UNITED STATES DEPARTMENT OF LABOR
Frances Perkins, *Secretary*
BUREAU OF LABOR STATISTICS
Isador Lubin, *Commissioner* (on leave)
A. F. Hinrichs, *Acting Commissioner*

✦

Wage Structure of the Motor-Vehicle Industry

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LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
BUREAU OF LABOR STATISTICS,
Washington, D. C., February 14, 1942.

The SECRETARY OF LABOR:

I have the honor to transmit herewith a report covering a study made by the Bureau of Labor Statistics of the wage structure of the motor-vehicle industry.

A. F. HINRICHS, *Acting Commissioner.*

Hon. FRANCES PERKINS,
Secretary of Labor.

PREFACE

The field study of earnings and hours in the motor-vehicle industry, upon which this report is based, was conducted during May and June 1940. Between that time and the virtual cessation of pleasure-car production late in 1941, there were substantial increases in the earnings of workers in the industry. The changes appear, however, to have been of a character which raised general levels of earnings without introducing important changes in the fundamental characteristics of the industry's wage structure. The data contained in this report are thus rendered somewhat more important, historically at least, for they supply a picture of an industry which, because of the conversion to war production, no longer exists as such.

The report which follows appeared in the form of two separate articles in the MONTHLY LABOR REVIEW, February and March 1942. The articles have been combined into this bulletin for convenience, but the original text has not been changed.

Subsequent to the publication of these articles, the attention of the Bureau of Labor Statistics has been called to certain statements in the original articles which may well be further clarified.

It is pointed out that the discussion (see p. 6) of wages paid to workers in the industry, which is expressed as a percentage of the total value of the industry's product, is somewhat misleading, because of duplication in reporting product values to the Census Bureau. The value of certain automobile parts may, for example, be reported once as such, again by another plant in the form of a subassembly, and a third time as part of a finished vehicle. If wages paid are expressed as a proportion of the total value added by manufacture,the motor-vehicle industry ranks well above a number of the industries with which it might be logically compared.

In connection with the discussion of turn-over rates in the industry, insufficient weight was given to certain recording procedures followed by some companies. Prior to 1940 several large firms recorded a worker as laid off if he missed even a single pay period. This procedure was inconsistent with that of many other industries and tended to inflate the turn-over rates. Late in 1939 the General Motors Corporation discontinued collecting turn-over data for this reason; elimination of the data reported by this large company was partly responsible for the decrease in the published turn-over rate.

The data for this survey were collected by field representatives of the Bureau's Division of Wage Analysis under the supervision of O. R. Mann. The report was prepared by Harold R. Hosea, with the assistance of George E. Votava, under the general direction of Victor S. Baril. The Bureau is indebted to the officials of the many companies who cooperated by furnishing the data for this survey, and to the staff members of the Automobile Manufacturer's Association, the Automotive Parts and Equipment Manufacturers, Inc., and the United Automobile Workers of America for their advice and counsel in connection with the study.

A. F. HINRICHS,
Acting Commissioner, Bureau of Labor Statistics.

Bulletin No. 706 of the
United States Bureau of Labor Statistics
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WAGE STRUCTURE OF THE MOTOR-VEHICLE INDUSTRY

Summary

THE wage structure of the motor-vehicle industry reflects, in large part, certain fundamental characteristics of the industry itself. The concentration of management is apparent from the fact that, in 1940, more than half the automobile plants, in which over 90 percent of all the wage earners were employed, were operated by the 11 large companies producing virtually all of the Nation's automobiles. Half of the plants are in the five East North Central States which comprise the "automobile region"; during May and June 1940 they employed 85 percent of the wage earners.

The industry is characterized by a high degree of mechanization, and the labor force therefore includes relatively large numbers of semiskilled workers. Virtually all of the larger establishments have concluded agreements with trade-unions. The level of hourly earnings in the industry has been relatively high almost from its beginning, and there is a marked tendency for individual earnings to concentrate about the general average. The earnings of 471,270 employees in the 448 motor-vehicle establishments included in a special survey made by the Bureau of Labor Statistics in May and June 1940 averaged 92.2 cents, and the earnings of half these workers differed from the general average by 11 cents or less.

Wage levels in the motor-vehicle industry rose about 17 percent between the date of this special survey and November 1941. Because the increases affected the majority of the wage earners in a comparatively uniform fashion, the fundamental characteristics of the wage structure remained essentially the same until the early fall of 1941. This survey covered the country's largest single industry immediately prior to its complete reorganization for the production of war materials.

Earnings in the automobile division of the industry are higher, on the average, than those in parts plants which are smaller and more widely scattered and show less concentration of management. The

hourly earnings of 322,941 workers in the 167 automobile plants included in this survey averaged 96.1 cents, or 12.3 cents above the corresponding figure for 148,329 employees in 281 parts plants.

Earnings in automobile plants located in the "automobile region" were slightly higher in general than those in other areas. Average hourly earnings in this area amounted to 97.7 cents, and Michigan workers earned an average of 98.5 cents per hour. Geographic differences among establishments operated by the larger companies were relatively unimportant. Weekly hours during the period of the study averaged 36.8, and average weekly earnings amounted to $35.42.

Basic differences in the characteristics of the automobile and automotive-parts divisions of the motor-vehicle industry are apparent in the wage structures of these two branches. The earnings of 148,329 workers in 281 parts plants averaged 83.8 cents per hour in May and June 1940. This figure is 12.3 cents below the corresponding rate for automobile plants. Compared with the automobile plants, the automotive-parts plants were hardly more than one-fourth as large, were much more specialized, employed a much higher proportion of women, and were less highly concentrated geographically and with respect to management. The hourly earnings of half the individual workers in parts plants fell within a range of about 15 cents above and below the general average; the corresponding figure for the earnings of employees in automobile plants was 9 cents.

Male workers in parts plants earned an average of 88.6 cents per hour as compared with 61.9 cents for women. Average earnings varied as much as 27 cents between groups of plants manufacturing different types of products, and the largest plants as a group paid more than 30 cents above the average rate for the establishments employing 50 workers or less.

Slightly more than half the plants reported union agreements. In general, these were the larger plants in which earnings tended to be higher. Most of the plants were operating on an official 40-hour week and the average employee worked 37.9 hours during the payroll period selected for study.

Earnings in the motor-vehicle industry as a whole rose about 17 percent between the period of this study (May–June 1940) and November 1941. The increase in parts plants was probably slightly less than that for the industry as a whole.

An average of $1,562 per worker was paid by motor-vehicle plants, during the year ended June 30, 1940, to 153,682 Michigan workers whose earnings records were selected at random. Approximately 85 percent of this group received their entire earnings, insofar as they were subject to the provisions of the State unemployment compensa-

tion law, as a result of employment in motor-vehicle plants during at least a part of each of the four quarters of the year. Their average earnings were $1,667, or about 17 percent below the theoretical rate of full-time annual earnings.

Purpose and Scope of Study

Preeminent among American manufacturing industries and presenting the outstanding example of mass-production methods, the motor-vehicle industry has wielded a tremendous influence on American wage structure and has been the deserving subject of much research. The Bureau of Labor Statistics first studied wages and hours of work in this industry in 1919. Subsequent surveys of wages and hours were undertaken every 3 years to 1928, and biennially from 1928 to 1934.[1] The availability, after the early thirties, of the Bureau's figures on average hourly earnings and average weekly hours of work for the industry as a whole reduced the necessity for frequent special surveys, and no other detailed study was undertaken until May and June 1940. The results of the 1940 study are described in the present article.

The scope of the 1940 survey is not limited to the establishments included in the motor-vehicle industry as defined by the United States Census of Manufactures. The census definition includes "Establishments primarily engaged in the manufacture or assembly of complete motor vehicles, motor-vehicle chassis, bodies and such parts and accessories as gears, wheels, radiators, bumpers, shock absorbers, frames, horns, windshield wipers, etc.; and trailers for motortrucks and truck tractors. This industry does not include establishments manufacturing tires and tubes, springs, ignition apparatus, batteries, starting and lighting equipment, headlights, sheet-metal stampings, hardware, etc." The data for this survey were collected from establishments classified in the motor-vehicle industry as defined above and, in addition, from plants whose principal products were automotive stampings, automotive electrical equipment, automobile engines and parts, automobile hardware, coil and leaf springs, and certain widely used types of accessories. Omitted from the survey (as well as from the census definition of the industry) are plants producing forgings and castings (except machined forgings and castings made primarily for use in motor vehicles), tools and garage equipment, tires and tubes, batteries, trailers for attachment to passenger cars, and products made in other industries for use in the motor-vehicle industry such as upholstery materials, bolts, nuts, and wire (in bulk). Data on

[1] See Monthly Labor Review, March 1936 (pp. 521–533): Wages, Hours, Employment, and Annual Earnings in the Motor-Vehicle Industry, 1934. (Reprinted in U. S. Bureau of Labor Statistics, Serial No. R. 356.)

the numbers and types of establishments included in the survey appear in a subsequent section (p. 9).

The data collected in connection with the 1934 survey revealed significant differences in earnings and employment as between those establishments which manufacture finished motor vehicles and bodies and those which produce parts and equipment for automobiles. The present survey therefore follows the procedure of the earlier study and treats these divisions separately. The term "motor-vehicle industry" is used to indicate the combination of the two divisions. Plants producing finished vehicles and bodies are grouped under the category "automobile division"; the term "automotive-parts division" includes establishments producing parts and equipment for new vehicles and for replacements.

Important changes in the motor-vehicle industry have taken place since the data for the present survey were collected. Substantial wage increases have been made, affecting the greater part of the wage earners in the industry; most of these became effective during the second quarter of 1941. Such changes are discussed in a later section dealing with the trend of employment, pay rolls, hours, and earnings. These recent wage increases are of considerable importance in an analysis of the industry's wage structure, but they are probably much less significant than other effects of the defense program which have involved radical changes in product and major shifts in the industry's occupational structure. Certain of these developments are discussed in the following summary of the characteristics of the industry. It may be noted in passing that the firms and establishments which comprised the motor-vehicle industry at the time of this survey no longer constitute a homogeneous group with respect to products, types of employees, or wage structure. The data presented in this report, therefore, assume added significance, at least historically, since they supply a picture of the wage structure of the country's largest single industry at the end of an era and just prior to a period of transition. Any adequate analysis of the reorganized industry, as a whole, must await the further development of the changes necessitated by the war program.

Characteristics of the Industry

The production of motor vehicles and parts has provided employment for some 4 to 7 percent of all the wage earners in manufacturing industries for the past two decades. The motor-vehicle industry in 1939 ranked first in number of wage earners employed as well as in value of products, according to the Census of Manufactures. Pay rolls in the industry totaled nearly 7 percent of the amount paid to all wage earners in manufacturing in 1939. In May 1940, the month

during which the present survey was made, the motor-vehicle industry employed approximately 440,000 wage earners and maintained a weekly pay roll of more than $14,000,000.

The production of automobiles on a commercial basis began with the turn of the century, and the principal problem of the industry until about 1920 was that of producing a supply of dependable vehicles sufficient to meet the rapidly increasing demand. By 1905, production had reached an annual rate of 24,000 passenger cars; over 180,000 were built in 1910 and about half a million were in use in that year. Almost a million vehicles were made in 1915, and the 1916 total was well over a million and a half. In the boom year of 1929, the retail cost of the 4,500,000 new passenger cars sold was about $4,000,000,000, and more than $2,500,000,000 was paid for used cars. Although the necessity for selling as well as producing automobiles became apparent in the early twenties, the marketing problem first assumed really serious proportions about 1929, and production was not maintained on the basis of the 7,000,000 cars originally scheduled for that year. With the coming of the depression, output declined steadily through 1932, and then rose to a total of 4,700,000 units (commercial vehicles and chassis included) with a wholesale value of more than $2,800,000,000 in 1937. The total units produced in 1939 were slightly in excess of 3,500,000. During May 1940, approximately 390,000 units were produced, of which more than four-fifths were passenger cars.

Several hundreds of companies have been organized for the manufacture of motor vehicles and parts; 676 different makes of automobiles were registered in Massachusetts in 1916, but 12 manufacturers had produced three-quarters of the total. Industrial mortality in the field was enormously high and much of it occurred during the infancy of the manufacturing companies. During the last 10 years the "big three" (Chrysler, Ford, and General Motors) have made about 90 percent of all the automobiles produced in the United States.[2]

More than 80 percent of the 400,000 wage earners in the motor-vehicle industry in 1939 were employed in plants in the five East North Central States (Ohio, Indiana, Illinois, Michigan, and Wisconsin). Michigan alone accounted for nearly two-thirds of the workers, and more than 90,000 wage earners were employed in motor-vehicle plants within the city limits of Detroit. New England, where the automobile was first developed, had 43 plants employing only about 2,300 wage earners in 1939. Concentration of the industry in

[2] For a detailed history of the industry with special emphasis on its organization and financial characteristics, see Kennedy, E. D., The Automobile Industry; the Coming of Age of Capitalism's Favorite Child, New York, Reynal & Hitchcock, 1941.

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the East North Central States is somewhat less apparent from the distribution of plants, although nearly half are in this area.

The motor-vehicle industry, particularly the automobile division, has consisted of two general types of establishments. Of the 1,054 plants reported by the census in 1939, almost three-fourths had fewer than 100 employees and were producing either specialized vehicles (ambulances, fire apparatus, etc.) or small parts and accessories. At the other extreme were 170 plants with 500 or more employees each; a substantial proportion of these were the vehicle and parts plants operated by the 11 largest companies in the field. The production of motor-vehicles and parts also has been essentially an urban industry. Well over half of the vehicle and body plants and about two-thirds of the workers included in this survey were found in metropolitan areas of 250,000 population and over. The parts plants were, in general, smaller and more widely scattered, yet half the workers in the parts plants studied were located in these densely populated areas.

Total payments to wage earners in motor-vehicle plants amounted to about 16 percent of the total value of the industry's products during 1939. This proportion was substantially below those in comparable industries despite the fact that motor-vehicle production, with its high wage level, ranked first among all manufacturing industries in total wages paid during that year. This apparent inconsistency obviously results in large part from the high degree of mechanization within the industry, a condition which was further reflected in the characteristics of the labor force. Semiskilled workers, particularly machine operators and assemblers, constituted a very large segment of that labor force.

Motor-vehicle wage earners were characteristically males. Females constituted about a fifth of the parts-plant workers, but in the automobile division, which was more than twice as large on the basis of employment, only 2 out of every 100 wage earners were women.

Organization of the workers within the industry was relatively slow in developing, but union agreements are now in effect in virtually all important plants of the automobile division and in most of the larger establishments manufacturing parts. Partly because of the fact that unionization was accompanied by the demand for abolition of piece rates, the majority of the wage earners were paid on a time-rate basis; less than a fifth were subject to any type of incentive system at the time this study was made. The most common type of shift differential was an additional payment of 5 percent, and most of the plants paid at the rate of time and a half for all work above 8 hours a day, 40 hours a week, or either, with double time for Sundays and holidays.

RECENT CHANGES IN THE INDUSTRY

The reduction of automobile production for civilian use late in 1941 and the transition by many plants to the manufacture of military equipment have, of course, produced widespread changes in the industry. These changes will be intensified in 1942 with the virtual termination of pleasure-car output.

Experience during recent months has demonstrated that the transition to a wartime production schedule will affect the various individual establishments quite differently. The manufacture of army trucks and small tanks has, in some cases at least, involved but moderate changes in productive processes. The production of aircraft bodies, shell and bomb parts, or machine guns and anti-aircraft guns, on the other hand, has typically required wholesale replacement of machines and equipment and a complete reorganization of production.

It is clearly impossible accurately to predict the effects of this reorganization upon the labor force of the industry, but certain general changes appear inevitable. In the first place, the essential retooling will involve increases in the relative number of tool and die makers, machinists, and other highly skilled workers; these additions are likely to be reflected in a continuation of the rise in average earnings within the industry. The workers formerly engaged in mass-production work, such as machine operators, assemblers, etc., will continue to be laid off temporarily pending development of line production for war equipment. The numbers of such workers subject to this dislocation and the duration of unemployment among them depend upon several factors. The production of automobiles for military and emergency civilian use will require relatively minor reorganization, and plants manufacturing such products as engine parts will experience little or no change. It follows that the effects of the shift upon the workers in these establishments will be unimportant. The extent to which labor is dislocated in plants subject to drastic reorganization obviously depends upon the speed and smoothness with which the process is accomplished. One fact is nevertheless patent: to achieve the production levels planned will require not only the total manpower of the industry but substantial additions to it as well.

Certain general changes in the characteristics of the labor force can be outlined despite the fact that the details of the reorganization are not yet apparent. It is clear, for example, that the diversity of products to be produced by the reorganized and expanded industry will increase greatly. This trend will be reflected in a greater spread in the skills of the workers and, consequently, a decrease in the former high concentration of the earnings of individual workers about the

general average for the industry. The proportions of highly skilled workers, as already pointed out, will increase and the semiskilled groups will become less important until line production of war equipment is developed. Furthermore, it is possible that the reorganized industry will require, at least temporarily, a larger proportion of relatively unskilled workers, a group which was comparatively small in the motor-vehicle industry prior to the defense program.

