Transportation Implications of Employment Trends in Central Cities and Suburbs

EDMOND L. KANWIT and ALMA F. ECKARTT, U. S. Bureau of Public Roads

This paper reports the results of a study of employment trends in large metropolitan areas during the past fifteen years. It analyzes the volume and proportion of employment in the central city and suburbs, knowledge of which is necessary to forecast the degree of developing decentralization and to evaluate its highway implications.

The study conforms standard metropolitan statistical areas to a constant geographical area over time, according to the 1960 area definitions. Comparisons are drawn between types of employment derived from the Censuses of Business and Manufactures which are now becoming available from the 1963 Census. It shows in relative and absolute terms the number of employees in manufacturing, selected services, and wholesale and retail trade for the SMSA as a whole and by central city and ring. The study includes all SMSA's with a population of 1 million or more in 1960.

The analysis of employment trends in these four industries, 1948-1963, shows rapid growth in the suburbs and progressive relative decline in employment in the central cities. Annexations to central cities complicate the analysis. Only a few central cities continue to report absolute increases in employment; most do not, a factor of major importance in transportation planning.

•IN the largest population concentrations of the United States—areas of 1 million inhabitants or more—almost 40 percent of the national population now live and work. In these urban agglomerations are the more intractable traffic problems, the only significant use of rail transit, and a tremendous variety of social, economic, financial, and political problems.

These complex urban areas consist of one or more central cities, secondary industrial and commercial centers, older suburbs of rising population density, and sprawling peripheral suburbs mainly of single-family detached homes. Almost without exception family income and automobile ownership rates are higher in the suburban ring than in the central cities, and dependence on the motor vehicle generally increases as the urban population extends outward from the central business district (CBD).

These urban areas have been changing steadily in structure for more than 40 years; both population and employment have been decentralizing; and despite repeated efforts to strengthen central cores in particular, and central cities in general, success has been limited. Growth of both suburban population and employment continues to be rapid, while relatively few large central cities are growing in either respect despite repeated annexations.

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Employment has grown less rapidly than population during the postwar period, although rising rates of job holding and slowed population growth have brought the growth rates into close relation during the past several years.

United States urban growth is similar to the world phenomenon, but it possesses some distinctive characteristics. The ubiquity of the motor vehicle in the United States has produced a suburban role more substantial than in other countries. Almost universal dependence on the motor vehicle characterizes peripheral rural land and exurban and suburban areas where the heaviest growth rates are taking place. The Washington SMSA, for example, has a substantial belt around the area whose population increased more than 200 percent in a single decade.

Population growth is closely connected with economic growth; indeed, one without the other is hardly possible in the wage and salary-dependent United States. The intensive population and economic growth which has characterized this nation since its formation is altering its urban structure rather fundamentally because of the mobility provided by the motor vehicle, and this evolution is a dynamic process. The changes have not been limited to the United States, but they are more advanced here and probably indicate the direction that developments will take on a worldwide basis, modified by local planned policy and distinctive cultural preference.

RAPID GROWTH OF LARGE SMSA'S CONTINUES

Not only is the rate of population growth more rapid in metropolitan areas than outside, but a steadily increasing proportion of the population lives in metropolitan areas of 1 million or more inhabitants. Between April 1, 1960 and July 1, 1965, it is estimated by the Census that five additional metropolitan areas passed the 1 million mark: Anaheim-Santa Ana-Garden Grove, Calif.; Denver, Colo.; Miami, Fla.; San Bernardino-Riverside-Ontario, Calif.; and New Orleans, La. In addition, the Indianapolis, San Jose, Tampa-St. Petersburg, and Phoenix areas have passed, or are now close to, the 1 million mark (assuming continuation of their growth rates between 1960 and 1965).[1] By mid-1965, more than 72 million Americans lived in the metropolitan areas with more than 1 million people in 1960; this represents 37 percent of the total, in contrast to 61.6 million which comprised 34 percent of the population in 1960. The new areas would increase the proportion to about 40 percent.

Table 1 gives the proportion of the population and employment in the central city, and by implication outside for the 24 SMSA's which had 1 million population in 1960. The period covered extends over the years from 1948 to 1963, the same period for which employment in manufacturing, retail and wholesale trade, and selected services was studied from the Censuses of Manufactures and Business. The definitions for the areas conform to those of the 1960 Census. The areas used are consistent, but no estimates of the effect on employment of annexation to central cities has been made.

During the 15-yr period under study, population in the central cities declined from 61 percent of the metropolitan areas in 1948 to 48 percent in 1963 (Table 2), and the proportionate drop in employment was from 72 percent to 58 percent. In fact, the trend in decentralization between 1958 and 1963 appears to have accelerated somewhat in these four selected industries (Fig. 1).

EMPLOYMENT TRENDS

Figure 2 shows that in these four industries, which normally include about two-thirds of the BLS nonagricultural total (excluding fisheries, mining, construction, transportation, communication, finance, insurance, real estate, professional and public administration), central-city employment has remained on a plateau while the entire gain has been concentrated in the suburban areas and smaller cities outside the metropolitan centers. In these suburban areas, despite successive losses through central city annexations, which have been quite significant in many areas, employment

[1]Omitted were sections of the consolidated New York and Chicago areas in New Jersey and Indiana.

