HITS AND MISSES:
FAST GROWTH IN METROPOLITAN PHOENIX

MORRISON INSTITUTE FOR PUBLIC POLICY

SEPTEMBER YEAR TWO THOUSAND

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HITS AND MISSES:
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Preface

Hits and Misses: Fast Growth in Metropolitan Phoenix is the first product of a comprehensive effort to describe and analyze the region's growth. The Brookings Institution Center on Urban and Metropolitan Policy in Washington, D.C. presented the opportunity for this project to Morrison Institute for Public Policy.

The Brookings Institution has been engaging leading local scholars to study the role of government policies in growth and development patterns in various metropolitan areas in recent years. As part of this urban agenda, the Brookings Center invited Morrison Institute to prepare a case study of the Phoenix region to supplement reports on the other five cities already involved in the national research. Soon thereafter, Morrison Institute invited a number of metropolitan Phoenix cities, businesses and civic alliances to provide financial support for this new investigation. The supporting organizations were eager to obtain fresh, quality information about growth in the area at a time of increasing anxiety about the topic. They also saw the benefit of showcasing metropolitan Phoenix' sometimes surprising story within Brookings' larger set of case studies.

The formal Phoenix case study will appear next year as a chapter in a Brookings Institution book with national distribution. However, the pressing public debate about growth issues in metropolitan Phoenix obliged Morrison Institute to make its findings available locally now. This detailed document offers significant data and discussion not included in the formal Brookings case study. It also features a finer-grained local focus for local audiences. Morrison Institute hopes the analyses and recommendations will foster a better understanding of the dynamics at work in this region and support wise decisions in the future.

Some readers will wonder why **Hits and Misses** does not take a specific stand on the growth management measures on the November 2000 ballot. The two measures represent a key moment in both Phoenix' and the state's growth history, so this report's silence on the proposals may seem peculiar. However, in keeping with this study's purpose to identify the causes of growth patterns, the Morrison Institute team chose to pass over discussion of particular ballot items in favor of offering fresh data and new options for thinking about the challenges and opportunities of rapid growth. Such an approach sacrifices topicality in favor of a potentially longer-lasting effect on the region's future.

The story of growth in metropolitan Phoenix is a complicated, often surprising, tale. There is much to be proud of in the region. Yet there is also much to worry about, and much that needs to be done. **Hits and Misses** will have been successful if it becomes a catalyst for getting started.



A NOTE ABOUT DATA

Any study of this kind depends on accumulating a comprehensive and up-to-date body of research that can inform regional policy making. Fortunately, many cities in the region as well as the Maricopa Association of Governments (MAG), the Central Arizona-Phoenix Long-Term Ecological Research Project at Arizona State University, the state of Arizona and the federal government maintain large bodies of useful data on the region's job market, population, land-use and transportation trends. However, assembling a comprehensive statistical picture of the region remains problematic. Differences in collection efforts among metropolitan Phoenix cities and agencies make the assembly of consistent, city-by-city databases difficult. Hard figures do not exist for numerous topics. Or, relevant numbers date back a number of years. The U.S. Bureau of the Census most detailed statistics covering small geographic divisions, for example, date to either the 1990 census or the MAG 1995 special census, precluding more up-to-date accountings. Clearly this lack of timely data creates difficulties when speaking of a fast-changing region such as metropolitan Phoenix. Nevertheless, Morrison Institute remains confident the trends it highlights here hold for the region.

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Executive Summary

Phoenix is often viewed as the quintessential Sunbelt metropolis: young, fast-growing, auto-centered, and sprawling. While some facets of the stereotype are accurate, the complete picture of metropolitan Phoenix is more complex. In some notable ways, metropolitan Phoenix' story is one of success. For example, compared to other urban regions, the Phoenix metropolitan area is fairly compact with relative equity between its core city and its suburbs. Prospectively, however, the challenges are great. The desert landscape is changing and some educational and economic divides are obvious, plus the mechanisms available to cope with problems may be insufficient to handle many rapidly-evolving situations.

Hits and Misses is based on a wide-ranging set of projects undertaken by scholars at Morrison Institute for Public Policy (School of Public Affairs, Arizona State University) during the past year. Overall, this research provides an updated and expanded view of regional growth and development trends and the pressures that will challenge the region's residents and policy makers in the future.

This has been a complicated inquiry, given the tangle of events, trends and circumstances that affect and shape any region. Still, two things stand out about metropolitan Phoenix' growth experience.

1) Metropolitan Phoenix has grown differently from other urban regions and in ways that defy conventional wisdom.

- **Density is increasing.** Given residents' dependence on cars, most people would not expect the Phoenix region to be showing increases in population density from its core to its edges. But it is – making it one of only a handful of large areas in the country to do so. Population grew 263 percent between 1960 and 1990, while the urbanized area expanded 199 percent during the same period. By contrast, metropolitan Chicago gained 4 percent in population while urban land area increased 47 percent. Metropolitan Atlanta consumed nearly twice as much land as metropolitan Phoenix to accommodate approximately the same number of people.

- **The region's center is holding.** Employment remains concentrated in the metropolitan Phoenix core, unlike in many other urban regions. Jobs in the area's center account for 32 percent of the region's employment. In addition, both population and employment rose in the heart of the metropolitan area in the 1990s, although the rate of expansion was less robust than in other parts of the region. Still, these healthy signs belie the "hollowing out" that has plagued many other regions.

- **The region's core city and its major suburbs are quite balanced.** In keeping with the vitality of its center, metropolitan Phoenix is also fortunate to retain a measure of balance among its major cities. The absence of glaring disparities between the center and the next largest cities – at least in terms of housing values, jobs and retail activity – stands in contrast to other metropolitan areas and bodes well for the future of the core and the entire region.

- **People and businesses keep coming.** To stay the same in today's world usually means going backward. Metropolitan Phoenix still is experiencing phenomenal growth with nearly 700,000 new residents (31 percent more) and approximately 500,000 more jobs in just less than 10 years. Between 1997-1998 alone, approximately 1,300 new business establishments were counted in metropolitan Phoenix. The region now ranks 13th in high-tech jobs.

2) Metropolitan Phoenix faces extraordinary challenges because of local circumstances and the effects of past public policy decisions.

- **Residential development is moving outward very swiftly.** Overall in the last five years, the urban edge has advanced nearly one-half mile per year. In the southeast, the fringe pushed out an average of three-fourths of a mile each year. The region's heaviest home building is now occurring in a ring some 18 to 21 miles from downtown Phoenix. It is fair to ask: How far out will the ring of development need to be pushed to accommodate the 1.6 million additional residents projected in the region by 2020?

- **Metropolitan Phoenix is using up its agricultural and desert land**. Calculations from aerial photographs show that between 1975 and 1995 some 40 percent of all agricultural land and 32 percent of all undeveloped desert land was lost to urbanization. The vivid Sonoran Desert is what makes metropolitan Phoenix unique and gives it a special character. Losing huge tracts of land threatens the region with the loss of its most famous lifestyle and environmental asset.

- **A regional divide exists by race, poverty and schools.** For years, the sections north and northeast of downtown Phoenix, including Scottsdale, have been affluent areas with attractive housing, good schools, and enviable amenities. Also for years, poor whites and low-income minorities have been concentrated in neighborhoods in the central and southern portions of the city of Phoenix. The demographic divide plays out in schools as well, with few poor and minority students in high-achieving school districts.

- **The region's rapid growth disturbs the majority of residents.** Since its inception three years ago, the Morrison Institute quality of life survey has documented the breadth and depth of residents' discontent with growth. In 1999, 80 percent of residents said they were "concerned" or "very concerned" with the region's growth. Most dramatically, nearly half reported that they would leave Phoenix tomorrow if they could. Two-thirds added that the region was doing a "poor" or "fair" job of preserving the desert and open space.

THE RESPONSE: THREE STRATEGIC RECOMMENDATIONS

As the region's leaders and residents decide what to do next, actions in three strategic areas seem imperative.

First, the Phoenix region needs to understand the full range of issues that shape its growth and development patterns. The region's emerging divisions, transportation challenges, loss of desert lands, and the many other growth

issues that threaten metropolitan Phoenix' quality of life are inextricably linked and cut across jurisdictional boundaries.

The smartest regions today have embraced the "four E's" of a strong economy, healthy environment, social equity and civic engagement as a framework for analyzing problems and building regional advantages. They recognize that everything is connected.

Metropolitan Phoenix' leaders can disregard the relationships among the region's education, social, economic and environmental challenges and hope for the best. But they would do better if together they "connected the dots" among the issues and created new partnerships capable of responding to growth's problems and paradoxes.

Second, the Phoenix region must overcome the near "Catch-22s" that are rooted in its history. These Catch-22s will not succumb to old ideas or big ideas borrowed from a Seattle or a Denver. Bold, innovative policy decisions, based on the region's circumstances, will be needed. The Catch-22s include:

- **Looming transportation and land use conundrums.** In contrast to other regions, highway building in metropolitan Phoenix has supported the region's central area. The present round of suburb-to-suburb freeway extensions, however, could create problems. By making jobs and homes away from the center more accessible, the presence of freeways will intensify land consumption on the fringe. But should employment remain concentrated in the cores and home building continue to move outward, commute times could worsen. The challenge to unraveling this Catch-22 will be finding transportation and land-use initiatives that create dispersed mixed-use clusters of greater residential and employment density that do not detract from the vitality of downtown Phoenix, the region's signature core.

- **State trust land questions.** Large tracts of state-owned trust land near the urban fringe constitute an irreplaceable asset for the region's quality of life. This land could serve as a growth boundary that provides a vast reservoir of open space. However, the state constitution requires that these lands be managed to maximize revenues for Arizona's educational needs. The mandate bars wholesale conservation of the lands and increases the likelihood of future land sales to developers. The challenge for the region will be to amend the Arizona constitution and state enabling act to allow for trust land to be dedicated to open space while maintaining the ability to fund schools.

- **Growth agendas in the smaller cities.** Eighteen less-populous cities on the urban fringe now control nearly as much land as the city of Phoenix and the five largest suburbs combined. These areas also lag behind the region in open space protection and use of growth management tools. This means that the municipalities in the region least equipped to deal with the effects of fast growth will soon be making decisions with enormous implications for the entire region. The challenge will be to bring a regional perspective to the planning efforts of all cities while respecting the region's tradition of local control.

- **Fixing the schools of the core.** The region has reason to worry about the education of children in central Phoenix and the southwest portion of the region. Individual economic success correlates particularly with education attainment (the number of years of school completed). The weak schools of the center present a powerful impetus for decentralization. Schools with high proportions of low-income, minority or underachieving students may influence where people and businesses choose to locate. This increases the viability of the fringe at the expense of the core. Ironically, though, the region and its cities possess limited authority to address the unique problems of schools. The challenge will be encouraging more effective collaboration between school districts and city leaders and including education issues in both fringe growth management and core revitalization strategies.

- **Conflicting views on sprawl and density.** Residents of metropolitan Phoenix decry sprawl, but they also dislike density. Unfortunately, controlling one usually means encouraging the other. To confront this Catch-22, regional leaders and residents will need to find an acceptable way to promote greater density with "quality" development that fosters convenience, diversity, transit options and access to open spaces. One approach will be to re-evaluate traditional zoning ordinances with their rigid and segregated land uses and consider new rules that foster acceptable combinations of residential and commercial uses.

- **Regional authority dilemma.** Although valuable, especially as the 18 less-populous communities become a stronger force in the regional dynamics, city-to-city coordination will only go so far. However, the creation of a binding regional authority has been rejected so often that implementation of such a concept appears unrealistic for metropolitan Phoenix. The challenge will be to reap the benefits of regional "governance" without having to adopt a formal "regional government" structure.

- **An on and off relationship with Washington.** The region historically has benefitted from federal assistance with water and public works projects that have sustained a growing population. In recent years, state leadership – executive and congressional – has disdained federal help with similar projects, believing that the state should be more independent from Washington. This stance handicaps the region's ability to finance major growth management initiatives, such as light rail or open space acquisition, that neither the state nor any single municipality can afford on its own. The challenge will be to get back to a long-term regional agenda so compelling that it would be unthinkable for any elected official not to support it.

- **Tensions that surround state support of metropolitan Phoenix.** In today's economy metropolitan regions are increasingly overtaking states as the drivers of growth. The situation in Arizona is no exception; the metropolitan Phoenix region currently accounts for 70 percent of the state's total personal income and is responsible for over 70 percent of new job growth. Thus, ensuring a viable metropolitan Phoenix should be a top priority of state government. However, other communities across Arizona have needs that also must be addressed at the state level. The challenge will be to support the Phoenix region in a way that does not neglect the needs of other localities, but accepts that prosperity brought forth by a strong regional driver benefits the state as a whole.

- **Water's changing role.** Although the region has ample water for its current population, water management will be more important given that there are no potential projects on the scale of the Central Arizona Project to increase the future supply of water. As such, water management will be increasingly related to growth management, as water becomes an invaluable regulator by influencing where homes and businesses may locate. However, discussions on water management and growth management currently take place in entirely separate spheres. The challenge will be to bring together the water mavens and the urban planners to come to an understanding of how water policies could be used to manage growth.

This report's final suggestion is for the region to be alert to the demographic, technological and cultural trends that are shaping the next metropolitan era. New faces, a new economy, and a new geography of amenities may be as profound a determinant of the size, shape and prospects of cities and their surroundings in the coming years as the post-war suburban boom was. How a region chooses to take what it has and put it into play amid these emerging trends will determine the region's competitiveness and how it will grow.

Then and Now: How the Metropolitan Phoenix Region Has Changed

	1970s	1990s*
FAST GROWTH AND INCREASING DENSITY		
Total Population	971,228	2,783,779
Population Density (people/square mile urbanized area)	2,228	2,707
Average Lot Size for New Homes (square feet)	7,500	6,677
MAJOR CHANGES IN LAND USE		
Percent Urbanized Area	15	41
Percent Agriculture Area	32	19
Percent Desert Area	49	33
Distance of Fringe from Downtown Phoenix (miles)	10-11	18-21
STRONG CENTER		
Employment Concentrated in Two Central Areas	32% of jobs are on 4% of land area	
Population Remaining in Core		
Percent in the city of Phoenix	60	43
Percent in the five largest suburbs**	25	39
Percent in the balance of the county	15	18
MORE EXTENSIVE ROAD SYSTEM		
Total Lane Miles per 1,000 Residents (freeways, major arterial roads, minor arterial roads)	3.5	4.1
Vehicle Miles Traveled (per person per day)	14	24
Transit Miles (per capita)	n/a	7
BALANCE BETWEEN THE CORE AND THE FIVE LARGEST SUBURBS		
Housing		
Housing value in the city of Phoenix	$48,500	$76,700
Housing value in the five largest suburbs	$59,400	$92,600
Employment		
Number of jobs for every 100 residents in the city of Phoenix	n/a	58
Number of jobs for every 100 residents in the five largest suburbs	n/a	49
Retail Sales		
Retail sales per capita in the city of Phoenix	$8,600	$7,500
Retail sales per capita in the five largest suburbs	$8,500	$10,600
INCREASING DIVERSITY		
Percent of Ethnic Minorities in Metropolitan Phoenix	19	28
DEEPENING DIVIDE		
Concentration of Minorities		
Percent of population in south Phoenix that is minority	47	77
Percent of population in the city of Phoenix that is minority	22	36
Percent of population in the five largest suburbs that is minority	13	22
Concentration of Poverty		
Percent of persons in poverty in central and south Phoenix	24	36
Percent of persons in poverty in Phoenix	12	14
Percent of persons in poverty in the five largest suburbs	9	10
Schools Performance (Stanford 9 reading score percentile rank)		
Percent of students nationwide scoring above the average score of students in central Phoenix	n/a	67
Percent of students nationwide scoring above the average score of students in the northwest quadrant	n/a	61
Percent of students nationwide scoring above the average score of students in the northeast quadrant	n/a	27
Percent of students nationwide scoring above the average score of students in the southeast quadrant	n/a	41
Percent of students nationwide scoring above the average score of students in the southwest quadrant	n/a	66

* *NOTE: Except for the following, data is given for 1970 and 1998. Data for population density in the 1990s is based on data for 1990; land use compares percents in 1975 and 1995; housing values compare median figures for 1970 and 1990 (in 1990 dollars); employment figures are for 1995; retail sales comparisons are for 1980 and 1995; overall ethnic minority comparison is for 1980 and 1995; poverty comparison is for 1969 and 1989; minority concentration for central and south Phoenix is for 1980 and 1995; and minority concentration for Phoenix and the region is 1980 and 1995.*

** *The five largest suburbs are: Chandler, Glendale, Mesa, Scottsdale, and Tempe.*

Introduction

Cities are the ultimate embodiments of their times, and metropolitan Phoenix is no exception.