The recruitment of additional workers will be inevitable eventually, and, since the supply of skilled workers is limited, heavy additions to the semiskilled and unskilled groups and the necessity for training them are likely. At the same time, increases in the combat forces may well result in the employment of older workers (many of whom are skilled) who would not be in the labor market in normal times. Finally, the labor force of the reorganized industry is almost certain to be augmented by the employment of women who formed a relatively small proportion of the workers prior to the emergency.

The net effect of these changes, in the absence of unpredictable developments, will be to increase the spread of earnings in the industry. Earnings levels will probably be affected further by increases in overtime work, additional shifts, and increased hours.

Coverage of Survey

As defined in the Census of Manufactures, the motor-vehicle and allied industries embraced 1,228 establishments in 1939, and in the period May-June of 1940 employed approximately 465,000 workers.[3] These establishments include, in addition to the 1,054 plants classified in the motor-vehicle industry proper (Census industry No. 1810), 90 automotive-stamping plants (industry No. 1472) and 84 plants producing automotive electrical equipment (industry No. 1640). A fourth (308) of these plants, which employed 95 percent of the total wage earners, were included in the present survey (table 1). The relatively small proportion of the total plants studied results from the fact that 598 of the 1,228 establishments employed fewer than 21 wage earners and were purposely excluded from the survey; nearly all the large plants and more than half those with 21 or more wage earners were surveyed.

[3] This figure is derived by adjusting average annual employment for 1939, as reported by the Census, on the basis of the monthly employment indexes released by the Bureau of Labor Statistics.

TABLE 1.—*Plants and Estimated Wage Earners in Specified Census Industries, and Number and Percent Included in Bureau's Survey, May–June 1940*

Industry classification (census)	Plants			Wage earners			
	Total (1939)	Included in survey		Total (1940)	Employed in plants included in survey		Number of wage earners included in survey [1]
		Number	Percent of total		Number	Percent of total	
	1	2	3	4	5	6	7
Total	[2] 1,228	308	25	464,737	443,132	95.4	421,543
Motor-vehicle industry (Census industry No. 1810)	[3] 1,054	276	26	436,113	428,297	98.2	407,056
Automotive stampings (Census industry No. 1472)	[4] 90	19	21	9,431	3,829	40.6	3,426
Automotive electrical equipment (Census industry No. 1640)	[5] 84	13	15	19,193	11,006	57.3	11,061

[1] Differs from column 5 since employees engaged on experimental work and wage earners not employed on automotive products were ordinarily excluded from the survey.
[2] Includes 598 plants employing fewer than 21 workers and thus excluded from the survey.
[3] Includes 524 plants employing fewer than 21 workers and thus excluded from the survey.
[4] Includes 32 plants employing fewer than 21 workers and thus excluded from the survey.
[5] Includes 42 plants employing fewer than 21 workers and thus excluded from the survey.

In addition to the 308 plants included in these distinct census classifications, the Bureau's survey included 140 plants classified by the Census in other industries. These establishments, which employed a total of 61,825 wage earners, were producing automobile-body hardware, bearings, pistons and piston rings, transmissions, leaf and coil springs, and other parts excluded from the motor-vehicle industry according to the census definition. No attempt is made to relate the data from these 140 plants to any total for the country, since separate figures for such establishments are not available from census data. It is not possible, for example, on the basis of published census information, to segregate those plants engaged principally in producing automobile-body hardware from the general-hardware industry as a whole. Similarly, data for plants manufacturing motor parts for automobiles are grouped by the Census with those producing similar parts for marine, stationary, and airplane engines. The types of plants included in this group were selected in consultation with representatives of trade associations and manufacturers, and, when combined with the 308 establishments classified in the industry by the Census, provide an adequate basis for analysis of the wage structure of the industry as it is here defined.

As indicated above, the detailed analysis of the data collected treats the automobile and automotive-parts divisions of the industry separately. Of the 448 plants included in the survey, 167, employing 339,698 wage earners, were engaged in the production of finished

vehicles (including passenger cars, trucks, ambulances, hearses, and commercial trailers), bodies, and body parts (table 2). The data on these plants (group A) are presented on page 18.

TABLE 2.—*Plants and Workers Included in Bureau's Survey of Motor-Vehicle Industry, by Type of Product, May–June 1940*

Type of product	Number of plants	Total wage earners employed	Wage earners included in survey [1]
	1	2	3
Total	448	504,957	471,270
Vehicles and bodies (group A)	167	339,698	322,941
Parts (groups B and C)	281	165,259	148,329
Parts (group B) [2]	141	103,434	98,602
Parts (group C) [3]	140	61,825	49,727

[1] Differs from column 2 since experimental workers and wage earners not employed on automotive products were ordinarily excluded from the survey.
[2] Includes only plants classified by the U. S. Census of Manufactures as motor-vehicle, automotive-stamping, or automotive-electrical-equipment plants.
[3] Plants classified by the U. S. Census of Manufactures in industries other than motor vehicles, automotive stamping, and automotive-electrical equipment.

To permit comparison with census data, the plants included in the automotive-parts division are divided into two categories. Group B is composed of those parts plants classified by the Census in the three industries for which data are given in table 1. Group C includes the establishments classified by the Census in various other industries. These two groups (B and C) are treated as a single unit in the discussion of the automotive-parts division of the industry.

Data on earnings and hours were transcribed by field representatives of the Bureau of Labor Statistics from pay-roll and other records in the plants surveyed. With rare exceptions, data were collected only for wage earners working on automotive products; the number of workers included in the survey is thus less than the total number of wage earners employed in the respective plants. Central office and supervisory employees (except working supervisors) were also excluded. All data shown regarding clerical or office workers refer to persons employed in production departments. Plants employing 20 wage earners or fewer were ordinarily excluded.

Information on occupation, sex, method of wage payment, and number of hours and total earnings for one pay-roll period during May or June 1940 were transcribed for all workers in plants employing 21 to 1,000 wage earners. In larger plants, samples varying from 10 to 50 percent of the workers were taken. For such cases, special sampling procedures were devised for the purpose of insuring adequate representation of all types of workers. The data for all plants

sampled, as shown in the various tables, have been weighted up to the actual total automotive employment in the respective establishments during the pay-roll period selected for study. Average hourly earnings have been calculated by dividing gross earnings by total hours actually worked during the pay-roll period. The basic rates are, therefore, raised slightly as the result of relatively small amounts of extra earnings during overtime periods.

The period during which the survey was made (May–June 1940) represents neither a high nor a low point for the year. Industry employment indexes for the 2 months were 109.8 and 104.9, respectively, or almost midway between the low of 82.3 in July and the December high of 130.2.

Trend of Employment, Pay Rolls, Earnings, and Hours, 1923–41

EMPLOYMENT AND PAY ROLLS

Employment in the motor-vehicle industry has tended to fluctuate in harmony with employment in the durable-goods industries as a whole (table 3). However, the changes in motor-vehicle employment have been more pronounced, a reflection, among other things, of the extreme sensitivity of the industry to general business conditions as well as the dependence of a major part of it upon the policies and fortunes of a relatively small group of manufacturers.[4]

The annual index of employment in the industry reached its highest level in 1937 when it stood at 128.3 and indicated an average employment of nearly 517,000 wage earners during that year. On a monthly basis, May 1937, with an index of 140.4 and an estimated total of more than 560,000 wage earners, was the peak (table 4). This figure exceeds that for the highest previous month, April 1929, by almost 50,000 workers. Employment in the industry was low throughout 1938 except in November and December, and the index of 75.8 for the year was the lowest since 1933. Increased demand and, later, anticipation of restrictions on automobile production in connection with the defense program resulted in rises in 1939 and 1940; the added effect of defense activities is apparent in a further increase in the level of employment to more than 540,000 in June 1941. Employment in establishments classified in the motor-vehicle industry for the purposes of this survey continued to rise during the second half of 1941,

[4] The sensitivity of the motor-vehicle industry to general economic conditions is suggested by data collected in connection with the Study of Consumer Purchases (1934–36), which show that families with annual incomes between $1,200 and $1,500 spent about $23.50 per year for the purchase of automobiles, while families with incomes twice as large spent between three and four times as much for automobiles.

but the fact that this period marked the end, at least for the duration of the war, of the industry as it existed formerly, makes these data of little significance so far as this study is concerned.

TABLE 3.—*Employment and Pay Rolls in Motor-Vehicle and Durable-Goods Manufacture, by Years, 1923–40*[1]

Year	Employment				Pay rolls			
	Motor-vehicle industry		Durable-goods manufacture		Motor-vehicle industry		Durable-goods manufacture	
	Index[2]	Estimated wage earners (thousands)	Index[2]	Estimated wage earners (thousands)	Index[2]	Estimated weekly pay rolls (thousands)	Index[2]	Estimated weekly pay rolls (thousands)
1923	100.6	404.6	104.1	4,008.9	100.6	$12,703	103.2	$103,421
1924	93.6	377.1	96.4	3,712.5	90.6	11,426	95.9	96,057
1925	105.8	425.8	99.5	3,831.1	108.8	13,736	100.9	101,157
1926	104.8	421.6	102.5	3,947.8	104.8	13,239	104.8	105,053
1927	91.9	369.6	96.5	3,714.9	93.3	11,789	98.9	99,049
1928	108.1	434.8	97.7	3,760.4	113.9	14,379	102.3	102,462
1929	111.3	447.4	106.2	4,089.9	111.6	14,094	111.2	111,374
1930	80.3	322.8	87.6	3,375.0	65.7	8,299	83.8	83,969
1931	71.0	286.0	67.7	2,607.8	53.4	6,740	55.6	55,731
1932	60.5	243.7	52.8	2,034.1	38.8	4,900	33.4	33,468
1933	60.6	244.1	57.5	2,215.1	38.3	4,835	36.8	36,867
1934	94.5	380.6	72.4	2,787.2	68.2	8,601	52.2	52,298
1935	110.4	444.5	79.8	3,072.1	89.5	11,297	64.1	64,206
1936	113.9	458.6	90.7	3,492.5	102.8	12,976	80.7	80,840
1937	128.3	516.7	104.3	4,017.2	124.1	15,663	102.4	102,559
1938	75.8	305.4	78.9	4,036.5	69.2	8,737	67.9	68,047
1939	97.9	394.2	90.2	3,475.2	97.5	12,299	86.2	86,334
1940	111.3	448.0	104.3	4,015.1	121.1	15,274	107.8	108,008

[1] Data from Bureau of Labor Statistics trend-of-employment and pay-rolls series.
[2] 1923–25=100.

Wide seasonal fluctuations have been characteristic of the industry almost since its infancy. Prior to 1935 there was usually a long and severe drop in employment during the autumn, and some attempts were made to devise schemes for rotation of industrial and agricultural employment to take up this slack. In 1935, the date for releasing new models was shifted from winter to fall. As a result, the single and severe seasonal slump was replaced by two more moderate contractions, one in August and another about the first of the year. Another advance in the model date in 1939 again shifted the period of low employment and distributed the slack season between July and August.

Instability of employment in the motor-vehicle industry prior to 1940 is also apparent from an analysis of labor turn-over. For every year during the period 1931–39, the separation rates in both the automobile and the automotive-parts divisions of the industry were almost twice as high as those for all manufacturing industries. In 1934, there were no less than 117.3 separations for each 100 wage earners on the average pay roll during the year. About three-fourths of these separations were lay-offs. Discharge and quit rates in the motor-vehicle industry were not greatly in excess of those for manufacturing

industries as a whole. As might be expected, accession (hiring) rates were also high—1½ to 2 times those for all manufacturing industries. Increased employment and the development of trade-union organization were reflected in significantly lower turn-over rates during 1940.

TABLE 4.—*Employment and Pay-Roll Indexes in Motor-Vehicle Industry, by Months, January 1935 to September 1941* [1]

Year and month	Employment index [2]	Pay-roll index [2]	Year and month	Employment index [2]	Pay-roll index [2]
1935: January	109.6	82.6	1938: July	53.1	47.4
February	119.1	98.8	August	48.0	47.0
March	121.1	100.9	September	64.9	66.3
April	121.5	104.9	October	86.3	91.3
May	118.0	94.1	November	101.9	107.6
June	108.7	83.7	December	106.8	107.4
July	102.0	76.8			
August	96.4	72.2	1939: January	106.1	101.3
September	85.1	64.6	February	104.4	97.3
October	106.4	87.5	March	103.8	97.0
November	117.1	104.5	April	101.8	99.5
December	119.7	103.8	May	93.3	88.0
			June	91.6	88.6
1936: January	117.8	96.2	July	76.4	72.9
February	113.5	84.3	August	70.4	75.0
March	112.2	95.0	September	98.7	102.9
April	115.3	110.1	October	107.8	113.3
May	116.9	112.2	November	102.3	106.0
June	115.5	108.3	December	118.1	127.9
July	110.7	100.4			
August	97.6	83.6	1940: January	115.8	119.9
September	89.6	77.4	February	113.1	119.1
October	109.8	102.1	March	114.4	122.9
November	128.5	127.2	April	112.0	121.2
December	139.2	137.2	May	109.8	111.1
			June	104.9	112.0
1937: January	125.3	108.8	July	82.3	80.5
February	127.3	122.7	August	85.5	96.1
March	131.8	133 6	September	112.2	125.1
April	136.5	137.3	October	125.1	149.2
May	140.4	145.5	November	129.8	150.5
June	138.2	136.6	December	130.2	145.0
July	131.0	124.9			
August	119.1	116.5	1941: January	128.5	147.7
September	112.2	106.0	February	130.1	159.6
October	134.0	139.3	March	131.5	163.1
November	133.5	126.9	April	132.4	147.3
December	110.5	91.5	May	134.1	170.6
			June	134.8	188.3
1938: January	84.7	64.4	July	126.9	158.0
February	82.1	62.7	August	109.3	137.3
March	79.3	62.3	September	123.4	158.9
April	72.9	63.3	October	128.9	176.6
May	68.6	56.8	November	129.7	175.8
June	61.5	54.4			

[1] Data from Bureau of Labor Statistics trend-of-employment and pay-roll series.
[2] 1923–25=100.

Aggregate pay rolls in the motor-vehicle industry have fluctuated in close harmony with changes in employment. The annual index of pay rolls reached the lowest point since 1923 in the year 1933 when the index reached a level of 38.3 (1923–25=100.0) and the estimated average weekly pay roll fell to $4,800,000. In the relatively good years of 1928, 1929, 1936, and 1937, both employment and pay rolls were greater than in the base period, 1923–25. In 1937, however, employment had advanced farther beyond the 1923–25 level than had pay rolls. Since August 1939 the reverse has been the case; pay rolls

have been at a higher level, as compared with the 1923–25 period, than has employment except during 1 month (July 1940). A high level of pay rolls occurred in June 1941 when the index rose to 188.3 and weekly pay rolls amounted to $23,800,000. The extremely rapid growth of motor-vehicle pay rolls can be seen by comparison with the year 1904 when an average of about 12,000 wage earners were paid a total of less than $140,000 per week.

AVERAGE HOURLY EARNINGS

The level of average hourly earnings in the motor-vehicle industry has been relatively high almost from its beginning. Average hourly earnings in this industry have been roughly a fifth to a third above those in the durable-goods industries as a whole during the entire period for which comparable figures are available; in 1938 the difference was a third (table 5). The substantial increase in earnings during 1937 in part reflects the result of the trend toward unionization.

Between the period of this survey (May–June 1940) and November 1941, average hourly earnings in the industry rose 16.5 cents, or 17.4 percent. Changes in wage rates made during the last half of 1940 were not sufficiently important to cause any appreciable change in the average for the industry; the figure of 95.4 cents for December 1940 is, in fact, identical with that for the preceding June.

A rise of 1.5 cents between December 1940 and January 1941 and another of 0.5 cent in February reflect the first important change in a series which resulted from the terms of new union agreements effected during the first half of 1941. Data submitted to the Bureau by manufacturers indicate that somewhat more than 80,000 wage earners, or virtually all the employees of the companies reporting wage increases, were affected. The information available shows a flat increase of 2 cents per hour granted by the Chrysler Corporation,[5] a raise of 5 percent in the plants of two moderately large companies, and adjustments varying from 2 to 10 percent in several smaller firms. Except in a few of the smallest establishments, all wage earners in these plants were affected in a relatively uniform manner.

The later wage adjustments made during March and April 1941 were restricted principally to the smaller concerns. The increases varied from 4 to 18 percent, and, according to available reports, less than 10,000 workers were involved. With minor exceptions, the increases applied to all wage earners in the plants reporting changes. The relative unimportance of changes in these 2 months is indicated by the over-all figures on average hourly earnings which show an increase of less than 1 cent between February and April.

[5] Effective during the latter part of December.

