DEVELOPMENT OF METROPOLITAN PHOENIX: HISTORICAL, CURRENT AND FUTURE TRENDS

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Tom R. Rex
Center for Business Research
L. William Seidman Research Institute
College of Business
Arizona State University
Box 874011
Tempe, Arizona 85287-4011

(480) 965-3961
FAX: (480) 965-5458
EMAIL: tom.rex@asu.edu

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GEOGRAPHIC DEFINITIONS

Metropolitan Phoenix/Phoenix Metropolitan Area: Metro areas consist of one or more counties. The Phoenix metro area consisted only of Maricopa County (which has more than 9,000 square miles) until the results of the 1990 census were tabulated, when Pinal County (which has more than 5,000 square miles) was added to the metro area. Because of this recent addition and since most of the population of Pinal County lives scattered across the county at some distance from Maricopa County, Pinal County has been excluded from Metropolitan Phoenix in this analysis. Since Maricopa County encompasses a substantial land area, most of which is unsettled, countywide data essentially are equivalent to those of the built-up area in Phoenix and surrounding cities. Thus, "Metropolitan Phoenix" may be used to refer to county data or to a more focused look at the developed portion of the metro area.

Phoenix Urbanized Area: Urbanized areas are defined by the U.S. Bureau of the Census, with the boundaries updated every 10 years based on decennial census data. Inclusion in the urbanized area is based on a variety of factors, most notably population density and settlement patterns. The Phoenix urbanized area in 1990 consisted of only 741 square miles, including the extension into Pinal County in the Apache Junction area, compared to some 15,000 square miles in the officially defined metropolitan area. Analyses of population density use the urbanized area definition.

MAG Planning Area: The Maricopa Association of Governments defines an area that already is developed or is expected to be mostly developed by 2020. While its 1,768 square miles are nearly 2.5 times the land area of the 1990 urbanized area, the planning area still is much smaller than the metropolitan area. It includes considerable land currently vacant or used for agriculture, mostly in the southeast corner of the county, to the southwest and west of the developed area, and to the north and northeast. Because of Indian Reservations, the boundaries of the developed area largely are fixed to the south and in part of the east. In the northwest, the planning area does not extend much beyond Sun City West and Sun City Grand.

Central Arizona – Phoenix: The Central Arizona – Phoenix Long-Term Ecological Research (CAP-LTER) project defines an area of about 4,422 square miles -- a little less than one-half of Maricopa County's land area.

DEVELOPMENT OF METROPOLITAN PHOENIX: HISTORICAL, CURRENT AND FUTURE TRENDS: SUMMARY/INTRODUCTION

The Phoenix metropolitan area is new by national standards, having developed primarily since World War II and particularly since 1970. However, settlement patterns were established in the 1800s, in part due to topographic features such as water courses and mountains. Other factors also contributed to the northeast becoming the "favored quarter" for residential use. Transportation – initially railroads but later highways and airports as well – also played a major role in early development, especially of business and industry. Agriculture was a major part of the early economy.

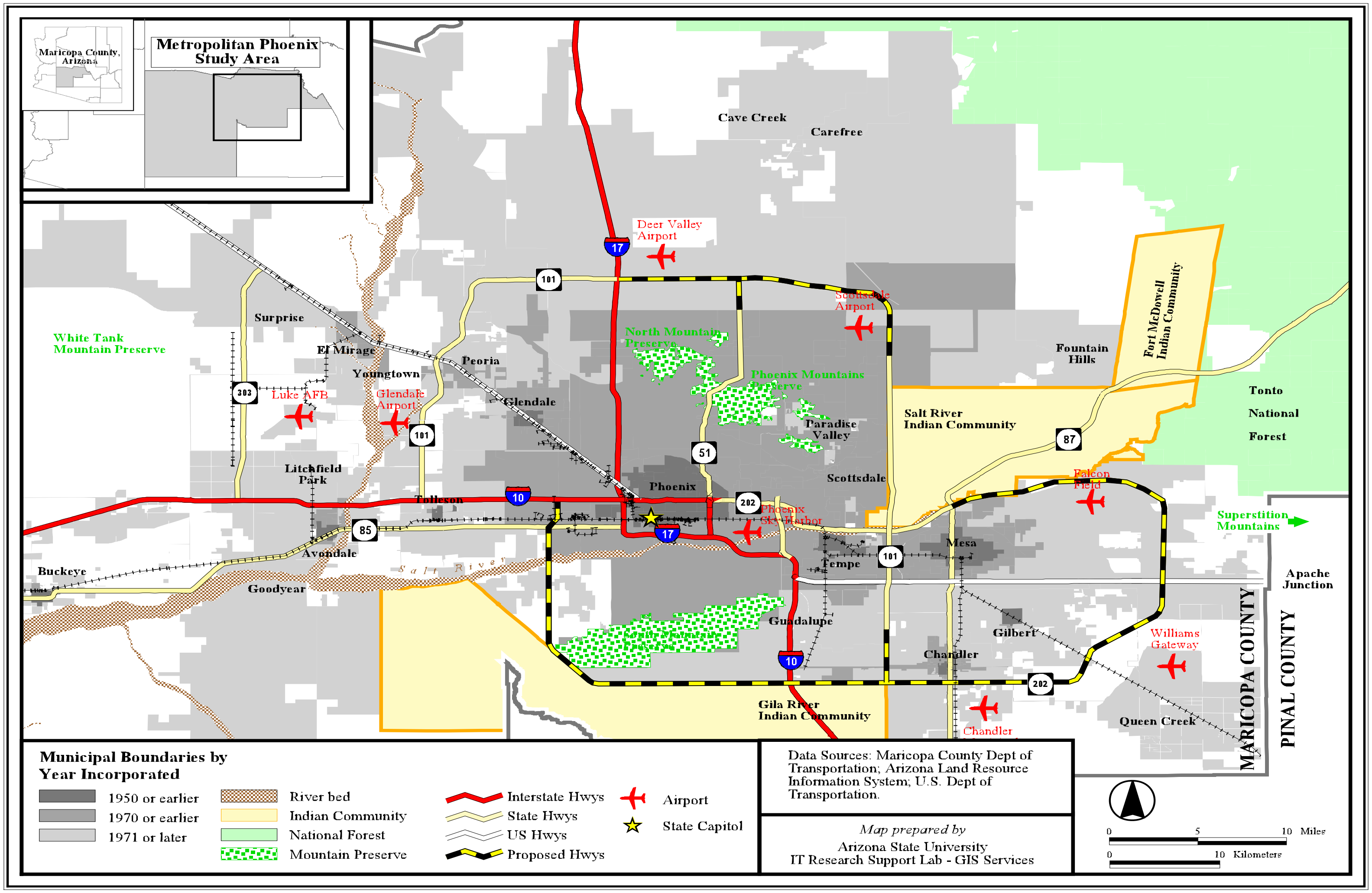
The urbanized portion of the metro area sits in the Salt River Valley, which is largely encircled by mountains. The Valley is gently sloping except where punctuated by low mountains rising from the valley floor. Most of these mountains now are protected, part of the Phoenix Mountain Preserve, but have been surrounded by urban development. Natural and built landmarks of the metro area are shown in Map 1.

