

UNITED STATES DEPARTMENT OF LABOR

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Intercity Variations in Wage Levels

Prepared by the

DIVISION OF WAGE ANALYSIS

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Letter of Transmittal

UNITED STATES DEPARTMENT OF LABOR,
BUREAU OF LABOR STATISTICS,
Washington, D. C., August 24, 1944.

The SECRETARY OF LABOR:

I have the honor to transmit herewith a report on intercity variations in wage levels. This report was prepared by Louis M. Solomon of the Bureau's Division of Wage Analysis. The general method used in this bulletin was outlined by the Division's planning committee, and the statistical material was compiled under the direction of Joseph H. Mayer.

A. F. HINRICHS, *Acting Commissioner.*

HON. FRANCES PERKINS,
Secretary of Labor.



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(II)

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United States Bureau of Labor Statistics*

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Intercity Variations in Wage Levels

Summary

Examination of wage statistics for American cities of 250,000 population or more reveals striking differences in the rates of pay for identical or closely similar work. These differences may reflect differences in the productivity of labor or management, the influence of unionization, the temporary result of abrupt industry shifts, or a variety of other factors. Although the relative wage level of an area varies somewhat according to the occupation considered, there is sufficient consistency in the wage rates of most areas to permit their classification as high-wage or low-wage, or in some intermediate position.

In the present article wage data for 26 manufacturing and 9 non-manufacturing occupational classifications have been analyzed to discover the relative general wage levels of 31 large urban areas. In order to discount the influence of varying industrial composition among these areas, identical occupations with uniform weights were studied in all areas. The manufacturing occupations were drawn largely from the metalworking industries, while financial institutions and power laundries account for 5 of the 9 nonmanufacturing jobs. Since these industries are not equally representative of all areas, the wage levels indicated should be recognized as rough approximations.

On the basis of evidence presented here, Detroit and Seattle appear to maintain the highest wages among the areas studied, the former ranking first in manufacturing occupations and the latter first in nonmanufacturing. Other areas in which wage rates are 10 percent or more above the general average for both groups of occupations are San Francisco, Portland, and Cleveland. Atlanta, Dallas, Birmingham, San Antonio, Memphis, and New Orleans appear to be the lowest-wage urban areas; although it has been possible to rank five of these six areas with respect to only one of the two occupational groups, the low level of their wage rates is confirmed by information from other sources. Houston and St. Louis are also at least 10 percent below the average for both groups. Both in manufacturing and in nonmanufacturing the level of wages in the highest-wage areas is almost twice as high as in the lowest-wage area.

Most of the remaining areas pay wages somewhere near the average either in manufacturing or in nonmanufacturing, or in both. The wage levels of some of these areas, in fact, are clustered within so narrow a range that a variation of only a few percentage points would change the rank of the area by 5 or 6 places.

Areas in which the pay is higher than average but less than 110 percent of the average for one or both groups are Toledo, Pittsburgh, Philadelphia, Los Angeles, and Milwaukee. It is probable that New York City would fall in this class if sufficient data were available to permit classification. Wage rates in Indianapolis, Minneapolis-St. Paul, Cincinnati, and Washington (rated only in private non-manufacturing) appear to be about average. Columbus, Baltimore, Louisville, and Boston are relatively low-wage areas, but surpass 90 percent of the average for one or both occupational groups. Denver, for which nonmanufacturing wage data alone are available, pays wages about 10 percent below the average and should probably be added to this group of cities. Buffalo and Chicago, which pay about average wages in manufacturing, pay relatively high wages in nonmanufacturing jobs. Kansas City pays average wages in manufacturing but somewhat lower wages in nonmanufacturing, while Providence wage levels are below the average for the first group and slightly above for the second.

Purpose and Scope of Study

Intercity differences in wage rates play an important part in the economic life of the Nation. They are a vital concern of the war worker seeking the most advantageous market in which to sell his services, of the manufacturer considering the expansion or relocation of his facilities, of the Federal agency faced with responsibility for determining or stabilizing wage rates, and of other groups to which wages represent a source of income or an item of expense.

It is not, of course, to be expected that wage rates should be uniform in all parts of the United States. The labor available in some communities is more efficient than that in others. Changes in the localization of industry, such as those associated with the war production program, create labor shortages in some communities and leave surpluses in others. The level of wage rates is also influenced by local differences in the extent of unionism, the regularity and security of employment, alternative opportunities for earning a living, the cost of consumer goods, the availability of capital equipment, the efficiency of management, and other factors. To some extent, therefore, geographic variations in wage rates may serve merely to offset differences in the productivity of labor or the attractiveness of employment. Wage differences also help to induce workers to move from the trades and localities in which surpluses exist to those in which labor is scarce. Other differences reflect the influence of monopolistic forces, while still others are largely fortuitous.

The purpose of the present study was to achieve an approximate classification of the major American cities with respect to the relative levels of their wage rates, and to indicate roughly the extent of existing wage differences. Previous studies by the Bureau of Labor Statistics and tabulations of census data have shown the existence of broad regional variations in wages, and a few studies—particularly those of

common-labor entrance rates and of union rates in certain highly organized trades—have provided detail by individual city. The information now available, however, is superior to material previously assembled both as to scope and accuracy of classifications employed.

The material on which the rankings of the respective urban areas are based consists of average hourly rates or straight-time hourly earnings of experienced workers employed at specific jobs. The rankings consequently reflect variations in hourly wage rates as they are ordinarily conceived by employers and workers. Obviously they do not measure differences in weekly or annual incomes, since they take no account of hours worked or of supplementary income. They are deficient as measures of labor cost in so far as they fail to reflect differences in labor productivity and certain other items.

