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THE UNIVERSITY OF CHICAGO

THE LOCATIONAL INFLUENCE OF PLACE OF WORK ON
PLACE OF RESIDENCE

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE DIVISION OF SOCIAL SCIENCES
IN CANDIDACY FOR THE DEGREE OF
MASTER OF ARTS
DEPARTMENT OF SOCIOLOGY

BY

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INTRODUCTION

CHAPTER I

That a definite relationship exists between place of work and place of residence has long been assumed by sociologists. Theories about the exact nature of this relationship have added to the body of knowledge accumulated in the fields of human ecology and urban sociology. Planners, housing experts, real estate dealers and students of land values have investigated the subject and contributed further information, while the growth of suburbs, both industrial and residential have complicated the problem. The main hypothesis held on the subject is that the lower the position of an individual employee within the hierarchy of an industry, the closer he will tend to live to his place of work; conversely, the higher his position the better able he will be to live in a more desirable neighborhood (usually further away from the plant) and the greater number of areas available to him for residential choices because of the higher rent or purchase price of a home.

The daily journey to work is a common phenomenon of our society. For some it means a trip from a "high-class" residential suburb into the financial or commercial sections of the central city; for others it means a trip from the low rent, workingmen's homes areas of the central city to a plant in one of the indus-

trial suburbs; and for many it consists merely of walking the two or three blocks from home to a nearby store, office or factory. This daily movement is necessary, as Liepmann points out:

The emergence of large-scale manufacture as the most economic form of production in various branches of industry has led to the development of huge plants employing many thousands of workers. . . . It would be physically impossible, e.g. to house the 20,000 employees of an engineering works in the vicinity of the factory; the great majority of such workers being men, they and their families constitute by themselves the population of a medium-sized town. The community would be further increased by the auxiliary services which are necessary for such a number of inhabitants; the area covered by houses would render illusory the nearness between home and workplace. Moreover, there would be the social and economic disadvantages of a one-industry town. . . . Daily travelling by the workers has thus become necessary to secure the concentration of labour in plants of the size demanded by technical and economic considerations.¹

The area in which an employee of a particular firm will reside is not determined by one or two factors alone. If other members of his family are employed he must seek a home where each of them will be able to reach his own working place within at least a certain time limit and with a certain amount of convenience. He may be a member of a group which is forced to live in particular areas of the city, no matter where he works, by restrictive housing practices. There may be only a certain number of areas in which he can afford to live, and there may be other areas in which he would never choose to live because he considers the conditions within them unsatisfactory for his family.

The trip to work is not only measured in terms of actual

¹Kate L. Liepmann, The Journey to Work, Its Significance for Industrial and Community Life (London: Kegan, Paul, Trench, Trubner and Co., Ltd., 1943), pp. 10-11.

miles traveled, but, in terms of time and cost as well. If the person concerned can afford to live further away from the factory, thus escaping from the industrial dirt, noise and odors present in the vicinity, he might perhaps choose to do so, even at the cost of adding another hour or more to the length of his working day. Specialists and technicians frequently will live in areas where they are close to or equally distant from other jobs which if available might be advancements over their present ones.

Added to these factors is the current housing shortage in all industrial areas. Employees unable to find suitable accommodations for themselves and their families will travel great distances to their jobs in order to retain the satisfactory housing they already have. Home ownership also acts as a deterrent to a worker's changing residence when he changes his job. Especially in the case of a large plant where there may be great seasonal fluctuations in employment, there must be considered the large number of part-year employees who farm or find other employment during times of lay-offs.

There are various methods available to the student who wishes to investigate the relationship between place of work and place of residence. He may choose to approach the problem as a dispersal of residents from a given area to the different places of employment. Or he may choose to study the conflux of workers at a given factory or plant to discover the areas from where they have come. A third alternative would be to make a traffic study --to discover the different travel routes used daily, the intensity of traffic on the routes and the lengths and directions of

these routes. For the present study the second method was chosen.

This study is an analysis of the labor force of a large steel plant located in East Chicago, Indiana. The basic data were gathered during August, 1950, at a time when the total number of employees was 17,492. The analysis will include: (1) the establishment of the areas in which employees of the plant live, (2) the extent of the influence of period of service on the distance of residence areas from the plant, and (3) the extent of the influence of the type of occupation within the plant on the distance of residence. In addition, an attempt will be made to determine other characteristics of employees living in particular areas.

Hypotheses

Two major hypotheses will be tested in this study. The first hypothesis is related to the existence of a definite area in which employees of the steel firm are concentrated. From a tabulation of employees living in different cities issued by the personnel office it can be seen that employees live within a radius of forty miles of the plant, in the northwest coming from as far as Evanston, on the south from as far as Joliet, and from small towns east of Gary and from southern Indiana as far as Valparaiso.¹ That there is a dense concentration of employees in the cities of East Chicago, Gary, Hammond, Chicago and Whiting is obvious from this table. It should be noted, also, that approximately one-half of the total labor force resides within the city of East

¹See Table I, issued by the personnel office of the steel company in July, 1950, based on personnel files.

TABLE 1

RESIDENTIAL LOCATION OF TOTAL LABOR FORCE OF
16,488 EMPLOYEES AT AN EAST CHICAGO,
INDIANA STEEL PLANT, JUNE, 1950¹

East Chicago, Ind.	7,998	Oak Lawn, Ill.	2
Hammond, Ind.	2,530	Evanston, Ill.	4
Gary, Ind.	2,127	Steger, Ill.	4
Chicago, Ill.	1,607	Evergreen Pk., Ill.	3
Calumet City, Ill.	335	Hinsdale, Ill.	2
Whiting, Ind.	371	Oak Glen, Ill.	4
Lansing, Ill.	150	Thayer, Ind.	2
Highland, Ind.	189	Knox, Ind.	3
Munster, Ind.	89	Cicero, Ill.	2
Cedar Lake, Ind.	86	Posen, Ill.	1
Chesterton, Ind.	126	Glenwood, Ill.	1
Griffith, Ind.	82	Mill Creek, Ind.	1
Valparaiso, Ind.	74	Mount Ayre, Ind.	1
Dyer, Ind.	59	Terre Haute, Ind.	1
Crown Point, Ind.	158	Rochester, Ind.	1
Hobart, Ind.	122	Monticello, Ind.	1
South Holland, Ill.	21	LeRoy, Ind.	1
Wheatfield, Ind.	23	Westville, Ind.	1
Chicago Heights, Ill.	16	Kingman, Ind.	1
Hazel Crest, Ill.	10	Sumava Resort, Ind.	1
Lowell, Ind.	34	Beverly Shores, Ind.	1
Schereville, Ind.	36	Miller, Ind.	1
Shelby, Ind.	8	Creton, Ind.	1
Thornton, Ill.	9	San Pierre, Ind.	1
Porter, Ind.	19	Fort Wayne, Ind.	1
Burnham, Ill.	17	Hamlet, Ind.	1
St. John, Ind.	17	Sumner, Ill.	1
Rensselaer, Ind.	6	Wilmette, Ill.	1
Hebron, Ind.	14	Robbins, Ill.	1
Lake Village, Ind.	8	Robison, Ill.	1
Blue Island, Ill.	8	Chicago Ridge, Ill.	1
Michigan City, Ind.	11	Hegewisch, Ind.	1
Harvey, Ill.	11	La Grange, Ill.	1
Dolton, Ill.	10	Bellwood, Ill.	1
Wheeler, Ind.	5	Roberts, Ill.	1
Crete, Ill.	3	Homewood, Ill.	1
La Porte, Ind.	4	St. Anne, Ill.	1
Wanatah, Ind.	3	Peotone, Ill.	1
Riverdale, Ill.	2	Lemont, Ill.	1
Fair Oaks, Ind.	2	Momence, Ill.	1
Morocco, Ind.	7	Midlothian, Ill.	1
DeMotte, Ind.	12	Crystal Falls, Mich.	1
Kouts, Ind.	8	Saginaw, Mich.	1
		Ind. Unclassified	1

¹Compiled by the personnel office at the East Chicago Steel plant during June, 1950.

Chicago, Indiana. Presumably, when the effort of commuting forty miles daily to work and back again is too great and too costly of time and money, the worker can be expected to move closer to his place of employment as soon as he is able to find accommodations for himself and, if married, his family. Thus the hypothesis is that the longer an individual is employed by a firm, the more likely he is to live close to his place of work.

This fact was recognized in the wartime amendments to the National Housing Act.¹ The restrictions on new housing construction during the war provided that the only residential building priorities to be issued were those for war workers and, further, were to be constructed only in so-called "war-production" areas. Houses for war workers were to be located in areas not more than one hour's travel-time from the major war plants in the area by means of public transportation, and at a cost of not more than fifty cents for each trip. Such limits being set on workers' housing likewise suggests that all but the most recently hired employees of a firm will tend to live within an hour's distance from the plant. Probably, too, the relatively long-term employees will live even closer to the plant than those who have been working there for periods of six months to five years. This does not preclude the existence of a relatively large group of newly hired employees, for whom the spatial distribution of their place of residence may show, only to a small degree, the locational in-

¹The National Housing Act delegated the power to the Federal Housing Administration to determine areas for war workers' homes. The Federal Housing Administration Office in Chicago used these criteria to determine areas for home construction. National Housing Act as Amended May 26, 1942. 77th Cong., 2nd Sess. (Washington: Government Printing Office, 1942).

fluence of the plant. But to reiterate, the first working hypothesis is, the employees who have worked at the plant for the longest period of time will tend to live closest to it, while those who have been hired most recently will tend to be dispersed over a wider area surrounding the plant.

The second hypothesis to be tested is related to the fact that selection of a place of residence is influenced by socio-economic position. In the present case, the plant under discussion is located along the lakefront in East Chicago, close to the Pennsylvania and New York Central Railroads' mainlines and to the Outer Belt Railroad. Close to it there are several other heavy industrial plants and heavily-travelled truck routes. There are a number of rooming houses and cheap hotels nearby. The odors and dirt accompanying heavy industry are much in evidence. Thus the area contiguous to the plant would not be likely to be the one chosen by employees of that group which could afford to live elsewhere, but would rather be the one in which would reside those workers who could only afford to pay low rentals. Hoyt's classification of land values constructed for use in urban areas holds true for the area under discussion.¹ The areas of higher rentals occur farther from the industrial plant than areas of low rentals.

In the present study the category "type of work" was chosen as the index of socio-economic position. For convenience

¹Federal Housing Authority, Homer Hoyt: The Structure and Growth of Residential Neighborhoods in American Cities (Washington: Government Printing Office, 1939).

in handling the data, the various types of jobs within the plant were grouped into eight of the eleven classifications defined by the census.¹ The other three classifications concerned those occupations not present in an industrial plant. The classifications employed range from "professional workers" to "laborers, except farm." The second hypothesis to be investigated is that workers of higher socio-economic status will tend to be dispersed over a larger area than workers of lower socio-economic status. Laborers and semi-skilled workers will tend to be concentrated in areas near the plant.

Review of Previous Literature

The literature in the general field of suburbanization is pertinent to the present discussion of the locational influence of place of work on place of residence. Most of the literature on suburbs is concerned with "dormitory" or residential rather than industrial suburbs. The literature is relevant, however, since many of the employees of the steel plant commute from nearby residential suburbs. Douglass, in The Suburban Trend makes the distinction between industrial and residential suburbs as well as between suburb and the satellite city. He claims that satellite cities are not truly suburbs unless they exhibit "suburban characteristics of which roominess in comparison with the congestion of the central city is chief."² Suburbs are separated into pro-

¹U.S. Bureau of the Census, Classified Index of Occupations and Industries (Washington: Government Printing Office, 1940), p. 2.

²Harlan Paul Douglass, The Suburban Trend (New York: The Century Co., 1925), p. 23.

duction and consumption types. The industrial community (production suburb) is more independent of the central city, and the satellite city still more so. To use his criterion of roominess, none of the cities with which we are concerned in the present study could be called suburbs--not even industrial suburbs--inasmuch as they all show as much congestion as parts of the central city, Chicago. Certainly the whole of the Calumet Industrial Area is so built up and so closely connected that one can go from Hammond to East Chicago to Gary without noticing any undeveloped or open areas between them.

Taylor's Satellite Cities throws light on the historical development of the Calumet Area.¹ He focusses his discussion on Gary where, even in 1915, housing accommodations were inadequate and workers commuted.² The passage of thirty-five years, two wars, a vastly enlarged steel production, the establishment of many new heavy industries in the South Chicago district, and the coming of age of the automobile for commuting have made this more necessary and more prevalent now than before. Using data showing the location of homes of employees working in an industrial suburb of Cincinnati, he showed that even an industrial suburb did not necessarily draw its labor force from the town in which it was located.³

The study Leisure, although mainly concerned with the spare time activities of the commuting population living in an

¹Graham R. Taylor, Satellite Cities (New York: Appleton and Co., 1915).

²Ibid., p. 18.

³Ibid., p. 96.

upper class residential suburb is only relevant to this study in its discussion of commuting.¹ The authors point out that compared to the commuting facilities within the city, those which connect the suburb to the city tend to be much more comfortable and convenient. Furthermore, since comparatively few people in the city actually live within walking distance of their work, suburban commuting does not add appreciably to their hardships. This is significant to the discussion for two reasons: first, the disadvantages to a professional worker or specialist of living in an industrial district can be obviated by his living away from it and commuting; secondly, it can perhaps explain why employees should come in large numbers from as far away as Chicago (since they would otherwise have the problem of commuting to work within that city).

Several studies have been published on the subject of travel time to work, most notable among them being Journey to Work.² An extensive bibliography is provided within it. Mention is made of a study of a plant in Baden, in 1926.³ Of the firm's 2,888 workers less than 40 per cent lived in the same town as the factory, about 20 per cent lived nearby, but over 40 per cent came from more distant places, "walking up to 4.4 miles and travelling by rail up to 16.7 miles." Other monographs mentioned were more concerned with the strains of travelling by different means--walking, cycling, trains, busses, etc., and the influence

¹George A. Lundberg, Mirra Komarovsky and Mary Alice McInerny, Leisure (New York: Columbia University Press, 1934).

²Op. cit.

³Ibid., p. 124.

of the various strains on absenteeism. The most recent study quoted was a 1937 traffic census taken at the Longbridge, England, plant of the Austin Motor Co. which employed 20,000 people. There were only three town each where more than one thousand employees lived, and these together housed more than one-third of the total number of employees.¹ (In this and in the size of the labor force, this plant is comparable to the steel plant under discussion. Both are located in industrial suburbs within an industrial area as well.) 49.2 per cent of the employees lived three to five miles away from the plant, 44.8 per cent more lived from six to ten miles away, and only 6 per cent lived farther than ten miles distant. However, some difference can be expected between this distribution of employees and the one to be found in the present study, inasmuch as car ownership in England is not as widespread as in the United States where many employees use their own cars each day to go to work. No mention was made in the Austin census of either period of employment or the occupational levels of the various employees.

In a thesis written on The Separation of Place of Work from Place of Residence, Breen constructed an "index of separation" as a measure of the extent to which any of the community areas in Chicago may be considered "work," "residential," or "mixed" areas.² This measure is the ratio of percentage of employment in an area to the percentage of worker residing there.

¹ Ibid., p. 147.

² Leonard Z. Breen, "The Separation of Place of Work from Place of Residence" (Unpublished M. A. Thesis, Department of Sociology, University of Chicago, 1950).

The distributions of workplaces and residential areas within the city are discussed for all industries in Chicago and for nine individual industries. The iron and steel industry is one of these. Breen finds that it is the most highly dispersed of those investigated, by which he means that there are a greater number of work areas in this industry than in any of the others discussed. Using Mayer's classification of Chicago community areas in terms of socio-economic status,¹ he compares these ratings for community areas for residential and work areas. The socio-economic ratings of the residential areas, he finds, tend to be significantly higher than the ratings for work areas. Since the residential areas contain only a small portion of the city's total employment, the persons living in these areas must travel further to work than persons living in work areas. He concludes that higher socio-economic persons tend to travel farther to work than persons of lower socio-economic class.

Data and Methodology

The basic data in this study were taken from the personnel files of the steel company. A 20 per cent sample was taken of the total number of employees over the period of one month. The files are kept in alphabetical order, and the sampling procedure was to pick one card out of every five. By this method it was possible to avoid a bias in the direction of any particular ethnic or occupational group. Information as to place of residence,

¹Albert J. Mayer, "A Method for Determining Socio-Economic Areas in Census Tract Cities" (Unpublished M.A. Thesis, Department of Sociology, University of Chicago, 1948).

type of work, and date or dates hired was given on each card. See Table 2 for the residential location of employees in the sample labor force. It is true, of course, that during the period of time necessary to take the sample of employees, addresses and "type of work" might have been changed, and new people hired while others were dismissed. But these were factors beyond the control of the investigator. Furthermore, the sample taken was thought to be large enough so that these errors would not be significant. A comparison of the percentage distributions of the residential locations of employees in the total and sample labor forces is presented in Table 3. A study of this table reveals that the percentage differences in any of these areas is never higher than 2 per cent. Both distributions show the highest concentration of employees in East Chicago; 86.50 per cent of the total employees and 86.16 per cent of the employees in the sample live in the four cities of East Chicago, Hammond, Gary, and Chicago.

In order to determine the influence of period of employment at the plant on place of residence of the employees, four time categories were established, a recent-hire period, an intermediate period, a long-term period, and a class of employees hired more than once. Employees hired within a period of six months before the data were gathered were classed in the recent-hire category. Those employed for a period of eight months to five years were classed as five-year employees. Those employed for more than this length of time were classed as long-term employees. The whole group of employees hired more than once were classed as

TABLE 2

RESIDENTIAL LOCATION OF A SAMPLE POPULATION OF 3,461 EMPLOYEES
OF AN EAST CHICAGO, INDIANA STEEL PLANT,
AUGUST, 1950

East Chicago, Ind.	1,703	Knox, Ind.	2
Hammond, Ind.	594	Steiger, Ill.	2
Gary, Ind.	355	Joliet, Ill.	2
Chicago, Ill.	332	Evansston, Ill.	2
L I-2 Ind.	71	De Motte, Ind.	1
(Black Oak [68] and St. John [3])		Etna Green, Ind.	1
Calumet City, Ill.	64	Goodland, Ind.	1
L I-1, Ind.	63	Lake Village, Ind.	1
(Griffith, Munster, Highland)		La Porte, Ind.	1
Whiting, Ind.	41	Mishawaka, Ind.	1
Lansing, Ill.	37	Mount Alp, Ind.	1
Crown Point, Ind.	30	Morocco, Ind.	1
Chesterton, Ind.	27	Schneider, Ind.	1
L I-3, Ind.	24	Waugetah, Ind.	1
(Hobart [24], New Chicago [0])		Wheeler, Ind.	1
Cedar Lake, Ind.	13	Ripon, Wisc.	1
East Gary, Ind. (EG-1)	12	HW, Ill. Homewood	1
Valparaiso, Ind.	11	CC23 Dolton	1
Schererville, Ind.	9	CC22 Hazel Crest	1
Hessville, Ind.	7	CC14 Palos Park	1
Dyer, Ind.	5	Blue Island, Ill.	1
Lowell, Ind.	5	HB Chicago Heights	1
Michigan City, Ind.	4	La Grange, Ill.	1
Porter, Ind.	4	Crete, Ill.	1
Shelby, Ind.	4	Bartlett, Ill.	1
Harvey, Ill.	4	Holland, Ill.	1
Wheatfield, Ind.	3	Roberts, Ill.	1
Hebron, Ind.	3		
Kouts, Ind.	3		
Roby, Ind.	2		

multiple-hire employees.

Employees hired more than once differ from the other stable employees of the plant in at least one attribute, being laid off and then rehired. This might influence the choice of residential location with respect to the plant. Therefore a separate category, multiple-hire employees, has been established. It is, of course, possible to group members of this multiple-hire category with the other three hire categories, using the date of most recent hiring as the criterion, but since more than one-third of the sample group falls into this class it would appear to be sufficiently significant to merit separate discussion. Individual hypotheses stating the spatial relationship of each hire group to the whole distribution were evolved in order that these relationships might be examined more closely.

Two types of percentages were used to describe the relationship of period of employment to place of residence. The first shows the ratio of the number of employees in each hire group living in an individual city, census tract, community area, or zone, to the total employees in that hire group. The second shows the ratio of employees in each hire group in an individual city, census tract, community area, or zone, to the total employees living in that city, census tract, community area, or zone. Thus, on the one hand the distribution of employees in each of the hire groups can be analyzed, and, on the other, the concentration of each hire group within the city or specific area can be seen. The standard errors of the sample proportions were calculated for the percent of total employees in each hire group, and for the percent

TABLE 3

PERCENTAGE DISTRIBUTION OF RESIDENTIAL LOCATION OF TOTAL
LABOR FORCE AND SAMPLE LABOR FORCE OF AN
EAST CHICAGO, INDIANA STEEL PLANT

City	Total Labor Force	Sample Labor Force	Percentage Total L.F.	Percentage Sample L.F.
East Chicago, Ind.	7,998	1,703	48.51	49.21
Hammond, Ind.	2,530	594	15.34	17.16
Gary, Ind.	2,127	355	12.90	10.26
Chicago, Ill.	1,607	332	9.75	9.59
LI-2	17	71	.10	2.05
Calumet City, Ill.	355	64	2.03	1.85
LI-1	360	63	2.18	1.82
Whiting	371	41	2.25	1.18
Lansing	150	37	.91	1.07
Crown Point	158	30	.96	.87
Chesterton	126	27	.76	.78
LI-3	122	24	.74	.69
Cedar Lake	86	13	.52	.38
East Gary	-	12	-	.35
Elsewhere, Ind.	354 ^a	74 ^b	2.14	2.14
Elsewhere, Ill.	145	21	.88	.61
Elsewhere, Mich.	2	-	.01	-
Total	16,488	3,461	100.00	100.00

^aIncludes one employee who lists his address as Orem, Utah.

^bIncludes one employee who lists his address as Ripon, Wisconsin.

of total employees in each city, census tract, community area, and zone, where this percentage was 1 per cent. In this way it was possible to note and describe any deviations from the percentages of employees of each of the total hire groups in a specific area as compared to the percentage of total employees found in that area, and the deviations from the percentages of employees living in a given area which fall into each of the four hire groups as compared to the percentage of total employees in each of the hire groups.

Type of work within the plant is the second factor investigated as an influence on place of residence. Data as to type of work were taken on each of the employees in the study. The census classification of occupations was used in order to group employees of similar occupations into larger classes. A table showing the percentage of each of the eight census classes of occupations relevant to the distribution of employees in this study can be found in the appendix. Separate tables for each of the main cities are also shown. Two occupational groups, white-collar and manual workers were used in this analysis. The procedure followed is the same as that described to investigate the influence of period of employment at the plant on place of residence. The two types of percentages used in this section were: (1) the employees in each hire group living in each city, census tract, community area, or zone, as a percentage of the total employees in that occupational group, and (2) the employees living in a given area which are classed in each of the occupational groups as a percentage of the total employees in the area. The standard error of

the sample proportions of employees living in each area is calculated in the same manner as that described above. The standard error of the sample proportion of employees in each occupational group was calculated on the basis of the percentage of total employees in the white-collar and manual workers categories. This was used to compare the percentage of total employees living in a given area which is classed in each of the two groups with the percentage of the sample in each.

A system of concentric zones was employed in order to show the percentage of employees living within specific distances of the plant. Maps showing the distribution of industrial and residential areas within these zones are presented in the appendix. Any census tract in which the largest portion of the residential area falls within a particular zone has been considered as belonging within that one. The lists of census tracts and cities in each zone is also to be found in the appendix.

CHAPTER II

THE DISTRIBUTION OF EMPLOYEES BY PERIOD OF EMPLOYMENT

In the statement of the hypotheses, one of the factors assumed to have some bearing on the place of residence of an employee was the length of time during which he had been employed in the plant. The exact nature of this relationship will be investigated in this chapter. For this purpose, separate categories have been devised for the total sample of employees, a recent-hire group, a long-term group, a group employed for an intermediate period of time and, after inspection of the data, a fourth group, composed of employees hired more than once.

The hypothesis relating period of employment to place of residence is: Other factors being equal, members of the labor force tend to locate residentially in areas at a minimum distance from their place of work. Two working hypotheses will be stated. The first is that the employees who have been working at the plant for an intermediate period of time are neither as dispersed as the recent-hire group, nor as concentrated as the long-term group in contiguous residential areas. The second working hypothesis is that of all employees those employees hired more than once tend to locate in greatest concentration in areas a short distance from the plant. These employees are expected to be found in an even greater concentration near the plant than the long-

term employees.

The three time categories, recent-hire, five-year, and long-term employees, were established after examining the number of employees in the sample, hired each year, and each month for the eight months preceding the study. The data were compiled during the month of August, 1950. Six months was considered the most satisfactory point at which to separate the recent-hire employees from the intermediate group. Comparatively few of the employees in the sample were hired in the four preceding months of November, December, January, and February. The period of intermediate length of employment was set at five years for two reasons. First, it was thought advisable to have the two groups of intermediate and long-term employees approximately equal in number. Secondly, the year 1945 marked the termination of war contracts and the "reconversion" to peacetime production scales in heavy industry. All employees hired more than once were separated into the multiple-hire category, since intermittent employment introduces a number of new factors. Employees who leave the firm to return to it at a later date might have certain characteristics which are obscured when examining the group as a whole, and which, in turn, might cause them to live in particular areas.

Two types of tables have been used to present the data on period of employment. Both show the number of employees in each time class and the number of employees in the city as a whole. But in one group of tables the percentages shown in each time class are derived from the total number of employees in that category, while in the other group the percentages shown are

based on the total employees for each city. For the cities of East Chicago, Hammond, Gary, Whiting, and Calumet City, separate tables have been drawn up showing the residential distribution of employees by census tracts. The data for Chicago are presented by community areas. The cities of Black Oak and St. John, Indiana, are combined in LI-2; Griffith, Munster, and Highland, Indiana, comprise LI-1; Hobart is listed LI-3. Cities where the proportion of employees in the sample is less than .35 per cent are included either in the Indiana or Illinois "Unclassified" totals.

Description of the Area

A description of the area in general, and the census tracts in each main city in terms of industrial, commercial, and residential land use as well as in terms of distance from the plant is necessary for an understanding of the distribution of employees over the area.

East Chicago. The plant discussed in this thesis is located in the northern portions of adjacent census tracts 1 and 2 in East Chicago. Both of these tracts are bounded by Lake Michigan, the Indiana Harbor Canal, and the Grand Calumet River. Most of the heavy industry of East Chicago--steel mills, metal-working plants, oil refineries, railroad yards and repair shops, and similar factories--are situated within these two tracts. Small residential areas are located in the southwest section of tract 1, and the central portion of tract 2. In tract 3 reside 10.43 per cent of the total employees, the heaviest concentration of employees in one census tract in the whole distribution.

Tract 3 lies immediately to the east of the plant. It includes a comparatively small area with rather more land occupied by railroad lines than by dwelling units. Tracts 4 and 5 lie to the east of the plant, and are the only census tracts entirely residential in character. There are both industrial and residential areas in tracts 6 and 7. Tracts 8 and 10 are separated from the plant by the Indiana Harbor Canal. A fairly extensive residential district extends from tract 8 on the north to the southern border of the city in tract 10. The only residential area in tract 9 is located in the northwest corner of the tract; a chemical plant and an oil refinery spread over the largest part of the tract.

From the descriptions of the census tracts in East Chicago, it would seem that there are only two tracts which are entirely free of industry, namely, tracts 4 and 5. The distribution of residential and industrial areas over the rest of the city is such that there appear to be islands of residential areas surrounded by industrial areas. These "islands" may extend from one census tract to a contiguous portion of another (or several others), or may exist in one small section of a single census tract. The clustering of heavy industry along the Calumet River and the several arms of the Indiana Harbor Canal from the southern end of the city north to the lake effectively separates the residential areas on the east and west sides of the city. The steel plant under study operates mills on both sides of the Canal. Since the present data do not indicate which employees work in which mills, it is not possible to investigate whether they reside

closer to one plant section than another. However, it has been noted that tracts 8 and 10 are separated from the plant by the Canal, and part of tract 10 by the Grand Calumet River, as well. This might be a pertinent factor if the employees living in these tracts differ substantially from the other employees who reside in East Chicago.

Hammond. Hammond extends from Chicago, Burnham, and Calumet City on the west, to Gary on the East, and borders Whiting and East Chicago on the north. Industry occupies most of the land in tract 1. Tract 2 borders Whiting and tract 1, and constitutes the chief residential section in the northern area of Hammond. Within tracts 5 and 7 is located the main commercial area of the city. Railroad yards are to be found within tract 7, also, and in the northern sections of tracts 8 and 9. Tract 8 is a predominantly industrial area; several other metalworking industries are located within it. The northern part of tract 9, bordering East Chicago and the Grand Calumet River, is also an industrial area; containing large oil refineries. Tract 9 extends east as far as Gary at the southern limits of Hammond. Tract 3 lies north of the Grand Calumet River, at the western limit of the city, adjacent to tract 4. Both include large residential areas, and only a small amount of industrial plants along the river. Tract 6, south of the Grand Calumet River, is a residential area. Tracts 10, 11, 12, and 13 all are located in the southwest section of Hammond, south of the Grand Calumet River. In none of these tracts is there an appreciable concentration of industry; they are chiefly residential areas. Tracts 10, 12, and

13 border the Little Calumet River.

