

POPULATION GROWTH *of the Phoenix Urban Area*

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1958 URBAN AREA

1980 URBAN AREA

1 UNSURVEYED AREAS:

① GLENDALE ③ TEMPE

② SCOTTSDALE ④ MESA

MILES 0 1 2 3 4

ADVANCE PLANNING TASK FORCE
CITY OF PHOENIX AND MARICOPA COUNTY
PLANNING DEPARTMENTS

PHOENIX URBAN AREAS • 1958 and 1980

POPULATION GROWTH
of the
PHOENIX URBAN AREA

A Study Basic to Long Range Planning

Prepared By
ADVANCE PLANNING TASK FORCE
City of Phoenix and Maricopa County, Arizona

April 1959

Price: One Dollar and Fifty Cents

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FOREWORD

On the recommendation of their respective Planning Commissions, the governing bodies of the City of Phoenix and Maricopa County established the Advance Planning Task Force in July, 1958. The Task Force is staffed by personnel assigned from the two planning and zoning departments. Its primary function is to prepare a comprehensive plan to serve as a guide for the orderly growth and development of the Phoenix Urban Area irrespective of present corporate limits of the City of Phoenix.

Because of the pressing needs, imposed by rapid growth, it proved necessary to undertake various studies simultaneously and to employ consultants for the preparation of certain parts of the plan. Western Business Consultants were employed to prepare economic studies, including a population projection, and Wilbur Smith and Associates were employed to prepare a system of major streets and highways to serve the anticipated future area of urbanization of Phoenix and Maricopa County as projected by the Task Force land use studies.

Before the future area of urbanization could be estimated, it was necessary to determine the present population-land use ratio and apply this to a future population base. Whether the future population base selected is attained by a given year is not important. However, it is important that the various physical facilities be planned to meet future population needs.

It is expected that the population projections to 1980 as prepared by the Task Force will vary, because of methodology, from certain projections prepared by Western Business Consultants. However, differences will not affect the validity of the several population projections or the logical area of urbanization for which physical plans are being prepared by the Task Force.

Economic factors will largely determine the rate of future population growth and this will be evaluated in the separate economic study currently being prepared by Western Business Consultants.

SUMMARY OF FINDINGS

1. The bulk of past population growth of Maricopa County and the Phoenix Urban Area occurred during the period 1940-1958.
2. Prior to 1940, agriculture, tourism, government and some food and fiber processing were the principal factors influencing growth in Maricopa County and the Phoenix Urban Area.
3. Since 1940 high nationwide birth rates, national migration to the Southwest and the effects of an accelerated defense program have become the principal stimuli influencing growth in Maricopa County and the Phoenix Urban Area.
4. Population of Maricopa County as of July 1, 1958, is estimated to be 560,000 persons.
5. Population of the Phoenix Urban Area, as shown on Plate 1 is estimated at 400,000 as of July 1, 1958.
6. In the period between 1958-1980 natural increase, migration to the Southwest and Phoenix' position as the government and business center of Arizona will be prime factors in future population growth.
7. Population of Maricopa County for 1980 is estimated to be 1,400,000 persons.
8. Population of the Phoenix Urban Area is estimated to be at least 1,000,000 persons by 1980.

INTRODUCTION

This is a report on population growth of the Phoenix Urban Area. It is the first of a series of reports that will comprise a long range comprehensive plan designed to guide the future physical development of the area in an orderly and economical manner.

Before physical plans can be prepared it is necessary to determine the amount and distribution of present and future population and the land area requirements. In an area of rapid growth such as Phoenix, future estimates may be subject to considerable fluctuation due to unforeseen trends and unexpected developments. For these reasons, projections must be reviewed periodically and, if warranted, revised accordingly.

Sections of this report discuss factors influencing past growth, past and present population distribution and density, future population distribution and density, and methods of obtaining a desirable future urban pattern.

FACTORS INFLUENCING PAST GROWTH

GENERAL

Prior to 1940, the availability of irrigation water in the Salt River Valley was probably the principal factor influencing growth in the Phoenix area. Once a thriving, agriculture-based community had developed other factors became important: (1) the community, because of its mild winter climate, attracted not only winter visitors but an impressive number of persons who suffered from "cold weather" ailments; (2) Phoenix was made the center of both state and county governmental activities; and (3) educational and other institutions were established which were to bring thousands of people into the area.

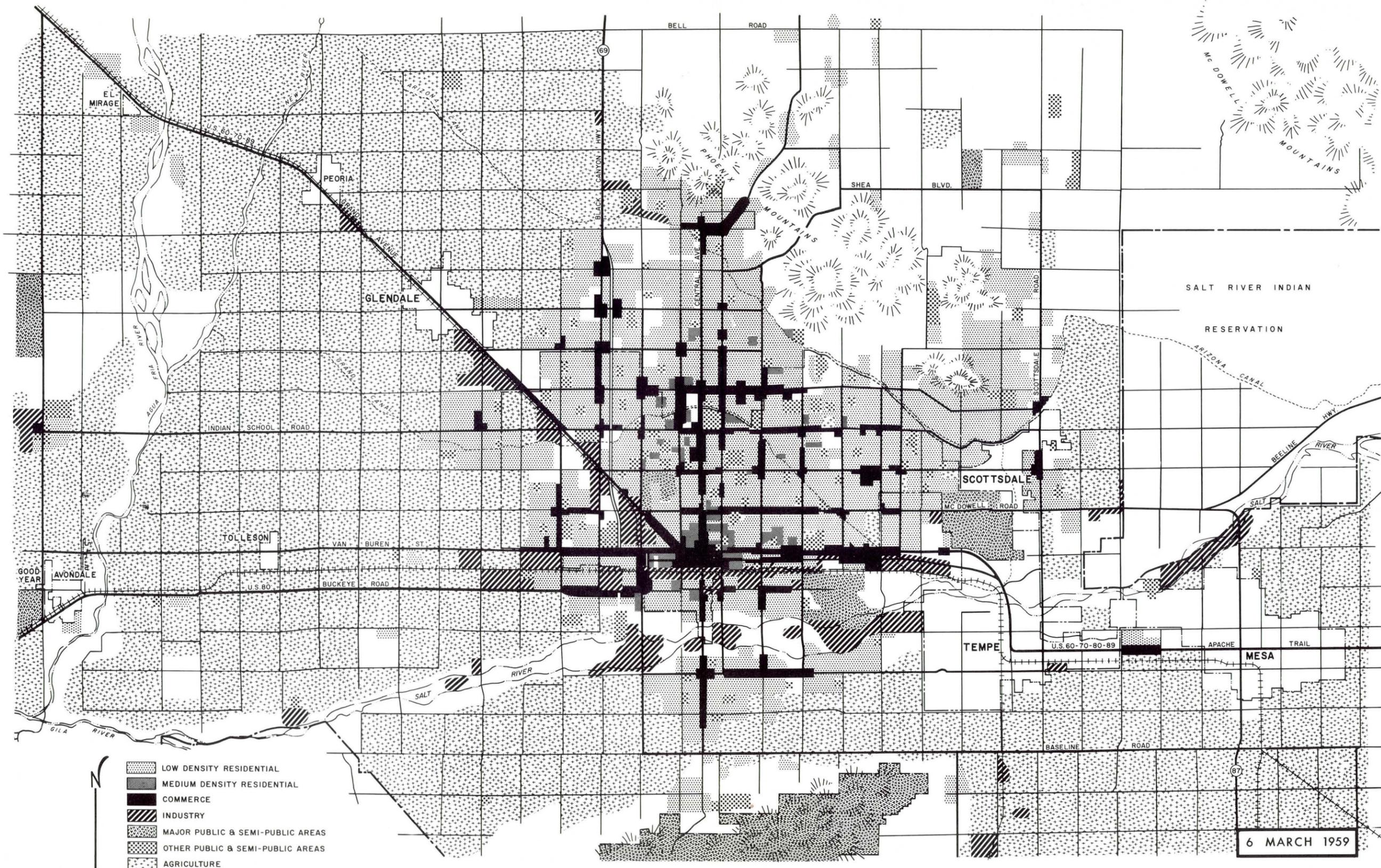
Agriculture, tourism, government and higher education were largely "export" activities — activities which brought income into the community and which made possible the extensive development of complementary trade and service activities.

Since 1940, World War II and the continuing cold war have influenced Phoenix growth to a great extent. Large numbers of servicemen were introduced to the climate of southern Arizona during the war, many of whom have since returned to make their homes here. Secondly, with incentives offered for dispersal of defense-oriented production facilities, several large firms have established electronics and aircraft-components producing branches in the Valley, creating several thousand manufacturing jobs. Two permanent Air Force training bases have been established near Phoenix and veteran's education training programs have been instrumental in the expansion of the State University at Tempe and other Valley schools.