The study included 31 urban areas centering in cities with a population of 250,000 or more. It therefore covered most of the larger cities of the United States, although a few, including New York City, were omitted because of lack of sufficient basic materials.² Most of the areas studied include suburbs or other neighboring cities in which wage levels have been found to approximate those of the central city. Twenty-four of the areas covered have been ranked according to their wage levels in both manufacturing and nonmanufacturing industries. Two additional areas have been ranked with respect to their manufacturing wage levels only, and five have been ranked only with respect to their wages in nonmanufacturing. The wage data relate primarily to the spring and summer of 1943.

Method of Analysis

Outlined briefly, the steps involved in determining the relative wage levels of the urban areas were as follows: (1) Standard lists of occupations (one for manufacturing and one for nonmanufacturing) were selected to represent the wage levels of all areas; (2) the average wage rate paid in each occupation in each area was determined from tabulations already at hand; (3) the respective averages for each occupation were combined into a composite occupational average for all areas, using as weights the estimated number of employees in that occupation in each area; (4) the average rate for each occupation in each area was expressed as a percentage of the composite occupational average; (5) the resulting series of relatives for each area were then combined into general index numbers for manufacturing and nonmanufacturing separately, the relative for each occupation being weighted in proportion to the estimated number of workers in that occupation in all areas combined; (6) for convenience in interpretation, these index numbers were then adjusted so that the simple average for all areas would equal 100; as an additional step (7) each area was ranked according to its wage rate for each separate occupation, and average ranks (unweighted) were then determined for each city for comparison with the index numbers described above.

² Other than New York City, the only places of 250,000 or more omitted in this study are Newark, Jersey City, Omaha, and Rochester. Oakland, Calif., is included in the San Francisco wage area.

SELECTION OF OCCUPATIONS

The following factors were taken into consideration in the selection of occupations: (1) Definitiveness, i. e., distinctiveness and ease of classification, (2) frequency in the areas covered, (3) numerical importance, (4) prevalence of payment by the hour, day, or week, (5) sensitivity of wage rates to economic influences, and (6) representativeness of various skill and wage levels. These criteria, especially the second, proved to be very restrictive and, although applied with some flexibility, greatly limited the number of jobs suitable for consideration. Certain suitable jobs, moreover, in industries such as building construction, and public utilities, were not generally included in the locality wage surveys.³

The list finally selected included 26 occupational groups representative of manufacturing industries and 9 representative of nonmanufacturing. Twenty of the jobs in manufacturing, however, represented various branches of the metal trades, a fact which must be taken into consideration in interpreting the results of the analysis. Three represented the food industries (bakeries) and three (janitors, janitresses, and hand truckers) a variety of industries. Two of the non-manufacturing occupations represented financial institutions; three, power laundries; and four, a variety of industries. The selected occupational groups and the respective weights used are presented in table 1.

TABLE 1.—Occupational Groups, Weights, and Average Hourly Wage Rates Used in Constructing Composite Index Numbers of Wage Rates

Occupation, class, and sex	Weight	Average hourly wage rates ¹	Occupation, class, and sex	Weight	Average hourly wage rates ¹
<i>Manufacturing</i>			<i>Food products:</i>		
Manufacturing, total	100.0		Bakers, all-round (bench hands), male.....	1.4	\$0.98
Metalworking:			Bread wrappers:.....		
Assemblers, bench:			Male.....	.4	.79
Class A, male.....	3.8	\$1.13	Female.....	.2	.61
Class B, male.....	7.2	1.00	Miscellaneous industries:		
Class C, male.....	6.1	.85	Janitors:		
Class B, female.....	3.8	.87	Male.....	10.8	.75
Class C, female.....	17.5	.68	Female.....	1.1	.71
Coremakers, hand, bench:			Truckers, hand, male.....	8.5	.75
Class A, male.....	1.8	1.22	<i>Nonmanufacturing</i>		
Class B, male.....	1.1	1.10	Nonmanufacturing, total	100.0	
Drill-press operators, single spindle:			Financial institutions:		
Class A, male.....	1.0	1.09	Paying and receiving tellers:		
Class B, male.....	2.3	.95	Male.....	8.8	1.06
Class C, male.....	2.6	.84	Female.....	4.5	.73
Class C, female.....	2.5	.72	Power laundries:		
Electricians, maintenance:			Feeders, catchers, and shakers (flatwork), female.....	32.2	.39
Class A, male.....	2.2	1.25	Markers, female.....	10.5	.45
Class B, male.....	1.2	1.03	Washers, male.....	4.0	.72
Engine-lathe operators:			Miscellaneous industries:		
Class A, male.....	4.0	1.22	Elevator operators, passenger:		
Class B, male.....	4.7	1.06	Male.....	10.2	.65
Class C, male.....	2.7	.95	Female.....	6.0	.48
Class C, female.....	.9	.85	File clerks, class B, female.....	11.0	.51
Shake-out men (foundry), male.....	2.6	.87	Switchboard operators, female.....	12.8	.56
Tool and die makers:					
Class A, male.....	6.7	1.48			
Class B, male.....	2.9	1.23			

¹ Weighted average representing areas covered by study; wage rates as of spring and summer of 1943.

³ Shipbuilding, airframe assembly, and the basic iron and steel industry were purposely excluded from the data analyzed in this article because they are not found in all of the areas. In many areas, however, these industries greatly influence the level of local wage rates.

AVERAGE WAGE RATES

The average hourly rates for the respective occupational groups in each area were established on the basis of wage studies conducted by the various regional offices of the Bureau during the spring and summer of 1943. The primary purpose of these studies was to provide information for use by the War Labor Board in administering the wage-stabilization program.