Nothing has determined the shape and tenor of metropolitan Phoenix' development more than the fact that it has taken place almost entirely in the post-World War II era of cars. The Phoenix region, in a word, has grown in the largely suburban, horizontal way it has because that is how virtually all cities grew during the past 50 years. The strengths and problems of the Phoenix region are in that sense very much of their time.

Yet now a new time is beginning to shape metropolitan Phoenix and the choices open to it. This era is the era of the Internet and the new economy. So the region that came of age in the auto era is now sensing that new values and new ways of living are going to rearrange the metropolitan fabric as thoroughly as the suburban boom did.

Laptop gypsies with blue hair writing code at the Starbuck's; "yuppie seniors" wired for semi-retirement; new immigrants and smaller firms: All these are coming, and they will influence the layout and priorities of metropolitan Phoenix as surely as did all those Chevy-driving defense workers of the 1950s. Yet *how*, precisely, the newcomers will do this, and to what degree, remains a riddle. Moreover, it remains unclear how the region that rose to prominence by mass production will adapt its form to the new era of clustering, networks and "quality of place." Change is everywhere. The world is changing; cities are changing; and so are the possible solutions to the problems faced by metropolitan areas.

This report, in order to help make sense for policy makers and the public of this extraordinarily dynamic moment, endeavors to detail the trends that are now shaping metropolitan Phoenix. Along the way, it identifies the side effects of rapid growth that threaten the region's future. And it ponders how the region may ensure it prevails as a competitive, high-quality region in its next era.

Yes, cities embody their times, but that does not mean they need be confined to the forms and problems of just one era. A new time is always coming, and the trick for metropolitan Phoenix is to begin adapting creatively – and quickly – to the new imperatives of region building. Fortunately, as the following pages make clear, the region begins this evolution from a position of surprising strength.

BY THE NUMBERS: Snapshot of the Metropolitan Phoenix Region

1 — COUNTY
The metropolitan Phoenix region is contained within Maricopa County. At 9,226 square miles, the area of the county is larger than New Jersey and four other states.

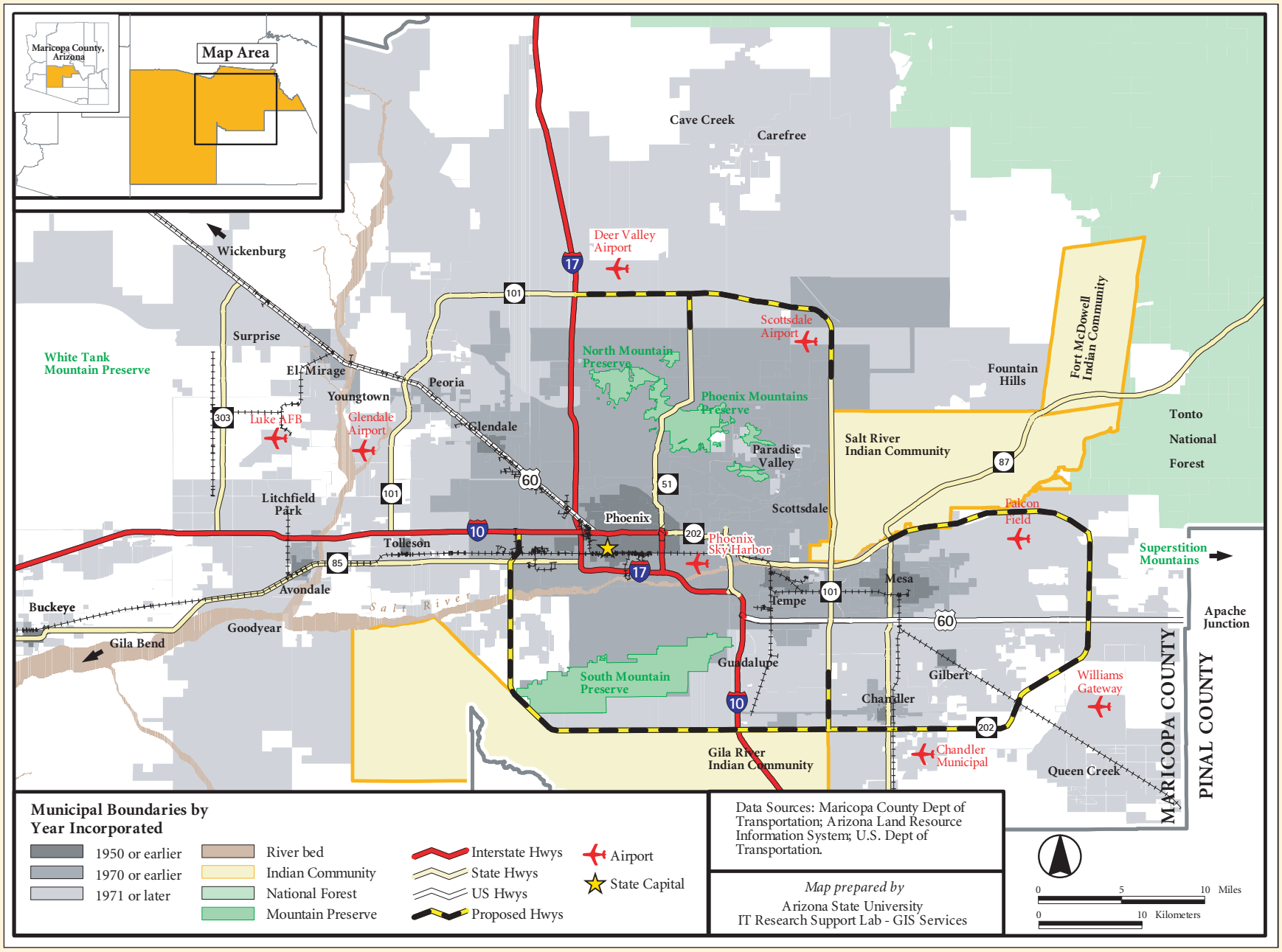
24 — JURISDICTIONS
The region consists of only 24 cities and towns. The total population in 1998 was almost 2.8 million.

1 — CENTRAL CITY
The city of Phoenix is the central city. With a population of nearly 1.2 million, it covers 470 square miles.

5 — LARGE SUBURBS
Chandler, Glendale, Mesa, Scottsdale, and Tempe are home to 39 percent of the region's residents.

18 — LESS-POPULOUS MUNICIPALITIES
The 18 municipalities house only 11 percent of the population and have grown 446 percent since 1970.

Landmarks in Metropolitan Phoenix



The Shape of Fast Growth

Growth affects every dimension of the region's identity, including its population, employment, transportation arrangements, land-use patterns and social landscape. This section tells what changes are unfolding and what those trends might mean for the Phoenix region.

Basically, these pages show that the region's story conforms to neither the "traditional" model of urban development, nor the popular image of Sunbelt growth.

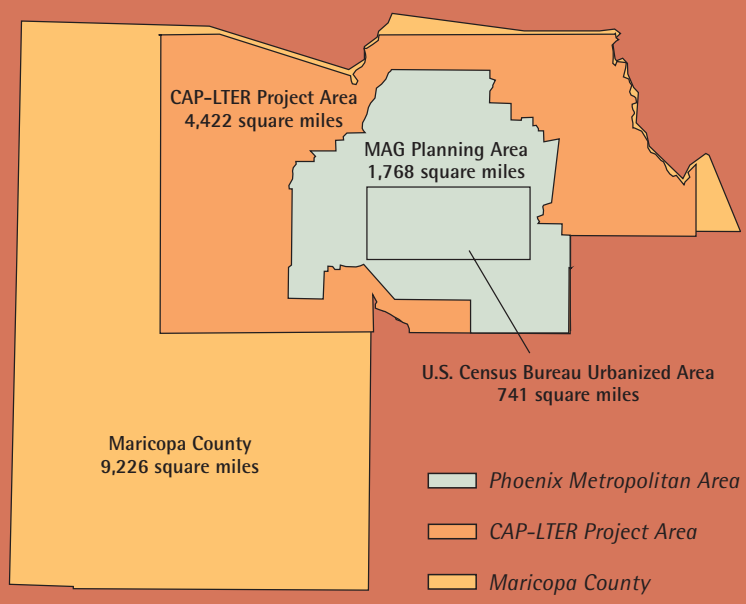
Under the traditional model, associated most often with older east coast and midwestern cities, metropolitan areas frequently feature a distressed central city confined to its boundaries by fast-growing suburbs. There in the center, the old downtown becomes a catch basin for the region's poor and minority residents, while middle-class families, corporations and job growth migrate to the suburbs.[1]

Popular views of the Sunbelt, by contrast, constantly assume metropolitan Phoenix exemplifies the unpopular word "sprawl." Phoenix in this view is denounced as a vast, auto-centered collection of retirement communities and a sea of red-tiled roofs. Or worse, it is portrayed as a low-density urban behemoth that lacks both a center and an "edge," as the architectural critic Michael Sorkin had it in a 1997 review in Architectural Record. "Phoenix has become the dreaded polycentric automotive metropolis," Sorkin wrote.[2]

To be sure, aspects of both of these accounts of metropolitan Phoenix growth hold true. But for the most part the picture of the region's development that emerges from the research reported below is subtler than either the traditional or popular view.

In this fashion, the trends that follow belie easy preconceptions. Concepts and labels continue to be tossed about like footballs in the growth debates. However, the data and other information presented here stick closely to what is actually happening as metropolitan Phoenix gets bigger and challenge the region's discussions with a number of surprises.

Guide to Official Descriptions of Metropolitan Phoenix



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The trends that follow
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DATA NOTE

According to the U.S. Bureau of the Census, the "Phoenix metropolitan area" consisted only of Maricopa County until 1990 census results became available, when Pinal County was added. For historical consistency, and because little of Pinal County is part of the Phoenix urbanized area, references in this report to the Phoenix metropolitan area equate to Maricopa County unless otherwise noted. Other geographic units occasionally referred to include (1) Phoenix urbanized area. This geography closely follows the developed area, but only decennial census data are produced for urbanized areas. Discussions of population density use this geography, which in 1990 was only 8 percent of the county's land area. (2) The Maricopa Association of Governments defines a planning area that includes the current developed area plus land projected to be largely developed by 2020. It is about one fifth of the county's land area. (3) The Central Arizona-Phoenix Long-Term Ecological Research project defines a study area larger than the MAG planning area, but still substantially smaller than Maricopa County. It is used in discussions of land use.

Population is Booming

TREND: Growth driven by vast in-migration is occurring almost everywhere in metropolitan Phoenix – even near the core. But the most dramatic gains are at the outer edges of the current urbanized area.

Metropolitan Phoenix grew faster than any other large metropolitan region between 1970 and 1998.* From just 1990 to 1998, the region's population increased 31 percent thanks in large part to the arrival of an average of 57,000 new residents a year.** Among the 25 largest metropolitan areas in the nation only Atlanta grew similarly (27 percent) during the 1990s.

About one-third of the region's population growth between 1990 and 1998 occurred in the city of Phoenix. Another fifth went to cities close to the core – Tempe, Scottsdale and Glendale. Tempe grew by 18 percent, Phoenix by 21 percent, Glendale by 32 percent, and Scottsdale by 50 percent (see Table 1). The city of Phoenix added 210,000 residents from 1990 to 1998. Tempe, Scottsdale and Glendale together added 137,000 residents.

At the same time, 8 out of the 24 cities in the Phoenix metropolitan area experienced a population increase of more than 50 percent from 1990 to 1998. Cities with the fastest population growth are at the urban edge. Avondale, Carefree, Chandler, Fountain Hills, Gilbert, Goodyear, Peoria and Surprise all extend along the metropolitan area's outer ring. Map 1 shows these areas in light blue and dark blue. The cities with over 50 percent growth accounted for about 200,000 new residents to the region during the 1990s. The city of Phoenix' share of the regional population dropped from 60 percent in 1970 to 43 percent in 1998 (see Figure 1).

Over the last 30 years, an average of 127 new residents moved to the Phoenix region every day.

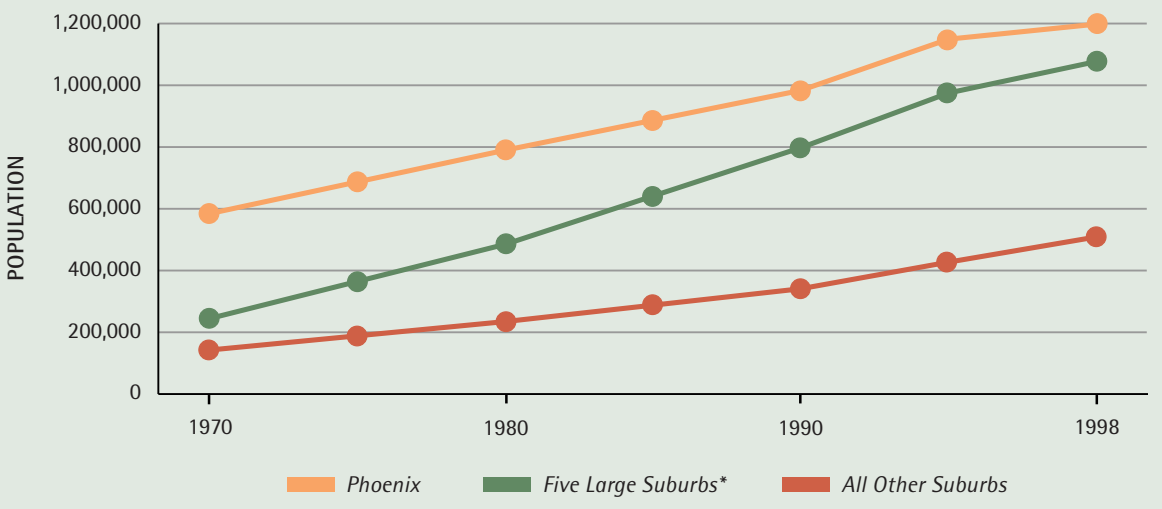
The growth rate in the southern and central portions of the city of Phoenix trailed the numbers recorded elsewhere in the region. South and central Phoenix (indicated in red on Map 1) added only about 15,000 people (9 percent) between 1990 and 1995. The metropolitan area's largest pockets of population decline were also in these areas.