Gary. The Gary industrial area is located primarily within tract 1 which extends along the lakefront from East Chicago on the west to the eastern border of Lake County, Indiana. Tract 2, in the northeastern corner of Gary, occupying the area from the border of Lake County, Indiana, westward along the lakefront, is an adjacent residential area. However, tract 2 of Gary is separated from the East Chicago steel plant by the whole of this industrial area. Located within tract 1 are a large number of steel mills, metalworking plants, railroad lines, and similar industries. There is a small residential area within the tract which lies between East Gary and tract 2 of Gary at a distance of approximately twelve miles from the steel plant in question. Tract 6, the second largest, is the only other tract wherein there is found another large metalworking plant. It is adjacent to Hammond, at the western border of Gary. The commercial district of Gary extends through tracts 9, 10, 15, and 16. There is little industry in any other census tracts in Gary. The remaining tracts are predominantly residential, with an extensive undeveloped area in tract 14.

Although most of the railroad lines pass through tract 1, several run east and west along the northern parts of tracts 15, 16, 17, and 18. Another cuts diagonally southeast on the line formed by the diagonal boundaries of tracts 5, 17, and 14. Two other railroads form an X crossing over tracts 24, 25, 26, and 27 at the southern end of the city.

Thus, it would seem logical that the highest percentage

of steel plant employees who reside in Gary would be found in tract 6, the tract wherein the residential area is closest to the plant. In addition to the factor of proximity, there is the presence of an industrial plant in which are performed similar operations. This factor, the intra-industry migration of workers is not investigated in this thesis, but would appear to be worth investigating especially in the case of a particular plant located in an industrial region in which are found many other similar plants. Tract 16, in which is found the second highest proportion of employees is not so readily available. Its location at the southern end of the commercial district plus the presence of two railroad lines might lead to the conclusion that this would be the area of rooming houses and hotels where would reside a high proportion of young unmarried males who would be seeking employment.

Chicago. In Chicago, both community areas 46 and 52 are mixed residential and industrial areas. Industry is located in the eastern section of area 46 along the lake and south, along the Illinois state line. The residential areas are located in the northwestern and central parts of the area. Within the residential area can be found much vacant land.¹ In community area 52, a comparatively smaller amount of land is occupied either by industry or residences. As of 1943 there was a much greater proportion

¹Detailed land use maps for community areas 46 and 52 are found in Land Use in Chicago which was published in 1943. Since then the amount of vacant land in the area has diminished. Chicago Land Use Survey, Land Use in Chicago (Chicago: Chicago Plan Commission, 1943).

of vacant land in area 52 than in area 46. However, several extensive parks are to be found within the area. The residential portion of the area is concentrated in the central section. Industry is located mainly in the northern portion of the area and on the western perimeter, along the Grand Calumet River. Steel mills and similar metalworking industries are located in both areas. Area 46 lies north of area 52. Both are separated from the East Chicago steel plant by the large industrial area extending along Lake Michigan in Hammond and Whiting, but are connected with the Calumet Industrial Area by highways and rail.

Calumet City. Census tract 1 of Calumet City includes within it the city of Burnham, and is bordered by Chicago on the north and Hammond on the East. Approximately one-fourth of the area within tract 1 is occupied by heavy industry, at the northern end of the tract. Approximately one-third of the tract is occupied by forest preserves and parks. In the northeast and the south, the residential area is located in the central portion of the tract, divided into two parts by a narrow belt of land zoned for light industry which extends south from Burnham. Tract 2 contains some heavy industry--chemical plants and steel mills in the north, but is chiefly residential in the south. Tract 3 lies south of tract 2 along the eastern edge of the city. It contains no industry, and is occupied by parks and residences. Calumet City is separated from the steel plant by the city of Hammond; the residential districts lie at a distance of from four to six miles of the plant.

Whiting. Whiting is adjacent both to East Chicago on the

east and Hammond on the west and south. Tract 1 is mainly industrial--chemical manufacturing companies and oil refineries occupy most of the area--with a small residential section in the southern tip of the tract. Tract 2 is entirely residential, but is separated from the steel plant by the large industrial area in tract 1. The residential areas of both tracts in Whiting lie between one and three miles from the East Chicago steel plant.

Distribution of Employees

The following discussion is devoted to an analysis of the distribution of employees by period of employment within the cities where at least two per cent of the total employees of the steel plant reside, as shown in Table 3. In East Chicago, Hammond, Gary, and Chicago, 86.22 per cent of the total employees, 85.75 per cent of the recent-hire employees, 83.92 per cent of the five-year employees, 86.28 per cent of the long-term employees, and 89.19 per cent of the multiple-hire employees reside. The data for the three cities in Indiana are presented by census tracts, and for Chicago, by community areas.

The first table for each city shows the percent of each employee group in each city, census tract, or community area. It can be seen from Table 4 that for a given city, the percentage distribution of employees in each of the four hire categories is roughly proportionate to the percentage of total employees residing in that city. For example, 49.21 per cent of the total employees reside in East Chicago, whereas 38.25 per cent of the

TABLE 4

PERCENT OF EACH EMPLOYEE GROUP IN MAIN CITIES WHERE
EMPLOYEES ARE LOCATED

Cities	Employee Group					Pct. R.H.	Pct. 5-yr. Emp.	Pct. L.T. Emp.	Pct. M.H.	Pct. Total
	Recent Hire	5-yr. Emp.	Lg.-Term Emp.	Multiple Hire	Total					
East Chi.	95	400	496	712	1,703	38.93	42.60	49.40	56.60	49.21
Hammond	59	195	147	193	594	25.18	20.77	14.64	15.34	17.16
Gary	35	122	87	111	355	14.30	12.99	8.63	8.82	10.26
Chicago	18	71	137	106	332	7.34	7.56	13.61	8.43	9.59
LI-2 ^a	5	21	20	25	71	2.01	2.24	1.95	1.99	2.05
Cal. City	6	23	20	15	64	2.42	2.45	1.95	1.19	1.85
LI-1 ^b	6	15	21	21	63	2.42	1.60	2.05	1.67	1.82
Whiting	4	11	7	19	41	1.60	1.17	.66	1.51	1.18
Lansing	3	9	15	10	37	1.19	.96	1.45	.79	1.07
Crown Pt.	3	10	6	11	30	1.19	1.06	.56	.87	.87
Chesterton	1	9	9	8	27	.37	.96	.86	.64	.78
LI-3 ^c	1	7	10	6	24	.37	.75	.96	.48	.69
Cedar Lake	.	8	1	4	13	.	.85	.06	.32	.38
East Gary	.	4	3	5	12	.	.43	.26	.40	.35
Ind. Unclass. ^d	6	24	20	24	74	2.42	2.56	1.95	1.91	2.14
Ill. Unclass.	2	10	5	4	21	.78	1.06	.50	.32	.61
Total	244	939	1,004	1,274	3,461	100.00	100.00	100.00	100.00	100.00

^aLI-2 indicates census tract 2 of Lake County, Indiana: Black Oak, St. John.

^bLI-1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland

^cLI-3 indicates census tract 3 of Lake County, Indiana: Hobart

^dIncludes one employee listing address as Ripon, Wisconsin

recent-hire employees, 42.55 per cent of the five-year employees, 49.95 per cent of the long-term employees, and 56.96 per cent of the multiple-hire employees are residents of that city.

The second table for each city shows the concentration of each employee group within the city, e.g., that proportion of employees who reside in a given city which falls in each of the four hire groups. Thus, Table 5 shows that of the total in the sample, 7.05 per cent are recent-hire, 27.13 per cent are five-year, 27.13 per cent are long-term, and 36.81 per cent are multiple-hire employees. One would therefore expect that all cities would have this proportionate distribution of employees in each employment class unless other factors influence the selection of a particular employment group to reside there. But, for example in East Chicago, as shown in Table 5, 5.58 per cent of the employees are in the recent-hire group, 23.49 per cent in the five-year, 29.13 in the long-term, and 41.81 per cent in the multiple-hire group.

The problem then was to determine which differences in proportionate employment and residence were important. For this purpose, the standard error of the sample proportion was calculated. In the first series of tables, this was calculated for the percentage of total employees living in each city and for census tracts which had a large proportion of the total employees of the steel plant. Any deviation greater than the proportion for each city (or census tract, where this was calculated) plus or minus twice this figure was considered important. For the second series of tables, the standard error of the sample

was calculated for the percent of total employees in each employment class. If the percent of employees of a given city or census tract differed from the sample proportion by more or less than twice this figure, the deviation was considered noteworthy.¹ Thus it would appear that for East Chicago the percentages of recent-hire and five-year employees are lower, and the percentage of multiple-hire employees is much greater than the percentage of total employees would indicate. Furthermore, the concentrations of both the recent-hire and the five-year employees within East Chicago are lesser than, and that of the multiple-hire employees greater than the concentrations of these groups in the total distribution.

Recent-Hire Employees

From Table 4 it is apparent that the percent of recent-hire employees living in East Chicago and Chicago, as compared with the percent of total employees residing in these cities, is lower than might be expected. The proportions of recent-hire employees in other cities, although somewhat higher than the proportions of total employees for those cities, are still within the limits of a chance distribution.

Examination of Table 5 shows that in only two cities, East Chicago and Chicago, is the concentration of recent-hire

¹Cf. Margaret J. Hagood, Statistics for Sociologists (New York: Henry Holt and Co., 1941), pp. 343ff. The formula used for the standard error of the sample proportion is $\sqrt{p \cdot \frac{q}{N}}$. About 95 per cent of the samples can be expected to have proportions between $\pm 2\sigma$ from the proportion present in the universe. Thus any deviations greater than this can not be considered as being caused by chance factors.

TABLE 5

PERCENT OF EMPLOYEES IN EACH CITY BY PERIOD OF EMPLOYMENT

Cities	Recent Hire	5-yr. Empl.	Lg.-Tm. Empl.	Multiple Hire	Total	Pct. City	Pct. City	Pct. City	Pct. City	Pct. Total
East Chicago	95	400	496	712	1,703	5.58	23.49	27.51	41.81	100.00
Hammond	59	195	147	193	594	9.93	32.83	24.75	32.50	100.00
Gary	35	122	87	111	355	9.86	34.35	24.51	31.27	100.00
Chicago	18	71	137	106	332	5.42	21.39	41.25	31.93	100.00
LI-2 ^a	5	21	20	25	71	7.04	29.58	28.17	35.21	100.00
Calumet City	6	23	20	15	64	9.38	35.59	31.25	23.44	100.00
LI-1 ^b	6	15	21	21	63	9.52	23.81	33.33	33.33	100.00
Whiting	4	11	7	19	41	9.96	26.83	17.07	46.34	100.00
Lansing	3	9	15	10	37	8.11	24.32	40.54	27.03	100.00
Crown Point	3	10	6	11	30	10.00	33.33	20.00	36.67	100.00
Chesterton	1	9	9	8	27	3.70	33.33	33.33	29.63	100.00
LI-3 ^c	1	7	10	6	24	4.17	29.17	41.67	25.00	100.00
Cedar Lake	.	8	1	4	13	.	61.54	7.69	30.77	100.00
East Gary	.	4	3	5	12	.	33.33	25.00	41.67	100.00
Ind. Unclass.	6	24 ^d	20	24	74	8.22	31.51	27.40	32.88	100.00
Ill. Unclass.	2	10	5	4	21	9.52	47.62	23.81	19.05	100.00
Total	244	939	1,004	1,274	3,461	7.05	27.13	29.01	36.81	100.00

^aLI-2 indicates census tract 2 of Lake County, Indiana: Black Oak, Saint John.

^bLI-1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

^cLI-3 indicates census tract 3 of Lake County, Indiana: Hobart.

^dIncludes one employee listing his address as Ripon, Wisconsin.

employees (5.58 per cent and 5.42 per cent, respectively) lower than the concentration of employees of this class in the total distribution (7.05 per cent). The concentration of recent-hire employees within Hammond and Gary is higher than might be expected (9.93 per cent and 9.86 per cent, respectively).

East Chicago. The percentage of recent-hire employees who live in East Chicago, 38.93 per cent, is lower than the percentage of total employees living there, 49.21 per cent. The concentration of recent-hire employees within East Chicago (the percentage of employees living in East Chicago who fall in the recent-hire category) is, furthermore, lower than the concentration of recent-hire employees in the total distribution (the percentage of total employees who are classified in the recent-hire group). There are noticeably lower percentages of recent-hire employees living in census tracts 4, 5, 6, and 7 than the percentages of total employees, as shown in Table 6.

Tracts 4, 5, and 6 lie within one mile's distance from the plant. In these four tracts, and tracts 2 and 10 as well, the concentration of recent-hire employees is also less than that of the total distribution, as shown in Table 7. The residential area of tract 2 lies between one and two miles away, and in tract 10 between two and three miles from the plant. Tract 8, within which both the concentration of recent-hire employees and the percentage of recent-hire employees is much greater than might be expected, deviates from the other tracts in the

TABLE 6

PERCENT OF EACH EMPLOYEE GROUP IN CENSUS TRACTS OF EAST CHICAGO

Census Tract	Recent Hire	5-yr. Emp.	Lg.-Term Empl.	Multip. Hire	Total in C.T.	Pct. R.H.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. Total
1	4	13	11	24	52	1.60	1.38	1.10	1.91	1.50
2	10	58	38	66	172	4.06	6.18	3.78	5.25	4.97
3	26	110	84	141	361	10.62	11.71	8.37	11.21	10.43
4	17	73	89	134	313	6.93	7.77	8.86	10.65	9.04
5	12	49	77	88	226	4.88	5.22	7.67	7.00	6.53
6	6	26	70	96	198	2.42	2.77	6.97	7.63	5.72
7	7	30	71	89	197	2.83	3.19	7.07	7.07	5.69
8	6	16	19	20	61	2.42	1.70	1.89	1.59	1.76
9	5	17	25	35	82	2.01	1.81	2.49	2.78	2.37
10	2	8	12	19	41	.78	.85	1.20	1.51	1.18
Total	95	400	496	712	1,703	38.93	42.60	49.40	56.60	49.21

TABLE 7

PERCENT OF EMPLOYEES IN EACH CENSUS TRACT OF EAST CHICAGO
BY PERIOD OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Tot. Empl. in Tract	Pct. C.T.	Pct. C.T.	Pct. C.T.	Pct. C.T.	Pct. of Total
1	4	13	11	24	52	7.69	25.00	21.15	46.15	100.00
2	10	58	38	66	172	5.81	33.72	22.09	38.37	100.00
3	26	110	84	141	361	7.20	30.47	23.27	39.06	100.00
4	17	73	89	134	313	5.43	23.32	28.43	42.81	100.00
5	12	49	77	88	226	5.31	21.68	34.07	38.94	100.00
6	6	26	70	96	198	3.03	13.13	35.35	48.48	100.00
7	7	30	71	89	197	3.55	15.23	36.04	45.18	100.00
8	6	16	19	20	61	9.84	26.67	31.15	32.79	100.00
9	5	17	25	35	82	6.10	20.73	30.40	42.68	100.00
10	2	8	12	19	41	4.88	19.51	29.27	46.34	100.00
Total	95	400	496	712	1,703	5.59	23.49	29.12	31.81	100.00

city. Tract 8 is also between two and three miles from the plant.

Hammond. Table 4 indicates that the percent of recent-hire employees living in Hammond is greater than might be expected, while Table 5 shows that the concentration of this hire group of employees within the city is also greater. From Table 8 it can be seen that tracts 1, 4, 6, 8, 11, 12, and 13 show higher proportions of recent-hire employees. Within these seven tracts, and, in addition, in tract 3, the concentration of recent-hire employees is greater than that of the total distribution, as shown in Table 9. The residential areas of tracts 2 and 4 are located at a distance of between two and three miles from the plant, those of tracts 1, 3, 5, and 6, between three and four miles away; that of tract 8, between four and five miles, and those of tracts 11, 12, and 13, between five and six miles away from the plant. Both tracts 5 and 9, on the other hand, show noticeably lower percentages of recent-hire employees, and less dense concentrations of recent-hire employees are found within them and tracts 7 and 10. The residential area of tract 5 is located at a distance of between three and four miles from the plant, that of tracts 7 and 9, between four and five miles away, and that of tract 10, between five and six miles' distance.

Gary. Both the percentage of recent-hire employees and the concentration of recent-hire employees within Gary are considerably higher than might be expected. However, it can be seen from Table 10 that in only two census tracts, 6 and 16, are the percentages of total employees high enough to make separate men-

TABLE 8

PERCENT DISTRIBUTION OF EMPLOYEES IN CENSUS TRACTS OF HAMMOND
BY PERIOD OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg.-Tm. Empl.	Mult. Hire	Total in C.T.	Pct. R.H.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. of Total
1	5	13	9	7	34	2.01	1.38	.90	.56	.98
2	2	6	9	9	26	.78	.64	.90	.72	.75
3	3	18	4	12	37	1.19	1.92	.40	.95	1.07
4	7	7	15	14	43	3.83	.75	1.49	1.11	1.24
5	4	53	9	25	91	1.60	5.64	.90	1.99	2.63
6	7	17	13	14	51	2.83	1.81	1.29	1.11	1.47
7	2	7	13	12	34	.78	.75	1.29	.95	.98
8	4	10	8	12	34	1.60	1.06	.80	.95	.98
9	5	27	29	44	105	2.01	2.88	2.89	3.50	3.03
10	2	15	11	6	34	.78	1.60	1.09	.48	.98
11	8	7	9	13	37	3.74	.75	.90	1.03	1.07
12	4	9	8	12	33	1.60	.96	.79	.95	.95
13	6	6	10	13	35	2.42	.64	.99	1.03	1.01
Total	59	195	147	193	594	24.18	20.77	14.64	15.34	17.16

PERCENT DISTRIBUTION OF EMPLOYEES IN CENSUS TRACTS OF HAMMOND
BY PERIOD OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg.-Tm. Empl.	Mult. Hire	Total in C.T.	Pct. R.H.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. of Total
1	5	13	9	7	34	2.01	1.38	.90	.56	.98
2	2	6	9	9	26	.78	.64	.90	.72	.75
3	3	18	4	12	37	1.19	1.92	.40	.95	1.07
4	7	7	15	14	43	3.83	.75	1.49	1.11	1.24
5	4	53	9	25	91	1.60	5.64	.90	1.99	2.63
6	7	17	13	14	51	2.83	1.81	1.29	1.11	1.47
7	2	7	13	12	34	.78	.75	1.29	.95	.98
8	4	10	8	12	34	1.60	1.06	.80	.95	.98
9	5	27	29	44	105	2.01	2.88	2.89	3.50	3.03
10	2	15	11	6	34	.78	1.60	1.09	.48	.98
11	8	7	9	13	37	3.74	.75	.90	1.03	1.07
12	4	9	8	12	33	1.60	.96	.79	.95	.95
13	6	6	10	13	35	2.42	.64	.99	1.03	1.01
Total	59	195	147	193	594	24.18	20.77	14.64	15.34	17.16

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TABLE 9

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF HAMMOND BY PERIODS OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg.Tm. Empl.	Mult. Hire	Total	Pct. C.T.	Pct. C.T.	Pct. C.T.	Pct. C.T.	Pct. of Total
1	5	13	9	7	34	14.70	38.24	26.47	20.59	100.00
2	2	6	9	9	26	7.69	23.08	34.62	34.62	100.00
3	3	18	4	12	37	8.11	48.65	10.81	32.43	100.00
4	7	7	15	14	43	16.28	16.28	34.88	32.56	100.00
5	4	53	9	25	91	4.40	58.24	98.90	27.47	100.00
6	7	17	13	14	51	13.72	33.33	25.49	27.45	100.00
7	2	7	13	12	34	5.88	20.59	38.24	35.29	100.00
8	4	10	8	12	34	11.76	29.41	23.53	35.29	100.00
9	5	27	29	44	105	4.76	25.71	27.62	41.90	100.00
10	2	15	11	6	34	5.88	44.12	32.35	17.65	100.00
11	8	7	9	13	37	21.62	18.92	24.32	35.13	100.00
12	4	9	8	12	33	12.12	27.27	24.24	36.36	100.00
13	6	6	10	13	35	17.14	17.14	28.57	37.14	100.00
Total	59	195	147	193	594	9.93	32.83	24.75	32.49	100.00

TABLE 10

PERCENT DISTRIBUTION OF EMPLOYEES IN CENSUS TRACTS OF GARY
BY PERIOD OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Total in C.T.	Pct. R.C.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. of Total
1	.2	4	2	5	11	.	.44	.20	.40	.32
3	2	4	3	6	15	.78	.44	.29	.48	.43
4	.1	2	5	2	9	.	.22	.49	.16	.26
5	.1	.	4	4	9	.37	.	.39	.32	.26
6	6	21	23	32	82	2.42	2.25	2.29	2.54	2.37
7	.	.	3	4	7	.	.	.29	.32	.20
8	1	5	2	4	12	.37	.54	.20	.32	.35
9	2	5	4	11	22	.78	.54	.39	.87	.64
10	.	6	2	2	10	.	.65	.20	.16	.29
11	2	2	1	2	7	.78	.22	.10	.16	.20
12	1	8	3	3	15	.37	.86	.29	.24	.43
13	.	1	.	.	1	.	.12	.	.	.03
14	1	8	3	2	14	.37	.86	.29	.16	.40
15	1	1	.	3	5	.37	.12	.	.24	.14
16	8	17	8	4	37	3.24	1.82	.79	.32	1.07
17	2	4	1	2	7	.78	.44	.10	.	.20
18	.	3	.	2	5	.	.33	.	.16	.14
19	1	5	5	4	15	.37	.54	.49	.32	.43
20	.	5	2	.	7	.	.54	.20	.	.20
21	2	2	1	1	6	.78	.22	.10	.08	.17
22	2	2	2	1	5	.	.22	.20	.08	.14
23	2	6	6	6	20	.78	.65	.59	.48	.58
24	1	1	.	4	6	.37	.12	.	.32	.17
25	1	5	4	6	16	.37	.54	.39	.48	.46
26	.	4	3	1	8	.	.44	.29	.08	.23
27	1	1	.	2	4	.37	.12	.	.16	.12
Total	35	122	87	111	355	14.30	13.00	8.66	8.82	10.26

TABLE 11

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF GARY BY PERIOD OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Total	Pct. C.T.	Pct. C.T.	Pct. C.T.	Pct. C.T.	Percent of Tot. class.
1	.	4	2	5	11	.	36.36	18.18	45.45	100.00
3	2	4	3	6	15	13.33	26.67	20.00	40.00	100.00
4	.	2	5	2	9	.	22.22	55.56	22.22	100.00
5	1	2	4	4	9	11.11	.	44.44	44.44	100.00
6	6	21	23	32	82	7.32	25.61	28.05	39.02	100.00
7	.	.	3	4	7	.	.	42.86	57.14	100.00
8	1	5	2	4	12	8.33	41.67	16.67	33.33	100.00
9	2	5	4	11	22	9.09	22.73	18.18	50.00	100.00
10	.	6	2	2	10	.	60.00	20.00	20.00	100.00
11	2	2	1	2	7	28.57	28.57	14.28	28.57	100.00
12	1	8	3	3	15	6.67	53.33	20.00	20.00	100.00
13	.	1	.	.	1	.	100.00	.	.	100.00
14	1	8	3	2	14	7.14	57.14	21.43	14.28	100.00
15	1	1	.	3	5	20.00	20.00	.	60.00	100.00
16	8	17	8	4	37	21.62	45.94	21.62	10.81	100.00
17	2	4	1	2	7	28.57	57.14	14.28	.	100.00
18	.	3	.	2	5	.	60.00	.	40.00	100.00
19	1	5	5	4	15	6.67	33.33	33.33	26.67	100.00
20	.	5	2	.	7	.	71.43	28.57	.	100.00
21	2	2	1	1	6	33.33	33.33	16.67	16.67	100.00
22	2	2	2	1	5	.	40.00	40.00	20.00	100.00
23	2	6	6	6	20	10.00	30.00	30.00	30.00	100.00
24	1	1	.	4	6	16.67	16.67	.	66.67	100.00
25	1	5	4	6	16	6.25	31.25	25.00	37.20	100.00
26	1	4	3	1	8	.	50.00	37.50	12.50	100.00
27	1	1	.	2	4	25.00	25.00	.	50.00	100.00
Total	35	122	87	111	355	9.86	34.37	24.51	31.27	100.00

tion of tract data worthwhile at this point in the discussion. Only in tract 16 is the percentage of recent-hire employees and the concentration of recent-hire employees within the tract noticeably higher, as shown in Table 11. The residential area of tract 6 lies between four and five miles from the plant; that of tract 16 lies between seven and eight miles away.

Chicago. In the city of Chicago, only two community areas, 46 and 52, contain more than one per cent of the total employees, the only two with percentages of total recent-hire employees greater than one per cent. Table 12 shows that even these percentages are not disproportionately high. Rather, the percentages of total recent-hire employees are lower than might be expected. In these two community areas, the concentration of recent-hire employees within each is greater than for the total distribution. The number of employees in the remaining community areas is too small to enable any conclusions about concentration of recent-hire (or any other time-category employees) to be drawn at this time.

Calumet City and Whiting. None of the individual census tracts in either Calumet City or Whiting contains one or more per cent of the total employees of the steel plant. However, both tract 2 in Calumet City and tract 2 in Whiting contain markedly higher proportions of recent-hire employees. Tract 2 of Whiting is between two and three miles away from the plant. Tract 2 in Calumet City is between four and five miles' distance of it.

Considering the recent-hire group as a whole, then, it is possible to describe which areas show the highest percentages of

TABLE 12

PERCENT OF EMPLOYEES IN COMMUNITY AREAS OF CHICAGO BY PERIOD OF EMPLOYMENT

Comm. Area	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Total in G.A.	Pct. R.H.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. of Total
1	1	.	.	.	1	.40	.	.	.	.03
6	.	2	2	.	4	.	.21	.20	.	.12
7	.	.	1	.	1	.	.	.10	.	.03
8	.	.	1	1	2	.	.	.10	.08	.06
15	.	.	1	.	1	.	.	.10	.	.06
19	.	.	1	.	1	.	.	.10	.	.03
20	.	.	.	1	1	.	.	.	.08	.03
22	.	.	.	1	1	.	.	.	.08	.03
23	.	1	2	.	3	.	.11	.20	.	.09
24	.	1	.	1	2	.	.11	.	.08	.06
28	1	4	7	5	17	.40	.43	.70	.40	.49
29	.	1	.	.	1	.	.11	.	.	.03
32	.	.	.	1	1	.	.	.	.08	.03
34	.	.	.	1	1	.	.	.	.08	.03
35	.	2	1	1	4	.	.21	.10	.08	.12
36	.	1	3	.	4	.	.11	.30	.	.12
37	.	.	1	1	2	.	.	.10	.08	.06
38	.	2	2	2	6	.	.21	.20	.16	.17
39	1	1	2	2	4	.40	.11	.	.16	.12
40	.	1	.	.	3	.	.11	.20	.	.09
41	.	.	6	1	7	.	.	.60	.08	.20
42	2	4	5	4	15	.81	.43	.50	.32	.43
43	.	3	9	7	19	.	.32	.91	.56	.55
44	.	.	4	.	4	.	.	.40	.	.12
45	.	1	6	.	7	.	.11	.60	.	.20
46	4	14	23	26	67	1.61	1.49	2.32	2.08	1.94
47	1	.	1	.	2	.40	.	.10	.	.06
48	.	2	4	3	9	.	.21	.40	.24	.26
49	.	.	4	4	8	.	.	.40	.32	.23
51	.	.	1	7	8	.	.	.10	.56	.23

TABLE 12--Continued

Comm. Area	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Total in C.A.	Pct. R.H.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. of Total
52	4	11	26	19	60	1.61	1.17	2.62	1.52	1.73
53	.	.	.	1	1	.	.	.	.08	.03
54	.	1	1	1	3	.	.11	.10	.08	.09
55	.	4	2	4	10	.	.43	.20	.32	.29
60	.	.	1	.	1	.	.	.10	.	.03
61	1	2	1	.	4	.40	.21	.10	.	.12
66	1	.	1	.	2	.40	.	.10	.	.06
67	.	.	2	1	3	.	.	.20	.08	.09
68	.	8	3	3	14	.	.85	.30	.24	.40
69	1	.	9	5	15	.40	.	.91	.40	.43
71	.	1	2	1	4	.	.11	.20	.08	.12
72	.	.	1	.	1	.	.	.10	.	.03
73	1	2	1	.	4	.40	.21	.10	.	.12
75	.	1	1	.	2	.	.11	.10	.	.06
Total	18	71	137	106	332	7.34	7.56	13.61	8.43	9.59

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TABLE 13

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF CALUMET CITY AND WHITING
BY PERIODS OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Total in C.T.	Pct. R.H.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. of Total
CC-1 ^a	1	.	6	3	10	.37	.	.59	.24	.29
CC-2	5	11	9	6	31	2.01	1.18	.89	.48	.90
CC-3	.	12	5	6	23	.	1.29	.49	.48	.66
Total	6	23	20	15	64	2.40	2.46	1.99	1.19	1.85
Wh-1 ^b	1	2	3	8	14	.37	.22	.29	.64	.40
Wh-2	3	9	4	11	27	1.19	.97	.39	.87	.78
Total	4	11	7	19	41	1.60	1.17	.66	1.51	1.18

^aCC indicates Calumet City census tracts.

^bWh indicates Whiting census tracts.

TABLE 14

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF CALUMET CITY AND WHITING
BY PERIODS OF EMPLOYMENT

Census Tract	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Total	Pct. C.T.	Pct. C.T.	Pct. C.T.	Pct. C.T.	Pct. of Total
CC-1 ^a	1	.	6	3	10	10.00	.	60.00	30.00	100.00
CC-2	5	11	9	6	31	16.13	35.43	29.03	19.35	100.00
CC-3	.	12	5	6	23	.	52.17	21.74	26.09	100.00
Total Cal. City	6	23	20	15	64	9.38	35.94	31.25	23.44	100.00
Wh-1 ^b	1	2	3	8	14	7.14	14.29	21.43	57.14	100.00
Wh-2	3	9	4	11	27	11.11	33.33	14.81	40.74	100.00
Total Whiting	4	11	7	19	41	9.76	26.83	17.07	46.34	100.00

^aCC indicates Calumet City census tracts.