In some cases the rates used represented combinations of data for industry branches which are usually presented separately by the Bureau. Thus, the foundry occupations cover both ferrous- and non-ferrous-metal foundries; some of the other metalworking occupations represent combinations of data for machinery factories and ordnance plants; the jobs of janitor and hand trucker are found in many industries, etc. In consequence, although the same jobs have been used to represent every area, the influence of varying industrial composition has not been entirely eliminated.⁴ The industry branches actually covered in the particular localities are, for the most part, the dominant industries in which the occupations are found. With respect to size of establishment, unionization, and similar factors, the wage rates used for each occupation are generally representative of establishments in the respective communities.

The selected occupational groups are, of course, more representative of some areas than of others. Industries of considerable importance in individual cities—for example, grain milling in Minneapolis and petroleum refining in Houston—have little direct representation here. The index numbers and rankings should consequently be considered only as rough and ready measures of relative wage levels, and recognized as subject to a considerable margin of error.

Wage Levels in Manufacturing Industries

Index numbers and rankings for each of the 31 areas are presented in table 2. Data appear for both manufacturing and nonmanufacturing industries, but because of the differences in wage levels in these two broad industrial segments they will be discussed separately.

The indexes of manufacturing wage rates reveal that Detroit (index 131) ranks first among the 26 areas for which an index is given. Neighboring Toledo, competing in some occupations for the same labor supply, ranks second (127), Portland third (117), and Seattle fourth (116). Atlanta, with an index of 70, ranks last, while rates in Dallas (76) and Birmingham (78) are only slightly higher.

Examination of these data reveals no consistent variation by size of central city,⁵ but regional differences are marked. These reflect the customary regional pattern shown by earlier wage surveys of the Bureau. In general, the highest wage levels are found on the Pacific Coast, reflecting in part the increasingly important industrial role played by Pacific Coast cities and their effort to attract additional labor. All of the 4 areas in this region are included among the highest 10, although the index for Los Angeles (103) is considerably lower

⁴ Because of the industry combinations that have been made, the actual wage rates for the occupation covered in each city are not entirely suitable for collective-bargaining or wage-stabilization purposes and are not presented in this article. The basic wage material will be supplied to interested persons, however, on application to the Bureau.

⁵ This is probably due to the fact that the cities covered are few in number and the range in size relatively narrow. Other studies by the Bureau have demonstrated a strong tendency for wage rates to increase with size of city.

than those for the other 3 areas. The Great Lakes areas are also represented by relatively high index numbers, 3 of the 6 approximately equaling and 3 substantially exceeding the average for the 26 areas combined. Collective agreements with labor unions are common in all of the highest ranking areas, and all of these areas are centers of heavy industry.

TABLE 2.—*Indexes and Rank of 31 Urban Areas, by Level of Wage Rates in Selected Occupations, Spring-Summer of 1943*

Area	Indexes (average, all areas =100)		Rank of area, based on index ¹		Area	Indexes (average, all areas =100)		Rank of area, based on index ¹	
	Manu- fac- tur- ing	Non- manu- fac- tur- ing	Manu- fac- tur- ing	Non- manu- fac- tur- ing		Manu- fac- tur- ing	Non- manu- fac- tur- ing	Manu- fac- tur- ing	Non- manu- fac- tur- ing
Detroit, Mich.....	131	116	1	4	Columbus, Ohio....	98	95	16	19
Toledo, Ohio.....	127	104	2	11	Minneapolis-St. Paul, Minn.....	98	100	16	17
Portland, Oreg.....	117	121	3	3	Baltimore, Md.....	94	93	18	20
Seattle, Wash.....	116	136	4	1	Denver, Colo.....	(²)	90	(²)	21
San Francisco, Calif	114	135	5	2	Louisville, Ky.....	92	86	19.5	24
Pittsburgh, Pa.....	113	105	6	10	Providence, R. I....	92	102	19.5	13.5
Cleveland, Ohio.....	111	110	7	8	Houston, Tex.....	90	83	21	25
Philadelphia, Pa....	107	103	8	12	St. Louis, Mo.....	87	88	22	22.5
Los Angeles, Calif..	103	114	9	6	Boston, Mass.....	86	100	23	17
Milwaukee, Wis.....	102	106	10	9	Birmingham, Ala..	78	(²)	24	(²)
Indianapolis, Ind...	101	100	11	17	Dallas, Tex.....	76	80	25	26
Kansas City, Mo....	100	88	12	22.5	New Orleans, La....	(²)	73	(²)	27
Buffalo, N. Y.....	99	115	13.5	5	Memphis, Tenn.....	(²)	72	(²)	28
Chicago, Ill.....	99	112	13.5	7	Atlanta, Ga.....	70	(²)	26	(²)
Washington, D. C..	(²)	102	(²)	13.5	San Antonio, Tex...	(²)	70	(²)	29
Cincinnati, Ohio...	98	101	16	15					

¹ In cases where 2 or more cities have the same index, the rank given represents the average of the ranks in which they would fall; i. e., 13.5 is the average of ranks 13 and 14, 16 is the average of ranks 15, 16, and 17, etc.

² Data not available.

In the Midwest, except in the vicinity of the Great Lakes, the range is extremely narrow, all of the cities except St. Louis (87) having index numbers from 98 to 101, inclusive. The eastern areas rank relatively low, except for Pittsburgh (113) and Philadelphia (107).⁴ New England has long been recognized as a relatively low-wage region and the index numbers for Boston (86) and Providence (92) support this designation. In general, however, the lowest index numbers represent southern cities.

