REPORT

TO

THE LOS ANGELES METROPOLITAN TRANSIT AUTHORITY

ON

A MONORAIL RAPID TRANSIT LINE

FOR

LOS ANGELES

PART II

TRAFFIC, POPULATION AND ECONOMIC DATA

JANUARY 1954

RUSCARDON ENGINEERS

LOS ANGELES CALIFORNIA

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ENGINEERING - MANAGEMENT

RUSH T. SILL, A.I.M.E. – A.S.C.E.
DONALD M. BAKER, M.AM.SOC.C.E.

448 SOUTH HILL STREET
LOS ANGELES 13, CALIFORNIA
MUTUAL 5809

CABLE ADDRESS:
"RUSCARDON"
ALL CODES

January 15, 1954

Coverdale and Colpitts,
Consulting Engineers,
120 Wall Street,
New York 5, New York

Gentlemen:

We are pleased to transmit herewith our Report, covering certain matters assigned to us in our Agreement of April 15, 1953, in connection with the study, made for the Los Angeles Metropolitan Transit Authority, as to the economic feasibility of a monorail rapid transit line from the San Fernando Valley to Long Beach.

May we herewith express our pleasure in this association with you in this study, and in the cooperation which we received therein from your staff.

With kind regards, we are

Very truly yours,

RUSCARDON ENGINEERS

DMB:el

By Donald M. Baker
Donald M. Baker

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Population of Metropolitan Los Angeles as of April 1953

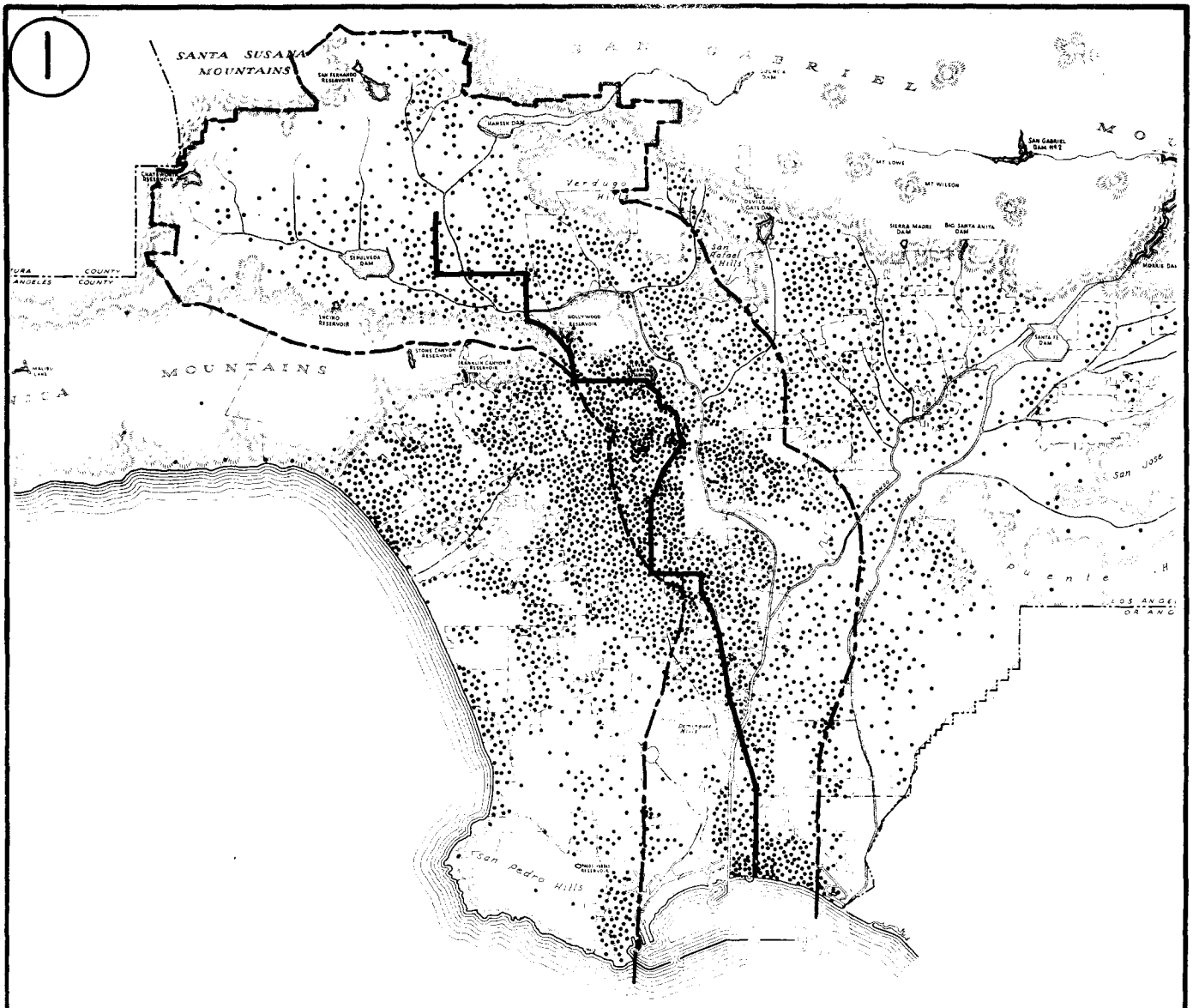
Los Angeles City	2,100,000
Other 43 Incorporated Cities	1,475,000
Remainder of Area	1,038,000
Total	4 613,000
Balance of Los Angeles County	37,000
Total - Los Angeles County	4,650,000

Source - Research Department, Los Angeles Chamber of Commerce

Los Angeles City was founded in 1781 as a Spanish Pueblo, and was incorporated in 1850, or 69 years later, with a population of 1600 persons. By 1880, The City population had increased to 11,183 persons and that of the County to 20,000; in 1900-50 years after its incorporation-the City of Los Angeles had a population of 102,489 and the County a population of 170,298 persons; in 1950-100 years after the incorporation of the City-its population was 1,970,318 and that of the County was 4,151,683 persons. A recent Federal Census made in the Fall of 1953 found the City with a population of 2,104,663, with an estimate of County population at this date, made by the Los Angeles Regional Planning Commission of 4,750,000. Until 1940, County population has ranged from 1.6 to 2.0 times that of the City of Los Angeles. In 1950, however, County population was 2.1 times that of the City and in 1953 it was nearly 2.3 times that of the City.

The City of Los Angeles has added greatly to its area as well as to its population in the past century, and is now reputed to be the largest City in point of area-in the world.

This rate of population increase-almost doubling every decade with the exception of that of 1930-1940-has created a dynamic economy in the area, which could naturally be expected to affect the pattern and structure of any large community, but the period during which large numerical increases



KEY

STUDY AREA BOUNDARY

MONORAIL ROUTE

• 1000 PERSONS

NORTH

MILES 0 5 10

SOURCES
L A COUNTY REGIONAL PLANNING COMMISSION

DISTRIBUTION OF POPULATION

COUNTY OF LOS ANGELES
JANUARY, 1951

RUSCARDON ENGINEERS 1953

FIGURE NO. 1

DISTRIBUTION OF POPULATION IN
METROPOLITAN LOS ANGELES - 1950

This Figure shows the distribution of population in Metropolitan Los Angeles as of 1950, the boundary of the Study Area - discussed hereafter- and the route of the proposed Monorail line.

The "ellipse" of heavy population density, extending from Hollywood southeasterly to Compton, is served at either end by the proposed route. The latter swerves easterly to pass through the Central Business District of Los Angeles, a focal point of a large amount of travel, thence southerly for some distance, from where it passes easterly to the industrialized area, and again southerly therefrom to Long Beach.

TABLE NO.. 1

AREA AND POPULATION
CITY OF LOS ANGELES
1850 - 1953

YEAR (Dec.31)	AREA ADDED Sq. Mi. (1)	TOTAL AREA Sq. Mi. (2)	CITY POPULATION (3)	PERSONS PER Sq. Mi. (4)
1850	**28.01	28.01	*1610	57
1859	1.20	29.21	4385	150
1895	1.41	30.62	50395	1640
1896	10.18	40.80	50395	1230
1899	2.46	43.26	102479	2370
1906	18.64	61.90	240000	3880
1909	23.26	85.16	307322	3520
1910	15.66	100.72	*319198	3160
1912	6.90	107.62	427000	3980
1915	180.59	288.21	475367	1650
1916	49.71	337.92	500000	1480
1917	13.18	351.11	533535	1515
1918	12.76	360.46	550000	1525
1919	3.41	363.87	563000	1550
1920	0.50	364.37	*576673	1585
1922	5.82	370.19	736963	1990
1923	29.73	399.92	802358	2002
1924	9.30	409.22	850143	2085
1925	5.90	415.12	1014622	2443
1926	19.14	434.26	1056983	2438
1927	6.88	441.14	1079789	2462
1928	0.15	441.29	1152806	2605
1930	0.45	441.74	*1238048	2800
1931	0.09	441.83	1255829	2840
1932	8.70	450.53	1283859	2850
1933	0.13	450.66	1281266	2842
1935	0.12	450.78	1294600	2870
1941	0.42	451.20	1544000	3380
1944	0.68	451.88	1697000	3760
1947	0.84	452.72	1840835	4025
1949	0.75	453.47	1920595	4250
1953	0.27	453.75	2100000	4650

* U.S. Census ** City Incorporated

Notes: Column 1 - City Incorporated 1850 Area - City of Los Angeles

Column 3 -*Federal Census - Other Years - Research Dept. L.A. Chamber of Commerce

the entire County of 170,000, mass transportation requirements in the city were adequately served by two electric transit systems, which later merged. During the 1900-1910 decade Henry E. Huntington built the Pacific Electric Interurban System, connecting the City of Los Angeles with all of the outlying population centers in the County and the San Fernando Valley, and extending eastward and southeasterward to San Bernardino, Riverside and Orange Counties. This system likewise served to collect and distribute freight throughout this four-county area.

By 1910 the City of Los Angeles had a population of 319,000 and a County population of 504,000. Trackage and service rendered by both local and interurban transit companies were still adequate to serve transit needs of the community. Ten years later, however, by 1920, when the City reached a population of 577,000 and the County of 936,000, rising construction and operating costs, with a continuation of pre-World War I fares made capital investment in expansion of rail transit facilities more or less unattractive. Buses were then in the development stage and provision of new facilities did not keep up with increased population and developed area. Travel distances had increased with increases in developed area, and travel time had lengthened.

By this date, however, the motor vehicle had appeared. In 1921 there was one passenger automobile for every 6.4 inhabitants of Los Angeles County. Local residents found that it was not necessary for them to live within a half mile of a transit line in order to secure adequate transportation service in their daily movements between where they lived and where they worked, shopped and played. They could use their automobile - because of local climatic conditions - for 365 days a year, and they started to do so. Settlement advanced beyond the end of rail transit lines and it was

not until the end of the 1920-1930 decade that bus service was to any degree serving these outlying areas. The increasing number of motor vehicles created congestion, slowed down schedules of transit vehicles-rail and bus-transit riders took to using their own cars, and the spiral had commenced.

Had the advent of the motor vehicle in this country occurred fifty years earlier, other large cities in the United States would undoubtedly have commenced this current trend towards sub-urbanization far earlier, and population densities therein would not be what they are today. On the other hand, had it occurred fifty years later than it did, Metropolitan Los Angeles would today have had a far higher average population density, a much smaller developed area and undoubtedly a smaller population. Occurring at the time that it did, the motor vehicle encouraged low density and widespread distribution of local population.

Cause of Local Population Growth

From a long local residence and a study of factors which have been responsible for the dynamic growth in population in Metropolitan Los Angeles, the writer is of the opinion that it is not the local climate but rather the type and kind of living which such climate allows-single family homes, with front and back yards, flowers and fruit trees, a barbecue, a two-car garage, and in many homes two cars-and proximity to ocean, mountain, desert and recreational areas-practically year around outdoor living that has caused this growth. This widespread occupancy of single family homes has created in this area what is probably the highest standard of living the world has ever seen.

Travel distances resulting from a City population of 300,000 and a County population of 500,000 did not create very serious problems of daily

movement, even with low population densities, but when the Los Angeles City population reached 1,000,000 or more, and County population double this figure, the built up area of the community had become extremely large. The problems of congestion and slower rates of movement began to be acutely felt.

So far, however, this condition has not resulted in a cessation of population growth, as is evidenced by an increase in population in Los Angeles County during the past $3\frac{1}{2}$ years of around 600,000 persons, but it has resulted in far more time being spent in daily movement between place of residence and place of work.

Retail stores have moved out to the people, as is evidenced by the widespread distribution of substantial shopping centers in the material shown herein. Industry, however, has not to any extent changed its general location, and the time required for people, particularly those employed in industry, to travel from where they live to where they work, has increased substantially.

Freeways as a Solution of Transportation Needs

Much talk has occurred over the past ten or fifteen years as to the advisability of constructing a system of freeways throughout Metropolitan Los Angeles to provide a means of movement within the area, but progress in this construction has been very slow. The Arroyo Seco Freeway connecting Pasadena with Downtown Los Angeles was completed in the latter part of the 1930-1940 decade, and it is expected that the Hollywood Freeway connecting the San Fernando Valley to Downtown Los Angeles will be open to through traffic early in 1954. The Ramona and Santa Ana Freeway should be completed within the next two or three years. However, these Freeways will not in any way serve the entire transportation needs of the community, as

they already are now approaching congestion in the sections where they have already been opened to travel.

The method of financing the construction of freeways in this area by the State Highway Commission s on a "Pay as You Go" basis, which depends upon the annual allocation from gasoline taxes, by the State, for their construction. This method of financing cannot, because of inadequacy of funds, provide any adequate or extensive system of freeways in this area short of the next 25 or more years. Unless some other method of financing is developed, it is not believed that freeway construction will begin to keep pace with increasing population and resultant motor vehicle registration.

Factors Necessary to Maintain Future Growth of Population and Present Living Standards

To maintain anything approaching past rates of population growth in the area-until a point of saturation occurs-two things are necessary, (a) the single family residential characteristic of local living must be maintained, by the shortening of the time of daily travel between place of residence and place of work to a reasonable figure, and (b), local residents must have the opportunity to earn their living when residing here.

The first requirement will be served, at least within a portion of the area, should the proposed monorail facility be constructed. As to the opportunity to earn a living, this in the last analysis depends upon the availibility of jobs in industry. The existence of such jobs, also in the last analysis, depends upon the existence of markets for local products-agricultural, mineral and industrial.

Los Angeles County is today, and has been for many years, the leading agricultural County in the United States in value of its agricultural products, largely because of the high priced citrus, nuts and field crops raised here. In time, with land use changes from agricultural to residential and industrial purposes, this present ranking will probably be lost, but for many years it can be expected to continue at a high level since land which produces agricultural crops of highest unit value per acre will be the last to change to use for other purposes.

Petroleum is the principle local mineral product, although there is an increasing production of non-metallic minerals in the desert back country. On-shore petroleum production in the area has probably passed its peak. Recent investigations indicate, however, the possibility of larger off-shore reserves available for production equal in volume to the original reserves in the Los Angeles Basin. The Tidelands Oil contrcversy has so far limited off-shore activities to study and investigation, but if and when this controversy is settled, it is expected that an active drilling campaign would be initiated to develop this off-shore oil.

Industrial employment depends essentially upon markets for the products of local industry, and to support a substantial amount of such industry, distant as well as local markets must exist. Metropolitan Los Angeles, located at a considerable distance from the center of population in the United States, is itself a rapidly growing market as are the Pacific Coast and Southwestern States. Areas rapidly growing in population absorb considerably more industrial products per capita than are absorbed in more stable areas.

also large resources of fuel and power, and an efficient labor force. It

can be expected that, as soon as conditions settle down in the Orient, even if this requires several decades to occur, large demands will be made upon this local area for its industrial products.

Available Data

Probably in no other large community in this country has more data been assembled or collected, for a wide variety of purposes, than in Metropolitan Los Angeles. Were it not for the availability of such data, this Report could not have been made within the time available.

While all data utilized was of recent date, not all of it was as of a single date. Also, coming from numerous sources, it was found that in some instances data on the same subject varied slightly. In no instance, however, was this slight difference of sufficient magnitude to effect conclusions reached.

The rapidly growing population of the area resulted in the greatest differences in basic data. The county population increased some 600,000, or 14.5 per cent between the 1950 Federal Census, taken in April of that year, and the most recent estimate was made by the County Regional Planning Commission, as of the Fall of 1953. Consequently, certain derived data based upon 1950 Census figures may be somewhat low. Wherever it was possible however, to make reasonable estimates of quantities as of 1953, this was done.

Acknowledgements

To name separately every agency or firm that cooperated in this study, particularly those who assisted in furnishing information upon which the Origin and Destination Study was made, would require pages. The following agencies and their staffs, however, deserve special acknowledge-

ment for large volumes of data and information furnished and cooperation rendered - Federal Bureau of the Census, Federal Superintendent of Buildings, Assistant Postmaster, Los Angeles County Regional Planning Commission, Los Angeles City Civil Service Commission, Los Angeles City Planning Commission, Los Angeles City Engineer's Office, Research Department of the Los Angeles Chamber of Commerce, Research Department of the Security First National Bank of Los Angeles, State Highway Commission, County Road Department, County Administrator's Office, Automobile Club of Southern California, Los Angeles Metropolitan Traffic Association, Downtown Business Men's Association, Building Owners and Managers Association, Pacific Electric Railway, Pacific Telephone and Telegraph Company, Los Angeles Transit Lines, California Public Utilities Commission, Los Angeles Department of Public Utilities and Transportation, and the Los Angeles Metropolitan Transit Authority.

II

THE STUDY AREA

Under the Enabling Statute creating the Los Angeles Metropolitan Transit Authority, the latter was authorized to construct a monorail line extending from the San Fernando Valley to the Pacific Ocean, the location of this line being limited, on the Coastal Plain, to within a radius of 4 miles on either side of the Los Angeles River. The Authority was likewise authorized, under certain conditions, to operate buses within the above area. Hence, it became necessary to determine an area whose population, workers and shoppers would be served by the proposed facility and such feeder buses or private automobiles as would be used by potential riders.

Area Selected

An area was selected which embraced the San Fernando Valley, including the Cities of Burbank, Glendale and San Fernando, and which extended somewhat outside of the 4 mile radius specified in the Enabling Act, when it reached the Coastal Plain. This area included population, present and future, which it was felt would be reasonably served by the proposed facility and feeder bus lines. It totalled 330,011 acres-515.6 square miles-or 46.9 per cent of the area designated as Metropolitan Los Angeles.

In outlining the Study Area, as it is termed herein, boundaries of Postal Zones or Post Office Delivery Areas (described hereafter) were used as exterior boundaries. In establishing these latter, there was taken into consideration present daily movement of population, by transit facilities, and by private automobiles on competing highways, whereby people travelled from their place of residence to work and shop. The boundary of the Study Area was limited to an area outside of which people would probably use

other means of transportation than the proposed monorail line.

The boundaries of this Study Area are shown on Plate III. Its population, discussed later in this Report, and the relation of such population to that of the County of Los Angeles, are shown in the following tabulation:

Census of	Population		% of Population
	Los Angeles County	Study Area	in Study Area, of County Population
1930	2,208,492	1,334,100	60.4
1940	2,785,643	1,626,937	58.4
1950	4,151,687	2,284,363	55.0
1953*	4,650,000	2,473,329	53.3

* Estimate of Los Angeles County Regional Planning Commission for April 1953

This Study Area has contained, at least since 1930, more than one-half of the population in Los Angeles County, although the relative proportion of such population to that of the County has decreased slightly since 1930. It is believed that the provision of better transportation within the Area will increase this ratio somewhat in forthcoming years.

Postal Zones

In the 1940 and 1950 Federal Censuses Los Angeles County was divided into a series of "Census Tracts", these tracts being areas which had a population which ranged, in 1940, from 3000 up to 6000 or 7000. There were 580 of these tracts in the 1940 Census. Increase in population in various sections of the County has caused the sub-division of many of these tracts, and in the 1950 Census they numbered somewhat in excess of 700.

Various reports issued by the Bureau of Census for its 1940 and 1950 Censuses contain statistical information-in addition to population-pertaining

to each of these Census Tracts. This information has proved to be very valuable in the present Study.

Shortly after 1940, the Research Committee of the Los Angeles Chamber of Commerce embarked upon a project to determine and segregate the population in the 1930 Census to Census Tracts as they existed in 1940. This was accomplished, and at the present time there are available "Tracted" population figures for the County for the three Census years, 1930, 1940 and 1950. There has been some slight shifting of Census Tract boundaries in the 1950 Census from those of the 1940 Census, but for all practical purposes such tract boundaries may be considered comparable for all three Censuses.

In the Origin and Destination Study (discussed hereafter) it was found necessary to allocate places of work and places of residences in accordance with information available to both employers and employees. Few people in the County know the number of the Census Tract in which they live, but practically every employer and employed person is familiar with his Postal Zone or Post Office Delivery District. As a result, it was determined to use these latter two Units (hereinafter referred to "Postal Zones") as a basis for studies of population and of travel patterns described in this Report.

The City of Los Angeles is divided into Postal Zones south of the Santa Monica Mountains, and the Cities of Glendale and Long Beach are likewise zoned. The San Fernando Valley and the remainder of the Study Area is not so sub-divided, but is divided into areas which are tributary to local Post Offices and which are known as Post Office Distribution Districts. In certain of the smaller Cities on the Coastal Plain, the City itself was considered as a Postal Zone.

This study resulted in the development of 80 Postal Zones distributed throughout the Study Area. Data pertaining to past and present population,

to location of industrial establishments, and other employing agencies, and to place of residence of employees, has been distributed amongst these 80 Postal Zones. These Zones are also shown on Plate III.

III

POPULATION

Los Angeles County

The Federal Census of 1880 found a population of 33,381 in Los Angeles County. Seventy years later, the 1950 Census found a County population of 4,151,687, or 124.5 times the population 70 years previous. The Regional Planning Commission estimates the County population-as of the Fall of 1953-to be 4,750,000, or 142.5 times the 1880 population.

To forecast future population in an area which has for so long been functioning under a dynamic economy is a far more difficult task than to forecast future population in more stabilized communities in the United States. Table No. 2 and Figure No. 2 show Census population of Los Angeles County from 1880 to 1950, and in Figure No. 2 the County population has been projected to the year 1980.

Past and Present Population of Postal Zones

The boundaries of the various Postal Zones within the Study Area were not coterminous with boundaries of Census Tracts, and in practically every case, except where the smaller incorporated Cities were involved, Postal Zone boundaries cut across Census Tract boundaries. In these Census Tracts estimates were made of the proportionate area of each Census Tract within such Postal Zone, and the area and population of the Census Tract within such Zone for the 1930-1940 and 1950 Censuses were estimated. From these the total area of the Postal Zone and its total population for the above three dates was estimated.

The entire Study Area was then divided into 13 Groups of Postal Zones, all of which, from local knowledge, had more or less similar characteristics as to population densities and rates of population increase.