PRESENT LAND USE PATTERN

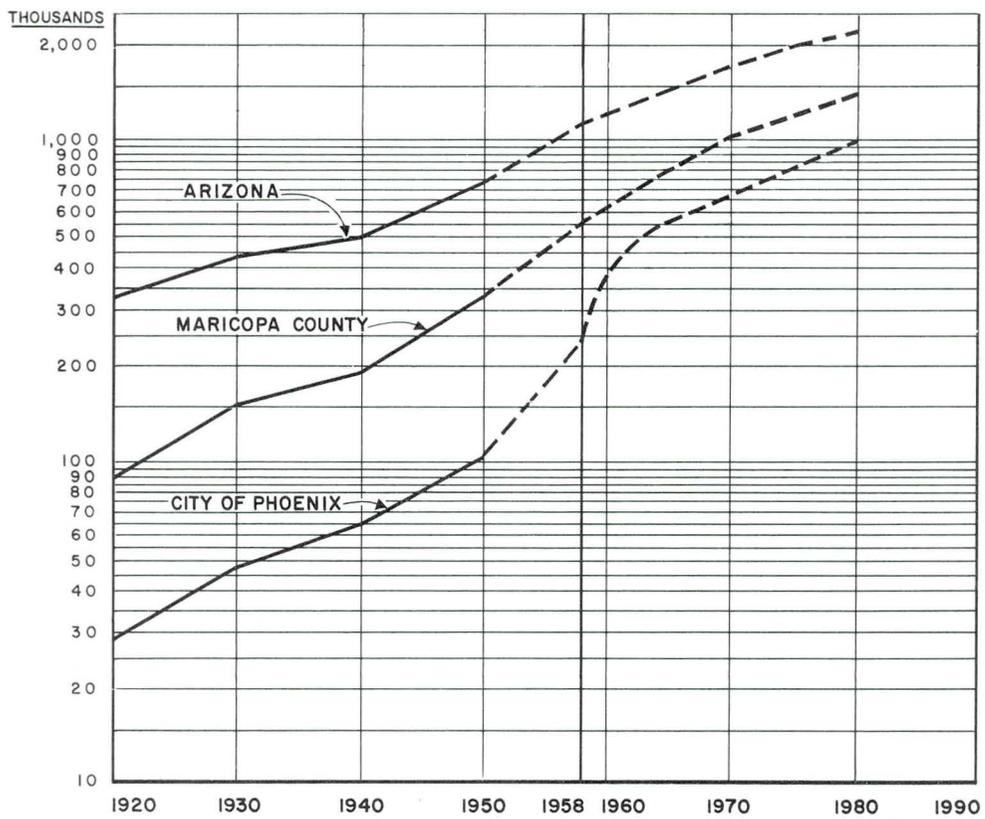
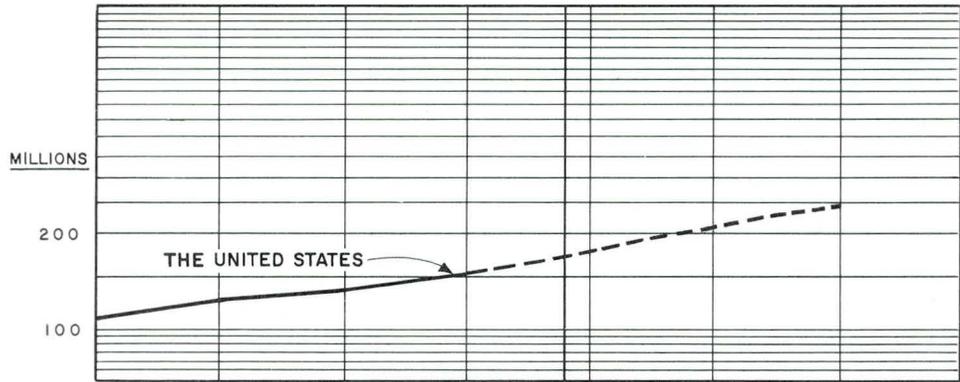
Plate 3 shows the generalized existing land use pattern in the Phoenix Urban Area. On it are shown the major land uses such as industrial, commercial, public and semi-public areas. The present land use pattern will largely determine the future pattern within older sections of the community. As in most communities, the central business district is surrounded by more intensive residential uses and industry has located along railroads and certain of the low-lying lands in the Salt River Basin. Major residential growth has been to the north and northwest. Lack of access to the south has held back development of areas south of the Salt River. As in many other cities, there is considerable strip commercial development along major thoroughfares. Multiple family development is scattered and there is a considerable intermingling of land uses. Also, within older sections of the urban area, there are large tracts of vacant land that are suitable for urban development but have been by-passed for one reason or another. Deficiencies in the present urban pattern should be gradually corrected as conditions permit.

A separate report on land use will explain in detail the influences that physical features such as topography and water and sewer service have exerted on the development of the Phoenix Urban Area.



GENERALIZED EXISTING LAND USE • 1958

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1920 - 1980 COMPARATIVE POPULATION GROWTH



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PAST AND PRESENT POPULATION

PAST POPULATION TRENDS

The populations of the United States, the State of Arizona, Maricopa County and the City of Phoenix are shown for the years 1920, 1930, 1940, 1950 and 1958 in Table 1. The population growth curves which result from these data are shown on Plate 2 along with indications of estimated future growth discussed elsewhere in this report.

As indicated, the population of the United States increased by about 63 per cent (from 106 to 173 million) from 1920 to 1958. Over the same period, the population increase in the State of Arizona amounted to 240 per cent (from 334,000 to 1,140,000), that in Maricopa County to 522 per cent (from 90,000 to 560,000), and in the City of Phoenix to 740 per cent (from 29,000 to 244,000).

The rates of growth in all of the above areas were considerably retarded in the depression years of the 1930's, but they surged upward again in the 1940's, with Arizona's rate of growth during this decade about three times that of the United States as a whole and Maricopa County's rate about five times as great. In the 1950's (to 1958) the United States' population increased by 15 per cent while the increases in Arizona, Maricopa County and the City of Phoenix amounted to 52, 69 and 128 per cent, respectively.

A significant indication of the population growth in Maricopa County is the increase in its proportion of the total state population, especially since 1950. From only 27 per cent of the state's total in 1920, the county has grown to contain nearly 50 per cent as of 1958.

The physical expansion of the City of Phoenix from 1881 to 1958 is shown on Plate 4. It is significant that in less

TABLE 1

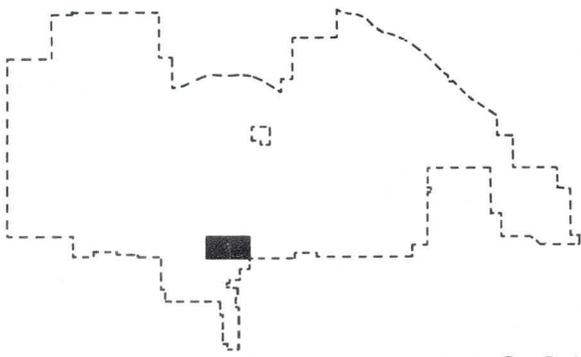
TRENDS IN POPULATION GROWTH, 1920-1958

Year	United States			State of Arizona			% of U.S.
	Popu- lation (000,000)	Increase (000,000)	%	Popu- lation (000)	Increase (000)	%	
1920	106	-	-	334	-	-	0.31
1930	123	17	16.0	436	102	30.5	0.35
1940	132	9	7.3	499	63	14.4	0.38
1950	151	19	14.4	750	251	50.3	0.50
1958 (est)	173	22	14.6	1,140	390	52.0	0.66

Year	Maricopa County			% of Arizona	City of Phoenix			% of Mari- copa Co. Population
	Popu- lation (000)	Increase (000)	%		Popu- lation (000)	Increase (000)	%	
1920	90	-	-	26.95	29	-	-	32.22
1930	151	61	67.8	34.63	48	19	65.5	31.79
1940	186	35	23.2	37.27	65	17	35.4	34.95
1950	332	146	78.5	44.27	107	42	64.6	32.23
1958 (est)	560	228	68.7	49.10	244	137	128.0	43.57

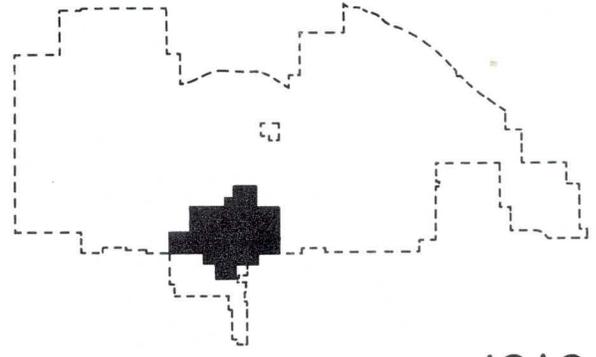
Sources:

1920-1950 data, U. S. Census of Population; U. S. and Arizona 1958 estimates, U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 189 (November 13, 1958); Maricopa County 1958 estimates, Advance Planning Office (see PRESENT POPULATION); City of Phoenix 1958 estimates, currently in use by the City Research and Budget Office.