The extreme range of these index numbers is noteworthy. The index for Detroit is nearly twice as high as that for Atlanta, and, although these figures may exaggerate or understate the amount of the difference somewhat, there can be no doubt that it is very great. Reference to the basic data, for example, reveals that the hand truckers included in the Bureau's survey in the Georgia capital averaged 45 cents an hour, while those studied in Detroit averaged 94 cents. The respective rates for janitors were 36 cents and 90 cents. Male bench assemblers, class C, averaged 59 cents and \$1.11, respectively. The relative difference was less pronounced, however, among skilled classifications. Thus, class A tool and die makers averaged \$1.20 in the Atlanta area and \$1.62 in the Detroit area. Class A bench assemblers averaged \$1.07 and \$1.32, respectively.

⁴ The results of a number of Bureau studies suggest that wage levels in New York City are generally some what below the levels prevailing in Philadelphia with respect to manufacturing. Thus, common-labor entrance rates in manufacturing in the spring and summer of 1943 averaged 69.8 cents per hour in Philadelphia and 64.4 cents in New York City. In nonmanufacturing the relationship appears to be reversed, with wages in New York City slightly exceeding those in Philadelphia.

For the purpose of comparison with the cost of a family budget, measures of wage rates are less satisfactory than measures of weekly, monthly, or annual earnings. It is of interest to note, however, that the differences in wage rates disclosed by this study show but little relationship to differences in the retail-price level in the various central cities. Information regarding intercity differences in the cost of the same standard of living in the spring of 1943 is available for 21 of the 26 cities.⁷ Of these, the price level was highest in San Francisco, followed by Detroit, Chicago, Cleveland, Boston, and Minneapolis. Kansas City was lowest, with Birmingham, Houston, Indianapolis, and Los Angeles only slightly higher. Costs in Atlanta were about the same as in Philadelphia. The lowest cost was only 14 percent below the highest.

AVERAGE RANK OF AREAS

The index numbers presented in table 2 are of particular interest because they indicate roughly the *extent* of wage differences from area to area. A second type of comparison, which ranks the various areas without attempting to measure the extent of their differences, is presented in table 3. In arriving at this comparison all cities were first ranked in accordance with the level of wage rates in each occupational category separately. The series of rankings for each city resulting from this operation were then summarized in terms of a simple average and the final rank determined on the basis of that average.

TABLE 3.—Comparative Rank of 26 Urban Areas, by Level of Wage Rates in Selected Manufacturing Occupations, Spring—Summer of 1943

Area	Index	Average rank	Rank of area ¹		Area	Index	Average rank	Rank of area ¹	
			Based on index	Based on average rank				Based on index	Based on average rank
Detroit.....	131	2.5	1	1	Cincinnati.....	98	14.4	16	17
Toledo.....	127	4.2	2	2	Columbus.....	98	13.3	16	15
Portland.....	117	4.5	3	3	Minneapolis.....				
Seattle.....	116	5.6	4	5	St. Paul.....	98	12.5	16	12
San Francisco.....	114	5.0	5	4	Baltimore.....	94	17.0	18	19.5
Pittsburgh.....	113	7.5	6	7	Louisville.....	92	16.1	19.5	18
Cleveland.....	111	6.5	7	6	Providence.....	92	17.2	19.5	21
Philadelphia.....	107	8.7	8	8	Houston.....	90	17.0	21	19.5
Los Angeles.....	103	9.3	9	9	St. Louis.....	87	17.6	22	22
Milwaukee.....	102	11.6	10	10.5	Boston.....	86	20.1	23	23
Indianapolis.....	101	12.6	11	13	Birmingham.....	78	23.4	24	26
Kansas City.....	100	14.1	12	16	Dallas.....	76	21.0	25	24
Buffalo.....	99	12.8	13.5	14	Atlanta.....	70	23.2	26	25
Chicago.....	99	11.6	13.5	10.5					

¹ In cases where two or more cities have the same index or rank, the figure given represents the average of the ranks in which they would fall; i. e., 13.5 is the average of ranks 13 and 14, 16 is the average of ranks 15, 16, and 17, etc.

It might be expected that these two methods would yield substantially different results, particularly in view of the different weights given to the individual occupations. In the preparation of the index numbers these weights varied from 0.2 (female bread wrappers) to 17.5 (female bench assemblers, class C), whereas the method of average rankings gave all occupations the same weight. The comparison presented in table 3, however, reveals great similarity in the

⁷ The figures used represent the estimated cost of a budget for a 4-person manual workers' family living at the maintenance level. This budget was defined by the Division of Social Research of the Family Progress Administration early in 1935. See Estimated Inter-City Differences in Cost of Living, March 15, 1943, in Monthly Labor Review, October 1943 (p. 803).

ranks of the areas and suggests that the weights assigned the various occupations have not been of major significance. The Detroit, Toledo, and Portland areas are respectively first, second, and third in both series. Both methods place the Atlanta, Dallas, and Birmingham areas at the bottom of the list, although their individual positions are somewhat different. The positions of only three areas—Kansas City, Minneapolis-St. Paul, and Chicago—are changed by more than two places. These shifts of position, moreover, are of little significance, since they involve areas whose wage levels appear to be very nearly the same.