TABLE 5.—*Average Hourly Earnings, Weekly Hours, and Weekly Earnings in Motor Vehicle and Durable-Goods Manufacture, 1922–41*

Year and month	Average hourly earnings (in cents)		Average hours worked per week		Average weekly earnings	
	Motor-vehicle industry	Durable-goods manufacture	Motor-vehicle industry	Durable-goods manufacture	Motor-vehicle industry	Durable-goods manufacture
1922	[1] 65.7	[2]	[2]	[2]	[2]	[2]
1925	[1] 72.3	[2]	[2]	[2]	[2]	[2]
1928	[1] 75.0	[2]	[1] 46.9	[2]	[1] $35.14	[2]
1930	[1] 72.4	[2]	[1] 34.5	[2]	[1] 25.01	[2]
1932	68.0	50.8	31.3	32.5	21.27	$17.66
1933	59.3	48.5	35.2	34.7	20.96	17.80
1934	70.0	56.7	33.3	33.7	23.31	19.81
1935	73.9	58.7	37.1	37.1	27.41	22.72
1936	77.4	59.7	38.5	40.8	29.75	25.24
1937	89.1	68.6	35.9	39.8	31.94	28.09
1938	92.5	69.8	32.9	34.8	30.45	24.77
January	91.5	70.5	27.6	32.2	25.27	22.90
February	91.6	70.2	27.7	33.0	25.34	23.42
March	91.9	70.2	28.4	33.6	26.10	23.69
April	92.0	70.1	31.4	33.5	28.83	23.80
May	92.0	69.9	30.0	33.8	27.65	23.93
June	92.5	69.6	31.9	33.9	29.49	23.86
July	93.0	68.8	31.8	33.4	29.56	23.32
August	93.6	68.5	34.6	35.8	32.33	24.84
September	93.3	69.0	36.3	36.4	33.81	25.65
October	92.8	69.6	37.7	37.5	34.98	26.86
November	93.2	70.6	37.5	36.7	34.89	27.02
December	92.4	70.9	36.0	37.1	33.22	27.27
1939	92.9	71.0	35.5	37.8	32.90	27.83
January	92.1	71.0	34.3	36.1	31.55	26.53
February	92.4	70.9	33.3	36.6	30.80	26.78
March	92.6	71.1	33.3	36.8	30.87	27.02
April	92.8	71.0	34.9	36.6	32.33	26.92
May	93.1	70.7	33.5	36.9	31.18	26.82
June	93.3	70.8	34.3	37.4	31.94	27.26
July	92.8	70.2	34.0	36.2	31.50	26.31
August	93.5	69.9	37.7	38.4	35.15	27.92
September	93.4	70.9	36.9	38.2	34.41	28.15
October	92.2	71.3	37.7	40.1	34.75	29.71
November	92.2	71.5	37.2	39.6	34.25	29.41
December	94.0	72.7	38.1	39.6	35.81	30.04
1940	94.9	73.4	37.9	39.2	35.88	29.88
January	93.4	72.7	36.7	38.1	34.28	28.96
February	93.8	72.6	37.1	37.9	34.80	28.60
March	94.4	72.8	37.7	38.3	35.53	28.90
April	94.5	72.9	37.9	38.2	35.78	28.92
May	94.7	73.0	35.4	38.2	33.47	28.80
June	95.4	73.2	37.0	38.7	35.28	29.43
July	94.9	72.7	34.0	37.9	32.26	28.52
August	95.6	73.1	38.8	39.7	37.13	29.98
September	95.0	73.7	38.6	40.2	36.67	30.57
October	95.1	73.9	41.3	41.0	39.24	31.42
November	95.7	74.4	39.9	40.2	38.11	31.11
December	95.4	74.9	38.5	41.2	36.54	31.96
1941:						
January	96.9	75.8	38.9	40.6	37.66	31.93
February	97.4	76.2	41.1	41.6	40.06	32.90
March	98.2	76.8	41.4	42.0	40.61	33.49
April	98.3	78.5	37.0	41.5	36.36	33.54
May	101.4	80.6	41.0	42.5	41.56	35.57
June	106.3	82.2	43.0	43.1	45.70	36.90
July	106.6	82.6	38.3	41.5	40.79	35.84
August	105.7	83.0	39.0	42.6	41.14	36.52
September	108.5	84.3	38.7	42.3	42.20	36.79
October	[109.1	85.3	40.7	42.9	44.32	37.92
November	111.6	86.5	39.3	41.8	43.84	37.56

[1] Data from special studies of the industry and based on a specific pay-roll period rather than on regular monthly reports.
[2] Data not available.

Major changes in wage rates resulted from the agreements concluded between the union and the principal manufacturers during May and June. In general, the increases amounted to about 10 percent and more than 300,000 workers were affected. The great majority of the adjustments were in the form of blanket increases. Typical of the adjustments were the 10-cent raise granted to the 160,000 employees of 61 General Motors plants, 8 cents to the employees of Hudson, Packard, Briggs, and Chrysler,[6] and similar increases in a large number of smaller companies. The Ford Motor Co. made adjustments varying from 5 to 15 cents. The Ford adjustments involved increases for about 53,000 wage earners, and were effected over a period of several months. These industry-wide changes resulted in sharp rises in average hourly earnings which reached $1.014 in May and $1.063 in June. It should be noted, however, that these general averages were also affected by extra earnings at overtime rates. Wage adjustments made in July were limited to relatively few of the smaller companies, and the increase in the industry's average hourly rate amounted to only 0.3 cent.

On the basis of the above discussion it is apparent that the description of the wage structure outlined in this report is generally applicable to the industry through July 1941; that is, to the end of the 1941 model year. While it is true that earnings have risen sharply, the increase has affected some 80 to 90 percent of the industry's wage earners in a comparatively uniform fashion. The increases on an occupational basis made to the remaining 10 to 20 percent introduce only minor modifications in the wage structure; these were principally of a sort which would tend to produce slightly greater uniformity of earnings among certain semiskilled and skilled groups.

Employment in the industry declined sharply in August in conformity with the usual seasonal drop at the end of the model year. The curtailment of normal output and the diversion of plant facilities to defense production renders interpretation of data for September and subsequent months difficult and inconclusive. It may be noted, however, that the "normal" activities of the industry, for all practical purposes, came to an end at the close of the 1941 model year. It is probable that the upward trend in average hourly earnings, which reached $1.085 in September, $1.091 in October, and $1.116 in November, is largely a result of defense activities. Further, it is certain that the employment of the relatively large numbers of skilled workers essential to reorganization and retooling of the industry for the production of war material, together with increases in overtime and night shifts, will continue to exert an upward pressure on the hourly rate of earnings for some months to come.

[6] In the case of the Chrysler Corporation, this was in addition to the earlier 2-cent increase noted above.

TREND OF EARNINGS BY OCCUPATION

Data on the earnings of individual occupational groups collected in connection with the Bureau's several special surveys of the industry indicate considerable uniformity in the trend for various occupations. The largest increases between earnings in 1922 and in 1940 are shown for laborers, inspectors, and tool and die makers (table 6). There appears to be little or no relationship between degree of skill and the extent to which earnings rates have risen. It should be pointed out, however, that these comparisons are subject to certain limitations. Changes in technology and in the nature of the duties performed by many occupational groups between 1922 and 1940 have greatly reduced the number of job categories which can be logically compared. Although it is believed that the occupational groups selected have remained reasonably comparable throughout the period, small differences should not, in general, be interpreted as significant.

TABLE 6.—*Average Hourly Earnings of Males in 26 Selected Occupations in Automobile Division, Motor-Vehicle Industry, in Specified Years*

Occupation	1922 [1]	1925 [1]	1928 [1]	1930 [1]	1932 [1]	1934	1940
Total industry [2]	$0.662	$0.729	$0.756	$0.733	$0.638	$0.730	$0.967
Assemblers, axle	.675	.729	.755	.717	.602	.694	.971
Assemblers, chassis and final	.647	.694	.758	.681	.570	.720	.943
Assemblers, motor and transmission	.661	.747	.762	.725	.632	.745	.960
Crane operators	[3]	.726	.707	.673	.658	.685	.956
Cutters, cloth and leather	[4]	.803	.831	.798	.709	.857	.982
Die setters	[3]	.797	.849	.819	.741	.774	1.055
Dingmen	[5]	1.037	1.128	.975	.813	1.063	1.248
Drop hammermen, forge shop	.810	.957	.973	1.005	.800	.871	1.165
Forge shop workers, except hammermen	.698	.753	.735	.782	.679	.721	1.006
Gear cutters	.678	.746	.760	.740	.623	.778	.974
Hardeners and annealers	.676	.725	.749	.720	.618	.709	.975
Inspectors, testers, balancers, and straighteners	[6] .611	.687	.725	.748	.660	.724	.977
Laborers and stock handlers	.495	.570	.589	.589	.575	.613	.836
Lacquer and enamel rubbers	-------	.871	.841	.746	.603	.841	1.059
Machine operators, group 1 [7]	.659	.727	.751	.713	.634	.714	.954
Machine operators, group 2 [8]	.700	.764	.792	.774	.667	.754	.987
Metal finishers	[3]	.851	.893	.738	.633	.867	1.048
Millwrights	[3]	[3]	[3]	.753	.688	.719	.983
Punch and press operators	.715	.718	.746	.717	.646	.693	.955
Sanders and rough-stuff rubbers	[3]	.843	.807	.702	.591	.723	1.001
Sewers and trim bench hands	[4] .650	.738	.793	.734	.495	.742	1.002
Sheet-metal machine operators and assemblers	[5] .656	.783	.807	.711	.574	.752	.949
Sprayers	.723	.850	.824	.733	.615	.783	1.011
Tool and die makers	.769	.875	.919	.887	.785	.899	1.194
Welders and brazers, hand	[3]	.810	.852	.757	.659	.787	1.028
Welders, machine	[3]	.792	.789	.735	.622	.743	.979

[1] Includes some workers in the automotive-parts division.
[2] Excludes office workers.
[3] Averages not available.
[4] Cutters, cloth and leather, included in sewers and trim bench hands.
[5] Dingmen included with sheet-metal machine operators and assemblers.
[6] Straighteners were not included when computing the average for 1922.
[7] Includes automatic lathe and screw, drill-press, and milling-machine operators.
[8] Includes boring-machine, grinding-machine, nonautomatic-lathe, and planer and shaper operators.

AVERAGE WEEKLY HOURS

Average weekly hours in the motor-vehicle industry have tended to be slightly below those for the durable-goods industries as a group. In general, the differences in the two series are slight throughout the

period for which comparable data are available (table 5). Hours in the industry reached the high point of 43.0 in June 1941 but dropped to 38.3 in the following month. As a rule seasonal changes do not seem to have had any profound effect on the average hours of work Instead, the fluctuations have been in volume of employment. Average hours during May and June 1940, the period of the present survey, were 35.4 and 37.0,[7] respectively.

AVERAGE WEEKLY EARNINGS

Average weekly earnings in the motor-vehicle industry were above those for the durable-goods industries as a whole for each year during the period 1932–40 (table 5). The differences ranged from 14 to 23 percent and were somewhat smaller than the differences in average hourly earnings because of the fact that the motor-vehicle industry has in general worked fewer hours per week than have establishments in the durable-goods industries. There are no outstanding deviations from the general trend of the relationship between average weekly earnings in the motor-vehicle industry and in the durable-goods industries except in April 1941 when the two averages were only $2.82 apart. Earnings in the motor-vehicle industry reached their highest point ($45.70) in June 1941 as the result of the general wage increases already referred to and also, presumably, because of considerable amounts of overtime payments during that month.[8]

Earnings and Hours in the Automobile Division

AVERAGE HOURLY EARNINGS

Hourly earnings of the 322,941 workers in the 167 automobile plants studied averaged 96.1 cents in May and June 1940 (table 7). The earnings of half the workers were within 9 cents per hour of the general average. Fewer than 5 percent of the workers earned below 72.5 cents an hour. This high concentration of earnings about the average is characteristic of a high-wage industry in which the majority of the workers are employed in the plants operated by a small number of large firms and in which the great majority of the employees are paid on a straight-time rather than a piece-rate basis.

Regional differences.—The five East North Central States, as noted earlier, contain the great majority of the workers in the automobile division of the industry; more than half the 167 plants and almost 85 percent of the workers studied were in this region. The hourly earn-

[7] The special-survey data show a slightly higher figure (37.2) because (1) the definition of the industry as used in the survey differs slightly from that used in the trend-of-employment and pay-roll series, and (2) proportionately more parts plants (in which average hours are higher) than vehicle plants are included in the survey sample as compared with the group of plants reporting monthly.

[8] The figure of 43.0 hours per week for the industry as a whole involves an average of somewhat more than 3 hours of overtime per week for each worker since the legal maximum of 40 hours was in effect.

ings average for this region was about 1.5 cents above that for the country as a whole; Michigan, with more than a fourth of the automobile plants and almost three-fourths of the workers studied, showed average hourly earnings of 98.5 cents. As might be expected, the tendency for the earnings of individual workers to concentrate about the general average is even more pronounced in Michigan than in the country as a whole.

TABLE 7.—*Percentage Distribution of Workers in Automobile Division, by Average Hourly Earnings and Geographic Division, May–June 1940*

Hourly earnings (in cents)	All divisions	New England and Middle Atlantic	East North Central					West North Central	Other divisions [1]
			Total	Michigan	Ohio	Indiana	Illinois and Wisconsin		
Under 37.5	0.2	0.3	(2)	-------	(2)	-------	0.1	0.1	3.4
37.5 and under 42.5	.1	.5	(2)	(2)	0.2	0.1	.2	.2	1.3
42.5 and under 47.5	.1	.4	0.1	(2)	.9	.2	.2	.2	1.1
47.5 and under 52.5	.3	1.5	.2	0.1	1.3	.3	1.0	.5	.8
52.5 and under 57.5	.5	2.2	.2	.1	1.9	.4	1.1	1.0	.9
57.5 and under 62.5	.6	3.0	.3	.1	3.4	.3	1.5	.6	.5
62.5 and under 67.5	1.0	2.7	.8	.5	3.3	1.9	1.0	1.6	.6
67.5 and under 72.5	1.4	3.2	1.2	.9	4.1	2.0	1.5	.9	1.0
72.5 and under 77.5	4.9	7.7	4.4	4.1	5.1	5.4	8.4	7.9	7.4
77.5 and under 82.5	7.4	8.8	7.1	7.2	8.9	4.8	5.7	9.2	8.9
82.5 and under 87.5	10.4	14.9	9.5	9.7	6.8	8.3	10.6	14.9	15.3
87.5 and under 92.5	14.8	17.7	14.6	15.0	10.6	14.7	10.7	12.8	14.0
92.5 and under 97.5	12.3	14.7	12.0	11.4	12.4	16.3	16.6	8.5	16.5
97.5 and under 102.5	16.7	8.9	17.7	17.6	15.7	17.1	23.8	18.5	13.0
102.5 and under 107.5	10.8	3.8	11.7	11.7	10.5	14.5	9.0	9.6	9.0
107.5 and under 112.5	6.9	4.8	7.3	7.4	5.7	8.0	5.1	6.4	3.9
112.5 and under 117.5	5.0	2.4	5.5	5.9	3.5	3.3	1.8	5.6	1.4
117.5 and under 122.5	2.5	1.4	2.7	3.0	2.2	.8	.7	1.2	.6
122.5 and under 127.5	1.2	.5	1.4	1.5	1.8	.4	.4	.2	.2
127.5 and under 132.5	.8	.2	.9	1.0	1.1	.3	.1	.1	.1
132.5 and under 137.5	.7	.2	.8	.9	.2	.1	.1	-------	.1
137.5 and under 142.5	.5	.1	.6	.7	.1	.1	.1	-------	(2)
142.5 and under 152.5	.5	.1	.6	.7	.3	.1	.2	-------	(2)
152.5 and under 162.5	.2	-------	.2	.3	(2)	.1	.1	-------	(2)
162.5 and under 172.5	.1	-------	.1	.1	-------	.2	(2)	-------	-------
172.5 and over	.1	(2)	.1	.1	(2)	.3	(2)	-------	-------
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of workers	322,941	29,712	271,151	229,845	15,185	15,399	10,722	8,921	13,157
Number of plants	167	30	89	45	19	10	15	12	36
Average hourly earnings	$0.961	$0.877	$0.977	$0.985	$0.920	$0.950	$0.923	$0.908	$0.876

[1] Plants distributed as follows: Alabama, 2; California, 12; Colorado, 1; Georgia, 4; Kentucky, 3; Louisiana, 1; Mississippi, 1; North Carolina, 2; Oregon, 1; Tennessee, 1; Texas, 3; Utah, 1; Virginia, 2; Washington, 2.
[2] Less than a tenth of 1 percent.