TABLE 1

PROPORTION OF POPULATION AND EMPLOYMENT IN CENTRAL CITIES OF THE 24 LARGEST SMSA'S[a] (1960 Definitions)

Central City	Pop. (%)		Employ. (%)[b]		Pop. Change 1948-63 (%)	Employ. Change 1948-63 (%)
	1948	1963	1948	1963		
New York, N. Y.	84	72	91	80	-12	-11
Los Angeles-Long Beach, Calif.	53	41	58	42	-12	-16
Chicago, Ill.	71	54	81	62	-17	-19
Philadelphia, Pa.-N. J.	57	45	66	53	-12	-13
Detroit, Mich.	63	42	67	49	-21	-18
San Francisco-Oakland, Calif.	57	37	70	52	-20	-18
Boston, Mass.	34	25	48	36	-9	-12
Pittsburgh, Pa.	31	24	37	34	-7	-3
St. Louis, Mo.-Ill.	52	33	72	52	-19	-20
Washington, D. C.-Md.-Va.	59	35	82	53	-24	-29
Cleveland, Ohio	64	48	84	61	-16	-23
Baltimore, Md.	70	52	77	61	-18	-16
Newark, N. J.	31	22	45	32	-9	-13
Minneapolis-St. Paul, Minn.	75	50	88	71	-25	-17
Buffalo, N. Y.	55	39	57	42	-16	-15
Houston, Tex.	73	75	82	85	+2	+3
Milwaukee, Wis.	68	63	77	66	-5	-11
Paterson-Clifton-Passaic, N. J.	31	23	52	31	-8	-21
Seattle, Wash.	57	48	81	68	-9	-13
Dallas, Tex.	57	64	84	78	-7	-6
Cincinnati, Ohio	57	46	75	57	-11	-18
Kansas City, Mo.-Kan.	57	49	72	62	-8	-10
San Diego, Calif.	63	57	81	70	-6	-11
Atlanta, Ga.	49	46	80	66	-3	-14
Average	61	48	72	58	-13	-14

[a]Sources: adapted from data in the U.S. Department of Commerce, Bureau of the Census, Censuses of Population 1950 and 1960, and Current Population Reports, Series P-25, No. 330; data for central cities, 1963, from Sales Management, Survey of Buying Power, 1964; Censuses of Business and Manufactures, 1947-1948, and 1963.

[b]Employment as represented by all employees in manufacturing, retail and wholesale trade and employees and proprietors in selected services.

TABLE 2

POPULATION FOR CENTRAL CITIES OF THE 24 LARGEST SMSA'S AND PROPORTION OF SMSA POPULATION IN THE CENTRAL CITY[a]

Central City	Population (thousands)			Proportion of SMSA Population in the Central Cities (%)	
	1950	1960	1963	1948	1963
New York, N. Y.	7,892	7,782	7,932	84	72
Los Angeles-Long Beach, Calif.	2,221	2,823	3,039	53	41
Chicago, Ill.	3,621	3,550	3,534	71	54
Philadelphia, Pa.-N. J.	2,072	2,003	2,039	57	45
Detroit, Mich.	1,849	1,670	1,614	63	42
San Francisco-Oakland, Calif.	1,160	1,108	1,117	57	37
Boston, Mass.	801	697	660	34	25
Pittsburgh, Pa.	677	604	578	31	24
St. Louis, Mo.-Ill.	857	750	708	52	33
Washington, D.C.-Md.-Va.	802	764	792	59	35
Cleveland, Ohio	915	876	870	64	48
Baltimore, Md.	950	939	936	70	52
Newark, N. J.	439	405	392	31	22
Minneapolis-St. Paul, Minn.	833	796	787	75	50
Buffalo, N. Y.	580	533	516	55	39
Houston, Tex.	596	938	1,056	73	75
Milwaukee, Wis.	637	741	765	68	63
Paterson-Clifton-Passaic, N. J.	262	280	287	31	23
Seattle, Wash.	468	557	567	57	48
Dallas, Tex.	434	680	781	57	64
Cincinnati, Ohio	504	503	500	57	46
Kansas City, Mo.-Kan.	457	475	532	57	49
San Diego, Calif.	334	573	639	63	57
Atlanta, Ga.	331	487	510	49	46
Total	29,692	30,534	31,152		
Average				61	48

[a]Sources: U.S. Department of Commerce, Bureau of the Census, Censuses of Population 1950 and 1960, and Current Population Report, Series P-25, No. 330; data for central cities 1963 from Sales Management, Survey of Buying Power, 1964.

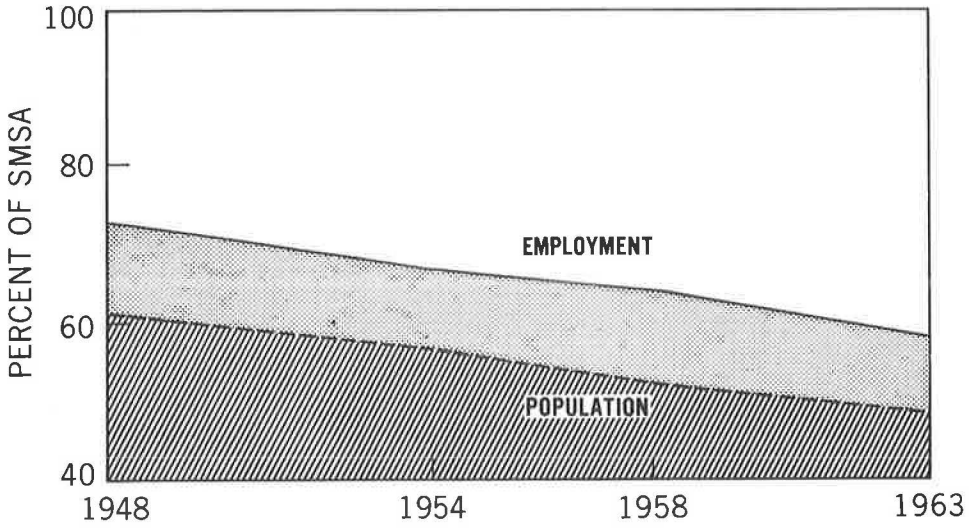

Figure 1. Percent of population and employment for selected industries.

has increased in 15 years by more than 2,500,000. The employment mix of the central cities has also changed considerably. Many specialized services not covered by census—government at all levels and many central office functions—have continued to add employment, while manufacturing, wholesale and retail trade, and the selected services covered by census have barely held their own level.

New York, Philadelphia, Boston, Los Angeles-Long Beach, San Francisco-Oakland, Washington, Chicago, Detroit, and Cincinnati show the same basic pattern of greater increase in the suburbs (Figs. 3, 4, and 5). In Los Angeles and Washington slight increases have also taken place in the central cities. There is some variation in trend from census to census. In Philadelphia, Cincinnati and Boston, for example, the central cities have lost employment steadily.