INFLUENCE OF INCENTIVE PAYMENT

It has been mentioned that prevalence of payment by the hour, day, or week was one of the criteria taken into consideration in selecting occupations for use in this analysis. Among certain manufacturing occupations, however—particularly assemblers, drill-press operators, and engine-lathe operators—incentive systems were in use by some establishments. Since the straight-time hourly earnings of incentive workers usually exceed the rates of time workers, the inclusion of incentive earnings tends to overstate somewhat the wage levels of those areas in which incentive payment is most common.⁸

It is doubtful, however, whether the index numbers or the ranks of the urban areas are influenced very substantially by the inclusion of incentive payments. In no area do incentive-paid workers represent a large proportion of those compared in this study. Moreover, a calculation of average ranks among eight occupations paid almost exclusively on a time basis⁹ produces rankings very similar to those based on the index numbers. Only five areas are changed by more than four places. Philadelphia and Milwaukee—both areas in which incentive payment is common—drop five and six places, respectively, whereas Chicago, Minneapolis-St. Paul, and St. Louis move upward by approximately as many places. The changes in rank of the latter three cities probably are due to other differences and not to the elimination of incentive payments. Again the changes in rank are observed primarily among areas whose wages are closely similar, while the standing of the highest- and lowest-wage areas is not greatly changed. Incentive payment is not characteristic of the areas with top rating or of those in the South.

STABILITY OF RANK

Critical examination of the wage data for individual occupations reveals that the relative wage levels of the individual areas vary considerably by occupation and that the index numbers and average rankings presented above tend to oversimplify the relationship between the wage levels of the various areas. It may be seen from table 4 that Detroit, which ranks first in 11 occupations, falls as low as seventh in the rate for male bread wrappers. Minneapolis-St. Paul, although twelfth in average rank, is first in the rate for class A electricians. St. Louis ranks last in three occupations, but fourth from the top in the rates for all-round bakers.

⁸ The exclusion of incentive pay is desirable, not because the straight-time hourly earnings of incentive workers fail to reflect levels of pay accurately, but because the greater effort that is typically induced by incentive pay tends to disturb the comparability of jobs.

⁹ These occupational classifications are as follows: All-round baker; maintenance electrician, classes A and B; tool and die maker, classes A and B; janitor; janitress; and hand trucker. It will be noticed that these occupations differ from the remaining 18 not only with regard to method of wage payment but in other important respects as well. Consequently the differences in the rank of the 8 occupations and those of the 26 may not be attributed entirely to the elimination of incentive pay.

TABLE 4.—Rank of 26 Urban Areas, by Individual Manufacturing Occupation, Spring-Summer of 1943¹

Occupation, class, and sex ²	Detroit	Toledo	Portland	San Francisco	Seattle	Cleveland
Average rank.....	2.5	4.2	4.5	5.0	5.6	6.5
Metalworking:						
Assemblers, bench:						
Class A.....	1	6	2	7	15	8
Class B.....	2	1	3	9	11	7
Class C.....	2	1	(?)	10	(?)	5
Class B, female.....	1	6	4	9	7.5	2
Class C, female.....	1	2	(?)	6	(?)	5
Coremakers, hand, bench:						
Class A.....	3	8	5	4	11	2
Class B.....	4	10	2	16.5	(?)	5
Drill-press operators, single spindle:						
Class A.....	2	1	4	9	5	6
Class B.....	6	1	3	5	4	8
Class C.....	5	1	4	2	3	8.5
Class C, female.....	4	1	(?)	5	(?)	8
Electricians, maintenance:						
Class A.....	2	8	10	3	(?)	7
Class B.....	1	4	(?)	2	(?)	3
Engine-lathe operators:						
Class A.....	1	8	4	2	3	11
Class B.....	1	5	3	2	4	7
Class C.....	3	1	2	4	(?)	10
Class C, female.....	2	1	(?)	(?)	(?)	7
Shake-out men (foundry)	1	3.5	5	7	6	8
Tool and die makers:						
Class A.....	1	4	10	2	7	5
Class B.....	1	3	6	2	(?)	5
Food products:						
Bakers, all-round (bench hands).....	5	15	3	2	1	10
Bread wrappers.....	7	5	2	1	3	8.5
Bread wrappers, female.....	4	3	(?)	5	(?)	6.5
Miscellaneous industries:						
Janitors.....	1	2.5	6	5	2.5	4
Janitors, female.....	1	4	7	2	(?)	5
Truckers, hand.....	2	5	4	3	1	7

Occupation, class, and sex ²	Pittsburgh	Philadelphia	Los Angeles	Chicago	Milwaukee	Minneapolis-St. Paul
Average rank.....	7.5	8.7	9.3	11.6	11.6	12.5
Metalworking:						
Assemblers, bench:						
Class A.....	3	5	17	14	9	4
Class B.....	4	5	21	19	6	10
Class C.....	3	7	9	11	4	17
Class B, female.....	(?)	3	13	14	10	15
Class C, female.....	3	4	9	16	14.5	17
Coremakers, hand, bench:						
Class A.....	9	1	6	13	14	19
Class B.....	6	1	11	7	9	8
Drill-press operators, single spindle:						
Class A.....	3	7	8	16	13	11
Class B.....	2	9	18	11	7	13
Class C.....	11	10	16	17	6	20
Class C, female.....	18	3	9	15	7	20
Electricians, maintenance:						
Class A.....	4	15	6	9	20	1
Class B.....	11	12	6	8	13	16
Engine-lathe operators:						
Class A.....	7	5	6	13	15	18
Class B.....	6	9	8	14	10	15
Class C.....	7	12	6	5	8	11
Class C, female.....	(?)	8	(?)	5	6	15
Shake-out men (foundry)	12	14	13	11	16	9
Tool and die makers:						
Class A.....	13	8	3	6	20.5	12
Class B.....	8	15	4	7	13	17
Food products:						
Bakers, all-round (bench hands).....	7	11	9	6	19	14
Bread wrappers.....	14	6	4	12.5	12.5	8.5
Bread wrappers, female.....	8.5	(?)	1	16	17	2
Miscellaneous industries:						
Janitors.....	10	15	16	11	8	12.5
Janitors, female.....	3	15.5	8	9	12	10
Truckers, hand.....	8	16	6	15	12	10

See footnotes at end of table.