The number of plants and workers in areas other than the East North Central States are, in general, too small to justify more than broad generalizations concerning earnings. It should also be noted that the automobile plants located outside of the principal area do not comprise a homogeneous group. They are, rather, made up of two types of establishments—the decentralized plants of large companies and a group of firms, most of which are relatively small, producing commercial bodies, trailers, and such equipment as busses, ambulances, hearses, and fire engines. Substantial amounts of this work are done on a special-order or custom basis. The wage structure in

the outlying plants operated by the larger companies tends generally to conform to that of similar plants located in the so-called automobile States, and the level is, with a few exceptions, substantially higher than that in the independent plants. This situation is reflected in the distributions of workers by average hourly earnings in all areas except the East North Central and is apparent in the minor peaks at or near the lower ends of the distributions (table 7). It also explains the close agreement between the average for the country as a whole and those for the several regions, none of which varied from the general average by more than 8.5 cents.

Plant averages.—The distribution of individual plants according to the average hourly earnings of workers also reflects the fact that data from a relatively small number of firms determine the statistical characteristics of the wage structure of this industry. Almost half the plants, which employed more than 85 percent of all the workers studied, showed averages above 90 cents per hour. Almost two-fifths of the workers were employed in the 29 plants in which hourly earnings averaged $1.00 or more (table 8). Only 24 plants reported hourly earnings of less than 60 cents. These establishments were generally small, employing only about 75 workers on the average, and the entire group of wage earners in these plants amounted to scarcely more than a half of 1 percent of the workers surveyed in the automobile division of the industry.

TABLE 8.—*Distribution of Plants and Workers in Automobile Division, by Plant Average Hourly Earnings, and Size of Operating Companies, May–June 1940*

Plant average hourly earnings (in cents)	All companies		Companies employing—			
			5,000 or more		Less than 5,000	
	Number of plants	Number of workers	Number of plants	Number of workers	Number of plants	Number of workers
All plants	167	322,941	91	301,481	76	21,460
Under 40	3	274	----------	----------	3	274
40 and under 45	3	157	----------	----------	3	157
45 and under 50	7	608	----------	----------	7	608
50 and under 55	5	210	----------	----------	5	210
55 and under 60	6	627	----------	----------	6	627
60 and under 65	9	1,160	----------	----------	9	1,160
65 and under 70	6	1,162	----------	----------	6	1,162
70 and under 75	9	1,297	----------	----------	9	1,297
75 and under 80	5	2,444	----------	----------	5	2,444
80 and under 85	12	11,760	4	9,250	8	2,510
85 and under 90	23	24,392	16	20,306	7	4,086
90 and under 95	23	95,957	19	92,959	4	2,998
95 and under 100	27	[1] 60,905	24	56,978	3	3,927
100 and over	29	121,988	28	121,988	1	(1)
Average hourly earnings	$0.961		$0.972		$0.825	

[1] Workers of 1 plant included in interval 95 cents to $1.

Hourly earnings and size of operating company.—Ninety-one of the 167 automobile and body plants surveyed were operated by 11 companies. These 91 plants employed about 93 percent of all the workers in this division of the industry. Average hourly earnings for the plants of the large companies, taken as a group, were 97.2 cents, or 1.1 cents above the figure for the entire automobile division. None of these plants showed average earnings below 80 cents per hour. More than 40 percent of all the workers employed by these companies were in the 28 plants in which hourly earnings averaged $1 or above (table 8).

By contrast, the 76 smaller companies, employing the remaining 7 percent of the workers, showed average hourly earnings of 82.5 cents—14.7 cents below the figure for the large companies and 13.6 cents less than the average for all automobile plants as a whole. Plant averages for more than two-thirds of these establishments were below 80 cents per hour; these, as might be expected, were the smaller plants employing on the average only about 150 workers each. Four of the small companies showed average hourly earnings of 95 cents or more and, of these, only one averaged above $1.00.

The concentration of management in this division of the industry and its effect on wage policy tend to offset the influence of such factors as size of community. The wage rates paid by the large companies vary but slightly from area to area, and a tabulation of earnings by size of community has little or no significance because its characteristics are largely a reflection of the types of communities in which the plants of the few large companies happen to be situated.

Hourly earnings and size of plant.—The close correspondence between size of plant and level of earnings among automobile companies is, of course, to be expected because of the concentration of management within the industry. Of the 167 establishments, about three-fifths (101) reported 500 or more employees each. These plants, however, accounted for almost 98 percent of all the workers in the automobile division of the industry (table 9). Nearly three-fourths of the workers were employed in plants which averaged 2,500 or more employees each. At the other end of the scale were 36 plants with average employment of 100 or less, and this entire group contained little more than a half of 1 percent of the workers. None of the units with 2,500 or more workers showed average hourly earnings below 80 cents, and 14 plants, with a total of more than 105,000 workers, had average hourly earnings in excess of $1.00. Again, by contrast, only 5 of the plants with 100 workers or less showed average hourly earnings as high as 80 cents; the combined employment of the 5 small plants was only 223.

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TABLE 9.—*Distribution of Plants in Automobile Division, by Plant Average Hourly Earnings and Size of Plant, May–June 1940*

Plant average hourly earnings (in cents)	Total		Size of plant in terms of number of workers						
	Employees	Plants	Under 51	51–100	101–250	251–500	501–1,000	1,001–2,500	2,501 and over
35 and under 40	274	3	1	2					
40 and under 45	157	3	1	2					
45 and under 50	608	7	3	2	2				
50 and under 55	210	5	4	1					
55 and under 60	627	6	4		2				
60 and under 65	1,160	9	3	1	4	1			
65 and under 70	1,162	6	2		3		1		
70 and under 75	1,297	9	2	1	5	1			
75 and under 80	2,444	5	1	1		1	1	1	
80 and under 85	11,760	12	2		4		3	1	2
85 and under 90	24,392	23		2	2	2	8	7	2
90 and under 95	95,957	23	1			1	9	8	4
95 and under 100	59,988	27				1	8	10	8
100 and under 105	112,869	23				1	5	4	13
105 and over	10,036	6					2	3	1
Number of plants		167	24	12	22	8	37	34	30
Number of employees	322,941		801	942	3,687	2,897	27,304	52,768	234,542

Occupational differentials among male workers.—More than three-fourths of the male workers in the automobile and body plants studied were employed in production departments; average hourly earnings for this group were 95.5 cents or 1.2 cents below the average for all males in this division of the industry (table 10). The average for maintenance workers was only slightly (0.9 cent) below that for production employees, while foundry occupations as a group showed earnings 4.2 cents under the general average. Tool- and die-room workers, with average earnings of $1.168 per hour were, of course, the highest-paid group. The highest average per hour for any single occupational group was $1.416 for working foremen in tool and die rooms; except for wages of helpers and apprentices, the lowest average per hour for males was 77.2 cents for janitors. Within production departments, the hourly earnings of males ranged from 81.5 cents for laborers to $1.248 for dingmen. Despite this rather wide spread of 43.3 cents, the earnings of male production workers offer striking evidence of the concentration of individual earnings. The averages for 23 occupations, which included nearly half the total of 241,332 male production workers, were within 3 cents of the general average of 95.5 cents for the entire group.

More than a fourth of all the male workers were classified in the 28 occupational groups which showed average earnings of $1.00 or more per hour. In addition to working foremen in tool and die and in maintenance departments, seven occupational groups, with nearly 20,000 workers, had earnings in excess of $1.10 per hour. Included in this total were dingmen ($1.248), drop-hammer operators ($1.165), heaters in forge shops ($1.158), tool, die and lay-out inspectors

($1.208), tool and die makers ($1.194), other tool-room workers ($1.111), and pattern makers ($1.215). The 5,091 janitors with an hourly average of 77.2 cents constituted the only male group (except for apprentices) with earnings below the 80-cent level, and only six additional occupations showed hourly averages less than 85 cents: maintenance laborers (81.6 cents), miscellaneous service workers (83.9 cents), production-department laborers (81.5 cents), truckers and material handlers (84.7 cents), male sewing-machine operators (83.8 cents), and watchmen (80.7 cents). These seven groups with earnings of less than 85 cents an hour included about 37,000 male workers or 11.5 percent of the total. It may be noted, however, that nearly one-half of these 37,000 were truckers and material handlers whose average earnings were within 3 mills of 85 cents.

TABLE 10.—*Average Hourly Earnings of Workers in Automobile Division, by Sex, Occupation, and Geographic Division, May–June 1940*

Occupation	Total		East North Central		Other divisions	
	Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings
Males						
All departments	315,013	$0.967	263,651	$0.983	51,362	$0.882
Processing occupations	241,332	.955	197,274	.970	44,058	.885
Assemblers, axle	1,623	.971	1,509	.979	114	.874
Assemblers, chassis and final	19,399	.943	12,341	.961	7,058	.911
Assemblers, motor	7,130	.960	6,838	.964	292	.868
Assemblers, sheet-metal, subassembly	2,810	.957	2,501	.974	309	.825
Assemblers, small parts	958	.891	923	.887	35	(1)
Assemblers and trimmers, body [2]	22,725	.941	16,040	.967	6,685	.880
Balancers	663	1.011	649	1.013	14	(1)
Bench hands, machined parts	1,130	.913	1,021	.927	109	.788
Car loaders	1,245	.913	964	.913	281	.913
Clerical workers, factory	4,549	.892	3,722	.911	827	.811
Crane and hoist operators	1,699	.956	1,568	.973	131	.766
Cutters, cloth and leather	582	.982	561	.986	21	(1)
Die setters	1,242	1.055	1,184	1.069	58	.806
Dingmen	635	1.248	536	1.265	99	1.159
Door hangers	1,220	1.021	912	1.051	308	.931
Drop-hammer operators	1,320	1.165	1,238	1.192	82	.826
Foremen and lay-out men	3,163	1.095	2,386	1.122	777	1.017
Forge-shop workers, not elsewhere classified	459	.960	410	.995	49	(1)
Hardener and annealer helpers	714	.942	670	.951	44	(1)
Hardeners and annealers	1,690	.975	1,639	.977	51	.911
Heaters, forge shop	505	1.158	493	1.173	12	(1)
Helpers, processing occupations, n. e. c	1,930	.891	1,640	.956	290	.528
Inspectors, tool, die, and lay-out	698	1.208	679	1.210	19	(1)
Inspectors, n. e. c	10,346	.964	8,929	.968	1,417	.938
Job setters, machine	2,653	1.056	2,515	1.054	138	1.104
Laborers, n. e. c	8,840	.815	6,795	.845	2,045	.717
Leaders and relief workers	5,791	1.025	4,611	1.034	1,180	.992
Metal finishers	10,322	1.048	7,728	1.081	2,594	.952
Operators, machining processes	28,976	.963	27,384	.969	1,592	.867
Boring machines	1,369	.981	1,291	.985	78	.914
Drill presses	8,254	.941	7,843	.947	411	.831
Gear cutters	1,853	.974	1,793	.977	60	.895
Grinding machines	6,099	.994	5,852	.997	247	.930
Lathes, automatic and semiautomatic	5,651	.973	5,348	.977	303	.903
Lathes, hand	1,146	.953	1,079	.958	67	.860
Milling machines	3,262	.953	3,061	.960	201	.856
Miscellaneous machines, n. e. c	1,342	.905	1,117	.927	225	.798
Other processing occupations, n. e. c	14,553	.912	12,275	.921	2,278	.865
Packers and craters	2,634	.859	1,748	.875	886	.830
Paint-shop workers, n. e. c	4,011	.917	2,944	.942	1,067	.852
Painters, spray	4,489	1.011	3,009	1.040	1,480	.952

See footnotes at end of table.

TABLE 10.—*Average Hourly Earnings of Workers in Automobile Division, by Sex, Occupation, and Geographic Division, May–June 1940*—Continued

Occupation	Total		East North Central		Other divisions	
	Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings
Processing occupations—Continued.						
Platers	449	$0.929	432	$0.932	17	(1)
Polishers and buffers, plating	771	1.072	750	1.076	21	(1)
Polishers and rubbers, paint	2,478	1.059	1,691	1.072	787	$1.029
Punch and press operators	13,259	.955	12,584	.963	675	.812
Repairmen, productive, n. e. c	5,182	1.028	4,133	1.045	1,049	.959
Sanders and rough-stuff rubbers	4,089	1.001	2,936	1.046	1,153	.893
Sewing-machine operators	802	.828	654	.838	148	.842
Sheet-metal machine operators, n. e. c	1,803	.935	1,584	.961	219	.757
Straighteners	1,111	.978	1,061	.981	50	.917
Testers, car, final	843	.949	583	.962	260	.921
Testers, motor and transmission	1,191	.992	1,146	.995	45	(1)
Trim bench hands	5,500	1.028	4,365	1.044	1,135	.968
Truckers, hand, and material handlers	17,365	.847	13,496	.858	3,869	.810
Truckers, power (inside)	3,294	.892	3,015	.905	279	.742
Welders and brazers, hand	4,062	1.028	3,153	1.064	909	.908
Welders and brazers, machine	8,429	.979	7,329	.988	1,100	.924
Tool- and die-room occupations	19,210	1.168	17,197	1.197	2,013	.923
Foremen and leaders	1,639	1.416	1,543	1.430	96	1.223
Tool and die makers	13,920	1.194	12,518	1.222	1,402	.948
Tool and die maker apprentices	1,809	.759	1,613	.794	196	.501
Tool-room workers, n. e. c	1,842	1.111	1,523	1.139	319	.969
Foundry occupations	18,018	.925	17,744	.928	274	.762
Casting cleaners	1,505	.909	1,487	.911	18	(1)
Chippers and sandblasters	2,210	.895	2,174	.898	36	(1)
Coremakers	2,323	.963	2,300	.964	23	(1)
Inspectors	726	.891	709	.897	17	(1)
Molders	1,555	.973	1,526	.976	29	(1)
Pattern makers	422	1.215	411	1.222	11	(1)
Skilled and semiskilled foundry workers, n. e. c	6,142	.928	6,084	.929	58	.826
Unskilled foundry workers	3,135	.862	3,053	.868	82	.640
Maintenance and service occupations	36,453	.946	31,436	.961	5,017	.851
Carpenters	692	.966	591	.974	101	.921
Electricians	2,801	1.027	2,426	1.046	375	.910
Foremen and leaders	1,953	1.142	1,673	1.152	280	1.080
Helpers and apprentices	2,322	.850	2,126	.855	196	.793
Janitors	5,091	.772	4,207	.778	884	.747
Laborers, n. e. c	2,486	.816	2,172	.835	314	.689
Repairmen, skilled	5,525	1.055	4,916	1.067	609	.956
Repairmen, machine tools	4,804	1.059	4,253	1.072	551	.954
Repairmen, other equipment	721	1.031	663	1.036	58	.971
Millwrights	2,841	.983	2,505	.998	336	.869
Pipe fitters	1,663	1.015	1,450	1.029	213	.923
Semiskilled workers, n. e. c	1,271	.936	1,051	.954	220	.849
Service workers, n. e. c	713	.839	617	.849	96	.773
Skilled workers, n. e. c	4,560	.997	3,919	1.008	641	.925
Tool grinders and cutters	1,353	1.019	1,258	1.029	95	.888
Truck drivers	1,310	.897	1,154	.910	156	.805
Watchmen	1,872	.807	1,371	.838	501	724
Females						
All departments	7,928	.720	7,500	.722	428	.683
Processing occupations	7,346	.722	6,937	.724	409	.685
Assemblers, motor	163	.730	163	.730	----	----
Assemblers, small parts	903	.719	903	.719	----	----
Assemblers and trimmers, body [2]	782	.711	643	.716	139	.687
Clerical workers, factory	122	.644	109	.668	13	(1)
Inspectors, n. e. c	208	.683	204	.687	4	(1)
Laborers, n. e. c	222	.692	219	.694	3	(1)
Other processing occupations, n. e. c	405	.733	364	.734	41	(1)
Paint-shop workers, n. e. c	179	.737	172	.739	7	(1)
Punch and press operators	207	.747	179	.754	28	(1)
Sewing-machine operators	2,137	.744	2,120	.745	17	(1)
Trim bench hands	1,880	.714	1,724	.714	156	.710
Truckers, hand, and material handlers	138	.673	137	.675	1	(1)
Foundry occupations	451	.697	439	.698	12	(1)
Skilled and semiskilled foundry workers, n. e. c	168	.736	156	.742	12	(1)
Unskilled foundry workers	283	.673	283	.673	----	----
Service workers, n. e. c	131	704	124	.711	7	(1)

[1] Workers too few to justify computation of an average.
[2] Does not include body welders.

Interpretation of the regional differences in the average hourly earnings for the several occupational groups is subject to limitations on the basis of certain complex factors, most of which have their origin in the fundamental characteristics of the industry itself. As pointed out earlier, the large automobile manufacturers operate plants both within the East North Central States and in other areas, and the differences in wage levels between the two groups of plants are, in general, small.[9] Within certain limits, therefore, it may be said that the occupations which have substantial numbers of workers outside the "automobile area" might be expected to show relatively small regional differences in occupational earnings averages, principally because of the fact that the large companies employ some 90 percent of all the workers. This is true in the case of inspectors, trim bench hands, chassis and final assemblers, and paint polishers and rubbers, in which groups the regional differences in occupational averages are well within the general regional difference of 10.1 cents.