The war effort during World War II stimulated the growth of the Valley. After the war, a combination of events led to much faster growth. These included the desire of ex-servicemen stationed in the area during the war to return; improvements in air conditioning; charter government in Phoenix, which allowed a small pro-growth business group to gain power; and aerospace and electronics firms siting facilities, in part because of the federal government's designation of Fort Huachuca as the principal proving ground for electronic defense equipment.

The modern period began around 1970, when a maturing metro area coincided with the baby-boom generation reaching adulthood. The result was even more rapid growth that has continued to the current time.

Rapid growth of the Phoenix metro area is expected to continue for at least the next 50 years. Land and water availability should not restrict growth until after the current population of nearly three million exceeds seven million in 2050.

MAP 1
LANDMARKS IN METROPOLITAN PHOENIX



DEVELOPMENT FROM 1870 TO 1940

The Salt River Valley was an agricultural center of ranching and irrigated farming, specializing in cattle, cotton and citrus until after World War II. Tourism began in the early 1900s, but was limited mostly to the wealthy and to health seekers until the 1950s.

Through World War II, most residents of Maricopa County lived in unincorporated areas. With a weak county government, little power was exerted by local public-sector entities. More generally, the frontier spirit of the West and the associated desire for minimal government contributed to the public sector in the Salt River Valley generally not wielding much power. Few restrictions were placed on the private sector and land use regulations were weak. With the Valley economy still largely agrarian until after World War II, a concentrated power base in the private sector also was missing.

Settlement Patterns

Phoenix was the first of the Valley's towns. From the beginning, north and east were the preferred directions of Phoenix's growth as the south edge of town (south of Jefferson Street) consisted of warehouses and inexpensive housing. The railroad, which arrived in the 1880s, passed through this part of town, causing it to further develop with lumberyards, industry and railyards. Minorities were confined to this area by discrimination and economic factors. Farther south, the floodplain of the Salt River (which flooded severely in 1890 and 1891) discouraged all but low-quality development.

Growth to the east was negatively influenced by the "insane asylum" (now the Arizona State Hospital at Van Buren and 24th Streets). In contrast, the Indian School to the north (at Central Avenue and Indian School Road, now closed) was an attraction to businesses and affluent housing because of prospects of cheap labor and a market for Anglo merchants. Initially, high-end growth proceeded to the northwest (most notably in the Encanto district northwest of 7th Avenue and McDowell Road), drawn by plans for the Territorial Capitol to be built to the west and by the availability of public transit (mule-drawn trams) to the northwest. Floods along Cave Creek, however, stopped outward movement of high-end housing in this direction.

Thus, a favored residential quarter became established to the north and northeast of downtown Phoenix. This area was attractive because of irrigated fields, the early planting of shade trees, the establishment of orange groves along the flanks of the Phoenix Mountains (especially Squaw Peak and Camelback Mountain; the range extends from north central Phoenix southeast to east Phoenix), views of the mountains, and the cooling summer breeze coming off of the mountains. Price-related deed restrictions began in the 1920s, keeping out lower-value housing. Sunnyslope, established in 1919 as a community of lower-value housing populated by many tuberculars, stopped the expansion of the favored quarter to the north (north of Northern Avenue). Thus, the expansion of the favored quarter proceeded only to the northeast.