TABLE 4.—Rank of 26 Urban Areas, by Individual Manufacturing Occupation, Spring-Summer of 1943¹—Continued

Occupation, class, and sex ²	Indi-anap-olis	Buf-falo	Colum-bus	Kan-sas City	Cin-cinnati	Louis-ville	Hous-ton
Average rank.....	12.6	12.8	13.3	14.1	14.4	16.1	17.0
Metalworking:							
Assemblers, bench:							
Class A.....	18	22	23	13	20	11	19
Class B.....	8	20	16	14	17	13	12
Class C.....	6	12.5	8	12.5	14	21	19
Class B, female.....	11	(³)	5	7.5	12	(³)	(³)
Class C, female.....	11	12.5	14.5	8	7	18	12.5
Coremakers, hand, bench:							
Class A.....	23	11	11	21	17.5	22	16
Class B.....	13	14	3	(³)	12	20	16.5
Drill-press operators, single spindle:							
Class A.....	21	15	14	17.5	23	10	12
Class B.....	14	21	10	19	12	16	20
Class C.....	14	12	13	7	8.5	21	18
Class C, female.....	13	14	6	17	2	16	12
Electricians, maintenance:							
Class A.....	13.5	12	21	18	19	11	(³)
Class B.....	14	7	22	9	15	5	19
Engine-lathe operators:							
Class A.....	10	6.5	19	(³)	20	12	9
Class B.....	11	16	19	17	23	12	13
Class C.....	9	19	16	(³)	14	15	22
Class C, female.....	10	13	4	(³)	3	9	16
Shake-out men (foundry).....	10	3.5	2	17	15	19	23
Tool and die makers:							
Class A.....	9	14	22	15	19	20.5	17
Class B.....	10	12	19	11	18	20	9
Food products:							
Bakers, all-round (bench hands).....	16	12	21	8	13	22	17
Bread wrappers.....	11	10	15	20	17.5	17.5	21
Bread wrappers, female.....	10	8.5	6.5	11	13	14.5	14.5
Miscellaneous industries:							
Janitors.....	12.5	7	14	17	9	21	22
Janitors, female.....	15.5	6	11	18	13	14	22
Truckers, hand.....	13.5	9	11	13.5	18	22	26

Occupation, class, and sex ²	Balti-more	Prov-idence	St. Louis	Boston	Dallas	At-lanta	Bir-ming-ham
Average rank.....	17.0	17.2	17.6	20.1	21.0	23.2	23.4
Metalworking:							
Assemblers, bench:							
Class A.....	16	10	25	21	(³)	12	24
Class B.....	15	18	24	22	25	26	23
Class C.....	20	15	16	18	23	22	(³)
Class B, female.....	(³)	16	(³)	17	(³)	(³)	(³)
Class C, female.....	10	19	(³)	20	(³)	(³)	(³)
Coremakers, hand, bench:							
Class A.....	20	7	15	17.5	(³)	25	24
Class B.....	19	21	15	18	22.5	24	22.5
Drill-press operators, single spindle:							
Class A.....	17.5	19	(³)	22	20	(³)	24
Class B.....	15	17	25	23	22	(³)	24
Class C.....	19	15	25	22	24	(³)	23
Class C, female.....	11	10	(³)	19	(³)	(³)	(³)
Electricians, maintenance:							
Class A.....	13.5	22	5	17	16	23	24
Class B.....	17	20	18	21	10	(³)	23
Engine-lathe operators:							
Class A.....	14	22	21	23	25	24	16.5
Class B.....	18	20	21	22	25	26	24
Class C.....	19	21	13	19	17	(³)	(³)
Class C, female.....	12	11	(³)	14	(³)	(³)	(³)
Shake-out men (foundry).....	22	21	18	20	25	26	24
Tool and die makers:							
Class A.....	18	16	11	26	23	24	25
Class B.....	16	22	14	21	23	(³)	(³)
Food products:							
Bakers, all-round (bench hands).....	18	(³)	4	(³)	20	23	24
Bread wrappers.....	22	(³)	17.5	(³)	17.5	24	23
Bread wrappers, female.....	19	(³)	(³)	(³)	12	18	(³)
Miscellaneous industries:							
Janitors.....	19	18	23	20	24	26	25
Janitors, female.....	17	19	21	20	23	(³)	(³)
Truckers, hand.....	19	17	21	20	23	25	24

¹ In cases where two or more cities have the same rank, the figure given represents the average of the ranks in which they would fall; i. e., 2.5 is the average of ranks 2 and 3, 17.5 is the average of ranks 17 and 18, etc.

² Male unless otherwise designated.

³ Data not available.

Obviously these rankings for individual occupations are considerably influenced by random factors and should not be regarded as highly significant. In some cases, moreover, considerable differences in occupational rank may reflect wage differences of only 3 or 4 cents per hour. The detail for individual occupations is useful, however, as the basis of a rough measure of the stability of the over-all ranks. This measure may be formulated by comparing each area's rank in each individual occupation with its average rank, and averaging the deviations. For example, the various ranks of Detroit among the 26 occupations deviate by an average of 1.5 points from the area's average rank of 2.5. This would appear to indicate that Detroit's position at or near the top of the list is rather consistent among the various occupations.