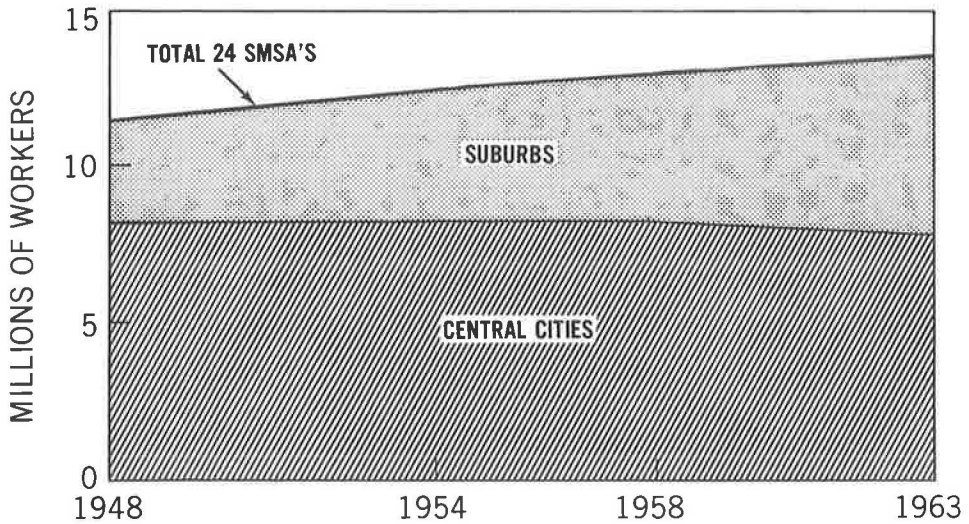

Figure 2. Number of workers in selected industries.

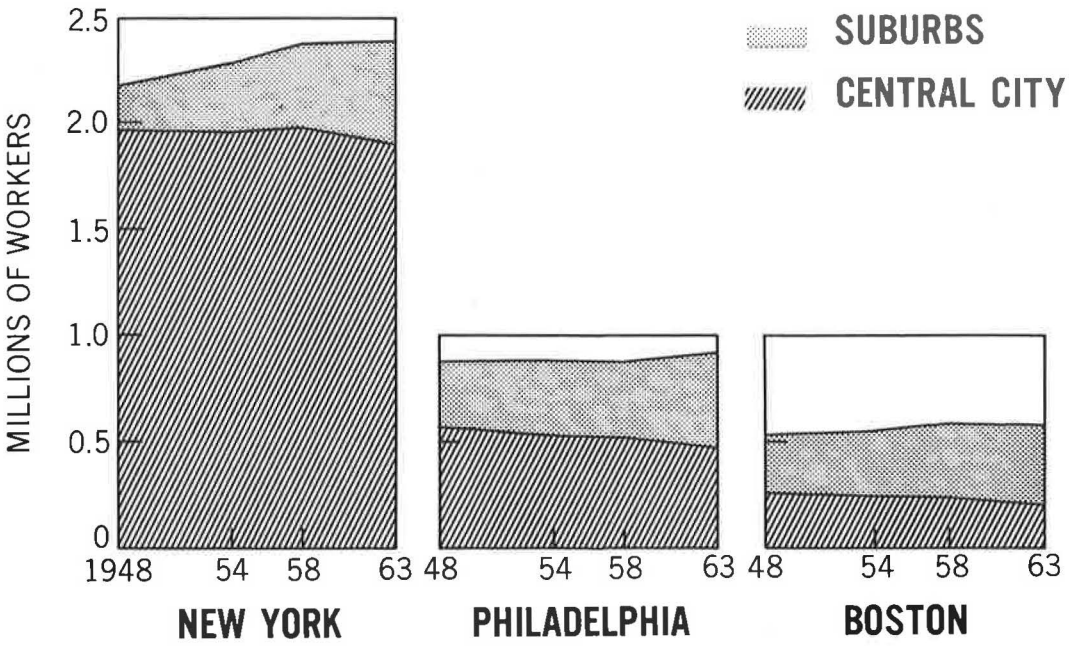

Figure 3. Employment in metropolitan areas.

The central city of Detroit shows some slackening in the rate of loss after 1958. The Detroit area as a whole, however, shows a gain in the most recent period, reflecting advances in the automotive industries after a preceding decline.

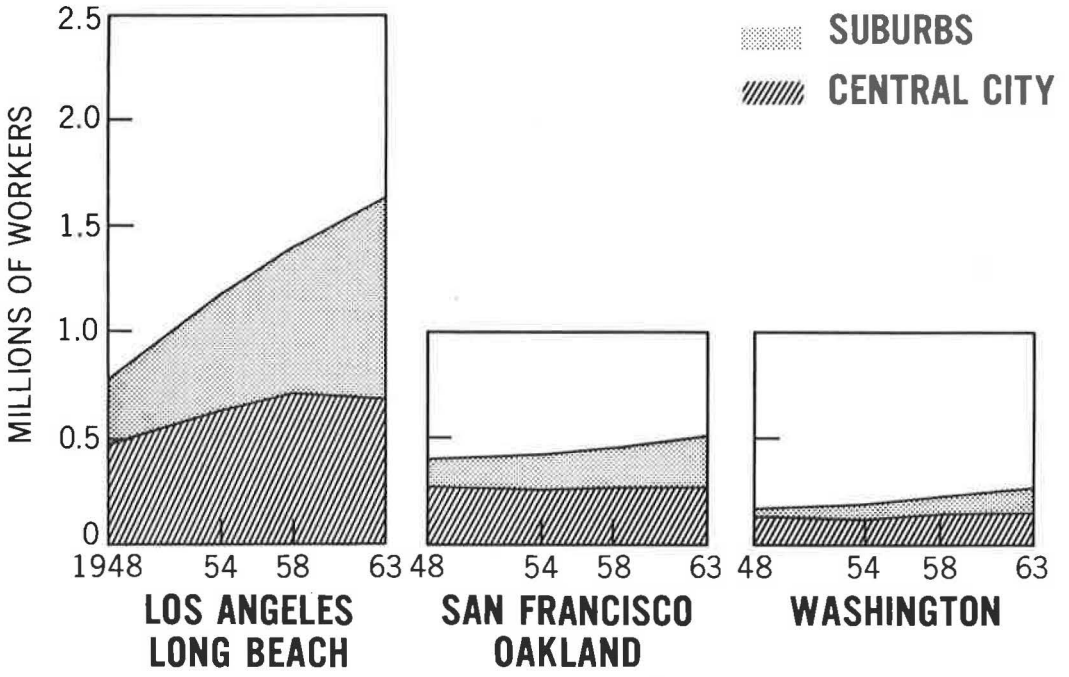

Figure 4. Employment in metropolitan areas.