(2)

PAST AND ESTIMATED FUTURE POPULATION OF LOS ANGELES COUNTY, CALIFORNIA

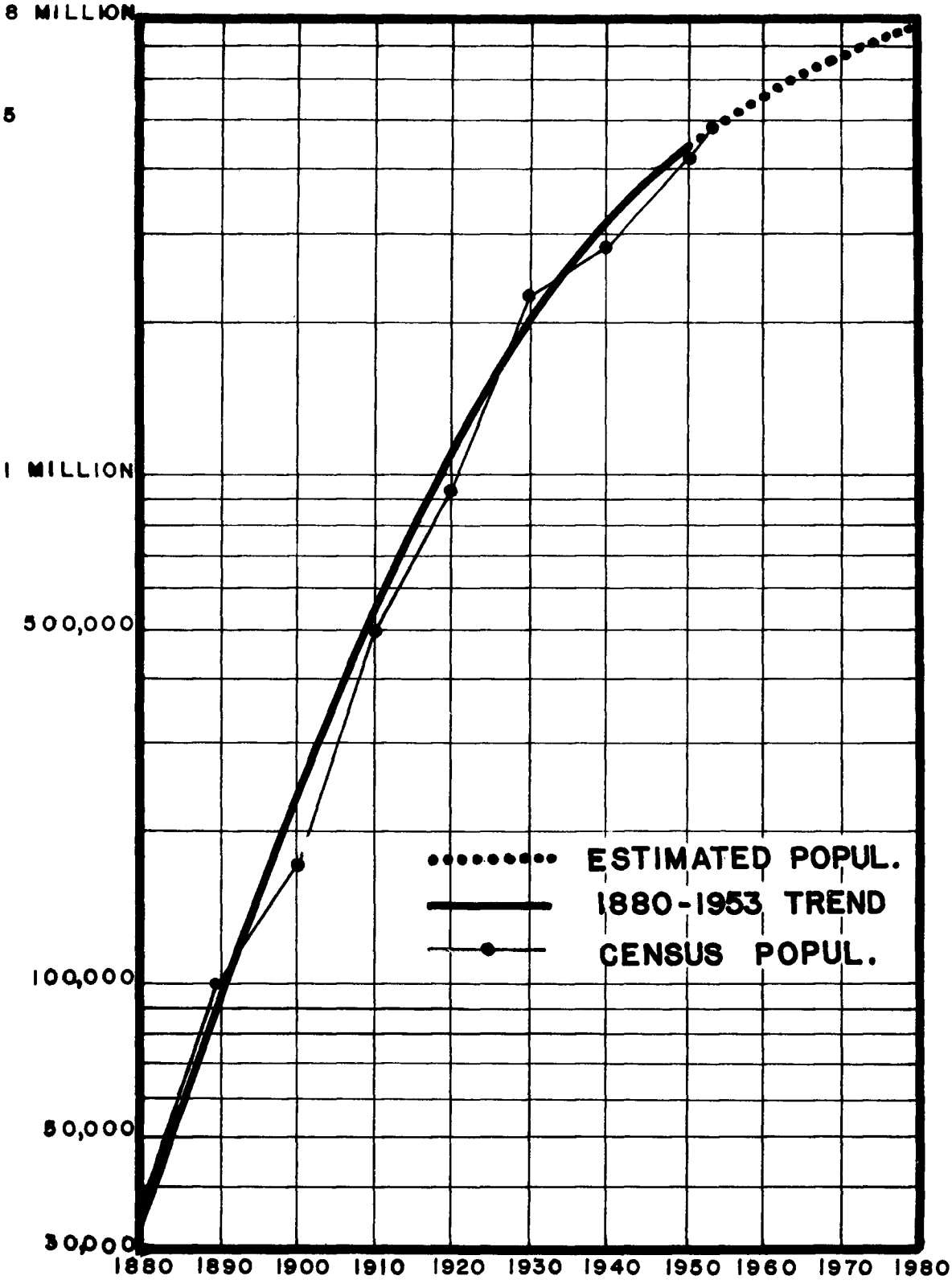


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FIGURE NO. 2

PAST AND ESTIMATED FUTURE POPULATION
LOS ANGELES COUNTY-1880 TO 1980

The writer has found, in numerous studies of population in Southern California, that the percentage rate of population increase each decade alternates, a decade with a percentage rate greater than the general trend being followed by one with a rate less than such trend.

It will be noted that the rate of increase, indicated by the slope of the line connecting points showing Census population, has this characteristic. Rate of increase for the decade 1880-1890 is greater than the rate of trend increase, that for the decade 1890-1900 is less, etc., etc. The smallest percentage rate of population increase occurred during the 1930-1940 decade, the Depression years.

As with population increases in all large Metropolitan areas, the trend curve from 1880 to 1950 has a decreasing rate of increase with every decade. Projected to the year 1980, the following are estimates of future County population -

Census of 1960	5,500,000
1970	6,600,000
1980	7,500,000

These are believed to be reasonable figures, provided that the present single family residential living characteristic can be maintained, by provision of adequate mass rapid transit facilities and that no serious economic disturbance nr international conflict occurs within this future period.

If the above trend curve were continued for another two decades, to the year 2000, a County population of the order of 8,300,000 might be expected in 1990 and of the order of 9,000,000 by the year 2000. This, however, in the opinion of the writer is too far in the future to estimate, with any degree of assurance, the population of a dynamic community such as is Metropolitan Los Angeles. See Table No. 2

TABLE NO. 2

PAST AND ESTIMATED FUTURE
POPULATION - LOS ANGELES COUNTY

CENSUS DATE	POPULATION	INCREASE DECADE NO.	IN %
1860	11333		
		3976	35.1
1870	15309		
		18072	118.0
1880	33381		
		68063	203.9
1890	101454		
		68844	67.9
1900	170298		
		333842	196.0
1910	504131		
		432324	85.8
1920	936455		
		1272037	135.8
1930	2208492		
		577151	26.1
1940	2785643		
		1366044	49.0
1950	4151687		
		1348313	32.5
1960	5500000		
		1100000	20.0
1970	6600000		
		900000	13.6
1980	7500000		

Table No. 3 presents the area in acres, population for the Census years, 1930, 1940 and 1950, and the estimated population derived from figures of the Los Angeles Regional Planning Commission for the Spring of 1953, as well as the density of population for each of the 80 Postal Zones and the average density for the 13 Groups of Postal Zones.

Future Population of Postal Zones

It is believed that the ratio of population of the Study Area to that of the County will increase somewhat in the future, and the following estimates of future population were made -

Date	County Population	Ratio Population of Study Area to County Population	Population of Study Area
1953*	4,650,000	53.3%	2,473,329
1960	5,500,000	53.4	2,937,999
1970	6,600,000	53.4	3,528,400
1980	7,500,000	56.4	4,139,000

Population for each of the Zone Groups was then estimated, taking into consideration past rates of population increases for each Zone Group, present and ultimate probable densities and general personal knowledge of the areas. Population of each Zone was then adjusted to total Zone Group population. Similar procedure was followed in estimating population of each Zone in each Zone Group. Results for each Zone and Zone Group are shown in Table No. 4.

Decentralization of Population

One of the most interesting facts encountered in this study resulted from an analysis of population increase within a 20-mile radius of Downtown Los Angeles between 1940 and 1950. Total population within this 20-mile radius in 1950 was 4,051,903 persons or 97.8 per cent of the County population as of that date. The area within this radius was divided into four quadrants

(3)

PAST AND ESTIMATED FUTURE POPULATION OF STUDY AREA BY P.O. ZONE GROUPS

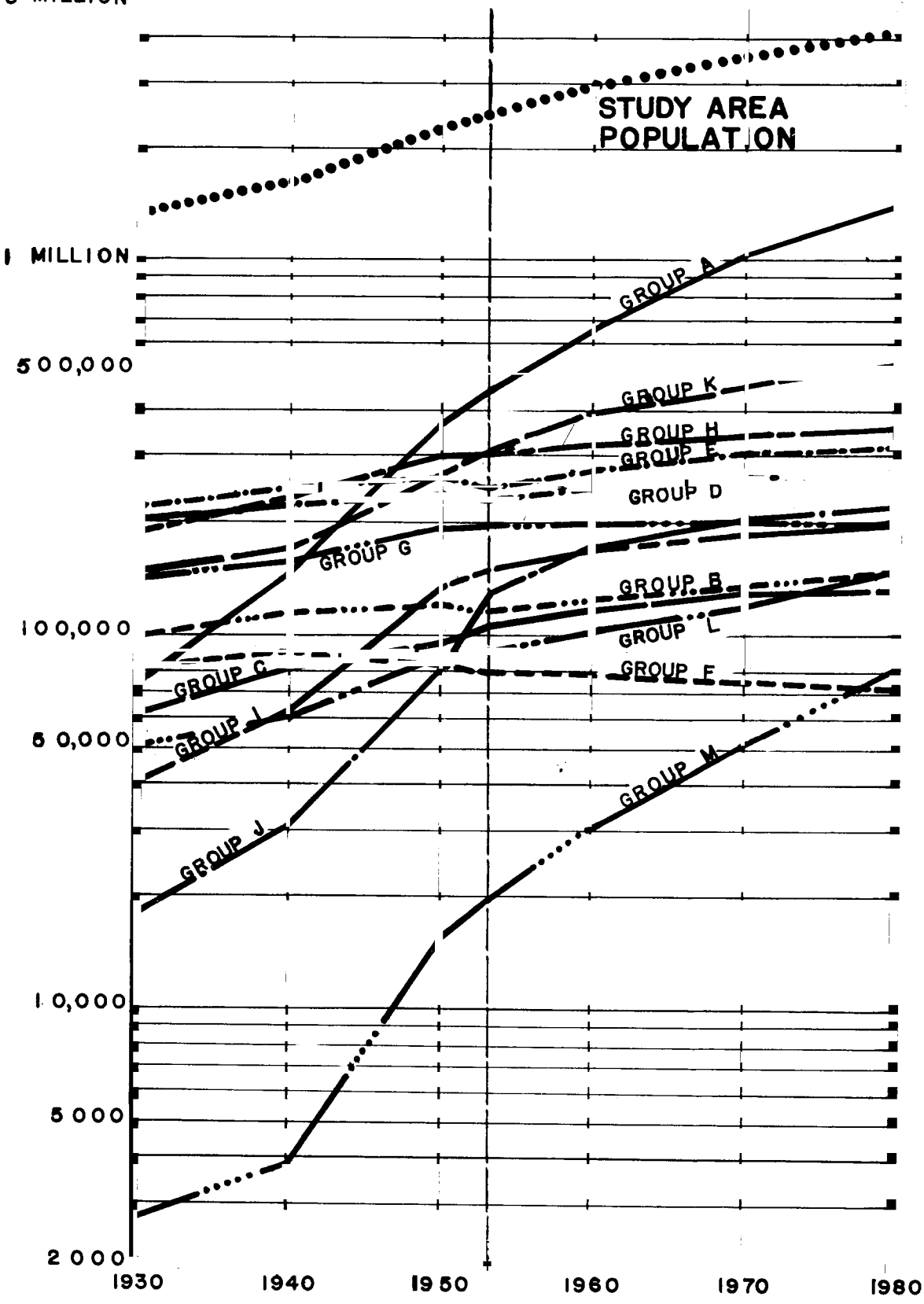

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FIGURE NO. 3

PAST AND ESTIMATED FUTURE POPULATION OF THE STUDY AREA
1930 to 1980 - BY GROUPS OF POSTAL ZONES

The locations of the groups of Postal Zones designated alphabetically on this Figure are ahown on Plate III. The slope of each curve showing population is proportionate to the percentage rate of population increase during each decade. Up until 1953, Groups A, I, J and M had the greatest rate of Population increase. Following 1953, rates, except for those of Groups A and M tend to more or less stabilize. Group F includes the Central Business District of Los Angeles, which has shown a declining population since 1940.

Percentage rate of increase for the 1940-1950 decade was as follows:

Group	1950 Population in % of 1940 Population
A	261.2
B	105.4
C	115.9
D	106.4
E	109.1
F	93.7
G	122.4
H	131.9
I	219.7
J	268.9
K	157.9
L	143.3
M	397.4
Study Area	140.4

See Tables Nos. 3 and 4

TABLE NO. 3

PAST AND PRESENT POPULATION OF
STUDY AREA - 1930 - 1953

		AREA	1930 POPULTN		1940 POPULTN		1950 POPULTN		1953 POPULTN	
		ACRES	NO.	DEN-SITY	NO.	DEN-SITY	NO.	DEN-SITY	NO.	DEN-SITY
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GROUP A										
Burbank		10704	16667	1.6	34356	3.2	78577	7.3	84591	7.9
Chatsworth		7286	735	0.1	1462	0.2	3258	0.4	4250	0.6
Canoga Park		11037	3569	0.3	5000	0.5	9509	0.9	12252	1.2
Encino		6208	980	0.2	1769	0.3	11133	1.8	14734	2.4
No. Hollywood		13968	15767	1.1	39201	2.8	91133	6.5	101287	7.3
Northridge		4503	885	0.2	1230	0.3	3152	0.7	4166	0.9
Pacoima		6813	3148	0.5	5440	0.8	19253	2.8	25661	3.8
Reseda		5390	1623	0.3	3725	0.7	14810	2.8	19365	3.6
San Fernando		26686	12756	0.5	17574	0.7	40752	1.5	51760	1.9
Sun Valley		5732	1964	0.3	4393	0.8	18687	3.3	20640	3.6
Tarzana		4170	884	0.2	1821	0.4	4390	1.1	5814	1.4
Universal City		290	51	0.2	11	0.04	7	0.02	7	0.02
Van Nuys		20124	14059	0.7	28268	1.4	79973	4.0	105214	5.2
Woodland Hills		7402	609	0.1	1025	0.1	4774	0.6	6127	0.8
Total		130313	73697	0.6	145275	1.1	379408	2.9	455868	3.5
GROUP B										
L.A Zone	27	5269	29128	5.5	34798	6.6	40311	7.7	39305	7.5
	28	6047	30522	5.0	36306	6.0	39257	6.5	37952	6.3
	29	835	19498	23.4	21300	25.5	20866	25.0	19869	23.8
	38	1058	20246	19.2	22255	21.0	20500	19.4	19328	18.3
Total		13209	99394	7.5	114659	8.7	120934	9.2	116454	8.8
GROUP C										
Glendale	1	1524	7624	5.0	11464	7.5	15148	9.9	17457	11.5
	2	1368	8054	5.9	12299	9.0	13918	10.2	16017	11.7
	3	517	6194	12.0	7172	13.9	7653	14.8	8810	17.0
	4	631	8350	13.2	9695	15.4	9980	15.8	11397	18.0
	5	1262	15242	12.1	17840	14.1	18837	14.9	21688	17.2
	6	3077	10383	3.4	13041	4.3	15948	5.2	18350	6.0
	7	2939	4465	1.5	6019	2.0	6785	2.3	7806	2.7
	8	1003	2017	2.0	4599	4.6	6986	7.0	7954	7.9
Total		12321	62329	5.1	82129	6.7	95255	7.7	109479	8.9

TABLE NO. 3 - CONTINUED

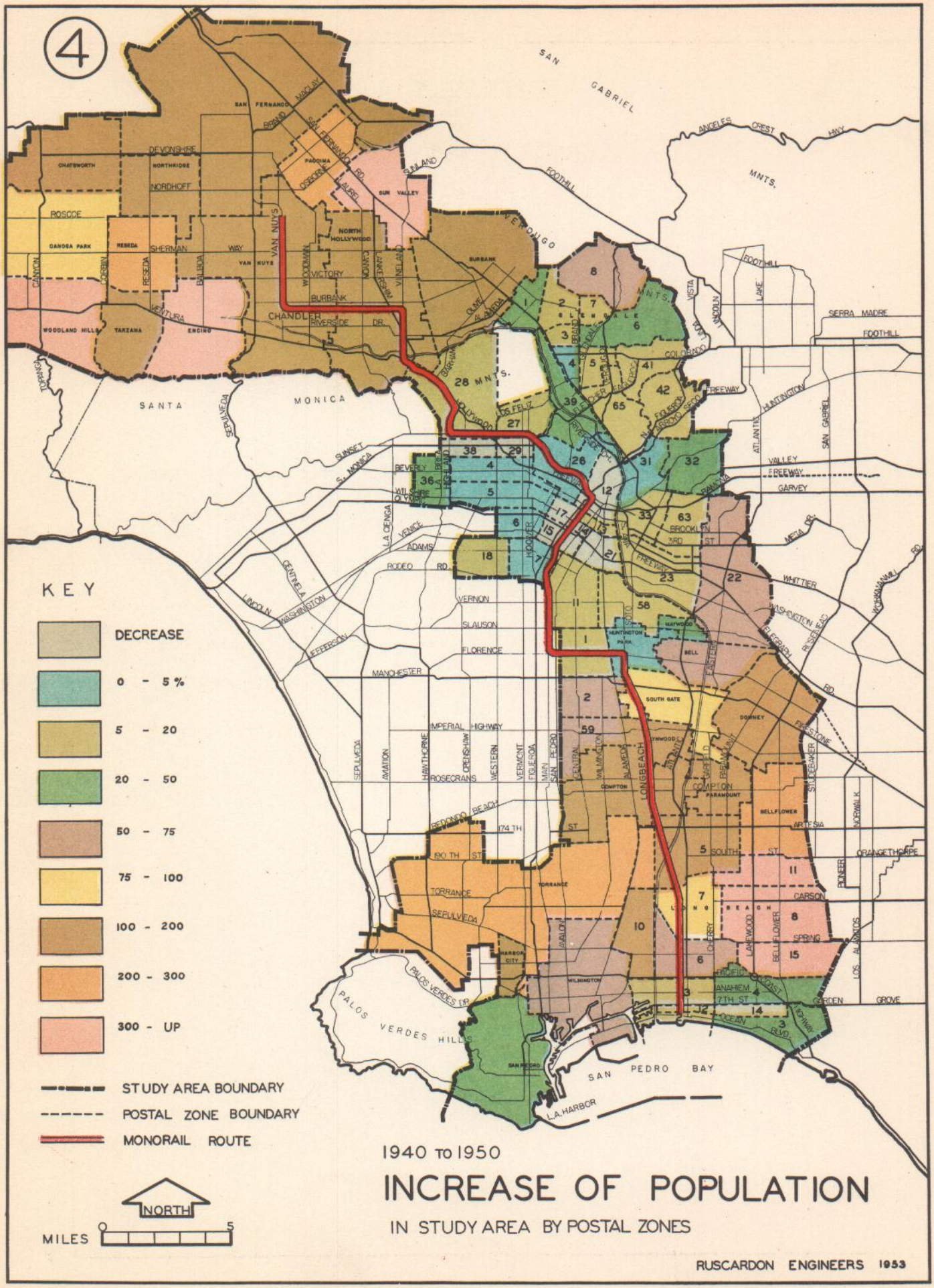
		AREA	1930 POPULTN		1940 POPULTN		1950 POPULTN		1953 POPULTN	
		ACRES	NO.	DEN-SITY	NO.	DEN-SITY	NO.	DEN-SITY	NO.	DEN-SITY
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GROUP D										
L.A.Zone	4	2132	37581	17.6	40761	19.4	40858	19.1	39362	18.4
	5	1978	40873	20.7	48786	24.7	50075	25.7	48906	24.8
	6	1066	29249	27.5	33018	31.0	33438	33.4	32118	30.1
	7	1684	39024	23.2	42283	25.4	43589	25.9	41625	24.8
	18	1942	36634	17.3	39171	20.2	44136	22.7	43267	22.4
	36	2319	17201	7.4	23308	10.1	29708	12.8	30091	13.0
Total		11121	200562	18.0	227327	20.4	241804	21.7	235369	21.2
GROUP E										
L.A.Zone	12	2065	41845	20.2	42632	20.6	39751	19.2	38000	18.4
	26	2798	48729	17.4	54469	19.4	56244	20.1	53323	19.0
	31	2410	32645	13.6	34053	14.1	35391	14.7	35456	14.7
	37	3160	13734	4.3	17669	5.6	25780	8.2	25862	8.2
	39	2806	16814	6.0	21875	7.8	27892	9.9	28322	10.1
	41	2276	15297	6.7	17633	7.7	19808	8.7	20137	8.8
	42	2770	30142	10.9	33193	12.0	35372	12.8	35307	12.8
	65	2811	21764	7.7	24487	8.7	28261	10.0	28712	10.2
Total		21096	220970	10.5	246011	11.6	268499	12.7	265119	12.6
GROUP F										
L.A.Zone	13	459	9496	20.7	9779	21.3	10485	22.8	9808	21.4
	14	258	6866	26.6	6704	26.0	6414	24.9	6728	26.0
	15	1072	28015	26.2	32042	29.9	29473	27.5	27608	25.8
	17	531	24541	46.2	27680	52.2	24699	46.5	23181	43.6
	21	1048	14944	14.2	14989	14.3	14391	13.7	13934	13.3
Total		3368	83862	24.9	91194	27.0	85462	25.4	81259	24.1
GROUP G										
L.A.Zone	22	7139	29973	4.2	39420	5.5	61475	8.6	61131	8.6
	23	3287	33956	10.3	36989	11.2	43785	13.3	43743	13.3
	33	1779	39790	22.4	40571	22.8	44432	24.9	44574	25.1
	63	2515	40896	16.2	44677	17.8	48255	19.2	48071	19.1
Total		14720	144615	9.8	161657	11.0	197947	13.4	197519	13.4

TABLE NO. 3 - CONTINUED

		AREA	1930 POPULTN		1940 POPULTN		1950 POPULTN		1953 POPULTN	
		ACRES	NO.	DEN-SITY	NO.	DEN-SITY	NO.	DEN-SITY	NO.	DEN-SITY
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GROUP H										
L.A.Zone	1	2282	31875	14.0	35655	15.6	39341	17.2	39589	17.3
	2	2273	20653	9.1	24773	10.9	40251	17.7	40773	18.0
	11	2736	63849	23.3	69892	25.6	79134	29.0	78366	28.6
	58	3929	8902	2.3	9060	2.3	10643	2.7	10663	2.7
Bell		4141	11315	2.7	25171	6.1	41527	10.0	41218	10.0
Huntington Pk.		1792	25994	14.5	29985	16.7	30598	17.1	30804	17.2
South Gate		4475	19632	4.3	26945	6.0	51116	11.4	51473	11.4
Maywood		639	6794	10.6	9097	14.2	11684	18.3	12236	19.1
Total		22267	189014	8.5	230578	10.4	304294	13.6	305122	13.7
GROUP I										
L.A.Zone	59	2244	13471	6.0	18874	8.4	31371	14.0	31709	14.1
Compton		8361	19764	2.4	31689	3.8	75742	9.0	86197	10.3
Lynwood		3069	7489	2.4	11594	3.8	29456	9.6	31875	10.4
Total		13674	40724	3.0	62157	4.6	136569	10.0	149782	11.0
GROUP J										
Bellflower		6037	6996	1.2	11774	2.0	37892	6.3	62964	10.4
Downey		8141	8004	1.0	12538	1.5	28402	3.5	41929	5.2
Paramount		2602	3145	1.2	6320	2.4	16088	6.2	23548	9.0
Total		16780	18145	1.1	30632	1.8	82382	4.9	128441	7.7
GROUP K										
Long Beach	2	536	12592	23.5	12133	22.6	14080	26.3	14378	26.8
	3	2031	15787	7.8	18739	9.2	24937	12.3	25444	12.5
	4	3745	16888	4.5	18069	4.8	23596	6.3	29476	7.9
	5	4885	12611	2.6	21247	4.4	46908	9.6	52202	10.7
	6	3061	15826	5.2	18449	6.0	29446	9.6	30396	9.9
	7	2061	2713	1.3	5649	2.7	10404	5.0	10628	5.2
	8	5313	1623	0.3	3562	0.7	18375	3.5	20088	3.8
	10	2158	3916	1.8	7983	3.7	23690	11.0	24269	11.3
	11	2351	0	0.0	0	0.0	2638	1.1	5964	2.5
	12	613	18483	30.2	18176	29.6	17005	27.8	17370	28.3
	13	3467	33414	9.6	33043	9.5	38553	11.1	39538	11.4
	14	944	11873	12.6	12344	13.1	11643	12.3	11873	12.6
	15	5458	646	0.1	674	0.1	7295	1.3	11172	3.4
Total		36623	146372	4.0	170068	4.6	268570	7.3	318468	8.7

TABLE NO. 3 - CONTINUED

	AREA ACRES	1930 POPULTN NO.	1930 POPULTN DENSITY	1940 POPULTN NO.	1940 POPULTN DENSITY	1950 POPULTN NO.	1950 POPULTN DENSITY	1953 POPULTN NO.	1953 POPULTN DENSITY
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GROUP L									
Harbor City	1714	1608	0.9	2121	1.2	6192	3.6	6729	3.9
San Pedro	13289	36363	2.7	44086	3.3	56496	4.3	57480	4.3
Wilmington	6796	13665	2.0	15205	2.2	25300	3.7	27119	4.0
Total	21799	51636	2.4	61412	2.8	87988	4.0	91328	4.2
GROUP M									
Torrance	12720	2780	0.2	3838	0.3	15251	1.2	19121	1.5
Total	12720	2780	0.2	3838	0.3	15251	1.2	19121	1.5
GRAND TOTAL	330011	1334100	4.0	1626937	4.9	2284363	6.9	2473329	7.5
L. A. County Population		2208492		2785643		4151687		4650000	
Study Area Population in % of County Population		60.4		58.4		55.0		53.3	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KEY
DECREASE
0 - 5 %
5 - 20
20 - 50
50 - 75
75 - 100
100 - 200
200 - 300
300 - UP
STUDY AREA BOUNDARY
POSTAL ZONE BOUNDARY
MONORAIL ROUTE
NORTH
MILES 0 5
1940 TO 1950
INCREASE OF POPULATION
IN STUDY AREA BY POSTAL ZONES
RUSCARDON ENGINEERS 1953
SAN GABRIEL MNTS.
SANTA MONICA
SAN PEDRO BAY
PALOS VERDES HILLS
L.A. HARBOR

FIGURE NO. 4

PERCENTAGE RATE OF INCREASE
BY POSTAL ZONES
WITHIN STUDY AREA 1940-1950

As would be expected, percentage rates of increase during this decade were the largest in those Postal Zones at either extremity of the Study Area - in the entire San Fernando Valley and in the Zones easterly and southerly of the industrial area from Vernon through Compton, with the exception of the City of Long Beach and Signal Hill.