The lowest average rank, that of Birmingham, is also relatively stable, since the average deviation is only 1.1. For only 5 areas, however, is the average deviation less than 2.0. For 5 it is 2.0 but less than 3.0, and for 9 it is 3.0 but less than 4.0. The 7 areas with least-stable rank are Columbus (5.3), St. Louis (4.8), Cincinnati (4.2), Minneapolis-St. Paul (4.1), Louisville (4.1), Los Angeles (4.0), and Philadelphia (4.0).¹⁰ As would be expected, fluctuations in rank are most pronounced among those areas the wage levels of which cluster within a narrow range.

COMPARISONS WITH COMMON LABOR RATES

In view of the great influence of the metal trades in the composite index numbers and ranks presented above, and in view of the instability of rank of certain areas, it is of interest to compare these composite measures with other measures of intercity differences in wage level. The most appropriate alternative measure available consists of the average entrance rates of male common laborers in manufacturing industries in 1943.¹¹ Although the rates in that occupation are also materially influenced by wage practice in the metal trades, they cover a number of other industries, including meat packing, fertilizer, furniture, leather, and petroleum. Common-labor entrance rates represent time payments exclusively. They are less frequently determined by collective-bargaining agreements than are the wages of skilled workers.

The comparison afforded by table 5 reveals a fairly close correlation between the composite index and the index of common-labor entrance rates. In both series the highest index is found in Detroit¹² and the lowest in Atlanta. In each case the maximum index number is approximately twice the minimum. The 5 highest-wage areas are the same by both measures, as are also 3 of the 5 lowest-wage areas. The coefficient of correlation is 0.89. In 18 of the 26 areas the ranks are the same or differ by not more than 3 places. Several striking differences may be noted, however. Cincinnati ranks sixteenth

¹⁰ The stability of rank of the various occupations can be similarly measured. Among the 26 individual areas in which class A tool and die makers' wages were studied, these workers rank first in every case, yielding an average rank of 1 and an average deviation of 0. Female janitors, who rank last, show an average deviation of 1.5. All of the average deviations for occupations are relatively low, the highest being for all-round bakers and female bread wrappers (both 3.3).

¹¹ See *Hourly Entrance Rates of Common Laborers in Large Cities, Spring and Summer of 1943 in Monthly Labor Review*, April 1944. The averages here used represent manufacturing industry only and are taken from table 2 (p. 811). It should be noted that the areas represented by the common-labor rates are somewhat more restricted than those used in this article, being limited for the most part within city boundaries.

¹² It will be noted, however, that Detroit's top position in common-labor rates was shared by Portland and San Francisco.

in the composite index but twenty-third in the index of common-labor rates, and Indianapolis ranks eleventh in the composite index but seventeenth in the common-labor index. The comparative ranks of 5 other areas differ by 4 places or more.¹³

TABLE 5.—Differences in Manufacturing Wage Levels in Urban Areas as Measured by Composite Index and by Common-Labor Entrance Rates, Spring-Summer of 1943

Area	Index number (average, all areas=100)		Rank ¹		Area	Index number (average, all areas=100)		Rank ¹	
	Compo- site index	Com- mon labor	Compo- site index	Com- mon labor		Compo- site index	Com- mon labor	Compo- site index	Com- mon labor
Detroit.....	131	129	1	2	Cincinnati.....	98	82	16	23
Toledo.....	127	116	2	5	Columbus.....	98	90	16	18.5
Portland.....	117	129	3	2	Minneapolis-				
Seattle.....	116	126	4	4	St. Paul.....	98	102	16	10.5
San Francisco.....	114	129	5	2	Baltimore.....	94	98	18	15
Pittsburgh.....	113	112	6	6	Louisville.....	92	81	19.5	24
Cleveland.....	111	106	7	8	Providence.....	92	95	19.5	16
Philadelphia.....	107	102	8	10.5	Houston.....	90	88	21	20
Los Angeles.....	103	111	9	7	St. Louis.....	87	86	22	22
Milwaukee.....	102	99	10	14	Boston.....	86	90	23	18.5
Indianapolis.....	101	94	11	17	Birmingham.....	78	78	24	25
Kansas City.....	100	103	12	9	Dallas.....	76	87	25	21
Buffalo.....	99	101	13.5	12.5	Atlanta.....	70	63	26	26
Chicago.....	99	101	13.5	12.5					

¹ In cases where two or more cities have the same index, the rank given represents the average of the ranks in which they would fall; i. e., 13.5 is the average of ranks 13 and 14, 19.5 is the average of ranks 19 and 20, etc.

Wage Levels in Nonmanufacturing

For 24 of the urban areas discussed above, and for 5 additional areas, index numbers of wage levels in nonmanufacturing industry have been prepared. These index numbers, it will be recalled, are based on wage data for 9 occupations in banks, laundries, and miscellaneous industries. In general, the establishments in which these occupations were found were smaller than the manufacturing establishments studied. Unionization was less common, and incentive payment negligible.

The index numbers and rankings in the nonmanufacturing field have been presented in table 2. Comparison of these with the corresponding measures based on manufacturing occupations reveals much similarity, but a few significant differences.

Both series of index numbers, it will be noted, reveal about the same regional variations in wage level, although the New England areas appear somewhat more favorably in nonmanufacturing than in manufacturing. The range from the lowest to the highest index number is also approximately the same in each case. Correlation of the index numbers for areas appearing in both series yields a coefficient of 0.68.

It will be noted that Seattle ranks first in the level of nonmanufacturing wages, with San Francisco a very close second, and Portland third. Detroit holds fourth place in nonmanufacturing. Four of the leading five areas, therefore, are common to both series. All of the five lowest-wage areas in nonmanufacturing are in the South.

¹³ For other comparisons of possible interest, see *Union Wages and Hours in the Baking Industry, July 1, 1943*, in *Monthly Labor Review*, March 1944 (table 8, p. 609), and *Union Wages and Hours in the Printing Trades, July 1, 1943* in *Monthly Labor Review*, April 1944 (table 6, p. 831).