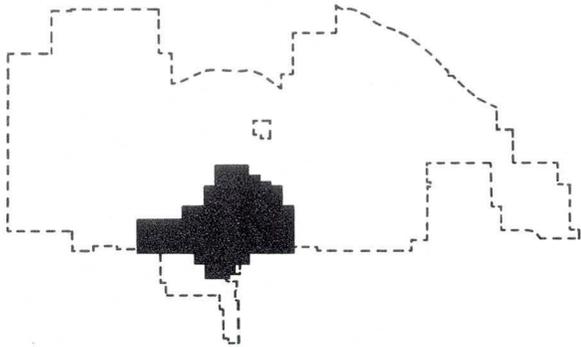
AREA: 0.5 SQ MI POP: 1,708

1881



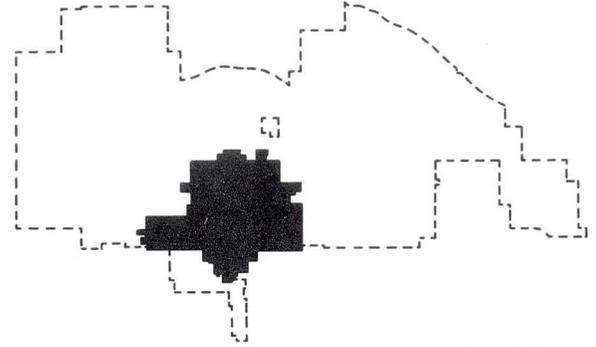
AREA: 3.2 SQ MI POP: 11,134

1910



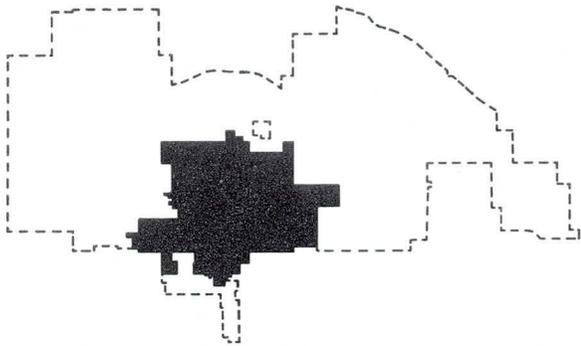
AREA: 5.1 SQ MI POP: 29,053

1920



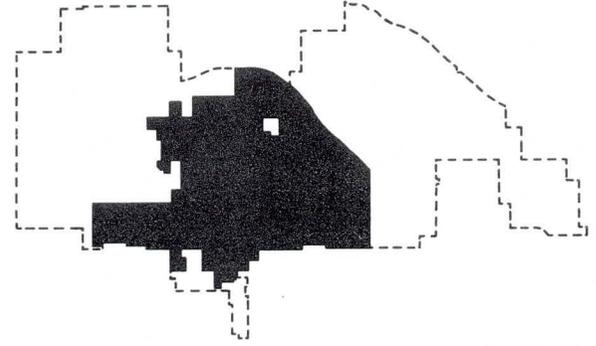
AREA: 6.4 SQ MI POP: 48,118

1930



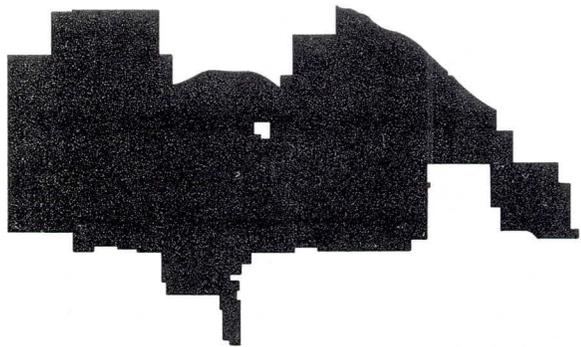
AREA: 9.6 SQ MI POP: 65,414

1940



AREA: 17.1 SQ MI POP: 106,818

1950



AREA: 52.6 SQ MI POP: 241,899

1958

GROWTH OF THE CITY OF PHOENIX

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CITY OF PHOENIX AND MARICOPA COUNTY
PLANNING DEPARTMENTS

than 77 years the City of Phoenix has grown in area from one-half mile to over 52 square miles. This expansion is primarily a result of the past population growth which has taken place in the Phoenix Urban Area, and the annexing of portions of the urban area by the City as they became developed. Major expansions were made in 1958. Although not shown in this plate, during April, 1959, Phoenix annexed an additional 57.4 square miles of territory.

Unlike many communities elsewhere, Phoenix has recognized the need to increase its land area to accommodate the present and certain of the future population needs. Gradually a uniform level of governmental service can be extended to the entire urban area. However, this will pose a problem in certain areas that now contain low population densities as discussed elsewhere in this report.

POPULATION ESTIMATES FOR PHYSICAL PLANNING

Most private and public developments rely heavily upon population figures as one of the chief elements in the determination of a "design standard". However, neither can time their investments to always coincide with a decennial Census, thereby having accurate up-to-date population data. Thus, a need usually exists to estimate the population of an area between Censuses. The same need is also applicable to future population estimates because in most cases the physical planning of today must be geared to accommodate future populations. For planning purposes it is necessary to determine the amount, distribution and density of existing and future population.

The last official Census of the Phoenix Urban Area was taken in 1950 by the U. S. Bureau of the Census (in 1953 the City of Phoenix had a special census taken but it is

now obsolete due to changing city boundaries, etc.). During the past eight years building activity, utility service demands, school enrollments and many other indicators have made it quite obvious that the population of the area has increased rapidly. To determine the extent and character of that growth is essential for planning purposes. It is the primary purpose of this study.

In the past, due to rapid growth the planning divisions of many public and private agencies have found it necessary for their own purposes to estimate current population levels and attempt predictions of future levels. In recent months new estimates have been publicized almost weekly and these frequently vary widely depending upon the area and basis of forecast used.

Estimates of natural increase in population can be made quite accurately from available birth and death records, but net migration into or out of cities and counties is seldom recorded, and is therefore difficult to measure. For this reason the Task Force sought an estimating method which best dealt with this problem of migration.

POPULATION ESTIMATE MARICOPA COUNTY - JULY 1958

In estimating the population of Maricopa County a method developed by the United States Bureau of the Census, known as "Method II", was used. Briefly, the method embodies the following steps:*

1. Determine the civilian population at the time of the last Decennial Census.
2. Determine the natural increase (births minus deaths).

*A more detailed discussion of the application made of "Method II" for Maricopa County can be found in Appendix "A" of this report.

3. Determine the in-migration by use of school enrollment data.
4. Determine the net loss in population to the Armed Forces.
5. The total of items 1, 2, 3 less item 4 becomes the estimated civilian population.

The results of "Method II" applied to Maricopa County indicate a total population of approximately 560,000 persons as of July 1, 1958.

POPULATION ESTIMATE PHOENIX URBAN AREA -
JULY 1958

The population of the Phoenix Urban Area as of July 1, 1958 is estimated to be 400,000 persons. The 1958 Phoenix Urban Area, shown on Plate 1, contains about 144 square miles and includes the City of Phoenix as well as surrounding areas which are substantially urban in character. The incorporated areas of Glendale, Scottsdale, Tempe and Mesa are not included.

The population estimate of 400,000 persons was based on a dwelling unit count from the recently completed land use survey. In this estimate, a factor of 3.3 (persons per dwelling unit) was multiplied by the number of counted dwelling units, after making adjustments (based on 1950 Census data) for vacancies and non-household population. The 3.3 factor constitutes an upward adjustment of that reported for the Phoenix urbanized area in 1950, and results from Census estimates of changes in the national population composition since 1950.

DISTRIBUTION OF POPULATION - 1958

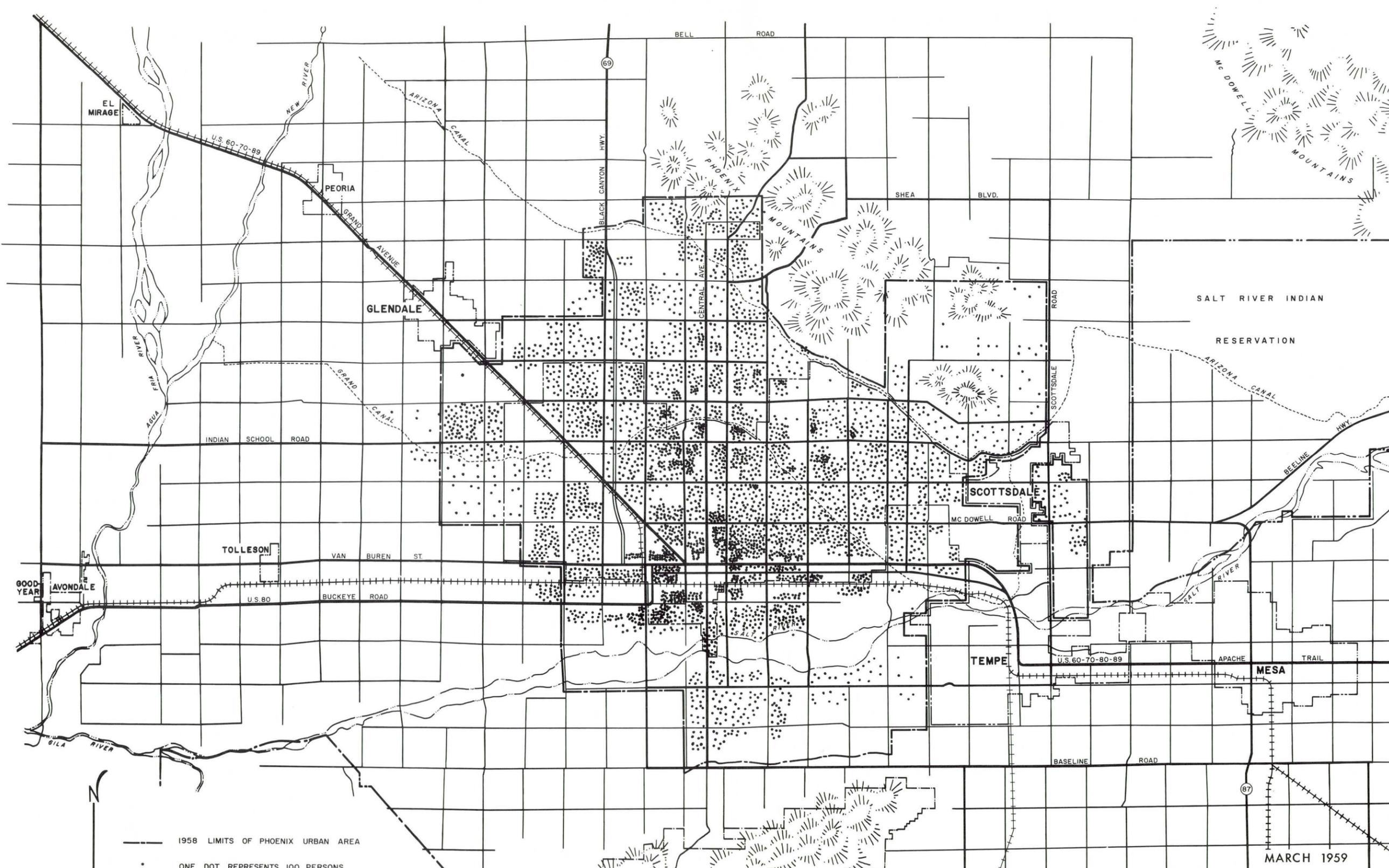
The distribution of population in the Phoenix Urban Area is shown on Plate 5. Each dot on the map represents 100 persons. The resulting pattern of dots indicates that the past direction of growth has been to the north, east and west sections of the Phoenix Urban Area. The clusters of dots around the central core of the City of Phoenix and in other scattered locations indicate a more intense use of the land in those areas (apartments, small lots, etc.).