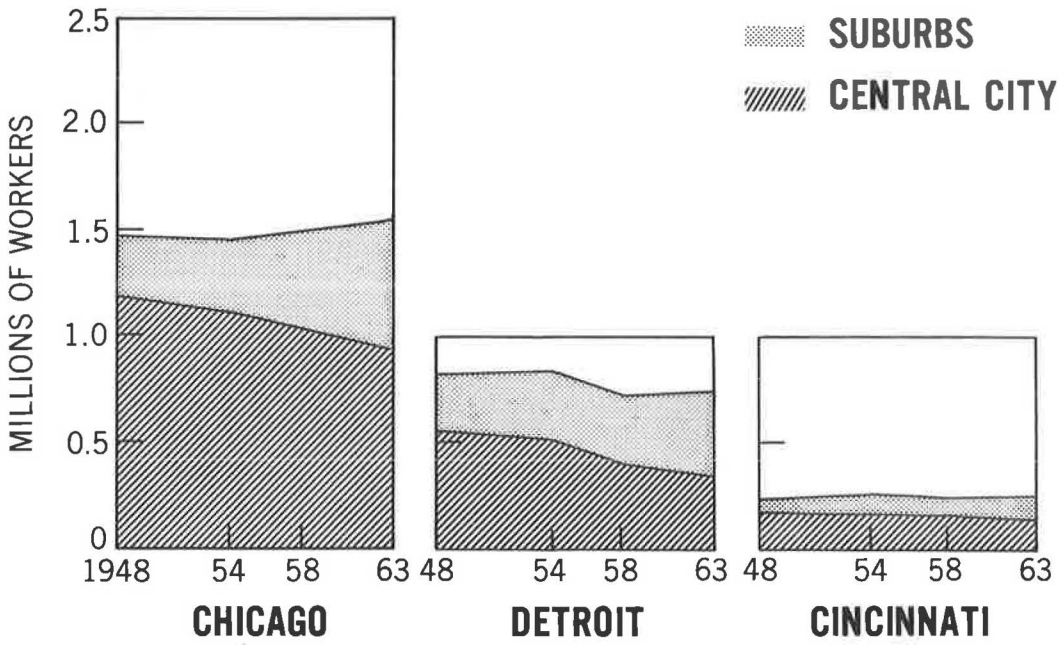

Figure 5. Employment in metropolitan areas.

The proportion of area employment in the central cities declined in the four industries studied (Fig. 6). Wholesale trade dropped from 90 percent to 72 percent from 1948 to 1963; retail trade from 74 percent to 55 percent; selected services from 80 percent to 67 percent; and manufacturing from 67 percent to about 53 percent.

Over the whole period the sharpest declines, therefore, have taken place in distribution; both wholesale and retail trade have dropped sharply and consistently over the entire period. The service industries covered by census, however, have continued to

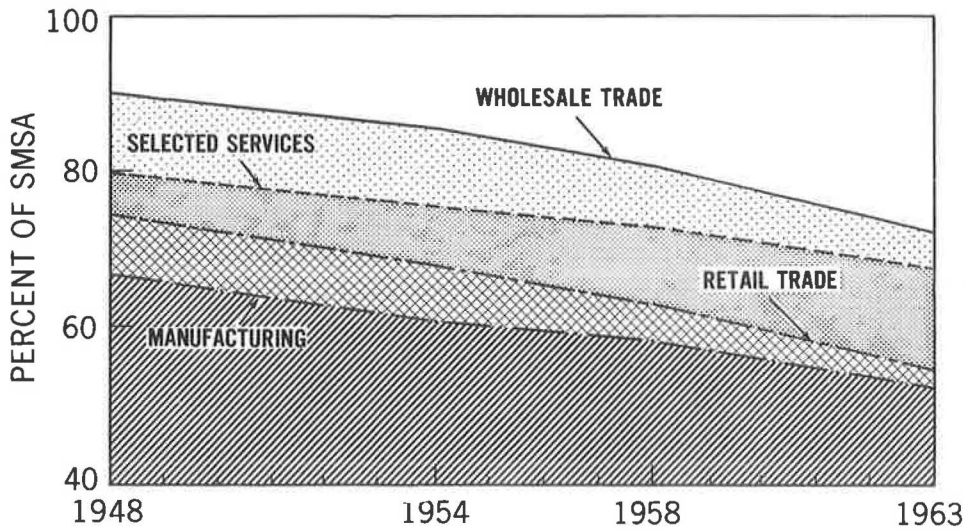

Figure 6. Percent of employment in central cities by industry.

show relatively more strength in their central city locations, and by 1963 were only a little less decentralized than retail trade. There is little doubt that gradual completion of Interstate highway networks, including circumferential belts, has played an important part in the steady decentralization of wholesale trade activity.