The "core" area around the Central Business District, and some of Hollywood, showed for the most part moderate rates of increase ranging up to 10-15 per cent, but likewise showed some areas where a slight decrease in population occurred. This decrease was due to commercialization and industrialization-for the most part with light industry-of former residential areas, and also because of the taking for freeway purposes, in recent years, of substantial areas which had a high population density in 1940.

TABLE NO. 4 - CONTINUED

GROUP D		AREA ACRES	1953 POPULTN NO.	1953 POPULTN DENSITY	1960 POPULTN NO.	1960 POPULTN DENSITY	1970 POPULTN NO.	1970 POPULTN DENSITY	1980 POPULTN NO.	1980 POPULTN DENSITY
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
L. A. Zone	4	2132	39362	18.4	44600	21.0	50200	23.6	55000	25.8
	5	1978	48906	24.8	55800	28.2	63100	31.9	69000	34.9
	6	1066	32118	30.1	33200	31.1	33000	31.0	32000	30.0
	7	1684	41625	24.8	43200	25.7	42900	25.4	42000	24.9
	18	1942	43267	22.4	45700	23.6	46600	24.0	47000	24.2
	36	2319	30091	13.0	31500	13.6	34200	14.7	35000	15.1
Total		11121	235369	21.2	254000	22.8	270000	24.2	280000	25.1
GROUP E										
L.A. Zone	12	2065	38000	18.4	38900	18.8	39900	19.3	41000	19.8
	26	2798	53323	19.0	55900	20.0	59600	21.3	63000	22.5
	31	2410	35456	14.7	35900	14.9	36400	15.1	37000	15.4
	32	3160	25862	8.2	27500	8.7	29800	9.4	32000	10.1
	39	2806	28322	10.1	30700	10.9	33800	12.0	37000	13.2
	41	2276	20137	8.8	21900	9.6	24500	10.8	27000	11.9
	42	2770	35307	12.8	36900	13.3	38900	14.0	41000	14.8
	65	2811	28712	10.2	32300	11.5	37100	13.2	42000	15.0
Total		21096	265119	12.6	280000	13.3	300000	14.2	320000	15.2
GROUP F										
L.A. Zone	13	459	9808	21.4	9300	20.3	8700	19.0	8000	17.5
	14	258	6728	26.0	6300	24.4	5700	22.1	5000	19.4
	15	1072	27608	25.8	27400	25.6	27300	25.5	27000	25.1
	17	531	23181	43.6	23100	43.5	23000	43.3	23000	43.3
	21	1048	13934	13.3	13400	12.8	12700	12.1	12000	11.4
Total		3368	81259	24.1	79700	23.6	77400	23.0	75000	22.3
GROUP G										
L.A. Zone	22	7139	61131	8.6	60000	8.4	58500	8.2	57000	8.0
	23	3287	43743	13.3	42700	13.0	41400	12.6	40000	12.2
	33	1779	44574	25.1	45500	25.6	46800	26.3	48000	27.0
	63	2515	48071	19.1	49800	19.8	52400	20.8	55000	21.9
Total		14720	197519	13.4	199000	13.5	199000	13.5	200000	13.6

TABLE NO. 4 - CONTINUED

GROUP H	AREA ACRES (1)	1953 POPULTN NO. (2)	1953 POPULTN DENSITY (3)	1960 POPULTN NO. (4)	1960 POPULTN DENSITY (5)	1970 POPULTN NO. (6)	1970 POPULTN DENSITY (7)	1980 POPULTN NO. (8)	1980 POPULTN DENSITY (9)
L.A. Zone 1	2282	39589	17.3	43000	18.9	43000	18.8	45000	19.7
2	2273	40773	18.0	44700	19.7	46800	20.6	48000	21.1
11	2736	78366	28.6	77600	28.4	76000	27.8	75000	27.4
58	3929	10663	2.7	10900	2.8	10900	2.8	11000	2.8
Bell	4141	41218	10.0	46600	11.3	53000	12.8	55000	13.3
Huntington Pk.	1792	30804	17.2	35600	19.9	41900	23.4	45000	25.1
South Gate	4475	51473	11.4	56600	12.4	62800	14.0	67000	15.0
Maywood	639	12236	19.1	13000	20.4	13600	21.3	14000	21.9
Total	22267	305122	13.7	328000	14.7	348000	15.6	360000	16.2
GROUP I									
L. A. Zone 59	2244	31709	14.1	33000	14.7	35000	15.6	36000	16.0
Compton	8361	86197	10.3	99000	11.8	112000	13.4	118000	14.1
Lynwood	3069	31875	10.4	39000	12.7	43000	14.0	46000	15.0
Total	13674	149782	11.0	171000	12.5	190000	13.9	200000	14.6
GROUP J									
Bellflower	6037	62964	10.4	68000	11.2	71000	11.8	74000	12.3
Downey	8141	41929	5.2	77000	9.5	98000	12.0	115000	14.1
Paramount	2602	23548	9.0	29000	11.1	33000	12.7	36000	13.8
Total	16780	128441	7.7	174000	10.4	202000	12.0	225000	13.4
GROUP K									
Long Beach 2	536	14378	26.8	18500	34.5	18800	35.1	19000	35.5
3	2031	25444	12.5	37500	18.5	51800	25.5	61000	20.0
4	3745	29476	7.9	35700	9.6	43800	11.7	45000	12.0
5	4885	52202	10.7	62400	12.8	67500	13.8	69000	14.1
6	3061	30396	9.9	34400	11.2	36500	11.9	37000	12.1
7	2061	10628	5.2	18300	8.9	19700	9.6	21000	10.2
8	5313	20088	3.8	34400	6.5	49900	9.4	64000	12.0
10	2158	24269	11.3	27400	12.7	27700	12.7	28000	13.0
11	2351	5964	2.5	17600	7.5	26700	11.4	31000	13.2
12	613	17370	28.3	19300	31.5	19700	32.1	20000	32.6
13	3467	39538	11.4	43400	12.5	45500	13.1	47000	13.6
14	944	11873	12.6	12600	13.4	12800	13.6	13000	13.8
15	5458	11172	3.4	35500	6.5	47600	8.7	65000	11.9
Total	36623	318468	8.7	397000	10.8	468000	12.8	520000	14.2

TABLE NO. 4 - CONTINUED

GROUP L	AREA ACRES (1)	1953 POPULTN NO. (2)	1953 POPULTN DENSITY (3)	1960 POPULTN NO. (4)	1960 POPULTN DENSITY (5)	1970 POPULTN NO. (6)	1970 POPULTN DENSITY (7)	1980 POPULTN NO. (8)	1980 POPULTN DENSITY (9)
Harbor City	1714	6729	3.9	8300	4.8	12500	7.3	17000	9.9
San Pedro	13289	57480	4.3	63300	4.8	76400	5.8	92000	6.9
Wilmington	6796	27119	4.0	29400	4.3	34100	5.0	41000	6.0
Total	21799	91328	4.2	101000	4.6	123000	5.6	150000	6.9
GROUP M									
Torrance	12720	19121	1.5	32000	2.5	53000	4.3	80000	6.3
Total	12720	19121	1.5	32000	2.5	53000	4.3	80000	6.3
GRAND TOTAL	330011	2473329	7.5	2937700	8.9	3528400	10.7	4139000	12.5
L. A. County Population		4650000		5500000		6600000		7500000	
Study Area Population in % of County Population		53.3		53.4		53.4		56.4	

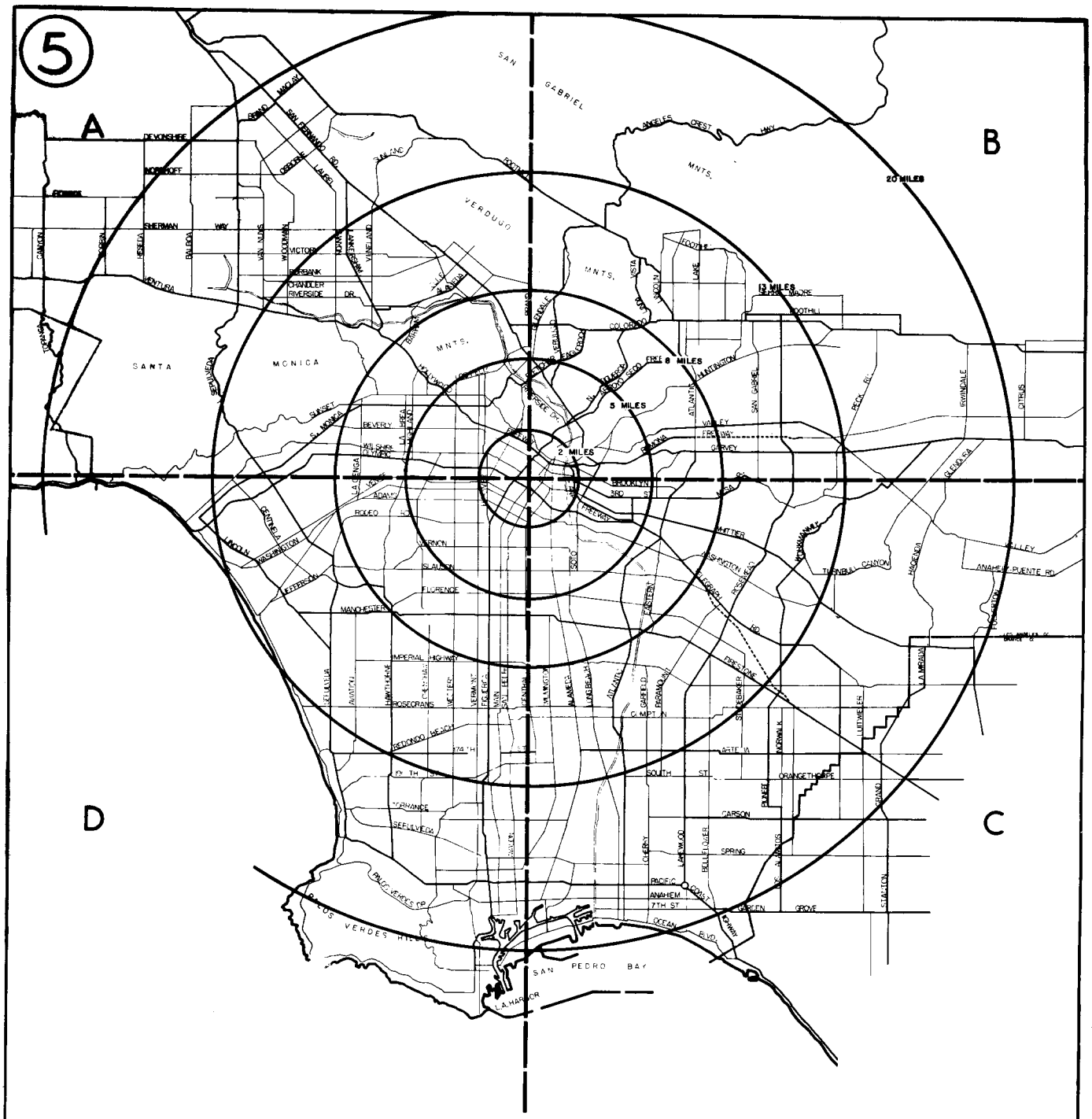
and each quadrant was divided into Zones or Sectors of various radii, 2,5,8,13 and 20 miles, from the center of Downtown Los Angeles. These quadrants and zones are shown on Figure No. 5, with the area and population of each Zone within each quadrant, total area, and also population density in persons per acre for the Census years 1930, 1940 and 1950 are likewise given in Table No. 5.

Densities outside of the 8-mile radius are still very low, and encourage this trend towards single family residential living. That it is continuing is borne out by data collected by the Los Angeles Regional Planning Commission. At the present time 66 per cent of the residential family units in Los Angeles County are single family in character, and of family units constructed between 1950 and the present time, 77 per cent were single family in character.

Population Density

Metropolitan Los Angeles has always been characterized by a low density of population. In the Spring of 1953, with a total County population of 4,650,000 - 98 per cent of which lived within a 20-mile radius of Downtown Los Angeles, the average population density of the area was 6.5 persons per acre. The density of the Study Area was slightly in excess of this figure, being 7.5 persons per acre.

Of the 80 Postal Zones included in the Study Area, 13 had a population density in excess of 20 persons per acre. The total population of these 13 Zones in the Spring of 1953 was 407,798 persons, or 16.5 per cent of the total population of the Area. The highest population density within the Study Area -43.6 persons per acre- occurred in Postal Zone 17, in the City of Los Angeles, as of the Spring of 1953. There was one Postal Zone having a population density in excess of 30 persons per acre at that time, and the



QUADRANT MAP

FOR LOS ANGELES COUNTY

RUSCARDON ENGINEERS 1953

FIGURE NO. 5

QUADRANTS AND SECTORS WITHIN A 20-MILE RADIUS
OF DOWNTOWN LOS ANGELES

This map is to be used in connection with Table No. 5, which presents the changing distribution of population within a 20-mile radius of Downtown Los Angeles as of 1930-1940 and 1950.

Total population as of 1950 was fairly well distributed amongst the four quadrants, ranging from 818,553, or 20.4 per cent of the total population, within the 20-mile radius in the Northeast Quadrant, to 1,114,478 or 27.5 per cent of this total, in the Southwest Quadrant. Population increase during this period was the least in the Northeast Quadrant, being 232,280 or 17.5 per cent of the total increase, and the greatest in the Southeast Quadrant, being 348,746, or 26.3 per cent.

Population densities in 1950 ranged from 4.5 persons per acre in the Northwest Quadrant to 8.4 persons per acre in the Southwest Quadrant. The average density for the entire area within the 20-mile radius was 5.6 persons per acre(areas for which population density was computed included all hill and mountain, as well as valley land within each Quadrant and Sector.)

The most significant facts developed in this study were -

a. In 1930, 63.2 per cent of the total population within the 20-mile radius lived within an 8-mile radius. By 1940, this percentage had dropped to 58.5, and by 1950 it had dropped to 45.1.

b. Of the total population increase between 1940 and 1950 of 1,327,438 within this 20-mile radius, 1,090,666 or 82.2 per cent(practically 5 out of 6) occurred outside of the 8-mile radius.

c. Should this trend in decentralization of population increase during the 1950-1960 decade-and there is every reason to believe that it will-provided adequate transportation is provided, population increase during the coming decade outside of the 8-mile radius can be expected to be somewhat in excess of 1,000,000 persons, and total population outside of this radius by 1960 can be expected to be of the order of 3-$\frac{1}{4}$ million people, or about 60 per cent of total population within the 20-mile radius.

TABLE NO. 5

POPULATION CHANGES BY QUANDRANTS 1930 - 40 - 50
WITHIN VARIOUS RADII FROM CENTER OF CITY OF LOS ANGELES

RADII MILES	AREA ACRES (a)	1930 POPULATION NO.	1930 DENSITY*	INCREASE 1930-40 IN POPULATION NO.	INCREASE 1930-40 %	1940 POPULATION NO.	1940 DENSITY*	INCREASE 1940-50 IN POPULATION NO.	INCREASE 1940-50 %	1950 POPULATION NO.	1950 DENSITY*
A. NORTH WEST QUADRANT											
0--2	1969	68698	34.9	9386	13.7	78084	39.7	-2882	-3.7	75202	38.2
2 -5	8423	154996	18.4	22305	14.4	177301	21.0	2865	1.6	180186	21.4
5 -8	20100	170069	8.5	49697	28.2	219766	10.9	22328	10.1	242094	12.1
8 13	49262	86902	1.8	73900	85.0	160802	3.3	125397	78.0	286199	5.8
13-20	153689	51163	0.3	41779	81.6	92942	0.6	173051	186.0	265993	1.7
Total	233443	531828	2.3	197067	37.0	728895	3.1	320759	44.0	1049674	4.5
B. NORTH EAST QUADRANT											
0 2	1935	46092	23.8	989	2.1	47081	24.3	-2860	-6.1	44221	22.8
2--5	10873	109488	10.1	6783	6.2	116271	10.7	15805	13.6	132076	12.2
5--8	21071	140615	6.7	28817	20.4	169432	8.0	40572	24.0	210004	10.0
8-13	59853	149658	2.5	56912	38.0	206570	3.5	121876	59.0	328446	5.5
13-20	48363	36614	0.8	10305	28.2	46919	1.0	56887	121.3	103806	2.2
Total	142095	482467	3.4	103806	21.7	586273	4.1	232280	39.6	818553	5.8
C. SOUTH EAST QUADRANT											
0--2	2377	30222	12.7	-1536	-5.1	28686	12.1	-163	-0.6	28523	12.0
2--5	9615	131215	13.7	10398	7.9	141613	14.7	16234	11.5	157847	16.9
5--8	19684	110453	5.6	39360	35.6	149813	7.6	75596	50.5	225409	11.5
8-13	43796	59209	1.4	31928	54.0	91137	2.1	147243	162.0	238380	5.5
13-20	136294	194199	1.4	38117	19.0	232316	1.7	186743	80.4	419059	3.1
Total	211766	525298	2.5	118267	22.5	643565	3.0	425653	66.2	1069218	5.0

Note: (a) Area given is that of Census Tracts whose outer boundaries most closely follow quadrant and circumference lines.

* - Density in Persons per Acre

TABLE NO. 5 - CONTINUED

RADII MILES	AREA ACRES (a)	1930 POPULATION NO.	1930 DENSITY*	INCREASE 1930-40 IN POPULATION NO.	INCREASE 1930-40 %	1940 POPULATION NO.	1940 DENSITY*	INCREASE 1940-50 IN POPULATION NO.	INCREASE 1940-50 %	1950 POPULATION NO.	1950 DENSITY*
				D. SOUTH WEST QUADRANT							
0--2	1757	40136	22.8	6267	15.6	46403	26.4	-1365	-2.9	45038	25.6
2--5	10085	208532	20.8	17095	8.2	225627	22.5	10369	4.6	235996	23.6
5 -8	20466	151707	7 4"	41605	27.4	193312	9.4	60273	31.2	253585	12.4
8-13	52180	137809	2.6	60001	43.5	197810	3.8	204765	103.5	402575	3.9
13-20	49130	77653	1.6	24927	32.2	102580	2.1	74704	72.9	177284	3.6
Total	133618	615837	4.6	149895	24.4	765732	5.7	1348746	45.5	1114478	8.4
				TOTAL WITHIN 20 MILE RADIUS							
0--2	8038	185148	23.0	15106	8.2	200254	25.0	-7270	-3.6	192984	24.0
2--5	38996	604231	15.5	56581	9.2	660812	17.0	45273	6.8	706105	18.1
5--8	81321	572844	7.0	159479	27.9	732323	9.0	198769	27.2	931092	11.5
8-13	205091	433578	2.1	222741	51.5	656319	3.2	599281	91.2	1255600	6.1
13-20	387476	359629	0.9	115128	32.0	474757	1.2	491385	103.3	966142	2.5
Total	720922	2155430	2.9	569035	26.4	2724465	3.8	1327438	48.6	4051923	5.6

Note:

(a) Area given is that of Census Tracts whose outer boundaries most closely follow quadrant and circumference lines.

* - Density in Persons per Area.

TABLE NO. 5 - CONTINUED

SUMMARY - POPULATION INSIDE AND OUTSIDE 8-MILE RADIUS

	AREA	1930 POPULATION		INCREASE 1930-40 IN POPULATION		1940 POPULATION		INCREASE 1940-50 IN POPULATION		1950 POPULATION	
	ACRES (a)	NO.	DENSITY*	NO.	%	NO.	DENSITY*	NO.	%	NO.	DENSITY*
Inside	128355	1362223	10.6	231166	17.0	1593389	12.4	236772	14.9	1830161	14.3
Outside	592567	793207	1.3	337869	42.5	1131076	1.9	1090666	96.5	2221742	3.8
Total 20-Mile Radius	720922	2155430	2.9	569035	26.4	2724465	3.8	1327438	48.6	4051903	5.6

POPULATION OUTSIDE OF 20-MILE RADIUS

	1930 POPULATION		1940 POPULATION		1950 POPULATION	
	NO.	% TOTAL CO.	NO.	% TOTAL CO.	NO.	% TOTAL CO.
Total County Pop.	2208492	100.0	2785643	100.0	4151687	100.0
Total Inside 20-Mile Radius	2155430	97.6	2724465	97.8	4051903	97.8
Total Outside 20-Mile Radius	53062	2.4	61178	2.2	91784	2.2

Note: (a) Area given is that of Census Tracts whose outer boundaries most closely follow quadrant and circumference lines.

* Density in Persons per Acre.

remaining 11 of the above 13 Postal Zones had a population density of between 20 and 30 persons per acre.