^bWh indicates Whiting census tracts.

this class, and secondly, to show in which areas this class of employees comprises a large portion of the total employees. Specifically, the highest percentages of recent-hire employees live in East Chicago, especially in tracts 3 and 4, Hammond, Gary, and Chicago, although both the percentages for Chicago and East Chicago were found to be somewhat lower than the percentages of total employees for each would indicate. The areas in which the percentage of recent-hire employees, as opposed to the other groups of employees living within these areas, comprises an appreciable portion, are census tracts 8 in East Chicago, tracts 1, 4, 6, 8, 11, 12, and 13 in Hammond, Gary considered as a single area rather than any of the individual census tracts within it, Calumet City as a whole, LI-1, Whiting, and Crown Point.

When the individual census tracts mentioned above, observed to be areas wherein reside noticeably lower percentages of recent-hire employees are placed within the framework of distance from the plant, it becomes apparent that these tracts all lie within three miles' distance of the plant, and include 21.90 per cent of the recent-hire group. Those tracts in which the percentages of recent-hire employees are considerably higher lie at a distance of up to eight miles from the plant, and include 24.88 per cent of the recent-hire group. The census tracts with low percentages of recent-hire employees include 38.79 per cent of the total employees, and only 11.60 per cent of the recent-hire employees. Both groups of census tracts are mainly residential areas, with the exception of tract 2 in East Chicago and tracts 1 and 8 in Hammond, which are largely industrial areas.

Tract 8 in East Chicago is the only census tract in that city wherein both the percent and the concentration of recent-hire employees is noticeably high. In the previous section of this chapter, tract 8 was described as separated from the plant by both branches of the Indiana Harbor Canal. Only a relatively small part of the area within the tract is occupied by industry or railroad lines; the rest is residential except for a park, a school and the University of Indiana Extension. Most of the tracts in Hammond with a notably high percent of recent-hire employees, tracts 6, 11, 12, and 13, are residential areas, although other tracts with high percents of recent-hire employees are industrial areas (tracts 1 and 8) and mixed areas (tracts 3 and 4). Tract 16 of Gary is also mainly a residential area, although part of the Gary commercial district extends into the tract. Calumet City and LI-1 are almost completely residential communities. Within Whiting the industrial and residential areas of the city are distinctly separated, tract 2 containing the latter area.

Five-Year Employees

The percentage distribution of five-year employees indicates that the percentages of this group found in Chicago and East Chicago, as shown in Table 4, are very much lower than would be expected in terms of the percentages of total employees found in these cities. Percentages in Hammond and Gary are, on the other hand, higher. Table 5 shows that the concentration of five-year employees in the separate cities varies considerably. East

Chicago, Chicago, LI-1¹, and Lansing appear to have lesser concentrations of five-year employees than those derived for the total distribution. But Hammond, Gary, LI-2² and Calumet City show higher concentrations of five-year employees.

East Chicago. The data for census tracts in East Chicago show that only two tracts (2 and 3) in the city, have higher percentages of five-year employees, while the percentages for tracts 4, 5, 6, and 7 confirm the lower percentage of five-year employees living in the city as a whole. Approximately one-third of the employees living in tracts 2 and 3 are in the five-year group, a greater concentration than would be expected. But tracts 4, 5, 6, 7, and 10 show lesser concentrations. Tracts 4, 5, 6, and 7 also contain fewer recent-hire employees.

Hammond. In Hammond, tracts 3, 5, and 7 have higher percentages of five-year employees, while only tract 4 shows a lower percentage. Within tracts 1, 3, 5, 6, 8, and 10 appear higher concentrations of five-year employees than the percentage of the total group would indicate. Tracts 2, 4, 7, 11, and 13 have lower concentrations of employees in this class.

Gary. Of the two census tracts in Gary with more than one per cent of the total population, only in tract 16 is there a markedly higher percentage of total five-year employees. The concentration of five-year employees within tract 16 is also higher. Although many of the census tracts in Gary show what

¹LI-1 refers to census tract 1 of Lake County, Indiana, in which are located the cities of Griffith, Munster, and Highland.

²LI-2 includes census tract 2 of Lake County, Indiana, in which are situated the cities of Black Oak and Saint John.

appear to be great concentrations of employees in the five-year category, still the number of employees who reside in the tracts is rather too small a base for percent comparisons. For this reason, only tracts 6 and 16 are discussed in this section.¹ Tract 6 shows a lesser concentration of five-year employees, but almost half of the employees living in tract 16 belong in this class. Tract 16 also contains a high percentage of recent-hire employees.

Chicago. Similarly, there are only two community areas in Chicago where more than one per cent of the total employees live. These are areas 46 and 52; they are the only community areas to be discussed in the remainder of this chapter. The latter area shows a slightly lower percentage of total five-year employees than might be expected. Both areas show lower concentrations of five-year employees than would be expected.

Calumet City. The percentage of total recent-hire employees residing in both tracts 2 and 3 of Calumet City is greater than one per cent, but only in tract 3 was this percentage considerably greater than the percentage of total employees in the tract. The concentration of five-year employees within tract 3 and the city as a whole was also greater.

Thus, of the total five-year class of employees, relatively more tend to live in tracts 2 and 3 of East Chicago, 1, 3, 5, 10 in Hammond, tract 3 in Calumet City, and tract 16 in Gary than would be the case were place of residence determined purely by chance factors. Conversely, relatively lower percentages of em-

¹The remaining tracts in Gary will be included in the following chapter.

ployees in this group are found to live in tract 4 in Hammond, and tracts 4, 5, 6, and 7 of East Chicago. Of the total distribution, 27.13 per cent falls in the five-year group. It should be remembered that even areas which do not contain an appreciably larger percentage of total five-year employees might show a higher concentration of this group internally. This would be possible in a city or census tract where there was an extremely small number of employees in one or two of the other time categories. Although the concentration of five-year employees living in East Chicago is lower than that of the distribution as a whole, tracts 2 and 3 show higher concentrations of five-year employees. In Hammond, where the percentage of the city in this group is higher, tracts 2, 4, 7, 11, and 13 are exceptions, and show fewer five-year employees, while tracts 3, 5, 6, 8, and 10 show high proportions of the tract totals in this group. Gary, as a whole, shows a higher concentration of employees in this category, as does tract 16. Chicago shows relatively fewer employees in this class, which is also true of LI-1¹ and Lansing. The other cities all show greater concentrations of five-year employees.

Of the separate census tracts mentioned in this summary, those in which the percentage of five-year employees is higher than might be expected outnumber those in which this percentage is lower. The tracts with the higher percentages are scattered over a wider area, while those in which this percentage is lower are located within three miles of, and between four and six miles,

¹LI-1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

from the plant. The tracts in the former group contain 31.74 per cent of the five-year employees, and 23.60 per cent of the total employees. Those in the latter group contain 11.30 per cent of the five-year employees and 14.09 per cent of the total employees. Both groups are composed of tracts with similar internal composition, in terms of industrial, residential, and mixed areas.

Tract 2 of East Chicago is predominantly industrial, with a small residential area within two miles of the plant. Tract 3, a mixed area, is within a mile's distance. Tracts 4, 5, and 6 are mainly residential areas within the same distance as tract 3. Tract 7 is a mixed residential and industrial area. All of these tracts lie southeast of the plant. Thus it appears that the tracts in East Chicago with high proportions of five-year employees contain less industry than those with low proportions of five-year employees. In Hammond this is less clear. Tract 10 is the only residential tract with a high proportion of five-year employees; tract 3 is a mixed residential and industrial area, while tract 5 is industrial, commercial and residential. Tract 4, with a low proportion of five-year employees, is also a mixed residential and industrial area, and is the closest of all the above-mentioned tracts to the plant. Tracts 3 and 5 lie between three and four miles of the plant. Tract 10 is at a distance of between five and six miles of the plant. Tract 16 in Gary is completely residential and lies between seven and eight miles southeast of the plant. Community area 52 of Chicago, with a low proportion of recent-hire employees, is a mixed residential and

industrial area between five and six miles northwest of the plant. Calumet City is a residential area between four and six miles southwest of the plant.

From this brief summary it is difficult to conclude whether the type of area--residential, industrial, or mixed--exerts any noticeable influence over the proportion of five-year employees within a specific area. The factor of distance appears to be more pertinent to the discussion inasmuch as those areas with a low proportion of five-year employees are located at shorter distances from the plant, mainly concentrated within an area of three miles' distance. Tracts with high proportions of five-year employees are more widely dispersed. In general, it appears that in many of the cities and areas where there are high proportions of five-year employees there are also to be found high proportions of recent-hire employees as well.

Long-Term Employees

Since one of the hypotheses under investigation is that long-term employees of the firm will tend to be found concentrated in areas proximate to it, the percentage distributions of workers in this group must be examined with this fact in mind. Proportionately more long-term employees live in Chicago and Lansing than would be expected solely on the basis of the percentages of total employees living in each city. On the contrary, fewer long-term employees live in Hammond, Gary, and Whiting than is proportionate to the percentages of total employees found in each. It is only within this distribution that a rank order of the percentages for the respective cities would differ from a rank order of

the percentages of total employees, the two exceptions being Chicago ranked above Gary, and Lansing above Whiting.

East Chicago. The percentage of total long-term employees located in East Chicago is twenty per cent lower than the percentage of total employees living there, as shown in Table 4. At first glance this appears to disprove the hypothesis being tested, but it must be remembered that some of the census tracts in the city are as far as three to four miles away from the plant. Tracts 5, 6, and 7 contain relatively higher percentages of total long-term employees, while tracts 2 and 3 show relatively lower percentages for this class. Of the long-term employees living within the tracts, there are comparatively greater concentrations of this group in tracts 5, 6, 7, 8, and 9 than in the distribution as a whole, and lesser concentrations in tracts 1, 2, and 3. Despite the fact that tract 3 is within a mile's distance of the plant, a comparatively low percentage of long-term employees live there. However, such close proximity might act as a deterrent rather than an incentive for permanent workers to reside there if they can possibly find other convenient residential areas. At such close range the presence of industrial noise and dirt is inescapable. Furthermore, the actual residential area is small and obviously crowded, since three hundred sixty-one employees live there. The presence of two railroad lines over which heavy traffic passes increases the noise and dirt. Tracts 1 and 2 both contain small residential areas separated from the plant by large industrial areas, and, so, for the same reasons, would not be selected as areas of permanent residences. A second factor might

also be involved in this situation. The plant operates its promotion system on a straight seniority basis. Long-term employees, then, are the one who have risen within the occupational hierarchy of the plant to higher paid positions. They would not be forced for economic reasons to live in the immediate vicinity of the plant.

The residential areas of tracts 5 and 6 are also located within a mile's distance of the plant, but are further removed from it than tract 3. There is no industry within tract 5, and only a small portion of tract 6 is so occupied. Tracts 7, 8, and 9 lie within two miles' distance of the plant. Tract 8 is almost entirely residential; tracts 7 and 9 contain both residential and industrial areas. But in both of these tracts the residential areas are distinct and separate from the industrial areas. Tracts 5, 6, and 7 contain markedly fewer recent-hire and five-year employees. Noticeably higher percentages of five-year employees live in tracts 2 and 3. Tracts 5, 6, and 7 show relatively lower percentages of recent-hire and five-year employees, and lesser concentrations of recent-hire employees.

Hammond. Hammond, considered as a whole, shows a lower percentage of total long-term employees than is indicated by the percentage of total employees living in that city. Tracts 3 and 5 in particular contain fewer employees in this group. See Table 6. No tracts had appreciably higher percentages in this class, although there are greater concentrations of long-term employees within tracts 2, 4, 7, and 10, than in the total distribution. Table 7 shows that tracts 3, 5, 6, 8, 11, and 12, show lower con-

centrations of long-term employees. Tract 2 is a residential area, while tract 4 is a mixed residential and industrial area, both between two and three miles from the plant. Tract 7 is an industrial area between four and five miles from the plant, and tract 10 is a residential area between five and six miles away. All three tracts are located in the southwestern part of Hammond; tracts 7 and 10 lie south of the Grand Calumet River. Within tracts 2, 4, and 7, the concentration of five-year employees is lower than that of the total distribution, but within tract 10 this concentration is greater. The concentration of recent-hire employees is only noticeably greater in tract 4.

Tracts 3 and 5 are between three and four miles southwest of the plant. Both are mixed residential and industrial areas. The residential section of tract 3 is in the northern section. The largest part of Hammond's commercial area is situated within tract 5.

Gary. Although the city of Gary as a unit shows a considerably lower percentage of total long-term employees than of total employees, Table 10 shows that neither of the two tracts under discussion in this section exhibits any such large difference. However, according to Table 11, a lower percentage of employees living in tract 16 falls into this category than is proportionate to the percentage of the whole distribution. In this tract both the percentages and the concentrations of recent-hire and five-year employees are appreciably higher. The Gary commercial district occupies the northeastern corner of tract 16, which is, moreover, cut through by two railroad lines. The tract

is between seven and eight miles southeast of the plant.

Chicago. Chicago, as was mentioned earlier, contains a larger percentage of total long-term employees, especially in community area 52. Of the employees living in the city, ten per cent more are to be found in the long-term category than in the total distribution; both areas 46 and 52 exhibit this phenomenon. The percentage of five-year employees in tract 52 is noticeably low. See Table 12.

Calumet City and Whiting. Since none of the census tracts in Calumet City or Whiting contains one per cent of the total employees or one per cent of the total long-term employees, the percentage distribution of the latter will not be discussed in this section. However, Tables 13 and 14 show the proportion and concentration of long-term employees in each census tract.

Thus, the percentage of total long-term employees appears at first to be lower than expected in the three cities closest to the plant, and higher in the city farther away. This would disprove the hypothesis were it not for the fact that in each of the cities there are particular census tracts wherein are found higher percentages of long-term employees. Actually, those census tracts in which reside markedly high percentages of long-term employees are located within two miles of the plant, while those census tracts in which reside lower percentages than might be expected extend to a distance of four miles. Within the former reside 21.71 per cent of the long-term employees and 17.94 per cent of the total employees. Within the latter reside 13.45 per cent of the long-term and 19.10 per cent of the total employees. The

tracts with high percentages of long-term employees contain low percentages of both the recent-hire and five-year groups. In the following chapter when the census tract percentages are combined for tracts within specific distances of the plant, the distribution of long-term employees will be discussed at greater length. An attempt will then be made to clarify further this apparent contradiction.

Multiple-Hire Employees

That multiple-hire employees tend to be concentrated in areas contiguous to the plant is borne out by the location of more than one-half of this group in the same city as the plant itself. Table 4 shows that of the multiple-hire group, 56.96 per cent are residents of East Chicago, and approximately one-third (31.41 per cent) live in Hammond. Thus, 88.37 per cent of the class is located in these two closest areas. These percentages are considerably higher than would appear to be caused by chance. In Chicago, on the other hand, the percentage of multiple-hire employees is somewhat lower than indicated by the percentage of total employees in that city.

East Chicago. The percentages of multiple-hire employees in census tracts 4 and 6 are higher than the percentages of total employees in these tracts would indicate, as seen in Table 6. Among the other tracts in the city, there are no other variations from the percentages of total employees as large. However, it appears from Table 7 that all but tracts 2 and 8 show greater concentrations of multiple-hire employees than is present in the

total distribution. The concentration of multiple-hire employees in tract 8 is less than that of the total distribution. The residential areas of tracts 4 and 6 are close to the plant, as in tract 3, but are not crossed by any extensive railroad lines. Tract 8, with a lower concentration of multiple-hire employees and higher concentrations of recent-hire and long-term employees is further removed from the plant. In most of the tracts with high concentrations of multiple-hire employees, the concentration of the recent-hire group is apparently lower than that of the total distribution.

Hammond. None of the census tracts in Hammond individually has a higher percentage of multiple-hire employees than might be expected. Tracts 1, 5, and 10, surprisingly enough, show slightly lower percentages than might be indicated by the corresponding percentages of total employees in the tracts. See Table 8. Census tract 9 is the only tract wherein the concentration of multiple-hire employees (41.90 per cent) greatly exceeds that percentage of the total distribution in this category. In tracts 1, 3, 4, 5, 6, and 10, this concentration is noticeably less. Tract 1 is separated from the northern section of East Chicago by Whiting. The industries in Whiting would possibly attract some of the workers in the multiple-hire group. Tract 1 is also adjacent to Chicago which might also attract workers who had ceased to work at the steel plant in East Chicago. Of all the census tracts in Hammond, tract 10 is farthest from the plant. Tract 9 is the only tract to have a concentration of multiple-hire employees greater than that of the total distribu-

tion. Tract 9 is between four and five miles directly south of the plant. The residential areas of the other tracts are all southwest of the plant, with the exception of tract 2. Table 9 shows that within tract 9 the concentrations of long-term and recent-hire employees are less than that of the total distribution, while Table 8 shows it to contain a high percentage of five-year employees.

Gary. The concentration of multiple-hire employees being so pronounced in the cities of East Chicago and Hammond, it is not surprising to find that the remaining cities manifest a sharp drop in the percentages of employees in this category. Gary is no exception, although the percentage of multiple-hire employees in tract 6 comprises a larger portion of the total for the tract than does the multiple-hire class of the total distribution. The percentage and the concentration of multiple-hire employees in tract 16 are lower than might be expected. The concentrations of recent-hire and five-year employees in tract 16 are noticeably higher than the proportion in the total distribution, and the concentration of long-term employees lower. The percentages of recent-hire and five-year employees in tract 16 are considerably higher than the percentage of total employees there.

Chicago. Neither of the two community areas under discussion in this section shows a percentage of total multiple-hire employees markedly larger than the proportions of total employees in the respective areas. But the concentrations of multiple-hire employees in community area 46 is higher than, and, in community area 52, is lower than, that proportion of the total

employees in the multiple-hire group in general.

Calumet City and Whiting. None of the census tracts in either of these two cities contains one per cent of the total multiple-hire employees. Since neither of them has one per cent of the total employees, besides, they are not discussed in this section.

To summarize, considering the cities as units, East Chicago shows higher percentages of multiple-hire employees, but lower percentages of both recent-hire and five-year-employees. Hammond and Gary exhibit higher percentages of both recent-hire and five-year employees, but lower percentages of long-term and multiple-hire employees. Chicago contains lower percentages of recent-hire and five-year employees, higher percentage of long-term employees, and a lower percentage of multiple-hire employees. In LI-2 the percentage of each class of employees falls within the limits of a chance distribution. Calumet City shows a high percentage of both recent-hire and five-year employees, and a low percentage of multiple-hire employees. LI-1 shows only a higher percentage of total recent-hire employees. Lansing shows only a high percentage of total long-term employees. Whiting shows a higher percentage of recent-hire, and a low percentage of long-term employees.

A summary of the percentage distribution of the four categories of periods of employment within the city reveals a similar situation. Within East Chicago is the highest concentration of multiple-hire employees, while the concentration of recent-hire employees is furthest below that of the total distribution, that of the long-term group is greater. Hammond and Gary both show rela-

tively higher percentages of employees in the recent-hire and five-year categories, and lower percentages in the multiple-hire and long-term groups. Chicago shows a noticeably lower concentration of five-year employees, and a higher concentration in the long-term group. Calumet City has higher concentrations in all groups but the multiple-hire class, LI-2,¹ a higher concentration of recent-hire employees, and a lower percentage of five-year employees. Lansing and LI-1 show higher concentrations in the recent-hire and long-term groups, but lower in the five-year and multiple-hire groups. Whiting shows higher percentages in the recent-hire and multiple-hire groups, but comparatively fewer long-term employees. The percentages of employees in the recent-hire and five-year groups were low in East Chicago as a whole, which has the highest percentage of total employees, of long-term employees, and multiple-hire employees.

¹Refers to the census tract 2 of Lake County, Indiana, which includes the cities of Black Oak and Saint John.

CHAPTER III

THE SPATIAL LOCATION OF EMPLOYEES BY PERIOD OF EMPLOYMENT AND BY DISTANCE FROM PLANT

In Chapter III the data for all cities and areas are combined and analyzed within the framework of a zonal distribution over the area surrounding the plant. A system of one-mile concentric zones using the steel plant as a center has been employed for this purpose. Each census tract has been placed in a particular zone after examination of the location of the main residential area within the tract has shown it lies within a specific distance from the plant. Table 42 in the Appendix lists all census tracts within mile distances of the plant, up to ten miles. From then on, the categories are broadened to ten to fifteen miles, fifteen to twenty miles, twenty to twenty-five miles, and twenty-five miles and beyond. Thus the data for the areas not discussed in the previous chapter are analyzed in this chapter, and, particularly for the more remote areas, the problem of locational influence can be more clearly traced.

The pattern of concentration of employees in nearby areas is viewed in this spatial presentation somewhat differently from the percentage distribution of employees by census tracts and cities employed in the previous section. In the spatial distribution, areas in each city which lie at different distances from

the plant were separated and combined with areas from other cities which lie at the same distance from the steel plant. Thus, if any pattern of distribution does exist, this method should show it quite clearly. Another advantage to this method of presentation is that the distribution of each class of employees over the whole area can be viewed in terms of gradients which are readily compared.

All of the employees living within a mile's distance from the plant live in the eastern half of the zone. Those who live between one and two miles from the plant live in the eastern and western parts of the zone, but not in its central area. In the two to three mile zone, the employees live in the area extending from the central part to the lake on the west. Those employees who live in the three to four mile zone live north and south of Wolf Lake and west to the central part of the zone. In the four to five mile zone, the residents are found in the southwest in tract 6 of Gary, in the adjoining central area which lies directly south of the plant, in the two eastern tracts of Calumet City, and in the two tracts in Chicago north of Wolf Lake. The residences of employees in the five to six mile zone are southeast in Gary tracts 4 and 5, southwest in Hammond tracts 10, 11, 12, and 13, and Calumet City tract 3, and northwest in the Chicago census tracts. The residences of employees in the six to seven mile zone are located in the southeast in Gary and the northwest in Chicago. In the seven to eight mile zone, the homes of employees are situated in the northwest in the tracts to the north and south of Lake Calumet, centering on the southern border of Chicago, and

southeast in tract 2 of Lake County, Indiana, and tracts in Gary. For any further distances from the plant, employees tend to live southeast in Indiana and northwest in Chicago. Very few employees who live in Chicago live further west than State Street, with the exception of a group of employees residing in community areas 28 and 67. Some few live northwest of the plant in a direct line across Lake Calumet and Wolf Lake, but this number is quite small.

Recent-Hire Employees

The hypothesis concerning recent-hire employees is that this group tends to be more widely dispersed than any of the other time classes in the distribution. However, as in all time classes of employees, the highest percentage appears in the zone within a mile's distance of the plant. See Table 15. Nevertheless, the percentage of the recent-hire class is smaller than that of any of the other categories in this zone (25 per cent of the recent-hire, 31.87 per cent of the long-term, 27.48 per cent of the five-year, and 36.03 per cent of the multiple-hire employees). Between ten and fifteen per cent of the recent-hire employees are found in the zone one to two, five to six, and seven to eight miles away from the plant, as shown on Map 1. A comparatively greater proportion of both the long-term and multiple-hire groups is found in the one to two mile zone, ten to fifteen per cent. The percentage of recent-hire employees living in the area five to six miles away is higher than that of any of the other groups (five to ten per cent of the five-year, long-term, and multiple-hire classes). Likewise is the percentage of total

TABLE 15

PERCENT OF EACH EMPLOYEE GROUP BY MILE ZONES FROM EAST CHICAGO STEEL PLANT

Distance	Recent Hire	5-yr. Empl.	Lg.Tm. Empl.	Mult. Hire	Total in Zone	Pct. R.H.	Pct. 5-yr.	Pct. L.T.	Pct. M.H.	Pct. of Total
1 mile	61	258	320	459	1,098	25.00	27.48	31.87	36.03	31.72
1-2 mi.	29	123	156	218	526	11.89	13.10	15.54	17.11	15.20
2-3 mi.	18	43	51	77	189	7.38	4.58	5.08	6.04	5.46
3-4 mi.	19	101	35	58	213	7.79	10.76	3.49	4.55	6.15
4-5 mi.	23	81	91	112	307	9.43	8.63	9.06	8.79	8.87
5-6 mi.	25	61	77	75	238	10.25	6.50	7.67	5.89	6.88
6-7 mi.	6	22	19	37	84	2.46	2.34	1.89	2.90	2.43
7-8 mi.	30	97	77	80	284	12.30	10.33	7.67	6.28	8.21
8-9 mi.	9	35	50	40	134	3.69	3.73	4.98	3.14	3.87
9-10 mi.	2	5	11	11	29	.82	.53	1.10	.86	.84
10-15 mi.	8	46	71	49	174	3.28	4.90	7.07	3.85	5.03
15-20 mi.	5	20	16	23	64	2.05	2.13	1.59	1.81	1.85
20-25 mi.	2	24	15	17	58	.82	2.56	1.49	1.33	1.68
over 25	.7	23	15	18	63	2.87	2.45	1.49	1.41	1.82
Total	244	939	1,004	1,274	3,461	100.00	100.00	100.00	100.00	100.00

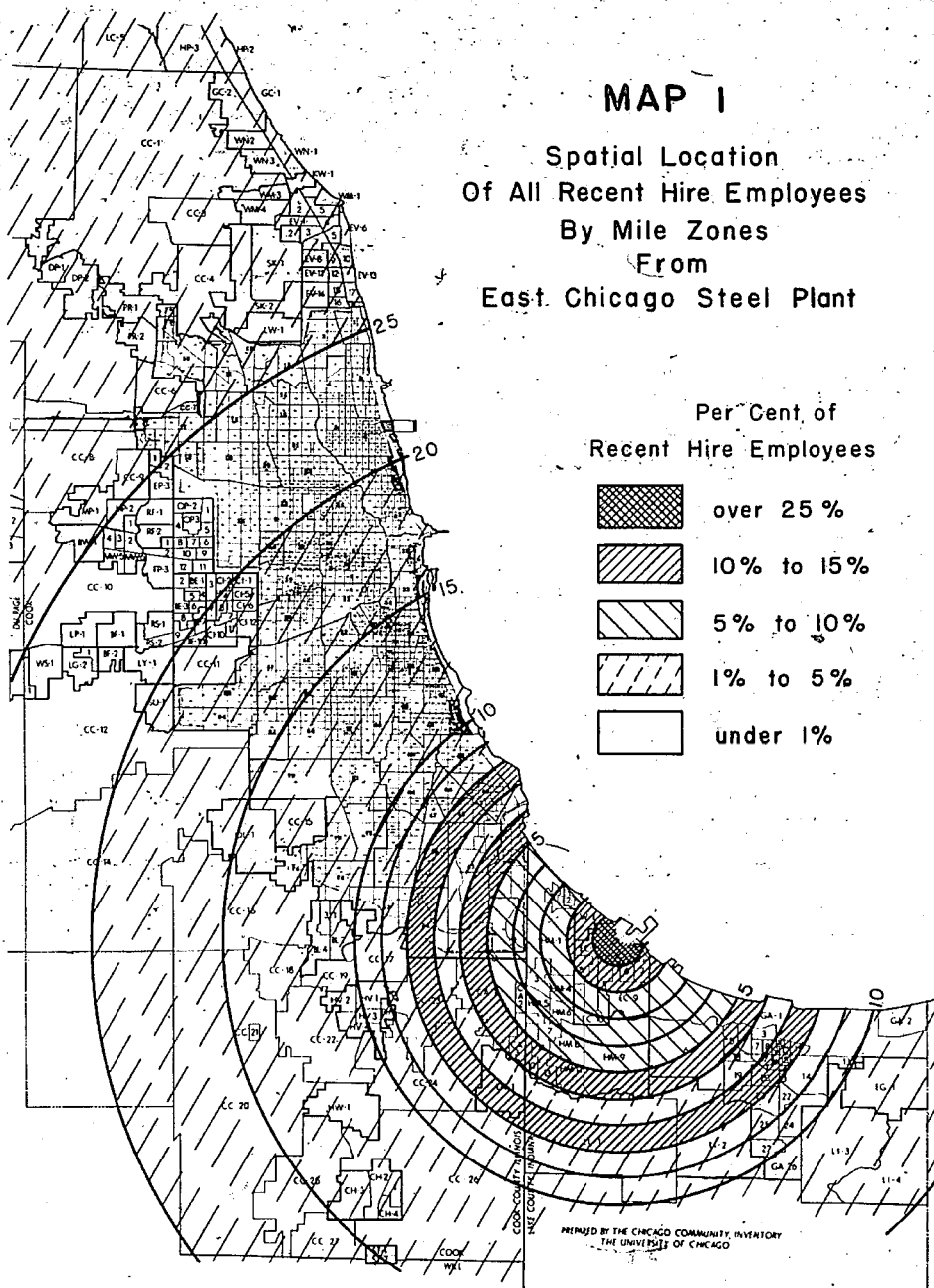
TABLE 16

PERCENT OF EMPLOYEES OF EAST CHICAGO STEEL PLANT IN EACH MILE ZONE BY
PERIOD OF EMPLOYMENT

Distance	Recent Hire	5-yr. Empl.	Lg. Tm. Empl.	Mult. Hire	Total in Zone	Pct. Zone	Pct. Zone	Pct. Zone	Pct. Zone	Pct. of all Time classes in Zone
1 mile	61	258	320	459	1,098	5.56	23.50	29.14	41.80	100.00
1-2 mi.	29	123	156	218	526	5.51	23.38	29.65	41.44	100.00
2-3 mi.	18	43	51	77	189	9.52	22.75	26.98	40.74	100.00
3-4 mi.	19	101	35	58	213	8.92	47.41	16.43	27.23	100.00
4-5 mi.	23	81	91	112	307	7.49	26.38	29.64	36.48	100.00
5-6 mi.	25	61	77	75	238	10.50	25.63	32.35	31.51	100.00
6-7 mi.	6	22	19	37	84	7.14	26.19	22.61	44.04	100.00
7-8 mi.	30	97	77	80	284	10.56	34.15	27.11	28.17	100.00
8-9 mi.	9	35	50	40	134	6.72	26.12	37.31	29.85	100.00
9-10 mi.	2	5	11	11	29	6.90	17.24	37.93	37.93	100.00
10-15 mi.	8	46	71	49	174	4.60	26.44	40.80	28.16	100.00
15-20 mi.	5	20	16	23	64	7.81	31.25	25.00	35.93	100.00
20-25 mi.	2	24	15	17	58	3.44	41.37	25.86	29.31	100.00
over 25	7	23	15	18	63	11.11	36.50	23.80	28.57	100.00
Total	244	939	1,004	1,274	3,461	7.05	27.13	29.01	36.81	100.00