Other towns were started from the 1870s into the 1890s: Tempe, Mesa, Peoria, Glendale and Scottsdale. Damming of watercourses and further development of the canal system shortly after the turn of the century allowed several "planned" communities, each with an adequate supply of water, to start between 1910 and 1920: South Phoenix, Tolleson, Chandler, Gilbert, Litchfield Park and Ocotillo. More informal settlements, consisting mostly of housing for farm workers (primarily low-income minorities) began at the same time: Guadalupe, Higley, Laveen, Cashion, and Queen Creek.

Transportation played a major role in the location of development within the extensive Salt River Valley. Phoenix as well as the three next most populous towns – Mesa, Tempe and

Glendale – were connected by the railroad and then along the same route by U.S. 60, the Valley's main highway until the 1960s. The Phoenix airport (which became Sky Harbor International Airport, still the Valley's dominant airport today) was located along the Salt River, just south of the railroad and close to downtown Phoenix and Tempe (see Map 1). Scheduled air service began in 1927.

Land Use

In 1912, when Arizona became a state and just after Roosevelt Dam was completed, 9 percent of the land in the Phoenix area was used for farming, according to the Central Arizona – Phoenix Long-Term Ecological Research (CAP-LTER) project's report on historical land use. Only 0.2 percent was urbanized.

Over the next two decades, conversion of desert to farmland continued. Some of the expansion occurred on unused land in agricultural districts, while extensions of irrigated areas to the west and southeast opened additional land for farming. In 1934, 16 percent of the land in the Phoenix area was put to use for farming.

Dedicated land for recreation accounted for 0.5 percent of the total in 1934. Only 0.4 percent of the land was used for urban purposes. Nearly all of the modest expansion of the urbanized area between 1912 and 1934 took place on farmland, with Phoenix growing primarily to the north.

Population Growth

The population of Maricopa County in 1900 was only 20,000. Numeric growth accelerated between 1910 and 1920 but then stabilized through 1940. Population gains were only a few thousand per year. Only 6 percent of the 20th century's nearly 3 million increase in population happened in the first 40 years of the century even though the population multiplied nine times.

Phoenix, the state capital, was a city of 65,000 in 1940. Having developed almost entirely after the advent of the automobile, during an era when established metropolitan areas were expanding outward into suburbs, Phoenix never had a very dense urban core like most American metropolitan areas. The rest of Maricopa County's 120,000 residents in 1940 were spread across unincorporated areas and small towns, none more populous than 7,000.

DEVELOPMENT FROM 1940 TO 1970

The federal government was a prime stimulus to the development of the Phoenix metropolitan area during World War II. In an effort to better link the East Coast to the West Coast, the federal government invested heavily in infrastructure across the mid-section of the country, including Phoenix. Two major air force bases – Luke in the northwest Valley and Williams in the southeast Valley (now closed) – opened in 1941. Along with auxiliary airfields and a ground training center at Hyder, west of Phoenix, these facilities introduced many servicemen to the Valley. Major manufacturing facilities, particularly in aerospace, sprouted in the Phoenix area to support the war effort, some financed and located by the federal government.

Power Hierarchies

After the war, the process of urbanization was propelled by pro-growth attitudes developed by local business leaders. Originally led by a relative few, the business power base broadened with time, firmly establishing the actively pro-growth philosophy that continues today in both the private and public sectors of the Phoenix metro area.

In 1948, a reformed city charter was adopted in the city of Phoenix. A charter government committee took control of city administration within a year. This committee was composed of conservative businessmen and the professional class. They set a strong agenda for growth, promoting spatial as well as industrial growth. With urbanization in the 1950s occurring almost entirely in the city of Phoenix, the power base of this select group developed further. Real power was wielded by a small number of private-sector leaders. Thus, public decisions were made in part by individuals who were motivated by profit maximization and who stood to benefit from growth.

In particular, these leaders largely came from business sectors – such as utilities, newspapers and banks – which were monopolistic or near monopolistic in nature. Only two utilities, which did not directly compete with each other, and one newspaper company controlled nearly 100 percent of their sectors. Banks were more numerous, but were protected against interstate competition, with a small number of large banks dominating the industry. Due to the protection against competition and the nature of their businesses -- to serve the local population -- each of these entities had a very strong vested interest in growth. They played a big role in producing the pro-growth attitudes and policies that persist today.

In addition, those who own fixed assets, such as land, receive a disproportionately large gain in value from the greater demand that accompanies urban growth. Large landowners, and those who do business with these property owners, profit from growth and the associated increased intensification of land uses. Thus, this group also has a very strong vested interest in growth.

As urban growth continued in the 1960s and 1970s and spread from Phoenix into surrounding communities, the power base widened. Instead of a few private-sector leaders, there was the "Phoenix 40," a group of approximately 40 business leaders that included representatives from other industries, such as real estate and construction. The pro-growth bias broadened and became prevalent. In general, the perception of the bulk of the business community has been and continues to be that growth is good for business.

This concentration of power was enabled by so many residents of the Valley being relative newcomers. Most had no roots in the community and many were not sure that they would permanently reside in the Phoenix area. Further, most of the newcomers were young and preoccupied with personal issues such as careers and starting a family. Thus, the general public took little involvement in civic affairs such as policies regarding growth and land use. Moreover, many of the migrants, by moving west to a rapidly growing area, were predisposed to such concepts as laissez-faire economics and limited government involvement.