A slight loss in population between the time of the 1950 Census and the Spring of 1953, occurred in 19 Postal Zones, these having a total population in 1950 of 721,726. This loss in population amounted to 17,527 persons, or 7.7 per cent of the 1950 population of the Study Area. This loss occurred in the Zones of highest density and was due essentially to (a) the industrialization or commercialization of land use in these Zones of high population density, or (b) the condemnation of a substantial area of land in these Zones for use in construction of freeways.

Location of Areas of Low Population Density

It can be expected that the large population increases numerically as well as percentage-wise would occur in areas having at the present time low population densities. Figure Nos. 6 and 7 present by Postal Zones the population density in persons per acre as of 1953, and estimated population density in persons per acre as of 1980, and Figure 4 shows the percentage increase in population from 1940 to 1950 in Census Tracts. It will be noted in this last Figure that the high rates of population increase during the above decade occurred in the San Fernando Valley and also southerly of Los Angeles, with the exception of the City of Long Beach.

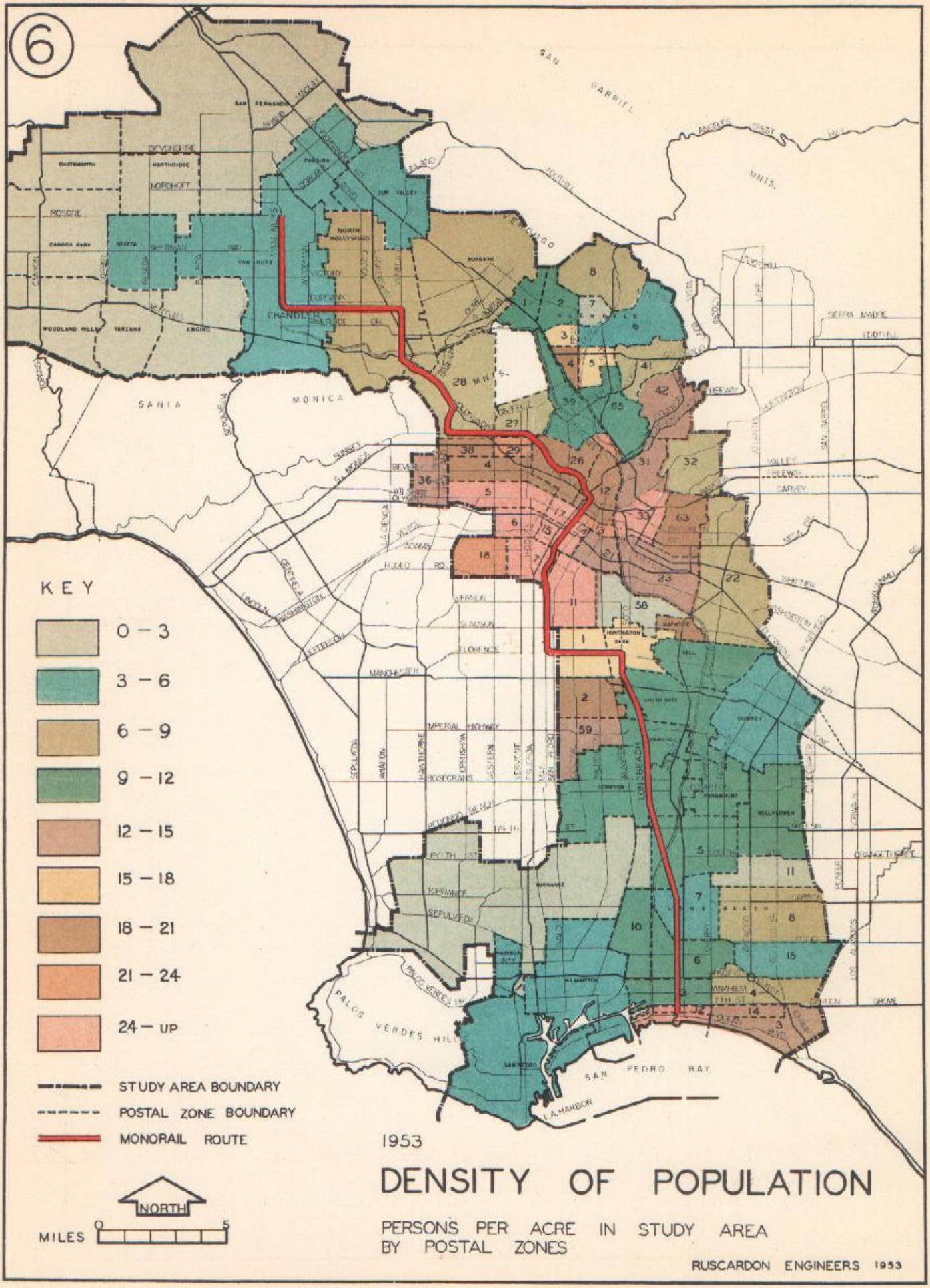

6
KEY
0 – 3
3 – 6
6 – 9
9 – 12
12 – 15
15 – 18
18 – 21
21 – 24
24 – UP
STUDY AREA BOUNDARY
POSTAL ZONE BOUNDARY
MONORAIL ROUTE
NORTH
MILES
0
5
1953
DENSITY OF POPULATION
PERSONS PER ACRE IN STUDY AREA
BY POSTAL ZONES
RUSCARDON ENGINEERS 1953
SAN GABRIEL MTNS.
SANTA MONICA
PALOS VERDES HILLS
SAN PEDRO BAY
L.A. HARBOR
CHANDLER
IMPERIAL HIGHWAY
ROSECRANS
MANCHESTER
FLORENCE
SEPULVEDA
TORRANCE
LONG BEACH

FIGURE NO. 6

DENSITY OF POPULATION WITHIN STUDY AREA BY POSTAL ZONES - 1953

This map shows that, in spite of the fact that the greatest percentage rate of population increase during the 1940-1950 decade occurred at either extremity of the Study Area, population densities at such extremities are still relatively low, and for this reason the large future increases in population-provided that adequate transportation facilities are provided-can be expected to occur in the areas of present and future low population density.

Residential building lots-usually 50' x 150' in dimensions-result in about 5 lots per acre. With 3.3 persons per family, this results in a saturation density of 16 persons per acre for strictly residential areas of this character. Since World War II, however, family size is increasing, and in new subdivisions occupied by the younger population, saturation densities of from 17 to 19 per acre may be reached.

Allowing for local commercial buildings, a few multiple dwellings, schools and parks, saturation densities today of from 15 to 17 per acre may occur when large areas are considered.

This map shows that there are still large areas with densities of much less than these latter figures.

See Table No. 3

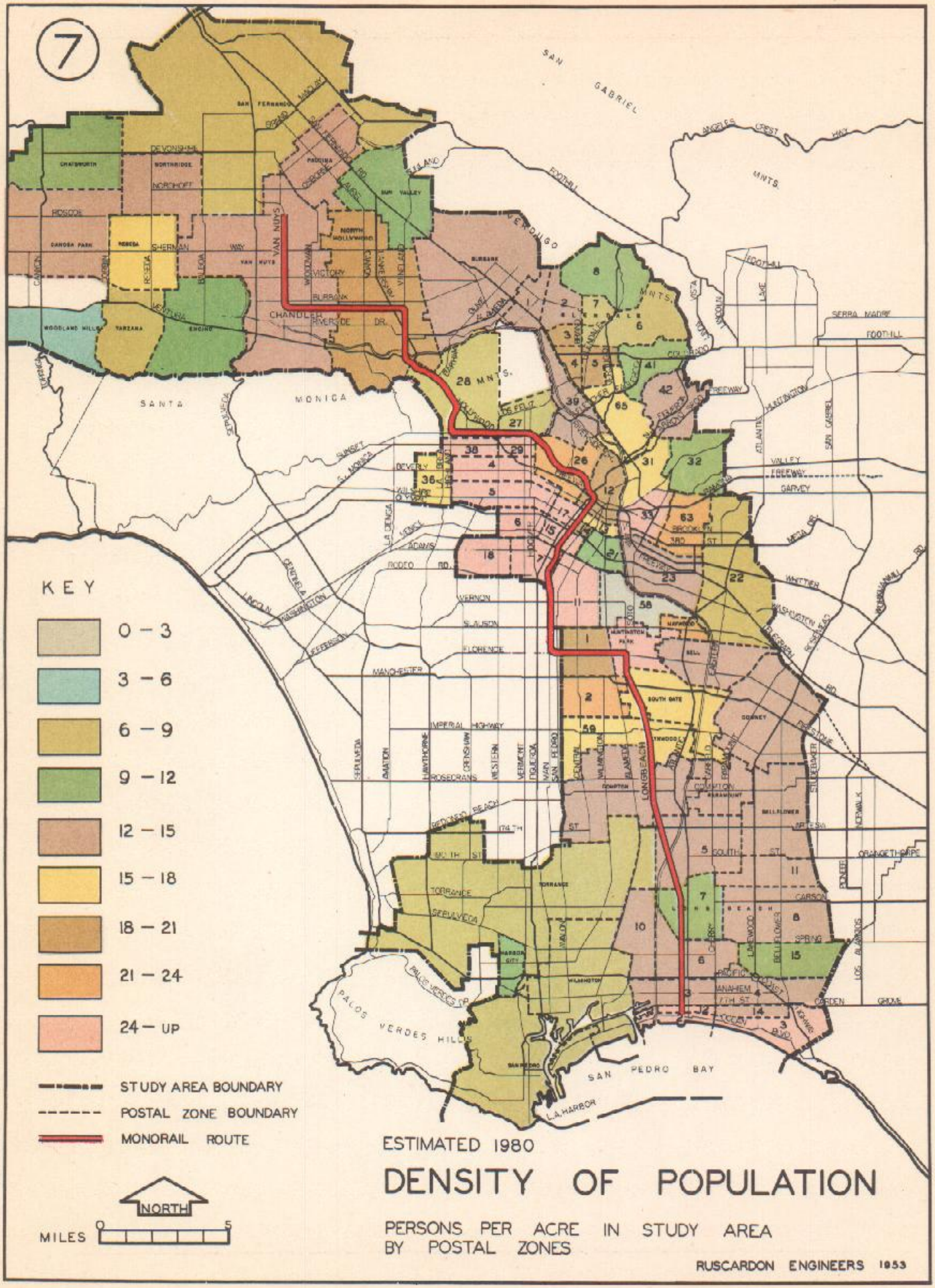

7
KEY
0 – 3
3 – 6
6 – 9
9 – 12
12 – 15
15 – 18
18 – 21
21 – 24
24 – UP
STUDY AREA BOUNDARY
POSTAL ZONE BOUNDARY
MONORAIL ROUTE
NORTH
MILES
0
5
ESTIMATED 1980
DENSITY OF POPULATION
PERSONS PER ACRE IN STUDY AREA
BY POSTAL ZONES
RUSCARDON ENGINEERS 1953
SAN GABRIEL MNTS.
SANTA MONICA
SAN PEDRO BAY
PALOS VERDES HILLS
L.A. HARBOR

FIGURE NO. 7

ESTIMATED FUTURE DENSITY OF POPULATION WITHIN THE STUDY AREA - AS OF 1980

This map is based upon data in Table No. 5. Average population density in 1980 is estimated as 12.5 persons per acre.

There are still a considerable number of Postal Zones where population density in 1980 is estimated to be considerably below the saturation point for single family residences. Zones in Groups D and F average in excess of 20 persons per acre and in Groups E and H in excess of 15 persons per acre.

Increased use of land for industrial purposes in the area southerly from Vernon to San Pedro Harbor may result in densities as given in Table No. 4, approaching saturation by 1980, but there still will be considerable room for population living in single family residences in those Zone Groups having population densities of less than 12-13 persons per acre, as of that date.

See Table No. 4

IV

ECONOMIC CHARACTERISTICS

While this Report does not deal essentially with economic characteristics of the general area, it was thought advisable to present a small amount of material pertaining to this subject.

Median Value of Owner Occupied Single Family Homes - 1950

Figure No. 8 shows by seven brackets the median value of single family owner occupied homes within the Study Area. As with income, most sections in which the higher value homes occur are located outside of the Study Area.

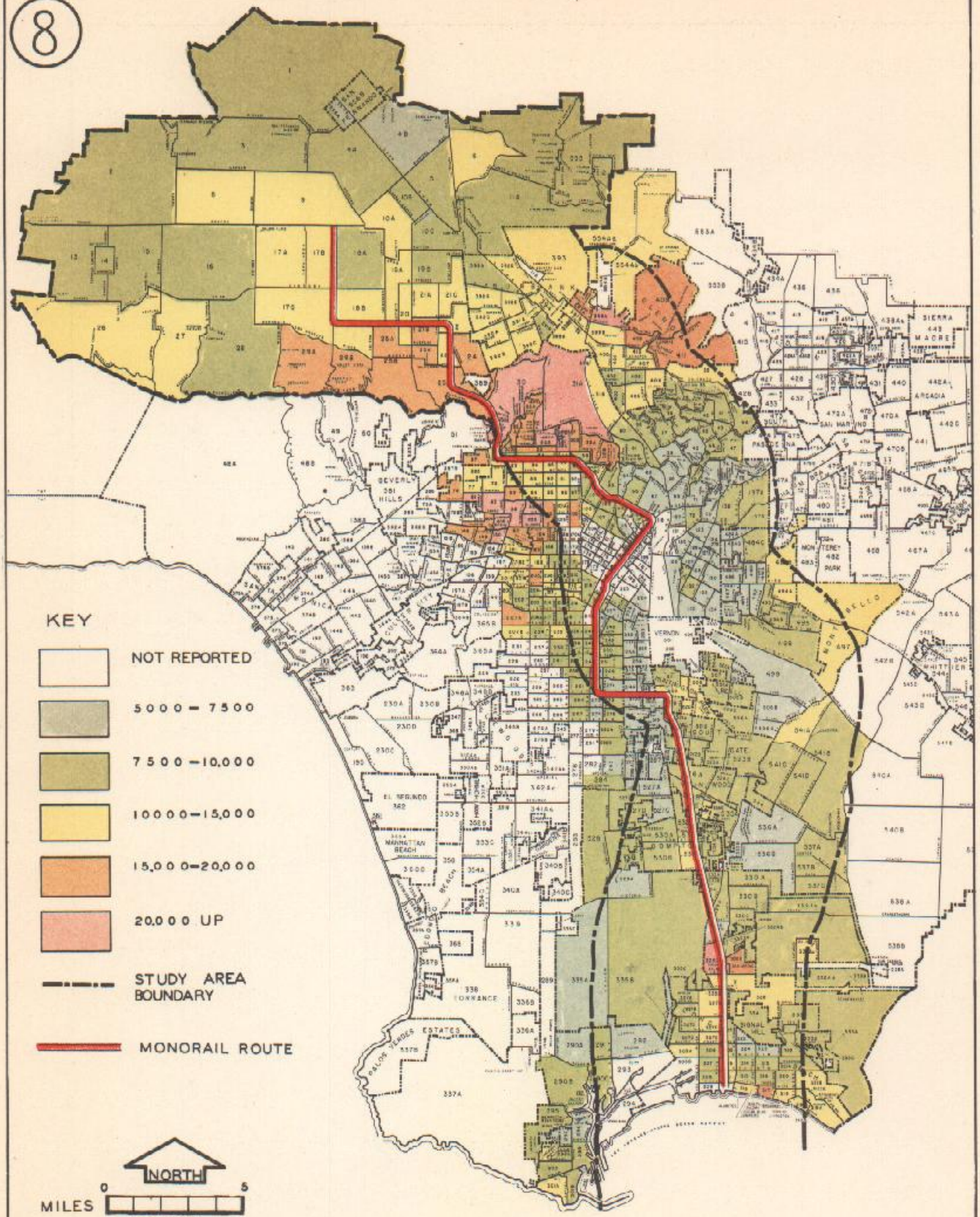
Median Income Per Family - 1950

Figure No. 9 shows the range in family income in six different brackets. Most of the high family income areas are without the Study Area.

Economic Indices

Figure No. 10 and Table No. 6 present certain Indices for the Los Angeles Metropolitan Area over the past three or more decades. Gasoline Sales are for the entire State of California, as such sales in individual Counties of the State are not reported separately.

8



MEDIAN VALUE OF OWNER OCCUPIED DWELLING UNITS IN STUDY AREA BY CENSUS TRACTS

RUSCARDON ENGINEERS 1953

FIGURE NO. 8

MEDIAN VALUE OF OWNER OCCUPIED SINGLE FAMILY HOMES WITHIN STUDY AREA - 1950

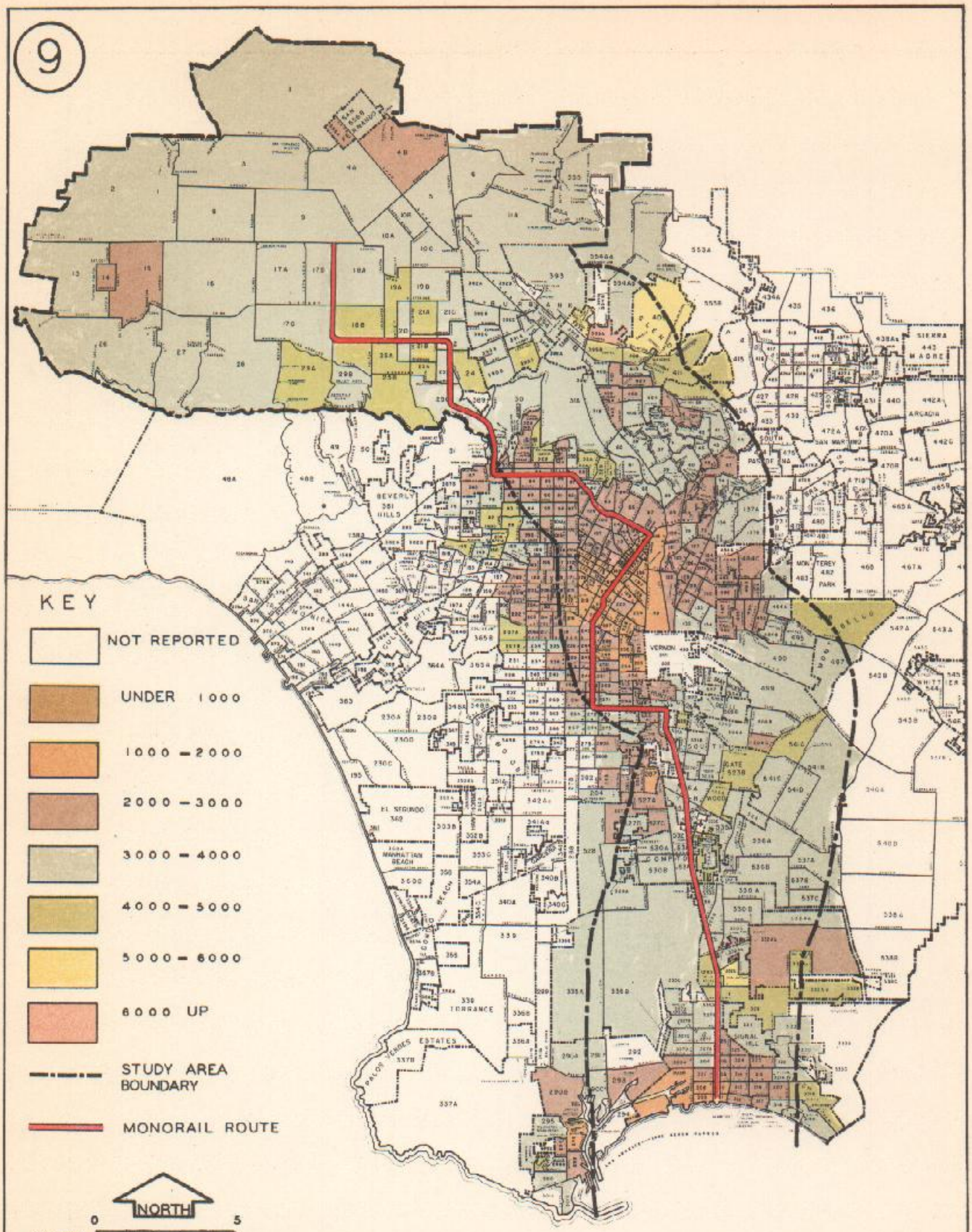
This factor is usually considered to be a very good indicator of the economic status of residents within any area and may be considered to be so in those Census Tracts having relatively low population densities, but a comparison with Figure No. 9, Median Income per Family, will not show very good correlation between Median Value of Homes and Median Family Income, for all Census Tracts, for the following reasons.

In many areas of higher population densities, a considerable number of inhabitants therein live in multiple dwellings, and for the most part, single family homes, while having a high value, house a relatively small proportion of the total population, with residents of multiple dwellings being in a somewhat lower economic bracket. Consequently, high values of single family owner occupied homes do not reflect high income in these Tracts.

High population densities also occur in the older sections of the area, where single family homes were built many years ago before present costs levels existed. Furthermore, the market for such older homes is not great, further resulting in lower values. In most of the areas where median values are in excess of $ 8000, homes have been built in recent years during the era of high construction costs.

In the Census Tracts not colored, no data was given in the Census Reports as to this factor.

9



MEDIAN INCOME IN STUDY AREA
BY CENSUS TRACTS 1950

RUSCARDON ENGINEERS 1953

FIGURE NO. 9

MEDIAN FAMILY INCOME WITHIN THE STUDY AREA - 1950

This map indicates Median Family Income as of 1950, in each Census Tract within the Study Area. In general, such income ranged from $ 2500 to $ 4500 per year, except in a small area in Hollywood, within Downtown Los Angeles and within an area southerly and southwesterly therefrom, in the Watts area westerly of Lynwood, and in a small area along the Ocean in Long Beach, in which areas Median Income ranged from under $ 1500 up to $ 2500 per year.

Areas with Median Income in excess of $ 4500 per year are few in number within the Study Area, as most of such areas in the County occur in Pasadena, Beverly Hills, Westwood, West Los Angeles, the "Malibu" and Palos Verdes, all of which are outside of the Study Area.

Experience in other communities where mass rapid transit facilities exist shows that areas having family incomes within the $ 2500 to $ 4500 per year bracket develop a higher riding habit on such systems than those where incomes are in higher or lower brackets.

In Census Tracts not colored, no data regarding income was given in the Census Reports.