MAP 1

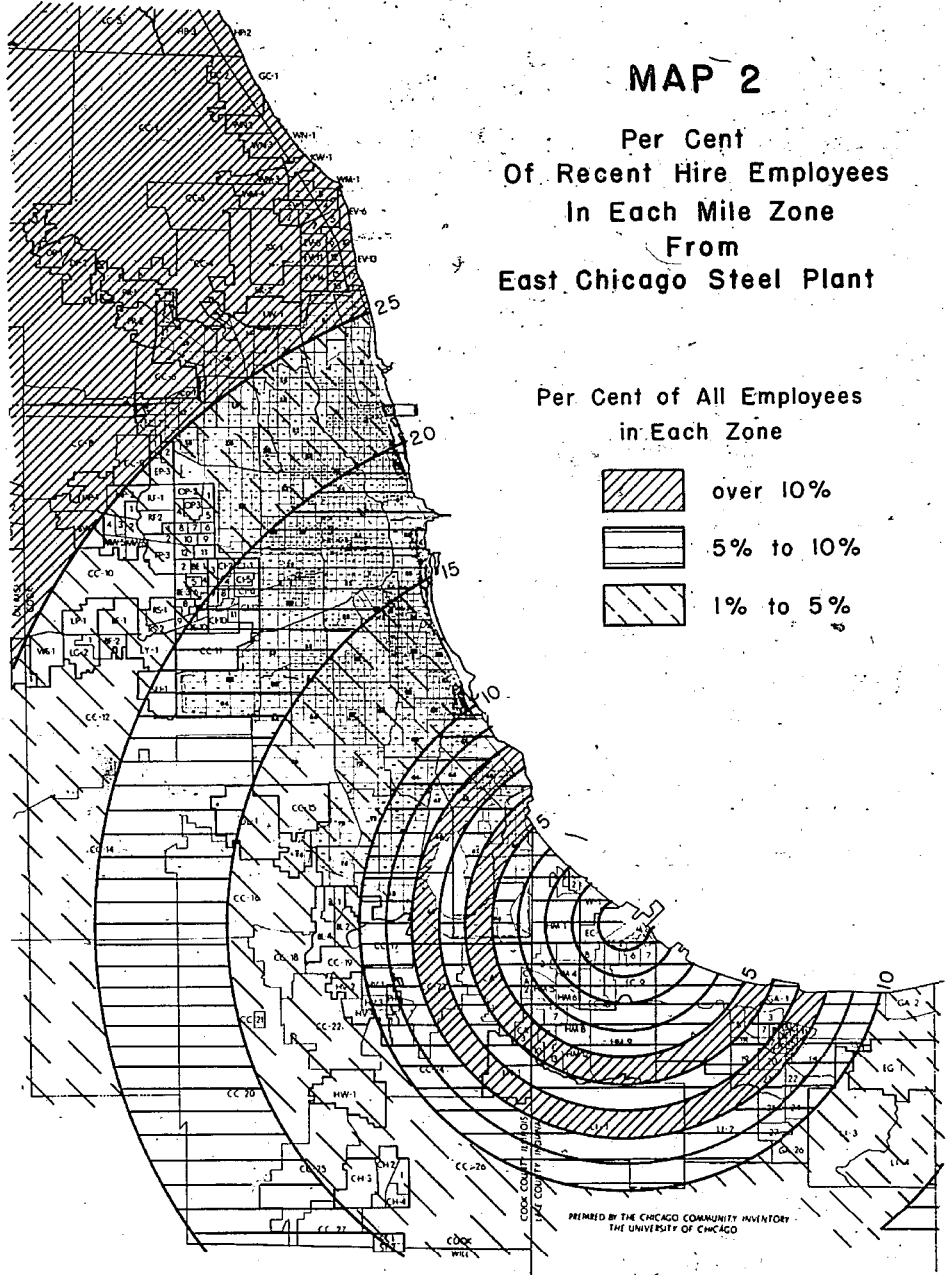
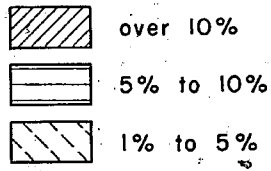
Spatial Location Of All Recent Hire Employees By Mile Zones From East Chicago Steel Plant



MAP 2

Per Cent
Of Recent Hire Employees
In Each Mile Zone
From
East Chicago Steel Plant

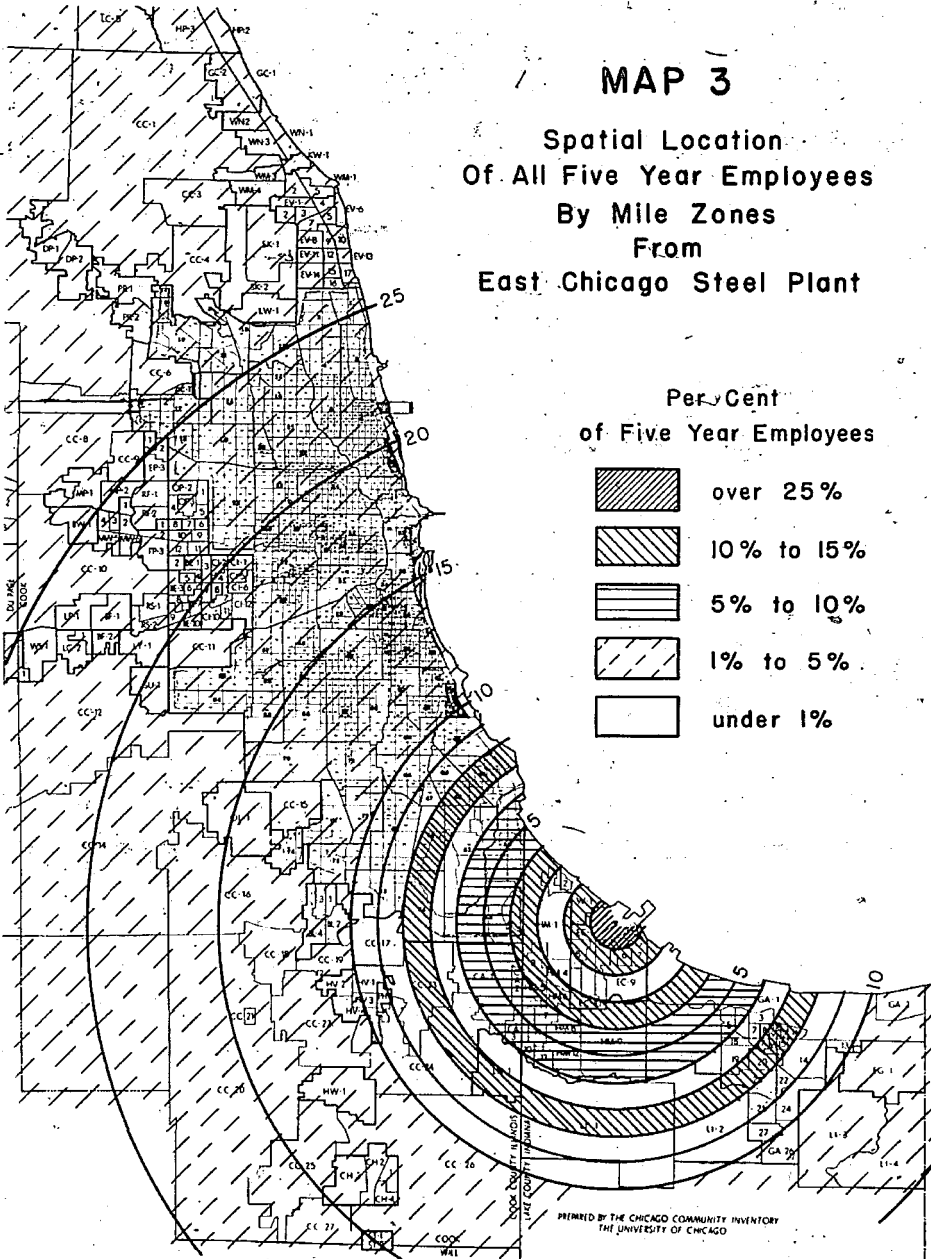
Per Cent of All Employees
in Each Zone



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MAP 3

Spatial Location Of All Five Year Employees By Mile Zones From East Chicago Steel Plant

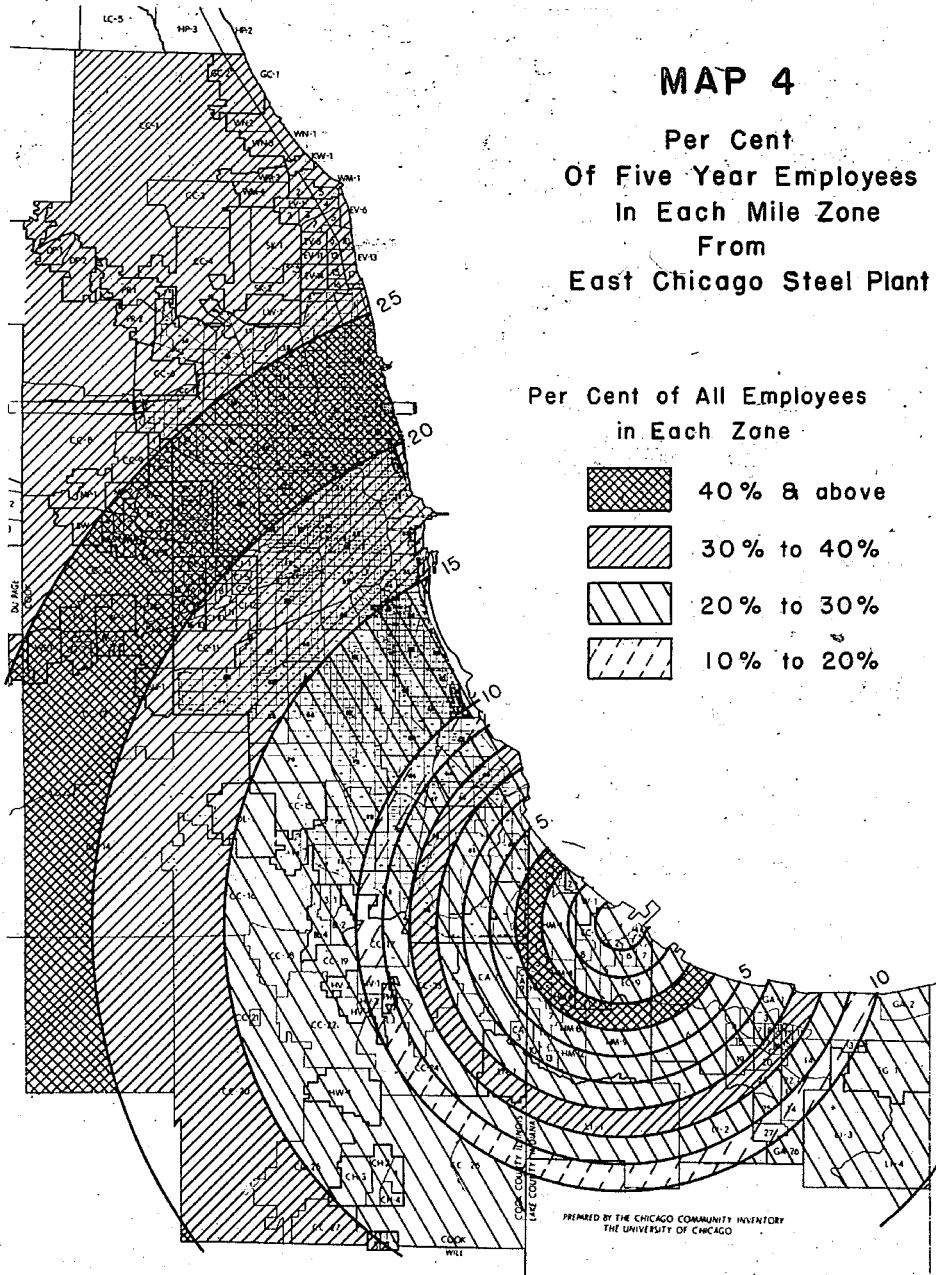
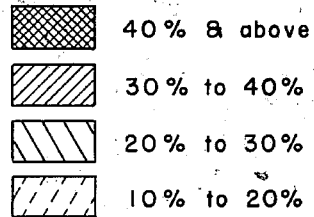


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MAP 4

Per Cent
Of Five Year Employees
In Each Mile Zone
From
East Chicago Steel Plant

Per Cent of All Employees
in Each Zone



recent-hire employees living seven to eight miles from the plant greater than that of either the long-term or multiple-hire categories (five to ten per cent). The zones in which are found proportionately higher concentrations of recent-hire employees, are those five to six, seven to eight, and beyond twenty-five miles away from the plant. See Table 16.

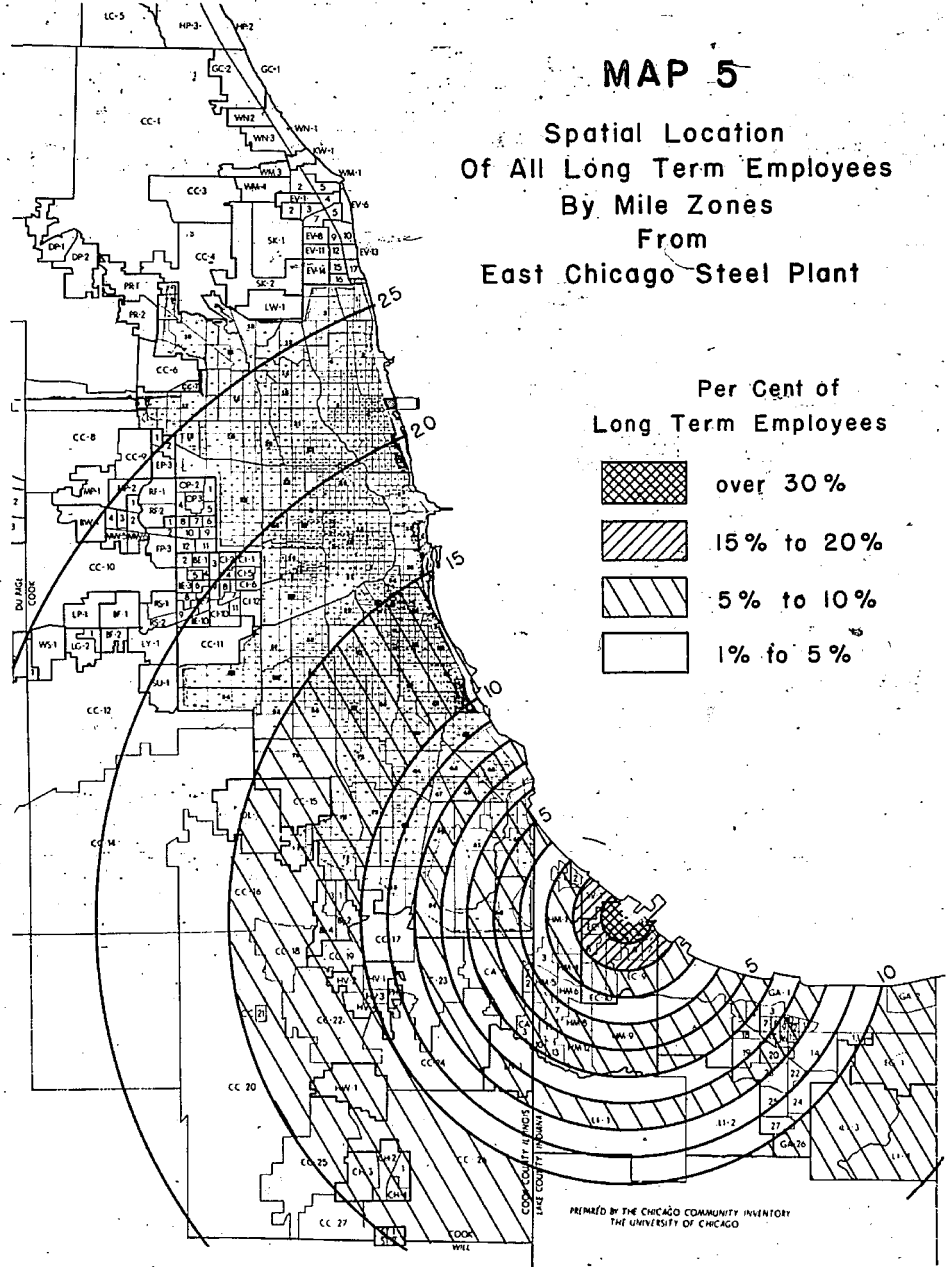
Five-Year Employees

The hypothesis formulated as regards the distribution of five-year employees holds that this group is neither so concentrated as the long-term group, nor as dispersed as the recent-hire group. Again, the highest percentage appears in the zone adjacent to the plant, but the percentage of total five-year employees, 27.47 per cent, is intermediate between that of the recent-hire group, 25 per cent, and that of the long-term group, 31.87 per cent. In the one to two mile, and seven to eight mile intervals reside ten to fifteen per cent of the total five-year group. The percentages of the total recent-hire class for the one to two mile and seven to eight mile areas are the same, but a higher percentage, fifteen to twenty per cent, of the total long-term employees is found in the former, while only five to ten per cent of the long-term group lives in the latter zone. Thus it would appear that the hypothesis governing this distribution is substantially borne out.





The zones wherein are found the proportionately greatest concentrations of employees in the five-year class are the three to four mile sector, the twenty to twenty-five mile sector, and

MAP 5

Spatial Location Of All Long Term Employees By Mile Zones From East Chicago Steel Plant



Per Cent of
Long Term Employees

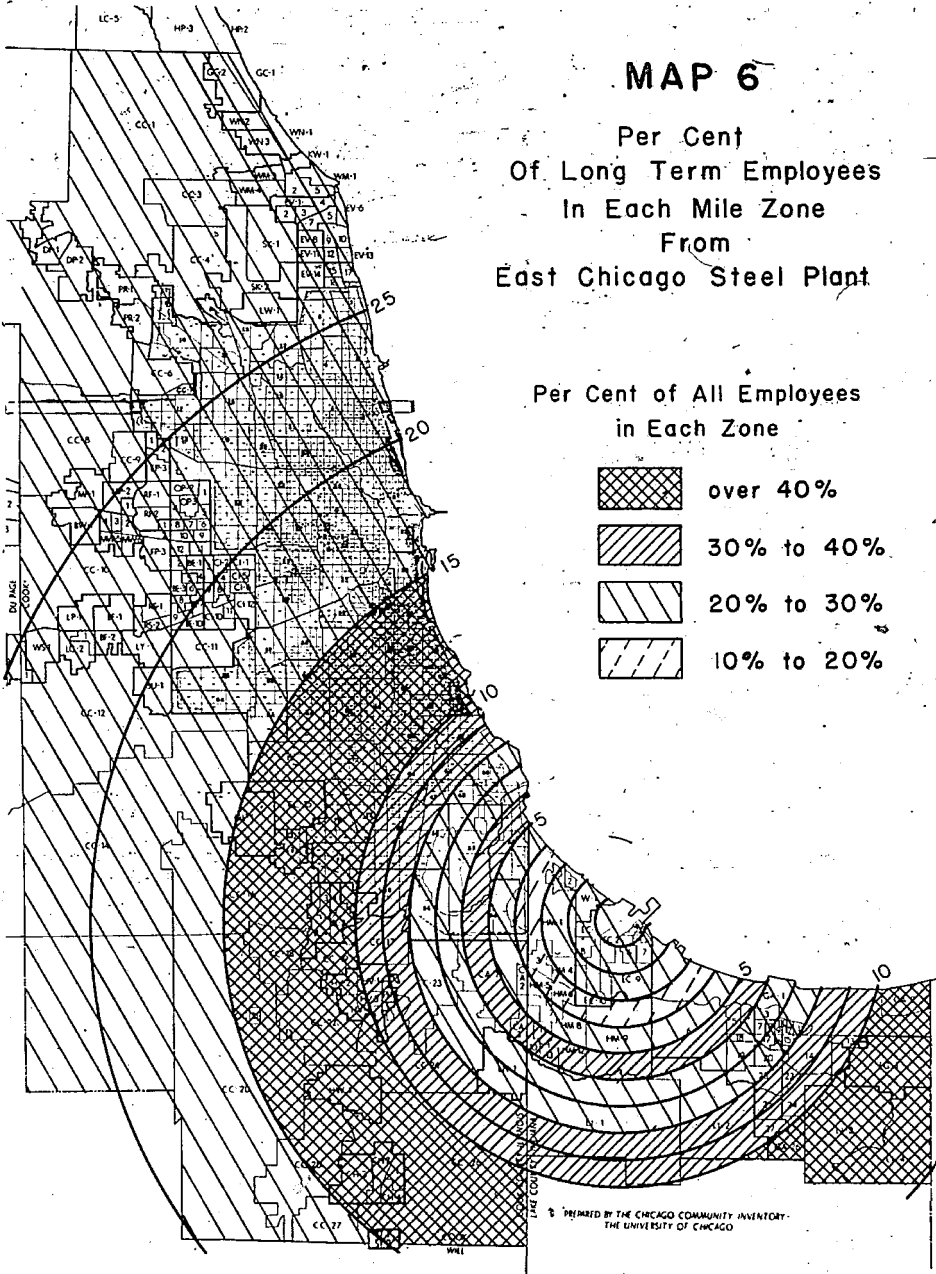
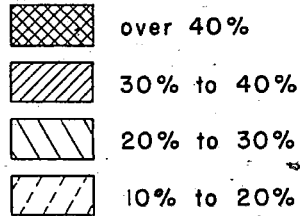
-  over 30%
-  15% to 20%
-  5% to 10%
-  1% to 5%

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MAP 6

Per Cent
Of Long Term Employees
In Each Mile Zone
From
East Chicago Steel Plant

Per Cent of All Employees
in Each Zone



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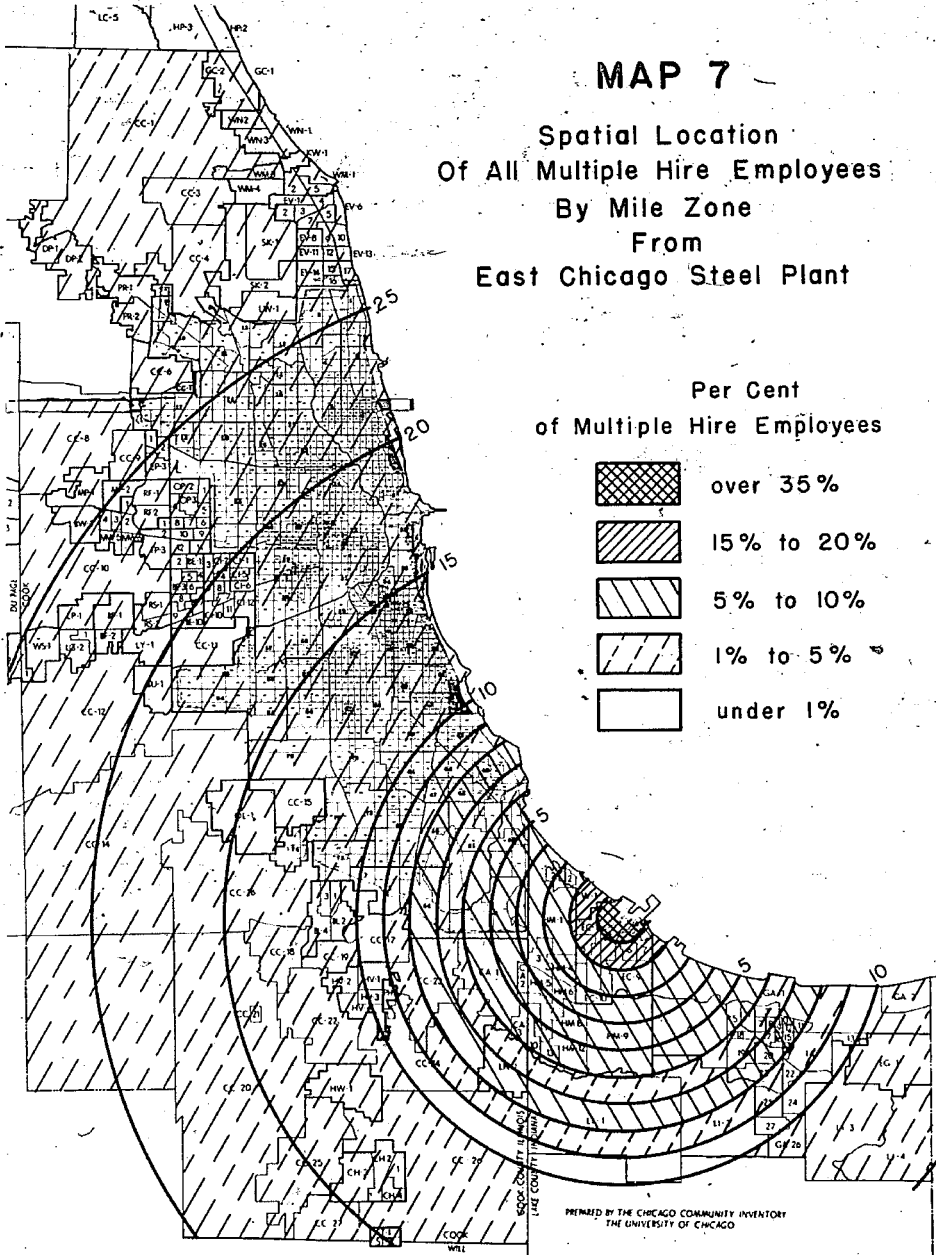
the area beyond twenty-five miles away. Although the latter two areas are those wherein the concentration of employees in the five-year class are proportionately highest, the first mentioned is nearer the plant than is the five to six mile area, the third highest area of the recent-hire class. This is a further indication that the hypothesis is substantiated.

Long-Term Employees

That the percentage of long-term employees in areas nearest the plant is the highest of the three categories is evident. More than thirty per cent of the total long-term employees live within one mile of the plant, while 15.54 per cent live in the one to two mile interval. In neither of the classes discussed above did such high percentages occur in the same areas. The next highest percentage of total long-term employees, a drop to five to ten per cent, occurs in four zones: two to three miles, four to five miles, five to six miles, and seven to eight miles. In these areas are found five to ten per cent of the total recent-hire class and one to five per cent of the total five-year class in the first mentioned. The second, four to five miles, contains five to ten per cent of the total recent-hire group and one to five per cent of the total five-year group. On the other hand, in the five to six mile zone live ten to fifteen per cent of the total recent-hire, and five to ten per cent of the total five-year employees. The zonal distribution of both of these latter groups shows that ten to fifteen per cent of each lives seven to eight miles from the plant, as compared to the above mentioned

MAP 7

Spatial Location
Of All Multiple Hire Employees
By Mile Zone
From
East Chicago Steel Plant

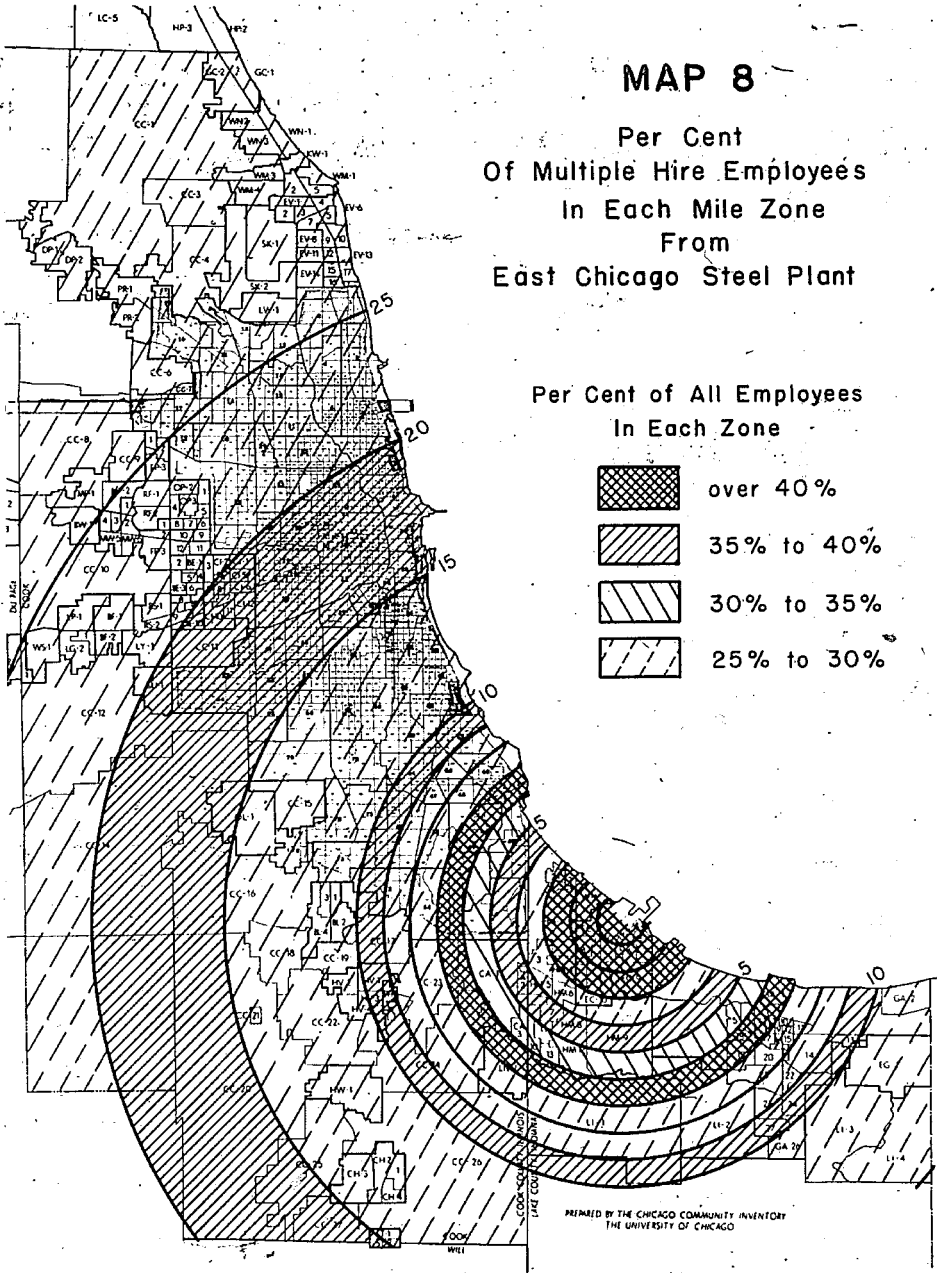
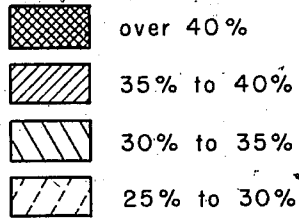


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MAP 8

Per Cent
Of Multiple Hire Employees
In Each Mile Zone
From
East Chicago Steel Plant

Per Cent of All Employees
In Each Zone



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five to ten per cent of the long-term employees residing there. Thus, since both the concentration of long-term employees within the one and one to two mile areas is higher than that of either of the other groups already discussed, and since the concentrations of long-term employees in areas further away from the plant are lower than those of the other groups, it may be said that long-term employees tend to live closer to the plant.