DENSITY OF POPULATION - 1958

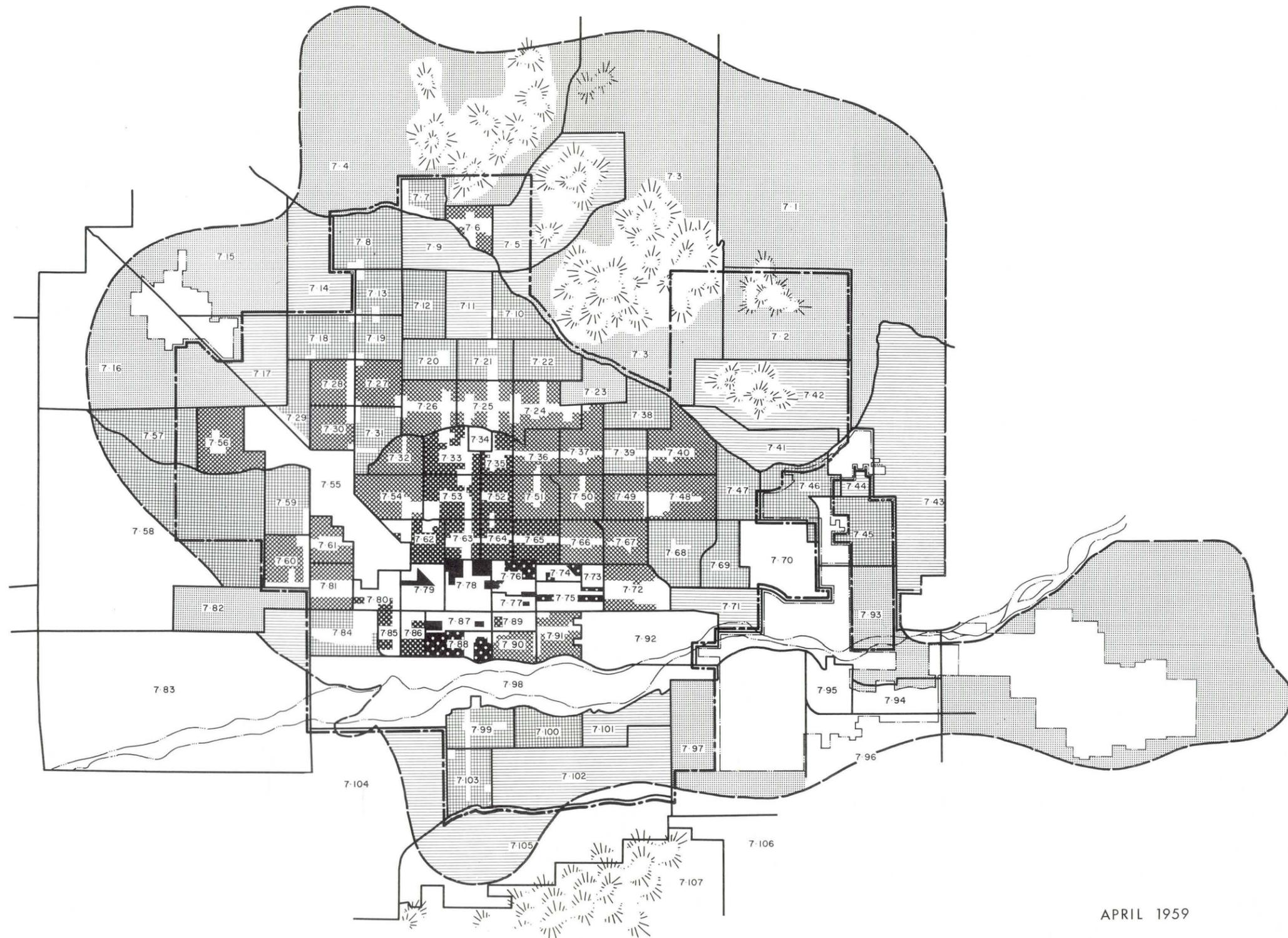
Population density is a measure of the crowding together of people on any given area of land. It can be stated in a number of ways (persons per net acre, families per residential acre, etc.). In this report, the 1958 net residential density in each census tract is the average number of persons per acre of adjusted residential land in the tract. The "adjustment" is made where vacant land in any tract exceeds ten per cent of the total tract area, in which case the excess vacant land is added to the residential land total for density computation.* The industrial, commercial and other non-residential uses are, of course, not considered in the calculation of residential density. The map, therefore, shows no density pattern in these areas. Plate 6 shows the adjusted net residential density by Census Tract.

Density is significant, since it is one measure of determining whether or not an area contains enough population to support a satisfactory and economical level of governmental service. Information is not available to determine the minimum density needed to provide a satisfactory and economical level of governmental service in the Phoenix Urban Area.

*The "adjusted" residential land is used for calculation of 1958 densities in order to make them comparable to those of 1980 (The 1980 Density Land Use Plan - discussed later - allows for only ten per cent of all land to be vacant).



POPULATION DISTRIBUTION • 1958



PERSONS PER ACRE
BY CENSUS TRACT

- 0 - 0.9
- 1 - 4.9
- 5 - 9.9
- 10 - 19.9
- 20 - 29.9
- 30 - 39.9
- 40 & OVER

MILES 0 1 2 3 4

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PLANNING DEPARTMENTS

APRIL 1959

POPULATION DENSITY • 1958

However, frequently planners have used a figure of 10 persons per gross acre as a minimum in studies of other communities. It is significant to note that areas with 10 persons or more per gross acre are primarily located within the 1958 corporate limits of Phoenix.

FUTURE POPULATION

FUTURE POPULATION GROWTH FACTORS

In the immediate future, natural increase in the population will be an important element in the growth of the Phoenix Urban Area. Maricopa County, with a births-deaths ratio of about 3:1, has experienced a natural increase in its population of about 75,000 persons since 1950 (a rise of about 2% per year), and the indications are that the population boom which began in 1946 will continue for at least the next 20 years.*

In-migration, however, is likely to continue to account for the bulk of the Phoenix Urban Area's growth in the near future. The Census Bureau predicts that the greatest population growth in the United States within the next decade or so will occur in the West, with Arizona second only to Nevada in highest rate of growth among the states. It has been estimated that the population of Arizona will increase by 79% from 1955 to 1970. In August, 1957, the U. S. News and World Report published future population estimates based on data from the Census Bureau and other sources which indicated that, among 33 of the nation's "Metropolitan" areas in which rapid growth is taking place, Phoenix would experience, by 1975, the second highest growth rate (over 100 per cent), exceeded only by Miami and followed by Houston and San Francisco.

The Phoenix area appears to have two principal assets which will influence its future growth. The first of these is its winter climate. If migration of the American people continues to increase as a result of higher incomes and improved means of travel, the moderate winter climate should bring increasing numbers of people and businesses

* Concerning statements in this and the following paragraphs, see article reporting an interview with Dr. Philip M. Hauser, head of the Population Research Center, University of Chicago, in U. S. News and World Report Nov. 28, 1958, and U. S. News, August 9, 1957. Also see Bureau of the Census Current Population Reports, Series P-25, No. 187, Nov. 10, 1958.

to the Phoenix Urban Area. Secondly, Phoenix should profit, growthwise, from its position as the hub of government and business in Arizona and from the fact that it is the largest urban area between southern California and central Texas.

FUTURE POPULATION GROWTH

In forecasting the probable future population of the Phoenix Urban Area (See Plate 1), a projection of the Bureau of the Census of the population for the State of Arizona has been relied upon. The projected growth for the State of Arizona has been related to Maricopa County and the Phoenix Urban Area on the basis of trends since 1950, thus apportioning from the total population estimated for Arizona that portion which it is thought would be in Maricopa County and in the Phoenix Urban Area.

There is little evidence to suggest significant changes to appear in the pattern of population growth in the Phoenix area. The pattern to date has been closely related to national migration trends and it is apt to continue to be so. For this reason, reliance has been placed on national trends and their relationship to the Phoenix Urban Area in making the future population estimates rather than on independent estimates based upon the potential of the area.

In 1955 the Bureau of the Census published a range of population projections for the population of the United States as of 1970 and 1975. The range of "high" and "low" result from assumed high and low fertility rates. The high projection indicated a United States population of 209 million persons by 1970. In November of 1958 these projections were revised and the new projections published reflected increases in the population growth rate with the effect being that the projection to 1970 of 209 million persons becomes the medium low

new projection, or a conservative one.* It is on the basis of this earlier high projection that the future estimate of population for the Phoenix Urban Area is made. All future estimates are based on the assumptions usually implicit in such predications, i. e., no major wars, depressions or other catastrophies will occur to drastically alter the pattern of growth.

PROBABLE FUTURE POPULATION MARICOPA COUNTY
AND PHOENIX URBAN AREA - 1980

Table 2 is based on the Census projections previously described, and indicates that the population of Arizona will increase to about 1,800,000 by 1970, and to about 2,400,000 by 1980. In 1950 Maricopa County's share of the state population was 44.3%. Arizona State Employment Service estimates indicate that this share has increased by approximately one-half of 1% each year since 1950. At this rate of increase the county should have nearly 60% of the state's population by 1980, or 1,440,000.