Changes in state government also affected the Phoenix metro area. For more than 50 years of statehood, the Arizona Senate had consisted of two members per county, while the House of Representatives was apportioned by population. At statehood, Maricopa County was only slightly underrepresented in the Senate. However, the proportion of the state's population living in Maricopa County rose rapidly into the 1960s, reaching more than 50 percent -- compared to its 7 percent share of Senate seats. Thus, power disproportionately remained in the hands of rural counties dominated by agricultural and mining interests. This changed in 1966 when the Senate was apportioned by population in response to a federal court order, giving more political power to Metro Phoenix.

Migration

After the war, net in-migration to the metro area accelerated as former servicemen relocated to the area. Young adults dominated the Valley's population growth and remain the most important age group today. (Since about 1960, retirees have been an important, but secondary, source of growth.) Advances in air conditioning, which made living in the Valley comfortable year round, also occurred at this time.

Since the 1950s, the Phoenix metro area has been a favored spot for the relocation of individuals and families, largely because of its climate but also because of other perceived advantages. The ease with which a work force could be drawn to the area at reasonable cost, and other low costs of doing business, influenced employers in their expansion and relocation decisions. In turn, the availability of jobs made the area even more favored by workers. Then and now, the availability of jobs drives the growth of the metropolitan area in the short term, as most migrants are young working adults.

Economic Growth

The Phoenix metropolitan area's economic structure in 1950 was substantially different from the national average, as well as much different from the current industrial mix. Despite the construction of manufacturing facilities during the war, manufacturing's sectoral share was less than 40 percent that of the national average. The sectoral share of each of the other major industries other than mining was proportionately greater, especially in agriculture and construction.

The structure of the Phoenix metropolitan area's economy shifted substantially in the 1950s, with most of the changes marking a convergence toward the national average industrial mix. Agriculture's sectoral share declined substantially, while manufacturing's relative contribution was rising (despite declines in the national share). Within manufacturing, all of the increase in share occurred in three sectors. The largest change occurred in the aircraft sector, which experienced sharp expansion in the Phoenix metropolitan area in the early 1950s. The electronics sector became noticeable in the mid-1950s, with rapid expansion starting in the late 1950s. Most of the early electronics products were communications equipment. Industrial machinery's sectoral share rose moderately throughout the decade.

The manufacturing expansion, which provided jobs for additional migrants, began in 1949 when Motorola sited the first of several facilities in the Valley. Location factors cited as important were air service to the Midwest, the Valley's location between the military markets in southern California and Albuquerque, low humidity, Arizona State University, and the Valley's reputation as a resort and health center. Again the federal government played a role, in 1954, by designating Fort Huachuca in southeast Arizona as the Army's principal proving ground for electronic defense equipment.

Some of the new manufacturing establishments were located close to the developed area, for example between Downtown Phoenix and Scottsdale/Tempe. Others, however, were located many miles from the developed area in what 40 to 50 years later still is the fringe of the urbanized area. Manufacturing companies siting large facilities often seek large parcels of inexpensive land where their activities will not disturb residents.

In the 1960s, manufacturing's sectoral share continued to expand in the Phoenix metropolitan area while it shrank further nationally. The increase in the Phoenix metropolitan area resulted mostly from the electronics sector, particularly electronic components (which today is dominated by semiconductors). The share of the industrial machinery sector also rose throughout the decade. In contrast, the relative importance of the aircraft sector fell substantially. As in the 1950s, many of the new facilities were sited outside the urbanized area.

Thus, during the 1950s and 1960s the metro area's economy shifted from rural to urban. By the mid-1960s, the Phoenix metropolitan area's industrial mix was almost as similar to the national average as it is today.

In 1970, major industrial employers were clustered along a diagonal (formed largely by the route of the railroad and U.S. 60) from northwest to southeast of downtown Phoenix, as well as to the north of downtown. However, the biggest industrial employers were more scattered across the Valley, including a few at some distance from downtown. All of the major office buildings were in downtown Phoenix or along North Central Avenue. Large shopping centers were located particularly in east Phoenix and Scottsdale, though the two largest were a little west of Central Avenue and on Central Avenue. Other major employment centers included Arizona State University in downtown Tempe and the state capital west of downtown Phoenix.

Settlement Patterns

Nearly all of the urbanization in the 1950s was focused on the city of Phoenix or on lands annexed by the city during the 1950s. The proportion of the county's population living in the city of Phoenix jumped from 32 percent in 1950 to 66 percent in 1960. The city's population quadrupled between 1950 and 1960 to 439,000 as its land area soared from 17 to 190 square miles. Tract housing, rare until after the war, accommodated the more rapid postwar pace of growth.

After the war, the central business district began to move north of downtown Phoenix along Central Avenue. The first high-rise outside of downtown opened in 1955, followed in 1957 by the opening of Valley's first shopping mall (Park Central at Osborn Road and Central Avenue). Many retailers and other businesses left downtown after this, with the downtown evolving into a legal, financial and governmental center.

During the postwar period, the northeast remained the preferred quarter. Its appeal was enhanced by new resorts, the development of Scottsdale as a tourist mecca, and the opening of the Valley's most elegant shopping centers in the early 1960s (what is now Biltmore Fashion Park and Scottsdale Fashion Square).