WHAT THIS MEANS

Explosive population growth has enriched metropolitan Phoenix' talent pool and enlarged its local markets, but it is also challenging the region's infrastructure and natural resources, particularly in the areas of the metropolitan fringe. More traffic, longer commutes, air pollution, and crowded schools all result from the region's phenomenal influx of drivers and home buyers. Local governments may be capable of only minimal planning and may struggle to provide basic services. Communities that are relatively small and inexperienced, or where growth outpaces the rate at which tax rolls and census counts can be updated to ensure various revenue flows, have been the hardest hit. Hence, the potential for regional problems is great.

That the city of Phoenix and other "inner-ring" cities are still growing at a rate relatively close to the regional average suggests the region's center is not "emptying out" as it is in many other metropolitan areas. Between 1970 and 1999, for example, the city of Atlanta's population decreased 14 percent compared to the region's increase of 114 percent.[3] The city of Phoenix' growth rate was 105 percent between 1970 and 1998, while the region gained 187 percent. However, slower growth in south and central Phoenix points to an emerging problem. Pockets of population decreases – caused primarily by the demolition of housing units – cluster in an area close to the region's core.

Figure 1: Metropolitan Phoenix' Population Grew by 187 Percent, adding 1.8 Million People from 1970 to 1998



** Large Suburbs refer to Chandler, Glendale, Mesa, Scottsdale and Tempe.*
Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census.

** Metropolitan Phoenix means Maricopa County, except where otherwise noted. See the Data Note for details on geographic areas.*

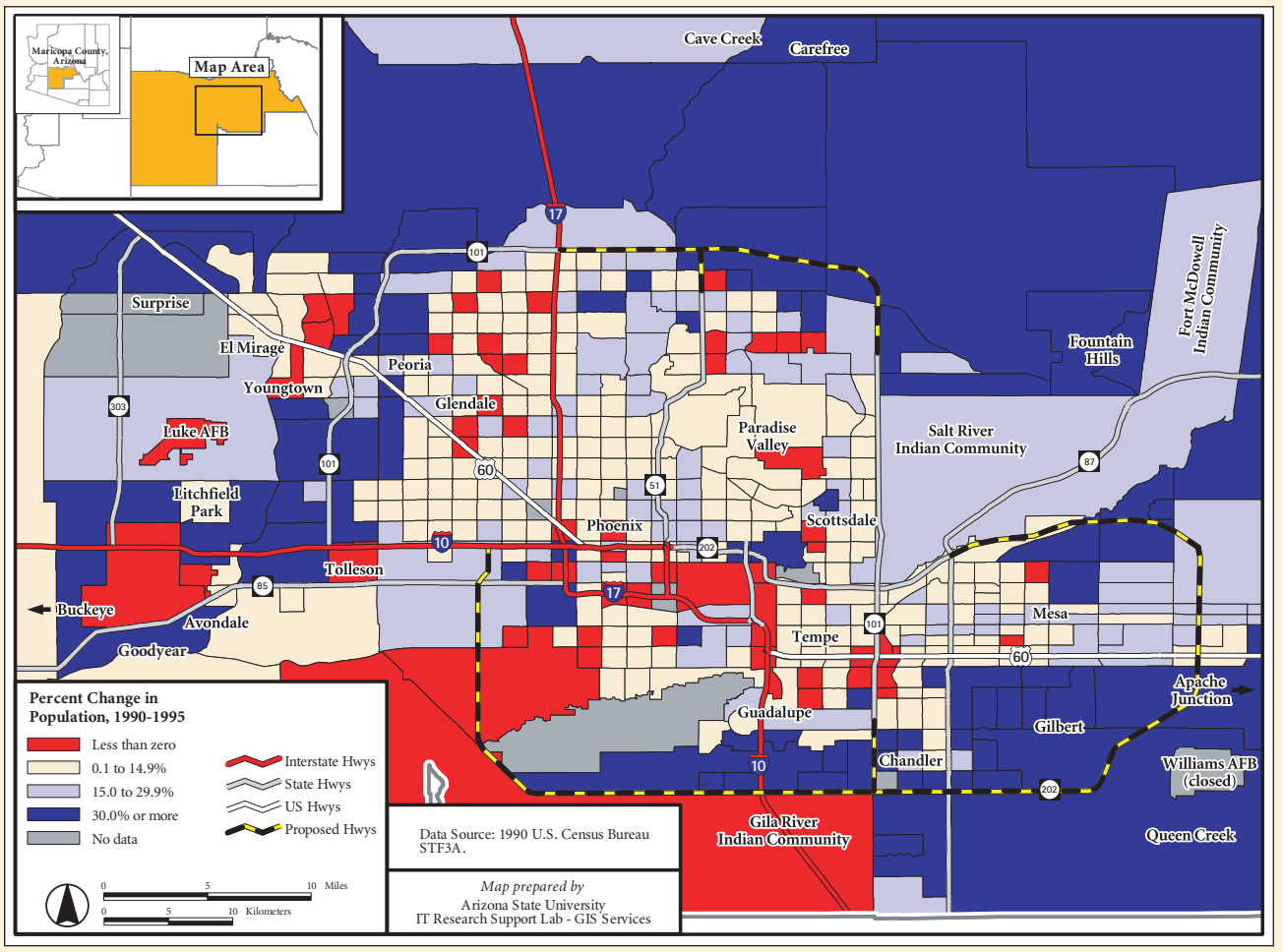
*** 1998 data reflect population estimates from the U.S. Bureau of the Census which were released March 2000.*

Table 1: Metropolitan Phoenix: Population by Municipality, 1970 to 1998

CITY	1970	1980	% Change 1970-1980	1990	% Change 1980-1990	1998 (estimate)	% Change 1990-1998	Change 1970-1998	% Change 1970-1998
Apache Junction	3,863	9,935	157%	18,092	82%	21,235	17%	17,372	450%
Avondale	6,626	8,168	23%	17,595	115%	27,580	57%	20,954	316%
Buckeye	2,599	3,434	32%	4,436	29%	5,184	17%	2,585	99%
Carefree		964		1,660	72%	2,566	55%	2,566	
Cave Creek		1,518		2,394	58%	3,481	45%	3,481	
Chandler	13,763	29,673	116%	89,862	203%	160,329	78%	146,566	1065%
El Mirage	3,258	4,307	32%	5,001	16%	5,940	19%	2,682	82%
Fountain Hills				10,030		19,159	91%	19,159	
Gila Bend	1,795	1,585	-12%	1,747	10%	1,754	0%	-41	-2%
Gilbert	1,971	5,717	190%	29,149	410%	88,840	205%	86,869	4407%
Glendale	36,228	97,172	168%	147,070	51%	193,482	32%	157,254	434%
Goodyear	2,140	2,747	28%	6,258	128%	15,262	144%	13,122	613%
Guadalupe		4,506		5,458	21%	5,758	5%	5,758	
Litchfield Park				3,303		3,858	17%	3,858	
Mesa	63,049	152,404	142%	289,199	90%	360,076	25%	297,027	471%
Paradise Valley	6,637	11,085	67%	11,903	7%	14,544	22%	7,907	119%
Peoria	4,792	12,171	154%	51,080	320%	87,048	70%	82,256	1717%
Phoenix	584,303	789,704	35%	988,015	25%	1,198,064	21%	613,761	105%
Queen Creek				2,667		3,706	39%	3,706	
Scottsdale	67,823	88,622	231%	130,099	47%	195,394	50%	127,571	188%
Surprise	2,427	3,723	53%	7,122	91%	14,849	108%	12,422	512%
Tempe	63,550	106,919	68%	141,993	33%	167,622	18%	104,072	164%
Tolleson	3,881	4,433	14%	4,436	0%	5,121	15%	1,240	32%
Wickenburg	2,698	3,535	31%	4,515	28%	5,366	19%	2,668	99%
Youngtown	1,886	2,254	20%	2,542	13%	2,705	6%	819	43%
MARICOPA COUNTY	971,228	1,509,175	55%	2,122,101	41%	2,783,779	31%	1,812,551	187%

Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census 1970, 1980, 1990, 1998.

Map 1: Cities with Fastest Population Growth from 1990 to 1995 are at the Urban Edge



Metropolitan Phoenix is Becoming Denser

TREND: The Phoenix urbanized area is consuming land at a less rapid pace than its population is growing. Its increasing population density contrasts with declining densities in most of the nation's urbanized areas.

Very large population increases are driving the rapid expansion of the urbanized area in metropolitan Phoenix. Between 1960 and 1990, the urbanized land area grew 199 percent, while population increased 263 percent. The Phoenix region is one of only a handful of large metropolitan areas (including Dallas and Los Angeles) that consumed land at a slower rate than population increased, as Figures 2 and 3 show. By contrast, the Atlanta region consumed nearly twice as much land as the Phoenix region (almost 900 square miles compared with about 500) to accommodate approximately the same level of population growth.

The Phoenix urbanized area's population density has been rising, according to the U.S. Bureau of the Census. Between 1960 and 1990, density rose 22 percent to 2,707 people per square mile. Densities went up 23 percent in the 1980s after holding steady in the 1960s and 1970s. Other information, including comparisons of 1990 and 1995 census data and dropping housing vacancy rates suggest density climbed even a little more in the 1990s (see Map A in Appendix).

Density increases appear to stem from increased construction of multi-family dwellings, decreases in average lot size and considerable "in-fill" construction. At the simplest level, population density is a function of occupied housing density (units per square mile) and average household size. An analysis of housing types and sizes suggests that favorable tax rules in the 1980s led to the construction of an unusually high proportion of multifamily housing units. Also, high interest rates at that time limited residents' ability to purchase single-family houses. During the 1980s, much of the single-family and multi-family housing construction happened on parcels that initially had been skipped over. At the same time, median lot sizes in metropolitan Phoenix dropped from 7,828 square feet in 1980 (about one-sixth of an acre) to 7,200 square feet in 2000.

The region is being built at quite even densities and lot sizes, even at the fringe. With few exceptions, most new neighborhoods in metropolitan Phoenix continue to be built at densities similar to the county average, rather than at the much lower densities common in some regions. This is true even in the prime new-home construction ring which now circles metropolitan Phoenix about 18 to 21 miles from downtown Phoenix. The median lot size generally does not vary too much from city to city. Most of the cities have been within 10 percent of the county average, although each quadrant of the region has some areas with larger and smaller lot sizes. Carefree and Paradise Valley are the major exceptions with median lot sizes of more than one acre. Lot sizes were more than 10 percent above the county average in Sun City West, Fountain Hills, and Queen Creek. Avondale has had the smallest median lot size (see Table A in Appendix).

Central Phoenix has also noted density increases. During the 1970s and 1980s, population density decreased within a three-mile radius of central Phoenix, much as it did near many urban cores in the United States. However between 1990 and 1995, densities increased in the center even though there had been little residential construction in the area. The turnaround is due mostly to a sharp decline in housing vacancy rates and an increase in household size, largely related to the center's growing Hispanic population. In addition, a growing number of people lived in "group quarters," such as prisons and homeless shelters, thereby increasing densities.

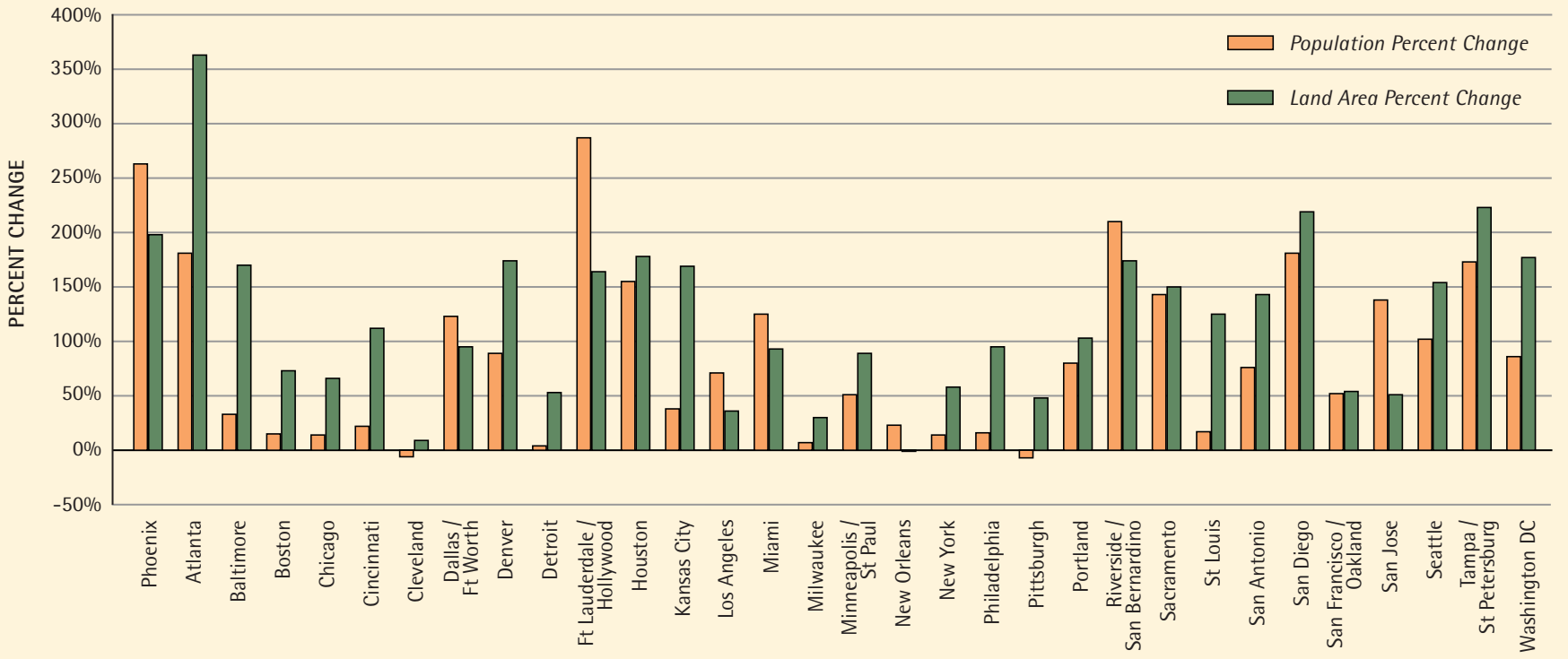
WHAT THIS MEANS

The Phoenix region, contrary to its sprawling, low-density image, is actually growing fairly compactly. Starting from a low base, population density increased to a point where it was only about 10 percent less than the national median for large urban areas (2,975 persons per square mile) in 1990. Moreover, unlike areas such as Atlanta, Denver or San Diego, the region is consuming land at a slower rate than it is adding people. Such trends mean that the region's land consumption, commute times, decentralization and toll on the desert are less than they might have been given the area's phenomenal population growth.