WHOLESALE TRADE EMPLOYMENT

In New York City, the major center of wholesale activity, wholesale trade dropped from 96 percent of the area's total to 87 percent. In the Los Angeles area, the pattern was different. An increase in wholesale trade of 24 percent in the city in contrast to the 6 percent New York City loss was insufficient to prevent the proportion in Los Angeles and Long Beach from falling from 75 percent to 55 percent of the SMSA total. Outside wholesaling activity more than tripled during the period. In fact, the percentage increases in wholesaling in suburban locations from small beginnings in 1948 exceeded 245 percent for the 24 areas as a whole and exceeded 400 percent in Cleveland, Atlanta, Paterson, Minneapolis-St. Paul, and Chicago. For the first time wholesaling became a major activity in suburban locations in 1958 and the growth since that time has accelerated. With this development, dependence on over-the-road trucking has greatly increased. Wholesalers in the suburbs employed almost 4 out of every 10 employees in 1963 in contrast to only 1 of 10 in 1948.

RETAIL EMPLOYMENT

Retail trade has been an important element of growth in large United States metropolitan areas accounting for an increase of over 550,000 in employment. Within the central cities, however, retail trade has fallen steadily in number of jobs—a loss of over 11 percent over the entire period. While retail trade was losing 230,000 workers over the 15-yr period, suburban locations doubled their retail employment, which jumped from 710,000 to 1,492,000. Those areas showing the largest proportional losses in retail trade in central cities were: Detroit, 37 percent; Pittsburgh, 34 percent; St. Louis, 34 percent; Cleveland, 32 percent; and Buffalo, 33 percent. Their losses were much greater than the loss in residential population.

A few central cities gained, such as Houston, San Diego, and Los Angeles. These gains generally reflected substantial annexations. High rates of retail trade increase in the suburbs characterized Washington, 249 percent; Baltimore, 238 percent; Minneapolis-St. Paul, 334 percent; and San Diego, 254 percent. As might be expected, these rapid rates of increase occurred in the areas which experienced the most rapid increases in population. The correlation between retail trade and residential shifts is very high.

INCREASE IN SERVICE EMPLOYMENT IN BOTH CENTRAL CITY AND SUBURBS

The picture regarding selected services covered by census[2] is similar in direction but less pronounced because specialized service activities remained strong in the

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[2]Kinds of business covered: of the 14 major groups of services, defined in the Standard Industrial Classification (SIC) Manual as establishments primarily engaged in rendering a wide variety of services to individuals and business establishments, seven are included in the 1963 Census of Business essentially in their entirety, as follows:

70. Hotels, rooming houses, camps, and other lodging places, except SIC industries 702, "rooming and boarding houses," and 704, "organization hotels and lodging houses, on membership basis."
72. Personal services.
73. Miscellaneous business services.
75. Automobile repair, automobile, services, and garages.
76. Miscellaneous repair services.
78. Motion pictures.

central cities. The service industries as a whole added about 701,000 employees; 311,000 in the central cities, a growth of 31 percent; and 390,000 in the suburbs, a gain of 155 percent. Service activities in suburban Washington jumped from 6,000 to 29,000, representing the largest relative gain of any area. The District of Columbia also added a little more than 10,000 workers to the service industries covered. Other large gains in suburban service activities of 200 percent or more occurred in Cleveland, Baltimore, Minneapolis-St. Paul, San Diego and Los Angeles-Long Beach.

The gain in service activities in the cities of Los Angeles-Long Beach was noteworthy; employment jumped from 69,000 to 134,000. Service activities in New York City also showed considerable strength, adding about 85,000 or 29 percent, which was more than twice the 13 percent relative gain shown in Chicago. Service gains in the central cities were weak in Detroit (4 percent), St. Louis (8 percent), Cleveland (5 percent), and Cincinnati (only 4 percent). Only one central city, Buffalo, actually reported a decline in service employment.

TREND IN MANUFACTURING

Manufacturing activity accounted for 6.1 million jobs in the 24 areas in 1947; the total was up in 1954 as a result of the impact of the Korean War, declined in 1958, and then increased slightly to 6.6 million in 1963.

The total for the central cities, however, continued to decrease in 1963; after adjustment for central office employees, the proportion continued to fall as previously indicated. Generally, the older central cities have lost heavily since 1948 in manufacturing employment—heavily enough to offset their suburban gains.

After adjustment, 15 central cities lost employment in manufacturing over the 15-yr period ranging from almost 194,000 in Chicago, about 153,000 in Detroit, and over 100,000 in New York City to under 20,000 in San Francisco-Oakland, Baltimore, Paterson-Clifton-Passaic and Milwaukee. A slight increase occurred in Washington where manufacturing is relatively unimportant. After adjustment for the 24 cities, as a whole, it is estimated that a gain of over 1,000,000 in manufacturing occurred in suburban locations and a loss in the neighborhood of 578,000 occurred in the central cities since 1948.

REGIONAL GROWTH PATTERNS

Table 3 indicates the pronounced difference in the rates of population growth which have occurred regionally in the United States since 1948. For the United States, as a whole, 10 of the 24 largest metropolitan areas have experienced slow growth—under 10 percent; 6, moderate growth—between 10 percent and 30 percent; and 8, relatively fast growth of at least 30 percent. Six of the areas of slow growth were located in the North Central states and four in the Northeast. None were in the West or South. Of

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79. Amusement and recreation services, except motion pictures. Symphony orchestras, ballet and opera companies, and similar services organized on a nonprofit basis are included. However, establishments in this group which are operated to provide recreation facilities for their own members and which are exempt from payment of Federal income tax under the provisions of Sec. 501 of the Internal Revenue Code are not included.

The following major groups of services defined in the SIC Manual are not included in the 1963 Census of Business:

80. Medical and other health services (except 8072, "dental laboratories").
81. Legal services.
82. Educational services.
84. Museums, art galleries, and botanical and zoological gardens.
86. Nonprofit membership organizations.
88. Private households.
89. Miscellaneous services.