The northwest became the "popular" quarter during this period, with the construction of affordable homes for the working class. A classic example is Maryvale, an early planned community started in 1957. Growth was spurred by the opening of the first segments of the I-17 freeway in 1957. (More generally, housing across the Valley has followed the construction of freeways and other infrastructure, such as sewers.) In addition, Youngtown, a forerunner of modern retirement communities, began in 1954 to the northwest of the urbanized area. Adjacent Sun City opened in 1960.

The southeast Valley began to grow more rapidly in the 1960s, aided by the construction of the I-10 freeway, which ran north-south along the west edge of this quadrant, meeting the I-17 freeway in Phoenix. The I-10/I-17 freeway was completed in 1968. East Mesa also had an early retirement community in Dreamland Villa, opened in 1954.

South Phoenix, described by Johnson as “an unusual mixture of affluent farmers and minority groups, with belts of extreme poverty,” was annexed by Phoenix in 1960. It and the southwest quadrant grew less rapidly than the rest of the Valley.

Land Use

With almost all of the metro area’s growth occurring in the automobile-oriented post-World War II era, the population density of the area always was low, resulting in a disproportionately large amount of land being transformed.

By 1955, the early expansion of the urban area was evident. The CAP-LTER report shows that urban land use jumped to 2.7 percent of the total area, with expansion in all directions from central Phoenix. About five-sixths of the urban expansion between 1934 and 1955 occurred on farmland. A little more than 1 percent of the Phoenix area was dedicated to recreation (see Table 1).

Urban and recreational uses of the land steadily increased after 1955. By 1975, the urbanized area covered 6.6 percent of the land and the recreational share hit 3.3 percent. Urban expansion especially occurred in the southeast, northeast and northwest portions of the Valley. Some of it was not adjacent to existing towns whereas urban growth before this had spread gradually from the core.

Unlike earlier periods, much of the urban development between 1955 and 1975 took place on unused or grazed desert land. About 40 percent of the urban development still occurred on farmland. However, farming also was expanding onto desert land. The share of the land area used for farming was marginally higher in 1975 than in 1934. However, data from the Census of Agriculture indicate that farming acreage countywide peaked in the early 1960s (see Table 2).

In the early 1950s, agricultural use (farming and ranching) peaked at close to 50 percent of Maricopa County's 5.9 million acres, according to the agricultural census conducted every five years by the U.S. Departments of Agriculture and Commerce. Most of these 2.7 million agricultural acres were used for grazing. Cropland was largely limited to the irrigated areas near the Salt and Gila rivers and accounted for not quite 10 percent of the county's total land area in the 1950s and early 1960s.

Population Growth

Population growth surged in the Phoenix metropolitan area after World War II. Numeric growth in the 1950s was nearly 5.5 times that of the previous high decade.

In 1970, the population of the Phoenix metropolitan area was 971,000. The urbanized area population was 863,357, four times that of 1950. The urbanized area spread over 387.5 square miles, resulting in a relatively low population density of 2,228 per square mile.

By 1970, the Valley’s population had started to spread beyond the city of Phoenix, but the city still was growing rapidly and its 584,000 residents constituted 60 percent of the metro population. Mesa, the Valley’s second most populous city through most of its existence, had a population in 1970 of 63,000, similar to that of Scottsdale and Tempe. Glendale and Chandler were the only other cities with more than 10,000 residents.

TABLE 1
LAND USE IN CENTRAL ARIZONA – PHOENIX, 1912 TO 1995

	Share of Total			
	Agriculture	Desert	Recreation	Urban
1912	9.0%	90.9%	0.0%	0.2%
1934	15.7	83.4	0.5	0.4
1955	13.8	82.3	1.2	2.7
1975	16.0	74.1	3.3	6.6
1995	11.3	66.4	4.4	18.0

	Source of New Urban Land	
	Agriculture	Desert
1912-34	98.2%	1.8%
1934-55	82.6	17.4
1955-75	39.9	60.1
1975-95	41.9	58.1

Source: Central Arizona-Phoenix Long-Term Ecological Research, "Phase I Report on Generalized Land Use."

TABLE 2
AGRICULTURAL ACREAGE IN MARICOPA COUNTY, 1949 TO 1997

	Thousands Of Acres		Cropland	Percent Change	
	Total	Cropland	Share	Total	Cropland
1949	2,373	492	21%		
1954	2,711	581	21	14%	18%
1959	2,584	548	21	-5	-6
1964	2,518	584	23	-3	7
1969	1,899	542	29	-25	-7
1974	1,538	514	33	-19	-5
1978	1,413	509	36	-8	-1
1982	1,429	463	32	1	-9
1987	1,391	424	31	-3	-8
1992	730	376	52	-48	-11
1997	709	341	48	-3	-10

Source: Calculated from the U.S. Department of Agriculture, 1949 to 1997 Censuses of Agriculture.

DEVELOPMENT FROM 1970 TO 2000

The year 1970 marked a turning point for Metropolitan Phoenix. A newly mature economy, the baby-boom generation aging into their 20s – the prime age for making long-distance moves – and the end of the 1969-70 recession led to a spurt in population and job growth that continues through the end of the century. Settlement patterns since 1970 are not discussed in detail in this section; for more information, see other papers prepared for the Brookings Project by the same author: “Population Demographics in Metropolitan Phoenix,” “Housing in Metropolitan Phoenix” and “Population Density in Metropolitan Phoenix.”