The index numbers and rank of several areas differ greatly in the two series. Kansas City, for example, is near the middle of the group with respect to manufacturing wages but in nonmanufacturing is represented by an index number of only 88 and is tied with St. Louis for twenty-second place. Toledo ranks second in manufacturing but only eleventh in nonmanufacturing. Buffalo, paying only about average wages in manufacturing, ranks fifth from the top in nonmanufacturing. Boston, Chicago, and Providence all rank considerably higher in the nonmanufacturing series than in manufacturing.¹⁴

AVERAGE RANK OF AREAS

The ranks of the various urban areas, by individual occupation, are given in table 6. The order of the areas on the basis of average rank will be seen to correspond rather closely with that based on the index numbers. The position of only one area, Houston, differs by more than three places.

TABLE 6.—Rank of 29 Urban Areas, by Individual Nonmanufacturing Occupation, Spring-Summer of 1943¹

Area	Average rank	Financial institutions		Power laundries			Miscellaneous industries			
		Paying and receiving tellers, male	Paying and receiving tellers, female	Feeders, catchers, and shakers (flat-work), female	Markers, female	Washers, male	Elevator operators, passenger, male	Elevator operators, passenger, female	File clerks, class B, female	Switch-board operators, female
San Francisco.....	1.9	1	1	2	1	2	3	1	1	5
Seattle.....	2.0	2	2	1	2	1	(?)	2	3	3
Detroit.....	5.5	7	5	6.5	9	5	5	7	4	1
Portland.....	6.4	17	3	3	5	3	(?)	3	11	6
Cleveland.....	8.1	11	9	11	7	7.5	6	5	5	11
Los Angeles.....	9.1	20.5	17	5	3.5	7.5	7	6	2	13
Buffalo.....	9.3	6	9	4	3.5	16.5	25.5	11	6	2
Milwaukee.....	9.8	3.5	7	8	11	4	9	14	13	19
Chicago.....	9.9	20.5	16	6.5	6	11.5	1	(?)	9	9
Pittsburgh.....	10.5	5	20.5	18	15	6	2	4	20	4
Washington.....	11.2	3.5	4	16	8	21	14.5	10	8	16
Providence.....	13.1	9.5	12.5	9.5	11	9.5	19.5	16	(?)	17.5
Philadelphia.....	13.5	17	23	17	17.5	11.5	4	8.5	15	8
Toledo.....	13.6	13	25	9.5	13.5	9.5	11	17.5	16	7
Boston.....	14.8	8	14.5	15	17.5	22	13	19	14	10
Minneapolis-St. Paul.....	15.4	20.5	23	14	17.5	14.5	10	12.5	12	15
Indianapolis.....	15.6	24.5	12.5	13	11	14.5	16	21	10	17.5
Cincinnati.....	15.8	23	11	12	13.5	16.5	8	21	23.5	14
Columbus.....	16.5	14	18.5	19	17.5	13	18	21	7	20.5
Baltimore.....	18.1	17	23	21	22	19.5	12	8.5	17	23
Houston.....	19.6	12	9	25	25	24	17	17.5	22	24
St. Louis.....	20.7	15	26	23	24.5	25	14.5	12.5	23.5	22
Denver.....	20.9	20.5	13.5	20	20.5	19.5	23	15	26	25
Kansas City.....	22.2	26	14.5	24	23	23	(?)	27	28	12
Memphis.....	22.6	9.5	6	29	27	29	21.5	28	27	26
Dallas.....	23.6	24.5	28	26	24.5	27	19.5	23	19	20.5
Louisville.....	24.2	28	29	22	20.5	18	24	24.5	25	27
New Orleans.....	25.5	27	27	27	29	26	21.5	26	18	28
San Antonio.....	25.9	29	20.5	28	28	28	25.5	24.5	21	29

¹ In cases where two or more cities have the same rank, the figure given represents the average of the ranks in which they would fall; i. e. 3.5 is the average of ranks 3 and 4; 14.5 is the average of ranks 14 and 15, etc.

² Data not available.

¹⁴ These comparisons are complicated somewhat by the fact that some of the ranks are assigned to areas that appear in only one series. On the basis of corrected rankings, covering only the 24 areas common to both series, 7 areas (mostly in the middle-wage range) show differences of position of more than 4 places.

The relative wage levels of some areas, however, will be seen to vary greatly from occupation to occupation. Chicago, which ranks first in the payment of male elevator operators, ranks nineteenth with respect to the wages of male tellers.¹⁵ The Memphis area, which ranks last in three occupations, ranks sixth and ninth in two others. Application of the measure of stability described above reveals that Seattle has the most stable rank, with an average deviation of only 0.5 place. San Francisco (1.0) and Detroit (1.7) also have relatively stable ranks. On the whole, the rank of the areas with respect to non-manufacturing occupations appears to be somewhat less stable than that based on manufacturing occupations. The ranks of six areas have average deviations of 2.0 but less than 3.0, seven of 3.0 but less than 4.0, seven of 4.0 but less than 5.0, and four of 5.0 but less than 6.0. The least stable ranks by this measure are those for Memphis (6.8) and Pittsburgh (7.0).¹⁶

¹⁵ The rates shown for tellers in some areas have been greatly affected by labor turnover.

¹⁶ Among the nine nonmanufacturing occupations studied, male tellers received the highest wage in every city, yielding an average deviation of zero. Because the number of occupations studied was so limited, all of the average deviations were small. The largest were for male elevator operators (1.2) and female file clerks (1.0).