10

ECONOMIC INDICES - METROPOLITAN LOS ANGELES

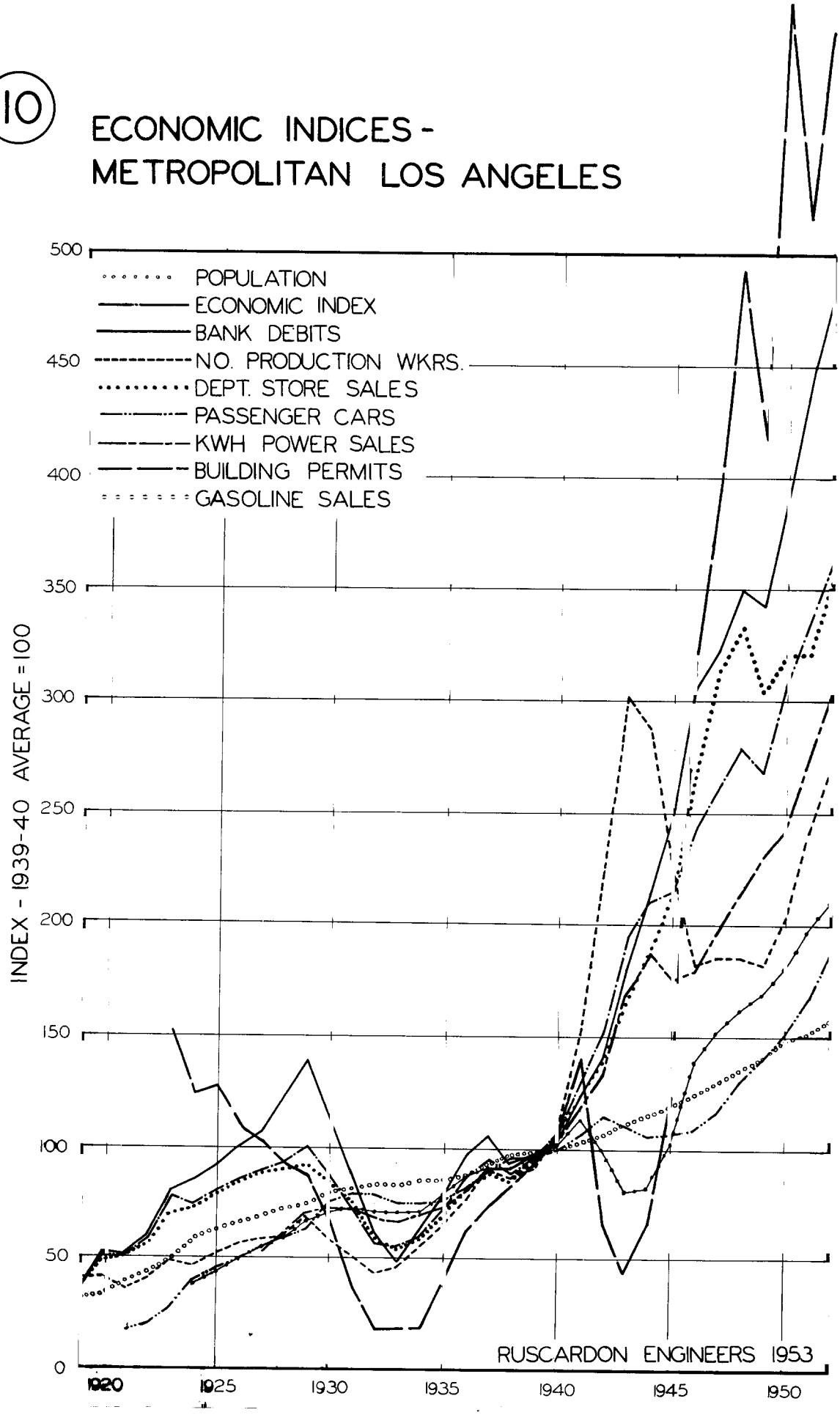


FIGURE NO. 10

ECONOMIC INDICES-METROPOLITAN LOS ANGELES-1920-1953

Various Economic Indices pertaining to Metropolitan Los Angeles are shown on this Figure. They all show an increase from 1920 through 1929, except that the Index for Building Permits declined during the early 1930's and, with the exception of Building Permits and Number of Production Workers in Manufacturing and the Motion Picture Industry, all showed a continued rise following the early 1930's. The general rate of increase in all Indices, except the foregoing, following this 1930-1935 period was considerably in excess of the rate of increase of population.

The initial decline in Building Permits during the 1920's probably indicated that the local population was becoming adequately housed, and that industrial plant construction had slowed down, while the decline in this Index during the 1941-1943 period was due to lack of availability of building materials and of construction labor.

The most significant fact in this graph is that, while the Index for the number of production workers dropped sharply from in excess of 300% in 1943 to well below 200% in 1946, and then continued at around this level for several years, other Indices, the Areal Economic Index and the Indices of Bank Debits, Department Store Sales, KWH Power Sales and Building Permits, did not reflect this decline. This would indicate that production workers, laid off from War Industry, still had money to spend and had found jobs at which to earn such money.

The extremely high rise in Building Permits would indicate that many of these former production workers secured employment in construction, residential and industrial, and the continued rise in KWH Power Sales, after a short drop following 1944, also would indicate that Post-War industrial activity recovered fairly rapidly. See Table No. 6.

TABLE NO. 6

ECONOMIC INDICES - LOS ANGELES AREA
(1939-40 - 100%)

YEAR	POPULATION	ECONOMIC INDEX	BANK DEBITS	DEPT. STORE SALES	NO. OF PRODUCTION WORKERS	KWH POWER SALES	BLDG. PERMIT VALUATION	PASSGR. CAR REGISTRATION	GASOLINE SALES
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1919	32.7	37.0	36.2	36.1	40.9		23.2		
1920	33.6	50.6	52.1	49.3	41.6		46.8		
1921	39.2	50.0	51.7	51.4	36.9		66.2	16.8	
22	44.1	59.2	59.8	56.7	40.8		96.0	20.7	
23	49.0	77.9	80.7	70.3	48.8		151.2	28.3	
24	59.2	74.7	85.1	73.4	47.2		123.1	40.2	38.9
1925	62.4	80.1	91.0	79.9	51.3		126.1	45.6	43.8
1926	66.1	85.7	100.4	85.0	57.2		109.1	49.7	49.3
27	69.0	89.5	107.0	89.0	59.2	54.7	102.3	55.0	55.5
28	72.1	93.9	123.8	90.1	60.7	62.1	91.0	59.0	59.5
29	74.7	100.9	140.3	91.8	68.1	72.1	87.0	64.1	67.0
1930	79.3	88.6	115.8	85.9	59.9	73.5	66.0	76.3	71.2
1931	81.8	73.9	88.7	76.7	51.3	73.5	36.8	79.1	73.0
32	83.8	57.9	62.8	59.1	44.5	68.4	16.2	79.1	71.8
33	83.0	55.5	58.0	55.2	47.1	67.1	17.2	75.8	71.3
34	85.5	60.6	62.1	59.6	57.3	70.0	17.4	75.6	71.3
1935	85.7	71.8	77.6	70.0	66.6	74.9	38.9	76.6	79.8
1936	88.0	86.9	97.5	82.1	78.1	83.8	67.2	82.4	87.1
37	93.6	95.4	105.7	88.8	90.3	91.0	74.6	89.0	92.1
38	97.5	89.4	93.6	85.3	83.6	92.7	83.5	95.8	92.0
39	98.3	95.5	96.4	93.7	92.4	97.4	93.5	96.2	97.8
1940	100.0	104.5	103.6	106.3	107.6	102.6	106.5	100.0	102.2
1941	103.0	130.2	125.0	125.1	155.7	118.1	141.3	107.2	114.7
42	107.1	153.9	141.9	140.7	225.2	135.8	68.9	115.1	98.8
43	111.8	194.5	182.1	167.4	303.6	170.2	45.0	110.8	81.7
44	115.7	211.4	214.4	189.1	288.2	189.6	66.9	106.2	83.5
1945	120.0	215.9	251.7	213.7	225.5	177.3	120.9	107.0	103.1
1946	125.1	243.6	306.4	277.7	183.9	180.8	319.1	108.5	139.5
47	130.3	261.4	323.7	313.7	186.1	198.4	395.6	117.3	152.8
48	136.0	279.8	351.0	334.5	186.2	216.1	493.8	131.0	163.0
49	142.0	269.2	344.9	305.5	183.8	232.0	419.3	140.0	170.0
1950	149.0	308.2	388.0	321.8	204.8	244.2	610.9	151.8	182.0
1951	152.6	334.5	441.4	322.8	243.5	276.5	517.1	168.1	198.0
1952	158.0	361.9	481.2	353.4	271.5	304.0	600.0	178.0	211.3

TABLE NO. 6 - CONTINUED

Notes

All Indices refer to average of 1939-1940 as 100%, except population, which is as of April 1, 1940. Population for 1930-1940-1950 is for April 1st - in other years for January 1st.

Sources

Col. 2 - All years except 1920-1930-1940 and 1950 - Research Dept. L.A. Chamber of Commerce. Other years - U.S. Census.

Cols. 3-4-5-6-8 - Research Department - Security First National Bank of Los Angeles. Col. 6- No. of Production Workers includes only workers engaged in Production and is exclusive of Administrative, Clerical and other employees.

Col. 7 - Research Department - Los Angeles Chamber of Commerce.

Col. 9 - California State Department of Motor Vehicles

Col.10 - Automobile Club of Southern California

100% Averages

Col. 2 - Population 1940 - 2,785,643

4 - Bank Debits 1939 - 1940 - $ 10,424,552,000

6 - No. Production Workers 1939-1940 - Average Monthly - 160,608

7 - KWH Power Sales 1939-1940 - 3,780,573,000

8 - Building Permits 1939-1940 - $ 219,832,500

9 - Passenger Auto Registration 1939-1940 - 1,019,293

10 - Motor Vehicle Fuel Sales - State of California 1939-1940 - 1,698,041,000 gallons

V

PASSENGER AUTOMOBILES

Los Angeles County has the greatest density of passenger automobile registration - expressed as the number of persons per registered automobile - or conversely - as the number of automobiles per 1000 population, of any large metropolitan area in the United States, which means in the World. This fact, the relatively low population density, and the prevalence of single family residential living, are all closely related.

Density of Passenger Automobile Registration in 10 Largest Counties in the United States 1951-1952

As of 1951-1952, there were 2.76 persons per passenger automobile in Los Angeles County, or 363 passenger automobiles per 1000 County population. The Five Boroughs of New York City had 7.03 persons per passenger automobile, or 142 automobiles per 1000 population.

Density of Passenger Automobile Registration - Los Angeles County Past and Estimated Future

In 1953, there were an estimated 1,895,000 passenger automobiles registered in Los Angeles County, or 2.43 persons per automobile-412 per 1000 of County population. This increase in the number of passenger automobiles has been much greater than the increase in population, as is shown on Figure No. 12 and Table No. 8.

Statutory Requirements for Garages in Residential Buildings

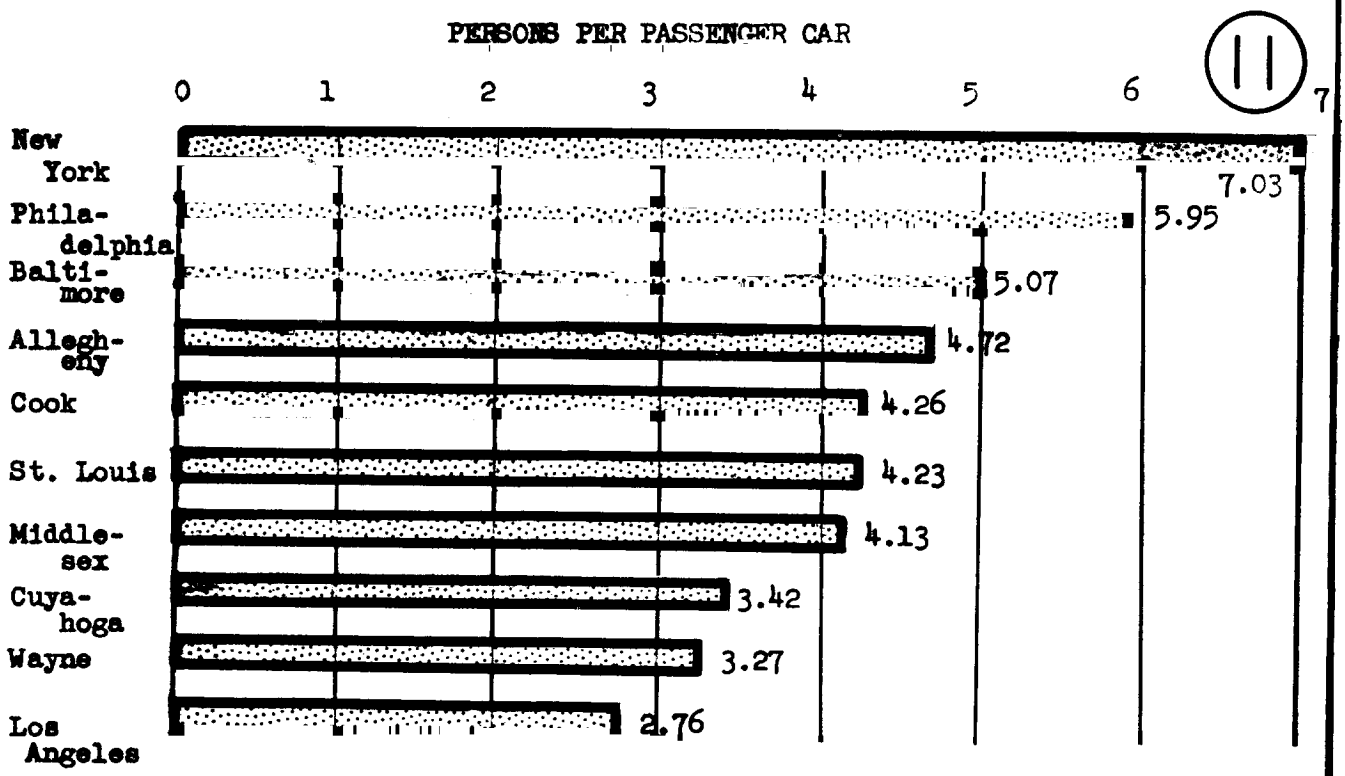
Ever since 1930, the City of Los Angeles has specified by Ordinance that one garage or storage space for an automobile must be provided for every family dwelling unit constructed, whether such unit be a single family or a multiple dwelling. Today no one thinks of building a single family

TABLE NO. 7

DENSITY OF PASSENGER AUTOMOBILES
IN THE 10 LARGEST COUNTIES AS
OF 1951-52

RANK IN DENSITY	COUNTY	PRINCIPAL CITY	PERSONS PER AUTOMOBILE	AUTOS PER 1000 POPULATION
1	Los Angeles	Los Angeles	2.76	363
2	Wayne	Detroit	3.27	306
3	Cuyahoga	Cleveland	3.42	292
4	Middlesex	Lowell	4.13	242
5	St. Louis	St. Louis	4.23	236
6	Cook	Chicago	4.26	232
7	Allegheny	Pittsburg	4.72	212
8	Baltimore	Baltimore	5.07	197
9	Philadelphia	Philadelphia	5.95	168
10	New York	New York	7.03	142

Source - Automobile Facts and Figures - 1953



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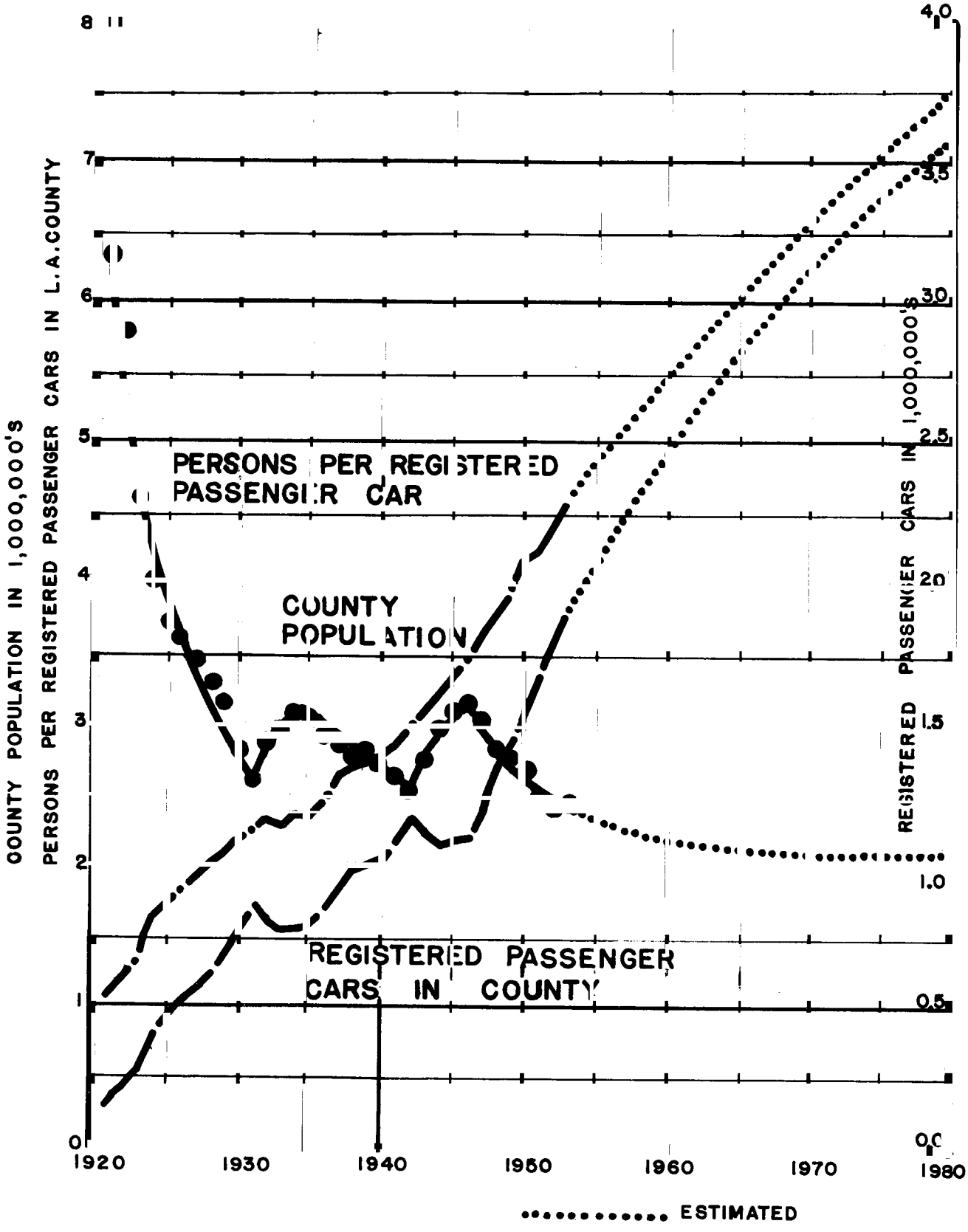
(12)

REGISTERED PASSENGER CARS AND POPULATION FOR LOS ANGELES COUNTY



RUSCARDON ENGINEERS 1953

FIGURE NO. 12

PAST, PRESENT AND ESTIMATED FUTURE PASSENGER AUTOMOBILE REGISTRATION IN LOS ANGELES COUNTY 1921 - 1980

Total number of passenger automobiles registered in Los Angeles County have shown a continuous rise since 1921, with the exception of a few years in the early 1930 decade, during the Depression, and also during the early years of World War II, when the number declined slightly.

The number of persons per passenger automobile also continuously declined, except for these two periods, and in 1953 reached a low figure (a high density) of 2.43 persons per car, or 412 passenger automobiles per 1000 County population.

The curve of persons per car, from the trend of the curve following 1946, might have been projected from a high of 3.16 in that year down to around 1.5 in 1980, but it is believed that other factors will come into play, economics, availability of garage accomodations, traffic congestion, which will prevent it from dropping to this low figure. Some reduction can be expected, however, and the curve has been flattened out by 1970 at a figure of 2.1 persons per car. This indicates a total passenger automobile registration of 3,700,000 passenger cars by 1980, about twice the present number.

See Table No. 8

TABLE NO. 8

LOS ANGELES COUNTY PASSENGER CAR REGISTRATION AND POPULATION
1921 - 1953

YEAR	PASSENGER CARS REGISTERED (1)	COUNTY POPULATION (2)	POP'N. PER PASS. CAR (3)	PASSENGER CARS 1000 POP'N. (4)
1921	171624	1092500	6.37	157
22	211000	1229490	5.82	172
23	288000	1336130	4.64	216
24	410000	1648670	4.02	249
1925	465000	1737570	3.74	268
26	506000	1842550	3.64	275
27	560000	1925010	3.43	291
28	601637	2010170	3.34	299
29	654100	2081070	3.18	314
1930	776677	2208492	2.85	352
31	866264	2278580	2.63	381
32	805787	2336060	2.90	345
33	772399	2308870	2.99	334
34	770877	2381080	3.09	324
1935	779915	2389680	3.06	326
36	838983	2453970	2.93	342
37	907223	2609270	2.88	348
38	975392	2718780	2.79	359
39	979974	2738390	2.80	358
1940	1019293	2785643	2.73	366
41	1093290	2866900	2.62	381
42	1174358	2985000	2.54	394
43	1127538	3108100	2.76	362
44	1082809	3221400	2.98	336
1945	1088930	3345900	3.08	326
46	1103914	3486600	3.16	317
47	1196319	3632000	3.04	329
48	1333718	3791900	2.84	352
49	1426073	3954700	2.78	360
1950	1543647	4151687	2.69	372
51	1712545	4250000	2.48	403
52	1816643	4400000	2.42	413
53	e 1895000	4600000	2.43	412

e Estimate

TABLE NO. 8 - CONTINUED

LOS ANGELES COUNTY PASSENGER CAR
REGISTRATION AND POPULATION
1921 - 1953

NOTES:

Col. 1 - Number of Passenger Cars Registered as of January 1st of Year Shown. This figure reflects the total number of Registrations during the previous 12 months period.

Source - California Department of Motor Vehicles

Col. 2 - Estimated County Population as of January 1st of Year Shown, except years of Decennial Census when population is as of April 15th.

Source - Census Years - U. S. Census
Other Years - Research Dept.
Los Angeles Chamber of Commerce

residence without at least a two car garage, as the place would neither be salable nor rentable. Today every sixth family owns two cars, and at the rate that this multiple ownership is increasing, it will not be long before this will be reduced to two cars for every fifth family.

Effect of Improved Transit Facilities upon Density of Passenger Automobile Registration

It is not believed that improved mass rapid transit facilities will have any great effect on this trend in multiple ownership of automobiles. The widespread and increasing decentralization of shopping centers throughout the Metropolitan Area will tend to maintain the trend. Many workers will still use their cars to reach transit stations. Reduction of long distance automobile travel, which the provision of mass rapid transit facilities will tend to encourage, combined with an increase in mileage of freeways, should reduce the present congestion on arterial highways, and encourage their wider use.

Should the family car be left at home, the housewife will find many additional needs for its use. It is the teen-age generation, and those a few years older, however, who are largely responsible for this multiple ownership of cars. These young people have their friends, and the parents have theirs, and the two groups are different and usually live in different localities. Automobiles pass through a number of ownerships today in their total life of 12 to 14 years, and the old age of many of them is spent in the hands of this younger generation.

Week-end travel to recreational areas - mountains, beaches and desert- is very extensive. Seldom do parents and young people go to the same place, and this is a strong argument for the second car in the family.

The strongest argument, however, lies in the fact that passenger

automobile density (expressed as number of such automobiles per 1000 population) varies inversely with population density (expressed as number of residents per acre). As long as this area maintains its low population density, it will maintain its high passenger automobile density.

VI

THE CENTRAL BUSINESS DISTRICT OF LOS ANGELES

Up until about 1920, the Central Business District of Los Angeles, or Downtown Los Angeles, as it is commonly known, was the dominating business center of Metropolitan Los Angeles. Practically all office buildings, all department stores, specialty shops, and other retail stores, except the usual neighborhood stores, were located there.

Such District is normally taken to extend from Sunset Boulevard on the North to Pico Boulevard on the South, and from Figueroa Street on the West to Los Angeles Street on the East, although various other boundaries, closely approximating these, have also been used.

Number of Motor Vehicles Entering Downtown Los Angeles from Past Cordon Counts 1923 - 1950

Table No. 9 presents the results of various cordon counts of motor vehicles entering the Central District, summarized in three groups of Streets on the East and West sides, and into two groups on the North and South sides.

Number of Motor Vehicles Entering Downtown Los Angeles-1950

Figure No. 13 presents in detail the number of motor vehicles entering Downtown Los Angeles in 1950, by streets of entry and departure.