Population growth is probably inevitable as long as the Phoenix region remains an attractive place to live and work. But density is not inevitable. As *Washington Post* columnist Neal Peirce recently told San Diego's leaders, "Density doesn't just appear like sprouts; it needs careful planning and permission."[4] Moreover, the key question ought not to be whether or not the region creates more density, but how. Merely squeezing more homes onto smaller lots in segregated housing developments is not the optimal strategy for compact development – though that is part of the picture. The region is likely to find huge land savings in the future by following through determinedly with current policies for in-fill development, transit-focused development zones, mixed use (and accompanying revisions to zoning ordinances) or other such vital centers with combinations of places to live and work.

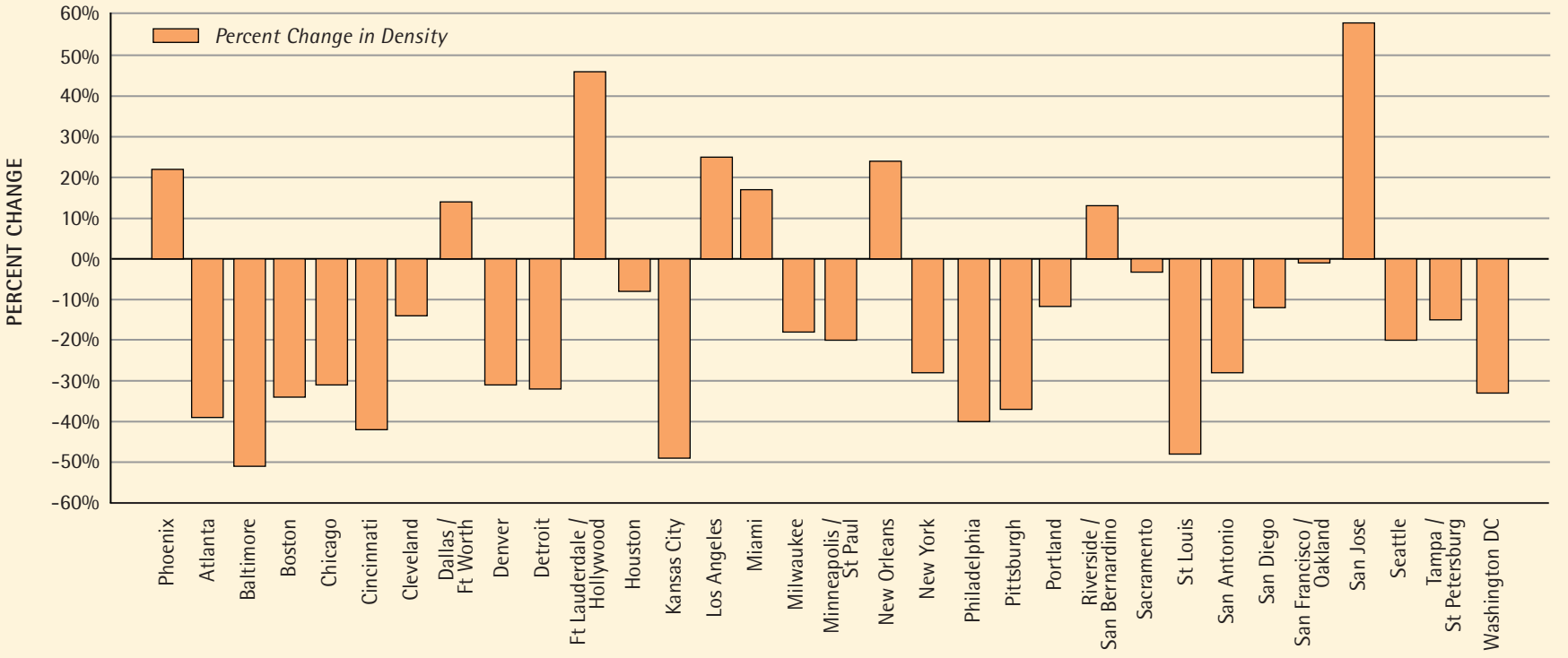
Between 1960 and 1990, Phoenix' urbanized area grew 199 percent,
while population increased 263 percent.
Phoenix is one of only a handful of large metropolitan areas that consumed land
at a slower rate than its population grew.

Figure 2: Phoenix and Seven Other Large Urbanized Areas Consumed Land at a Slower Rate than Population Growth Over 30 Years (percent change from 1960 to 1990)



Note: Urbanized Areas with population over one million in 1990. Does not include Norfolk-Virginia Beach.
Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census.

Figure 3: Phoenix and Seven Other Large Urbanized Areas Show a Density Increase Over 30 Years (percent change in density from 1960 to 1990)



Note: Urbanized Areas with population over one million in 1990; density is population per square mile. Does not include Norfolk-Virginia Beach.
Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census.

Employment Remains Concentrated

TREND: Employment in metropolitan Phoenix remains highly concentrated in central locations, though it is beginning to disperse.

Employment in the region is growing. Employment in metropolitan Phoenix is now 1.7 million, up from 1.2 million in 1990. Regional employment increased 24 percent from 1994 to 1997. During this period, the major employment cores added 39,000 jobs (12 percent). The region's greatest job increases occurred in outlying areas with 117,500 jobs (a 44 percent change), but this high growth rate was a product of increases from a small base.

A third of all of the region's employment in 1997, approximately 400,000 jobs, was located in two central areas that account for only 4 percent of the land in the regional planning area. The primary employment core is located in downtown-midtown Phoenix. This central area of the city of Phoenix has the highest employment density and the greatest number of industries.[5] The jobs are in high-paying industries such as finance, insurance, real estate, professional services and government, and many of them require substantial education (see Map 3).

The second strong employment core includes some of the city of Phoenix, but also stretches into central and downtown Tempe and south and downtown Scottsdale (see Map 2). Arizona State University, Sky Harbor International Airport, public utilities, communication assets and government are located in this employment core. Access to the region's first two freeways helped portions of Tempe become the largest employment center outside of the downtown-midtown Phoenix core. Scottsdale's employment success can be traced to its proximity to affluent residential areas that extend to the area around the Phoenix Mountains Preserve through north Scottsdale. Combined, the two employment cores contained 32 percent of the region's jobs, but cover only 76 square miles. Only 13 percent of the population lived within these two core areas.

Areas with the fewest jobs and the least job growth are in south Phoenix, west of Central Avenue, and in the Ahwatukee Foothills south of South Mountain Park. While the south Phoenix area is 73 percent non-white and largely low-income neighborhoods, Ahwatukee Foothills is mostly white, middle-income neighborhoods.

In addition, the fringe of the urban area on the west and north formed a nearly continuous employment-poor area. The exceptions were along part of I-10 (*e.g.*, Tolleson) and along part of I-17 north of Beardsley Road. In contrast, no portion of the region east of Scottsdale/Rural Road is employment-poor.

The employment core is so strong today that even with little growth in the next 20 years, it would still be the primary employment area for the region. In 1997, the Maricopa Association of Governments (MAG) issued a set of employment projections in line with its population projections. The data forecast a 50 percent gain in regional employment by 2020. Employment in the primary core was expected to remain steady over the next 25 years. However, the core still would have the highest employment densities in 2020 at more than 7,000 employees per square mile. The secondary core would retain its status with employment densities between 5,000 and 6,200 employees per square mile.

Two areas in the southeast quadrant that had essentially no employment in 1995 are projected to have densities equal to the secondary core in 2020. These areas are Chandler Municipal Airport and the Williams Gateway Airport. In all, north Scottsdale and the southeast quadrant are anticipated to have substantial growth. The greatest percentage of growth is expected to occur in outlying areas, but none of these areas, except the Chandler and Williams airports, would achieve an employment density anywhere near secondary core status.

High technology industry is growing outside the core. Metropolitan Phoenix ranks 13th among metropolitan areas in the total number of high-tech jobs. But, employment in industries such as aerospace, information, bioindustry, plastics and software is limited in the primary core. On the other hand, software and information industries have a large presence in Tempe and Scottsdale, part of the secondary employment core. As Map 4 shows, large high technology manufacturing companies, especially in aerospace and semiconductors, are generally located on large parcels outside the core areas in the northwest (along Black Canyon Freeway, north of Bell Road) and the southeast (Chandler and Mesa) portions of the region.

Approximately 400,000 jobs – one-third of the region's employment – are located in central locations that account for about 4 percent of the land in the regional planning area.

WHAT THIS MEANS

The center is holding in metropolitan Phoenix when it comes to employment. This employment strength contrasts sharply with most other metropolitan areas. Between 1972 and 1995, core employment in Chicago, for example, declined 19 percent, while other areas in the region grew 97 percent.[6] Central Phoenix' strength bodes well for providing alternative transportation options and more close-in, middle-class residential areas. It also continues to give the central city the inherent advantages of plentiful face-to-face contact and access to infrastructure (*e.g.*, airports) that have always fostered economic growth but which are critical for new economy firms and global businesses.

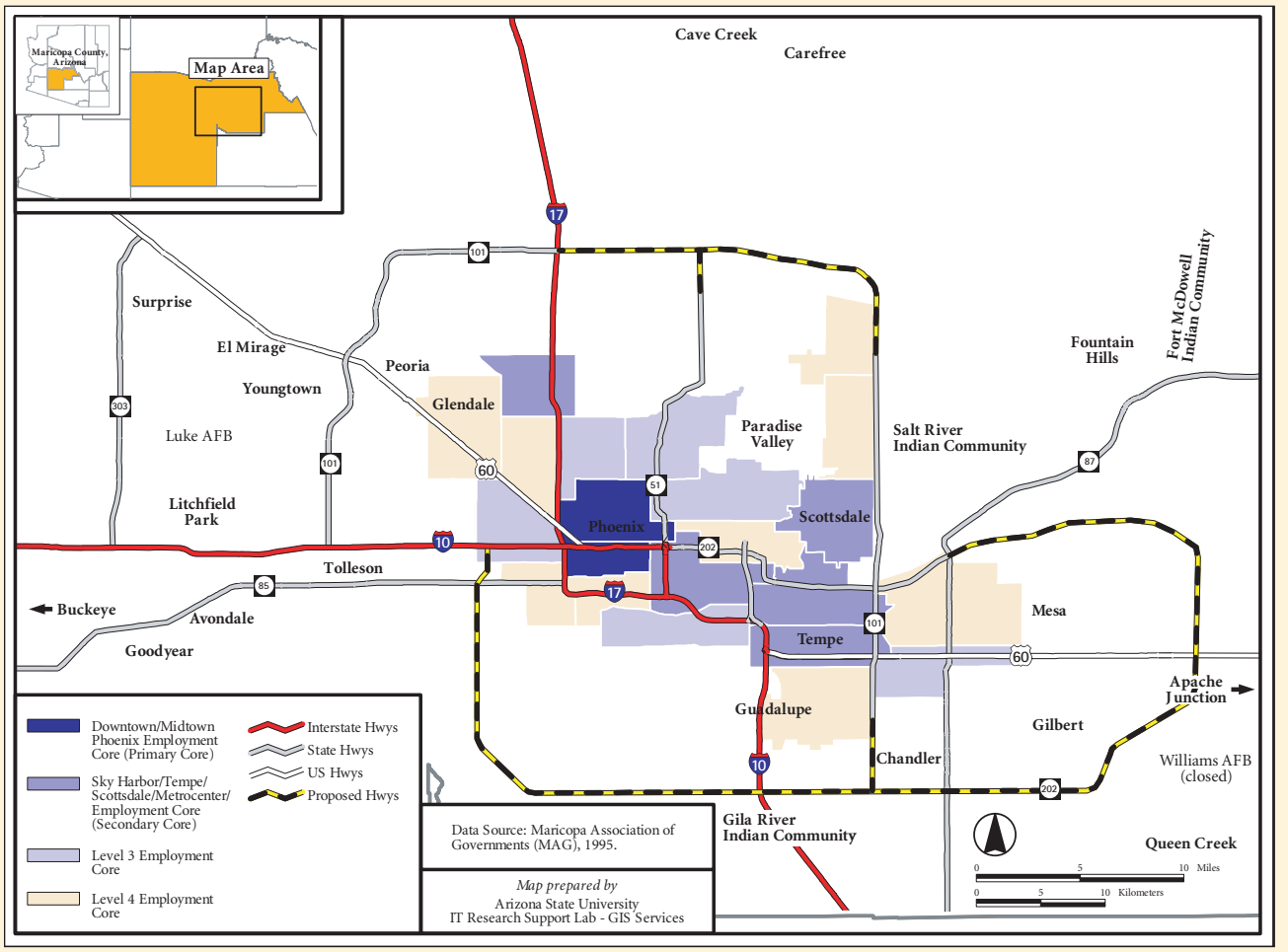
A "spatial mismatch" could also grow. There is a potential separation in the region between appropriate job opportunities and the location of less-skilled workers. In metropolitan Phoenix, these less-skilled workers often reside predominantly in or near the downtown Phoenix employment areas. However, the jobs accessible to them there are heavily weighted toward professional positions. That raises the possibility of their spatial isolation from needed entry-level work opportunities.

Table 2: Employment Growth in Metropolitan Phoenix' Central City is Growing, but Trails Other Areas, 1994 to 1997

	1994–1997 Employment Change	Percent Change
Downtown/Midtown Phoenix (Primary Core)	6,350	6%
Sky Harbor/Tempe/Scottsdale/Metrocenter (Secondary Core)	32,507	15%
Level 3 Employment Core	39,021	22%
Level 4 Employment Core	36,367	20%
Outlying Areas	117,508	44%
TOTAL	231,753	24%

Source: Morrison Institute for Public Policy, data calculated from Zip Code Business Patterns, U.S. Bureau of the Census.