An identifiable power hierarchy has been lacking since the 1970s. Charter government in the city of Phoenix was dissolved in 1975. The strength of the Phoenix 40 has waned without being replaced by a similarly powerful group. Yet the same pro-growth private-sector interests continue to wield considerable power. County government remains weak and no real regional government exists. Though city governments have become more important, some are as pro-growth as their private-sector constituency.

Migration

The most numerous migrants to the Valley are young adults and most are part of the labor force. Employment is the most important force pulling migrants to the Phoenix metro area, but the climate has a significant secondary role. More generally, not only do jobs attract migrants, the ability to attract a workforce draws employers to the metro area.

In the long-term, the two forces act together to keep the Valley's growth rate high. In the short-term, however, the availability of jobs controls the migration of people. Despite the area's industrial composition being similar to the national average, economic cycles tend to be more severe in the Phoenix metro area. The relatively large size of construction, the most cyclical of industries, contributes to this variability.

Many young migrants to the Valley subsequently leave the area. This impermanence combined with preoccupation on work and starting a family means that many of these migrants do not take an active role in the community. More generally, high mobility and the relatively recent growth of the area has resulted in few natives or long-time residents of the Phoenix area.

Related to their youth, the typical migrant's income has been below the Phoenix area median. These moderate incomes and the desire to live in singe-family homes increased the demand for inexpensive housing on small lots. In recent years, the substantial size of the baby-boom generation has shifted migration flows toward middle age. The result has been more large, expensive homes, and fewer starter homes, being built.

Retirement-age migrants to the area are much less numerous than younger adults. However, few of these older migrants subsequently move from the Valley, thus net migration in this age group is fairly large. Even with this net in-migration, the proportion of the population of retirement age is less in the Phoenix area than the national average. Since so many of the older migrants settle in age-restricted communities, their presence is more noticeable in the Phoenix area than in most places.

Most migrants to Metro Phoenix come from other U.S. states rather than from other countries. In particular, many move to the area from other western states. However, many of these newcomers originally lived east of the Rocky Mountains – in particular in the northern Plains and Great Lakes regions. In the past, a higher proportion of the migrants to the Phoenix metro area came directly from these regions.

Economic Growth

While the area's industrial mix has continued to evolve, most of the changes since the 1960s have matched national trends, the most notable of which have been a substantial decline in manufacturing's sectoral share, with an even bigger increase in services' share. In the Phoenix metropolitan area, a lesser decline in manufacturing's share has occurred. In addition, a drop in government's relative importance in the Phoenix metro area contrasts with a steady sectoral share nationally. Most of the relative decline has occurred in state and local government, but the closing of Williams Air Force Base contributed to a decline in military employment. Government's sectoral share is lower than the national average, despite the location of the state capital in Phoenix.

The decline in government's sectoral share in the Phoenix metropolitan area represents divergence from the national average. The only other sector showing a divergence from the national average is farming, whose sectoral share is less than, and falling faster than, the national average.

Despite continuing convergence, manufacturing's sectoral share based on employment and earnings remains smaller than the national average. Exceptions are electronics, transportation equipment, and instruments, though the local share is only slightly higher in the latter two sectors. The sectoral shares of instruments and most small manufacturing sectors have not fallen as fast as the national average. In contrast, the sectoral share of industrial machinery has declined much more than the national average, mostly since the mid-1980s. The sectoral share of electronics has slipped as well relative to the national average.

The services industry's sectoral share has climbed substantially since 1969. The increase in metropolitan Phoenix has not been quite as large as that nationally, as the local share has gradually converged toward the national average. Most of the services sectors have experienced an increase in share, but particularly large gains have occurred in three: health services, business services, and engineering, accounting, research and management services.

Industries with a greater share than the national average include construction, a result of the Phoenix metropolitan area's fast growth. However, this differential has been shrinking. Finance, insurance and real estate's sectoral share is a little larger than average, a reflection of real estate serving a growing area and the Phoenix metro area providing much of the rest of the state's financial needs. Retail trade employment also is relatively high, mostly because of sales to tourists and seasonal residents.

Though state and local governments in Arizona long have been focused on promoting economic development, a comprehensive economic development plan did not exist through four decades of rapid growth. Such a plan – Arizona Strategic Planning for Economic Development (ASPED) – was created at the beginning of the 1990s. However, only partial implementation of the plan has occurred.

ASPED stressed that the state should move from concentrating on growth of any kind to focusing on value-added activities in a limited number of economic clusters, particularly activities that pay moderate-to-high wages and produce relatively few deleterious effects on the environment. Eleven economic clusters currently are recognized. Six are "new economy" manufacturing activities: high technology (information and aerospace), the bioindustry, optics, software, environmental technology, and plastics and advanced composite materials. Two clusters aim to attract people: tourism and senior industries. Three are traditional activities: mining, transportation and distribution, and agriculture and food processing. These clusters are discussed in another paper by the same author: “Employment in Metropolitan Phoenix.” That paper addresses the spatial distribution of employment and other topics.

ASPED also concentrated on improving the quality of six economic foundations – human resources (including education), financial capital, technology, tax and regulatory environment, physical infrastructure and quality of life. Such improvements would benefit all existing and potential companies and residents.