However, inspection of the table showing the concentration of long-term employees in each zone reveals that within the eight to nine mile, the nine to ten mile, and the ten to fifteen mile zones the concentration of the long-term group is the greatest of all employee groups.

Multiple-Hire Employees

The hypothesis relating to employees hired more than once by the firm was developed while the data were being accumulated, and therefore can be expected to have been influenced by the data rather than the more usual circumstance where the hypothesis is formulated in advance. In this case, when it was found that such a practice was a relatively common one, a hypothesis was developed to describe the spatial relationship of the multiple-hire category to the other groups. Once this category was established it was expected that employees hired more than once would tend to live nearer to the plant than employees in any other class. A multiplicity of reasons exist to suggest this hypothesis. Employees living relatively far from the plant who are either laid off or who leave the firm for a different job are less likely to return

to it inasmuch as the further away they live, the more numerous are the alternative jobs available to them.¹ Conversely, those employees living close to the plant, if laid off, might take another job as a temporary one, with the end in mind of returning to work at the plant in the future. For them, employment at the plant would mean shorter distances to travel to work, an important consideration. Furthermore, the area northwest for seven miles, and southeast for a longer distance is a highly industrial one, with a great diversification of heavy industry. An employee of the plant under consideration might work in a large number of other industries in the area over a period of years, choosing jobs which offer advantages at the time of job changes. The steel plant in this study is located in the center of the Calumet Industrial region, so it might attract any number of transient workers who enter the area and work at a number of plants until they finally remain in one of them.

The hypothesis, then, is that employees hired more than once tend to be found in greatest concentration in areas closest to the plant; within these areas the group will be more concentrated than any of the others already discussed. The distribution of this group within the zonal system shows the expected pattern. Of the total class, 36.03 per cent lives within one mile of the plant, and 17.11 per cent lives between one and two

¹This is an adaption and modification of Stouffer's "Theory of Intervening Opportunities." Stouffer, Samuel A., "A Theory Relating Mobility and Distance," American Sociological Review, V (1940), pp. 845-67.

miles away. These percentages are higher than the comparable ones for any of the other categories. Between five and ten per cent of the total multiple-hire group lives in each of the following zones: two to three miles, four to five miles, five to six miles, and seven to eight miles. The percentages of long-term employees in these zones is within the same range, five to ten per cent. The percentages of five-year employees in the same zones are: one to five per cent, five to ten per cent, five to ten per cent, and ten to fifteen per cent. The percentages of recent-hire employees in the same zones are: five to ten per cent, five to ten per cent, one to five per cent, and ten to fifteen per cent. Thus both the recent-hire and five-year groups show higher percentages further away from the plant, and the five-year group, a lower percentage nearer to it. Since the percentage distribution of the long-term class is practically the same as that of the multiple-hire group in areas further away from the plant, the conclusion that there is the greatest concentration near the plant in the multiple-hire group is based upon the higher percentages of this group in the first two zones. The sums of the percentages in these zones are 65.04 per cent of the long-term class, and 72.52 per cent of the multiple-hire class.

From the table showing the percentage of employees living in each zone found in the multiple-hire category, it can be seen that the zones with the highest percentages in this group are zones, one, one to two, and six to seven miles away from the plant.

Summary

In this chapter an attempt has been made to investigate the nature of the relationship, if any exists, between place of residence and period of employment at a given plant. That a relationship does exist has been shown. But the nature of the relationship as stated in the hypotheses should be further qualified to take cognizance of the factor most important in all four distributions, namely, that the location of the plant, itself, appears to be more significant to place of residence than does period of employment. In all of the four time classes of period of employment it is apparent that more than one-third of the total employees in each time group lived within one mile of the plant.

Period of employment, however, definitely appears to be a factor in the relationship between place of work and place of residence. By tracing the distribution of the four classes of period of employment, it has been recognized that the longer an employee works at this East Chicago steel plant, the closer he tends to live to his place of work. This is especially true for the multiple-hire employees.

CHAPTER IV

THE LOCATIONAL INFLUENCE OF TYPE OF WORK ON PLACE OF RESIDENCE

One of the principles of human ecology is that people of similar race, culture, and economic status tend to gravitate to similar areas. The designation of various areas as zones of "workingmen's homes" and "restricted residential areas," as well as the concept of natural areas is based on this axiom. Monthly rentals and purchase prices paid for homes are dependent, in the main, on the earnings of an individual, which, in turn is based on the type of job he holds. However, although a skilled worker may earn as much or more than a clerical or minor professional worker, their aspirations and values may be such as to lead them to live in completely different areas and under different physical conditions.

Type of work or job has been used in this study as an additional factor to determine the influence of place of work on place of residence. An analysis of the data in these terms will help to distinguish the two groups with which the present study is concerned, the white-collar and manual workers. By such a separation, a rough approximation of socio-economic status is derived. The professional, executive, and managerial workers, better paid and more certain of continuous employment at the same

level than the skilled, semi-skilled, and service workers, and those in the general labor group, can be expected to live further away from the plant. The clerical workers, with expectations of rising to the same economic levels as the professional, executive, and managerial groups, are more likely to live in these same areas than in areas where the homes of manual workers are found. They are able to pay the costs of commuting, either owning a car or paying railroad fares, and are also financially able to pay higher rentals for homes or desirous of residence in more desirable residential areas. With reference to the particular area under consideration, the more desirable residential areas are quite removed from the plant and from the lakefront. The area adjacent to the plant is highly industrial in terms of land use though there are several hotels and rooming houses scattered nearby. The lakefront from the southern portion of Chicago east through Gary is mainly occupied by heavy industry.

Since the different jobs within the steel plant are so numerous, the census classification of occupations was used in order to group the individual employees into the various categories large enough to be studied. The broad census categories used for this classification are:

1. Professional and semi-professional workers
2. Proprietors, managers and officials
3. Clerical, sales, and kindred workers
4. Craftsmen, foremen, and kindred workers
5. Operatives and kindred workers
6. Protective service workers
7. Service workers
8. Laborers

A table showing the distribution of each of these classes of

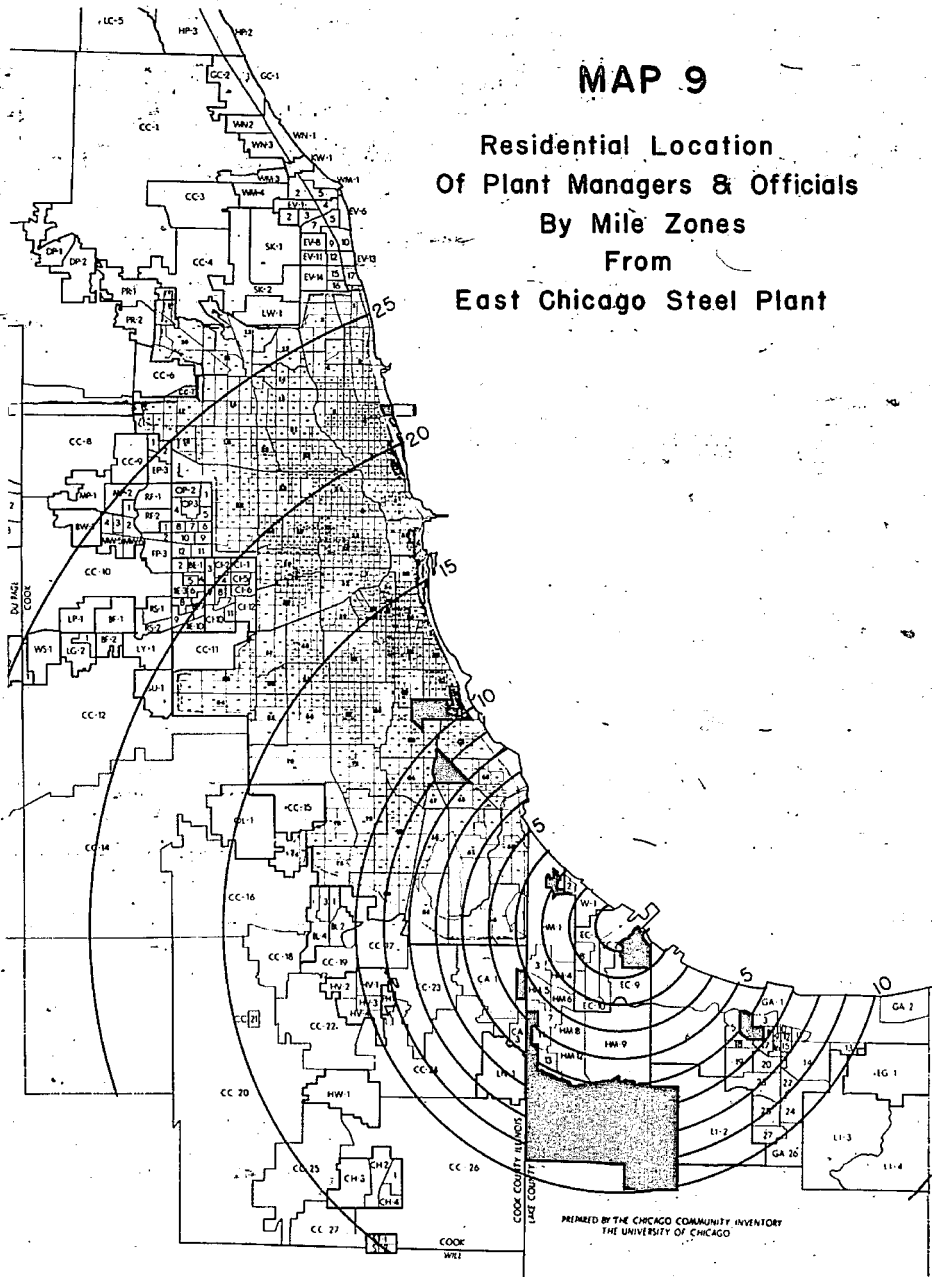
employees may be found in the appendix, as well as tables showing each of these classes of employees within the census tracts of the main cities.

For statistically meaningful conclusions to be drawn from these data, it was decided to sacrifice the precise detail gained by employing a large number of categories with a small number of residents in each category for more inclusive categories based on larger numbers. In the present study, to have based the percentage distributions on each of the eight categories would, in many cases, have little meaning, since a percentage based on such small numbers is statistically unreliable. Consequently, the large array of eight classes of employees was reduced to two: white-collar and manual workers. The first three categories in the above grouping logically belong in the white-collar class; the remaining are classed as manual workers. Inspection of the complete array shows that the only distortion resulting from this abbreviation is the disguising of the high percentage of managers and officials living in Chicago. See Map 9 for the areal distribution of this group.

The same method of analysis is used in this chapter as in the preceding one. Two series of tables show the number of white-collar and manual workers in each city, and census tracts. Percentages in the first series show the proportion of the total white-collar class and the proportion of total manual workers in each city or census tract. The second series shows the proportion of the employees living in an individual city or census tract that are white-collar and manual workers.

MAP 9

Residential Location Of Plant Managers & Officials By Mile Zones From East Chicago Steel Plant



In this chapter we wish to ascertain whether type of work in a given plant has any influence on place of residence. Specifically, we wish to know whether white-collar workers are located in larger numbers and at further distances from the plant than manual workers who tend to live close to their place of work. Liepmann states this fact succinctly when she mentions that in the case of a firm needing a particularly skilled person,¹ "It would not be possible to find the necessary number specialized [in a particular skill] within walking distance of the plant." In the present case, people with highly specialized skills are likely to live in the larger urban area where their skills are more in demand, and they are able to live with others of their class. Since the number of white-collar workers in any given plant is generally smaller proportionately than the blue-collar, they are more apt to reside in areas where members of their class reside. In Chicago, these areas are located at some distance from the heavy industrial areas. Manual workers, however, are expected to live close to the plant, since the residential areas adjacent to heavy industry are generally the "less desirable" workingmen's residential areas.

The same method was used to analyze the data in Chapter IV as in Chapter II. The standard error of the sample proportion was used to determine which percentage differences were important, or beyond the $\pm 2\sigma$ limit. The distribution of total employees over the area is, naturally, the same as in the previous

¹Liepmann, op. cit., p. 13.

chapter. In this chapter the distribution of white-collar and manual workers are compared to the distribution of total employees in the various cities and census tracts. For example, from Table 17 of the first series it is seen that 49.21 per cent of the total employees reside in East Chicago; 36.68 per cent of the white-collar class, and 50.35 per cent of the manual workers are found there, also. Table 18 indicates that the concentration of white-collar employees within the city of East Chicago is less than that of the total distribution; 6.22 per cent of the employees living in East Chicago are in the white-collar category as against 8.35 per cent of the total distribution. Conversely, the concentration of manual workers within the city of East Chicago, 93.59 per cent, is greater than the percentage of the total distribution, 91.65 per cent, in that class.

Description of Housing and Population in the Area

East Chicago steel plant. The plant in point is located in tracts 1 and 2, in both of which are found much heavy industry and only small residential areas. In tracts 3, 4, and 5 are located the residential areas closest to the plant. Proportionately more land within tract 3 is occupied by railroad lines than any other tract in East Chicago. Tracts 6, and 7 are closer to the plant than any of the other tracts with high percentages of white-collar employees. Tract 6 contains relatively little heavy industry, and this only on the southern and southeastern borders, separated from the main residential area by an athletic field on one side and a hospital on the other. In tract 7, the

residential area is also distinct from the industrial area; an undeveloped section lies between the two. There is also a park-like housing development in this tract. Tracts 8 and 10 lie southwest of the plant, tract 8 separated from it by the Indiana Harbor Canal, and tract 10 by the Canal and the Grand Calumet River. Only a very small area in tract 8 is occupied by industry. The main residential area of tract 10 is also separated from the industrial area by the Grand Calumet River. There is, however, a small residential area in tract 8 which lies on the same side of the river as the Shell Refineries.

Unfortunately, at the time of the 1940 census, the city of East Chicago was not yet divided into census tracts. Therefore, data are only available for the city as a whole. From the Census of Housing, it is seen that there were 13,169 occupied dwelling units in 1940, 33.5 per cent of them owner-occupied.¹ The percentage of white occupancy was 88.3 per cent.² There were 7,248 residential structures, slightly less than half of which, 3,307, were 1-family detached homes. More structures were built of wood than brick--3,509 wood, and 3,152 brick.³ The highest percentage of residential structures were built during the years 1910-1919 (39.6 per cent); 20.5 per cent were built between 1920-1924; 17.8 per cent during 1900-1909.⁴ Thus, 80.4 per cent of the total structures were twenty-five years old or more. In 1940,

¹U.S. Bureau of the Census, Census of Housing: Volume II, General Characteristics, Part 2, Data for Small Areas (Washington: Government Printing Office, 1941), Table 22.

²Ibid., Table 22. ³Ibid., Table 3. ⁴Ibid., Table 5.

25.0 per cent of the total dwelling units were in need of major repairs.¹ The average contract monthly rental for tenant-occupied units was \$23.91.² Another indication of the quality of housing in 1940 is derived from the figures on home value: the average value of all owner-occupied dwelling units was \$3,619.00.³ 11.0 per cent of the tenant-occupied units were rented at less than \$15.00.⁴

From the 1940 Census of Population it can be seen that more than one-third of the total population, 54,637, was foreign-born, 20,621, but only 11.2 per cent were Negroes.⁵ There had been a slight decrease in population since 1930 when the population was 54,784. The largest age group in 1940 was the group between twenty and twenty-four years old. Males outnumbered females in the total population. In all but three age groups there were more males than females; the three groups in which the females were more numerous were: ten to fourteen, fifteen to nineteen, and twenty to twenty-four.⁶ The population of East Chicago was smaller in 1940 than in 1930. The median number of school years completed was 7.6 for the male and 7.8 for the female population twenty-five years of age or over.⁷ Slightly more than 8.0 per cent of all persons twenty-five or more years old

¹Ibid., Table 6.

²Ibid., Table 24.

³Ibid., Table 24.

⁴Ibid., Table 18.

⁵U.S. Bureau of the Census, Census of Population: Volume II, Characteristics of the Population, Part 2, Data for Small Areas (Washington: Government Printing Office, 1941), Table 31.

⁶Ibid., Table 32.

⁷Ibid., Table 33.

had no formal education. The occupational distribution of the population, according to Table 33, reveals that almost one-third of the total employed males worked as laborers; more than one-fifth were classified as operatives, and another fifth as craftsmen.¹ More than one-half of the total employed males worked in the iron and steel industries. Of the employed females, approximately one-third were classified as clerical, sales, and kindred workers.

Hammond. The commercial district of Hammond is located within tracts 5 and 6, both of which lie at the eastern border of the city. The New York Central and the Nickel Plate Railroads run diagonally southeast through tract 5. Both of these tracts border Calumet City on the west, and lie southwest of the plant.

In 1940, the total population of Hammond was 70,184.² The largest single age group was the twenty-five to twenty-nine year category. Of the total population, 87.1 per cent were native white, and 11.9 per cent, foreign-born white. Males outnumbered females in the total population, but females predominated in the twenty to twenty-four and the twenty-five to twenty-nine year age groups. The largest number of foreign-born residents came from Poland; the number from Germany was slightly less.³

The median number of school years completed by the population twenty-five years of age and older was 8.7 for the males and

¹Ibid., Table 33.

²Ibid., Table 31.

³Ibid., Table 31.

8.8 for the females.¹ The largest number of employed males, more than one-fourth, were craftsmen, foremen, and kindred workers.² The second largest group, also greater than one-fourth, was the operatives and kindred workers. Slightly more than one-fifth of the total were laborers. The largest number of employed females was in the clerical group, with more than one-fourth of the total. As in East Chicago, the iron and steel industry employed the largest single group of workers.

There were 18,432 occupied dwelling units in 1940, 47.2 per cent of which were owner-occupied.³ The percentage of white occupancy was 99.1. Most of the structures were of the 1-family detached type, built of wood.⁴ Of the total structures, 8.2 per cent were built prior to 1900, 25.4 per cent between 1925 and 1929, 24.7 per cent between 1910 and 1919, and 18.0 per cent between 1920 and 1924.⁵ In 1940, 20.3 per cent of the total dwelling units were in need of major repairs.⁶ While the average contract monthly rental was \$28.67,⁷ 6.2 per cent of the occupied units rented for less than \$15.00 per month.⁸ The average value of all owner-occupied units was \$4,103.00.⁹

¹Ibid., Table 31.

²Ibid., Table 33.

³U.S. Bureau of Census, Census of Housing, op.cit., Table 1.

⁴Ibid., Table 3.

⁵Ibid., Table 5.

⁶Ibid., Table 6.

⁷Ibid., Table 14.

⁸Ibid., Table 18.

⁹Ibid., Table 24.

Gary. The total population of Gary was, in 1940, 111,719, of which 15.5 per cent was constituted by the foreign-born white population, and 18.3 per cent by the Negro population.¹ The largest age group for the total residents was the twenty to twenty-four year class. Males outnumber females in the city as a whole and in the age groups above the thirty to thirty-four year class. The median number of school years completed by the population twenty-five or more years old was 8.4 among the males, and 8.6 among the females.² The largest number of foreign-born residents came from Poland, 12.7 per cent, Yugoslavia, 12.1 per cent, Czechoslovakia, 10.0 per cent, Italy, 7.2 per cent, and Greece, 7.07 per cent.³ Craftsmen, foremen, and kindred workers constituted the largest occupational group; somewhat more than one-fifth of the total employed workers fell in this category. Almost as large a group was classified as operatives and kindred workers.⁴ More than one-third of the total male employees were craftsmen, between one-fourth and one-fifth operatives, and slightly more than one-fifth laborers. Of the group of female workers, approximately one-third were clerical, sales, and kindred workers, and one-sixth were operatives and service workers, each. More than one-half of the total workers are employed in the iron and steel industry. In the case of the male employees this ratio was almost two-thirds of the entire group, but among the female employees it dropped to less than one-tenth.

¹Census of Population, op. cit., Table B-35.

²Ibid., Table B-39.

³Ibid., Table B-40.

⁴Ibid., Table B-42.

In 1940, Gary contained 30,005 occupied dwelling units.¹ The rate of home ownership (35.4 per cent) was lower in Gary than in East Chicago or Hammond. Of the 30,005 units, 17.6 per cent were occupied by nonwhite residents, a higher percentage than in either of the other cities.² Most of the residential structures were 1-family detached units, more built of wood than of brick. The percentage of residential structures built before 1900 was very low, .1 per cent. Of the other structures, 34.6 per cent were built during 1910 to 1919, 30.9 per cent between 1925³ and 1929, and 21.3 per cent between 1920 to 1924.³ The percentage of dwelling units in need of major repairs was 16.1 per cent at that time.⁴ The average contract monthly rent of all tenant-occupied units was \$28.03.⁵ The average value of all owner-occupied units was \$3,903.⁶ The percentage of dwelling units rented at less than \$15.00 per month, 8.9 per cent, was lower in Gary than either of the other cities.⁷

Chicago community areas 46 and 52. Both community areas 46 and 52 are mixed industrial and residential areas. The population of area 46 was, in 1940, much greater than that of area 52 --55,090 in the former, as compared with 16,513 in the latter.⁸ The proportion of foreign-born white residents was approximately

¹Census of Housing, op. cit., Table 22.

²Ibid., Table 22. ³Ibid., Table 5.

⁴Ibid., Table 22. ⁵Ibid., Table 24.

⁶Ibid., Table 24. ⁷Ibid., Table 18.

⁸U.S. Bureau of the Census, Population and Housing for Chicago, Table A-1.

one-fifth in both of these areas, 20.79 per cent in area 46 and 19.50 per cent in area 52.¹ However, of all the cities heretofore described, only in area 46 did the Mexican population comprise a large part of the total foreign-born white population, almost one-half of the total.² In neither area was the percentage of Negroes in the population high--only 1.7 per cent in area 46 and less than .01 per cent in area 52.³ The largest number of employed males in area 46 were craftsmen and foremen (24.83 per cent), operatives (22.74 per cent), and laborers (21.83 per cent), while the greatest number of employed females were clerical workers and saleswomen (35.42 per cent) and operatives (26.65 per cent).⁴ In area 52, a greater proportion of the employed males were craftsmen and foremen (33.38 per cent) and operatives (26.01 per cent), and a lesser number were laborers (15.58 per cent).

There were, in 1940, 13,581 occupied dwelling units in area 46, and 4,117 in area 52.⁵ The percentage of owner-occupancy was considerably higher in area 52--47.1 per cent, as compared with 33.6 per cent in area 46.⁶ More than half of the dwelling units of both areas were in one or two family structures.⁷ The percentage of units needing major repairs was almost the same in both areas, 12.01 per cent in area 46 and 12.51 per cent in area 52.⁸ The average contract monthly rent for all tenant-occupied

¹Ibid., Table A-1.

²Ibid., Table A-3.

³Ibid., Table A-1.

⁴Ibid., Table A-3.

⁵Ibid., Table A-1.

⁶Ibid., Table A-4.

⁷Ibid., Table A-6.

⁸Ibid., Table A-6.

units was higher in area 46 (\$28.23) than in area 52 (\$25.70).¹ This was also true of the average value of owner-occupied units, \$4,158 in the first area and \$3,571 in the latter. The percentages of dwelling units renting for less than fifteen dollars a month was in area 46 13.84 per cent and in area 52 7.62 per cent.²

White-Collar Workers

The percentage of total white-collar workers is proportionately lower than the percentage of total employees in the following cities: East Chicago, LI-2,³ and Crown Point. See Table 17. The cities in which live proportionately higher percentages of white-collar workers than of total employees are: Hammond, Chicago (with one-third of the total managerial group), Calumet City and LI-1.⁴ The concentrations of white-collar employees within the cities show that in East Chicago, LI-2, Whiting, and Crown Point, this category constitutes a noticeably lower proportion of the employees living in these cities than does the percentage of white-collar employees in the total distribution. Hammond, Chicago, Calumet City, LI-1, Chesterton, Cedar Lake, and Illinois unclassified cities show higher concentrations of white-collar employees than the percentage of total employees in this class.

¹Ibid., Table A-5.

²Ibid., Table A-5.

³LI-2 is the census tract designation of that area in Lake County, Indiana, which includes the cities of Black Oak and St. John.

⁴LI-1 is the census tract designation of that area in Lake County, Indiana, which includes the cities of Griffith, Munster, and Highland.

East Chicago. Although the percentage of total white-collar workers living in East Chicago is lower than might be expected, census tracts 6, 7, 8, and 10 show higher percentages of total white-collar workers than the percentages of total employees living in these tracts, as shown in Table 19. With the exception of tract 9, which has a proportionate percentage of white-collar employees, all of the other tracts in East Chicago show lower percentages of white-collar employees. In East Chicago as a whole, the concentration of white-collar employees is considerably lower than the proportion of employees in the total distribution found in that category, as seen in Table 20. From Table 18 it can be seen that the white-collar group constitutes 8.35 per cent of the total employees. The concentration of white-collar employees within tracts 1, 2, 3, 4, and 5 in East Chicago is lower than this figure. These tracts also contain lower percentages of white-collar employees than are commensurate with the percentages of total employees who reside there. The four tracts in which the percentages of employees in this group are higher, tracts 6, 7, 8, and 10, are the ones wherein the concentration of white-collar employees is also greater than in the total distribution. In tract 9, both percentages are within the limits of a chance distribution.

Hammond. Hammond, as a whole, contains a percentage of white-collar workers higher than is proportionate to the percentage of total employees living there. Table 21 shows that in tracts 3, 4, 6, 10, 11, and 13, this same relationship between the two proportions holds. But the percentages of white-collar

TABLE 17

PERCENTAGE DISTRIBUTION OF EMPLOYERS IN MAIN CITIES BY TYPE OF WORK

City	White Collar	Manual	Total	Percentage White Collar	Percentage Manual	Percentage of Total
East Chic.	106	1,597	1,703	36.68	50.35	49.21
Hammond	62	532	594	21.45	16.77	17.16
Gary	28	327	355	9.69	10.31	10.26
Chicago	40	292	332	14.19	9.17	9.59
L I - 2 ^a	2	69	71	.69	2.18	2.05
Calumet City	10	54	64	3.46	1.70	1.85
L I - 1 ^b	9	54	63	3.11	1.70	1.82
Whiting	3	38	41	1.04	1.20	1.18
Lansing	3	34	37	1.04	1.07	1.07
Crown Point	1	29	30	.35	.91	.87
Chesterton	6	21	27	2.08	.66	.78
L I - 3 ^c	4	20	24	1.38	.63	.69
Cedar Lake	2	11	13	.69	.35	.38
East Gary	.	12	12	.	.38	.35
Ind. Unclassf. ^d	6	68	74	2.08	2.14	2.14
Ill. Unclassf.	6	15	21	2.08	.47	.61
Total	288	3,173	3,461	100.00	100.00	100.00

^aL I - 2 indicates census tract 2 of Lake County, Indiana: Black Oak, Saint John.

^bL I - 1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

^cL I - 3 indicates census tract 3 of Lake County, Indiana: Hobart.

^dIncludes one manual worker who lists his address as Ripon, Wisconsin.

TABLE 18

PERCENT OF EMPLOYEES IN EACH CITY BY TYPE OF WORK

City	White Collar	Manual	Total	Pct. City	Pct. City	Pct. of Total
East Chicago	106	1,597	1,703	6.22	93.59	100.00
Hammond	62	532	594	10.44	88.64	100.00
Gary	28	1,327	355	7.90	92.11	100.00
Chicago	40	292	332	12.35	87.65	100.00
L I - 2 ^a	2	69	71	2.82	97.18	100.00
Calumet City	10	54	64	15.63	84.37	100.00
L I - 1 ^b	9	54	63	14.29	85.73	100.00
Whiting	3	38	41	7.32	92.68	100.00
Lansing	3	34	37	8.11	91.89	100.00
Crown Point	1	29	30	3.33	96.67	100.00
Chesterton	6	21	27	22.22	77.78	100.00
L I - 3 ^c	4	20	24	17.50	82.50	100.00
Cedar Lake	2	11	13	15.38	84.62	100.00
East Gary	.	12	12	.	100.00	100.00
Ind. Unclassified ^d	6	68	74	8.11	91.89	100.00
Ill. Unclassified	6	15	21	28.57	71.43	100.00
Total	288	3,173	3,461	8.35	91.65	100.00

^aL I - 2 indicates census tract 2 of Lake County, Indiana: Black Oak, Saint John.