Map 2: Metropolitan Phoenix Employment is Highly Concentrated



METROPOLITAN PHOENIX EMPLOYMENT CORES:

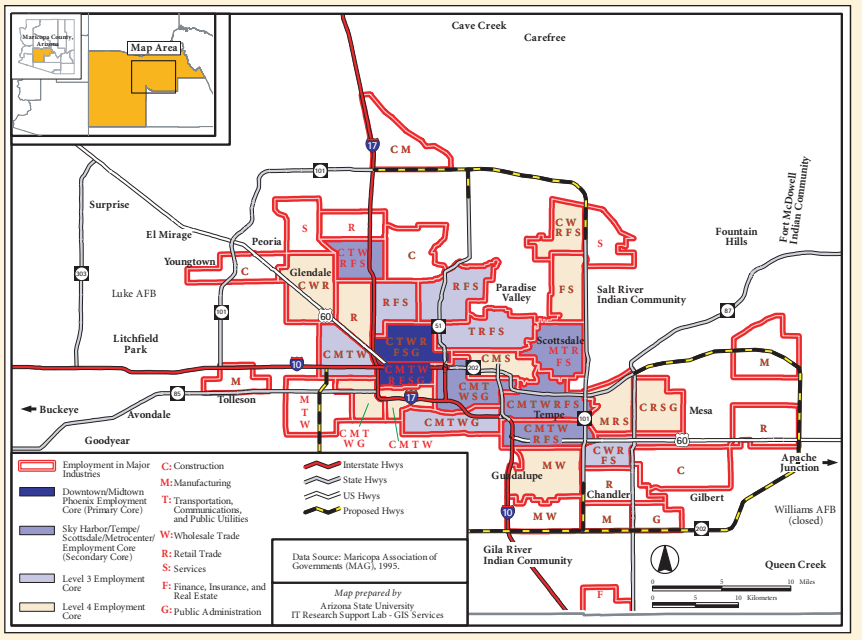
Primary Core (Level 1)
Downtown Phoenix
Midtown Phoenix

Secondary Core (Level 2)
East Phoenix, I-10 to Van Buren Street
Central Tempe
Downtown and west Tempe
Downtown and south Scottsdale
Metrocenter area of Phoenix

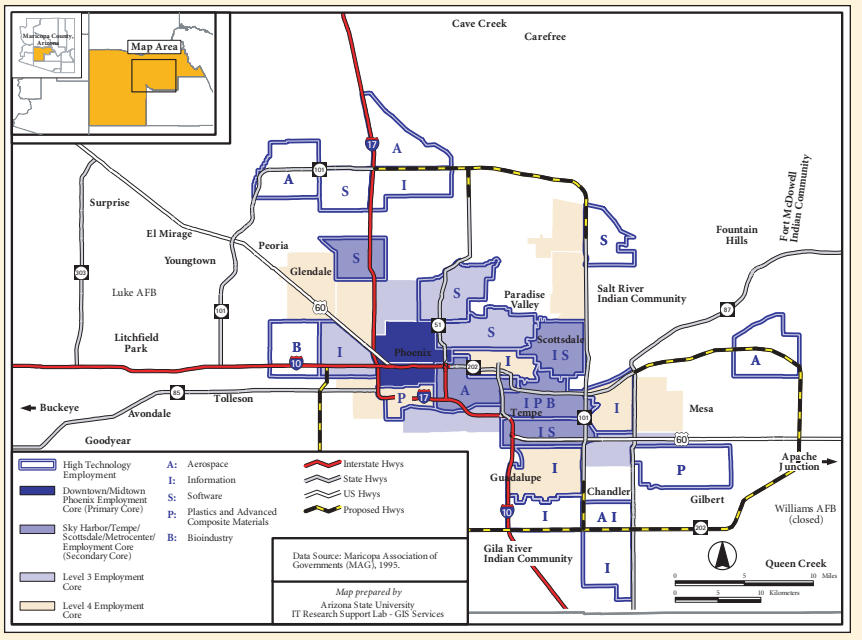
Level 3 Core
Uptown Phoenix
Biltmore/Squaw Peak Area of Phoenix
East Phoenix, Thomas Road to Camelback Road
Southwest Mesa
Southeast Phoenix
West Central Phoenix, Van Buren Street to Grand Avenue

Level 4 Core
Downtown Glendale
West Central Phoenix, Grand Avenue to Northern Avenue
North Scottsdale, McCormick Ranch
North Scottsdale, Airport Area
Northwest Mesa
Central Mesa
South Tempe
South Central Phoenix
Durango Area of Phoenix
East Phoenix, Van Buren Street to Thomas Road

Map 3: Major Industry is Located in the Primary and Secondary Employment Cores



Map 4: High Technology Industry is Located Outside the Primary Core



To learn what's behind the employment patterns,
see Figure A and Table B in the Appendix.

Road Building is Accelerating

TREND: Metropolitan Phoenix' recent transportation spending has focused overwhelmingly on highways. Access to the urban core has been improved, but alternative forms of transportation have been neglected.

Phoenix is one of the last major metropolitan areas in the United States to assemble a major freeway system.

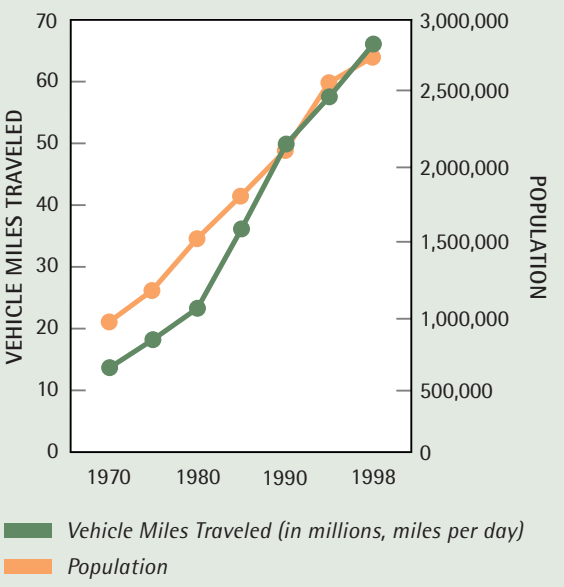
Metropolitan Phoenix is striving now to complete a freeway system that was begun in 1957, but expanded little between 1970 and 1985. At that time, local resistance to routing, federal funding, and high costs slowed construction. Consequently, as noted by the Texas Transportation Institute, only 290 lane miles of limited-access highways were available in 1985, none of which came together as a beltway.[7] Today as a result, metropolitan Phoenix makes do with a less-extensive limited-access road network than most regions its size. This belatedness also has made the region rely inordinately on arterial streets. In fact, the region is only now building beltways around the urban area about 10 to 20 miles from downtown Phoenix (see Map 5).

The freeway network has grown rapidly since 1985. In 1985, voters approved a county sales tax increase for freeway construction. Between 1985 and 1997, limited-access lane miles tripled from 290 to 870. The one-mile grid of arterial roads also increased substantially from 2,400 miles to 2,940 miles, a 42 percent increase. As a result, while traffic is increasing, its negative impacts have not yet become unmanageable. The Texas Transportation Institute also found congestion less in the city of Phoenix than in comparable cities. Per capita daily vehicle miles traveled increased in the early 1990s, but have remained on par with the rate of population growth since (see Figure 4). While Phoenix violated the federal ozone standard on 11 days as recently as 1995, the Environmental Protection Agency recently recognized the region's achievement in going three years without violating the standard.

Much of metropolitan Phoenix' transportation investment has benefitted the region's central area. Almost one-third of the $4.8 billion spent between 1986 and 1998 (in 1998 dollars) on highways funded freeways at the center of the region (see Table 3 and Map 6). An additional 28 percent of the expenditures went to roads that serve the southeast, the fastest-growing residential area, including the Loop 101 and State Route 60.

At the same time, public transit has been neglected. While investments were made in highways, a lack of local and state funding has constrained the Regional Public Transportation Authority (RPTA). This disparity helps explain why transit service miles in metropolitan Phoenix (7 miles per capita) remain among the smallest for any large metropolitan area in the United States, and far below almost all other comparably-sized metropolitan areas (11 transit service miles per capita in San Diego, 23 in Seattle, and 20 in Denver). These conditions may begin to change with the recent sales tax assessments authorized by voters in Mesa, Tempe and Phoenix. The new funds will pay for more bus service and the start of a 34-mile light rail project that will run through the central employment areas.

Figure 4: Vehicle Miles Traveled Are Now Growing at a Rate Even with Population in Metropolitan Phoenix



Source: Morrison Institute for Public Policy, data from Mark Schlappi, Arizona Department of Transportation, March 29, 2000.

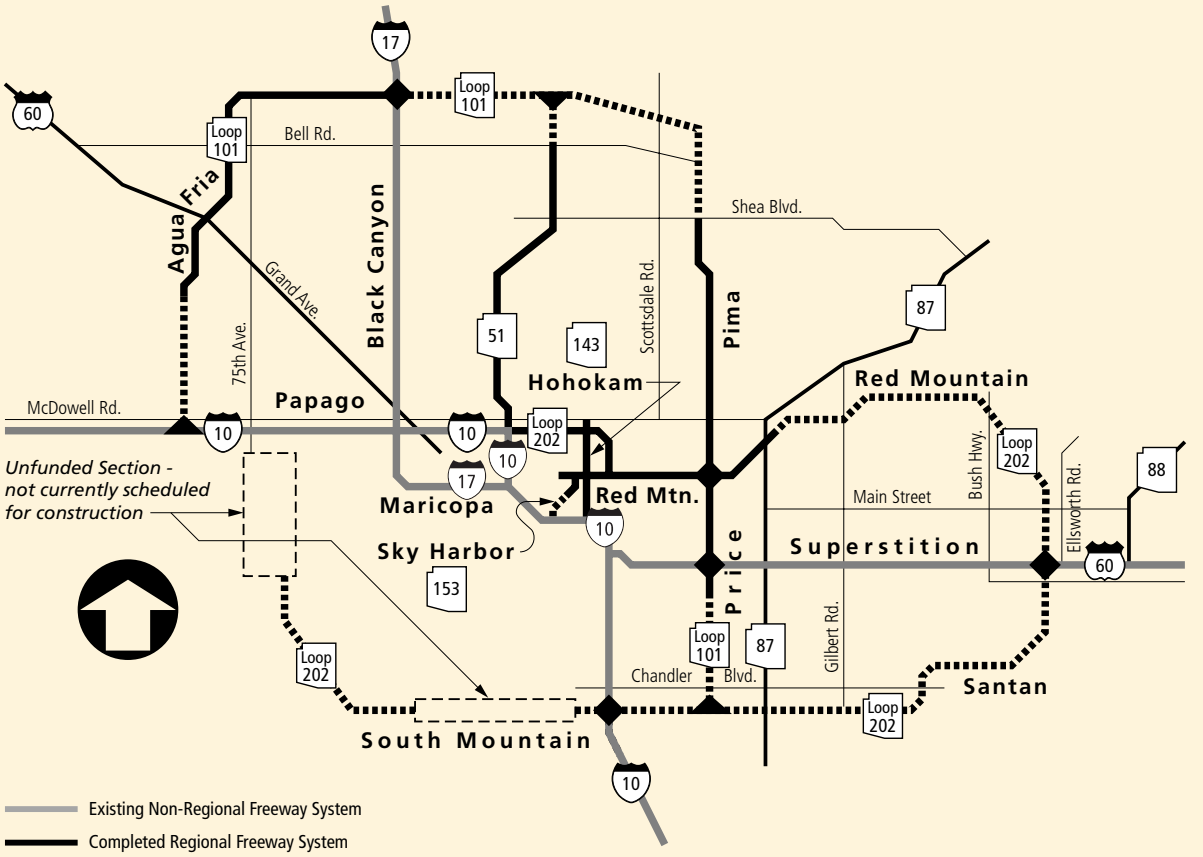
WHAT THIS MEANS

Transportation investments in the Phoenix region, unlike other metropolitan areas, have supported the region's center. From 1986 to 1998, the region's highway spending afforded access from more distant communities to the central locations of major employers, and helped keep the downtown area vital. This focus on infrastructure investment in the central region contrasts with decentralized spending patterns in Chicago, Atlanta, and Washington, D.C. where the construction of perimeter freeways contributed to movement away from the urban center.

Transit is a limited option for most residents. The lack of a comprehensive system effectively precludes the transit-oriented, in-city lifestyle which some people prefer. Lower-income citizens are especially locked into a bus system that, despite improvements in routes and schedules, still limits their access to employment and other activities.

The region faces complex transportation and land use decisions. The experiences of Chicago, Atlanta and Washington, D.C. make clear what could happen.[8] Completing Phoenix' planned freeway system appears likely to accelerate the pace of outward growth, particularly in those areas outside the planned beltways. (For an example, see *Learning from Atlanta*, page 28). However, should employers remain heavily concentrated as projected by the Maricopa Association of Governments, and if home building remains widely dispersed, major traffic problems for commuters converging on compact employment cores are a real possibility. Combined with continued underinvestment in transportation alternatives, the region risks limiting its comparative advantages over other fast-growing regions by increasing congestion, degrading air quality, lengthening commutes and limiting choices.

Map 5: Metropolitan Phoenix Freeways



Source: Arizona Department of Transportation, January 2000.

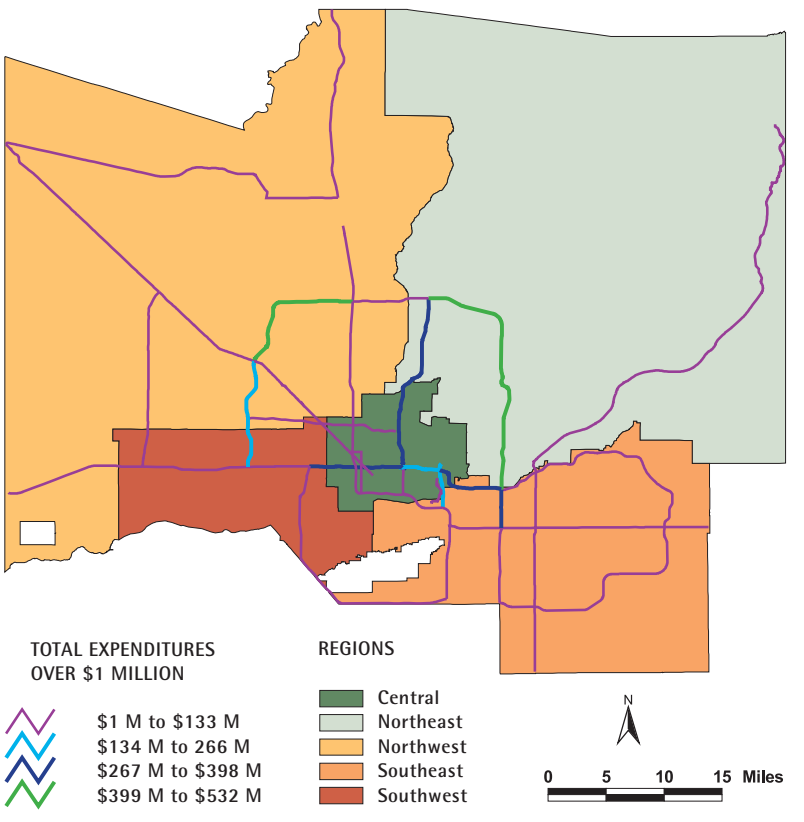
Table 3: Metropolitan Phoenix: Federal and State Highway Spending, 1986 to 1998 (in 1998 dollars)

Region	Number of Route Segments	Federal and State Highway Spending (for projects above $1 million)	Percent of Federal and State Highway Spending
Northwest	19	$842,865,377	17.6%
Northeast	11	$868,081,289	18.1%
Southeast	24	$1,347,625,827	28.1%
Southwest	9	$289,068,344	6.0%
Central	15	$1,445,647,559	30.2%
TOTALS	78	$4,793,288,396	100.0%

Note: Does not include federal and state highway funds going directly to cities. For a definition of the regions, see Map 6 and the Notes and Methodology section.

Source: Dr. Elizabeth Burns, Department of Geography, Arizona State University, data from Arizona Department of Transportation.

Map 6: Highway Expenditures from 1986 to 1998 Have Supported the Region's Core



Source: Dr. Elizabeth Burns, Department of Geography, Arizona State University.

The Fringe is Exploding

TREND: During the 1990s, most new home construction took place about 18 to 21 miles from downtown Phoenix. Both local movers and new arrivals are going to the fringe.