Land Use

According to the CAP-LTER study, recreational acreage continued to expand between 1975 and 1995, while urbanization accelerated considerably, going from less than 7 percent to 18 percent of Central Arizona - Phoenix. Like the prior 20-year period, about 60 percent of the urbanization occurred on desert land and 40 percent on farmland. Most of the farmland conversion took place in the northwest and southeast portions of the Valley. Desert conversion happened throughout the Valley, but especially to the northeast.

Unlike the prior 20 years, farming did not expand onto desert land between 1975 and 1995. Thus farming's share was down to 11 percent of the land area in 1995.

The agricultural census shows that the decline in cropland has been largely continuous over time since the early 1960s, with especially large reductions in the 1980s (see Table 2). In contrast, rangeland decreased sharply from the mid-1960s to the mid-1970s and again in the late 1980s and early 1990s. Much of the decline in agricultural lands, particularly rangeland, occurred due to abandonment rather than to conversion to urban uses. By 1997, only 12 percent of the county's land was used for agriculture, with this equally split between rangeland and cropland.

Neighboring Pinal County, into which the Phoenix urbanized area now spills, has seen a similar decline in both rangeland and cropland. A higher proportion of Pinal County remains dedicated to agriculture than Maricopa County.

Population Growth

As seen in Table 3, numeric population growth in Maricopa County generally accelerated throughout the 20th century. (Some of the rapid growth shown for individual cities resulted from annexations of already settled areas.) Annual population gains accelerated from only a few thousand to more than 80,000 in the mid-to-late 1990s. The county did not reach a population of 700,000 until 1961, but added the next 700,000 in only 18 years. The pace further accelerated, with the population rising from 1.4 to 2.1 million in 10 years, then to 2.8 million in nine years (in 1998). Almost two-thirds of the century's nearly 3 million increase in population occurred in the last 30 years.

Maricopa County is home to nearly 60 percent of the state's residents, a share that has grown throughout the century from only 17 percent in 1900. In the latter part of the century, about two-thirds of the people migrating to the state moved to Maricopa County.

Numeric population gains in the metro area have continued to accelerate since 1970. The annual average increase was 30,000 during the 1960s, 55,000 during the 1970s, 65,000 during the 1980s and 80,000 during the 1990s. Net in-migration from outside the metro area accounts for 70 percent of the total population increase (see Table 4). In the mid-to-late 1990s, about 170,000 people per year moved to Maricopa County, but 110,000 left the area, resulting in annual average net in-migration of 60,000. Thus, even in rapidly growing metro Phoenix, many people leave, frequently after having been residents only a short time.

In the special census of 1995, the metro population exceeded 2.5 million. Phoenix's share fell from 60 percent in 1970 to 45 percent in 1995. The population of Mesa jumped to 338,000 in 1995, while Glendale, Scottsdale, Tempe and Chandler each had between 100,000 and 200,000

TABLE 3
POPULATION OF SELECTED JURISDICTIONS IN MARICOPA COUNTY
1900 to 1998 (In Thousands)

	Urban Area	County	Phoe-nix	Mesa	Glen-dale	Scotts-dale	Tempe	Chand-ler	Peoria	Gilbert	Rest of County
1900	na	20	6	na	na	na	na	na	na	na	14
1910	na	34	11	2	na	na	1	na	na	na	20
1920	na	90	29	3	3	na	2	na	na	na	53
1930	na	151	48	4	4	na	3	1	na	1	90
1940	na	186	65	7	5	na	3	1	na	1	104
1950	216	332	107	17	8	2	8	4	na	1	185
1960	552	664	439	34	16	10	25	10	3	2	125
1970	863	971	584	63	36	68	64	14	5	2	135
1980	1,409	1,509	790	153	97	89	107	30	12	6	225
1990	2,006	2,122	983	288	148	130	142	91	51	29	260
1998	na	2,784	1,198	360	193	195	168	160	87	89	334

Numeric Change

1900-10	na	14	5	na	na	na	na	na	na	na	9
1910-20	na	56	18	1	na	na	1	na	na	na	33
1920-30	na	61	19	1	1	na	1	na	na	na	37
1930-40	na	35	17	3	1	na	0	0	na	0	14
1940-50	na	146	42	10	3	na	5	3	na	0	81
1950-60	336	332	332	17	8	8	17	6	na	1	-60
1960-70	311	307	145	29	20	58	39	4	2	0	10
1970-80	546	538	206	90	61	21	43	16	7	4	90
1980-90	597	613	193	135	51	41	35	61	39	23	35
1990-98	na	662	215	72	45	65	26	69	36	60	74

na: not available

Source: U.S. Bureau of the Census, 1900 to 1990 decennial census counts and 1998 estimates.

TABLE 4
POPULATION CHANGE IN MARICOPA COUNTY, 1961 TO 1999
Annual Average in Thousands, By Economic Cycle

		Net Migration		Births-		
	Total	Number	% *	Deaths	Births	Deaths
1961-70	30	19	63%	11	18	7
1971-75	55	44	78	11	20	9
1976-82	54	41	76	13	24	11
1983-91	66	45	68	21	36	15
1992-99	82	57	69	25	44	19

* As a percentage of total population change.

Source: Center for Business Research, L. William Seidman Research Institute, College of Business, Arizona State University.

residents. Gains between 1970 and 1995 totaled 565,000 in Phoenix and 275,000 in Mesa. More than 100,000 were added to the population in Glendale, Chandler and Scottsdale while Tempe, Peoria and Gilbert added more than 50,000.