In certain other occupations this generalization does not apply; a case in point is the tool-maker group in which the regional difference is more than 27 cents. In this instance the large difference probably reflects the fact that the outlying plants of the major companies are engaged principally in assembly and other processes which do not ordinarily involve the use of tool makers and certain other highly skilled groups. Most of the independent plants, in which wage levels tend to be lower, do, however, employ tool makers, and these smaller establishments are relatively far more important outside the East North Central States than they are within the automobile area. Thus, the difference in average earnings in this case is probably a result of the management structure of the industry to a much greater extent than it is a reflection of any marked regional differences in wage levels. Similar reasoning may be applied to certain other occupations, such, for example, as punch and press operators.

This general situation may be illustrated further by reference to the group of car loaders whose average hourly earnings are identical for the two areas shown. It is likely that few, if any, of the smaller independent plants have employees engaged exclusively in such work and so designated on pay rolls. No regional difference in earnings appears in this case, presumably because most, if not all, of the car loaders included are employed in the plants of the large companies. One additional factor is probably involved in these apparent regional differences and may be illustrated by the fact that average earnings for job setters in the East North Central States are 5 cents below those outside this central automobile area. Job setters in the cen-

[9] This comment relates, of course, only to similar establishments; most of the outlying plants of the large companies are for assembly and distribution, and it is obviously illogical to compare earnings in these plants with those in the central manufacturing plants in which the proportion of highly skilled workers and, consequently, plant average earnings are higher.

tral plants of the large companies are engaged principally in duties connected with mass-production methods, and their work may in some cases tend to be more standardized than would normally be true in a small plant subject to frequent changes of set-up. Further, it is likely that the job setter in a small plant will be expected to assume additional duties as foreman or repairman, and his rate of pay will, in consequence, tend to be higher. Since this is an occupation which would not be common in outlying plants of the large manufacturers, the explanation may well be based on this combination of circumstances rather than on any actual regional differences in wage levels for a standardized job.

Female workers.—The majority of the 7,928 female workers were employed in the larger plants, and their average hourly earnings were 72.0 cents, or 24.7 cents below those for males. The earnings of half the women employed were within 4 cents of the general average for female workers. Small-parts assemblers, body assemblers and trimmers, sewing-machine operators, trim bench hands, and core-room workers in foundries accounted for the great majority of the female employees. The number of women in plants outside the East North Central States is insufficient to provide an adequate basis for generalization.

WEEKLY HOURS

Full-time weekly hours.—Practically four-fifths (133) of the 167 vehicle and body plants studied were operating on an official 40-hour week. Most of the remaining plants reported a standard week of 42 hours (the maximum normal week established at the time of the survey under the Fair Labor Standards Act). Only four plants showed a general workweek of less than 40 hours, and an equal number were scheduling a week of more than 42 hours. The 40-hour week was found more frequently in the "automobile States" (the East North Central region), where almost 90 percent of the plants were on this schedule. This situation also results from the fact that most of the establishments were operated by a few large companies. More than three-fourths of the plants which scheduled more than 40 hours of work per week were outside the automobile area, and none of the four establishments reporting more than 42 hours were in the East North Central region.

Actual weekly hours.—The 322,941 automobile-plant employees studied worked an average of 36.8 hours per week in the pay-roll period for which the data were collected (table 11). Variations in the averages for the several regions are not large except in the case of the West North Central States where the low average reflects a slack period in several large body and assembly plants. It may be noted that the average weekly hours in automobile plants were slightly

more than an hour below the figure for the parts plants studied. This difference may be in part a result of the fact that the industry was approaching the end of a model year, and any slight effect of the seasonal dip would naturally be more apparent in automobile plants than in parts plants.

AVERAGE WEEKLY EARNINGS

The management structure and regional distribution of the automobile division of the industry are reflected in the data on weekly earnings as in the case of the other wage data. The average of $35.91 for the 271,151 workers in the East North Central States and the Michigan rate of $36.09 are slightly higher than the figure ($35.42) for the country as a whole. As in the case of weekly hours, the average for weekly earnings in the West North Central States is affected by the short workweeks in several large plants. The variations in average weekly earnings between regions would, of course, be greater were it not for the fact that the data from decentralized plants of the large companies carry sufficient weight virtually to eliminate the influence of the relatively lower earnings rates obtaining in the independent plants.

TABLE 11.—*Average Hourly Earnings, Weekly Hours, and Weekly Earnings of Workers in Automobile Division, by Geographic Division, May–June 1940*

Geographic division	Number of workers	Average hourly earnings	Average weekly hours	Average weekly earnings
All geographic divisions	322,941	$0.961	36.8	$35.42
New England and Middle Atlantic	29,712	.877	38.9	34.12
East North Central	271,151	.977	36.8	35.91
Michigan	229,845	.985	36.6	36.09
Ohio	15,185	.920	38.4	35.32
Indiana	15,399	.950	36.6	34.73
Illinois and Wisconsin	10,722	.923	37.6	34.68
West North Central	8,921	.908	31.5	28.64
Other divisions	13,157	.876	37.2	32.62

Earnings and Hours in the Automotive-Parts Division

CHARACTERISTICS OF THE DIVISION

The establishments which produce parts and accessories for automobiles vary widely with respect to size, organization, and type of product, and the industry division in which they are included is not clearly defined. "Parts plants" operated by the large motor-vehicle manufacturers are, with minor exceptions, definitely classified within this division of the industry as are also independent plants manufacturing automotive stampings, automotive electrical equipment, and numerous other products essential to automobiles. Many automo-

bile parts and accessories, however, such as body hardware, wire and cable, bearings, and other motor parts, are manufactured in plants which also produce articles not related to the motor-vehicle industry. It follows, therefore, that any group of establishments chosen to represent this division of the industry must be selected somewhat arbitrarily, and that an attempt to relate the sample of plants included in such a survey to any available statistical universe is beset with unusual difficulties.

The 281 parts plants and 148,329 workers covered by the Bureau's survey were selected in consultation with manufacturers and trade associations and are believed to constitute a representative sample of the industrial division as it is ordinarily conceived. They include establishments manufacturing products which fall into 15 general categories. The numbers of plants and workers in each of these product groups appear in table 2 (p. 10).

A number of the characteristics of this division of the industry, which exercise a marked influence on wage structure, differ substantially from those of the automobile division. For example, more than half of the automobile plants included in this survey, in which more than nine-tenths of the wage earners were employed, were operated by the 11 large companies which produced virtually all of the Nation's motor vehicles. The concentration of management among parts plants is considerably less important, for little over a fourth of the plants studied, which employed about 70 percent of the workers, were operated by 24 large companies. These differences have a profound effect on the levels and distributions of earnings.

Parts plants tend also to be more specialized. This fact inevitably results in less uniformity among establishments in occupational and wage structure. The variety of products is also greater in the parts divison; many of the plants manufacture types of parts and accessories that are not produced in any of the larger automobile plants. Women constituted nearly a fifth of the parts-plant workers while the number employed in the automobile division was little more than 2 percent of the total.

Finally, the parts plants studied were, on the average, little more than a fourth as large as the automobile and body plants. This is significant since wage levels in the industry tend, in general, to vary directly with size of plant.[10]

The labor force of this division of the industry is characterized by relatively large numbers of semiskilled workers, notably operators of various types of machines. Although trade-union organization developed fairly late in the history of the motor-vehicle industry,

[10] Additional data on the characteristics of the industry, its laborf orce, and the wage structure are contained in Part 1 of this report.

union agreements were in effect in about half the parts plants at the time this survey was conducted. These were the larger plants and, as a group, employed more than three-fourths of the workers.

Wages in the industry as a whole rose about 17 percent between May–June 1940, the period covered by the Bureau's survey, and November 1941. As pointed out earlier in this report, most of the increases were effected during the second quarter of 1941 as a result of new union agreements. These changes were, in general, of an industry-wide character and appear to have affected some 80 to 90 percent of the wage earners in a relatively uniform manner. Although the precise effects of these changes upon the wage structure of the automotive-parts division of the industry cannot be stated, it may be assumed that the workers in plants affected by the general wage changes received relatively uniform increases. There is, however, a group of plants, many of which were small, that were not immediately affected by the wage increases. Certain of these plants were not operating under union agreements at the time the changes took place. In other cases, the principal products of the plants were such that, from the point of view of union organization at least, the plants may not have been considered a part of the motor-vehicle industry proper; thus, any wage increases in these plants may have differed in amounts and effective dates. In view of the foregoing, it appears likely that wage increases in this division averaged somewhat less than the 17-percent change shown for the industry as a whole between the spring of 1940 and the fall of 1941.

The shift from civilian production to the manufacture of war materials has already occasioned profound changes in this division of the industry. As early as October 1941, virtually all of the product of some of the larger parts plants was devoted to defense orders. With the cessation of pleasure-car production, this trend will be accelerated. Many of the plants, particularly those equipped to produce motor parts, have shifted to war orders with a minimum of dislocation, and the only major problem is one of expansion. Others, however, have already been faced with the necessity for drastic reorganization to produce materials for which they were not equipped previously. It is in this second group that dislocations and changes in occupational distributions and wage structures are most pronounced.

TABLE 12.—*Percentage Distribution of Workers in Automotive-Parts Division,*

Hourly earnings	All divisions			New England and Middle Atlantic			East North Central		
							Total		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Under 37.5 cents	0.8	0.5	2.0	1.2	0.8	2.7	0.5	0.3	1.5
37.5 and under 42.5 cents	1.6	.8	4.8	1.8	1.3	3.7	1.4	.6	5.0
42.5 and under 47.5 cents	2.3	1.4	6.6	3.2	2.1	7.4	2.0	1.0	6.2
47.5 and under 52.5 cents	2.6	1.7	6.3	4.4	2.9	10.6	2.0	1.3	5.1
52.5 and under 57.5 cents	4.3	2.6	11.8	9.0	3.5	30.8	3.0	2.1	7.0
57.5 and under 62.5 cents	4.9	3.1	12.7	9.1	4.9	25.6	3.8	2.5	9.5
62.5 and under 67.5 cents	7.5	4.1	22.1	8.7	7.0	15.0	7.2	3.3	24.2
67.5 and under 72.5 cents	6.8	5.2	13.9	9.1	10.4	4.0	6.3	3.9	16.4
72.5 and under 77.5 cents	8.8	8.0	13.0	11.9	15.0	.1	8.2	6.3	16.4
77.5 and under 82.5 cents	7.9	8.5	5.0	11.4	14.2	.1	7.1	7.2	6.3
82.5 and under 87.5 cents	8.9	10.6	1.0	10.0	12.6	-------	8.7	10.4	1.3
87.5 and under 92.5 cents	10.2	12.5	.5	6.7	8.4	-------	11.3	13.9	.7
92.5 and under 97.5 cents	7.6	9.4	.2	4.0	5.0	-------	8.6	10.5	.3
97.5 and under 102.5 cents	7.9	9.6	.1	3.4	4.3	-------	9.0	11.1	.1
102.5 and under 107.5 cents	5.8	7.1	(2)	2.0	2.6	-------	6.8	8.3	(2)
107.5 and under 112.5 cents	3.8	4.7	(2)	1.3	1.6	-------	4.5	5.5	(2)
112.5 and under 117.5 cents	2.9	3.6	(2)	.8	1.0	-------	3.5	4.3	(2)
117.5 and under 122.5 cents	2.0	2.4	(2)	.5	.6	-------	2.4	2.9	(2)
122.5 and under 127.5 cents	1.1	1.3	(2)	.4	.5	-------	1.2	1.5	-------
127.5 and under 132.5 cents	.8	1.0	-------	.3	.4	-------	.9	1.1	-------
132.5 and under 137.5 cents	.4	.5	(2)	.2	.2	-------	.5	.6	(2)
137.5 and under 142.5 cents	.3	.4	-------	.2	.3	-------	.3	.4	-------
142.5 and under 152.5 cents	.3	.4	-------	.1	.1	-------	.3	.4	-------
152.5 and under 162.5 cents	.2	.2	-------	.1	.1	-------	.2	.2	-------
162.5 and under 172.5 cents	.1	.1	-------	(2)	(2)	-------	.1	.1	-------
172.5 cents and over	.2	.3	-------	.2	.2	-------	.2	.3	-------
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of plants	281			55			207		
Number of workers	148,329	120,288	28,041	27,809	22,169	5,640	117,315	95,337	21,978
Average hourly earnings	$0.838	$0.886	$0.619	$0.745	$0.790	$0.558	$0.866	$0.915	$0.638

[1] Plants distributed as follows: California, 8; Kentucky, 1; Oregon, 1. The number of women (52) employed in these plants is too small to justify computation of distributions by sex.
[2] Less than a tenth of 1 percent.

AVERAGE HOURLY EARNINGS

The earnings of the 148,329 workers in the 281 automotive-parts plants included in this survey averaged 83.8 cents per hour in May and June1940 (table 12). This figure is 12.3 cents below the corresponding rate in automobile and body plants. The earnings of about half the employees in these parts plants were within a range extending 15 cents above and 15 cents below the general average. More than a fourth of the workers were earning 97.5 cents or more per hour; at the other end of the range, fewer than a sixth received less than 62.5 cents per hour. That this industry was not affected significantly by the Fair Labor Standards Act is apparent from the fact that less than 1 percent of the workers earned under 37.5 cents per hour.

by Average Hourly Earnings, Geographic Division, and Sex, May–June 1940

East North Central.—Continued						West North Central			Other divisions [1]	Hourly earnings
Michigan			Ohio, Indiana, Illinois, and Wisconsin							
Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
0.1	(2)	0.2	1.1	0.6	3.4	7.3	4.3	23.1	0.6	Under 37.5 cents.
.6	0.1	2.6	2.5	1.2	8.4	7.6	7.3	9.4	1.3	37.5 and under 42.5 cents.
.9	.2	3.5	3.5	2.1	10.1	9.5	7.9	17.2	1.9	42.5 and under 47.5 cents.
.8	.4	2.5	3.6	2.5	8.9	8.5	7.8	11.6	4.4	47.5 and under 52.5 cents.
1.7	.9	5.1	4.7	3.6	9.6	13.8	14.0	11.8	4.5	52.5 and under 57.5 cents.
2.6	1.1	8.9	5.3	4.2	10.3	10.4	11.2	4.6	5.9	57.5 and under 62.5 cents.
5.2	1.3	21.4	9.7	5.8	28.0	7.2	7.7	4.3	7.9	62.5 and under 67.5 cents.
6.0	2.1	21.9	6.6	6.2	8.4	8.0	7.8	8.9	10.6	67.5 and under 72.5 cents.
8.8	5.4	22.7	7.5	7.5	7.3	5.0	5.6	2.2	11.6	72.5 and under 77.5 cents.
7.4	7.2	8.2	6.7	7.3	3.7	4.0	4.4	2.2	12.0	77.5 and under 82.5 cents.
9.2	11.0	1.6	8.0	9.7	.9	4.2	4.7	1.9	13.4	82.5 and under 87.5 cents.
10.9	13.3	.8	11.9	14.4	.5	3.2	3.5	1.1	7.2	87.5 and under 92.5 cents.
9.5	11.7	.3	7.4	9.0	.3	2.0	2.4	.3	8.8	92.5 and under 97.5 cents.
10.9	13.5	.2	6.6	8.0	.1	2.8	3.2	.5	5.6	97.5 and under 102.5 cents.
7.8	9.7	.1	5.4	6.5	(2)	2.3	2.7	.3	1.5	102.5 and under 107.5 cents.
5.1	6.4	(2)	3.7	4.5	.1	2.2	2.6	-------	.3	107.5 and under 112.5 cents.
4.2	5.2	-------	2.6	3.1	(2)	1.4	1.7	.3	.9	112.5 and under 117.5 cents.
3.1	3.9	-------	1.4	1.7	(2)	.3	.4	-------	.6	117.5 and under 122.5 cents.
1.6	2.0	-------	.8	.9	-------	.2	.2	.3	.7	122.5 and under 127.5 cents.
1.2	1.5	-------	.5	.6	-------	.1	.2	-------	-------	127.5 and under 132.5 cents.
.6	.7	-------	.3	.4	-------	(2)	.1	-------	-------	132.5 and under 137.5 cents.
.5	.6	-------	.1	.1	-------	(2)	.1	-------	.1	137.5 and under 142.5 cents.
.5	.7	-------	.1	.1	-------	(2)	.1	-------	-------	142.5 and under 152.5 cents.
.3	.4	-------	(2)	(2)	-------	-------	-------	-------	.1	152.5 and under 162.5 cents.
.1	.2	-------	(2)	(2)	-------	-------	-------	-------	.1	162.5 and under 172.5 cents.
.4	.5	-------	(2)	(2)	-------	(2)	.1	-------	-------	172.5 cents and over.
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	Total.
90	-------	-------	117	-------	-------	9	-------	-------	10	Number of plants.
65,948	53,069	12,879	51,367	42,268	9,099	2,345	1,974	371	860	Number of workers.
$0.914	$0.969	$0.673	$0.806	$0.849	$0.588	$0.644	$0.670	$0.496	$0.767	Average hourly earnings.