TABLE 3

NUMBER OF SMSA'S, 1 MILLION POPULATION OR MORE, BY POPULATION AND EMPLOYMENT GROWTH GROUPS, U.S. AND BY REGION, 1948-1963[a]

Industry	Number of Areas by Growth Group			
	Slow Under 10%	Moderate 10-29.9%	Fast 30% and Over	All
(a) United States				
Manufacturing	13	2	9	24
Retail trade	8	8	8	24
Wholesale trade	4	10	10	24
Selected services	0	4	20	24
Total, 4 industries	10	6	8	24
Population	1	9	14	24
(b) Northeast				
Manufacturing	6	0	1	7
Retail trade	1	4	1	7
Wholesale trade	3	2	2	7
Selected services	0	1	6	7
Total, 4 industries	4	2	1	7
Population	1	5	1	7
(c) South				
Manufacturing	1	0	4	5
Retail trade	0	1	4	5
Wholesale trade	0	1	4	5
Selected services	0	1	4	5
Total, 4 industries	0	1	4	5
Population	0	0	5	5
(d) North Central				
Manufacturing	6	1	1	8
Retail trade	6	2	0	8
Wholesale trade	1	6	1	8
Selected services	0	2	6	8
Total, 4 industries	6	2	0	8
Population	0	4	4	8
(e) West				
Manufacturing	0	1	3	4
Retail trade	0	1	3	4
Wholesale trade	0	1	3	4
Selected services	0	0	4	4
Total, 4 industries	0	1	3	4
Population	0	0	4	4

[a]Sources: adapted from U.S. Bureau of the Census: Censuses of Business and Manufactures, 1947-1948 and 1963; Census of Population, 1940, 1950, and 1960 and Current Population Report, Series P-25, No. 330.

the nine rapidly growing areas only one was located in the Northeast, none in the North Central region, four were in the South and three in the West. Of the nine metropolitan areas in the South and West, only two were areas of moderate growth; and seven were areas of rapid growth. The moderate growth areas were Baltimore and San Francisco-Oakland.

Viewed from another standpoint, employment in the four selected industries increased by 12 percent in the Northeast and by 7 percent in the North Central region, in contrast to a 52 percent gain in the South and a 79 percent gain in the West. The one area of rapid growth in the Northeast, Paterson-Clifton-Passaic, must be considered as a portion of the rapidly growing greater New York periphery. Buffalo and Pittsburgh suffered overall declines in employment. In the South the only area of moderate growth, Baltimore, is essentially a border area. In the North Central states the Min-

neapolis-St. Paul and Kansas City, Mo., areas showed moderate growth rates of 25 and 23 percent. All other areas were areas of slow growth except Detroit and Pittsburgh which lost growth in the four industries over the period. The most rapidly growing large areas (Tables 4 and 5) were as follows: San Diego (130 percent); Dallas (93 percent); Atlanta (67 percent); Houston (66.6 percent); and Washington (64.4 percent).

HOW INDICATIVE ARE THE FOUR INDUSTRIES OF TOTAL EMPLOYMENT?

It may be argued that the four industries are not typical of the employment trend. Analysis of the four industries for 22 of the 24 areas was compared with total nonagricultural employment for 1958 through 1963. Both the BLS four-industry total and the nonagricultural total increased at about the same rate: 8.0 percent for the four industries and 8.3 percent for the total. The census series, however, indicated a 4 percent gain. The difference was largely attributable to the broader coverage of the service industries in the BLS series which indicated almost 3.6 million employees in contrast to only 1.9 million in the census series for the 22 areas including 300,000 proprietors.

According to County Business Patterns, U.S. service industries SIC groups 80 through 89 not covered by Census added more than 500,000 workers between 1959 and

TABLE 4

EMPLOYMENT IN SELECTED INDUSTRIES FOR 24 LARGE SMSA'S AND NUMBER AND PERCENT CHANGE, 1948-1963
(Manufacturing, Retail Trade, Wholesale Trade, and Selected Services By Census Regions)[a]

Census Region	SMSA	Number (thousands)		Change	
		1947-1948	1963	Number	Percent
Northeast	New York, N. Y.	2,162.6	2,379.3	216.7	10.0
	Philadelphia, Pa.-N. J.	861.2	911.5	50.3	5.8
	Boston, Mass.	521.3	564.3	43.0	8.2
	Pittsburgh, Pa.	532.7	428.2	-104.5	-19.6
	Newark, N. J.	353.6	405.4	51.8	14.6
	Paterson-Clifton-Passaic, N. J.	184.9	286.2	101.3	54.8
	Buffalo, N. Y.	282.1	270.7	-11.4	-4.0
	Total	4,898.4	5,245.6	347.2	7.1
South	Baltimore, Md.	308.3	353.9	45.6	14.8
	Washington, D.C.-Md.-Va.	165.2	272.0	106.8	64.6
	Dallas, Tex.	131.6	254.4	122.8	93.3
	Houston, Tex.	143.9	239.7	95.8	66.6
	Atlanta, Ga.	136.4	227.6	91.2	66.9
	Total	885.4	1,347.6	462.2	52.2
North Central	Chicago, Ill.	1,477.1	1,533.2	56.1	3.8
	Detroit, Mich.	831.1	743.7	-87.4	-10.5
	Cleveland, Ohio	426.4	438.2	11.8	2.8
	St. Louis, Mo.-Ill.	432.6	440.3	7.7	1.8
	Minneapolis-St. Paul, Minn.	261.1	326.0	64.9	24.9
	Milwaukee, Wis.	282.6	299.0	16.4	5.8
	Cincinnati, Ohio-Ky.	232.2	244.6	12.4	5.3
	Kansas City, Mo.-Kan.	188.7	232.7	44.0	23.3
	Total	4,131.8	4,257.7	125.9	3.0
West	Los Angeles-Long Beach, Calif.	795.8	1,637.8	842.0	105.8
	San Francisco-Oakland, Calif.	401.2	501.6	100.4	25.0
	Seattle, Wash.	145.0	234.8	89.8	61.9
	San Diego, Calif.	62.4	143.7	81.3	130.3
	Total	1,404.4	2,517.9	1,113.5	79.3
	Total 24 SMSA's	11,320.0	13,368.8	2,048.8	18.1

[a]Source: U.S. Bureau of the Census, Censuses of Business and Manufactures 1947-48 and 1963. SMSA's are conformed to 1960 definitions.