^bL I - 1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

^cL I - 3 indicates census tract 3 of Lake County, Indiana: Hobart.

^dIncludes one manual worker who lists his address as Ripon, Wisconsin.

TABLE 19

PERCENT OF EMPLOYEES IN EACH WORK GROUP FOR CENSUS TRACTS OF EAST CHICAGO

City Census Tract	White Collar	Manual	Total	Pct. W.C.	Pct. Man.	Pct. of Total
1	2	50	52	.69	1.58	1.50
2	2	170	172	.69	5.36	4.97
3	4	357	361	1.38	11.25	10.43
4	17	296	313	5.88	9.33	9.04
5	5	221	226	1.73	6.97	6.53
6	27	171	198	9.34	5.39	5.72
7	23	174	197	7.96	5.49	5.69
8	14	47	61	4.84	1.48	1.76
9	7	75	82	2.42	2.36	2.37
10	5	36	41	1.73	1.13	1.18
Total	106	1,597	1,703	36.68	50.35	49.21

TABLE 20

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF EAST CHICAGO BY TYPE OF WORK

Census Tract	White Collar	Manual	Total	Pct. C.T.	Pct. C.T.	Pct. of Total
1	2	50	52	3.85	96.15	100.00
2	2	170	172	1.16	98.84	100.00
3	4	357	361	1.11	98.89	100.00
4	17	296	313	5.43	94.57	100.00
5	5	221	226	2.21	97.79	100.00
6	27	171	198	13.64	86.36	100.00
7	23	174	197	11.68	88.32	100.00
8	14	47	61	22.95	70.05	100.00
9	7	75	82	8.54	91.46	100.00
10	5	36	41	12.20	87.80	100.00
Total	106	1,597	1,703	6.22	97.82	100.00

7
TABLE 21

PERCENT OF EMPLOYEES IN EACH WORK GROUP FOR CENSUS TRACTS OF HAMMOND

Census Tract	White Collar	Manual	Total	Pct. W.C.	Pct. Man.	Pct. Tot.
1	3	31	34	1.04	.98	.98
2	3	23	26	1.04	.73	.75
3	4	33	37	1.38	1.04	1.07
4	6	37	43	2.08	1.17	1.24
5	3	88	91	1.04	2.77	2.63
6	8	43	51	2.77	1.36	1.47
7	1	33	34	.35	1.04	.98
8	.	34	34	.	1.07	.98
9	8	97	105	2.77	3.06	3.03
10	11	23	34	3.81	.73	.98
11	7	30	37	2.42	.95	1.07
12	2	31	33	.69	.98	.95
13	6	29	35	2.08	.91	1.01
Total	62 /	532	594	21.45	16.78	17.16

7
TABLE 22

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF HAMMOND BY TYPE OF WORK

Census Tract	White Collar	Manual	Total	Pct. C.T.	Pct. C.T.	Pct. of Total
1	3	31	34	8.82	91.18	100.00
2	3	23	26	11.54	88.46	100.00
3	4	33	37	10.81	89.19	100.00
4	6	37	43	13.95	86.05	100.00
5	3	88	91	3.30	96.70	100.00
6	8	43	51	15.69	84.31	100.00
7	1	33	34	2.94	97.06	100.00
8	.	34	34	.	100.00	100.00
9	8	97	105	7.62	92.38	100.00
10	11	23	34	32.35	67.65	100.00
11	7	30	37	18.92	81.08	100.00
12	2	31	33	6.08	93.94	100.00
13	6	29	35	17.14	82.86	100.00
Total	62	532	594	10.44	89.56	100.00

TABLE 23

PERCENT OF EMPLOYEES IN EACH WORK GROUP FOR CENSUS TRACTS OF GARY

Census Tract	White Collar	Manual	Total	Pct. W.C.	Pct. Man.	Pct. of Total
1	1	10	11	.35	.32	.32
2	.	.	.	.	.	.
3	.	15	15	.	.47	.43
4	3	6	9	1.04	.19	.26
5	3	6	9	1.04	.19	.26
6	5	77	82	1.73	2.43	2.37
7	2	5	7	.69	.16	.20
8	3	9	12	1.04	.28	.35
9	2	20	22	.69	.63	.64
10	1	9	10	.35	.28	.29
11	1	6	7	.35	.19	.20
12	1	14	15	.35	.44	.43
13	.	1	1	.	.03	.03
14	.	14	14	.	.44	.40
15	.	5	5	.	.16	.14
16	.	37	37	.	1.17	1.07
17	.	7	7	.	.22	.20
18	.	5	5	.	.16	.14
19	.	15	15	.	.47	.43
20	.	7	7	.	.22	.20
21	.	6	6	.	.19	.17
22	.	5	5	.	.16	.14
23	.	20	20	.	.63	.58
24	2	4	6	.69	.13	.17
25	4	12	16	1.38	.38	.46
26	.	8	8	.	.25	.23
27	.	4	4	.	.13	.12
Total	28	327	355	9.67	10.31	10.26

TABLE 24

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF GARY BY TYPE OF WORK

Census Tract	White Collar	Manual	Total	Pct. C.T.	Pct. C.T.	Pct. of Total
1	1	10	11	9.09	90.91	100.00
2	.	.	.	.	.	.
3	.	15	15	.	100.00	100.00
4	3	6	9	33.33	66.67	100.00
5	3	6	9	33.33	66.67	100.00
6	5	77	82	6.10	93.90	100.00
7	2	5	7	28.57	71.43	100.00
8	3	9	12	25.00	75.00	100.00
9	2	20	22	9.09	90.91	100.00
10	1	9	10	10.00	90.00	100.00
11	1	6	7	14.29	85.71	100.00
12	1	14	15	6.67	93.33	100.00
13	.	1	1	.	100.00	100.00
14	.	14	14	.	100.00	100.00
15	.	5	5	.	100.00	100.00
16	.	37	37	.	100.00	100.00
17	.	7	7	.	100.00	100.00
18	.	5	5	.	100.00	100.00
19	.	15	15	.	100.00	100.00
20	.	7	7	.	100.00	100.00
21	.	6	6	.	100.00	100.00
22	.	5	5	.	100.00	100.00
23	.	20	20	.	100.00	100.00
24	2	4	6	33.33	66.67	100.00
25	4	12	16	25.00	75.00	100.00
26	.	8	8	.	100.00	100.00
27	.	4	4	.	100.00	100.00
Total	28	327	355	7.89	92.11	100.00

TABLE 25

PERCENT OF EMPLOYEES IN EACH WORK GROUP FOR COMMUNITY AREAS OF CHICAGO

Community Area	White Collar	Manual	Total	Pct. W.C.	Pct. Man.	Pct. of Total
1	1	.	1		.	.03
6	1	3	4			.12
7	.	1	1			
8	.	2	2			
15	.	1	1			
19	.	1	1			
20	.	1	1			
22	.	1	1			
23	.	3	3			
24	.	2	2			
28	.	17	17		.54	
29	.	1	1			
32	.	1	1			
34	.	1	1			
35	.	4	4			
36	.	4	4			
37	.	2	2			
38	.	6	6			
39	1	3	4			
40	.	3	3			
41	3	4	7	1.04		.20
42	4	11	15	1.38	.35	.43
43	5	14	19	1.73	.44	.55
44	1	3	4			
45	3	4	7	1.04		.20

TABLE 25--Continued

Community Area	White Collar	Manual	Total	Pct. W.C.	Pct. Man.	Pct. of Total
46	6	61	67	2.08	1.92	1.94
47	.	2	2			
48	3	6	9	1.04		.26
49		8	8			
51		8	8			
52	7	53	60	2.42	1.67	1.73
53		1	1			
54		3	3			
55	1	9	10			
60		1	1			
61		4	4			
62		1	1			
65		1	1			
66		2	2			
67		3	3			
68	1	13	14			
69	2	13	15			
71		4	4			
72	1	.	1			
73		4	4			
75		2	2			
Total	40	292	332			9.59

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TABLE 26

PERCENT OF EMPLOYEES IN EACH WORK GROUP FOR CENSUS TRACTS IN
CALUMET CITY AND WHITING

Census Tract	White Collar	Manual	Total	Pct. W.C.	Pct. Man.	Pct. of Total
CC-1 ^a	1	9	10	.35	.28	.29
CC-2	3	28	31	1.04	.88	.90
CC-3	6	17	23	2.08	.54	.66
Total Cal. City	10	54	64	3.45	1.20	1.85
Wh-1 ^b	1	13	14	.35	.41	.40
Wh-2	2	25	27	.69	.79	.78
Total Whiting	3	38	41	1.04	1.20	1.18

^aCC indicates Calumet City census tracts.

^bWh indicates Whiting census tracts.

TABLE 27

PERCENT OF EMPLOYEES IN CENSUS TRACTS OF CALUMET CITY AND WHITING
BY TYPE OF WORK

Census Tract	White Collar	Manual	Total	Pct. C.T.	Pct. G.T.	Pct. of Total
CC-1 ^a	1	9	10	10.00	90.00	100.00
CC-2	3	28	31	9.68	91.32	100.00
CC-3	6	17	23	15.62	73.91	100.00
Total Calumet City	10	54	64	14.29	84.38	100.00
Wh-1 ^b	1	13	14	7.14	92.86	100.00
Wh-2	2	25	27	7.41	92.59	100.00
Total Whiting	3	38	31	7.32	92.43	100.00

^aCC indicates Calumet City census tracts.

^bWh indicates Whiting census tracts.

employees living in tracts 5, 7, and 8 are lower than might be expected. The concentration of white-collar employees within Hammond is higher than that of the total distribution, also. Tracts 2, 3, 4, 6, 10, 11, and 13 all demonstrate this. See Table 22. On the other hand, the concentration of white-collar employees within tracts 5, 7, 8, and 12 is lower than the proportion of white-collar workers for the total distribution.

Gary. The percentage of white-collar workers living in Gary is proportionate to the percentage of total employees living there. As in the preceding chapter, only those census tracts of the city wherein are found at least one per cent of either the total employees or the total class under discussion will be discussed in this section. Table 23 shows that tracts 5, 8, and 25, although containing less than one per cent of the total employees, contain over one per cent of the total white-collar workers, percentages greater than are commensurate with the percentages of total employees found there. Tract 16, with 1.07 per cent of the total employees, has no white-collar workers at all. Tract 6, with 2.37 per cent of the total employees shows a proportionate percentage of total white-collar workers. The concentrations of white-collar workers within tracts 5, 8, and 25 are greater than, and in tracts 6 and 16 are lesser than, the proportion of white-collar workers in the total distribution, as seen in Table 24.

Chicago. Chicago as a unit, shows a proportionately higher percentage of total white-collar workers than the percentage of total employees in Chicago would indicate. Although

the only community areas with more than one per cent of the total employees are 46 and 52, it can be seen from Table 25 that areas 41, 42, 43, 45, and 48 contain more than one per cent of the total white-collar employees. In areas 41, 42, 43, 45, 48, and 52, these percentages are markedly higher than the percentages of total employees residing in the separate areas. In area 46, the percentage of total white-collar employees is neither higher nor lower than the percentage of total employees. Although these areas show a high percentage of total white-collar employees, it is not possible to discuss the percentages of employees living in each of the areas in the white-collar category, except in the cases of areas 46 and 52. These are the only areas where the total employees living within the area is sufficiently large that a percentage based on this figure has some meaning. Only in area 52 is the percentage of employees living in the tract in the white-collar category higher than the percentage of the total distribution in this class.

Calumet City and Whiting. The percentage of total white-collar workers found in Calumet City is appreciably higher than the percentage of total employees living there, as seen in Table 26. Tract 3 is the only census tract in which this is illustrated. In all three tracts, as in the city as a whole, Table 27 shows that the concentration of white-collar workers is higher than the proportion of the total distribution in this class. The data for Whiting show no deviations large enough to be disproportionate in either of the percentage distributions.

Thus the percentage distribution of white-collar workers

shows that in East Chicago there are relatively fewer white-collar workers, except in tracts 6, 7, 8, and 10 than would be expected on the basis of the percentage of total employees living there. Tract 9 does not show any noticeable deviation, but the above enumerated tracts contain higher proportions in this class than would be expected. Hammond contains a higher proportion of white-collar workers, in the city and in all tracts except 5, 7, and 8 where there are lower percentages of total white-collar employees. The concentration of employees living in Hammond in the white-collar group is also higher than for the total distribution, in the city as a whole, and in all tracts but 5, 7, 8, and 12. The percentage distributions for Gary fall within the limits of a chance distribution. Chicago shows higher percentages of white-collar workers, even in some census tracts where the percentage of total employees is low. The percentage of total white-collar employees in Calumet City, and in tract 3 of Calumet City, is higher than might be expected, as is the concentration of white-collar employees within the city. The deviation from the percentage of total employees in Whiting is only slight, as is the deviation from the concentration of white-collar employees in the total distribution.

A comparison of the distribution of employees by period of employment with the distribution of employees by type of work reveals that there is a tendency for white-collar workers to live in the same areas as long-term workers. This is true of tracts 6 and 7 in East Chicago, Hammond as a whole, and tracts 4 and 10, and community area 52 in Chicago. With the exception of tract 5

in East Chicago, those tracts and cities in which are found low percentages of white-collar workers are the same as those in which reside low percentages of long-term employees. This is not surprising in view of the fact that white-collar workers are less likely to be laid off than manual workers. Secondly, although the industry is expanding, such expansion usually affects the number of production workers to a greater extent than supervisory, managerial, professional, or clerical workers. In addition, the white-collar group is a salaried rather than a wage-earning group and thus can expect a continued income. For these reasons the white-collar group can afford to live in the more desirable residential areas which coincide with the areas where are found high percentages of long-term employees.

Manual Workers

The hypothesis regarding the distribution of manual workers holds that this category of employees is more concentrated in areas closer to the plant. This is illustrated by the percentage distribution of manual workers; 75 per cent of the total class is located in the three cities of East Chicago, Hammond, and Gary. There is no marked deviation in any of the individual cities between the percentage of total manual workers and the percentage of total employees in each. However, the manual workers living in LI-2,¹ Whiting, and East Gary constitute a greater proportion of the total employees in each than does the

¹LI-2 includes the cities of Black Oak, Ross, and St. John in Lake County, Indiana.

manual worker category of the total distribution. In Hammond, Chicago, Calumet City, LI-1,¹ Chesterton, LI-3,² Cedar Lake and Indiana and Illinois unclassified cities, the percentage of employees living in each of the cities classified as manual workers is markedly lower than the percentage of the total distribution in the manual worker category.

LI-1 is separated from Hammond on the north by the Little Calumet River, and extends east to LI-2. The cities of Munster, Highland, and Griffith are located within LI-1, which extends west to the state line. LI-2 borders LI-1 and Hammond on the west, tracts 25, 26, and 27 of Gary to the east, and tract 6 of Gary to the north. The cities of Black Oak, Ross, and St. John are located within this tract. Black Oak is nearest to the plant, since it lies in the northwest portion of the tract. Most of the employees who live in LI-2 are residents of Black Oak. It separates the city of Gary to the west from East Gary and LI-4 to the east. Hobart lies directly east of tract 24 in Gary, and is the only city in LI-3 in which reside employees of the steel plant.

East Chicago. A higher proportion of employees living in East Chicago falls in the manual worker category than is expected on the basis of the percentage of total employees in the manual worker class. However, while tracts 1, 2, 3, 4, and 5 follow this pattern, the percentages of employees living in

¹LI-1 includes the cities of Griffith, Munster, and Highland in Lake County, Indiana.

²LI-3 Hobart, in Lake County, Indiana.

tracts 6, 7, 8, and 10 in this category are lower than that of the total distribution.

Hammond. Within the city there is a less dense concentration of manual workers than is present in the total distribution. This is shown in tracts 2, 3, 4, 6, 10, 11, and 13, but the percentages of employees living in tracts 5, 7, 8, and 12 which are in the manual worker group are higher than might be expected.

Gary. Although the percentage of employees living in Gary which falls in the manual worker class lies within the limits of a normal distribution, the percentages of employees living in tracts 6 and 16 found in this class are considerably higher than the percentage of manual workers in the total distribution.

Chicago. Both the percentage of employees living in Chicago classified as manual workers, and the percentages of employees living in community area 46 and 52 in that class, are lower than the percentage of employees in the total distribution in the manual worker category.

Calumet City and Whiting. The percentage of employees living in Calumet City classed as manual workers is considerably lower than the percentage of manual workers in the whole distribution. Only the data for tract 3 within the city show the same deviation. On the other hand, the concentration of manual workers is somewhat greater than that for the total distribution, for the entire city, and for the two census tracts separately.

Thus, in general, the percentage distribution of manual workers differs only slightly from the percentage distribution of total employees. This deviation is markedly less than the

deviation of the percentage distribution of the white-collar group. Hammond is the only city for which the deviation is large. Furthermore, in none of the subdivisions of the cities is any deviation of the percentage of total manual workers from the percentage of total employees in the same area great enough to be mentioned. Within certain cities the ratio of manual workers to all employees living in the city is greater than the ratio of manual workers to total employees, as in East Chicago as a unit, and East Chicago tracts 1, 2, 3, 4, and 5, Hammond tracts 5, 7, 8, and 12, Gary tracts 6 and 16, LI-2, Whiting as a unit and both census tracts separately, Crown Point and East Gary. In tracts 6, 7, 8, and 10 of East Chicago, Hammond as a whole, and tracts 2, 3, 4, 6, 10, 11, and 13, Chicago as a whole, and community area 52, Calumet City as a whole and census tract 3, LI-1, Chesterton, LI-3, Cedar Lake, and the Indiana and Illinois unclassified cities, the ratio of manual workers to all employees living in the area is lower than the ratio of total manual workers to total employees in the sample. From what is known about the distance of these areas from East Chicago, it already begins to be evident that the further the distance of a city from the plant the lower the ratio of manual workers to total employees living in a particular city.

CHAPTER V

THE SPATIAL LOCATION OF EMPLOYEES BY TYPE OF WORK AND BY-DISTANCE FROM PLANT

In order to analyze the distribution of employees in the two types of work categories by distance from the plant, the same system of concentric circles as was employed in Chapter III is used.

White-Collar Employees

The hypothesis concerning white-collar employees is that this class of workers is more widely dispersed than manual workers. However, as in the zonal distribution of total employees, employees in the four time classes (described in Chapter III), and manual workers, the greatest concentration of white-collar workers appears in the zone within a mile distance of the plant. The percentage of white-collar workers in this zone (18.40 per cent) is only slightly higher than the percentages of this class in the 1 to 2 mile zone (16.32 per cent) and the 5 to 6 mile zone (15.62 per cent). See Table 28. In fact, these three zones are shown as having percentages of total white-collar workers within the same range, 15 to 20 per cent, on Map.10. The percentages of manual workers in these three zones are: 32.93 per cent within the first mile, 15.10 per cent in the 1 to 2 mile zone, and 6.08 per cent in the 5 to 6 mile zone. It is apparent that the per-

centage of total manual workers is almost twice that of the white-collar workers in the first zone, while the percentage of white-collar workers in the 5 to 6 mile zone is more than twice that of the manual workers. In addition, it should be noted that the percentage of white-collar workers in the first zone is far lower than, and in the 5 to 6 mile zone considerably higher than, the corresponding percentages of manual workers and total employees. This can be interpreted as an indication that white-collar workers are not found in as great concentrations as manual workers or as total employees near the plant. It can also mean that a fair concentration of white-collar workers is located further from the plant than any similar concentration of manual workers or total employees.

The zone within which the concentration of white-collar workers is greatest is that which lies between 9 and 10 miles from the plant, in which this group comprises 20.69 per cent of the employees. Only 8.32 per cent of the total employees fall in the white-collar class. See Table 29. However, Table 28 shows that only .84 per cent of the total employees reside in this zone. Other zones within which the concentration of white-collar workers is higher than the proportion of white-collar employees in the sample are those 5 to 6 miles from the plant (18.91 per cent), 20 to 25 miles from the plant (17.24 per cent), and 8 to 9 miles from the plant (15.67 per cent).

The next highest proportion of white-collar employees is distributed over six zones, 7.29 per cent of the white-collar class in the 8 to 9 mile zone, and the 10 to 15 mile zone, 6.60

per cent in the 4 to 5 mile zone, 6.25 per cent in the 2 to 3 mile zone, and the 3 to 4 mile zone, and 5.56 per cent in the 7 to 8 mile zone. In the 8 to 9 mile zone are found 3.56 per cent of the total manual workers, and 3.87 per cent of the total employees. In the 10 to 15 mile zone are 4.82 per cent of the total manual workers, and 5.03 per cent of the total employees. The 4 to 5 mile zone includes 9.08 per cent of the total manual workers, and 8.87 per cent of the total employees. The percentage of white-collar workers in this zone is lower than would be expected. The percentage of manual workers in the 2 to 3 mile zone is 5.39 per cent; that of the total employees is 5.46 per cent. Thus the percentage of white-collar workers here is higher than expected. The percentages of the white-collar and manual workers in the 3 to 4 mile zone are proportionate to the percentage of total employees therein. However, in the 7 to 8 mile zone, the percentages of manual workers and total employees are higher than that of the white-collar group (8.45 per cent of the manual workers; 8.21 per cent of the total employees).

Those zones within which white-collar workers constitute between 10 and 15 per cent of the employees who reside therein are at a distance of from 10 to 15 miles away from the plant (12.07 per cent) and beyond 25 miles away (11.11 per cent).

The zones wherein are found from 1 to 5 per cent of the white-collar workers are 6 to 7 miles, 9 to 10 miles, 20 to 25 miles, and beyond 25 miles. The percentages of white-collar employees in the first-mentioned is lower than would be expected on the basis of the percentage of total employees in that zone. The

TABLE 28

PERCENT OF EMPLOYEES IN EACH WORK GROUP BY DISTANCE FROM PLANT

Distance	White Collar	Manual	Total	Pct. W.C.	Pct. Man.	Pct. of Total
1 mi.	53	1,045	1,098	18.40	32.93	31.72
1-2 mi.	47	479	526	16.32	15.10	15.20
2-3 mi.	18	171	189	6.25	5.39	5.46
3-4 mi.	18	195	213	6.25	6.15	6.15
4-5 mi.	19	288	307	6.60	9.08	8.87
5-6 mi.	45	193	238	15.62	6.08	6.88
6-7 mi.	5	79	84	1.74	2.49	2.43
7-8 mi.	16	268	284	5.56	8.45	8.21
8-9 mi.	21	113	134	7.29	3.56	3.87
9-10 mi.	6	23	29	2.08	.72	.84
10-15 mi.	21	153	174	7.29	4.82	5.03
15-20 mi.	2	62	64	.69	1.95	1.85
20-25 mi.	10	48	58	3.47	1.51	1.68
25 mi. or more	7	56	63	2.43	1.76	1.82
Total	288	3,173	3,461	100.00	100.00	100.00

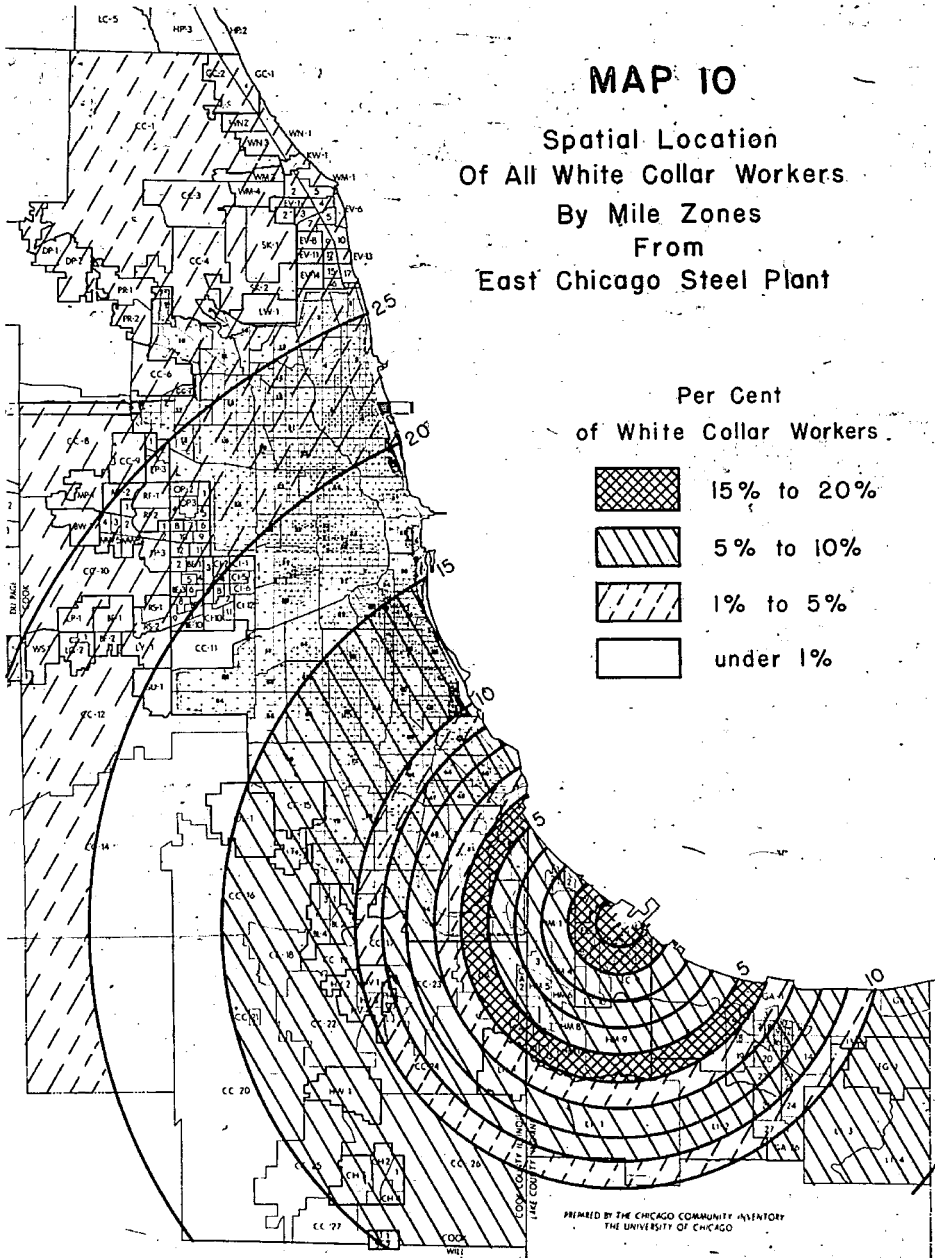
TABLE 29

PERCENT OF WORK GROUP IN EACH ZONE BY PERCENTAGE OF ZONE BY DISTANCE FROM PLANT

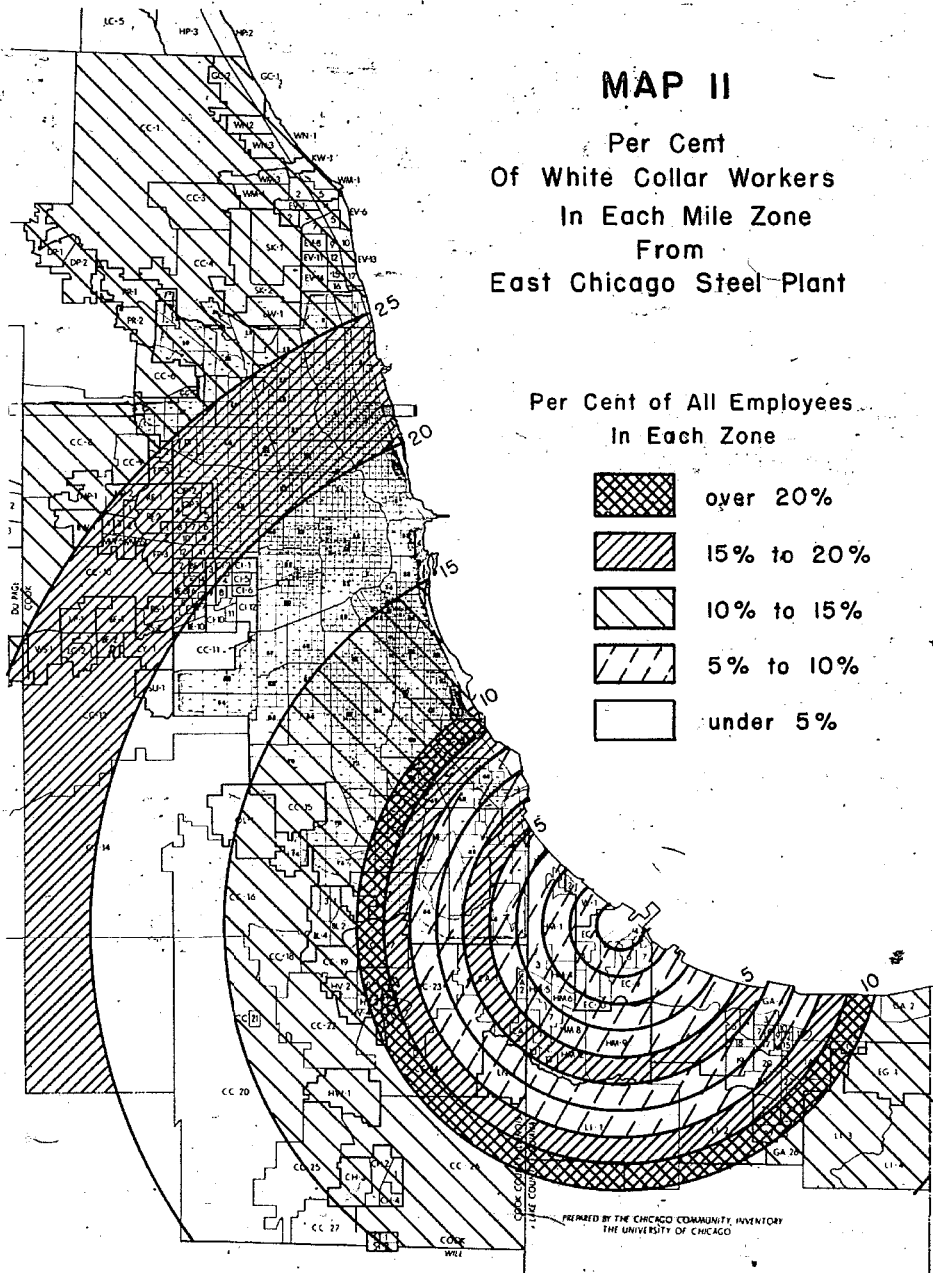
Distance in miles	White Collar	Manual	Total in Zone	Pct. of Zone	Pct. of Zone	Pct. of Total
1	53	1,045	1,098	4.83	95.17	100.00
1-2	47	479	526	8.94	91.06	100.00
2-3	18	171	189	9.52	90.48	100.00
3-4	18	195	213	8.45	91.55	100.00
4-5	19	288	307	6.19	93.81	100.00
5-6	45	193	238	18.91	81.09	100.00
6-7	5	79	84	5.95	94.05	100.00
7-8	16	268	284	5.63	94.37	100.00
8-9	21	113	134	15.67	84.33	100.00
9-10	6	23	29	20.69	79.31	100.00
10-15	21	153	174	12.07	87.93	100.00
15-20	2	62	64	3.13	96.87	100.00
20-25	10	48	58	17.24	82.76	100.00
over 25	7	56	63	11.11	88.89	100.00
Total	288	3,173	3,461	8.32	91.68	100.00

MAP 10

Spatial Location
Of All White Collar Workers
By Mile Zones
From
East Chicago Steel Plant



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percentages of white-collar employees in the remaining zones are all higher than are proportionate to the percentage of total employees in each. These percentages are also greater than the percentages of manual workers in the areas between 9 and 10, 20 to 25, and beyond 25, miles away from the plant. The percentages of white-collar workers in zones 6 to 7 and 15 to 20 miles away from the plant are lower than is proportionate to the corresponding percentages of total employees and manual workers.