The average hourly earnings of males were 88.6 cents while those for women were 61.9 cents. As might be expected, the earnings of women showed the greater concentration—half of them were within 8.5 cents of the average, above or below, as compared with a corresponding range of 12.5 cents from the average for men. More than a fifth of the men showed earnings in excess of $1.025 per hour, but the proportion of women in this category was negligible. Conversely, scarcely more than 1 percent of the men received less than 42.5 cents per hour but the earnings of almost 7 percent of the women were below this level.

Regional Differences

Nearly three-fourths of the parts plants studied, as compared with a little over half of the automobile and body plants, were in the five East North Central States. The concentration of employees in this area, however, was slightly less in the parts division than in the automobile division of the industry. Michigan, which had almost three-fourths of all the workers in the automobile division, had less than half the parts-plant employees. Average hourly earnings of parts-plant workers in the five "automobile" States as a group were less than 3 cents above the rate for the country as a whole, but the Michigan figure exceeded the industry average by 7.6 cents. Inter-area differences in averages were considerably greater in this division of the industry than in the automobile division. A comparison of the rate for parts plants in the East North Central States with the figure for all other areas combined shows a difference of 12.8 cents, and average earnings in Michigan were 17.6 cents per hour above the combined rate for all States outside the East North Central region.

It should not be assumed, however, that the differences in these averages or those shown in table 12 are due to regional factors alone. The classification of plants on a regional basis does not result in groups which are strictly comparable. Any adequate interpretation of these regional differences in rates must take into account a complex series of factors, some of which appear to accentuate the differences whereas others seem to offset them. The relatively low earnings shown for the West North Central States will serve as an example. This region happens to be the only area that does not include one or more plants operated by one of the large companies which, in general, tend to have higher wage levels. On the other hand, the high-wage area, that is, the group of East North Central States, shows a disproportionately large number of plants producing wheels and brakes, frames, and axles, in which relatively high wages are paid. The functional and management structure of the industry, the extent of trade-union organization, sex ratios among employees, and various less tangible influences may have combined to maintain a high level of wages among automotive workers in this area quite apart from these product differences. It may be noted that earlier studies of this industry by the Bureau have consistently shown higher wages in Michigan than in other States.

The differences in sex ratios among parts-plant employees in the several regions are not striking. The proportions of women varied from 6 percent in the 10 plants located in California, Kentucky, and

Oregon to 20 percent in Indiana, but the former group showed too few woman employees to furnish a significant ratio. The inter-area differences in the average hourly earnings of men and women followed essentially the same pattern as for all workers combined, except that women's earnings showed smaller differences in terms of cents per hour as a result of the universally high concentration of women's earnings around the general average. As in the case of the average for men, the comparatively low earnings of women in the West North Central States is partly accounted for by the fact that this area includes none of the plants operated by the larger companies. The average earnings of women in the 10 plants in California, Kentucky, and Oregon are not significant because of the small number of workers.

Earnings and Type of Product

The 281 parts plants studied have been classified according to type of product on the basis of categories generally accepted by the industry.[11] Average hourly earnings for workers in the several product groups range from 71.5 cents in plants producing pistons, valves, and parts thereof to 98.7 cents for axle plants (table 13). As has already been pointed out, the earnings in any group of plants or in any area are affected by interrelated factors which are difficult to isolate. Other things being equal, however, it would be expected that product groups of plants showing hourly earnings above the general average would tend to be concentrated in the high-wage area, to contain relatively small numbers of female workers, and to include disproportionately large numbers of wage earners employed by the larger companies. Of the six product groups in which earnings are above the average for all parts plants, three (wheels, rims, and brakes; frames; and axles) had all of these characteristics. In two of the three remaining groups—the plants producing leaf springs and bumpers and those producing gears—the relatively high average earnings resulted principally from the skills required and the type of working conditions. In addition, a relatively larger number of the gear plants were in the higher-wage East North Central States. Earnings in body-hardware plants were comparatively high despite the employment of large numbers of females, but it may be noted that the earnings of women in these plants were the highest for any product group where women constituted a substantial proportion of the workers.

[11] It is recognized that such classification may result in some inaccuracies, particularly in the case of plants manufacturing more than one type of product (such plants were classified on the basis of major product by value). Since the categories are those used by the industry itself, it is believed that the results will be useful and that any errors involved are inconsequential.

TABLE 13.—*Average Hourly Earnings of Workers in Automotive-Parts Divi-*

Type of product	Number of plants	All divisions						East North Central	
		All workers		Males		Females		All workers	
		Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings
All products	281	148,329	$0.838	120,288	$0.886	28,041	$0.619	117,315	$0.866
Wheels, rims, and brakes	8	9,421	.921	8,991	.930	430	.688	8,817	.943
Chassis frames	5	7,348	.929	7,189	.932	159	.822	7,002	.939
Pistons, valves, and parts thereof	29	8,130	.715	6,972	.752	1,158	.481	6,910	.728
Leaf springs and bumpers	21	4,790	.883	4,716	.887	74	.590	3,756	.898
Automotive stampings	54	12,827	.779	9,785	.828	3,042	.606	10,099	.823
Miscellaneous machined parts	33	11,583	.808	10,495	.831	1,088	.555	7,921	.842
Instruments [1]	4	5,543	.731	3,105	.834	2,438	.586	5,380	.737
Automotive electrical equipment	35	22,024	.796	15,092	.875	6,932	.616	19,401	.818
Radiators	11	4,251	.786	3,769	.809	482	.614	897	.747
Carburetors	7	3,070	.826	2,026	.910	1,044	.642	2,451	.837
Coil (wire) springs	14	7,238	.788	4,892	.856	2,346	.636	5,884	.808
Gears	13	6,466	.896	6,446	.897	20	.651	5,688	.920
Bearings	18	15,426	.795	12,184	.849	3,242	.585	6,599	.846
Axles	12	14,025	.987	14,013	.987	12	.595	13,309	.995
Automobile-body hardware	17	16,187	.881	10,613	.974	5,574	.687	13,201	.896

[1] Speedometers, ammeters, gasoline gages, oil-pressure gages, thermometers, etc.

Average hourly earnings were relatively low in plants manufacturing pistons and valves and in those producing instruments. The low earnings in plants manufacturing pistons, valves, and other machined motor parts are explained in large part by the extent to which these products are manufactured on a mass-production basis with the use of automatic machinery; skill requirements in this product group are consequently comparatively low. The average hourly earnings of males in these plants were the lowest of any of the product groups. Women constituted more than two-fifths of the total labor force in the plants making instruments, and the earnings average for the product group consequently reflects their generally lower earnings level.

Plant Averages

A distribution of individual plants according to the average hourly earnings of all their workers together shows approximately half the plants with average earnings levels between 60 and 85 cents per hour; these plants employed a little more than two-fifths of the workers in the parts division of the industry (table 14). Less than a fifth of the plants had earnings averages above 90 cents per hour, and these, as might be expected, were the larger plants; as a group, they included almost two-fifths of the workers. All of these highest-wage plants, except one comparatively small establishment, were in the East North Central States. Twenty-three plants showed average hourly earnings below 50 cents. These were the smaller plants,

sion, by Type of Product, Geographic Division, and Sex, May–June 1940

East North Central—Con.				Other divisions					Type of product
Males		Females		All workers		Males		Females	
Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings	
95,337	$0.915	21,978	$0.638	31,014	$0.738	24,951	$0.780	6,063	$0.555	All products.
8,428	.951	389	.713	604	.611	563	.620	41	.484	Wheels, rims, and brakes.
6,843	.941	159	.822	346	.752	346	.752	------	------	Chassis frames.
5,860	.770	1,050	.485	1,220	.634	1,112	.653	108	.444	Pistons, valves, and parts thereof.
3,686	.904	70	.591	1,034	.833	1,030	.833	4	.577	Leaf springs and bumpers.
7,946	.870	2,153	.630	2,728	.630	1,839	.664	889	.555	Automotive stampings.
7,284	.862	637	.579	3,662	.736	3,211	.762	451	.519	Miscellaneous machined parts.
3,016	.840	2,364	.591	163	.543	89	.628	74	.438	Instruments.[1]
13,147	.902	6,254	.630	2,623	.646	1,945	.697	678	.499	Automotive electrical equipment.
805	.764	92	.586	3,354	.796	2,964	.820	390	.619	Radiators.
1,592	.932	859	.650	619	.786	434	.845	185	.604	Carburetors.
3,914	.881	1,970	.654	1,354	.694	978	.750	376	.538	Coil (wire) springs.
5,668	.921	20	.651	778	.739	778	.739	------	------	Gears.
5,200	.902	1,399	.629	8,827	.759	6,984	.812	1,843	.554	Bearings.
13,297	.995	12	.595	716	.840	716	.840	------	------	Axles.
8,651	.991	4,550	.705	2,986	.816	1,962	.907	1,024	.604	Automobile-body hardware.

employing an average of less than 120 workers; 13 of the 23 were in the East North Central States.

Hourly earnings and size of operating company.—The concentration of employees in plants operated by large companies, as already noted,

TABLE 14.—*Distribution of Plants and Workers in Automotive-Parts Division, by Plant Average Hourly Earnings, Size of Company, and Region, May–June 1940*

Plant average hourly earnings (in cents)	All companies				Companies employing 1,500 or more workers				Companies employing fewer than 1,500 workers			
	All divisions		East North Central	Other divisions	All divisions		East North Central	Other divisions	All divisions		East North Central	Other divisions
	Plants	Workers	Plants	Plants	Plants	Workers	Plants	Plants	Plants	Workers	Plants	Plants
Under 40.0	4	208	1	3	------	------	------	------	4	208	1	3
40.0–44.9	6	478	2	4	------	------	------	------	6	478	2	4
45.0–49.9	13	2,002	10	3	------	------	------	------	13	2,002	10	3
50.0–54.9	24	2,774	17	7	------	------	------	------	24	2,774	17	7
55.0–59.9	22	[1] 3,361	14	8	2	(1)	1	1	20	3,361	13	7
60.0–64.9	25	7,313	18	7	3	3,846	2	1	22	3,467	16	6
65.0–69.9	22	[2] 5,726	14	8	1	(2)	1	------	21	5,726	13	8
70.0–74.9	36	13,137	22	14	10	8,068	6	4	26	5,069	16	10
75.0–79.9	27	15,722	17	10	10	10,349	6	4	17	5,373	11	6
80.0–84.9	32	20,130	26	6	12	14,560	10	2	20	5,570	16	4
85.0–89.9	22	21,344	19	3	13	19,056	11	2	9	2,288	8	1
90.0–94.9	22	27,388	22	------	14	25,000	14	------	8	2,388	8	------
95.0–99.9	12	10,747	11	1	8	7,861	8	------	4	2,886	3	1
100.0 and over	14	17,999	14	------	6	15,786	6	------	8	2,213	8	------
Total	281	148,329	207	74	79	104,526	65	14	202	43,803	142	60
Average hourly earnings	$0.838		$0.866	$0.738	$0.881		$0.903	$0.780	$0.735		$0.759	$0.681

[1] Workers in 2 plants included in interval 60.0–64.9 cents.
[2] Workers in 1 plant included in interval 70.0–74.9 cents.

is somewhat less in the parts division of the industry than in the automobile and body division. About 70 percent of all the workers were employed in parts plants operated by the larger companies as compared with 90 percent in the automobile division.[12] The 104,526 workers employed in the parts plants of large firms showed average hourly earnings of 88.1 cents, or 14.6 cents above the average for employees of the smaller firms. The corresponding difference between large and small automobile and body manufacturers was slightly less—13.5 cents. More than four-fifths of the parts plants operated by large companies were in the East North Central States and included a similar proportion of their employees. The regional difference between plants of the larger companies, which amounted to 12.3 cents (table 14), appears to be striking, but it must be borne in mind that groups of plants in the East North Central States are not strictly comparable with those in other areas, even when they are operated by the same company. This apparent large regional difference is partly a reflection of the fact that the East North Central States include disproportionately large numbers of parts plants in which hourly earnings were above the general average because of the nature of the product and its requirements in terms of highly skilled workers. Conversely, 12 of the 14 plants operated outside the "automobile States" by the large companies were manufacturing products which showed earnings below the general level for all parts plants. It is probable that the inter-area difference of 12.3 cents in earnings among plants of the large companies tends to overstate the actual regional difference, whereas the regional variation of 7.8 cents between small companies may be an understatement.

None of the plants operated by the larger companies showed average earnings under 55 cents per hour, but nearly a fourth of the small-company plants had averages below that level. At the other end of the scale, a third of the large-company plants had earnings averages above 90 cents per hour, but only a tenth of the plants operated by small companies were in this category.

Earnings and size of plant.—The relationship between average hourly earnings of workers and size of establishment is somewhat more pronounced among parts plants than in the automobile division of the industry. Only 6 of the 69 establishments with 100 employees or less showed plant average hourly earnings of 80 cents or more, but only 4 of the 14 plants with more than 2,500 workers each had averages below 80 cents (table 15); of the 26 plants in which

[12] It is recognized that these ratios as well as the differences in plant average hourly earnings are affected by the definition of large and small companies, both of which are arbitrary. However, in the case of the automobile division, the two groups of companies were clear-cut and a dividing point of 5,000 employees was used. In the case of parts plants, which are about a fourth as large, companies employing 1,500 or more workers were considered as large.

earnings averaged 95 cents or more per hour, 15 had more than 500 employees each. More than a fourth of all the establishments showed between 101 and 250 workers each and the plant average hourly earnings among this group were widely distributed.

TABLE 15.—*Distribution of Plants in Automotive-Parts Division, by Plant Average Hourly Earnings and Size of Plant, May–June 1940*

Average hourly earnings	Total		Size of plant in terms of number of workers						
	Employees	Plants	Under 51	51–100	101–250	251–500	501–1,000	1,001–2,500	2,501 and over
Under 40.0 cents	208	4	2		2				
40.0–44.9 cents	478	6	1	3	2				
45.0–49.9 cents	2,002	13	3	5	4			1	
50.0–54.9 cents	2,774	24	7	7	7	2		1	
55.0–59.9 cents	3,894	22	2	5	9	6			
60.0–64.9 cents	6,780	25	4	6	8	2	3	1	1
65.0–69.9 cents	6,226	22		4	11	2	4	1	
70.0–74.9 cents	12,637	36	3	6	8	10	7	2	
75.0–79.9 cents	15,722	27	4	1	7	5	4	3	3
80.0–84.9 cents	20,130	32	1	2	9	8	7	3	2
85.0–89.9 cents	21,344	22		3	2	8	4	3	2
90.0–94.9 cents	27,388	22			5	5	7	1	4
95.0–99.9 cents	10,747	12				2	5	5	
100.0 cents and over	17,999	14			4	5	1	2	2
Number of plants		281	27	42	78	55	42	23	14
Number of employees	148,329		881	2,889	11,787	18,378	24,790	34,255	55,349
Average hourly earnings	$0.838		$0.599	$0.627	$0.698	$0.791	$0.808	$0.847	$0.904

Size of Community and Unionization

The earnings of workers in organized parts plants in the East North Central States tended, in general, to be higher in the larger cities than in the small, although the relationship was neither close nor uniform. There was virtually no relationship between earnings and size of city in States outside the East North Central area or in the nonunion plants, as a whole.

Earnings in union plants were, as might be expected, somewhat higher than those in nonunion plants, and the differences were larger in the East North Central States than elsewhere. Slightly more than half (146) of the plants reported union agreements in effect at the time this study was made. The organized plants were, on the average, more than three times as large as the plants which reported no union agreements in effect, and the latter group employed less than a fourth of all the workers. Of the 207 plants in the East North Central States, 115 reported union agreements, but these establishments employed 80 percent of the workers in the region. Approximately two-thirds of the workers outside this region were employed in the 31 organized plants; 43 plants, with the remaining third of the employees, reported no union agreements.

Occupational Differences

Male workers.—Almost four-fifths of the males employed in the automotive-parts division of the industry were working in production departments. As in the case of the automobile division, hourly earnings of male workers in these departments were slightly below (2.1 cents) the general average for all men in the parts division as a whole (table 16). Maintenance workers received an average of 88.1 cents per hour or one-half cent below the figure for all males, and the rate for all male foundry workers was 2.5 cents below the general average. The average for males in tool and die departments in parts plants was $1.088 or 20.2 cents above the average earnings of all men.