Unlike the central cities of most metro areas, Phoenix is not entirely encircled by other cities. During the first annexation confrontations between cities in the 1950s (between Phoenix and Scottsdale over the area around Camelback Mountain), the city of Phoenix decided on an annexation strategy that would keep it from being surrounded. Thus, Phoenix is one of the largest cities in the country (in area and population), consisting not only of the old central core, but of older suburbs, newer suburbs, and the newest fringe development as well. Other than Tempe, which is hemmed in by other cities and running out of vacant land, each of the metro area's other major cities also transition from an old downtown core to the newest fringe development. Most metro areas east of the Rocky Mountains consist of smaller cities totally surrounded by other cities.

Land Ownership

Nearly two-thirds of the land in Maricopa County is publicly owned. The largest expanses of public land are the Tonto National Forest in the northeastern part of the county and various tracts, primarily in the western portion of the county, owned by the U.S. Bureau of Land Management (BLM). The BLM controls nearly four times as much land as the Forest Service.

As with Forest Service lands, BLM lands largely are used for cattle grazing leases, though they are managed under the doctrine of "multiple use." Some BLM land is administered as wilderness areas managed for wildlife habitat and limited recreation. While BLM lands are not sold outright, they can be traded and thereby come into private ownership.

The Arizona State Trust also controls a considerable amount of land in the county, especially to the north of the urban fringe. Like the BLM lands, state trust lands primarily are used for grazing. Statewide, grazing leases are held on 93 percent of the state trust lands.

These trust lands temporarily act as growth boundaries, limiting sprawl and leapfrog development. The goal of the trust, however, is to raise funds for public uses, especially the education system. Thus, trust lands are sold or leased when the value of the land increases because of encroaching urbanization. State trust lands historically have been developed under the concept of "highest and best use," with sales for less than the appraised fair market value prohibited. Some of the developed land in the urbanized area once was state trust lands.

About 5 percent of Maricopa County is controlled by five Indian communities. Three border the urbanized area, including the Gila River Reservation to the south and the Salt River Pima-Maricopa and Fort McDowell Mohave-Apache communities in the northeast. Modest amounts of development have occurred on the three Indian Reservations, but these lands are expected to remain mostly rural. Other public lands include federal, state, county and city parks, preserves and open spaces.

Privately owned land largely is confined to the urbanized area, the farmlands southeast of the urbanized area, and lands west of the urbanized area, extending for some distance near the major transportation routes of I-10 and State Route 85/I-8. Despite so much of the county's land being undevelopable public land, the amount of land available for development would allow the population of the Phoenix metro area to expand by at least several million.

In neighboring Pinal County, a much lower proportion of the land is federally owned than in Maricopa County. Indian tribes and the Arizona State Trust control much higher proportions.

FUTURE DEVELOPMENT

Rapid population growth in Maricopa County is expected to continue over the next 50 years. The 2000 population of nearly 3 million is projected to swell to more than 7 million in 2050. Annual growth in the next two decades is expected to slow somewhat from the pace of the 1990s, but gains after that should gradually rise (see Table 5). The current 83,000 per year average population change is projected to rise to 100,000 around 2050.

A small portion of Pinal County (Apache Junction) already is included in the Phoenix urbanized area. More of Pinal County will be added to the urbanized area over time. Pinal County's population is projected to rise from 158,000 in 1998 to 231,000 in 2020.

Only 6 percent of the county's 1995 population did not live within the MAG planning area. Even within this urban planning area, 53 percent of the land was vacant or used for agricultural purposes in 1995. By 2020, development is expected on nearly all of the 936 vacant square miles. Another 12 percent of the planning area (217 square miles) is dedicated to open space or consisted of water drainages and bodies of water. By 2020, this proportion is expected to double as more land is reserved as open space. However, the number of acres of dedicated open space hardly rose between 1990 and 1995, resulting in a 15 percent drop in per capita open space.

The rest of the planning area was used for urban purposes in 1995. Residential use accounted for 75 percent of these 597 square miles. The other 25 percent was split between public facilities, commercial, industrial and warehousing uses. By 2020, each urban use should account for a greater share than in 1995, with these urban functions using up three-fourths of the planning area – more than double the amount of land in 1995.

Over the next 25 years, the Maricopa Association of Governments predicts that development will shift somewhat from the southeast part of the Phoenix metro area to the north and southwest. The population center of the county has shifted to the east over the last 20 years, to northeast of Thomas Road and 24th Street in 1995. Over the next 25 years, it is projected to move slightly west and north.

Landforms only partially act as barriers to urban growth in the metro area. While mountains to the north and east are part of a large, rugged mountainous region, those at the fringe of the Valley to the south and west are not substantial enough to stop the expansion of the urban area.

Metropolitan Phoenix likely will run out of water before it runs out of developable land. Enough of both exist to allow the current population of 2.9 million to reach at least several million – more than that projected to be living in Maricopa County in 50 years.

TABLE 5
POPULATION PROJECTIONS OF MARICOPA COUNTY
2000 to 2050 (In Thousands)

	Population	10-Year Change
2000	2,954	832
2010	3,710	756
2020	4,516	806
2030	5,391	875
2040	6,296	905
2050	7,265	969

Source: Arizona Department of Economic Security.

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