The concentration of white-collar workers is noticeably low within the zones at the following distances from the plant: 15 to 20 miles (3.13 per cent), within 1 mile (4.83 per cent), 7 to 8 miles (5.63 per cent), 6 to 7 miles (5.95 per cent), and 4 to 5 miles (6.19 per cent). Thus it would appear from Map 10 that the highest percentages of white-collar workers reside within 2 miles of the plant, and between 5 and 6 miles away from it. On the other hand, Map 12 shows that in the zone immediately adjacent to the plant, the percentage of manual workers is far greater than in any other zone. However, in terms of the deviations of the percentages of white-collar workers in each zone from the percentages of total employees in each zone beyond the value of twice the standard error of the sample proportion, it would seem that the tendency of white-collar workers to be fairly widely dispersed is borne out by the data.

Manual Workers

The hypothesis to be investigated in this section is that manual workers are less widely dispersed than white-collar work-

ers. The percentage distribution of manual workers in the zonal system is so closely related to the percentages of total employees in each zone, that not one of the former shows any appreciable deviation from the latter in any zone. See Table 28. This close relationship between the two distributions as opposed to the more varying one of the distribution of white-collar workers with that of total employees, especially in the areas close to the plant, can be interpreted as an indication that manual workers tend to live closer to their place of employment than white-collar workers.

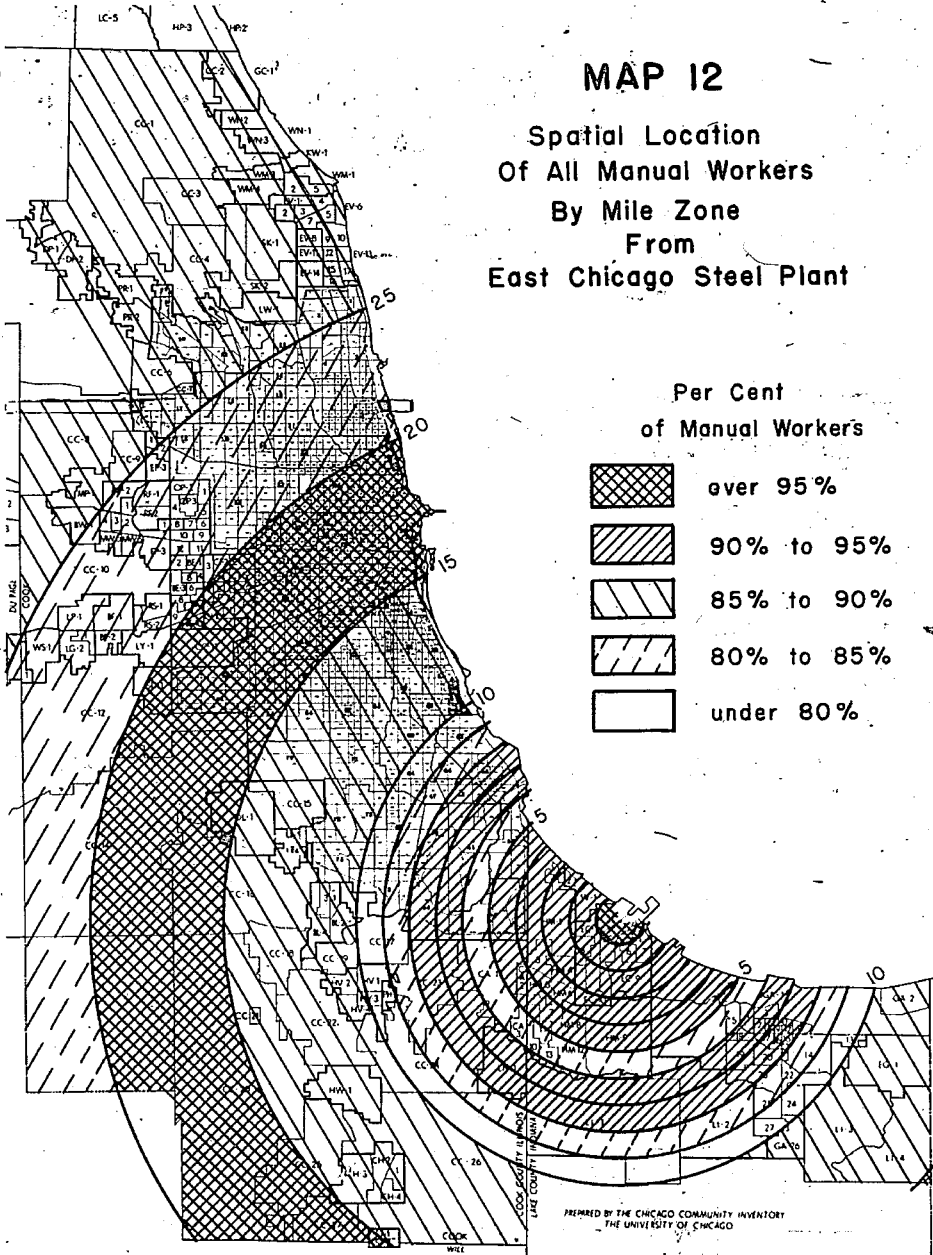
The highest concentration of manual workers, 32.93 per cent, is found in the 1 mile zone. The area from 1 to 2 miles contains the next highest concentration of employees in this category, 15.01 per cent. Zones 2 to 3, 3 to 4, 4 to 5, 5 to 6, and 7 to 8 miles away from the plant contain between 5 and 10 per cent of the manual workers.

Zones 6 to 7, 8 to 9, 10 to 15, 15 to 20, 20 to 25, and beyond 25 miles, each contain 1 to 5 per cent of the manual worker group. Of these, the percentage of manual workers in zone 6 to 7 miles and 15 to 20 miles from the plant are higher than the percentages of white-collar workers.






To compare the distribution of white-collar and manual workers, 34.72 per cent of the former live within 2 miles of the plant, while 48.03 per cent of the latter group are to be found in the same area. The proportion of white-collar workers in the first zone is lower than that of the manual workers, or of the total employees. More than 15 per cent of the white-collar

MAP 12

Spatial Location Of All Manual Workers By Mile Zone From East Chicago Steel Plant



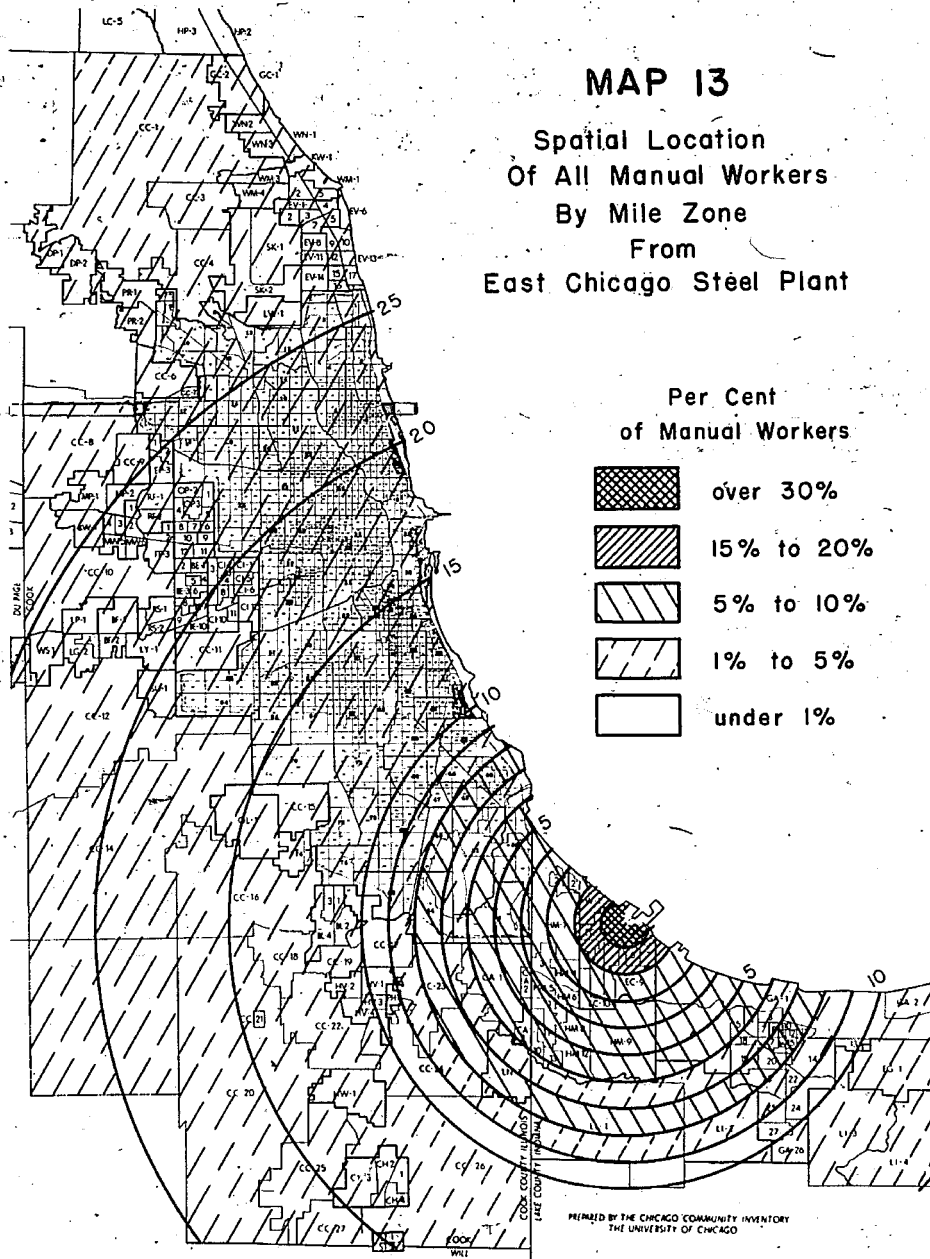
Per Cent
of Manual Workers

-  over 95%
-  90% to 95%
-  85% to 90%
-  80% to 85%
-  under 80%

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MAP 13

Spatial Location
Of All Manual Workers
By Mile Zone
From
East Chicago Steel Plant



group is found in each of three zones, while that large a concentration of manual workers is found in only two zones. Furthermore, the percentages of white-collar workers in the zones farther away than 8 to 9 miles from the plant are all higher than the percentages of the total employees in these areas, except for the .69 per cent of the white-collar group in the 10 to 15 mile zone.

Thus it would appear that the hypothesis which states that white-collar workers will be more dispersed over the area than manual workers is confirmed. Higher percentages of white-collar workers live at the edges of the spatial distribution as shown on the maps. The concentration of this group in areas adjacent to the plant is smaller than might be expected, and much lower than that of the manual workers.

The manual workers tend to concentrate in areas fairly close to the plant. With 32.93 per cent of this group living within a mile of the plant it would seem probable that one of the reasons for this is the advantage of being able to walk to work. Another reason might be that rents are cheaper near the plant. A new employee on the manual level enters the occupational hierarchy of the plant as a general laborer. Thus his salary is low, and he may not know whether he will remain in the employ of the company. There are a number of rooming houses and cheap hotels within the 1 mile zone. There is also a fairly large Mexican settlement in this district which naturally attracts the Mexican workers coming into the area for the first time.

Summary

In this chapter an attempt has been made to trace the locational influence of place of work on place of residence. The distribution of employees in two occupational groups, white-collar and manual workers was analyzed to determine the areas in which each of these classes lives. It is apparent that the employees of a plant make their places of residence according to some spatial pattern in relationship to the plant. In this chapter, by dividing the total distribution into the two occupational groups, it was possible to trace and compare the spatial distributions of each, and to confirm the hypothesis that white-collar workers tend to be more dispersed as a group than manual workers. The relative concentrations of the two groups were compared with the conclusions that manual workers were found in large concentrations in only two zones, while white-collar workers were found in large concentrations in three zones, the third up to 6 miles from the plant. In certain of the zones farther away from the plant a higher concentration of white-collar workers than of manual workers was observed, although only 8.35 per cent of the total employees belong in the white-collar category.

The concentration of manual workers in the zone adjacent to the plant was almost twice that of the white-collar group, while in the 5 to 6 mile zone, the concentration of the white-collar group was more than twice that of the manual workers.

The relative distributions of white-collar and manual workers within each zone indicate that the concentration of man-

ual workers in areas further away from the plant is lower than the percentage of manual workers in the total distribution. Conversely, the concentration of white-collar workers in these more remote zones is greater than might be expected compared to the percentage of white-collar workers in the total distribution.

There appears to be a close association between the percentage of total manual workers and the percentage of total employees in each area, while the percentage distribution of total white-collar workers is not so closely related to that of the total employees. Given these relationships, it would appear that place of residence of employees in the white-collar group is less influenced by place of work, while place of residence of members of the manual worker group is more influenced by the location of the firm.

CHAPTER VI

CONCLUSIONS

As large-scale industrial plants have grown, it has become necessary to recruit workers from more distant areas, especially in the case of heavy industry situated in an industrial suburb within an industrial area. Part of the necessary labor force can be supplied by the population of the city in which the plant is located. But in the case of a group of large plants within the same city, competing for workers, it becomes necessary to hire workers who live in nearby, or not-so-nearby areas. The plant discussed in this thesis, with a labor force of approximately 16,500 employees, is only one of the many steel mills in the Calumet Area. Even were this not so, the families of these 16,500 workers and the service workers necessary to provide for their needs, would alone constitute a fair-size city; from many sections thereof employees would still have to travel considerable distances from place of residence to place of work.

The spatial relationship between place of work and place of residence has provided subject matter for many investigations. In general terms, the studies deal with the locations of work and residential areas, and the relationship between the two types of areas within a given city. Travel-time from home to work has been treated, with an assessment of the strains on the employee of

the several modes of transportation. The problems of commuting and its influence on the life of the suburban dweller has been studied by other investigators. The vast accumulation of research in the general field of suburbanization touches on one part of the problem, the location of a particular group of employees with respect to the central city in which they work. Several intensive investigations of individual firms have shown that the area within which the employees live is limited to slightly more than 20 miles at the Austin Longbridge Plant in England, and the investigation of the Leuna Works in central Germany, 1929, where 20 per cent of the labor force travelled one hour or more each day.¹ Both of these studies were done in Europe and are not directly comparable to an American situation, where the private automobile is commonly used as the means of transportation to work.

The bibliographical research of this writer unearthed no study which attempted to define or describe the locational influence of period of employment or type of occupation within a specific plant on place of residence of its employees. These factors are relevant and necessary to an understanding of the distribution of employees of a given plant. The present study is concerned with these two problems. It deals with the spatial distribution of the employees of a steel plant in East Chicago, Indiana.

The hypotheses developed as a framework for this study are: (1) the longer an individual has been employed by a firm,

¹Liepmann, op. cit., pp. 147 and 117.

the more likely he is to live close to his place of work. Subsidiary hypotheses concerning the residential distribution of employees of the steel plant who had been subject to whatever locational influence might be exerted by virtue of their employment at the plant over different periods of time were set up in order to investigate the first hypothesis.⁽²⁾ Workers of higher socio-economic status will tend to be dispersed over a wider area than workers of lower socio-economic status. In the case of the second hypothesis, employees were grouped into two classes, white-collar and manual workers, as an indication of socio-economic status.

Period of employment was analyzed in terms of four time classes, recent-hire, five-year, long-term, and multiple-hire employees. The purpose of this separation was to discover whether the distributions of the residences of employees in each class showed noticeable deviations from the distribution present in the total sample.¹ Percentage distributions of employees in each time class were computed in two ways: (1) the ratio of employees in a particular hire group living in a given area, to the total employees in that time class, and (2) the percentage of employees living in a given area which falls in each time class.

The first hypothesis was investigated within the framework of the above mentioned time periods. Separate hypotheses were derived in order to describe the spatial relationship of

¹The standard error of the sample proportion was used for this purpose. See footnote n. 1, chap. ii, p. 30, for a discussion of the method employed.

each group to the whole distribution. As well as showing the distribution of each time class of employees by cities and census tracts, a concentric zonal system was employed to show the exact spatial distribution of each.

The largest part of the labor force of the East Chicago steel plant is located in the cities of East Chicago, Hammond, Gary, and Chicago. Comparing the percentage of total employees in each of these cities with the percentages of each of the four hire categories, it becomes apparent that the cities of Hammond and Gary show a disproportionately large number of recent-hire and five-year employees, while in East Chicago and Chicago the contrary situation exists. The percentage of long-term employees who live in Chicago is far greater and in Gary far smaller, than would be the case were there no selective factors present. Likewise the percentage of multiple-hire employees residing in East Chicago is so much higher than the proportion of total employees in that city and consistently lower in all other areas that it is beyond the limits of a chance occurrence. The areas in which recent-hire employees are concentrated in greater numbers than might be expected are located further away from the plant, and, in the main, are chiefly residential areas or mixed residential and industrial areas where the two are well separated. It is to be noted that in none of these areas is there a large proportion or concentration of multiple-hire employees. In addition, of these areas with high proportions of recent-hire employees, none show a comparably high proportion of long-term employees. Rather, the areas in which reside greater proportions of the long-term group

usually are those with few recent-hire employees. Close to the plant, namely within East Chicago, the areas in which reside large numbers of long-term employees are also those wherein are found disproportionately large numbers of multiple-hire employees. This does not hold true of any other area. The areas in which are located greater percentages of five-year employees are more often the same as those with significantly greater recent-hire employees than areas where long-term employees reside.

It was seen that the highest percentage of employees in each time class was found in East Chicago, and located within 1 mile of the plant. However, the percentages of employees in each group ranged from 25.00 per cent of the total recent-hire employees, 27.48 per cent of the total five-year employees, 31.87 per cent of the total long-term employees, to 36.03 per cent of the total multiple-hire employees, and 31.72 per cent of all employees to be found within this zone. It was also found that the zones in which were located from 10 to 15 per cent of the total employees in each class were:

Recent-Hire: 1 to 2, 5 to 6, 7 to 8 miles from plant
 Five-Year: 1 to 2, 3 to 4, 7 to 8 miles from plant
 Long-Term: 1 to 2 miles from plant.
 Multiple-Hire: 1 to 2 miles from plant

The two highest concentrations of employees living within a zone classed in each of the time periods were:

Recent-Hire: over 25, 7 to 8 miles from plant
 Five-Year: 3 to 4, 20 to 25 miles from plant
 Long-Term: 10 to 15, 9 to 10 miles from plant
 Multiple-Hire: 6 to 7, 1 to 2 miles from plant

Thus it appears that multiple-hire employees tend to live closest to the plant, long-term employees at a slightly greater

distance, five-year employees still further away, and recent-hire employees dispersed over the greatest distance. From this one can conclude that period of employment at the plant influences place of residence: the longer an employee works there, the closer he tends to live to the plant.

The second hypothesis, that the residences of white-collar workers tend to be dispersed over a wider area than those of manual workers, was investigated by dividing the entire sample into white-collar and manual workers categories. It was seen that the highest percentages of both total white-collar and total manual workers lived in East Chicago, and within 1 mile of the plant. However, compared to the percentage of total employees in East Chicago, the percentage of total white-collar workers was lower, while the percentage of total manual workers was not materially different. Throughout both the cities and zonal distributions, the percentage of total manual workers in each area was closely associated with the percentage of total employees for that area.

Unless other intervening factors influence the residential location of white-collar workers, it would be logical to assume that the distribution of workers in this group would have the same close association with the distribution of total employees as holds for the distribution of manual workers. This relationship did not hold true for the zonal or city distributions of the percentage of white-collar employees.

The proportion of white-collar workers in East Chicago and the area designated as LI-2 was considerably less than could

be explained by chance factors. The proportions of this group found in Hammond, Chicago, Calumet City, the areas designated as LI-1 and LI-3, and Chesterton were far greater than could be expected. These latter areas are situated at considerable distances from the plant. Furthermore, it should be noted that approximately one-third of the managerial and officials group was found to reside in Chicago.

As of 1940, East Chicago, as a whole, showed the lowest rate of owner-occupied dwelling units, the highest rate of dwelling units needing major repairs, the lowest average value of the owner-occupied dwelling units, and the lowest average contract monthly rent for tenant-occupied units of any of the five cities and the two Chicago community areas for which these data were examined. The median number of school years completed by the population twenty-five years old or over was also lowest for East Chicago. Despite these factors, certain areas within East Chicago contained high proportions of white-collar workers. These areas are mainly the residential areas of the city, none of which are located adjacent to the plant or nearby.

In general, the areas in which reside high percentages of white-collar workers are further removed from the plant and are areas in which housing is newer, rents and values of dwelling units are higher, and fewer of the units are in need of major repairs. These are scattered over a wider distance. Furthermore, the population within these areas shows a greater median number of school years completed among those twenty-five years old or more, a lower percentage of Negroes, and a greater pro-

portion of employed persons in the professional occupations.

The concentration of white-collar employees within any given area reflects the concentration of manual workers within that area, inasmuch as only these two employment categories were distinguished in this study.

The zones in which are found between 10 and 15 per cent of the total white-collar workers are 1 to 2 and 5 to 6 miles from the plant. The percentage of total manual workers in the first-mentioned zone is approximately the same, but the percentage of manual workers in the second-mentioned zone falls to 6.08 per cent.

In general, the concentration of white-collar workers is greatest in the zones 5 to 6 miles away from the plant, and between 8 and 10 miles away.

Hammond, where the percentage of employees living in the city classed in the white-collar group is greater than the percentage of total white-collar employees, and Chicago and Calumet City where the same situation holds, are located in these two zones.

The concentration of manual workers in the zones closer than 8 miles from the plant are approximately the same as, or greater than, the proportion of manual workers in the total distribution. However, at distances of 8 or more miles, the percentage of employees living in each zone, classed as manual workers drops to below the percentage of manual workers in the total distribution.

Thus it can be seen that type of work within the plant,

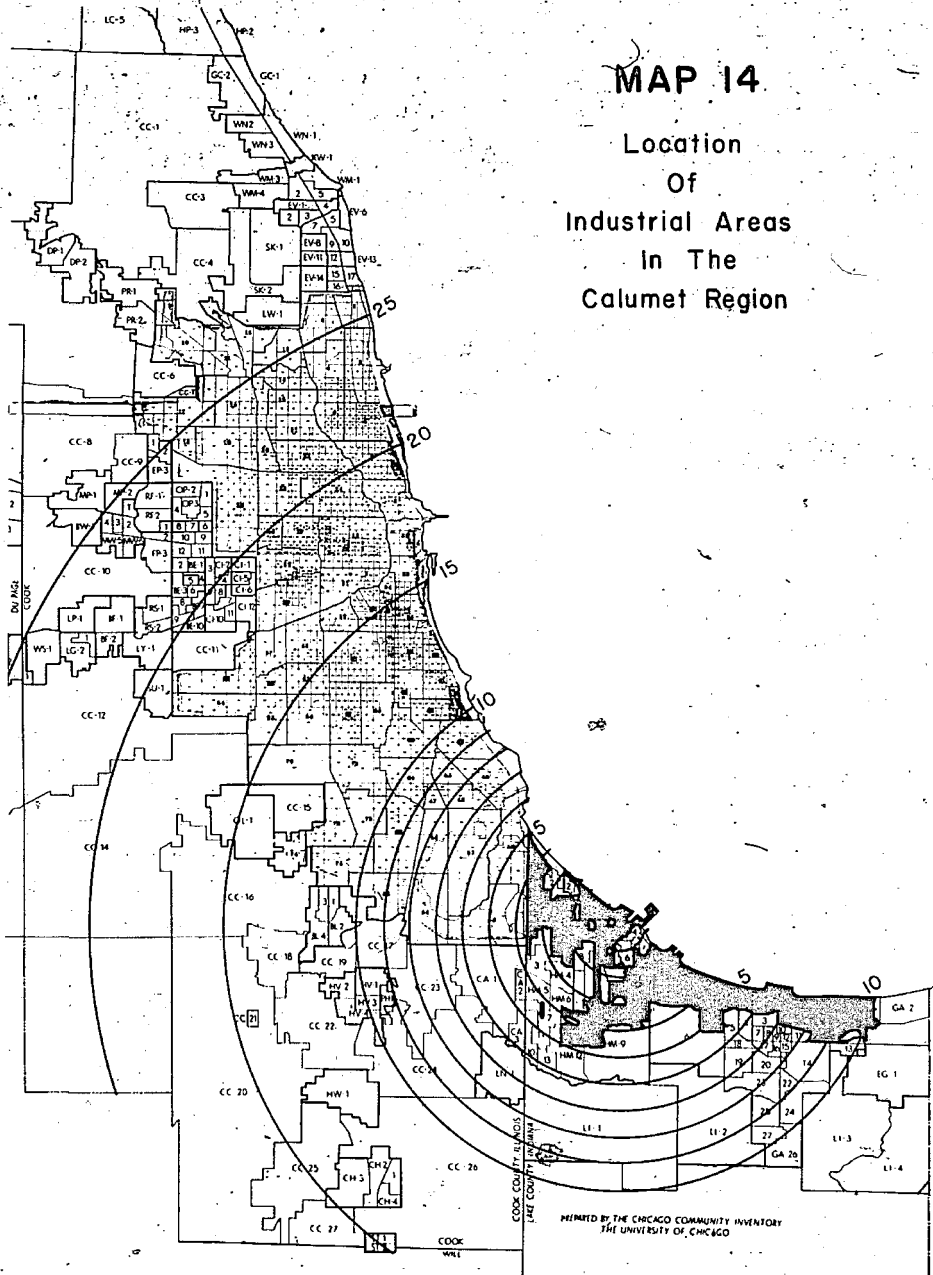
as well as period of employment, influences the location of employees' residences. The greatest concentration of employees in each occupational and time category is found within East Chicago, and within one mile's distance of the plant. However, the degree of concentration within this area varies, higher for long-term, multiple-hire, and manual workers; lower for recent-hire, five-year, and white-collar workers. As the distance from the plant increases, the differences in concentration of employees in each group becomes more apparent.

Although these conclusions were reached in the present study, other plant in different industries and different areas should be investigated before any broader generalizations can be made. The most that can be said at this point is that in the particular steel plant discussed, located in a general industrial area adjacent to a large central city, the relationships were found to exist which were described in this study.