Decentralization in Retail Trade - 1929-1948

In 1920, Los Angeles City had a population of 576,000 and the County of 936,000. By 1930, the City population had increased to 1,238,048 and the County population to 2,208,492. The increase in City population was 662,000 and in County population was 1,272,000. At the same time passenger automobile registration had increased from 171,624 in 1921 to 776,677 in 1930, or by 605,053. No figures are available as to the location of the

TABLE NO. 9

CORDON COUNTS - NUMBER OF MOTOR VEHICLES
ENTERING CENTRAL BUSINESS DISTRICT OF LOS ANGELES

YEAR	NORTH SIDE			EAST SIDE				SOUTH SIDE			WEST SIDE				GRAND
	SEC.1	SEC.2	TOTAL	SEC.3	SEC.4	SEC.5	TOTAL	SEC.6	SEC.7	TOTAL	SEC.8	SEC.9	SEC.10	TOTAL	TOTAL
1923	6414	16051	22465	24622	27188	7608	59418	22640	25906	48540	20468	22559	22756	65823	196246
1929	24200	29780	53980	26600	37696	10595	74891	26760	19200	45960	33286	38195	32800	104281	280112
1931	13193	21163	34356	28917	35386	14510	78803	24997	30467	55464	27302	41542	34749	103593	272216
1936	23250	32603	55853	26550	38787	10703	76040	25664	31350	57014	30384	42104	44200	116688	305595
1939	13190	19080	32270	28780	32970	12750	74500	21890	30937	52827	23513	34470	41500	99483	259080
1941	20527	23556	44083	39154	36904	14308	90726	24471	39042	63513	33752	39714	48542	122008	320330
1947	35783	21451	57184	45673	45894	24615	116182	28372	44628	73000	43304	45878	56976	146158	392524
1950	39234	21720	60954	45893	45035	23323	114251	28630	42878	71508	43354	42922	51848	138179	384892

NOTES:

1923 Count - L.A. Street Traffic Engineering Dept. - Sunset-Pico; Figueroa-Los Angeles

1929 Count - Auto Club of So. Calif. Flower to Los Angeles (W&S sides) Commercial to Pico (E side) Pico to Temple (W side) 16 Hr. Count Figures adjusted to include ommitted streets

1931 Count - L.A. Street Traffic Engineering Dept. Same as 1923 Count

1936 Count - Auto Club of So. Calif. - Same basis as 1929 Count

1939 Count - L.A. Transportation Engineering Board - 12 Hr. Count - 7:00AM - 7:00PM - Same Area as 1923 and 1931 Counts

1941 Count - L.A. County Regional Planning Comm. - 16 Hr. Count - 6:00AM - 10:00PM

1947 Count - L.A. Street Traffic Engineering Dept. - 16 Hr. Count - 6:00AM - 10:00PM

1950 Count - L.A. Street Traffic Engineering Dept. - 16 Hr. Count - 6:00AM - 10:00PM

TABLE NO. 9 - CONTINUED

NOTES:

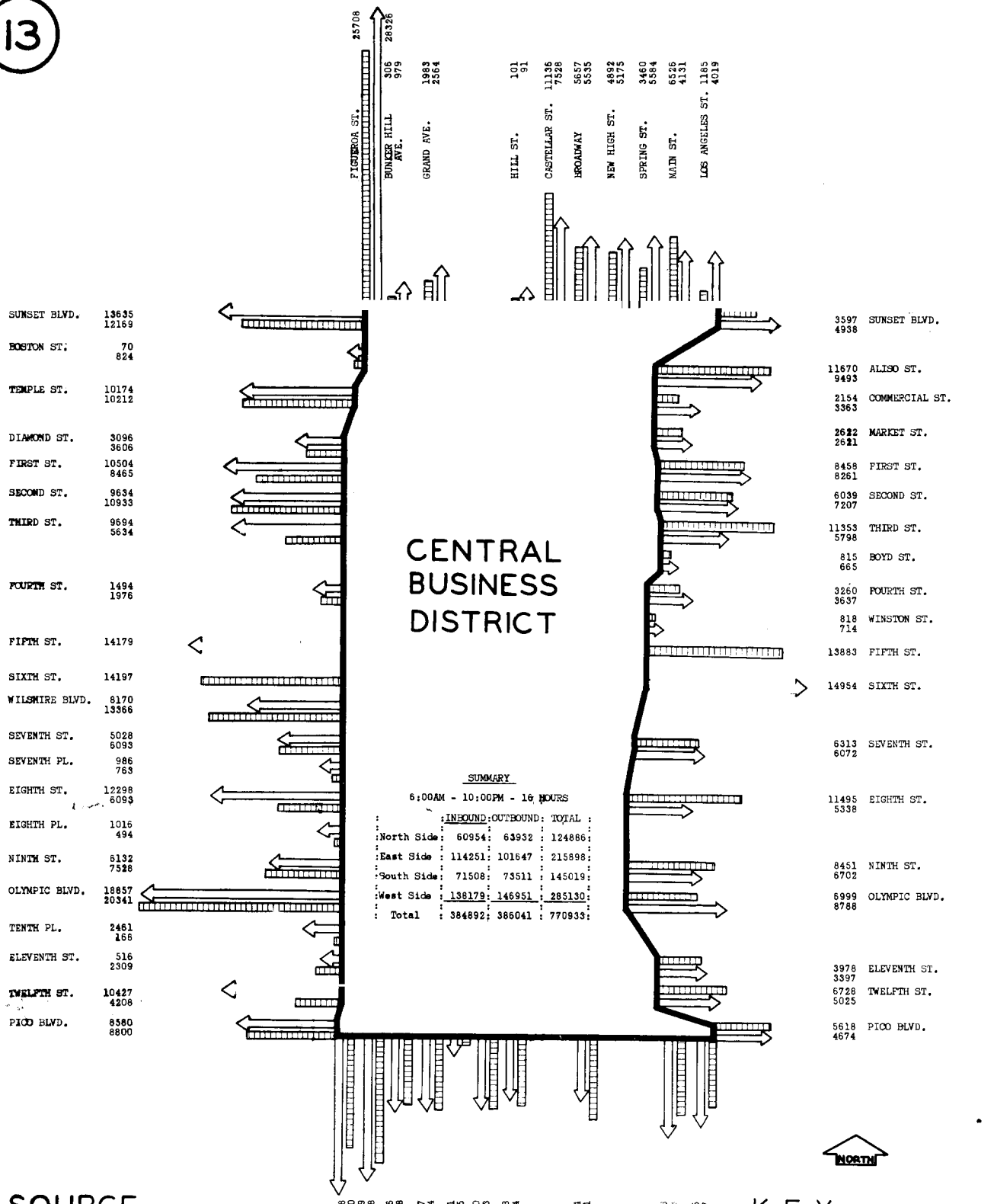
North Side
Section 1 Figueroa through Castelar Street
2 Broadway through Los Angeles Street

East Side
Section 3 Sunset through 3rd Street
4 Boyd through 9th Street
5 Olympic through Pico Street

South Side
Section 6 Los Angeles through Hill Street
7 Olive through Figueroa Street

West Side
Section 8 Pico through 9th Street
9 8th Place through 4th Street
10 3rd through Sunset Boulevard

13



SOURCE

DEPT. OF STREET TRAFFIC ENGINEERING, CITY OF LOS ANGELES

NUMBER OF VEHICLES ENTERING CENTRAL BUSINESS DISTRICT

6:00 A.M. TO 10:00 P.M. ON AVERAGE WEEKDAY - 1950

RUSCARDON ENGINEERS 1953

FIGURE NO. 13

NUMBER OF MOTOR VEHICLES ENTERING THE
CENTRAL BUSINESS DISTRICT OF LOS ANGELES -1950

This is the last complete Cordon Count made of motor vehicles entering the Central Business District of Los Angeles, although some counts have been made on individual streets since 1950. This count was made prior to the opening of the Hollywood or Harbor Freeways to traffic. At the present writing they are not yet open throughout their entire length, but are used to a substantial extent by local traffic. The Hollywood Freeway, since it has been partially opened, has taken a substantial amount of traffic from Sunset Boulevard, Temple, First, Second and even Third Streets.

Figueroa Street carried the largest volume of traffic, both in and outbound, this being essentially traffic from Pasadena and neighboring communities travelling to it over the Arroyo Seco Freeway. Olympic Boulevard carries traffic from Santa Monica and Western Los Angeles directly into the lower part of Downtown Los Angeles. At this date, Fifth and Sixth Streets were one-way streets, and recently Eighth and Ninth Streets have been made one-way.

The heavy traffic along the East and West sides of the area is due not alone to the greater length of these sides, but likewise to the fact that a great deal of through traffic moves in this direction, between residential areas to the West and wholesale and industrial areas to the East of the Central Business District. A study made in 1939 indicated that 35 per cent of the traffic entering the Central Business District in an East and West direction moved directly across it without stopping. Eliminating this percentage of through moving vehicles, from entering and leaving traffic, the number of vehicles entering and leaving across the East and West boundaries, in spite of the far greater length of the latter, is but about 10 per cent greater than those entering and leaving on the North and South sides.

increase in areal population between 1920 and 1930, but it undoubtedly occurred in peripheral areas. Distances had become great, traffic congestion had increased and decentralization of trade was under way.

The trend in this decentralization is shown in Table No. 10, the Major Economic Areas being indicated on Figure No. 14.

Another significant fact in connection with the decentralization of Downtown Los Angeles is the fact that but three office buildings have been constructed in Downtown Los Angeles since 1930, all in recent years, while many older buildings have been torn down to make way for parking facilities.

Number of Persons Entering Downtown Los Angeles
During an Average Week Day 1924 to 1980

From the cordon counts of motor vehicle traffic made between 1924 and 1950, from scattered data as to persons per passenger automobile, and from other scattered traffic counts, as well as from data supplied by the Pacific Electric Railway and the Los Angeles Transit Lines, it has been possible to estimate the number of persons entering Downtown Los Angeles during a 12-hour week day at various times between 1924 and 1953.

When these numbers of persons entering were expressed as the numbers per 1000 County population at each date, a trend curve developed which allowed a projection of the number entering per 1000 County population up to the year 1980.

If present conditions as to transportation and parking facilities continue it can then be assumed that Downtown Los Angeles has become stabilized. Every available vacant parcel of land not occupied by a building is used for a parking lot, and a number of parking garages have been constructed and are heavily used. The only manner by which parking capacity in the area can be increased will be to construct more parking garages, and/or to tear down more existing buildings and convert the area that they occupy to parking lots or garages.

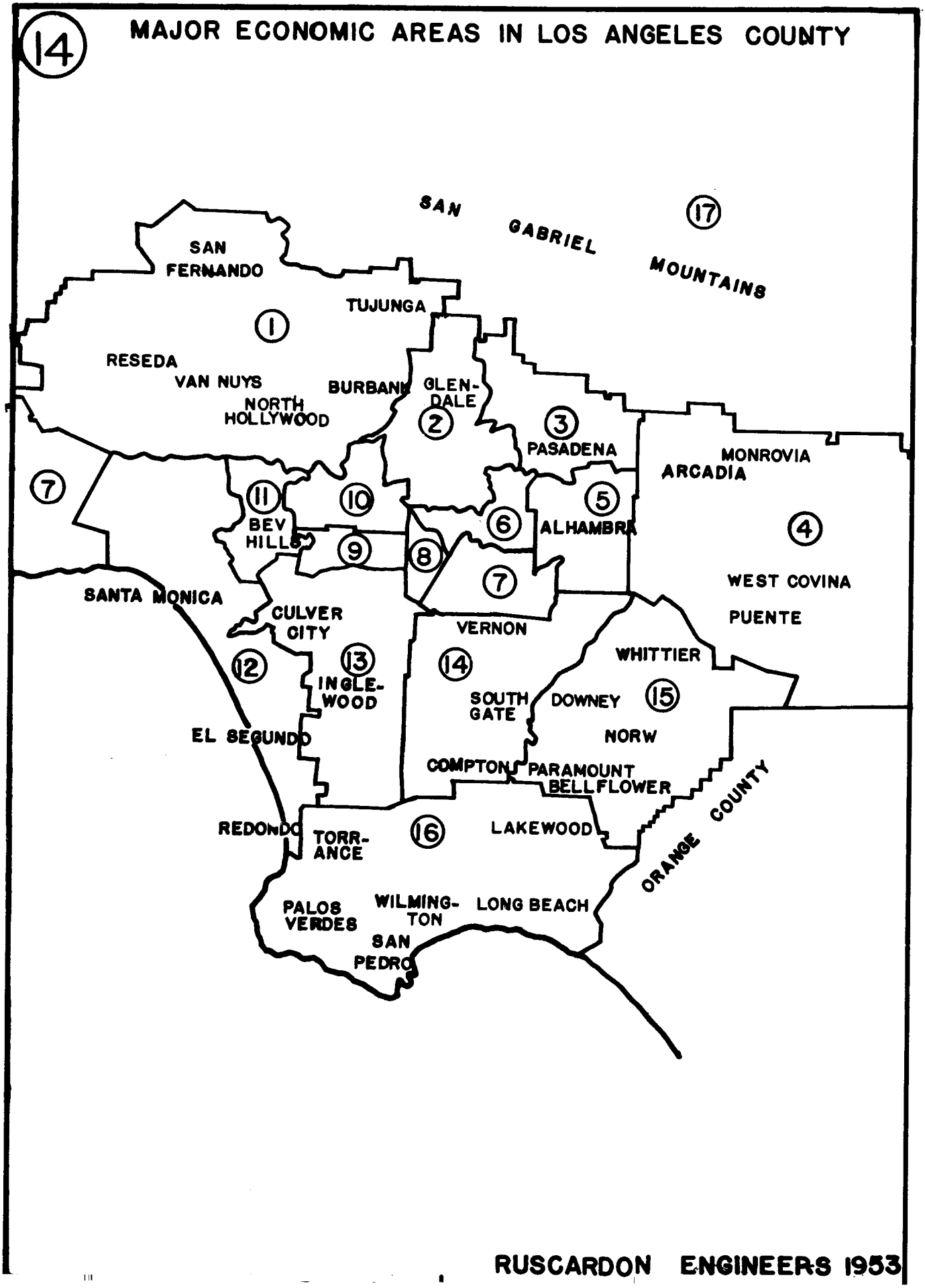

14
MAJOR ECONOMIC AREAS IN LOS ANGELES COUNTY
SAN GABRIEL MOUNTAINS
17
SAN FERNANDO
TUJUNGA
1
RESEDA
VAN NUYS
BURBANK
GLEN-DALE
NORTH HOLLYWOOD
2
3
PASADENA
MONROVIA
ARCADIA
7
11
10
BEV HILLS
9
8
6
ALHAMBRA
5
4
7
WEST COVINA
SANTA MONICA
CULVER CITY
VERNON
PUENTE
12
13
14
WHITTIER
INGLE-WOOD
SOUTH GATE
DOWNEY
15
EL SEGUNDO
NORW
COMPTON
PARAMOUNT
BELLFLOWER
ORANGE COUNTY
REDONDO
TORR-ANCE
16
LAKEWOOD
PALOS VERDES
WILMING-TON
LONG BEACH
SAN PEDRO
RUSCARDON ENGINEERS 1953

FIGURE NO. 14

MAJOR ECONOMIC AREAS - LOS ANGELES COUNTY

This map locates the Major Economic Areas within the County for which volume of Retail Sales are shown in Table No. 10.

Data presented in this Table emphasizes the extent to which decentralization of Retail Trade has taken place since 1929 in Los Angeles County. In that year, out of every $ 1.00 spent in Retail Sales in the County almost 30¢ was spent in Downtown Los Angeles, while in 1948, this 30¢ had dropped to slightly more than 11¢.

The Northeast, East, Central, including Downtown Los Angeles, Hollywood, and the balance of the County, all had lost their relative positions as retail trading centers between 1929 and 1948.

Downtown Los Angeles, as considered in these figures, extends from Temple Street southerly to Jefferson Boulevard, while normally it is considered to extend from Sunset Boulevard southerly to Pico Boulevard. Volume of trade between Temple and Sunset, and between Pico and Jefferson is relatively small.

See Table No. 10

TABLE NO. 10

TOTAL RETAIL SALES - LOS ANGELES COUNTY
BY MAJOR ECONOMIC AREAS

AREA	LOCATION	TOTAL RETAIL SALES $000 OMITTED 1929	1933	1935	1939	1948	% INCR. 1929-48
1	San Fernando Valley	28217	14818	25096	53138	324547	1050
2	Glendale	46463	27426	37692	62927	200891	333
3	Pasadena	60146	28808	45003	59718	211339	234
4	Pomona - Foothill	32845	16519	24000	42737	207850	532
5	Alhambra	23088	12831	21015	34625	123451	434
6	Northeast	40596	24402	37820	39415	106909	163
7	East	76766	34345	41148	86085	247230	223
8	Central	441792	196608	235803	256932	629723	42.5
8a	Downtown Los Angeles	381046	165758	205302	223071	505240	32.7
9	Wilshire	46750	39378	56167	87635	305169	553
10	Hollywood	87315	44802	70061	100142	256140	193
11	Beverly Hills-Westwood	15423	8370	21991	44738	158811	930
12	Santa Monica Bay	42260	21632	33790	54181	225886	435
13	Adams - Inglewood	97835	56778	83452	137556	515923	428
14	Southeast	65029	39771	58893	104273	406055	525
15	Whittier - Norwalk	11882	4426	7534	25481	127012	970
16	South Coast	106305	57225	86632	116278	429592	304
17	Balance of County	64692	31962	56006	8589	35733	-45
	Total Los Angeles Co.	1287304	660101	942103	1314450	4512261	251
	% 1929 Sales	100.0	51.4	73.3	102.0	350.5	

TABLE NO. 10 - CONTINUED

% OF COUNTY TOTAL

AREA	LOCATION	PER CENT OF COUNTY TOTAL 1929	1933	1935	1939	1948
1	San Fernando Valley	2.2	2.2	2.7	4.0	7.2
2	Glendale	3.6	4.2	4.0	4.8	4.5
3	Pasadena	4.7	4.4	4.8	4.5	4.7
4	Pomona - Foothill	2.6	2.5	2.6	3.3	4.6
5	Alhambra	1.8	1.9	2.2	2.6	2.7
6	Northeast	3.2	3.7	4.0	3.0	2.4
7	East	6.0	5.2	4.4	6.5	5.5
8	Central	34.3	29.8	25.0	19.5	14.0
8a	Downtown Los Angeles	29.6	25.1	21.8	17.0	11.2
9	Wilshire	3.6	6.0	6.0	6.7	6.8
10	Hollywood	6.8	6.8	7.4	7.6	5.7
11	Beverly Hills-Westwood	1.2	1.3	2.3	3.4	3.5
12	Santa Monica Bay	3.3	3.3	3.6	4.1	5.0
13	Adams - Inglewood	7.6	8.6	8.9	10.5	11.4
14	Southeast	5.1	6.0	6.3	7.9	9.0
15	Whittier - Norwalk	0.9	0.7	0.8	1.9	2.8
16	South Coast	8.3	8.7	9.2	8.8	9.5
17	Balance of County	5.0	4.8	5.9	0.7	0.8
	Total Los Angeles Co.	100.0	100.0	100.0	100.0	100.0

Source -
Research Department - Security First National Bank of Los Angeles

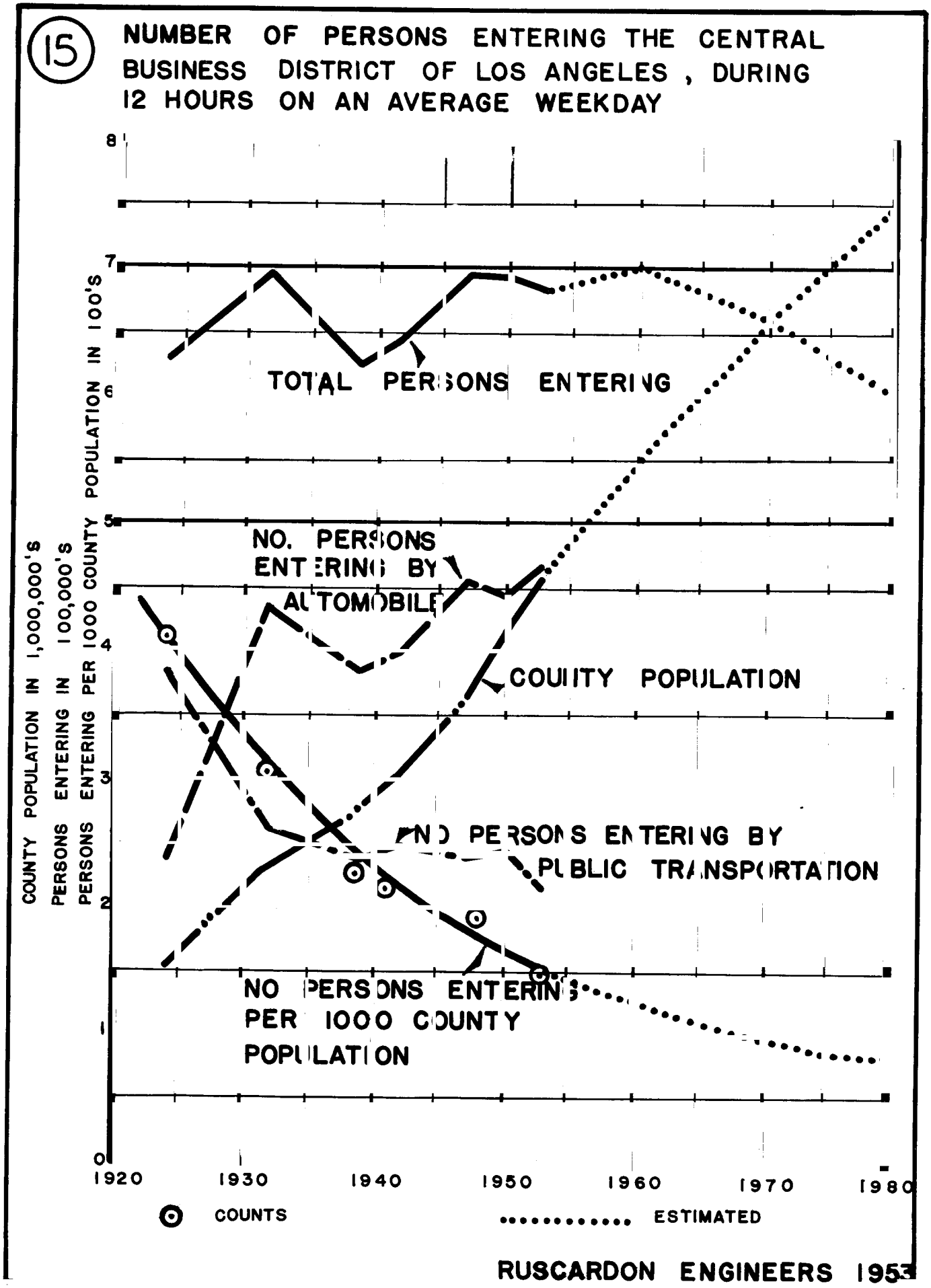

15
NUMBER OF PERSONS ENTERING THE CENTRAL BUSINESS DISTRICT OF LOS ANGELES, DURING 12 HOURS ON AN AVERAGE WEEKDAY
COUNTY POPULATION IN 1,000,000'S
PERSONS ENTERING IN 100,000'S
PERSONS ENTERING PER 1000 COUNTY POPULATION IN 100'S
TOTAL PERSONS ENTERING
NO. PERSONS ENTERING BY AUTOMOBILE
COUNTY POPULATION
NO PERSONS ENTERING BY PUBLIC TRANSPORTATION
NO PERSONS ENTERING PER 1000 COUNTY POPULATION
0
1
2
3
4
5
6
7
8
1920
1930
1940
1950
1960
1970
1980
COUNTS
ESTIMATED
RUSCARDON ENGINEERS 1953

FIGURE NO. 15

NUMBER OF PERSONS ENTERING THE CENTRAL BUSINESS DISTRICT
OF LOS ANGELES DURING 12 HOURS ON AN AVERAGE WEEK DAY
1924 to 1980

This Figure is presented in connection with Table No. 11, which is based upon available cordon counts and other traffic counts adjacent to the Central District, upon data from the Pacific Electric Railway and the Los Angeles Transit Lines, and from a 1944 Report of the Los Angeles County Regional Planning Commission.