TABLE 16.—*Average Hourly Earnings of Workers in Automotive-Parts Division, by Sex, Occupation, and Geographic Division, May–June 1940*

Occupation	All divisions		East North Central		Other divisions	
	Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings
Males						
All departments	120,288	$0.886	95,337	$0.915	24,951	$0.780
Processing occupations	95,328	.865	76,065	.894	19,263	.753
Assemblers, axle	1,522	.983	1,476	.986	46	.891
Assemblers, sheet-metal, subassembly	1,557	.799	748	.794	809	.804
Assemblers, small parts	7,866	.814	6,201	.842	1,665	.710
Assemblers, spring and bumper	408	.870	327	.891	81	.790
Bench hands, machined parts	478	.865	375	.905	103	.710
Clerical workers, factory	2,624	.786	2,036	.815	588	.687
Crane and hoist operators	472	.860	413	.877	59	.748
Die setters	907	.982	778	.994	129	.909
Drop-hammer operators	645	1.361	575	1.416	70	.942
Foremen and lay-out men	1,968	.996	1,705	1.017	263	.862
Forge-shop workers, not elsewhere classified	946	.939	813	.958	133	.834
Formers and fitters, springs and bumpers	438	.946	324	.957	114	.917
Hardener and annealer helpers	1,302	.844	951	.853	351	.743
Hardeners and annealers	1,210	.896	935	.930	275	.779
Heaters, forge shop	542	1.035	450	1.070	92	.868
Helpers, processing occupations, not elsewhere classified	803	.740	632	.791	171	.563
Inspectors, tool, die, and lay-out	329	1.083	257	1.111	72	.987
Inspectors, not elsewhere classified	7,050	.825	5,491	.860	1,559	.704
Job setters	2,605	.956	1,841	.995	764	.866
Laborers, not elsewhere classified	5,225	.741	4,141	.764	1,084	.657
Leaders and relief workers	1,127	.957	796	.983	331	.896
Metal finishers	337	.890	279	.940	58	.683
Operators, machining processes	23,051	.886	18,155	.916	4,896	.778
Boring machines	548	.910	495	.929	53	.732
Drill presses	4,268	.871	3,697	.891	571	.750
Gear cutters	836	.940	680	.981	156	.756
Grinding machines	6,075	.892	4,179	.933	1,896	.805
Lathes, automatic and semiautomatic	5,924	.914	4,662	.946	1,262	.798
Lathes, hand	1,270	.852	1,147	.869	123	.695
Milling machines	1,501	.865	1,218	.882	283	.784
Miscellaneous machines, not elsewhere classified	2,629	.838	2,077	.877	552	.697
Other processing occupations, not elsewhere classified	5,647	.871	4,857	.889	790	.766
Packers and craters	1,063	.691	707	.717	356	.639
Paint-shop workers, not elsewhere classified	795	.829	626	.868	169	.697
Painters, spray	620	.894	528	.929	92	.712
Platers	912	.862	729	.891	183	.755
Polishers and buffers, plating	3,356	1.019	2,845	1.028	511	.975
Polishers and rubbers, paint	222	1.006	196	1.049	26	.691
Punch and press operators	7,956	.853	6,544	.886	1,412	.714
Repairmen, productive, not elsewhere classified	820	.897	554	.917	266	.860
Sheet-metal-machine operators, not elsewhere classified	684	.848	549	.879	135	.727
Straighteners	457	.911	430	.916	27	.825
Truckers, hand, and material handlers	5,784	.746	4,743	.770	1,041	.644

TABLE 16.—*Average Hourly Earnings of Workers in Automotive-Parts Division, by Sex, Occupation, and Geographic Division, May–June 1940*—Continued

Occupation	All divisions		East North Central		Other divisions	
	Number	Average hourly earnings	Number	Average hourly earnings	Number	Average hourly earnings
Males—Continued						
Processing occupations—Continued.						
Truckers, power, inside	802	$0.821	672	$0.840	130	$0.727
Welders and brazers, hand	1,088	.966	971	1.010	117	.630
Welders and brazers, machine	1,710	.874	1,415	.905	295	.730
Tool- and die-room occupations	9,042	1.088	6,907	1.128	2,135	.962
Foremen and leaders	354	1.354	270	1.370	84	1.305
Tool and die makers	7,641	1.126	5,935	1.162	1,706	1.006
Tool and die maker apprentices	819	.635	538	.658	281	.592
Tool-room workers, not elsewhere classified	228	.969	164	.980	64	.942
Foundry occupations	2,070	.861	1,646	.869	424	.823
Casting cleaners	231	.821	191	.825	40	.796
Chippers and sand blasters	241	.837	180	.842	61	.821
Coremakers	119	.886	92	.897	27	.851
Inspectors	60	.758	52	.761	8	(1)
Molders	438	.950	340	.974	98	.855
Pattern makers	63	1.073	55	1.085	8	(1)
Skilled and semiskilled foundry workers, not elsewhere classified	571	.869	470	.867	101	.879
Unskilled foundry workers	347	.752	266	.749	81	.762
Maintenance and service occupations	13,848	.881	10,719	.907	3,129	.794
Carpenters	314	.883	241	.901	73	.822
Electricians	989	1.009	810	1.030	179	.921
Foremen and leaders	538	1.109	405	1.137	133	1.024
Helpers and apprentices	1,156	.792	764	.823	392	.731
Janitors	960	.680	735	.695	225	.630
Laborers, not elsewhere classified	995	.761	738	.792	257	.672
Repairmen, skilled	2,608	.984	2,014	1.013	594	.886
Repairmen, machine tools	2,490	.985	1,922	1.014	568	.887
Repairmen, other equipment	118	.960	92	.984	26	.881
Millwrights	1,189	.919	966	.940	223	.829
Pipefitters	470	1.001	373	1.032	97	.878
Semiskilled workers, not elsewhere classified	571	.826	470	.836	101	.781
Service workers	309	.713	232	.735	77	.649
Skilled workers, not elsewhere classified	1,395	.954	1,095	.977	300	.871
Tool grinders and cutters	758	.917	645	.941	113	.788
Truck drivers	415	.800	306	.822	109	.743
Watchmen	1,181	.687	925	.702	256	.631
Females						
All departments	28,041	.619	21,978	.638	6,063	.555
Processing occupations	27,801	.619	21,786	.638	6,015	.555
Assemblers, sheet-metal, subassembly	661	.629	344	.628	317	.630
Assemblers, small parts	11,110	.617	9,243	.633	1,867	.538
Clerical workers, factory	221	.540	160	.551	61	.511
Inspectors, not elsewhere classified	4,854	.586	3,417	.604	1,437	.546
Laborers, not elsewhere classified	528	.589	407	.605	121	.539
Operators, machining processes	3,661	.631	2,868	.652	793	.559
Drill presses	1,017	.637	805	.652	212	.578
Grinding machines	306	.564	26	.573	280	.564
Lathes, automatic and semiautomatic	73	.576	66	.576	7	(1)
Milling machines	163	.596	146	.607	17	(1)
Miscellaneous machines, not elsewhere classified	2,102	.644	1,825	.659	277	.544
Other processing occupations, not elsewhere classified	769	653	597	.680	172	.568
Packers and craters	862	.490	669	.512	193	.418
Paint-shop workers, not elsewhere classified	640	.686	565	.698	75	.596
Painters, spray	200	.567	179	.557	21	(1)
Punch and press operators	3,599	.686	2,844	.706	755	.607
Truckers, hand, and material handlers	590	.618	396	.642	194	.570
Welders and brazers, machine	106	.649	97	.659	9	(1)
Foundry occupations [2]	27	.601	25	.616	2	(1)
Service occupations	213	.604	167	.628	46	.519
Janitresses	176	.595	136	.619	40	.512
Service workers, not elsewhere classified	37	.646	31	.663	6	(1)

[1] Workers too few to justify computation of an average.
[2] Numbers insufficient to classify by detailed occupational groups.

Working foremen in tool and die rooms, as in the case of automobile and body plants, were the highest-paid single occupational group in the parts plants; their average of $1.354 was 6.2 cents below that for similar employees in automobile plants.[13] Except for apprentices, the janitors, with average earnings of 68.0 cents per hour, were the lowest-paid group. Earnings among male workers in production departments varied from $1.361 per hour for drop-hammer operators to 69.1 cents for packers and craters. In the automobile and body division the averages for 23 occupations, which included nearly half the male production workers, as already pointed out, were within 3 cents of the general average for the group. No such high degree of concentration was found in the earnings of men employed in the production departments of parts plants; a range 3 cents above and below the group average of 86.5 cents included only 16 occupations which employed less than two-fifths of the workers.

About one-eighth of all the men employed in parts plants were classified in the 11 occupational groups for which average earnings were $1.00 or more per hour, as compared with a quarter of the men classified in 28 occupations in automobile and body plants. Four occupational groups totaling about 9,000 parts-plant male employees showed average hourly earnings in excess of $1.10; included were maintenance foremen and leaders ($1.109), tool and die makers ($1.126), foremen and leaders in tool and die rooms ($1.354), and drop-hammer operators ($1.361). Fourteen occupational groups, in which nearly a fifth of the male workers were classified, showed average hourly earnings below the 80-cent level; in the automobile division the 5,091 janitors were the only employees (apprentices excepted) in this category. Six occupational groups (in addition to helpers and apprentices in production departments), which included more than 14,000 male parts-plant workers, had average earnings under 75 cents per hour. These groups were janitors (68.0 cents), watchmen (68.7 cents), packers and craters (69.1 cents), miscellaneous service workers (71.3 cents), laborers in production departments (74.1 cents), and truckers and material handlers (74.6 cents).

Data on regional differences in the earnings of occupational groups are, in general, not conclusive. As is pointed out above in connection with the general averages of earnings, none of the geographical rate differences is clear cut. Further, the numbers of workers in several of the occupational categories shown are too small to justify the computation of averages even when data for all the States outside the East North Central area are combined.

[13] It should be noted that important differences in the technological characteristics and occupational patterns of the two divisions of the motor-vehicle industry make comparisons of occupational earnings rates somewhat hazardous. Certain occupations, such as line assembly work, which are very important in large vehicle plants, do not appear in the parts division. Further, a few occupations shown under the same headings may not, because of differences in technology, be strictly comparable from one division to another.

Female workers.—Practically all of the 28,000 women employed in the parts plants studied were working in production departments. Nearly 40 percent were small-parts assemblers whose earnings averaged 61.7 cents per hour. The highest earnings paid to women were received by paint-shop workers and by punch and press operators. The rate for both of these occupational groups was 68.6 cents per hour and the latter included about an eighth of the total females. The 862 women classified as packers and craters had the lowest rate of earnings. Inspectors with average hourly earnings of 58.6 cents, drill-press operators (63.7 cents), and miscellaneous machine operators (64.4 cents) were the only other occupational groups which included substantial numbers of women.

WEEKLY HOURS AND EARNINGS

Full-time Weekly Hours

Four-fifths (223) of the 281 parts plants included in the survey were operated on the basis of a 40-hour week. The majority of the remainder had a 42-hour schedule although 11 were operating less than 40 hours and 7 were normally working overtime, i. e., more than the 42 hours then allowed at basic wage rates by the Fair Labor Standards Act. Full-time hours showed little variation between the East North Central or "automobile" States and the other areas.

Actual Weekly Hours

Employees in the parts plants studied actually worked an average of 37.9 hours per week during the pay-roll period for which the data were collected. Regional differences in average weekly hours were not striking; none varied from the combined average by more than 2.2 hours (table 17).

TABLE 17.—*Average Hourly Earnings, Weekly Hours, and Weekly Earnings of Workers in Automotive-Parts Division, by Geographic Division, May–June 1940*

Geographic division	Number of plants	Number of workers	Average hourly earnings	Average weekly hours	Average weekly earnings
All divisions	281	148,329	$0.838	37.9	$31.75
New England and Middle Atlantic	55	27,809	.745	39.2	29.18
East North Central	207	117,315	.866	37.6	32.54
Michigan	90	65,948	.914	37.0	33.80
Ohio	51	19,733	.823	37.3	30.73
Indiana	25	18,149	.834	38.2	31.83
Illinois and Wisconsin	41	13,485	.747	40.1	29.94
West North Central	9	2,345	.644	38.2	24.56
Other divisions	10	860	.767	35.9	27.55

Since the data on weekly hours are based on a single pay roll, they necessarily reflect the different slack and busy periods of the various groups of plants. This is apparent from the averages for the several groups of workers employed in establishments manufacturing different

types of products. However, none of the group averages differed from the general figure by as much as 4 hours per week (table 18).

TABLE 18.—*Average Hourly Earnings, Weekly Hours, and Weekly Earnings of Workers in Automotive-Parts Division, by Product, May–June 1940*

Product	Number of plants	Number of workers	Average hourly earnings	Average weekly hours	Average weekly earnings
All products	281	148,329	$0.838	37.9	$31.75
Wheels, rims, and brakes	8	9,421	.921	36.0	33.13
Chassis frames	5	7,348	.929	40.8	37.94
Pistons, valves, and parts thereof	29	8,130	.715	39.1	27.93
Leaf springs and bumpers	21	4,790	.883	36.0	31.82
Automotive stampings	54	12,827	.779	36.7	28.56
Miscellaneous machined parts	33	11,583	.808	38.2	30.89
Instruments [1]	4	5,543	.731	38.8	28.36
Automotive electrical equipment	35	22,024	.796	37.4	29.81
Radiators	11	4,251	.786	38.7	30.45
Carburetors	7	3,070	.826	38.0	31.38
Coil (wire) springs	14	7,238	.788	34.0	26.78
Gears	13	6,466	.896	36.3	32.53
Bearings	18	15,426	.795	38.6	30.65
Axles	12	14,025	.987	39.9	39.40
Automobile-body hardware	17	16,187	.881	38.3	33.73

[1] Speedometers, ammeters, gasoline gages, oil-pressure gages, thermometers, etc.

Average Weekly Earnings

Weekly earnings for all parts-plant workers averaged $31.75 during the pay-roll period used as the basis for this study (table 17). The lowest average is that for the West North Central States and is explained by the low average hourly earnings rate discussed earlier. The highest weekly figure was that for Michigan workers who earned an average of $33.80. As in the case of hours, weekly earnings data were affected by the operating schedules of individual plants during the pay-roll period used as the basis for the study.

Motor-Vehicle Industry as a Whole

AVERAGE HOURLY EARNINGS

The average hourly earnings of the entire group of 471,270 employees in the 448 plants included in the survey of the motor-vehicle industry amounted to 92.2 cents during May and June 1940, and the earnings of half of the workers were within approximately 10 cents of the general average (table 19). The comparatively high level of earnings in the industry is emphasized by the fact that the rates for a fourth of this large group of workers were in excess of $1.03 per hour, whereas fewer than 3 percent, principally women employed in parts plants, earned less than 52.5 cents per hour. Comparison of the earnings of workers in plants in the "automobile region," that is, the East North Central States (Michigan, Illinois, Ohio, Indiana, and Wisconsin), with the average for other areas reveals a difference of 11.7 cents. The data shown in table 19 provide a general picture of wage levels in the industry as it is popularly conceived.

TABLE 19.—*Percentage Distribution of Workers in Motor-Vehicle Industry by Average Hourly Earnings and Geographic Division, May–June 1940*

Hourly earnings (in cents)	All divisions	East North Central[1]	Other divisions	Hourly earnings (in cents)	All divisions	East North Central[1]	Other divisions
Under 37.5	0.4	0.2	1.3	117.5 and under 122.5	2.3	2.6	0.9
37.5 and under 42.5	.6	.5	1.2	122.5 and under 127.5	1.2	1.3	.4
42.5 and under 47.5	.8	.7	1.7	127.5 and under 132.5	.8	.9	.2
47.5 and under 52.5	1.1	.7	2.5	132.5 and under 137.5	.6	.7	.1
52.5 and under 57.5	1.7	1.1	4.5	137.5 and under 142.5	.4	.5	.1
57.5 and under 62.5	2.0	1.4	4.7	142.5 and under 152.5	.4	.5	.1
62.5 and under 67.5	3.0	2.7	4.4	152.5 and under 162.5	.2	.2	(2)
67.5 and under 72.5	3.1	2.7	4.8	162.5 and under 172.5	.1	.1	(2)
72.5 and under 77.5	6.2	5.5	9.1	172.5 and over	.1	.2	.1
77.5 and under 82.5	7.5	7.1	9.6				
82.5 and under 87.5	9.9	9.2	13.0	Total	100.0	100.0	100.0
87.5 and under 92.5	13.4	13.6	12.3				
92.5 and under 97.5	10.8	11.0	10.3	Number of plants	448	296	152
97.5 and under 102.5	13.9	15.1	8.6	Number of workers	471,270	388,466	82,804
102.5 and under 107.5	9.2	10.2	4.6	Average hourly earnings	$0.922	$0.943	$0.826
107.5 and under 112.5	5.9	6.4	3.5	Average weekly hours	37.2	37.0	37.9
112.5 and under 117.5	4.4	4.9	2.0	Average weekly earnings	$34.26	$34.89	$31.30

[1] Ohio, Indiana, Illinois, Michigan, and Wisconsin.
[2] Less than a tenth of 1 percent.