In 1950 the Phoenix "urbanized area" (Census definition, which excluded most of Scottsdale and Glendale) minus the cities of Mesa and Tempe, contained nearly 60% of the population of Maricopa County. The Phoenix Urban area of 1958 (see Plate 1) contained about 70% of the county's population. Assuming a continuation of this relationship to 1980, the Urban Area should have at least 1,000,000 people on that date.** Whether this population is attained before or after 1980 depends upon certain imponderables. The important thing is that plans be prepared to serve the future population needs as they materialize.

* Current Population Reports, Series P-25, Nos. 123 (1955) and 187 (1958).

** Not including population within the present boundaries of Glendale, Scottsdale, Mesa and Tempe, which presently numbers some 70,000.

TABLE 2

ESTIMATED FUTURE POPULATION: THE UNITED STATES,
ARIZONA, MARICOPA COUNTY, AND CITY OF PHOENIX, TO 1980¹

Year	United States			State of Arizona			
	Popu- lation (000,000)	Increase (over previous date) (000,000) %		Popu- lation (000)	Increase(over previous date) (000) %		% of U.S.
1958	173	-	-	1,140	-	-	0.66
1965	194	21	12.1	1,500	360	31.6	0.77
1970	209	15	7.7	1,800	300	20.0	0.86
1975	226	17	8.1	2,100	300	16.7	0.93
1980	245	19	8.4	2,400	300	14.3	0.98

Year	Maricopa County				City of Phoenix ²			
	Popu- lation (000)	Increase (over pre- vious date) (000) %		% of Arizona	Popu- lation (000)	Increase (over pre- vious date) (000) %		% of County
1958	560	-	-	49.1	244	-	-	43.6
1965	800	240	42.9	53.3	550	306	125.4	68.8
1970	1,020	220	27.5	56.7	670	120	21.8	65.7
1975	1,230	210	20.6	58.6	820	150	22.4	66.7
1980	1,440	210	17.1	60.0	1,000	180	22.0	69.4

¹ See Appendix A of report for estimating procedures.

² Reflects City annexations after July 1, 1958.

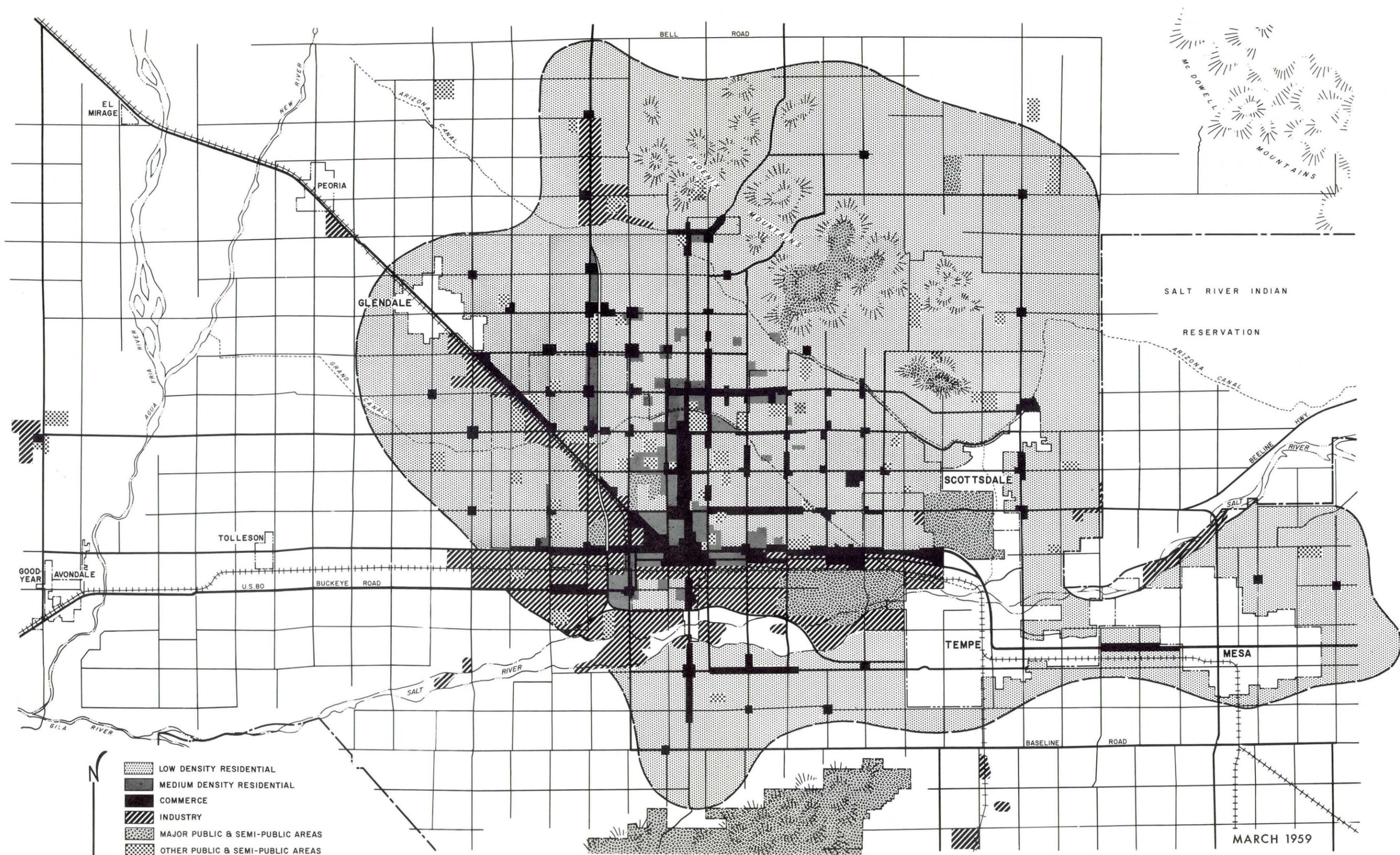
FUTURE LAND USE PLAN - 1980

One of the purposes of this report was a determination of how many people will live in the Phoenix Urban Area by 1980. It has been estimated that the population of the Phoenix Urban Area will probably be about 1,000,000 persons by 1980. Therefore, the future physical planning for the Urban Area should be geared to meet the needs of this future population.

Plate 7, the Preliminary Diagrammatic Land Use Plan for 1980, was derived from the land use - population relationships as revealed by the recent land use survey. These relationships have indicated the quantity of land area probably required to accommodate 1,000,000 persons.

The land use - population ratio for the City of Phoenix in 1958 was 9.88 acres per 100 persons, while in the fringe areas (see Plate 1) the ratio was 15.4 acres per 100 persons. Since the latter ratio is characteristic of the most recent development, it is probably more characteristic of development which will occur in the next 20 years than that which occurred in the older portions of the city. Since the development which is expected to occur in the next two decades will be double in amount that which has occurred to 1958, the future total urban ratio of land area to people would be somewhere near 14 acres per 100 persons. (An average of the ratios given above, but heavily weighted toward the fringe characteristic).

The plan shown on Plate 7 embraces an area of approximately 226 sq. miles excluding Glendale, Scottsdale, Tempe and Mesa. Based on the aforementioned population-land use ratios, about 143,300 acres or 203 sq. miles would be needed for all urban purposes by 1980. However, for various reasons certain areas will remain vacant as in all cities. Thus, the future urban area shown diagrammatically here should be more than ample for future urban needs as foreseen at this time. This is the area for which



-  LOW DENSITY RESIDENTIAL
-  MEDIUM DENSITY RESIDENTIAL
-  COMMERCE
-  INDUSTRY
-  MAJOR PUBLIC & SEMI-PUBLIC AREAS
-  OTHER PUBLIC & SEMI-PUBLIC AREAS

MILES 0 1 2 3 4

ADVANCE PLANNING TASK FORCE
CITY OF PHOENIX AND MARICOPA COUNTY
PLANNING DEPARTMENTS

DIAGRAMMATIC LAND USE PLAN • 1980

physical plans should be prepared now. Such plans should then be reviewed and revised periodically as warranted by changing conditions or unforeseen needs.

On the basis of past trends, the Diagrammatic Land Use Plan reflects the allocation of adequate space for all foreseeable urban uses. Most areas of the plan propose retention of the existing physical structures since it is recognized that they will probably continue into the future. Quite often overlooked in future plans is the fact that when a street is constructed or buildings, such as homes, plants, stores, etc., are erected they become, for all practical purposes, permanent features of the landscape influencing the city's land use pattern for generations. However, in some cases a community need in one particular area or another demands action which can make a drastic change in the land use pattern. For example, the area west of Sky Harbor Airport extending to Central Avenue is in an area of adverse residential influence as a result of the runway locations on the Sky Harbor Airport, so the plan proposes a complete elimination of residential uses. In another area, immediately to the southwest of the Central Business District, about 323 acres of land has been designated as an urban redevelopment project. The Future Land Use Plan reflects the community's decision that this land will be renewed for residential purposes, with elimination, where possible, of those non-residential uses which would not be compatible nor conducive to a healthy residential area.

The urban residential patterns shown on the plan contain two residential classifications:

<u>Residential Category</u>	<u>Persons Per Acre</u>	<u>Principal Type of Development</u>
Low Density	Less than 20 persons per acre	One and two-family dwellings
Medium & High Density	Over 20 persons per acre	Small and large apartment houses, trailers

A report on land use to be published in the near future will explain in detail the proposals suggested by this future land use plan.