The curve expressing total number of persons entering the Central District per 1000 total County population shows a very definite downward trend. In 1924, the number entering was equal to 413 per 1000 County population. At the present time this number has dropped to 152 per 1000, and by 1980 it is estimated that it will be about 80 per 1000. This last figure, naturally, is based upon the assumption that transportation and parking facilities remain at about what they are today.

A further interesting fact, based upon this projection and upon estimated future County population, is that there have not been, nor will there be - up to 1980 - less than 600,000 nor more than 700,000 persons entering the Central District daily, and that in 1980, there will be fewer persons entering such District daily than have entered it since 1924, when County population was slightly in excess of 1,500,000 persons.

See Table No. 11

TABLE NO. 11

NUMBER OF PERSONS ENTERING THE CENTRAL BUSINESS DISTRICT OF LOS ANGELES DURING AN AVERAGE 12 HOUR WEEK DAY

DATE	PERSONS ENTERING			POPULATION	PERSONS
	BY AUTO	BY PUBLIC TRANSP'N.	TOTAL ENTERING	LOS ANGELES COUNTY	ENTERING PER 1000 POPULATION
1924 Jan. 1	239855	383145	623000	1509318	413
1931 Dec. 1	434986	262256	697242	2273670	307
1938 Fall	384788	239512	624290	2730900	228
1941 Fall	396493	246440	642933	2995743	214
1947	455000	240500	695500	3632000	192
1950	446000	247450	693450	4151687	167
1953	470000	211300	681300	4600000	148
1960			700000	5500000	128
1970			660000	6600000	100
1980			600000	7500000	80

1960 - 1970 - 1980 - Estimated

Cordon bounded by Sunset Blvd., Los Angeles St., Pico Blvd., Figueroa St.

Figures fc 1924, 1931, 1938 and 1941 - Reports on Business Districts, L.A. County Regional Planning Comm.

Figures for 1947, 1950 and 1953 are estimates, based upon adjusted Motor Vehicle Cordon Counts, and data furnished by Pacific Electric Company and Los Angeles Transit Lines.

All Cordon Counts adjusted to a 12 hour basis

Factor of 1.45 persons per auto used with Cordon Counts to develop number of persons entering by automobile

VII

TRAFFIC

Increase in Motor Vehicle Traffic - 1948 to 1953

Up until the 1930-1940 decade, traffic patterns in the Metropolitan Los Angeles Area were primarily radial in direction, like the spokes of a wheel. Since that time, decentralization of business, extension of the populated area and increased industrialization in outlying sections, particularly since the early 1940's,have resulted in a substantial increase in circumferential traffic.

Many automobile riders who formerly drove through the Central District from one side of the Metropolitan Area to the other now drive around it. Morning and evening peaks made up of industrial workers are creating conditions which are approaching, if not reaching congestion. Plate IV presents the traffic flow-in both directions-on certain State and other highways in the area for the year 1948, and-in a different color,- the increase in such traffic during the five year period 1948 to 1953.

The shortage of passenger automobiles, created by cessation of production during World War II, had not been eliminated by 1948, there being 1,333,718 passenger automobiles registered in Los Angeles County in that year. This number had increased to 1,895,000 or 42.2 per cent by 1953. While population of the County had only increased by 22.5 per cent during this 5-year period. While in future years, the increase in number of passenger automobiles may be expected to follow more closely the increase in population, decentralization of the latter may be expected to cause a substantial increase in this circumferential traffic, unless provision is made to handle a considerable amount of such traffic on mass rapid transit facilities.

Southbound Passenger Automobiles and Passengers
Travelling over Cahuenga Pass - July 1953
From 6:00AM to 10:00PM

This count, made in connection with the annual traffic count of the California Highway Commission, was primarily to determine car riding habits, from which the number of persons leaving the San Fernando Valley during a 16-hour day could be estimateed. Because the Freeway over Cahuenga Pass is not as yet connected with the Hollywood Freeway-although such connection is expected to occur early in 1954-it was not possible to determine the proportion of these passengers coming from the Valley who travelled directly to Downtown Los Angeles, and those who followed a circumferential route around this area to points on the opposite side, or who travelled southerly or westerly from Hollywood.

Distribution of Rail and Vehicular Travel over 24 Hours

Transit riding habits, shown on Figure No. 17, are typical of those in large Metropolitan Areas in this Country, except that morning and evening peaks are sharper and mid-day and evening traffic is smaller, these characteristics being undoubtedly due to the high passenger automobile registration and decentralization of retail trade.

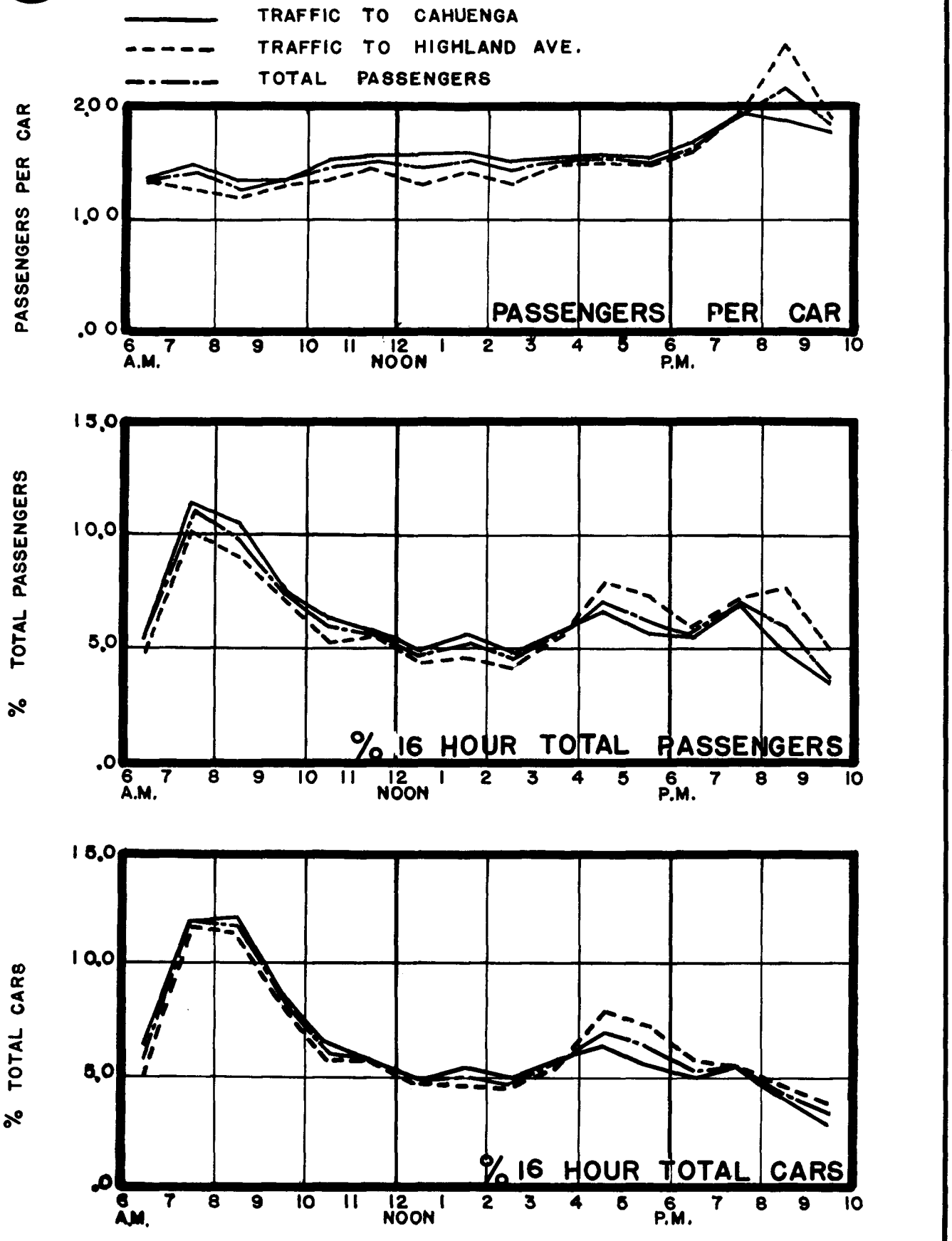
Freeway Construction Program

Figure No. 18 shows the present state of Freeway development in Metropolitan Los Angeles, and probable rate of future Freeway construction under present methods of financing. The present system of financing highways, based upon State collected gasoline and user taxes, with some Federal allocations, with these revenues being allocated to Cities, Counties and the State system according to a formula, has been in effect for three decades.

This system operated very well while the number of registered motor vehicles was relatively small, but today, when freeway construction is

16

SOUTH BOUND PASSENGERS AND PASSENGER CARS OVER CAHUENGA PASS



RUSCARDON ENGINEERS 1953

FIGURE NO. 16

DATA PERTAINING TO SOUTHBOUND PASSENGER CARS AND PASSENGERS TRAVELLING OVER CAHUENGA PASS DURING THE PERIOD 6:00AM to 10:00PM, JULY 1953

This Figure presents some of the data given in Table No. 12. A portion of the passenger automobiles travelling southbound over Cahuenga Pass continue directly down Highland Avenue to and through Hollywood, while the remainder travel easterly to the eastern section of Hollywood and beyond, via Cahuenga Boulevard. The Hollywwod Freeway is not yet connected to the Freeway through the Pass

Of a total of 47,658 passenger cars travelling southbound over the Pass, 29,289, or 61.5 per cent, travelled via Cahuenga Boulevard, and 18,369, or 38.5 per cent, passed down Highland Avenue. Of the total of 70,797 passengers, 44,434 or 62.8 per cent travelled via Cahuenga Boulevard, and 26,363, or 37.2 per cent, travelled down Highland Avenue.

Passengers per car started out at slightly over 1.3 in early morning hours, and gradually increased to around 1.5 by 6:00PM, and then increased fairly rapidly until 9:00PM, after which time they dropped off in number. Between 7:00 and 9:00AM, 20.9 per cent of the total passengers moved, and between 7:00 AM and 10:00AM, this proportion was 29.7 per cent, or a total of 50.6 per cent of the total 16 hour traffic in these 5 hours. The slight evening peak, between 4:00 and 6:00PM, is apparently made up of persons working in the San Fernando Valley and living south of the Pass, while the later peak between 7:00 and 9:00PM, is probably made up of pleasure seekers coming to Hollywood, and of persons travelling to Los Angeles from distant points in the northern or central part of the State.

See Table No. 12

TABLE NO. 12

SOUTHBOUND PASSENGER CARS AND PASSENGERS OVER CAHUENGA PASS

PERICD	TO CAHUENGA AVENUE					TO HIGHLAND AVENUE					TOTAL SOUTHBOUND TRAFFIC				
	PASS. CARS NO.	% TOTAL	PASSENGERS NO.	% TOTAL	PASS. PER CAR	PASS. CARS NO.	% TOTAL	PASSENGERS NO.	% TOTAL	PASS. PER CAR	PASS. CARS NO.	% TOTAL	PASSENGERS NO.	% TOTAL	PASS. PER CAR
6-7AM	1868	6.4	2510	5.6	1.34	943	5.1	1221	4.6	1.30	2811	5.9	3731	5.3	1.33
7-8AM	3498	11.9	5081	11.4	1.45	2133	11.6	2670	10.1	1.25	5631	11.8	7751	11.0	1.38
8- 9AM	3510	12.0	4609	10.4	1.31	2072	11.3	2406	9.1	1.16	5582	11.7	7015	9.9	1.26
9-10AM	2489	8.5	3323	7.5	1.33	1494	8.1	1891	7.2	1.27	3983	8.2	5214	7.4	1.31
10-11AM	1863	6.4	2792	6.3	1.50	1025	5.6	1350	5.1	1.32	2888	6.1	4142	5.9	1.43
11-12AM	1648	5.6	2545	5.7	1.54	1021	5.6	1437	5.4	1.41	2669	5.6	3982	5.6	1.49
12-1PM	1429	4.9	2186	4.9	1.53	868	4.7	1094	4.2	1.26	2297	4.8	3280	4.6	1.43
1-2PM	1538	5.2	2439	5.5	1.58	830	4.5	1165	4.4	1.40	2368	5.0	3604	5.1	1.52
2-3PM	1412	4.8	2098	4.7	1.49	820	4.4	1054	4.0	1.29	2232	4.7	3152	4.5	1.41
3-4PM	1630	5.6	2486	5.6	1.52	986	5.4	1418	5.4	1.44	2616	5.5	3904	5.5	1.49
4-5PM	1827	6.2	2871	6.5	1.57	1411	7.7	2067	7.9	1.46	3238	6.8	4938	7.0	1.52
5-6PM	1594	5.4	2445	5.5	1.53	1292	7.0	1894	7.2	1.47	2886	6.1	4339	6.1	1.50
6-7PM	1422	4.9	2384	5.4	1.68	1019	5.6	1531	5.8	1.50	2441	5.1	3915	5.5	1.61
7-8PM	1598	5.5	3073	6.9	1.92	986	5.4	1857	7.1	1.88	2584	5.4	4930	7.0	1.90
8-9PM	1137	3.9	2142	4.8	1.88	784	4.3	2011	7.6	2.57	1921	4.1	4153	5.9	2.16
9-10PM	826	2.8	1450	3.3	1.75	685	3.7	1297	4.9	1.89	1511	3.2	2747	3.7	1.82
Totals	29289	100.0	44434	100.0	1.46	18369	100.0	26363	100.0	1.44	47658	100.0	70797	100.0	1.49

TABLE NO. 12 CONTINUED

S U M M A R Y

PERIOD	TO CAHUENGA AVENUE					TO HIGHLAND AVENUE					TOTAL SOUTHBOUND TRAFFIC				
	PASS. CARS		PASSENGERS		PASS.	PASS. CARS		PASSENGERS		PASS.	PASS. CARS		PASSINGERS		PASS.
	NO.	% TOTAL	NO.	% TOTAL	PER CAR	NO.	% TOTAL	NO.	% TOTAL	PER CAR	NO.	% TOTAL	NO.	% TOTAL	PER CAR
6-7AM	1868	6.4	2510	5.6	1.34	943	5.1	1221	4.6	1.30	2811	5.9	3731	5.3	1.33
7-9AM	7008	23.9	9690	21.8	1.38	4205	22.9	5076	19.2	1.21	11213	23.5	14766	20.9	1.32
7-10AM	9497	32.4	13013	29.3	1.37	5699	31.0	6967	26.4	1.22	15196	31.7	19980	28.3	1.31
10A-4PM	9520	32.5	14546	32.7	1.53	5550	30.2	7518	28.5	1.35	15070	31.7	22064	31.2	1.47
10A-5PM	11347	38.7	17417	39.2	1.53	6961	39.7	9585	36.4	1.38	18308	38.5	27002	38.2	1.48
4P-8PM	6441	22.0	10773	24.3	1.67	4708	25.7	7349	28.0	1.56	11149	23.4	18122	25.6	1.63
5P-8PM	4614	15.8	7902	17.8	1.71	3297	18.0	5282	20.1	1.60	7911	16.6	13184	18.6	1.85
8P-10PM	1963	6.7	3592	8.1	1.83	1469	8.0	3308	12.5	2.25	3432	7.3	6900	9.6	2.01

NOTES:

Southbound Cars and Passengers to Cahuenga - Monday, July 20, 1953 - 6:00AM to 10:00PM by Ruscardon Eng.

Southbound Passengers to Highland - Monday, July 13, 1953 - 6:00AM to 8:00PM by Ruscardon Engineers

Southbound Passengers and Cars to Highland - Monday August 10, 1953 - 8:00PM to 10:00PM by Ruscardon Engineers

Southbound Cars to Highland - Monday, July 13, 1953 - 6:00AM to 8:00PM by State Highway Department

FIGURE NO. 17

HOURLY DISTRIBUTION OF VEHICULAR AND TRANSIT PASSENGER TRAVEL OVER 24 HOURS

This graph, based upon data given in Table No. 13, shows hourly distribution of passenger and vehicular travel on the lines of the Pacific Electric Railway, the Los Angeles Transit Lines, and on the Hollywood and Arroyo Seco Freeways.

The morning peak transit travel, between 7:00 and 9:00AM, accounts for 23.5 per cent of the total 24 hour passengers on the Pacific Electric Railway, and for 19.3 per cent on the Los Angeles Transit Lines, with the evening peak, between 4:00 and 6:00PM accounting for 25.7 per cent of the total 24 hour passengers on the Pacific Electric Railway, and for 22.5 per cent on the Los Angeles Transit Lines. Thus, these four peak hours account for travel of 49.2 per cent of the total passengers on the Pacific Electric Railway and for 41.8 per cent of the total passengers on the Los Angeles Transit Lines.

Travel during offpeak hours, during the middle of the day and after 6:00PM is heavier on the Los Angeles Transit Lines than on the Pacific Electric Railway, and this accounts, at least to a considerable extent, for the fact that travel peaks on the Pacific Electric Railway are somewhat higher than those on the Los Angeles Transit Lines, when expressed in terms of total 24 hour passenger travel.

TABLE NO. 13

HOURLY DISTRIBUTION OF PASSENGER AND VEHICULAR TRAVEL

TIME	PAC. ELEC. RY. % of TOTAL PASSENGERS		L.A. TRAN. LINES % OF TOTAL PASSENGERS		VEHICLES % OF TOTAL ON FREEWAYS	
	24 Hrs. 6-6AM	16 Hrs. 6A-10PM	24 Hrs. 6-6AM	16 Hrs. 6A-10PM	24 Hrs. 6-6AM	16 Hrs. 6A-10PM
6- 7AM	4.0	4.2	4.0	4.2	3.3	3.7
7- 8AM	13.8	14.4	11.8	12.5	8.4	9.4
8- 9AM	9.7	10.1	7.5	7.9	7.5	8.4
9-10AM	4.7	4.9	4.4	4.7	5.5	6.2
10-11AM	4.2	4.4	4.7	5.0	4.5	5.1
11-12AM	4.0	4.2	5.2	5.5	4.6	5.2
12- 1PM	4.0	4.2	4.8	5.1	4.6	5.2
1- 2PM	3.8	4.0	5.1	5.4	4.5	5.1
2- 3PM	4.1	4.2	5.2	5.5	4.9	5.5
3- 4PM	6.0	6.3	6.0	6.4	6.0	6.7
4- 5PM	11.7	12.2	10.6	11.2	8.3	9.3
5- 6PM	14.0	14.6	11.9	12.6	9.8	11.0
6- 7PM	6.0	6.3	5.5	5.8	6.8	7.6
7- 8PM	2.3	2.4	2.9	3.1	4.2	4.7
8- 9PM	1.8	1.9	2.5	2.7	3.1	3.5
9-10PM	1.6	1.7	2.3	2.4	3.0	3.4
10-11PM	1.3		1.6		3.2	
11-12PM	1.0		1.4		3.4	
12- 1AM	0.7		0.9		1.7	
1- 2AM	0.3		0.3		0.8	
2- 3AM	0.1		0.2		0.4	
3- 4AM	0.1		0.1		0.3	
4- 5AM	0.1		0.2		0.4	
5- 6AM	0.7		0.9		0.8	
TOTALS	100.0	100.0	100.0	100.0	100.0	100.0

Source -
Research Department- Pacific Electric Company -
January 28, 1953

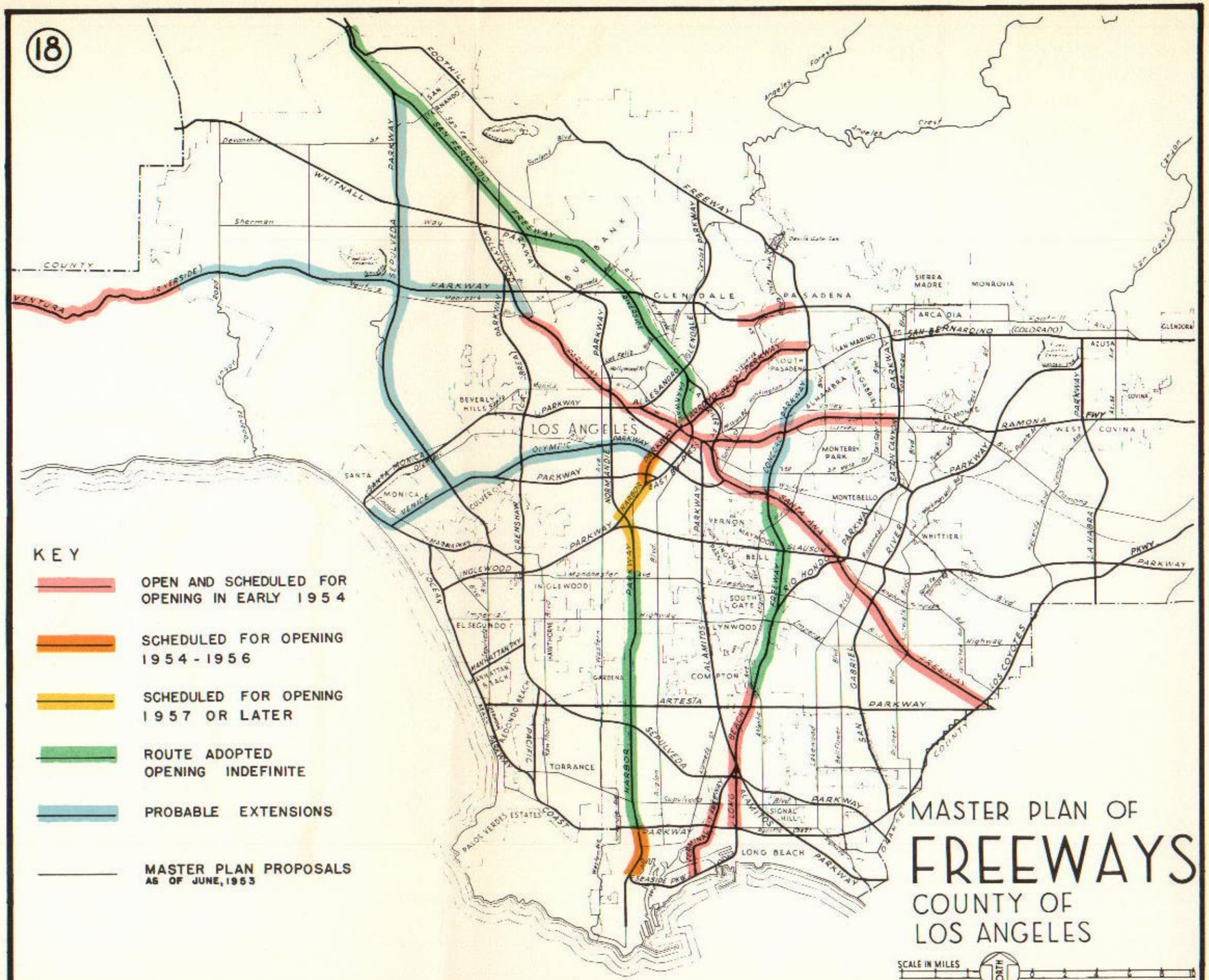
essential, particularly in the Metropolitan Areas of the State, and with the extremely high cost of such Freeways compared with costs of arterial highways, it has not provided sufficient funds annually to allow such freeway construction to keep pace with the increasing demands of motor vehicle traffic for them.

