adjustment clauses cover more than half of the workers under major collective bargaining agreements. See Edward Wasilewski, "Scheduled wage increases and cost-of-living provisions in 1980," *Monthly Labor Review*, January 1980, p. 10.