The group of establishments from which the data for table 20 were collected include only those classified by the 1939 Census of Manufactures as belonging to the motor-vehicle, automotive-stamping, or automotive-electrical-equipment industries. This group is somewhat more homogeneous than the larger group on which table 19 is based because of the exclusion of establishments manufacturing such items as hardware, coil springs, locks, and other products which, as far as technological processes and occupations are concerned, have little in common with the motor-vehicle industry proper. This greater similarity of plants included is apparent from the somewhat higher concentration of individual earnings about the general average and

TABLE 20.—*Percentage Distribution of Workers in Motor-Vehicle and Allied[1] Industries, by Average Hourly Earnings and Geographic Division, May–June 1940*

Hourly earnings (in cents)	All divisions	East North Central	Other divisions	Hourly earnings (in cents)	All divisions	East North Central	Other divisions
Under 37.5	0.3	0.1	1.3	117.5 and under 122.5	2.5	2.7	1.1
37.5 and under 42.5	.3	.2	.9	122.5 and under 127.5	1.2	1.4	.4
42.5 and under 47.5	.4	.3	1.0	127.5 and under 132.5	.8	1.0	.2
47.5 and under 52.5	.6	.4	1.7	132.5 and under 137.5	.6	.7	.2
52.5 and under 57.5	1.0	.6	3.2	137.5 and under 142.5	.5	.5	.1
57.5 and under 62.5	1.3	.9	3.3	142.5 and under 152.5	.5	.6	.1
62.5 and under 67.5	2.6	2.3	4.1	152.5 and under 162.5	.2	.2	(2)
67.5 and under 72.5	2.3	2.0	4.0	162.5 and under 172.5	.1	.1	
72.5 and under 77.5	5.8	5.2	8.6	172.5 and over	.1	.2	.1
77.5 and under 82.5	7.5	7.1	9.3				
82.5 and under 87.5	10.1	9.4	13.7	Total	100.0	100.0	100.0
87.5 and under 92.5	14.0	14.1	13.5				
92.5 and under 97.5	11.4	11.3	11.8	Number of plants	308	197	111
97.5 and under 102.5	15.1	16.1	9.8	Number of workers	421,543	354,017	67,526
102.5 and under 107.5	9.8	10.7	5.2	Average hourly earnings	$0.941	$0.958	$0.852
107.5 and under 112.5	6.3	6.8	4.1	Average weekly hours	37.1	37.0	37.7
112.5 and under 117.5	4.7	5.1	2.3	Average weekly earnings	$34.93	$35.46	$32.13

[1] As classified by Census. Includes automotive-stamping and automotive-electrical-equipment plants; excludes establishments producing passenger trailers.
[2] Less than a tenth of 1 percent.

from the fact that the regional difference is smaller than that found among plants included in the broader definition of the industry. Despite the greater homogeneity of this second group of plants, the elements which explain variations in earnings are too complex to justify detailed analysis on such a broad basis, and any adequate discussion necessitates separate treatment of the two broad divisions of the industry. It may also be noted that, quite apart from these variations resulting from differences in definition of the industry, the mere combination of the automobile and automotive-parts divisions of the industry tends to obscure certain characteristics of both. The difference in average earnings, for example, between these two divisions, each treated as a whole, is more than 12 cents.

During the pay-roll period selected for study, employees in the entire motor-vehicle industry worked an average of 37.2 hours per week. Since the production of automobiles is a seasonal industry, the number of hours worked in a particular week or pay-roll period is not highly significant. The effect of varying the definition of the industry noted in connection with hourly earnings is apparent here also. Hours in the industry as defined in table 20 were shorter by one-tenth of an hour. Average weekly earnings showed a slight difference in the opposite direction, and amounted to $34.26 and $34.93, respectively, for the broader and narrower definitions of the industry.

Annual Earnings of Michigan Motor-Vehicle Workers

Data on the annual earnings of approximately half the Michigan wage earners included in the Bureau's survey of the motor-vehicle industry were made available to the Bureau of Labor Statistics by the State Unemployment Compensation Commission for the year ended June 30, 1940. An average of $1,562 was paid by motor-vehicle plants to the 153,682 workers whose records were selected at random for this tabulation (table 21). The 120,400 employees in the automobile division of the industry earned an average of $1,589, while the corresponding figure for 33,282 workers in parts plants was about 8 percent less or $1,464. The average hourly earnings of Michigan workers in these two divisions of the industry during May and June 1940 also differed by almost 8 percent. It appears that the automobile and parts plants provided approximately equal amounts of employment for these workers.

These averages are affected by several factors which must be eliminated before any adequate analysis of annual earnings can be made. The form in which the data are available does not permit all the statistical refinements required for precise determinations, but two important factors can be isolated.

In the first place, about 8 percent (12,568) of this group were without earnings from the motor-vehicle industry during one, two, or

three quarters of the year. As might be expected, the average annual earnings of the remaining 141,114 workers who were employed for at least a part of each of the four quarters were somewhat higher; they amounted to $1,625 for the industry as a whole and $1,654 and $1,520, respectively, for the automobile and parts divisions. The irregularly employed workers constituted a relatively small proportion of the total and were made up primarily of the industry's reserve labor force, workers who transferred from one industry to another during the period, and wage earners who entered or left the Michigan labor market during the year.

In the second place, these data on earnings take no account of amounts received as a result of employment in industries other than motor vehicles. Information is available on such earnings as were received from industries covered by the Michigan unemployment-compensation law. However, the total amounts involved are very small. In fact, the average for the 153,682 workers as a group would be increased by only $34, that is to $1,596, if all such earnings were included. This result, taken by itself, is misleading because these earnings from other covered employment were not, of course, distributed among the entire group of motor-vehicle workers. They were divided among only 12,128 workers (about 8 percent of the total) and averaged $428 each for the particular group affected (table 22).

It is not possible to estimate the amounts received by these workers from sources other than covered employment within the State. It appears likely that the average for the whole body of motor-vehicle workers would be affected but slightly by the inclusion of unreported income. It is certain that substantial amounts were received by some individual workers on account of public employment, domestic service, agricultural employment, work outside the State, and other employment not covered by the law. Income received from annuities, investments, insurance policies, and similar sources was, of course, not reported. For these reasons, it is important to avoid interpreting any of these data on annual earnings as indexes of total earnings, total income, or levels of living.

Despite the presence of complicating factors, the tendency for individual earnings to concentrate about the general average is apparent. Well over half the 153,682 employees received between $1,200 and $1,800 in the form of wages from the motor-vehicle industry. As in the case of hourly earnings, this concentration is more marked in the automobile division of the industry than it is among workers in parts plants. It should be noted that the group of workers for whom annual earnings are known is somewhat heterogeneous, since it includes those employed in various types and sizes of plants, residents of large and small places, and workers of both sexes. Women constituted a negligible proportion of total employees in automobile

plants, but approximately a fifth of the workers in parts plants. These factors tend, at least in part, to decrease the concentration of annual earnings about the average.

TABLE 21.—*Percentage Distribution of Michigan Workers, by Average Annual Earnings from Motor-Vehicle Employment, Year Ended June 30, 1940*[1]

Annual earnings	Workers employed at any time during year, in—			Workers employed during all four quarters of year, in—		
	Motor-vehicle industry	Automobile division	Automotive-parts division	Motor-vehicle industry	Automobile division	Automotive-parts division
Under $100	1.4	0.5	5.0	1.3	0.4	4.8
$100 and under $200	.3	.2	.5	(1)	(1)	(1)
$200 and under $300	.5	.5	.5	.1	.1	.1
$300 and under $400	.6	.6	.6	.1	.1	.2
$400 and under $500	.6	.6	.7	.2	.1	.3
$500 and under $600	.6	.5	1.0	.2	.1	.5
$600 and under $700	.8	.7	1.4	.4	.2	.9
$700 and under $800	1.0	.8	1.8	.5	.3	1.2
$800 and under $900	1.6	1.4	2.4	1.0	.7	2.0
$900 and under $1,000	2.6	2.3	3.9	1.8	1.4	3.4
$1,000 and under $1,100	4.1	3.8	5.2	3.2	2.7	5.0
$1,100 and under $1,200	4.9	4.6	5.8	4.5	4.1	5.7
$1,200 and under $1,300	5.8	5.7	6.0	5.8	5.7	6.1
$1,300 and under $1,400	7.9	8.2	6.8	8.2	8.5	7.1
$1,400 and under $1,500	9.0	9.4	7.5	9.5	10.0	7.9
$1,500 and under $1,600	9.7	10.1	8.0	10.4	10.9	8.6
$1,600 and under $1,700	11.3	11.8	9.4	12.3	12.8	10.3
$1,700 and under $1,800	10.2	10.9	7.9	11.2	11.9	8.4
$1,800 and under $1,900	7.5	7.9	5.9	8.1	8.6	6.3
$1,900 and under $2,000	5.0	5.2	4.3	5.4	5.7	4.6
$2,000 and under $2,100	3.5	3.5	3.3	3.8	3.8	3.6
$2,100 and under $2,200	2.6	2.7	2.3	2.8	2.9	2.5
$2,200 and under $2,300	2.0	2.0	1.9	2.2	2.2	2.1
$2,300 and under $2,400	1.6	1.5	1.8	1.7	1.6	1.9
$2,400 and under $2,500	1.2	1.2	1.5	1.3	1.3	1.6
$2,500 and under $2,600	1.1	1.0	1.5	1.2	1.1	1.6
$2,600 and under $2,700	.8	.8	.9	.9	.9	1.0
$2,700 and under $2,800	.6	.5	.8	.6	.6	.9
$2,800 and under $2,900	.4	.4	.5	.4	.4	.5
$2,900 and under $3,000	.3	.2	.3	.3	.3	.3
$3,000 and over	.5	.5	.6	.6	.6	.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of workers	153,682	120,400	33,282	141,114	110,202	30,912
Average annual earnings from motor-vehicle employment	$1,562	$1,589	$1,464	$1,625	$1,654	$1,520

[1] Data from records of the Michigan Unemployment Compensation Commission.

TABLE 22.—*Average Annual Earnings from all Covered Employment of Workers in Michigan Motor-Vehicle Plants, by Source of Earnings, Year Ended June 30, 1940*[1]

Classification of workers by source of earnings and length of employment	Number of workers	Average annual earnings received from—		
		All sources	Motor-vehicle industry	Other industries
All workers	153,682	$1,596	$1,562	$34
Earnings from motor-vehicle industry only	141,554	1,609	1,609	----------
Earnings from motor-vehicle and other covered industries	12,128	1,442	1,014	428
Earnings in all four quarters	141,114	1,659	1,625	34
Earnings from motor-vehicle industry only	130,835	1,667	1,667	----------
Earnings from motor-vehicle and other covered industries	10,279	1,556	1,089	467
Earnings in less than four quarters	12,568	888	857	31
Earnings from motor-vehicle industry only	10,719	901	901	----------
Earnings from motor-vehicle and other covered industries	1,849	809	601	208

[1] Data from records of the Michigan Unemployment Compensation Commission.

Not quite 4 percent of the Michigan motor-vehicle workers received $2,500 or more from the industry during the year 1939–40. The slightly larger proportions of workers in these higher earnings brackets reported by parts plants is probably not significant. The experimental and development work in the large automobile plants is ordinarily done by special research departments, and the employees of such departments were excluded by definition from the Bureau's survey. On the other hand, experimental work in parts plants, which are generally smaller, may sometimes be done by specialized tool-makers or machinists designated on pay rolls as wage earners and, therefore, included in the survey. To the extent that this occurred, the upper ends of these distributions are not strictly comparable.

TABLE 23.—*Distribution of Workers with Compensable Employment in Michigan Motor-Vehicle Plants Only, by Annual Earnings, Year Ended June 30, 1940* [1]

Annual earnings	Percent of workers employed—		Annual earnings	Percent of workers employed—	
	At any time during year	During all 4 quarters		At any time during year	During all 4 quarters
Under $500	1.4	0.1	$2,000 and under $2,100	3.6	3.9
$500 and under $600	.4	.1	$2,100 and under $2,200	2.8	3.0
$600 and under $700	.7	.2	$2,200 and under $2,300	2.1	2.2
$700 and under $800	.9	.4	$2,300 and under $2,400	1.6	1.8
$800 and under $900	1.4	.7	$2,400 and under $2,500	1.3	1.4
$900 and under $1,000	2.4	1.6	$2,500 and under $2,600	1.2	1.3
$1,000 and under $1,100	3.9	2.9	$2,600 and under $2,700	.9	1.0
$1,100 and under $1,200	4.8	4.3	$2,700 and under $2,800	.6	.7
$1,200 and under $1,300	5.7	5.7	$2,800 and under $2,900	.4	.4
$1,300 and under $1,400	8.0	8.3	$2,900 and under $3,000	.3	.3
$1,400 and under $1,500	9.3	9.8	$3,000 and over	.6	.6
$1,500 and under $1,600	10.1	10.7			
$1,600 and under $1,700	11.8	12.8	Total	100.0	100.0
$1,700 and under $1,800	10.7	11.6			
$1,800 and under $1,900	7.9	8.5	Number of workers	141,554	130,835
$1,900 and under $2,000	5.2	5.7	Average annual earnings	$1,609	$1,667

[1] Data from records of the Michigan Unemployment Compensation Commission. Workers with earnings from any covered industry other than motor vehicles are excluded

Approximately 4 percent of the entire group showed annual earnings below $500; for workers employed for at least a part of each of the four quarters, the corresponding proportion was less than 2 percent. This latter group was probably made up largely of workers whose employment was intermittent or confined to peak periods. Since the 4 percent shown for the group as a whole presumably involved a substantial proportion of workers who were not in the Michigan labor market during the entire period, little significance can be attached to the figure.

Earnings from other industries.—Slightly less than 8 percent (12,128) of the workers for whom data on annual earnings were tabulated received earnings from other covered employment in addition to the amounts paid them by motor-vehicle plants (table 22). The average earnings of this group from all covered employment were $1,442, or

more than 10 percent below the average ($1,609) for the 141,554 workers whose entire earnings from covered employment came from the motor-vehicle industry. Of this average of $1,442, about 70 percent ($1,014) was paid by the motor-vehicle industry.

Five-sixths (10,279) of the workers who reported earnings from other industries (12,128 workers) received some earnings from covered employment in the State during each of the four quarters of the year. These 10,279 employees earned $1,556, of which $1,089, or about 70 percent, was in the form of wages paid by motor-vehicle plants. The total earnings of the remaining 1,849, that is those who were not employed in covered industries during one or more of the four quarters, amounted to $809, of which nearly three-fourths ($601) was received from the motor-vehicle industry.

Earnings of motor-vehicle workers without other covered employment.—It is clear from the foregoing data that employment in other covered industries within the State was relatively unimportant among workers officially recorded by the Michigan Unemployment Compensation Commission as attached to the motor-vehicle industry. Nevertheless, the further analysis of the level of earnings in the industry necessitates elimination of this relatively small group of workers who were dependent in part on earnings in other industries. Ideally, those workers who received earnings from uncovered employment should also be eliminated, but this is not possible on the basis of the data available. It is unlikely, however, that the inclusion of the latter group results in any serious error, so long as the data are not interpreted as significant in terms of total income or standards of living.

Approximately 92 percent (141,554) of the workers whose annual earnings were tabulated received their entire income from covered employment in the form of wages paid by the motor-vehicle industry. This group, whose annual earnings averaged $1,609, may be regarded as representative of the industry's regular labor force. The earnings of more than two-fifths of this group were within a range of $200 above and below the general average, and the distribution shows a high degree of symmetry; for example, the proportion of workers whose earnings fell in the $500 interval between $1,100 and $1,600 is almost equal to those in the $500 range between $1,600 and $2,100 (table 23).

The earnings of about 2.5 percent of the regular labor force of the motor-vehicle industry in Michigan amounted to less than $700. This group is made up principally of those who, for one reason or another, worked for only part of the year. This is apparent from the fact that less than half of 1 percent of the 130,835 workers employed in the industry for at least a part of each quarter earned less than $700. As might be expected, this latter group, who worked during all four quarters, showed an even greater concentration of individual earnings around the average of $1,667 per year.

The average ($1,667) for these 130,835 more or less regularly employed workers falls short of the theoretical full-time earnings of $2,015.50 [14] by about 17 percent. The time lost undoubtedly consisted of a combination of short days, weeks of less than 40 hours, and lay-offs, but the data available do not provide any basis for a precise statement on the relative importance of these factors. The usual seasonal decline in employment during July and August must, however, account for the major proportion of the net amount of lost time.

The remaining 8 percent (10,719 workers) who received their entire earnings from the motor-vehicle industry, but who were employed during three quarters of the year or less, earned an average of $901. Some of these workers undoubtedly entered or left the Michigan labor market during the year, while others may have been employed during a portion of the year in an industry not covered by the unemployment-compensation law. It is likely that a significant proportion of the group constituted a part of the industry's reserve labor supply and were workers employed in motor-vehicle plants intermittently or only during periods of maximum operation.

It should be noted, however, that the group reported as employed during three quarters or less by the motor-vehicle plants of Michigan did not represent the entire labor reserve of this industry. Although the proportion cannot be accurately estimated, a part of the 12,128 workers (see table 22) who received earnings from other covered industries as well as from motor-vehicle plants may be regarded as part of this reserve. That this is the case is apparent from the fact that, as already pointed out, about 70 percent of the reported earnings of the 12,128 workers were received from the motor-vehicle industry, irrespective of the number of quarters during which they were employed within the State.

[14] Theoretical full-time annual earnings were calculated by multiplying the total normal hours (2,080) by the average hourly earnings rate resulting from the Bureau's survey of May and June 1940.