APPENDIX

MAP 14

Location Of Industrial Areas In The Calumet Region



MAP 15

Location Of Residential Areas In The Calumet Region

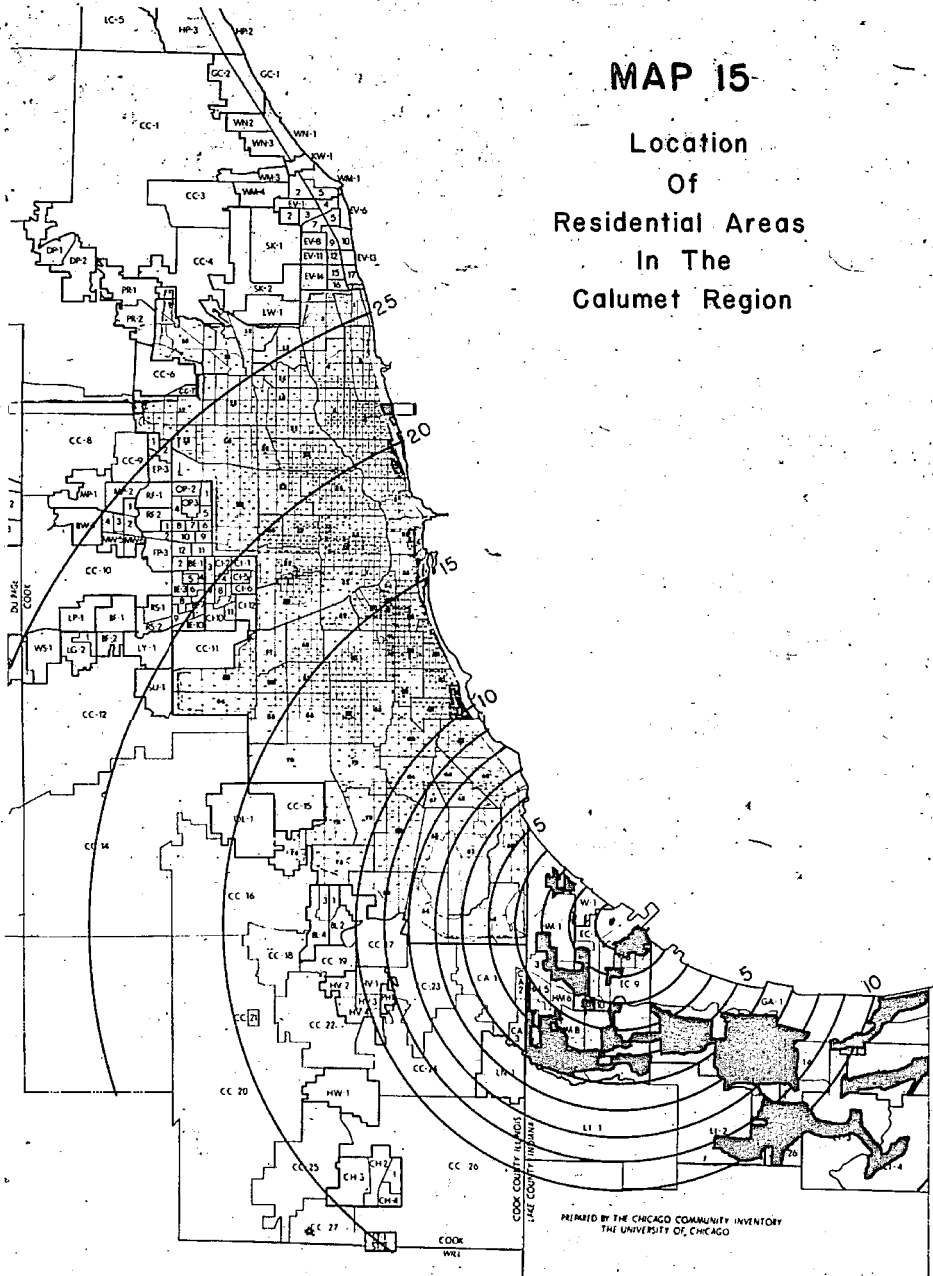


TABLE 30
PERIOD OF EMPLOYMENT
EAST CHICAGO

Census Tract	Total Employees	Recent Hire	5-yr. Empl.	Long-Term Empl.	Mult. Hire (Total)	Twice Hire	Three Hire	Four Hire	Five Hire
1	52	4	13	11	24	14	5	4	1
2	172	10	58	38	66	49	10	4	3
3	361	26	110	84	141	85	38	10	8
4	313	17	73	89	134	94	29	8	3
5	226	12	49	77	88	58	16	7	7
6	198	6	26	70	96	71	13	7	5
7	197	7	30	71	89	58	18	6	7
8	61	6	16	19	20	15	4	.	1
9	82	5	17	25	35	19	11	4	1
10	41	2	8	12	19	9	10	.	.
Total	1,703	95	400	496	712	472	154	50	36

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TABLE 31

LABOR FORCE OF STEEL PLANT BY PERIOD OF EMPLOYMENT

HAMMOND, IND.

Census Tract	Total Employees	Recent Hire	5-yr. Empl.	Long-Term Empl.	Total	Multiple Hire			
						2 times	3 times	4 times	5 or more times
1	34	5	13	9	7	5	2	.	.
2	26	2	6	9	9	7	1	1	.
3	37	3	18	4	12	11	1	.	.
4	43	7	7	15	14	8	6	.	.
5	91	4	53	9	25	18	5	1	1
6	51	7	17	13	14	11	2	1	.
7	34	2	7	13	12	8	4	.	.
8	34	4	10	8	12	9	2	1	.
9	105	5	27	29	44	31	6	4	3
10	34	2	15	11	6	4	2	.	.
11	37	8	7	9	13	10	2	1	.
12	33	4	9	8	12	8	1	2	1
13	35	6	6	10	13	9	1	1	2
Total	594	59	195	147	193	139	35	12	7

LABOR FORCE OF STEEL PLANT BY PERIOD OF EMPLOYMENT

HAMMOND, IND.

Census Tract	Total Employees	Recent Hire	5-yr. Empl.	Long-Term Empl.	Total	Multiple Hire			
						2 times	3 times	4 times	5 or more times
1	34	5	13	9	7	5	2	.	.
2	26	2	6	9	19	7	1	1	.
3	37	3	18	4	12	11	1	.	.
4	43	7	7	15	14	8	6	.	.
5	91	4	53	9	25	18	5	1	1
6	51	7	17	13	14	11	2	1	.
7	34	2	7	13	12	8	4	.	.
8	34	4	10	8	12	9	2	1	.
9	105	5	27	29	44	31	6	4	3
10	34	2	15	11	6	4	2	.	.
11	37	8	7	9	13	10	2	1	.
12	33	4	9	8	12	8	1	2	1
13	35	6	6	10	13	9	1	1	2
Total	594	59	195	147	193	139	35	12	7

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TABLE 32

LABOR FORCE OF STEEL PLANT BY PERIOD OF EMPLOYMENT
GARY, IND.

Census Tract No.	Total Employees	Recent Hire Empl.	5-year Empl.	Long- Term Empl.	Total	Multiple Hire			
						2 times Hired	3 times Hired	4 times Hired	5 or more times Hired
1	11	•	4	2	5	4	1	•	•
3	15	2	4	3	6	5	1	•	•
4	9	•	2	5	2	2	•	•	•
4	9	1	•	4	4	3	1	•	•
5	9	•	•	4	4	3	•	•	•
6	82	6	21	23	32	19	9	4	•
7	7	•	5	3	4	3	1	•	•
8	12	1	5	2	4	3	1	•	•
9	22	2	5	4	11	9	2	•	•
10	10	•	6	2	2	1	•	1	•
11	7	2	2	1	2	2	•	•	•
12	15	1	8	3	3	1	•	1	•
13	1	•	1	•	•	•	•	•	•
14	14	1	8	3	2	2	•	•	•
15	5	1	1	•	3	1	•	•	•
16	37	8	17	8	4	2	2	•	•
17	7	2	4	1	•	•	•	•	•
18	5	•	3	•	2	2	•	•	•
19	15	1	5	5	4	1	•	1	1
20	7	•	5	2	•	•	•	•	•
21	6	2	2	1	1	•	•	•	•
22	5	•	2	2	1	1	•	•	•
23	20	2	6	6	6	4	1	•	1
24	6	1	1	•	4	4	•	•	•
25	16	1	5	4	4	5	1	•	•
26	8	•	4	3	1	1	•	•	•
27	4	1	1	•	2	1	1	•	•
Total	355	35	122	87	111	77	25	7	2

TABLE 33

LABOR FORCE OF STEEL PLANT BY PERIOD OF EMPLOYMENT
CHICAGO, ILL.

Comm. Area No.	Total Employ-ees	Recent Hire Empl.	5-year Empl.	Long-Term Empl.	Total	Multiple Hire			
						2 times hired	3 times hired	4 times hired	5 or more times hired
1	1	1	.	.	.	.	.	.	.
6	4	.	2	2	.	.	.	.	.
7	1	.	.	1	.	.	.	.	.
8	2	.	.	1	1	1	.	.	.
15	1	.	.	1	1	.	.	.	.
19	1	.	.	.	1	1	.	.	.
20	1	.	.	.	1	1	.	.	.
22	1	.	.	.	1	1	.	.	.
23	3	.	1	2	1	1	.	.	.
24	2	.	1	.	1	.	.	1	.
28	17	1	4	7	5	3	2	.	.
29	1	.	1	.	.	.	.	.	.
32	1	.	.	.	1	.	1	.	.
34	1	.	.	.	1	1	.	.	.
35	4	.	2	1	1	.	1	.	.
36	4	.	1	3	1	.	.	.	.
37	2	.	.	1	1	1	.	.	.
38	6	.	2	2	2	1	1	.	.
39	4	1	1	.	2	2	.	.	.
40	3	.	1	2	.	.	.	.	.
41	7	.	.	6	1	1	.	.	.
42	15	2	4	5	4	1	2	.	1
43	19	.	3	9	7	6	1	.	.
44	4	.	.	4
45	7	.	1	6
46	67	4	14	23	26	21	4	.	1
47	2	1	.	1	3	2	.	.	.
48	9	.	2	4	.	.	1	.	.
49	8	.	.	4	4	1	.	1	2

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TABLE 33

LABOR FORCE OF STEEL PLANT BY PERIOD OF EMPLOYMENT
CHICAGO, ILL.

Comm. Area No.	Total Employ- ees	Recent Hire Empl.	5-year Empl.	Long- Term Empl.	Total	Multiple Hire			
						2 times hired	3 times hired	4 times hired	5 or more times hired
1	1	1	.	2	.	.	.	.
6	4	.	.	1	.	.	.	.
7	1	.	.	1	.	.	.	.
8	2	.	.	1	1	.	.	.	
15	1	.	.	1	1	1	.	.	
19	1	.	.	1	1	1	.	.	
20	1	.	.	.	1	1	.	.	
22	1	.	.	.	1	1	.	.	
23	3	.	1	2	1	1	.	.	
24	2	.	1	2	1	.	.	.	
28	17	1	4	7	5	3	2	1	
29	1	.	1	.	1	.	.	.	
32	1	.	.	.	1	.	.	.	
34	1	.	.	.	1	1	1	.	
35	4	.	2	1	1	.	1	.	
36	4	.	1	3	1	.	.	.	
37	2	.	1	1	1	1	1	.	
38	6	.	2	2	2	1	1	.	
39	4	1	1	1	2	2	.	.	
40	3	.	1	2	2	1	.	.	
41	7	.	1	6	1	1	.	.	
42	15	2	4	5	4	1	2	1	
43	19	.	3	9	7	6	1	.	
44	4	.	.	4	.	.	.	.
45	7	.	1	6	.	.	.	.
46	67	4	14	23	26	21	4	1	
47	2	1	.	1	3	.	.	.	
48	9	.	2	4	4	2	1	.	
49	8	.	.	4	4	1	.	2	

TABLE 33--Continued

Comm. Area No.	Total Employ-ees	Recent Hire Empl.	5-year Empl.	Long-Term Empl.	Total	Multiple Hire			
						2 times hired	3 times hired	4 times hired	5 or more times hired
51	8	.	11	1	7	6	1	.	.
52	60	4	.	26	19	13	5	1	.
53	1	.	.	.	1	1	1	.	.
54	3	.	1	1	1	1	.	.	.
55	10	.	4	2	4	3	1	.	.
60	1	.	.	1	.	.	.	.	.
61	4	1	2	1	.	.	.	.	.
62	1	.	.	.	1	.	.	1	.
65	1	.	1	.	.	.	.	.	.
66	2	1	.	1	.	.	.	.	.
67	3	.	.	2	1	1	.	.	.
68	14	.	8	3	3	2	1	.	.
69	15	1	.	9	5	5	.	.	.
71	4	.	1	2	1	1	.	.	.
72	1	.	.	1
73	4	1	2	1
75	2	.	1	1
Total	332	18	71	137	106	76	22	4	4

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TABLE 34

LABOR FORCE OF STEEL PLANT BY PERIOD OF EMPLOYMENT

Census Tract No.	Total Employees	Recent Hire Empl.	5-year Empl.	Long-Term Empl.	Total	Multiple Hire			
						2 times hired	3 times hired	4 times hired	5 or more times hired
LI-2a	71	5	21	20	25	17	5	2	1
CC-1	10	1	.	6	3	2	.	.	1
CC-2	31	5	11	9	6	5	1	.	1
CC-3	23	.	12	5	6	4	1	.	1
Total	64	6	23	20	15	11	2	.	2
LI-1 ^b	63	6	15	21	21	15	3	2	1
Wh-1	14	1	2	3	8	6	.	1	1
Wh-2	27	3	9	4	11	6	4	.	1
Total	41	4	11	7	19	12	4	1	2
Lansing	37	3	9	15	10	9	1	.	.
Crown Pt.	30	3	10	6	11	9	1	.	1
Chester-ton	27	1	9	9	8	6	2	.	.

^aLI-2 indicates census tract 2 of Lake County, Indiana: Black Oak, St. John.

^bLI-1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

TABLE 34--Continued

Census Tract No.	Total Employees	Recent Hire Empl.	5-year Empl.	Long Term Empl.	Total	Multiple Hire			
						2 times hired	3 times hired	4 times hired	5 or more times hired
LI-3 ^c	24	1	7	10	6	3	3	.	.
Cedar Lake	13	.	8	1	4	1	3	.	.
East Gary	12	.	4	3	5	3	1	.	1
Ind. Elsewh. ^d	74	6	24	20	24	19	5	.	.
Ill. Elsewh.	21	2	10	5	4	4	.	.	.
Grand Total	3,461	244	939	1,004	1,274	873	266	78	57

^cLI-3 indicates census tract 3 of Lake County, Indiana: Hobart.

^dIncludes one employee listing address as Ripon, Wisconsin.

TABLE 35

TYPE OF WORK OF SAMPLE EMPLOYEES IN AN EAST CHICAGO, INDIANA
STEEL PLANT, BY TYPE OF WORK

City	Type of Work							Total	
	Professional and Semi-professional	Managers and Officials	Clerical and kindred workers	Craftsmen and Foremen	Operative and kindred workers	Protective Service workers	Service workers		Labor
East Chicago	22	4	80	389	561	7	15	625	1,703
Hammond	17	2	43	137	224	7	5	159	594
Gary	10	2	16	88	119	.	5	115	355
Chicago	14	5	22	119	91	3	1	77	332
LI-2 ^a	2	.	.	23	26	1	.	19	71
Calumet City	4	1	5	15	23	.	.	16	64
LI-1 ^b	.	1	8	19	23	.	.	12	63
Whiting	1	.	2	9	21	.	1	7	41
Lansing	3	.	.	5	19	.	.	10	37
Crown Point	.	.	1	2	15	.	.	12	30
Chesterton	3	.	3	10	7	.	.	4	27
LI-3 ^c	1	.	3	7	9	.	1	3	24
Cedar Lake	1	.	1	2	6	.	1	2	13
East Gary	.	.	.	4	4	.	.	4	12
Indiana Uncl. ^d	1	.	5	21	34	.	.	13	74
Illinois Uncl.	4	.	2	7	6	.	.	2	21
Total	83	15	191	857	1,188	18	29	1,080	3,461

^aLI-2 indicates census tract 2 of Lake County, Indiana: Black Oak, St. John.

^bLI-1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

^cLI-3 indicates census tract 3 of Lake County, Indiana: Hobart.

^dIncludes one employee listing address as Ripon, Wisconsin.

TABLE 95--Continued

Pct. Professional and Semi-Professional	Pct. Managers and Officials	Pct. Clerical and Kindred Workers	Pct. Craftsmen and Foremen	Pct. Operatives and Kindred Workers	Pct. Protective Service Workers	Pct. Service Workers	Pct. Labor	Pct. Total
26.51	26.67	41.88	45.39	47.22	38.89	51.72	57.87	49.21
20.48	13.33	22.46	16.22	18.86	38.89	5.56	14.72	17.16
12.05	13.33	8.38	10.27	10.02	.	5.56	10.65	10.26
16.87	33.33	11.52	13.89	7.66	16.67	1.11	7.13	9.59
2.41	.	.	2.68	2.19	5.56	.	1.76	2.05
4.82	6.67	2.62	1.75	1.94	.	.	1.48	1.85
.	6.67	4.19	2.17	1.94	.	.	1.11	1.82
1.20	.	1.05	1.05	1.77	.	1.11	.65	1.18
3.61	.	.52	.58	1.60	.	.	.93	1.07
.	.	1.62	.23	1.26	.	.	1.11	.87
3.61	.	1.62	1.17	.59	.	.	.37	.78
1.20	.	.52	.82	.76	.	1.11	.28	.69
1.20	.	.	.23	.51	.	1.11	.19	.38
.	.	.	.47	.34	.	.	.37	.35
1.20	.	2.62	2.45	2.86	.	.	1.20	2.14
4.82	.	1.05	.82	.51	.	.	.19	.61
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 36

TYPE OF WORK OF SAMPLE EMPLOYEES IN AN EAST CHICAGO,
INDIANA STEEL PLANT BY CITIES:

City	Type of Work								Total
	Professional and Semi-profession	Managers and Officials	Clerical and kindred workers	Craftsmen and Foremen	Operatives and kindred workers	Protective Serv ice Workers	Service Workers	Labor	
East Chicago	22	4	80	389	561	7	15	625	1703
Hammond	17	2	43	137	224	7	5	159	594
Gary	10	2	16	88	119	.	5	115	355
Chicago	14	5	22	119	91	3	1	77	332
LI-2 ^a	2	.	.	23	26	1	.	19	71
Calumet City	4	1	5	15	23	.	.	16	64
LI-1 ^b	.	1	8	19	23	.	.	12	63
Whiting	1	.	2	9	21	.	1	7	41
Lansing	3	.	.	5	19	.	.	10	37
Crown Point	.	.	1	2	15	.	.	12	30
Chesterton	3	.	3	10	7	.	.	4	27
LI-3 ^c	1	.	3	7	9	.	1	3	24
Cedar Lake	1	.	1	2	6	.	1	2	13
East Gary	.	.	.	4	4	.	.	4	12
Ind.Unclass. ^d	1	.	5	21	34	.	.	13	74
Ill.Unclass.	4	.	2	7	6	.	.	2	22
Total	83	15	191	857	1188	18	29	1080	3461

^aLI-2 indicates census tract 2 of Lake County, Indiana: Black Oak, St. John.

^bLI-1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

^cLI-3 indicates census tract 3 of Lake County, Indiana: Hobart.

^dIncludes one employee listing address as Ripon, Wisc.

TABLE 36--Continued

Percent of Employees in Each Occupational Group By Cities								
Pct. Professional and Semi-profess.	Pct. Managers and Officials	Pct. Clerical and kindred Workers	Pct. Craftsmen and Foremen	Pct. Operatives and kindred Workers	Pct. Protective Service Workers	Pct. Service Workers	Pct. Labor	Pct. Total
1.29	.23	.39	22.84	32.94	.41	.88	36.70	100.00
2.86	.34	7.24	2.31	3.77	1.18	.84	26.77	100.00
2.82	.56	4.51	24.79	33.52	.	1.41	29.58	100.00
4.23	1.51	6.63	35.84	27.41	.90	.30	23.19	100.00
2.82	.	.	32.34	36.62	1.41	.	26.76	100.00
6.25	1.57	7.81	23.44	35.94	.	.	25.00	100.00
.	1.59	12.70	30.16	36.51	.	.	30.16	100.00
2.44	.	4.88	21.95	51.22	.	2.44	17.07	100.00
8.11	.	.	13.51	51.35	.	.	27.03	100.00
.	.	3.33	6.67	50.00	.	.	40.00	100.00
11.11	.	11.11	37.04	25.93	.	.	14.81	100.00
4.17	.	12.50	29.17	37.50	.	4.17	12.50	100.00
7.67	.	7.67	15.38	46.15	.	7.67	15.38	100.00
.	.	.	33.33	33.33	.	.	33.33	100.00
1.35	.	6.76	28.38	45.95	.	.	17.57	100.00
19.05	.	9.52	33.33	28.57	.	.	9.52	100.00
2.40	.43	5.52	24.76	34.33	.52	.26	31.20	100.00

TABLE 37)

LABOR FORCE OF STEEL PLANT BY TYPE OF WORK

EAST CHICAGO

Census Tract No.	Professional and Semi-Professional	Managers and Officials	Clerical and Kindred	Craftsmen and Foremen	Operatives and Kindred	Protective Service	Service	Labor	Total
1	.	.	2	19	18	.	.	13	52
2	.	.	2	38	48	.	.	84	172
3	1	.	3	48	81	.	4	224	361
4	4	1	12	71	113	2	1	109	313
5	.	1	4	48	96	.	5	72	226
6	8	1	18	53	72	5	2	39	198
7	4	1	18	65	65	.	2	42	197
8	2	.	12	11	23	.	.	13	61
9	2	.	5	24	29	.	1	21	82
10	1	.	4	12	16	.	.	8	41
Total	22	4	80	389	561	7	15	625	1,703

TABLE 38

LABOR FORCE OF STEEL PLANT BY TYPE OF WORK

Hammond

Census Tract No.	Professional and Semi-Professional	Managers and Officials	Clerical and Kindred	Craftsmen and Foremen	Operatives and Kindred	Protective Service	Service	Labor	Total
1	.	.	3	7	15	.	.	9	34
2	1	1	1	7	7	2	.	7	26
3	.	.	4	7	12	1	.	13	37
4	.	.	6	12	15	.	2	8	43
5	1	.	2	11	33	2	1	41	91
6	1	1	7	10	24	.	.	9	51
7	.	.	1	12	15	.	.	6	34
8	.	.	.	10	14	.	.	10	34
9	4	.	4	24	51	1	.	21	105
10	7	1	3	8	7	.	1	7	34
11	1	.	6	10	8	1	.	11	37
12	.	.	2	9	12	.	.	10	33
13	2	.	4	10	11	.	1	7	35
Total	17	2	43	137	224	7	5	159	594

TABLE 39

LABOR FORCE OF STEEL PLANT BY TYPE OF WORK

GARY

Census Tract No.	Professional and Semi-Professional	Managers and Officials	Clerical and Kindred	Craftsmen and Foremen	Operatives and Kindred	Protective Service	Service	Labor	Total
1	.	.	1	5	2	.	.	3	11
2	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.
4	.	1	2	3	8	.	.	4	15
5	.	.	2	3	2	.	.	1	9
6	.	.	3	3	2	.	.	1	9
7	1	.	4	28	29	.	.	20	82
8	.	1	1	1	3	.	.	.	7
9	3	.	.	2	2	.	.	4	12
10	1	.	1	4	10	.	.	6	22
11	1	.	.	5	4	.	.	.	10
12	1	.	.	5	3	.	.	1	7
13	.	.	.	4	6	.	.	3	15
14	.	.	.	1	.	.	.	.	1
15	.	.	.	1	4	.	.	9	14
16	.	.	.	1	1	.	1	.	5
17	.	.	.	2	5	.	1	31	37
18	.	.	.	2	2	.	.	3	7
19	.	.	.	1	2	.	1	1	5
20	.	.	.	6	5	.	.	4	15
21	.	.	.	.	4	.	.	3	7
22	.	.	.	.	2	.	.	4	6
23	.	.	.	1	2	.	.	2	5
24	1	.	1	2	2	.	2	8	20
25	1	.	3	3	4	.	.	5	16
26	.	.	.	5	3	.	.	.	8
27	.	.	.	.	2	.	.	2	4
Total	10	2	16	88	119	.	5	115	355

TABLE 40

LABOR FORCE OF STEEL PLANT BY TYPE OF WORK

CHICAGO, ILL.

Census Area No.	Professional and Semi-Professional	Managers and Officials	Clerical and Kindred	Craftsmen and Foremen	Operatives and Kindred	Protective Service	Service	Labor	Total
1			1						1
6	1				2				4
7					1				1
8					1			1	2
15					1				1
19					1				1
20					1				1
22					1				1
23					1			1	2
24					1			1	2
28				2	6			9	17
29								1	1
32								1	1
34								1	1
35				1	2			1	4
36					2			2	4
37					2				2
38					2			4	6
39	1				2			1	4
40	1				1			2	3
41	1	2			1	1		2	7
42	2		2	3	3	1		4	15
43	2		3	8	4			2	19
44	1			1				2	4
45		3		4					7
46	2		4	25	15			21	67
47	1				1			1	2
48			2	4	2				8
49					2	1			3
51					2			1	3

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TABLE 40--Continued

Census Area No.	Professional and Semi-Professional	Managers and Officials	Clerical and Kindred	Craftsmen and Foremen	Operatives and Kindred	Protective Service	Service	Labor	Total
52	2	.	5	30	17	.	.	6	60
53	.	.	.	1	2	.	.	1	13
54	2	.	.	1	3
55	1	.	.	4	3	.	1	1	10
60	.	.	.	1	.	.	.	.	1
61	1	.	.	3	4
62	1	1
65	1	1
66	.	.	.	1	1	.	.	.	2
67	.	.	.	1	2	.	.	.	3
68	.	.	1	5	7	.	.	1	14
69	.	.	2	7	4	.	.	2	15
71	.	.	.	3	1	.	.	.	4
72	.	.	1	.	4	.	.	.	14
73	2	.	.	2	4
75	.	.	.	2	.	.	.	.	2
Total	14	5	21	120	91	3	1	77	332

TABLE 41)

LABOR FORCE OF STEEL PLANT BY TYPE OF WORK

Census Tract No.	Professional and Semi-Professional	Managers and Officials	Clerical and Kindred	Craftsmen and Foremen	Operatives and Kindred	Protective Service	Serv-ice	Labor	Total
LI-2 ^a	2	.	.	23	26	1	.	19	71
CC-1	1	.	.	3	3	.	.	3	10
CC-2	.	1	2	7	10	.	.	11	31
CC-3	3	.	3	5	10	.	.	2	23
Total	4	1	5	15	23	.	.	16	64
LI-1 ^b	.	1	8	19	23	.	.	12	63
Wh-1	1	.	.	5	5	.	.	3	14
Wh-2	.	.	2	4	16	.	1	4	27
Total	1	.	2	9	21	.	1	7	41
Lansing	3	.	.	5	19	.	.	10	37
Crown Point	.	.	1	2	15	.	.	12	30
Chester-ton	3	.	3	10	7	.	.	4	27
LI-3 ^c	1	.	3	7	9	.	1	3	24

^aLI-2 indicates census tract 2 of Lake County, Indiana: Black Oak, St. John.

^bLI-1 indicates census tract 1 of Lake County, Indiana: Griffith, Munster, Highland.

^cLI-3 indicates census tract 3 of Lake County, Indiana: Hobart.

TABLE 41--Continued

Census Tract No.	Professional and Semi-Professional	Managers and Officials	Clerical and Kindred	Craftsmen and Foremen	Operatives and Kindred	Protective Service	Service	Labor	Total
Cedar Lake	1	.	1	2	6	.	1	2	13
East Gary	.	.	.	4	4	.	.	4	12
Elsewh. Ind. ^d	1	.	5	21	34	.	.	13	74
Elsewh. Ill.	4	.	2	7	6	.	.	2	21
Grand Total	83	15	191	857	1,188	18	29	1,080	3,461

^dIncludes one employee listing address as Ripon, Wisconsin.

TABLE 42

CENSUS TRACTS BY MILE DISTANCES FROM
EAST CHICAGO, INDIANA, STEEL PLANT

Distance in Miles	Census Tracts
within 1	East Chicago tracts 3, 4, 5, 6
1 to 2	East Chicago tracts 2, 7, 8, 9 Whiting tract 1
2 to 3	East Chicago tracts 1, 10 Hammond tracts 2, 4 Whiting tract 2
3 to 4	Hammond tracts 1, 3, 5, 6
4 to 5	Calumet City tracts 1, 2 Gary tract 6 Hammond tracts 7, 8, 9 Chicago tracts 709, 718
5 to 6	Calumet City tract 3 Gary tract 4, 5 Hammond tracts 10, 11, 12, 13 Chicago tracts 705, 706, 707, 708
6 to 7	Gary tracts 3, 7, 8, 18, 19 Chicago tracts 670, 671, 701, 703, 704, 719
7 to 8	CC23 ^a LI-2 ^b Gary tracts 9, 10, 11, 12, 15, 16, 17, 20, 21, 23 Chicago tracts 665, 666, 667, 668, 669, 679, 702, 717 Lansing
8 to 9	Chicago tracts 642, 659, 662, 663, 664, 673, 678, 689, 712 Gary tracts 14, 22, 25 LI-1 ^c

^aCC23 includes Dolton and South Holland, Illinois.

^bLI-2 indicates census tract 2 of Lake County, Indiana:
Black Oak, St. John.

^cLI-1 indicates census tract 1 of Lake County, Indiana:
Griffith, Munster, Highland.

TABLE 42--Continued

Distance in Miles	Census Tracts			
9 to 10	Chicago tracts 640, 643, 644, 650, 656, 657, 661, 682, 687, 688, 690, 691, 695 Gary tracts 13, 24, 27			
10 to 15	Gary tracts 1, 26 East Gary tract LI-3 Chicago tracts 547, 557, 559, 560, 562, 563, 565, 577, 581, 584, 587, 591, 593, 594, 599, 600, 602, 604, 612, 614, 617, 620, 623, 624, 625, 627, 629, 630, 632, 633, 634, 636, 639, 645, 646, 694, 791, 842, 846, 851, 855, 867, 874, 876, 877, 879, 880, 881, 882, 883, 885, 888, 889, 890, 892, 893, 894, 903, 904, 912, 923, 924, 926, 927, 932, 933			
15 to 20	Steger Crete Palos Park Crown Point Wheeler			
20 to 25	La Grange Cedar Lake Chesterton Porter			
25 and beyond	Hebron Wanatah Roberts Evanston La Porte	Knox Kouts Joliet Michigan City Schneider	Mishawaka Bartlett Lowell Shelby Morocco	Mt. Alp Wheatfield Lake Village Roby Goodland De Motte Valparaiso

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