Between 1993 and 1998, new residential development moved outward by an average of nearly half a mile each year.

Metropolitan Phoenix' residential construction is moving outward swiftly. Currently, homes are going up most quickly in a ring far from downtown Phoenix (see Figure 5). From 1993 to 1998, the urban edge has moved outward nearly one-half mile per year. But in the southeast quadrant, the rate has been faster approaching three-fourths of a mile a year. With the exception of the southwest quadrant which absorbed only about three percent of new residential development, new construction has been quite evenly distributed geographically (see Figure 5 and Table 4).

A close look at the data suggests that development across the region during the 1990s has followed a three-step pattern. Construction in the early 1990s took place within a zone approximately 12-18 miles from downtown Phoenix that left a band of bypassed development between the initial urban fringe and the new edge. This was followed by in-fill construction along with further development of the outer zone. Finally, construction was expanded from the outer zone to extend the ring of development even further to the current 21-mile distance.[9]

Local residents are moving to the new fringe neighborhoods. People moving from one part of metropolitan Phoenix to another represent a solid majority of new residents on the urban edge, according to Morrison Institute survey data gathered in September 1999.* Almost 60 percent of new residents at the urban periphery (18 miles or more from downtown Phoenix) came from another metropolitan address, rather than from out of town. New arrivals also choose homes at the fringe, but they comprise a smaller share of these residents.

For every local mover who came closer in, two moved farther out. Recent movers went outward an average of nearly five miles. In other words, they left a home about 10 miles from downtown Phoenix for one 15 miles out. The main destinations of outward movers were the north, northeast and southeast edges. Meanwhile, a third of metropolitan Phoenix movers moved inward an average of two-and-a-half miles. These relocations, however, cannot be construed as a "back-to-the-central-core" movement because their destinations were generally suburban sections of northeast Phoenix and older areas of Scottsdale.

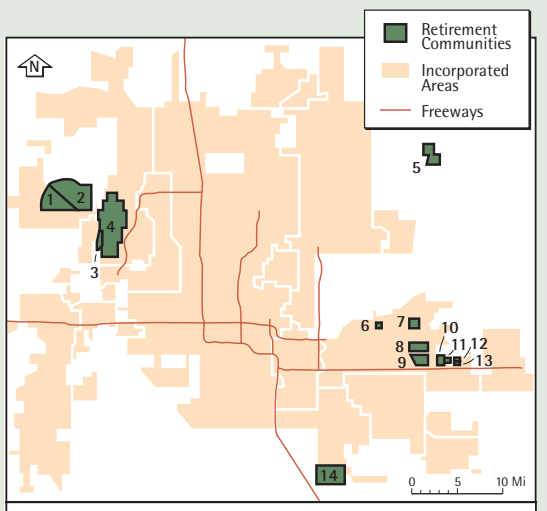
Persons over 55 years of age represent almost one-third of new urban fringe residents. These residents tend to congregate in the numerous age-segregated retirement communities located along the northwest and eastern edges of the urban area (see Map 7). These senior migrants are likely to arrive at the edge directly from outside the region.

Migrants to the fringe have higher incomes than their more centrally-located counterparts. About two-thirds of recent edge migrants reported household incomes above $50,000, compared to one-half of movers to more central locations. This contradicts the notion that affordable housing is the primary motivation for moving outward. Fringe migrants tended to favor "newness" more than proximity to work, quality schools, transit or established neighborhoods. They also felt a surprisingly strong sense of community and belonging in their new neighborhoods.

Though employment is dispersing at a slower rate than population, three employment subcenters are developing near the urban fringe. The areas around the Scottsdale Airport, Scottsdale Ranch, and along the Black Canyon Freeway north of Greenway Road at this time probably include 10,000 jobs each.

* *The survey respondents which were plotted on the street maps to identify their new location overrepresented affluent homeowners and underrepresented low-income renters.*

Map 7: Metropolitan Phoenix Retirement Communities are Located on the Region's Fringe



Source: Dr. Patricia Gober, Department of Geography, Arizona State University.

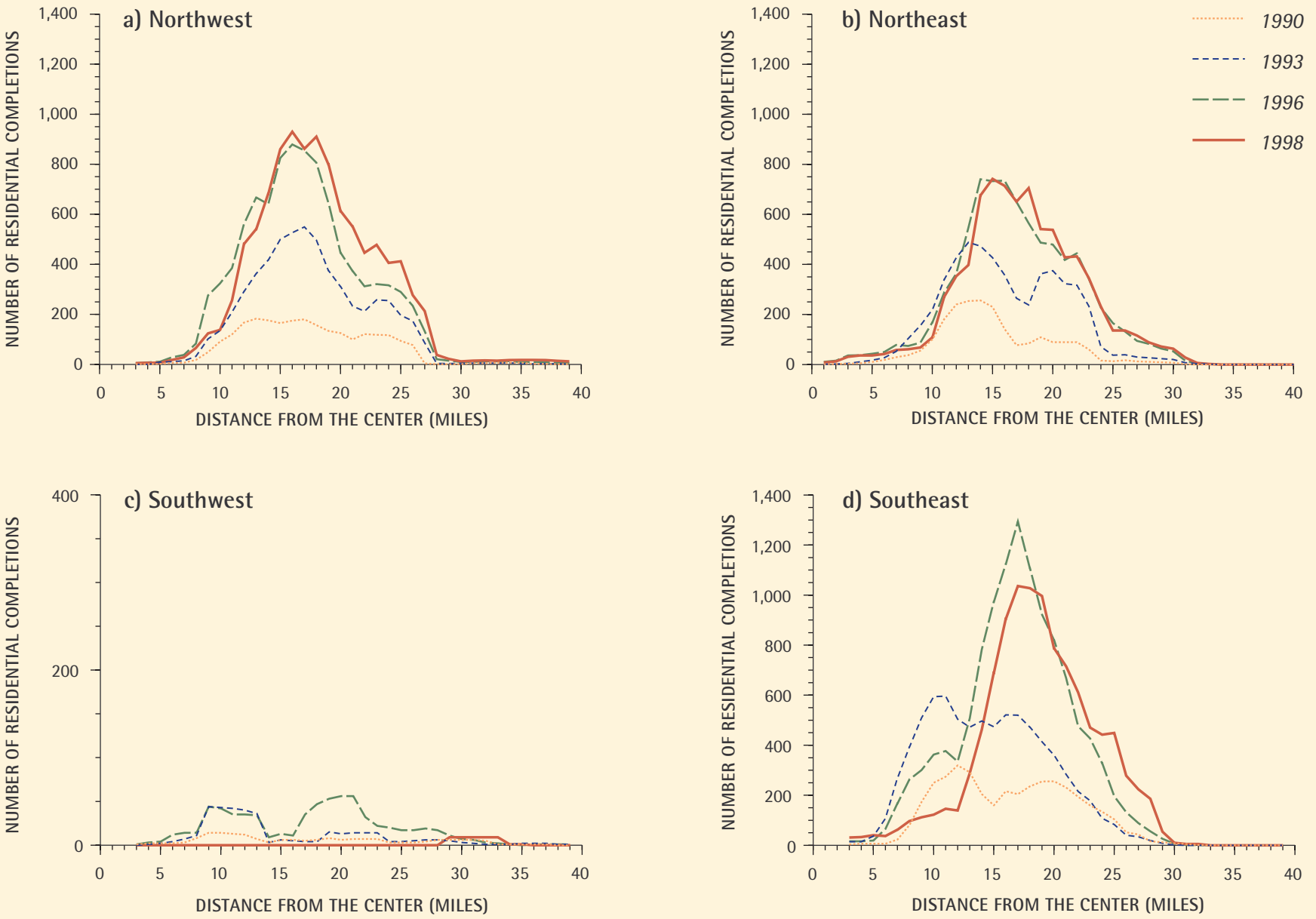
WHAT THIS MEANS

The fast pace of outward expansion highlights the importance of setting out strategies early to accommodate fast residential growth and to protect resources and open space. The tendency of residential housing development to extend to the outer limits first and then focus on in-fill construction leaves planners less time to prepare for growth on the fringe. Moreover, given that development is taking place across jurisdictions, the land-use plans of one city will intersect with – and perhaps contradict – the land-use policies of another.

Extremely fast growth at the fringe strains the capacity of outlying communities. Fringe areas are struggling to provide new schools, services and infrastructure, while preserving open space and protecting the environment. Many of these communities were essentially rural until very recently, but now they must contend with growth rates of 40 percent or more. New people require new services, water lines and sewer connections. But, many places, because they are essentially "bedroom communities," lack the resources and expertise to extend their systems across larger, more-populous service areas. For example, school districts as diverse as Avondale, Mesa, Peoria, Queen Creek, Glendale, and Deer Valley are worrying about hiring teachers to accommodate sudden pulses of new students. These pressures motivated Apache Junction to adopt a school impact fee on new residential development. Glendale recently adopted an ordinance which requires developers to show that school capacity exists before the city will approve their projects.

The large numbers of seniors and affluent households in the fringe areas may complicate community decision making. Well-off households and senior citizens can be a boon to their new hometowns. However, these populations could also compound the challenges facing these municipalities. Retirees require different services than young families. That they are attracted more by new homes and health care facilities than by accessibility to work and schools can pose challenges for communities seeking to provide a full range of transportation, recreation, and education services.

Figure 5: Most New Home Construction Took Place About 18 to 21 Miles from Downtown Phoenix* during the late 1990s



** Calculated from the intersection of Washington Street and Central Avenue for single-family homes.*
Source: Gober and Burns, 2000; data from Maricopa Association of Governments.

Table 4: New Residential Development Moved Outward by an Average of Nearly Half a Mile Each Year between 1993 and 1998

	SOUTHEAST		NORTHEAST		NORTHWEST		SOUTHWEST	
YEAR	Distance* (miles)	Number of Housing Units	Distance (miles)	Number of Housing Units	Distance (miles)	Number of Housing Units	Distance (miles)	Number of Housing Units
1990	16.4	3,930	17.1	2,249	18.1	2,483	19.2	197
1991	16.7	5,442	17.2	3,176	17.7	3,238	18.9	227
1992	16.5	7,205	17.4	4,806	17.1	4,455	19.6	284
1993	16.5	7,753	18.1	5,481	17.9	5,861	16.8	387
1994	17.1	10,314	18.4	6,612	18.1	7,644	16.8	431
1995	17.7	10,461	19.1	6,870	17.3	7,943	16.7	585
1996	18.8	11,883	19.0	8,245	17.3	9,696	18.8	729
1997	19.9	10,262	19.6	7,537	18.2	9,716	19.6	818
1998	20.6	10,498	19.4	8,142	18.5	10,432	20.1	904

** Calculated from the intersection of Washington Street and Central Avenue for single-family homes.*
Source: Gober and Burns, 2000; data from Maricopa Association of Governments.

The Phoenix Region is Using a Lot of Land

TREND: The region's urban land area doubled between 1975 and 1995. Forty percent of all agricultural land and 32 percent of undeveloped desert was lost.

Metropolitan Phoenix is rapidly losing desert and agricultural areas to urban uses. Between 1975 and 1995 metropolitan Phoenix' urban area more than doubled.* Many other regions have urbanized their land more quickly than Phoenix. Still, urban development now covers more than 40 percent of the MAG planning area, compared to 15 percent in 1975.

Increasingly, urbanization is taking over natural desert. Prior to 1975, most urbanization occurred on farm acreage which was replaced by new irrigated land (see Map 8). But urbanization soon spread to the west and the southeast onto agricultural land while replacement dwindled, and to the north and northeast onto desert land (see Maps 9 and 10). Undeveloped desert in 1995 represented only 33 percent of the land in the planning area compared to 49 percent in 1975 (see Table 5). A 49 percent increase in recreational land mitigates the agricultural and desert losses somewhat (see Table 6).

Local governments have moved to offset development with open space protection and recreation areas. In 1995, Maricopa County had almost 2 million acres (or over 3,000 square miles) of dedicated open space, including federal lands, city and county parks and mountain preserves. Much of this space is in unincorporated sections of Maricopa County. This figure represented an increase of nearly two percent since 1990.** The region's eight largest municipalities more than doubled their combined open space and recreational holdings from 23 square miles in 1975 to 49 square miles in 1995. Fully 40 percent of the city of Scottsdale is now slated to be protected as open space.

Nevertheless, open space acquisition lags behind population growth and development in most communities. Countywide, open space set aside declined on a per capita basis from .84 acres per person in 1990 to .71 in 1995. Furthermore, open space acquisitions are fragmentary. This results partly from Phoenix' setting, which has dictated the location of the region's mountain parks. But "patchy" open space provisions also follow from the divergent political orientations and financial conditions of metropolitan Phoenix' local governments. These local circumstances have meant various rates of open space acquisition and disparities in the amounts of open space available in different cities

State and federal lands are also affecting metropolitan Phoenix' open space and desert landscape. Federal and state land and Indian reservations encompass 25 percent of the MAG planning area. Although they have not blocked urbanization tightly so far, they have helped shape overall growth patterns and will likely play a larger role in the future. Moreover, federal holdings such as Tonto National Forest provide easily accessible open space and recreational opportunities for outlying communities, such as Mesa, as well as for residents throughout the region. State trust land, which is currently undeveloped, represents 275 square miles, or 15 percent of the MAG planning area (see Figure 6). The state constitution mandates that these lands must be managed to support the state's education system. This requirement is often interpreted as a mandate for the sale or lease of the lands to developers.

State policy choices will soon play a greater role in desert land protection and open space provision in the region. The city of Phoenix estimates that state trust land encompasses 70 percent of the land within its northern boundaries. Similarly, large state tracts comprise the last sizable parcels left in areas of north Scottsdale, Peoria and southeast of Apache Junction. This fact guarantees that imminent state decisions will have a huge bearing on the shape of the metropolis. Whether the land is sold to developers will determine what happens in the future. To date, the state has not sold much of the land, as little demand has surfaced for it given its location beyond the region's northern and eastern fringe. However, with the urban edge now reaching the state's largest land holdings, the parcels are "in play." Developers are pressing to buy them, while conservationists want to change the state constitution to allow the state to preserve large portions of the land as open space. A key policy decision lies just ahead. Selling large tracts of this land, as the state has begun to do in several high-growth areas, could supply land for massive new edge development. Conversely, holding this land would protect a major open space reserve and barrier to urban sprawl.

An average of 23 square miles of desert and farm land were converted to urban use annually between 1975 and 1995.