FUTURE DISTRIBUTION OF POPULATION - 1980

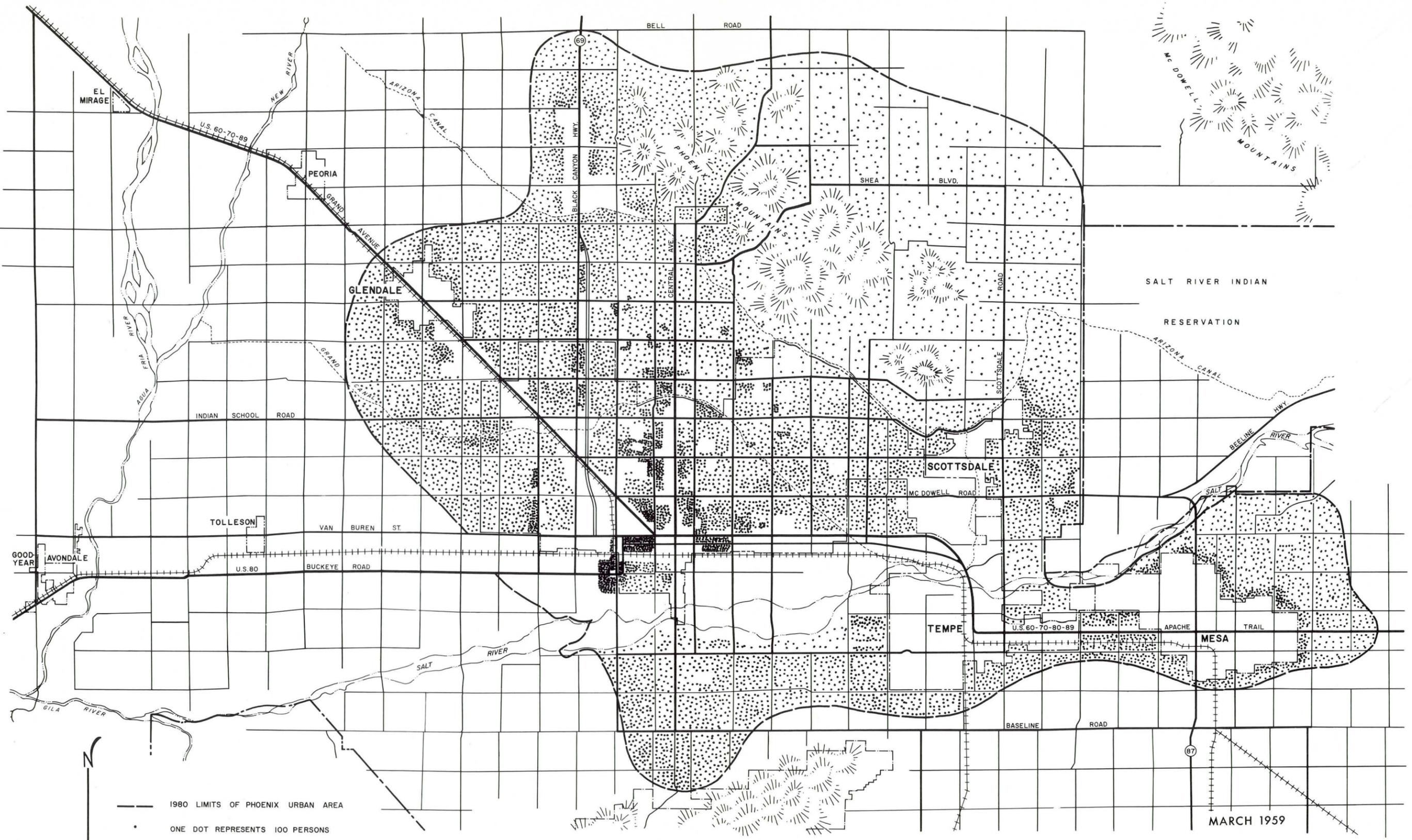
The 1980 distribution of population in the Phoenix Urban Area is shown on Plate 8 with each dot representing 100 persons. The location of the future population is based upon the residential areas identified on the Diagrammatic Land Use Plan, Plate 7. As previously stated, the Land Use Plan proposes some change of the existing land use pattern by 1980. These changes are of course reflected by the map showing the distribution of the 1980 population.

The most significant population shift is in the area bounded by Central Avenue on the west, Sky Harbor Airport on the east and the Salt River on the south. The people residing in that area now are proposed to be relocated to other residential areas by 1980.

FUTURE DENSITY - 1980

The 1980 net residential density by Census Tracts is shown on Plate 9. This map is comparable to the 1958 density map, Plate 6, because of the adjustments made in calculating the 1958 density.

Table 3 summarizes the proposed densities and points out the significant changes expected to occur by 1980.

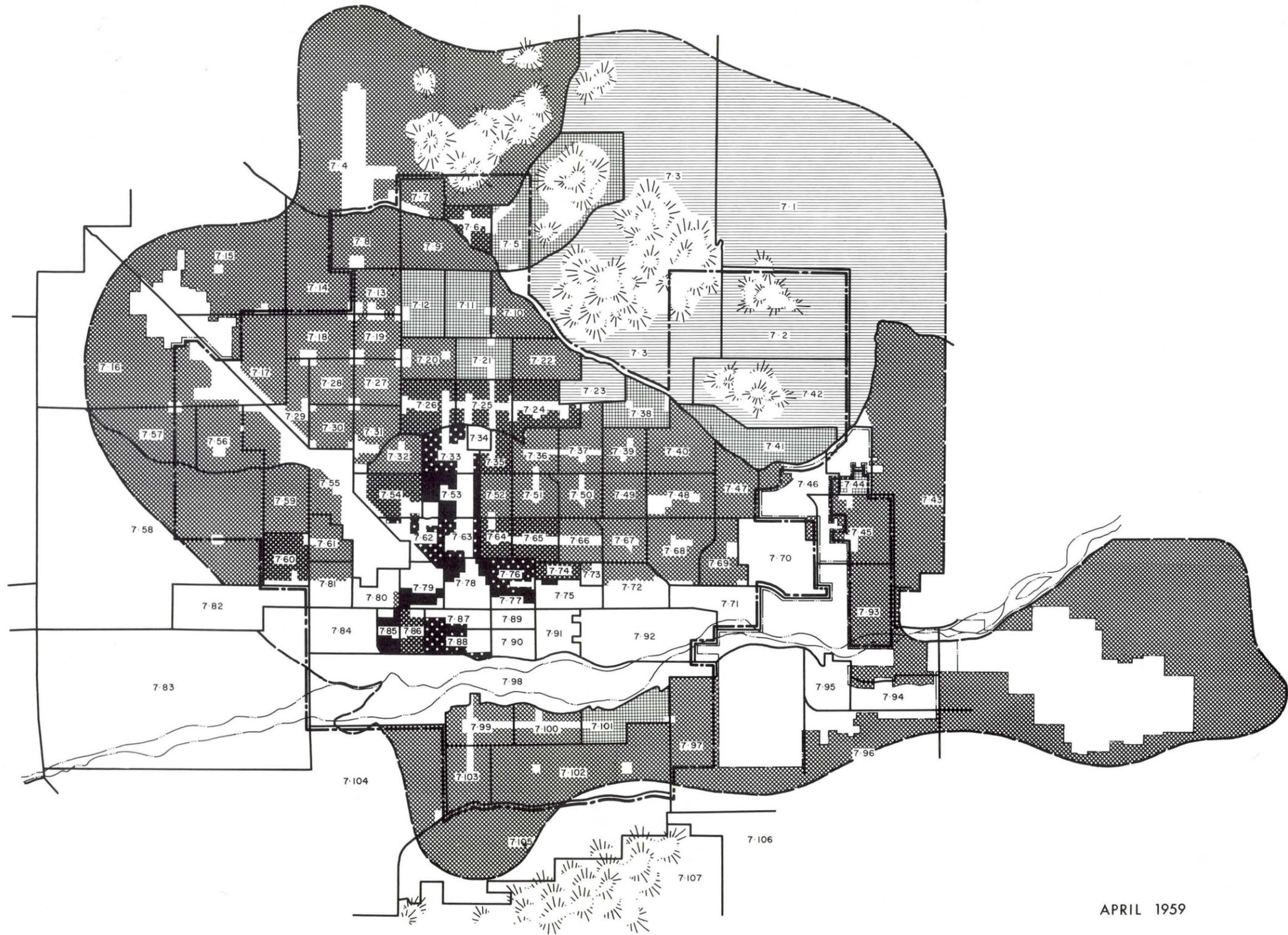


POPULATION DISTRIBUTION • 1980

- - - 1980 LIMITS OF PHOENIX URBAN AREA
 • ONE DOT REPRESENTS 100 PERSONS

MILES 0 1 2 3 4

ADVANCE PLANNING TASK FORCE
 CITY OF PHOENIX AND MARICOPA COUNTY
 PLANNING DEPARTMENTS



PERSONS PER ACRE
BY CENSUS TRACT

[Horizontal lines]	1 - 4.9
[Vertical lines]	5 - 9.9
[Diagonal lines (top-left to bottom-right)]	10 - 19.9
[Diagonal lines (bottom-left to top-right)]	20 - 29.9
[Stippled pattern]	30 - 39.9
[Solid black]	40 & OVER

MILES 0 1 2 3 4

ADVANCE PLANNING TASK FORCE
CITY OF PHOENIX AND MARICOPA COUNTY
PLANNING DEPARTMENTS

APRIL 1959

POPULATION DENSITY • 1980

TABLE 3
NET RESIDENTIAL DENSITY

Persons Per Adjusted Residential Acre	1958		1980	
		% of Total Population		% of Total Population
0 - 4.9	81,608	19.6	59,787	5.8
5 - 9.9	84,028	20.4	47,575	4.6
10 - 19.9	144,341	34.9	745,668	73.7
20 - 29.9	66,822	16.0	79,216	7.7
30 - 39.9	14,243	3.4	44,686	4.3
40 - 49.9	19,308	4.6	-	-
50 and over	4,795	1.1	40,534	3.9
	415,145	100.0	1,017,466	100.0

From this table it is important to note that in 1980 about 82 per cent of the area's population is proposed to live in low density areas (areas less than 20 persons per acre). Thus, sufficient population would be able to bear the expense of community services and at the same time have rather spacious residential lots.