TABLE 5

EMPLOYMENT IN 24 LARGE[a] SMSA'S BY SLOW, MODERATE, AND FAST-GROWING CENSUS REGIONS FOR SELECTED INDUSTRIES[b] (1948 to 1963)

Slow (under 10%)	Moderate (10 to 29.9%)	Fast (30% and over)
	(a) Northeast Region	
Philadelphia, Pa.-N. J. Pittsburgh, Pa. Buffalo, N. Y. Boston, Mass.	New York, N. Y. Newark, N. J.	Paterson-Clifton-Passaic, N. J.
	(b) South Region	
None	Baltimore, Md.	Washington, D. C.-Md.-Va. Atlanta, Ga. Dallas, Tex. Houston, Tex.
	(c) North Central Region	
Chicago, Ill. Detroit, Mich. Cleveland, Ohio Milwaukee, Wis. Cincinnati, Ohio-Ky. St. Louis, Mo.-Ill.	Kansas City, Mo.-Kan. Minneapolis-St. Paul, Minn.	None
	(d) West Region	
None	San Francisco-Oakland, Calif.	Los Angeles-Long Beach, Calif. Seattle, Wash. San Diego, Calif.

[a]SMSA's over 1 million as defined in 1960.

[b]Source: adapted from the U.S. Bureau of the Census, Censuses of Business and Manufactures, 1948 and 1963. Selected industries: manufacturing, retail trade, wholesale trade, and selected services.

1962 while census-reported industries added slightly over 300,000 in a similar United States base. These industries, therefore, were some element of strength in critical city employment but not enough to change the picture importantly. Longer-term comparisons cannot be made because of changes in OASI coverage.

Another source of central city strength were central office employees in manufacturing which tended to grow more rapidly than plant workers. BLS includes them and added 148,000 workers in manufacturing in contrast to the census increase of 59,000, excluding their administrative workers in the 22 areas. Adding them would have added about 60 additional workers and made the two series comparable. Striking differences in the distribution between central city and suburban central office employment occur, although about three-fifths of these workers are employed in the central cities. These workers were important, comprising 10 percent or more of all manufacturing workers in the following areas: Detroit, 14.5 percent; Pittsburgh, 12.9 percent; Newark, 10.3 percent; and New York, 9.9 percent.

More than 80 percent of these were employed in the central cities in New York and Pittsburgh, and more than 80 percent were in suburban Detroit and Newark. Thus, central office operations might be a factor in strengthening in some central cities but not in all. The character of manufacturing in the central city would have to be investigated.

In conclusion, the data may be considered indicative of continued long-range relative weakness of employment in large central cities, overstating the weakness largely because of non-reporting of certain service activities such as health, legal and educational services, and nonprofit organizations.

The effect of government would also vary. Regional centers of federal employment and state capitals such as Boston and Atlanta would have particular central city strength in state government employment. Of course, Washington is nontypical with its high

proportion of federal government workers, but state and local government tendencies to locate in central cities are largely offset by rapid growth of public school teachers in rapidly growing suburban areas.

WHAT OF THE CBD?

Unfortunately, the census does not process trend data on employment in the CBD. An indication of trends may be found in the Census of Business which reports retail sales in the CBD, a subject outside the scope of this paper. Studies of the role of the CBD, however, have shown a steady diminution of the relative importance of the retail business over the period in question. McMillan (1) showed for central cities between 1954 and 1958 a slight increase in the dollar volume of retail sales and a decrease in physical volume when the dollar volume is adjusted to allow for price increases and the entire increase in physical volume was located in the areas outside the central cities. Individual cities had varied experiences; for example, Atlanta and Nashville gained while Detroit and Flint lost heavily. Establishment sales data reflected a high mortality rate downtown in smaller metropolitan areas.

According to McMillan, the population shift was not the only factor responsible for the change; superior purchasing power, and increased mobility of the population because of the increased availability of automobiles must also be taken into consideration. In the years ahead, a more equitable income distribution among the population may arrest the trend of sales toward the suburbs but, inasmuch as most persons who can afford it apparently prefer suburban living, this trend must not be taken for granted. Despite efforts to resuscitate transit in the largest areas, it appears likely that in the future greater reliance will be placed on the family car or cars.

CBD's are not likely to attain their former dominant position, but they may be able at least to decelerate their losses. Factors which may aid this process include urban renewal, large luxury apartments, growing suburban congestion, and reaction to lengthening commuting trips. The success of downtown retailers will depend on a combination of private and public actions which are likely to bring varying results in different areas.

PROJECTIONS OF THE COMPREHENSIVE TRANSPORTATION STUDIES

Concerned with the future of the CBD, we reviewed the forecasts of 30 available comprehensive transportation surveys. These studies, with target year projections varying from 1975 through 1990, were generally centered on 1980. They indicated an increase of approximately 500,000 workers in all industries in the CBD, however defined, over approximately a 20-yr forecast period, a small absolute gain but a decline in relative importance. Only 5 of the 30 areas reviewed expect any gain in the relative position of the CBD in relation to the study area. However, only 3 areas actually expected absolute decreases. In general, the 30 areas anticipated a 3 percent period decline in the relative position of the CBD employment. It is clear that if these predictions prove correct considerable strengthening in CBD projections from the trends presented in this paper will have to take place. As previously indicated, the factors operating in both directions are strong, and it is likely that public policy will play a major role in determining the correctness of these forecasts (Table 6).

TRANSPORTATION IMPLICATIONS

Both the postwar employment trend in major metropolitan areas and the data from the transportation surveys portend, in general, a heavy increase in work travel in the suburbs and a relatively small increase in travel toward the CBD and central cities. Nevertheless, continuation of the trend toward private automotive travel would further increase the central city congestion.