WHAT THIS MEANS

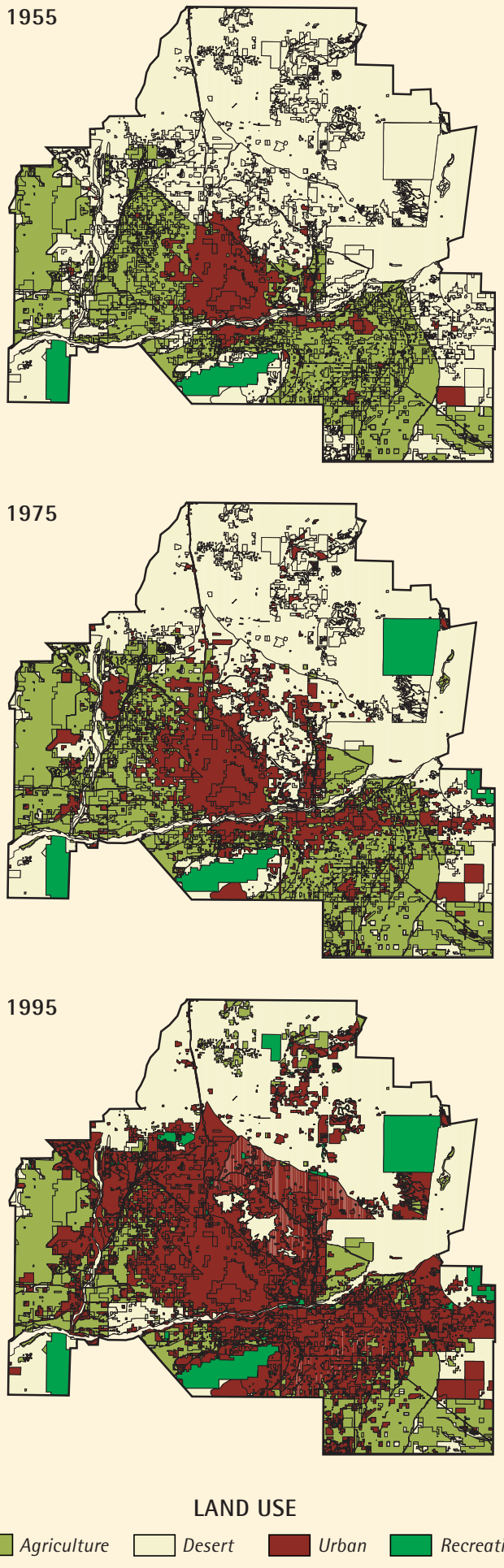
The development of almost 500 square miles of desert and fields in the MAG planning area between 1975 and 1995 represents a major alteration of the landscape. Most tangibly, this change has substantially reduced the accessibility of open space in parts of the region, whether for recreational use, viewscapes or as a contrast to the built environment. Yet other impacts have come with the loss of agricultural fields and creosote flats. Already the "urban heat island" effect of mass paving has pushed nighttime low temperatures in the urban area a full eight degrees higher than 50 years ago – a significant impact on a desert climate's livability. And the movement of most building onto open desert from retired fields in recent years raises additional concerns. Home construction is now cutting the remaining patches of natural vegetation into smaller and smaller fragments. Meanwhile, the channelization or blockage of riparian corridors, in addition to creating flood control problems, disrupts wildlife migration corridors and natural drainage patterns.

Failure to protect adequate tracts of natural desert threatens the region with the loss of its most famous lifestyle asset. Wide-open spaces, jagged purple mountains, the stately saguaro cactus – these compose more than just the local ecosystem. Along with the climate, these are the region's top amenities, its leading points of local pride and the region's signature image in the wider world. More than anything else, the vivid Sonoran Desert is what makes metropolitan Phoenix unique and gives it character. To lose too much of it would be to lose a crucial unifying amenity and a critical point of competitive advantage. ⊙

** This section refers to the MAG planning area.*

*** Based on land use reports submitted by individual cities and towns to MAG between 1990 and 1995.*

Maps 8-10: Metropolitan Phoenix: Land Use Change from 1955 to 1995



Source: Morrison Institute for Public Policy, data from CAP-LTER, "Land Use Change in Phoenix: Phase 1," 1955, 1975, 1995 overlayed onto MAG planning area.

Table 5: Urban Development Now Covers Over 40 Percent of MAG Planning Area*

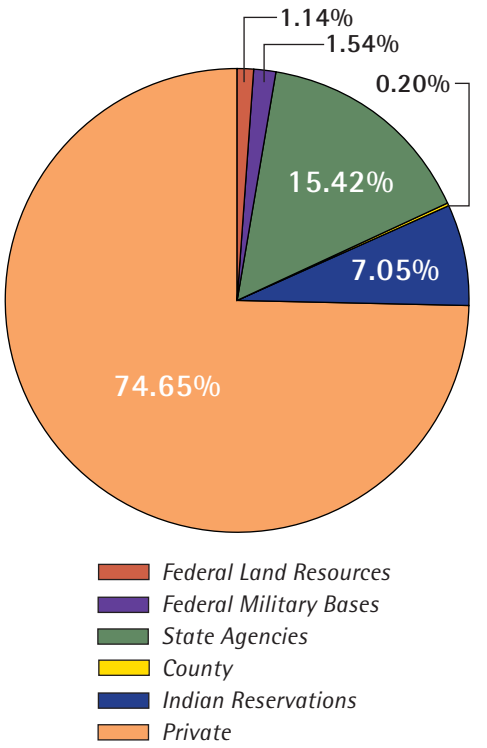
	PERCENT SHARE OF TOTAL				
	Agriculture	Desert	Recreation	Urban	Total
1975	32%	49%	4%	15%	100%
1995	19%	33%	7%	41%	100%

** The MAG planning area is 1,768 square miles within the metropolitan Phoenix region.*

Recreation is dedicated open space – large natural areas dedicated for public use.

Source: Morrison Institute for Public Policy, data from 1995 CAP-LTER, "Land Use Change in Phoenix: Phase I" overlayed on the MAG planning boundary.

Figure 6: MAG Planning Area: Percent of Land Ownership, 1997



Note: The total land area represented here is 1,780 square miles, which covers the MAG planning area of 1,768.

Source: Morrison Institute for Public Policy, data from Arizona Land Resources Information System.

Table 6: Percent Change in Land Use in MAG Planning Area (in square miles)

	1975	1995	% Change
Agriculture	557	334	-40%
Desert	857	585	-32%
Recreation	77	115	49%
Urban	273	732	168%

** The MAG planning area is 1,768 square miles within the metropolitan Phoenix region.*

Recreation is dedicated open space – large natural areas dedicated for public use.

Source: Morrison Institute for Public Policy, data from 1995 CAP-LTER, "Land Use Change in Phoenix: Phase I" overlayed on the MAG planning boundary.

The City of Phoenix' Resources are Balanced Compared to Its Largest Suburbs

TREND: Unlike in many regions, the city of Phoenix exhibits relatively balanced distribution of housing values, jobs and retail sales compared to its five large suburbs.

The region's central city and its major suburbs display relatively even distributions of housing, jobs and retail sales. This balance likely results from the fact that the city of Phoenix contains a mix of established central areas, old and new suburbs and recent fringe development. The city of Phoenix has more jobs than the per capita regional average. Retail sales and housing values are somewhat below the regional average. These figures suggest that the city of Phoenix, unlike many core cities of metropolitan areas, has maintained a broad revenue base to pay for services to residents.

Retail figures are used as one indicator of municipal fiscal capacity (see Table 7). Sales tax collections account for about 62 percent of local tax revenues in the region, compared to 27 percent nationwide. Six of the most populous cities in the region obtain at least 70 percent of their local tax revenue from sales activity. In contrast, the property tax is the primary source of local revenues nationally. Housing values are an indicator of property tax collections, which account for 32 percent of local tax revenues in the region (compared to 53 percent nationally).

Among the five populous suburbs, the measures of housing values, jobs and retail sales vary widely. Tempe and Scottsdale are the region's leaders in all three measures (see Figure 7). Scottsdale's per capita retail sales figure is almost twice that in the region and its housing value was 37 percent higher.* Tempe has attracted almost 80 percent more jobs than the regional average. Tempe and Scottsdale are part of the region's secondary employment core.

Smaller, outlying communities tend to have fewer resources. In nearly all of these municipalities, the per capita retail sales and jobs per capita figures are below the regional average. Housing values in some communities on the east side of the region are well above the metropolitan average. (see Figure 8).

The city of Phoenix has 15 percent more jobs per capita than the regional average.

WHAT THIS MEANS

Metropolitan Phoenix fortunately does not have the city-suburb resource disparities with which many regions struggle. Many urban regions in the United States suffer from gross disparities in the distribution of people, jobs, and economic and social resources between their core cities and their suburbs. Frequently, the cores and inner suburbs are caught in a downward spiral of poverty, crime, housing decline, job shortages and revenue shortfalls, made worse by the flight of middle-income families and many employers to more prosperous suburbs.[10] Metropolitan Phoenix does not fit this model since no glaring deficiency in resources separates the core city – Phoenix – from its five largest suburbs.

The stability of sales tax collections is a legitimate concern. Unlike urban regions in the northeast and midwest, metropolitan Phoenix cities rely heavily on sales tax revenue and relatively little on property tax collections. Property tax is limited by Arizona law. Conversely, sales tax collections can be set at the discretion of each city. Such a reliance on sales tax revenue raises policy issues for the future. The most familiar concern centers on the variability of sales tax collections, which tend to stagnate in economic recessions. But there are three other worries.

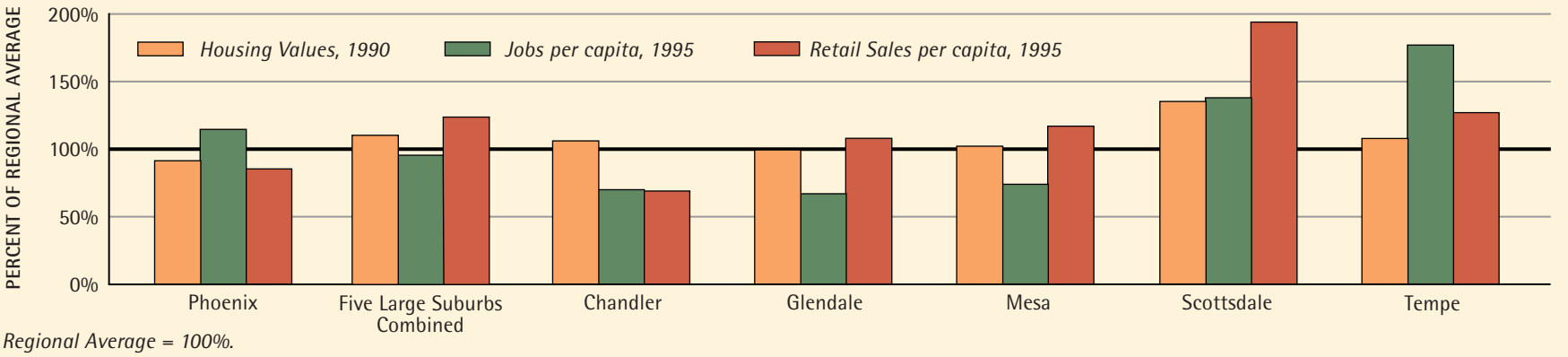
For one, the state is beginning to boost sales taxes for its own needs. The governor and the state legislature put a proposal on the November 2000 ballot to raise the state sales tax from 5.0 to 5.6 percent. The additional $445 million a year would be used for education. Public acceptance of sales tax increases may quickly "hit the wall." That could limit cities' ability to raise taxes further for key urban services. Most large cities in the Phoenix region have recently increased their sales tax rates for a variety of special purposes. For example, Tempe and Phoenix approved an increase to fund more transit, and Scottsdale raised its rate for the purchase of land for preservation. Mesa voted to fund a performing arts center and transit among other civic improvements in a quality-of-life measure.

Another concern is E-commerce (Internet sales) which currently escapes local taxation. This too could restrict municipal revenue growth. An assessment by the League of Arizona Cities and Towns suggests that Internet sales growth could cost Arizona cities $102 million by 2003. In this scenario, the eight largest Phoenix area cities would lose about 10 percent of current total sales tax collections. This would be a serious threat to Phoenix' metropolitan balance.

In addition, a sales tax that exempts most services will, over time, fall behind growth as an increasing percentage of spending shifts away from taxable goods to untaxed services.

* *The bed and use tax was excluded from this study because varying definitions limited comparisons.*

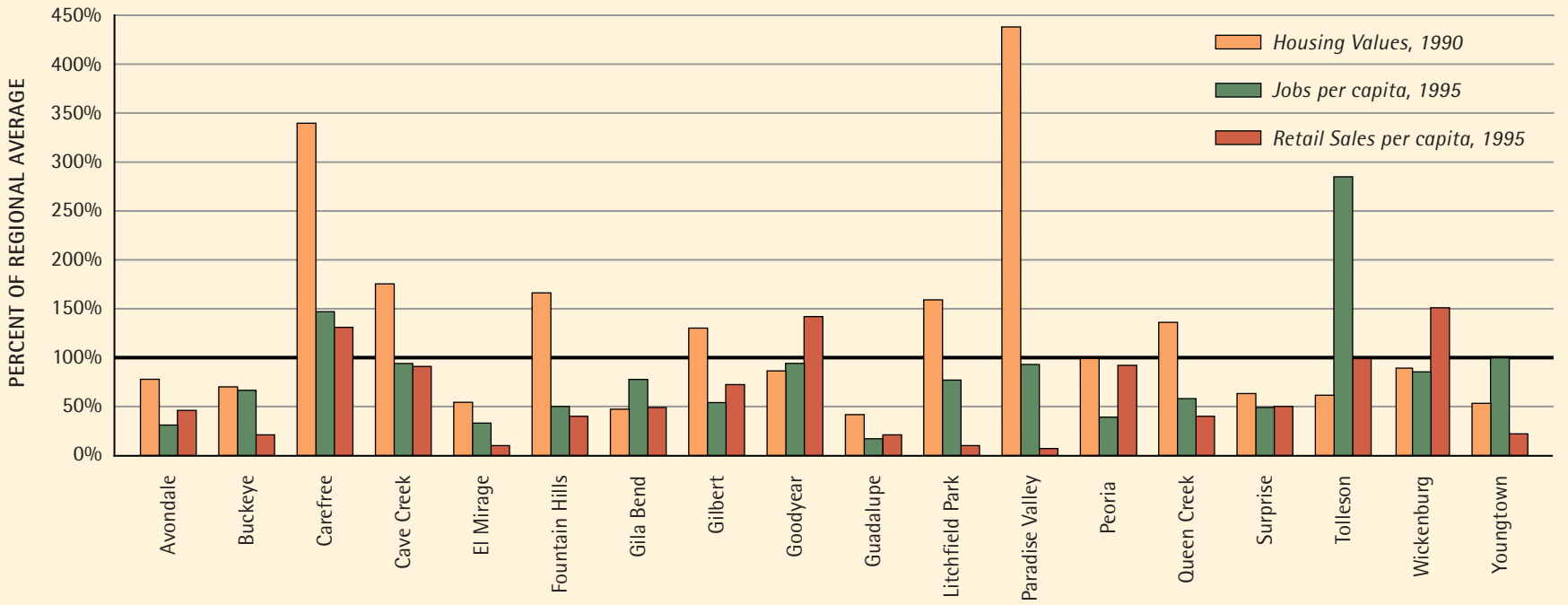
Figure 7: Housing Values, Jobs, and Retail Sales for Phoenix and Five Large Suburbs Compared with Regional Averages



Regional Average = 100%.

Source: Morrison Institute for Public Policy, data from: Housing Units – U.S. Bureau of the Census; Jobs - Maricopa Association of Governments; Retail Sales – League of Arizona Cities and Towns, Arizona Department of Revenue, Phoenix Department of Revenue, Tempe Department of Revenue.