METHODS OF ATTAINING PROPOSED URBAN PATTERN - 1980

The future urban pattern (Plate 7), population distribution (Plate 8) and population density (Plate 9) are intended only as guides for the future physical growth of the Phoenix Urban Area and show what would result if the plans were developed as suggested. These plans have considered and are in scale with the population expectations of the area and as far as is known the future economic prospects of the community.

With understanding and applied technical interpretations, the Phoenix Urban Area of 1980 can be developed along sound economic and social principles which will inspire the citizens of today and the future to take further pride in their community.

Recognizing that unforeseen developments can occur, it is assumed that changes and revisions will be applied to the Plan. It is important to recognize, however, that these changes should not impair the broad general principles and objectives of the Plan.

The proposed Plan can be carried out by the proper use of aids of land planning - zoning regulations, subdivision regulations, urban renewal programs and capital budgeting.

APPENDICES

APPENDIX A

METHODOLOGY FOR ESTIMATION OF MARICOPA COUNTY POPULATION

After consideration of a number of methods for estimating population the one selected as best suited to the local area is Method II, currently in use by the U. S. Bureau of the Census. The key step in this method is the estimation of net civilian migration into Maricopa County over the period April 1, 1950, (date of the last Census) to July 1, 1958. Briefly, this estimation has been made in the following manner:

- (a) A net migration rate for Maricopa County children 7 1/2 to 14 1/2 years of age was developed from a comparison of the reported number of elementary school children, grades 2-8, on the estimate date with the expected number of children of this elementary school age surviving from the appropriate age group in 1950 (and those born from April to December, 1950);
- (b) This rate was multiplied by a factor developed by the Census Bureau to obtain an estimated migration rate for the total county population;
- (c) This rate was applied to the population of all ages in the county in 1950 to obtain an estimate of net civilian migration for the period since 1950.

Two points in the estimation procedure that merit further comment are as follows:

- (a) Catholic school enrollment data for 1948-49 and the fall of 1958, grades 1-8, were obtained (through Western Business Consultants) from Diocesan officials in Tucson. These figures were adjusted by interpolation to provide figures for 1949-50 and 1957-58. Secondly, first grade students were estimated (to compute enrollments for grades 2-8) through use of pertinent ratios in the public grades. Finally, a conversion was made of enrollment to membership-at-end-of-year figures on the basis of the comparable public school ratios for these grades.

Enrollment data for the fall of 1958 for private and parochial schools other than Catholic were also obtained from Western Business Consultants* and were adjusted for 1957-58 in the manner described above. Membership in these schools for 1949-50 was estimated through application of the 1957-58 ratio of "other private" to total elementary students (the ratio was less than 1:100).

- (b) The factor .94 for conversion of the 7 1/2 to 14 1/2 cohort migration rate to one for total population migration results from extrapolation of a series recently developed by the Bureau of the Census in its use of Method II. The conversion factors now in use decline from 1.27 (for use in 1951 estimates) to .98 (for use in 1957 estimates). The trend of these factors, then, indicates one of approximately .94 for use in 1958. Explanation of the development of the series can be found in Current Population Reports, Series P-25, Nos. 165 and 186.

* From WBC survey of these individual schools.

ESTIMATED POPULATION OF MARICOPA COUNTY

July 1, 1958

Using Bureau of the Census METHOD II, from Current Population Reports, Series P-25, No. 123, March 16, 1956.

(Following are the principle steps in and the figures resulting from the application of Method II to the population of Maricopa County.)

Item 1. Civilian population of Maricopa County on April 1, 1950 - - - - -	<u>328,515</u>
la. Total population on April 1, 1950 - - -	331,770
lb. Persons 14 years old or over in the labor force on April 1, 1950 - - - - -	121,252
lc. Persons 14 years old or over in the civilian labor force on April 1, 1950 -	117,997
ld. Military personnel stationed in the county on April 1, 1950 (1b - 1c) - - -	3,255
le. Civilian population on April 1, 1950 (1a - 1d) - - - - -	328,515

SOURCE: 1950 Census of Population

Item 2. Natural increase in Maricopa County, April 1, 1950 to July 1, 1958 - - - - -	<u>74,779</u>
2a. Births, by residence, April 1, 1950 to July 1, 1958 - - - - -	97,618
2b. Percent completeness of birth registration in Maricopa County by place of residence (the 1950 completeness ratio is used here) - - - - -	95.0

2c. Births, by residence, adjusted for underregistration, April 1, 1950 to July 1, 1958 - - - - -	102,756
2d. Deaths, by residence, April 1, 1950 to July 1, 1958 - - - - -	27,977
2e. Natural increase, April 1, 1950 to July 1, 1958 - - - - -	74,779

SOURCE: Arizona Department of Health

Item 3. Net civilian migration for Maricopa County, April 1, 1950 to July 1, 1958 - - 151,614

3a. Children in grades 2 - 8 in the County at end of school year, 1950 - - - - -	42,200
3b. Children in grades 2 - 8 in the County at end of school year, 1958 - - - - -	82,400

SOURCES: State Superintendent of Schools, and survey by Western Business Consultants.

3c. Expected population 7 1/2 to 14 1/2 years old, assuming no migration, on July 1, 1958 - - - - -	63,385
3c(1) Births, April-December, 1950, adjusted for underregistration - -	6,949
3c(2) Population - 6 1/4 years old on April 1, 1950, adjusted for underenumeration of children under 5 years old - - - - -	57,374

3c(3) Survivors 7 1/2 to 14 1/2
 years old on July 1, 1958
 from 3c(1) and 3c(2),
 computed by use of sur-
 vival factors from Census
 life tables for age group,
 color and sex- - - - 63,385

3d. Estimated children 7 1/2
 to 14 1/2 years old on
 July 1, 1958, including
 effect of migration - - - - - 90,846

3d(1) Population 7 1/2 to
 14 1/2 years old on April 1,
 1950 - - - - - 46,527

3d(2) Children in grades 2 -
 8 in 1950 - - - - - 42,200

3d(3) Ratio: 3d(1) +
 3d(2) - - - - - 1.1025

3d(4) Children in grades
 2 - 8 in 1958 - - - - 82,400

3d(5) Estimated children
 7 1/2 to 14 1/2 years old
 on July 1, 1958:
 3d(3) x 3d(4) - - - - 90,846

3e. Net change in population in this
 cohort due to migration:
 3d - 3c - - - - - + 27,461

3f. Migration rate for this cohort,
 April 1, 1950 to July 1, 1958 - - - 0.4269

3f(1) Net in-migration for
 the cohort - - - 27,461

3f(2) Size of the cohort on
April 1, 1950 - - 64,323

3f(3) Migration rate, April 1,
1950 to July 1, 1958 - 0.4269

3g. Migration rate for the population
of all ages, April 1, 1950 to July 1,
1958: Item 3f x .94 (this factor
is derived from a series developed
by the Census Bureau in its use of
Method II for area estimates. It
is assumed the composition of the
population migrating to Maricopa
County does not differ sufficiently
from that of other subdivisions of
the U. S. to merit adjustment of the
factor for local use) - - - - - 0.4013

3h. Estimated total net civilian migra-
tion, April 1, 1950 to July 1, 1958 - 151,614

3h(1) Civilian population of
Maricopa County on
April 1, 1950- - - - - 328,515

3h(2) One-half births during
the period - - - - - 51,378

3h(3) Net loss to the armed
forces for Maricopa County,
April 1, 1950 to July 1, 1958 4,430

3h(4) Population of Maricopa
County under 5 years old, not
enumerated on April 1, 1950
(from Census enumeration
factor given above)- 2,343

3h(5) Population base for
 computing estimate of net
 migration at all ages:
 3h(1) + 3h(2) - 3h(3) +
 3h(4) - - - 377,806

3h(6) Net civilian migration
 at all ages: 3h(5) x
 item 3g 151,614

Item 4. Civilian population of Maricopa County on July 1, 1958 - - - - -	<u>550,478</u>
4a. Civilian population on April 1, 1950 -	328,515
4b. Natural increase, April 1, 1950 to July 1, 1958 - - - - -	74,779
4c. Estimated civilian net migration - -	151,614
4d. Net loss to armed forces - - - - -	4,430
4e. Estimated civilian population on July 1, 1958: 5a + 5b + 5c - 5d -	550,478
Item 5. Total population of Maricopa County on July 1, 1958 (adding approximately 10,000 persons to account for military personnel stationed in the County and college students who have come from outside the County in excess of the out- of-County students enrolled in 1950)--	<u>560,000</u>