An effort was made in the 1953 State Legislature to provide a large bond issue, debt service upon which would have been met from future gasoline and user taxes, in order to accelerate freeway construction in Metropolitan Areas, as well as to make up deficiencies in other highways, which was not successful. Another bill creating a Freeway Authority for Metropolitan Los Angeles, which would have imposed local gasoline and possibly other taxes, using such revenues for debt service on a large bond issue, to be likewise used for accelerating local Freeway construction, failed of passage.

It is the opinion of the writer, as stated in the Foreword of this Report, that, irrespective of whether the proposed rail facilities are constructed, some method of financing Freeway construction in Metropolitan Los Angeles, which will allow early completion of a Freeway network adequate to care for present traffic and which will allow such a network to keep pace with increasing population and motor vehicle registration, is an urgent necessity.

Such Freeway network will be needed particularly to serve those areas where present population densities are low and travel patterns are not now, nor will be for some time in the future, of a character to provide sufficient revenues to support rail mass rapid transit, until such time as densities and travel patterns in these areas will provide such support.

(18)



KEY

- OPEN AND SCHEDULED FOR OPENING IN EARLY 1954
- SCHEDULED FOR OPENING 1954 - 1956
- SCHEDULED FOR OPENING 1957 OR LATER
- ROUTE ADOPTED OPENING INDEFINITE
- PROBABLE EXTENSIONS
- MASTER PLAN PROPOSALS AS OF JUNE, 1953

MASTER PLAN OF FREEWAYS COUNTY OF LOS ANGELES

SCALE IN MILES

NORTH

RUSCARDON ENGINEERS · 1953

THE REGIONAL PLANNING COMMISSION - COUNTY OF LOS ANGELES

FIGURE NO. 18

PRESENT AND FUTURE STATUS OF FREEWAY DEVELOPMENT

The following indicate briefly the present and future status of Freeway development in Metropolitan Los Angeles, during the next few years.

HARBOR FREEWAY - Now open to Sixth Street. Section from Sixth to Olympic Boulevard scheduled to open in early 1954, Section to 23rd Street under contract, scheduled to open about the middle of 1955. Construction bids to Exposition Boulevard to be advertised early in 1954, with this section to be opened in the middle of 1956. Construction bids to Gage Avenue to be advertised in latter part of 1954, with opening of this section early in 1957. Southern end from Lomita Boulevard to Battery Street, San Pedro, to be advertised for bid in early 1954, and opened for use the latter part of 1956. Right-of-way acquired on all remaining sections. Construction to proceed as funds become available.

LOS ANGELES RIVER FREEWAY - Completed north of 223rd Street. Under construction to south crossing of Atlantic Boulevard. Right-of-way being acquired north to Olympic Boulevard, with section from Washington Boulevard to Olympic Boulevard scheduled for initial construction.

HOLLYWOOD - RAMONA CONNECTION- Aliso-Alameda Street underpass scheduled for opening the end of 1953. Vignes Street separation to be completed about the end of 1954.

HOLLYWOOD FREEWAY - Completion of section through Cahuenga Pass scheduled for completion early in 1954. Extension westerly to Ventura Boulevard probable. Extension north to San Fernando less probable.

GENERAL COMMENTS - Riverside Parkway route adopted, San Fernando to Arroyo Seco. Extension of Riverside Parkway from Arroyo Seco southerly to Ramona and Santa Ana Parkways, with Olympic Freeway, thence westerly to Santa Monica appears likely. Santa Monica Parkway through Beverly Hills appears unlikely. Sepulveda Parkway route adopted but time of initiation of construction indefinite.

VIII

ORIGIN AND DESTINATION STUDY

In an investigation of this character it becomes necessary to secure information as to the location of residence and place of employment of potential passengers who might ride a transit facility to be constructed, and also as to their movement and pattern.

Location of Industry

Plate II shows the location of land now occupied by industry. It will be noted that such industry is located in the area extending from the southeastern portion of Los Angeles in a southerly direction. That this general locational trend will in all probability continue in the future is indicated by the location of land now zoned for industrial purposes. Naturally, some scattering of industrial use may be expected, but the pattern has been set for this continuation, by the location of existing industrial uses and the zoning of land for expansion of these uses.

Other considerations will likewise influence the continuation of this trend, proximity of rail lines and highways, and of the Ports of Long Beach and Los Angeles, available water supply, and, with provision of adequate transportation facilities, an adequate labor supply.

Persons Included in Study

Because of the availability of information, the present study was limited primarily to employees of industry, with the exception of Postal Zones 12, 13, 14, 15 and 17, these being Downtown Los Angeles, and 28, Hollywood. In the aforementioned Zones the employees included those working in the retail stores, hotels, etc., and also occupants of office buildings. All persons covered in this study are employed and therefore constitute the major portion of the potential traffic during the morning and evening peak hours.

Industrial Establishments Included in Study

The Los Angeles Chamber of Commerce in 1952 published a Directory of all industrial establishments in Los Angeles County, employing 25 or more persons, giving the street address and Postal Zone of each industry or plant in the County. These industries were classified-as to number of employees into the following groups-25 to 49 employees; 50 to 99 employees; 100 to 249 employees; 250 to 499 employees; and 500 or more employees. The total industrial employees in each Zone were estimated by taking the average number employed in each group and multiplying such number by the number of plants listed in each Zone in each group. For example, in the group employing between 25 and 49 employees, it was assumed that average number employed was 37. This number was multiplied by the number of plants in the Zone in this group to secure the number of estimated industrial employees in that Zone.

This method is considered statistically sound, as the number of firms in each group was large. The number of employees in those firms employing in excess of 500 persons was in most instances secured directly from the employer, and in the few instances where such information was not available, the number was taken as the average number of employees per firm in the 500 or more group.

Procedure Used in Securing Employee Addresses

Addresses of employees segregated as to Postal Zones were secured by a number of methods - personal solicitation, telephone calls and by mail. In quite a few instances local Chambers of Commerce in smaller communities gave excellent cooperation. In securing this information some employers furnished separate 3" x 5" cards for each employee with their name and residence address, and in most instances, the Postal Zone in which such

employee lived. In a small percentage of cases the employees address card did not give the Postal Zone of his residence.

When the number of addresses lacking Postal Zone identification formed a fairly sizable proportion of the total persons employed at a plant, a 25 to 50 per cent sample of such unzoned addresses was taken, and Postal Zones of such addresses determined from a Street Directory which gave Postal Zones. Where the unzoned addresses constituted a relatively small proportion, they were proportioned between employees who lived in the Study Area and those who lived without it. As was to be expected, a large number of employees were found to live outside of the Study Area. This group was set aside, however, for use in any future studies.

Other employers and groups supplied the data on forms supplied to them, these forms giving the total number of persons employed by them at each plant or business location in each of the 80 Postal Zones.

Expansion Factor

While it was not possible to secure a 100 per cent sample of all employees, the percentage was quite high in the majority of Zones, being in excess of 50 per cent of those employed in industry in the Area, as is shown in Table No. 14.

It then became necessary to expand this sample to include all of these persons employed in industry in each Postal Zone. Inasmuch as the size of the sample was substantial, it was assumed that the residence pattern for all employees in each Zone was the same as that indicated by the sample. To the known number of employees working in a given Zone and living in each of the 80 Postal Zones, an "Expansion Factor" was applied, this being developed as follows.

TABLE NO. 14

SUMMARY OF ORIGIN AND DESTINATION STUDY

POSTAL ZONE		EMPLOYEES NAMES REC'D. (1)	EST'D. TOTAL EMPLOYEES (2)	EXPANSION FACTOR (3)	NO. IN COL. I LIVING IN STUDY AREA (4)	EST'D. NO. IN COL.2 LIVING IN STUDY AREA (5)
GROUP A						
Burbank		41804	48652	1.16	32271	37524
Chatsworth		129	129	1.00	103	103
Canoga Park		00	00	00	00	00
Encino		00	00	00	00	00
No. Hollywood		7912	9576	1.21	7059	8575
Northridge		00	00	00	00	00
Pacoima		151	213	1.41	135	191
Reseda		235	288	1.22	146	276
San Fernando		669	946	1.41	622	871
Sun Valley		397	688	1.74	349	606
Tarzana		00	00	00	00	00
Universal City		00	00	00	00	00
Van Nuys		3157	5976	1.89	2974	5615
Woodland Hills		00	00	00	00	00
Total		54454	66462	1.22	43659	53761
GROUP B						
L. A. Zone	27	435	1188	2.73	327	892
	28	3895	24720	*6.18	2621	17781
	29	386	638	1.65	246	399
	38	1720	8326	4.85	1152	5587
Total		6436	34872	5.41	4346	24659
GROUP C						
Glendale	1					
	2					
	3		Glendale zones not			
	4					
	5		Tabulated individually			
	6					
	7					
	8					
Total		5081	9373	1,85	3816	7105

TABLE NO. 14 - CONTINUED

POSTAL ZONE		EMPLOYEES NAMES REC'D.	EST'D. TOTAL EMPLOYEES	EXPANSION FACTOR	NO. IN COL. 1 LIVING IN STUDY AREA	EST'D. NO. IN COL. 2 LIVING IN STUDY AREA
		(1)	(2)	(3)	(4)	(5)
GROUP D						
L. A. Zone	4	1428	2391	1.67	991	1654
	5	3593	3873	1.08	1805	1960
	6	3362	3392	1.00	1657	1657
	7	3088	7501	2.43	1820	4418
	18	169	400	2.37	115	264
	36	2876	5225	1.82	1613	2933
Total		14516	22782	1.57	8001	12886
GROUP E						
L. A. Zone	12	26269	36577	*1.39	17127	24056
	26	72	725	10.10	50	502
	31	6923	11935	1.72	4341	7481
	32	4334	7500	1.73	1874	3245
	39	2786	5286	1.90	2289	4357
	41	69	75	1.09	65	69
	42	161	213	1.32	101	134
	65	3099	5913	1.91	2231	4263
Total		43713	68224	1.56	28078	44107
GROUP F						
L. A. Zone	13	15044	25799	*1.71	9390	16131
	14	30878	58636	*1.80	17510	32563
	15	7234	28852	*4.00	4390	16275
	17	12006	19443	*1.62	6669	10653
	21	4344	15696	3.62	2781	10251
Total		69506	148426	2.14	40740	85873
GROUP G						
L. A. Zone	22	14896	24926	1.67	7534	12620
	23	6428	19259	3.00	3884	11658
	33	1218	2124	1.75	862	1521
	63	140	3193	22.80	83	1895
Total		22682	49502	2.18	12363	27694

TABLE NO. 14 - CONTINUED

POSTAL ZONE		EMPLOYEES NAMES REC'D.	EST'D. TOTAL EMPLOYEES	EXPANSION FACTOR	NO. IN COL. I LIVING IN STUDY AREA	EST'D. NO. IN COL.2 LIVING IN STUDY AREA
		(1)	(2)	(3)	(4)	(5)
GROUP H						
L. A. Zone	1	2601	11831	4.55	1585	7055
	2	3972	6838	1.72	2931	5044
	11	2484	10897	4.38	1348	6505
	58	31243	51657	1.65	21337	34751
Bell		396	1137	2.87	298	853
Huntington Pk.		2592	4483	1.73	1687	2938
South Gate		7360	12168	1.65	5018	8285
Maywood		313	2235	7.15	218	1546
Total		50961	101246	1.99	34422	66977
GROUP I						
L. A. Zone	59	67	1076	16.08	30	481
Compton		2464	2786	1.13	1709	1964
Lynwood		1838	2080	1.13	1418	1599
Total		4369	5942	1.36	3157	4044
GROUP J						
Bellflower		00	00	00	00	00
Downey		4689	7751	1.66	2441	4056
Paramount		235	388	1.65	201	332
Total		4924	8139	1.65	2642	4388
GROUP K						
Long Beach	2	1156	2294	1.99	1051	2096
	3	7342	7755	1.06	6361	6738
	4	2170	2583	1.19	1901	2262
	5	1351	2137	1.58	1098	1537
	6	379	838	2.21	285	620
	7	199	538	2.71	154	417
	8	13571	17175	1.26	8398	10582
	10	24	150	6.25	20	118
	11	00	00	00	00	00
	12	888	2573	2.90	829	2358
	13	275	2003	7.29	252	1764
	14	7	288	00	3	3
	15	00	00	00	00	00
Total		27362	38334	1.40	20352	28495

TABLE NO. 14 - CONTINUED

POSTAL ZONE	EMPLOY-EES NAMES REC'D.	EST'D. TOTAL EMPLOY-EES	EXPAN-SION FACTOR	NO. IN COL. I LIVING IN STUDY AREA	EST'D. NO. IN COL.2 LIV-ING IN STUDY AREA
	(1)	(2)	(3)	(4)	(5)
GROUP L					
Harbor City	00	00	00	00	00
San Pedro	4347	10255	2.36	3693	8716
Wilmington	6659	11675	1.75	5527	9679
Total	11006	21930	1.99	9220	18395
GROUP M					
Torrance	5845	21836	3.74	3492	13020
Total	5845	21836	3.74	3492	13020
GRAND TOTAL	320855	597068	1.86	214288	391404

NOTES:

Column (1) Actual No. of Names secured of persons employed in designated Postal Zone

Column (2) Estimated Total No. of persons employed in zone by types of concerns contacted in Study

Column (3) Column (3) equals Column (2) divided by Column (1)

Column (4) Actual No. of Names secured of persons who were employed in zone and lived in Study Area

Column (5) Estimated total number of persons employed in zone by types of concerns contacted who live in Study Area. Column (5) is a summary of the expansion of the distributed names in the designated zone by use of the factor given in Column (3)

*-These zones were expanded by a different procedure explained in Text.

The total figure for employees estimated to be working in the given Postal Zone was divided by the figure for employees whose Postal Zone address was known, the result being considered as the "Expansion Factor". The following hypothetical case illustrates the procedure.

Assume that there were an estimated 2500 persons employed in Zone 35, who lived within the Study Area, and that of these, Zones of residence were available for 1500 employees. The "Expansion Factor" for Zone 35 would therefor be 2500 ÷ 1500, or 1.67. If information was received to the effect that 30 employees who worked in Zone 35 resided in Zone 22, this latter number was expanded by multiplying by the factor 1.67 (30x1.67) and it was estimated that of the total 2500 persons who worked in Zone 35, 50 resided in Zone 22.

Table No. 14 shows that there was a total of 597,068 persons employed in these 80 Zones, that data as to Zone of residence was received from 320,855 persons, making the "Expansion Factor" for the entire Study Area 1.86 This includes the Zones in "Downtown Los Angeles" mentioned above, and also the Hollywood Area.

Because of the preponderance of non-industrial employees in Downtown Los Angeles and in Hollywood, an effort was made to determine Zone addresses of employees of retail stores, hotels, financial concerns and public agencies and occupants of office buildings.

In 1949, the Downtown Business Men's Association made an estimate of the total number of persons who entered and remained in the Central District during the 16 hours, 6:00AM to 10:00PM, using then available sources of information, and this was used as a bases for the Origin and Destination Study in this area, being expanded as described below.

The area included in this Study extended from Sunset Boulevard on the north to Pico Boulevard on the south, and from Figueroa Street on the west to

Los Angeles Street on the east. The five Postal Zones which make up this area cover a considerably larger area than that given above, and it was felt that the Downtown Business Men's Association Study should be expanded to cover the five Postal Zones.

To the 22,343 Governmental employees included in the estimate of the Downtown Business Men's Association estimate, 15 per cent was added, making an estimated total within this employment category of 25,694 employees. City, County and Federal Agencies reported residence addresses of 21,448 employees. This providing an "Expansion Factor" of 1.20 (25694 ÷ 21448). A total of 4821 addresses of industrial employees working in plants in these Zones was received. Total employees estimated to be working in these Zones, based upon the categories in the Chamber of Commerce publication, were 10,993, which gave an "Expansion Factor" of 2.25(10993÷ 4821). No information as to employees in smaller retail stores in this Zone was received from the Downtown Business Men's Association, although those employed by the large department stores were included.

Zone 13 The Downtown Business Men's Association reported addresses of 7053 persons employed in stores in this Zone and an "Expansion Factor" of 1.50 was arbitrarily assumed. It was also found by canvass that 6165 occupants of office buildings in this Zone existed and an "Expansion Factor" of 1.7 was arbitrarily assumed, giving a total of 10,481 occupants of office buildings in this Zone. Replies were received from industrial employers giving the residence addresses of 1826 persons employed in this Zone. The estimate from the Chamber of Commerce Bulletin of total industrial employees therein was 4738 persons, resulting in an "Expansion Factor" of 2.59 for this Zone.

23,000 employees in retail stores in Hollywood. Since the Hollywood retail

no data was available on this point, it was arbitrarily assumed that 75 per cent of these 23,060 persons were employed in Zone 28, or a total of 17,300. Based upon data in adjacent Zones, it was assumed that 10.2 per cent of the 17,300 employees or 12,150, lived in the Study Area and their residential addresses were distributed in the pattern found by occupants of office buildings and industrial workers.

It is realized that the quality of the results of this Study is not as high as is that developed from industrial employees, but it does take in considerably more employees in other categories, and in all probability the final results are of reasonable quality.

Other Potential Passengers

As stated above, all potential passengers, except those in Downtown Los Angeles and in Hollywood, are industrial employees engaged in manufacturing industry. In addition to these employees, however, there are a substantial number of employees in other industrial categories.

In the Community Labor Market Survey of the California State Department of Employment a total of 1,486,000 persons were listed as being employed in 11 employment areas as of July 1952. These employment areas cover very closely the Study Area. The number of employees in each employment area in each category are listed in Table No. 15.

Manufacturing had the greatest number - 436,500 - followed by Wholesale and Retail Trade - 342,900 - and then Service - 248,100. Employees in Manufacturing constitute 29.7 per cent of the total number of employees, and the above three categories include 1,026,000 persons, or 69.0 per cent of the workers in these 11 employment areas.

Table No. 16 was prepared to show the number of employees in each employment area and under each category, per 1000 employees in Manufacturing.

For example, in the Huntington Park area there were 124,500 employees in Manufacturing, and 34,400 in Wholesale and Retail Trade, or 277 per 1000 Manufacturing. For every employee in Manufacturing there were a total, including those in Manufacturing, of 4,056 employees in the 13 employment Zones.

Nearly all of these employees in Manufacturing could be considered as potential users of this transit facility if it is constructed. This is not true, to as great an extent, with employees in other industrial categories due to various reasons, their residence being close to their place of employment, their need to use their own automobile in their daily work and similar reasons.

No information is available on this matter nor as to the location of residence of employees in other than the Manufacturing category. To secure some idea of how many of these employees in other categories would also be potential users in the proposed facility, it becomes necessary to make certain assumptions, these being based largely upon local knowledge of employment characteristics.

The results of these assumptions are Shown in Table No. 17. Under each category an assumption was made as to the total percentage of employees in each employment category who would be potential users of the proposed transit facility. For example, it was assumed that only 5 per cent of those employed in the category of Fishing and Agriculture would be potential users of the proposed facility, 10 per cent of those employed in the Mining category (including oil workers), $7\frac{1}{2}$ per cent in the Construction category, etc. In the Burbank employment area, for example, there were 68 employees in the Fishing and Agriculture category per 1000 employees in Manufacturing. Applying the 5 per cent Factor to this number it developed that but 3 employees per 1000 employees in Manufacturing would be potential users of the

TABLE NO. 16

EMPLOYMENT IN VARIOUS CATEGORIES PER 1000 EMPLOYEES IN MANUFACTURING - IN EMPLOYMENT AREAS ADJACENT TO AND INCLUDING STUDY AREA

EMPLOYMENT AREA	TOTAL	FISHING AGRICULTURE	MINING	CONSTRUCTION	MANUFACTURING	TRANSPN. COMMCTN. UTILIT'S	WHOLESALE RETAIL TRADE	FINANCE INSURANCE REAL EST	SERVICE	GOVERNMENT	OTHER
Burbank	1834	68	4	50	1000	90	153	49	340	30	50
Compton	3333	258	86	432	1000	247	518	62	494	111	123
East Los Angeles	3383	299	0	80	1000	313	955	56	274	10	398
Glendale	3598	378	15	235	1000	182	683	136	568	136	265
Hollywood	6840	216	16	280	1000	320	2000	440	1824	104	640
Huntington Park	1767	10	1	71	1000	44	277	34	180	54	96
Long Beach	3158	68	91	273	1000	117	682	143	431	208	145
Los Angeles	4777	112	5	121	1000	567	1320	372	875	405	0
San Fernando	9000	1650	200	600	1000	500	1600	300	2000	150	1000
San Pedro	3500	767	0	583	1000	250	233	83	150	267	167
Torrance	2827	143	42	327	1000	77	488	95	506	60	89
Van Nuys	5920	228	5	670	1000	107	1563	491	1071	312	473
Wilmington	2818	330	80	136	1000	568	227	34	170	68	205
Average	4056	348	42	297	1000	260	824	176	683	147	281

Source - Data in Table No.

TABLE NO. 17

POTENTIAL USERS IN VARIOUS EMPLOYMENT CATEGORIES
COMPARED WITH POTENTIAL USERS ENGAGED IN MANUFACTURING

% of USE BY EMPLOYEES IN MANUFACTURING		5	10	7½	100	25	25	25	12½	30	15
EMPLOYMENT AREA	TOTAL	FISHING AGRICULTURE	MINING	CONSTRUCTION	MANUFACTURING	TRANSPN. COMMCTN. UTILIT'S	WHOLESALE RETAIL TRADE	FINANCE INSURANCE REALEST.	SERVICE	GOVERNMENT	OTHER
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Burbank	1139	3	0	4	1000	23	38	12	42	9	8
Compton	1374	13	9	32	1000	62	130	15	62	33	18
East Los Angeles	1448	15	0	6	1000	78	238	14	34	3	60
Glendale	1440	19	2	18	1000	45	170	34	71	41	40
Hollywood	2079	11	2	21	1000	80	500	110	228	31	96
Huntington Beach	1146	0	0	5	1000	11	69	9	22	16	14
Long Beach	1405	3	9	20	1000	29	170	36	54	62	22
Los Angeles	1811	6	1	9	1000	141	330	93	110	121	0
San Fernando	2193	83	20	45	1000	125	400	75	250	45	150
San Pedro	1348	38	0	44	1000	63	58	21	19	80	25
Torrance	1295	7	4	25	1000	19	122	24	63	18	13
Van Nuys	1899	11	0	50	1000	27	390	122	134	94	71
Wilmington	1314	16	8	10	1000	142	57	9	21	20	31
Average	1530	17	4	22	1000	65	206	44	86	44	42