As Meyer, Kain and Wohl have demonstrated (2), there is no reason to believe that the existence of a good transit system will delay the process of decentralization. Quite

TABLE 6

FORECAST TREND IN CBD EMPLOYMENT ACCORDING TO URBAN TRANSPORTATION STUDIES[a]

Study Area and Size Group[b]	Base Year	Workers in Study Area	Workers in CBD		Target Year	Workers in Study Area	Workers in CBD		Change in CBD	
			Percent	Number			Percent	Number	Percentage Points	Number
Over 1,000,000										
Los Angeles, Calif.	1961	3,046,975	4	130,000[c]	1980	4,706,759	6	282,407	+2	+152,407
Chicago, Ill.	1956	2,140,000	14	299,600	1980	3,250,000	8	260,000	-6	-39,600
Baltimore, Md.	1962	602,111	13	78,274	1980	833,603	11	91,696	-2	+13,422
Washington, D. C.	1955	736,000	43	316,480	1975	913,500	39	356,265	-4	+39,785
Houston, Tex.	1960	409,930	29	118,880	1980	797,000	25	199,250	-4	+80,370
Seattle, Wash.	1961	463,386	17	78,776	1985	795,911	18	143,264	+1	+64,488
Total		7,398,402	14	1,022,010		11,296,773	12	1,332,882	-2	+310,872
500,000 to 1,000,000										
Kansas City, Mo.	1957	340,052	19	64,610	1980	465,000	18	83,700	-1	+19,090
New Orleans, La.	1960	320,770	42	134,723	1980	502,889	32	160,924	-10	+26,201
Denver, Colo.	1959	254,000	22	55,880	1980	496,500	22	109,230	0	+53,350
Hartford, Conn.	1960	258,880	11	28,476	1990	517,645	8	41,411	-3	12,935
Total		1,173,702	24	283,689		1,982,034	20	395,265	-4	+111,576
250,000 to 500,000										
Nashville, Tenn.	1959	161,126	21	33,836	1980	214,576	19	40,769	-2	+6,933
Albuquerque, N. M.	1962	100,000	9	9,000	1985	300,000	1	3,000	-8	-6,000
El Paso, Tex.	1958	91,316	15	13,697	1980	149,500	14	20,930	-1	+7,233
Knoxville, Tenn.	1962	89,146	21	18,721	1982	117,598	22	25,871	+1	+7,150
Total		441,588	17	75,254		781,674	12	90,570	-4	126,892
100,000 to 250,000										
Tucson, Ariz.	1960	67,350	14	9,429	1980	203,000	7	14,210	-7	+4,781
Chattanooga, Tenn.	1960	96,981	17	16,487	1980	138,638	12	16,636	-5	+149
Austin, Tex.	1962	91,100	24	21,864	1982	174,400	24	41,856	0	+19,992
Waterbury, Conn.	1962	67,360	17	11,451	1990	97,672	12	11,720	-5	+269
Erie, Pa.	1962	64,987	16	10,398	1990	100,000	14	14,000	-2	+3,602
Madison, Wis.	1962	67,326	18	12,119	1985	137,919	22	30,342	+4	+18,223
Portland, Me.	1963	55,097	18	9,917	1985	64,996	13	8,449	-5	-1,468
Lexington, Ky.	1961	40,315	24	9,676	1980	76,670	13	9,967	-11	+291
Topeka, Kan.	1958	45,600	37	16,872	1980	73,291	35	25,651	-2	+8,779
Springfield, Mo.	1961	40,956	28	11,468	1980	75,785	22	16,673	-6	+5,205
Total		637,072	20	129,681		1,142,371	17	189,504	-3	59,823
Under 100,000										
St. Joseph, Mo.	1962	30,804	33	10,165	1982	36,731	31	11,386	-2	+1,221
Sioux Falls, S. D.	1963	28,863	27	7,793	1985	48,954	23	11,259	-4	+3,466
Great Falls, Mont.	1961	25,400	26	6,604	1981	37,500	25	9,375	-1	+2,771
Joplin, Mo.	1960	14,628	28	4,096	1980	17,209	28	4,818	0	+722
Pittsburg, Kan.	1961	6,400	33	2,112	1980	8,060	36	2,902	+3	+790
Gainesville, Fla.	1960	12,762	23	2,935	1980	16,886	26	4,390	+3	+1,455
Total		118,857	28	33,705		165,340	27	44,130	-1	+10,425
Grand Total		9,769,621	16	1,544,339		15,368,192	13	2,052,351	-3	508,012

[a]Source: Office of Planning—Urban Transportation Studies.
[b]Ranked by population in the study area in the base year.
[c]Estimates from Parking in City Center, Wilbur Smith and Associates.

the reverse, the areas with the best transit appear to have experienced the most rapid losses in their central cities with the possible exception of New York (4).

However, in the future the heaviest increases in traffic are likely to occur in the older suburbs where highway planners have generally been unable to keep pace with demand. A survey of satellite communities in the Washington-Baltimore region, for example, indicates bumper-to-bumper traffic in far-out Prince William County (Va.) along US 1 in the Woodbridge area. Commuters have been experiencing difficulty in getting through densely populated suburbs such as Silver Spring and Bethesda, Md., and Seven Corners, Arlington, and Alexandria, Va., for some time.

The extent to which satellite cities such as Columbia, Md., and Reston, Va., may provide relief by providing jobs close to residence remains to be demonstrated. The growing interest in the satellite city concept by large American corporations such as General Electric, Goodyear, and Humble Oil, to mention a few, may represent a major new development, but it is still far too early to hazard an educated guess. The devel-

opment will bear watching, especially in the rapidly growing Los Angeles and Washington areas.

In any case, it appears likely that both downtown and suburban traffic will increase, and over-concentration on the problems of either area would be a mistake. At the present time, observed trends indicate that perhaps further attention to the rapidly mounting traffic problem of the suburbs is the priority problem.[3]

REFERENCES

1. McMillan, Samuel C. Recent Trends in the Decentralization of Retail Trade. Traffic Quarterly, June 1962.
2. Meyer, J. R., Kain, J. F., and Wohl, M. The Urban Transportation Problem. Harvard Univ. Press, Cambridge, Mass., pp. 47-54, 1965.

[3]The original manuscript of this paper included an Appendix containing detailed statistics concerning the 24 largest SMSA's (Appendix Tables 2-6). Copies may be obtained from the Highway Research Board at cost of reproduction and handling—Supplement XS-9 (Highway Research Record 187), approximately 10 pages.