APPENDIX B

AREA AND POPULATION DATA

By Census Tracts for the Phoenix Urban Area 1958 and 1980

Census Tract ¹	1958					1980				
	Gross Land Area	Non-Residential Area	Adjusted Net Residential Area	Estimated Population	Persons Per Net Residential Acre	Future Non-Residential Area	Future Net Residential Area	Estimated Future Population	Persons Per Net Residential Acre	
	In Acres	In Acres	In Acres ²	Population ³	Acre	In Acres	In Acres ²	Population ⁴	Acre	
A	B	C	D	E	F	G	H	I	J	
* 7- 1	13,931	5,458	8,473	1,238	0.1	6,086	7,845	23,241	3.0	
7- 2	3,684	1,888	1,796	1,610	0.9	1,740	1,944	5,262	2.7	
* 7- 3	15,328	6,602	8,726	3,482	0.4	8,138	7,190	27,210	3.8	
* 7- 4	13,474	6,700	6,774	5,494	0.8	8,162	5,312	69,261	13.0	
7- 5	3,689	1,322	2,367	5,917	2.5	2,051	1,638	15,606	9.5	
7- 6	388	185	203	3,528	17.4	202	186	3,800	20.4	
7- 7	540	215	325	3,053	9.4	221	319	4,902	15.4	
7- 8	1,228	514	714	5,026	7.0	450	778	13,292	17.1	
7- 9	1,185	423	762	3,356	4.4	442	743	10,017	13.5	
7-10	801	241	560	5,026	9.0	294	507	5,763	11.4	
7-11	957	238	719	3,531	4.9	337	620	4,306	6.9	
7-12	942	299	643	3,346	5.2	360	582	5,650	9.7	
7-13	651	171	480	4,049	8.4	290	361	4,981	13.8	
7-14	1,823	627	1,196	1,432	1.2	651	1,172	16,662	14.2	
+* 7-15	3,245	940	2,305	1,511	0.7	1,205	2,040	30,984	15.2	
+* 7-16	3,878	1,583	2,295	756	0.3	1,931	1,947	29,763	15.3	
+ 7-17	1,482	549	933	2,063	2.2	631	851	13,098	15.4	
7-18	953	379	574	4,650	8.1	381	572	9,660	16.9	
7-19	635	306	329	2,218	6.7	372	263	4,315	16.4	
7-20	785	246	539	4,310	8.0	305	480	6,985	14.6	

Cont'd

AREA AND POPULATION DATA Cont'd.

A	B	C	D	E	F	G	H	I	J
7-21	792	259	533	4,409	8.3	327	465	4,298	9.2
7-22	880	292	588	4,201	7.1	307	573	7,441	13.0
7-23	689	413	276	205	0.7	335	354	1,068	3.0
7-24	843	409	434	4,528	10.4	459	384	7,715	20.1
7-25	762	322	440	7,128	16.2	534	228	6,047	26.5
7-26	826	332	494	8,115	16.4	365	461	10,115	21.9
7-27	639	278	361	4,996	13.8	251	388	7,561	19.5
7-28	644	304	340	4,755	14.0	286	358	6,716	18.8
7-29	673	311	362	2,901	8.0	391	282	5,244	18.6
7-30	643	288	355	6,897	19.4	261	382	7,140	18.7
7-31	718	338	380	2,607	6.9	324	394	6,903	17.5
7-32	517	231	286	4,970	17.4	241	276	4,284	15.5
7-33	723	341	382	7,788	20.4	464	259	8,272	31.9
7-34	175	175	-	-	-	175	-	-	-
7-35	395	154	241	5,990	24.9	150	245	5,746	23.5
7-36	607	283	324	5,933	18.3	338	269	4,728	17.6
7-37	802	359	443	6,432	14.5	376	426	6,684	15.7
7-38	716	268	448	3,373	7.5	271	445	4,137	9.3
7-39	650	229	421	3,911	9.3	267	383	4,593	12.0
7-40	1,034	413	621	7,013	11.3	394	640	8,595	13.4
7-41	1,581	516	1,065	3,399	3.2	557	1,024	7,218	7.0
7-42	3,121	1,784	1,337	1,535	1.1	1,804	1,317	3,006	2.3
+7-43	4,650	2,020	2,630	2,861	1.1	2,052	2,598	40,443	15.6
+7-44	305	122	183	828	4.5	138	167	1,488	8.9
+7-45	1,265	472	793	4,290	5.4	479	786	12,876	16.4
+7-46	429	260	169	1,181	7.0	150	279	4,005	14.4
7-47	865	387	478	4,059	8.5	323	542	6,885	12.7
7-48	975	419	556	5,881	10.6	491	484	5,658	11.7
7-49	650	277	373	5,372	14.4	239	411	5,928	14.4
7-50	662	275	387	5,676	14.7	259	403	6,136	15.2
7-51	610	257	353	6,003	17.0	255	355	5,262	14.8
7-52	517	305	212	4,254	20.1	326	191	2,943	15.4
7-53	828	516	312	7,567	24.3	550	278	14,640	52.7

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Cont'd

AREA AND POPULATION DATA Cont'd.

	A	B	C	D	E	F	G	H	I	J
	7-54	880	499	381	6,897	18.1	524	356	8,567	24.1
	7-55	2,857	1,839	1,018	2,963	2.9	2,407	450	6,642	14.8
	7-56	1,116	485	631	7,633	12.1	430	686	11,121	16.2
	7-57	1,410	494	916	5,085	5.6	509	901	13,371	14.8
	*7-58	3,859	1,029	2,830	4,115	1.5	1,447	2,412	37,104	15.4
	7-59	881	363	518	4,415	8.5	353	528	9,947	18.8
	7-60	803	390	413	5,752	13.9	371	432	11,461	26.5
	7-61	577	269	308	4,967	16.1	303	274	4,536	16.6
	7-62	731	371	360	8,270	23.0	395	336	11,371	33.8
	7-63	358	176	182	4,435	24.4	273	85	3,263	38.4
	7-64	435	169	266	6,815	25.6	244	191	4,904	25.7
	7-65	623	291	332	8,227	24.8	296	327	7,100	21.7
	7-66	623	263	360	7,105	19.7	279	344	6,147	17.9
	7-67	665	288	377	5,858	15.5	299	366	5,979	16.3
	7-68	1,220	402	818	5,580	6.8	485	735	9,570	13.0
	7-69	731	291	440	2,445	5.6	296	435	6,225	14.3
	7-70	1,720	1,720	-	-	-	1,720	-	-	-
	7-71	936	477	459	1,122	2.4	936	-	-	-
	7-72	849	505	344	4,125	12.0	688	161	2,868	17.8
	7-73	160	160	-	-	-	130	30	462	15.4
	7-74	254	114	140	4,241	30.3	84	170	4,598	27.0
	7-75	544	379	165	5,056	30.6	529	15	796	53.1
	7-76	484	243	241	9,187	38.1	213	271	10,258	37.9
	7-77	305	219	86	4,241	49.3	185	120	7,478	62.3
	7-78	509	421	88	4,795	54.4	436	73	4,209	57.7
	7-79	691	454	237	10,025	42.2	539	152	9,576	63.0
	7-80	422	257	165	3,693	22.4	399	23	338	14.7
	7-81	635	343	292	4,937	16.9	503	132	2,373	18.0
	7-82	1,088	445	643	119	0.2	1,088	-	-	-
	*7-83	621	162	459	2,063	4.5	621	-	-	-
	7-84	969	402	567	4,973	8.8	969	-	-	-
	7-85	325	198	127	2,779	21.9	147	178	13,411	75.3

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Cont'd

AREA AND POPULATION DATA Cont'd.

	A	B	C	D	E	F	G	H	I	J
	7-86	503	299	204	5,495	26.9	195	308	9,154	29.7
	7-87	395	274	121	5,042	41.7	314	81	2,872	35.5
	7-88	419	278	141	5,056	35.9	298	121	3,746	31.0
	7-89	338	253	85	1,749	20.6	338	-	-	-
	7-90	405	179	226	4,442	19.7	405	-	-	-
	7-91	681	276	405	6,270	15.5	681	-	-	-
	7-92	2,283	1,588	695	2,270	3.3	2,283	-	-	-
	+ 7-93	1,900	605	1,295	792	0.6	1,291	609	10,152	16.7
	+ 7-94	119	43	76	16	0.2	50	69	1,059	15.3
	+ 7-95	-	-	-	(Lies within Tempe City Limits)			-	-	-
	+*7-96	1,056	381	675	83	0.1	370	686	11,952	17.4
	+*7-97	2,144	722	1,422	726	0.5	758	1,386	23,556	17.0
	7-98	6,523	3,202	3,321	5,174	1.6	6,523	-	-	-
	7-99	768	294	474	4,475	9.4	362	406	5,193	12.8
	7-100	860	316	544	3,148	5.8	433	427	7,032	16.5
29	7-101	837	250	587	2,690	4.6	309	528	4,872	9.2
	7-102	2,861	899	1,962	4,026	2.1	1,083	1,778	26,658	15.0
	7-103	911	345	566	4,175	7.4	354	547	6,522	11.9
	7-104	1,408	438	970	2,855	2.9	502	906	13,242	14.6
	7-105	2,144	693	1,451	2,000	1.4	750	1,394	24,435	17.5
	Sub Total	<u>154,621</u>	<u>67,948</u>	<u>86,673</u>	<u>427,056</u>	<u>4.9</u>	<u>83,795</u>	<u>70,826</u>	<u>902,653</u>	<u>12.7</u>
	+Mesa Area	<u>11,739</u>	<u>4,004</u>	<u>7,735</u>	<u>3,884</u>	<u>0.5</u>	<u>4,448</u>	<u>7,291</u>	<u>114,813</u>	<u>15.7</u>
	Total	166,360	71,952	94,408	430,940	4.6	88,243	78,117	1,017,466	13.0

Footnotes: 1 Census Tracts are those originally proposed for use in the 1960 Census. The tabulations do not reflect a number of recent changes in the tract boundaries required by the Bureau of the Census.

2 Net Residential Area (See explanation on page 8 of this report.)

3 Population estimates are derived from the dwelling unit count made in the summer of 1958. Not included in the count were motel, hotel, farm and institutional living units.

4 1980 population estimates were made on the basis of anticipated residential development and average lot size in each tract.

* Figures are for that portion of the tract within the 1980 Urban Area. + Does not include area within 1958 city limits of Glendale, Scottsdale, Tempe or Mesa.