Figure 8: Housing Values, Jobs, and Retail Sales for 18 Other Cities Compared to the Regional Averages



Regional Average = 100%.

Source: Morrison Institute for Public Policy, data from: Housing Units – U.S. Bureau of the Census; Jobs - Maricopa Association of Governments; Retail Sales – League of Arizona Cities and Towns, Arizona Department of Revenue, Phoenix Department of Revenue, Tempe Department of Revenue.

Table 7: Composition of Local Taxes, 1998 (Percent of Total Local Taxes)

	Sales Taxes	Property Tax	Other	Total Sales Tax Revenue per Capita
Phoenix	76%	24%	0.4%	$343
FIVE LARGE SUBURBS				
Chandler	74%	21%	5%	$273
Glendale	72%	24%	4%	$257
Mesa	94%	0%	6%	$242
Scottsdale	74%	22%	4%	$540
Tempe	81%	14%	5%	$578

** Total Sales Tax Revenue per capita (1998) was calculated using 1998 Sales Tax Revenue and 1998 Population Estimates from the U.S. Bureau of the Census.*

Source: Morrison Institute for Public Policy, data from annual budget and fiscal reports of the various city governments.

The Region is Becoming More Diverse

TREND: Racial and ethnic diversity is growing throughout the metropolitan area. However, a regional divide exists by race, poverty and housing and has the potential to get worse.

The Phoenix region's overall population is 72 percent white. Most of the non-white residents of the region are Hispanic, according to 1995 census data. As Table 8 shows, the Hispanic population has surged in recent years, increasing from approximately 13 percent of the population in 1980 to 20 percent in 1995.

Most of the region's Hispanic and African-American residents live in the city of Phoenix. In 1980, 64 percent of the region's Hispanics and 83 percent of its African-Americans lived in Phoenix, while the city was home to 52 percent of the region's total population. By 1995, when the city of Phoenix included 45 percent of the region's total population, 58 percent of all Hispanics and 64 percent of the region's African-Americans lived in the city (see Maps 11 and 12). In contrast, the five largest suburbs included about 30 percent of the region's minority population, 38 percent of the region's white population, and 38 percent of the overall population in 1995. Importantly, however, Hispanic numbers have been growing throughout the region.

Moreover, a clear north-south racial divide exists within the city of Phoenix. A line along State Route 202/I-10 separates a majority-white area from a majority non-white area. And the division is growing more dramatic. In 1980, minority residents accounted for nine percent of north Phoenix and 47 percent of south Phoenix. By 1995, 28 percent of north Phoenix residents belonged to ethnic minority groups while the percentage living in south Phoenix grew to 77 percent.

The concentration of minorities corresponds to concentrations of high poverty and low housing values. As the region has grown, the geographic extent of poverty in metropolitan Phoenix has expanded.* Maps 13 & 14 illustrate the startling increase in the number of areas within metropolitan Phoenix that are struggling with significant poverty levels (20 percent or more). However, while the physical extent of poverty expanded between 1970 and 1990, it was in line with the expansion of the urbanized area. Overall, 12.3 percent of the region's people lived in poverty in 1990 (see Figure A in Appendix).

At the same time, however, several high poverty clusters have grown larger and more pronounced – notably in central and south Phoenix, covering a 58-square-mile area of distress. In the middle of this cluster are the region's highest poverty rates (in excess of 40 percent) (see Table C in the Appendix). In this most struggling area, the median income was $11,500 in 1989 – compared to a countywide median income of $30,797 and $16,750 for the entire south and central Phoenix poverty zone. Other poverty clusters are evident in some portions of downtown Tempe and much of the west side of the region. Glendale, Tempe and Phoenix experienced an increase in the poverty rate between 1979 and 1989. The 1989 rate in Phoenix and Tempe was higher than the metropolitan average, though university students inflate Tempe's rate. Guadalupe and the Fort McDowell and Gila River Indian reservations also struggled with a very high poverty level.

Fifty-eight percent of the region's Hispanics live in Phoenix – and they are clustered in south and central Phoenix.

By contrast, poverty rates are low and income levels high in much of the northeast and southeast. In the most affluent part of the northeast quadrant, the 1989 median per capita income was $62,900. Another major swath of relative affluence ran south of South Mountain into south Tempe and west Chandler. Other low poverty areas were in portions of Chandler, Gilbert and east Mesa, along North Central Avenue in Phoenix, in the northwest region near the Sun Cities retirement communities, and in scattered tracts west of 83rd Avenue between Thomas Road and Olive Avenue.

Home values show a divide similar to race and poverty. The north and northeast parts of the region have high home values, while lower-value housing and rental values are concentrated in the southern and central parts of the city of Phoenix. For example, in 1990 the median value of older south and central Phoenix homes hovered around $50,000, while homes in north Phoenix were valued around $98,000, with prices even higher to the northeast.* In fact, the region's lowest-priced housing and rental values – those affordable to families with $20,000 in yearly income (approximately equivalent to two minimum-wage earners) – were almost exclusively clustered in the south and central area. The core's low rents and valuations, however, are less than affordable to the central area's low-income residents. In 1998, for example, a household with one minimum wage income could afford monthly rent or a mortgage of just $267. However, very few properties exist at that cost (see Maps B and C in Appendix).

New high-density construction caters to more-affluent citizens living some distance from the core. Most of the approximately 10,000 units constructed annually since 1996 are going up 10 to 15 miles from downtown Phoenix. Most of these units appear to be aimed at high-end markets, even though the core's lower-income residents are the ones most in need of rental housing.

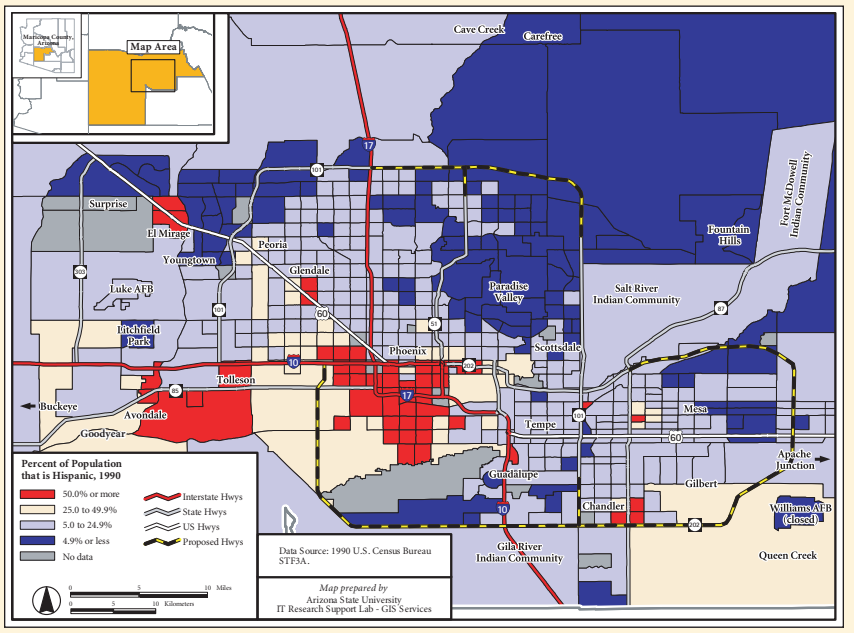
WHAT THIS MEANS

Metropolitan Phoenix is divided by race, income and housing values, though not as starkly as some cities. Areas north and northeast of central Phoenix, including Scottsdale, continue to be less diverse and wealthier and have higher property values than other areas. Meanwhile, the region's minorities, poor people and lowest-value housing are concentrated in a growing set of neighborhoods in the central and southern parts of the city of Phoenix. But contrary to national trends, these poorer, and increasingly Hispanic, areas exhibit some characteristics of stability such as a moderate level of home ownership. Still, these areas remain marked by the distress that comes from the combination of race, poverty, low employment rates, low educational attainment, and housing problems.

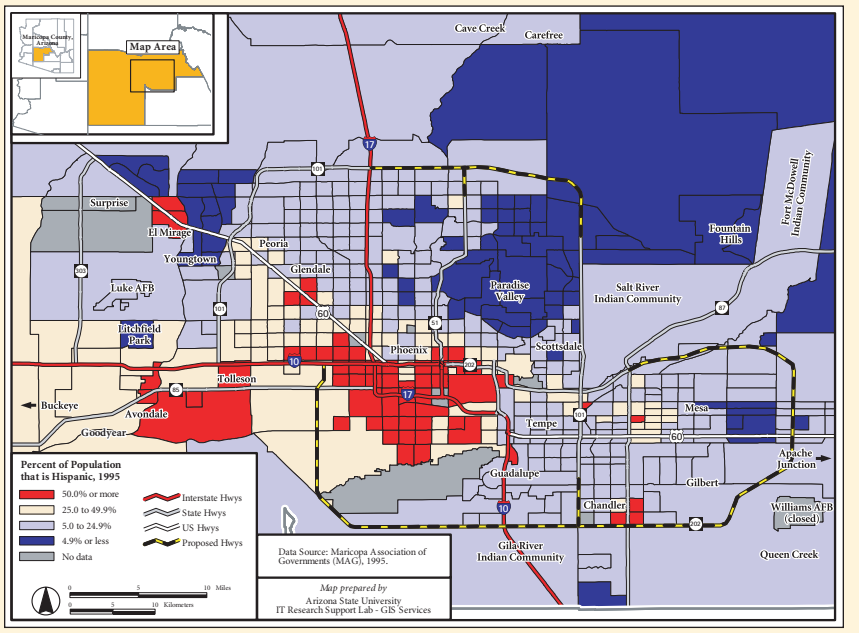
This regional divide has negative implications for metropolitan Phoenix. Literature and history show that heavy concentrations of poverty and social distress at a region's center play a major role in out-migration among middle-class residents. Research also reveals that growing income inequality undermines regional cohesiveness and economic success.[11] Thus, regional well being and poverty alleviation are inextricably linked. With such disparities as are evident now, everyone loses when residents in some areas must cope with substantial disadvantages and restricted opportunities. ⊙

** The 1990 Census is the most recent year for which there is reliable poverty and home value data available at this level of detail.*

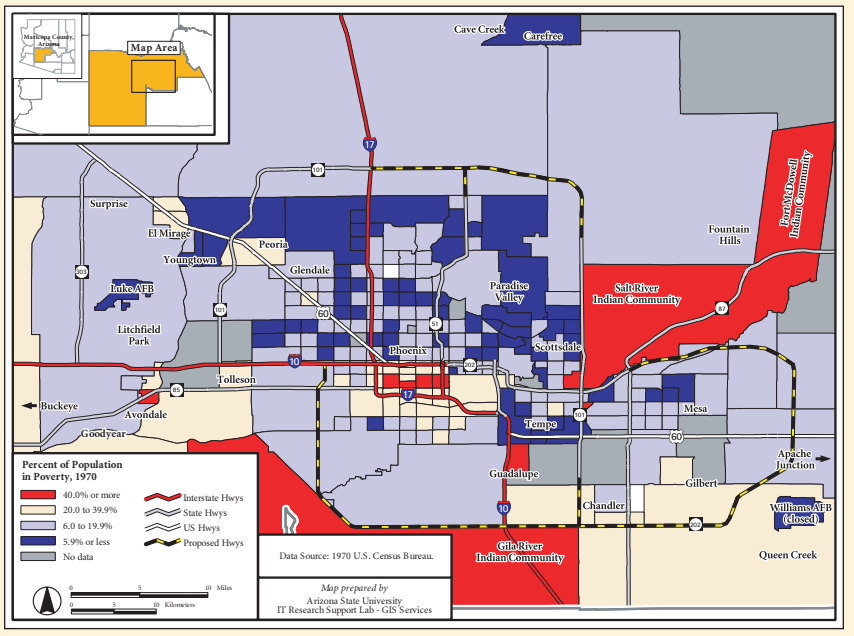
Map 11: Percent of Hispanic Population in 1990



Map 12: Percent of Hispanic Population in 1995



Map 13: Percent of Population in Poverty, 1970



Map 14: Percent of Population in Poverty, 1990

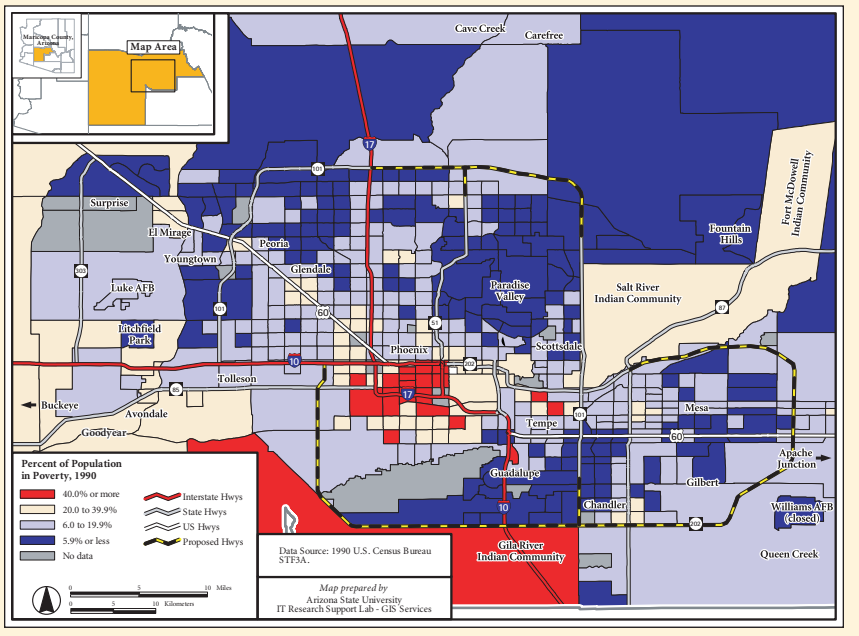


Table 8: Metropolitan Phoenix' Racial and Ethnic Composition, 1980 to 1995

	1980	1990	1995
White*	81.3%	77.1%	71.9%
Hispanic	13.2%	16.3%	20.5%
African-American*	3.1%	3.3%	3.5%
Asian*	0.9%	1.6%	1.9%
Native American*	1.4%	1.5%	1.5%

**Not of Hispanic origin.*

Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census.

Schools are Divided

TREND: Students from poverty and minority backgrounds with low test scores are clustered in southwest and central portions of the metropolitan area. Fast growth throughout the region finds all school districts struggling to accommodate student populations.

The region's demographic divide plays out in its schools, placing higher than average numbers of poor and minority students in the schools of central Phoenix and the southwestern portion of the region. Out of fifty elementary and unified school districts regionwide, the ten with the highest percentage of Hispanic students were predominantly in central Phoenix and the southwest. In fact, central Phoenix districts averaged only 20 percent white students and southwestern districts only 41 percent. In contrast, the five northeastern school districts averaged 87 percent white students. In general, rapidly-expanding schools – which tend to lay along the fast-growing fringe, have the greatest percentages of white students, higher family incomes and higher education levels in students' families (see Map 15).

An achievement gap also exists. The region's lowest-achieving districts, based on percentile ranking of standardized test scores, are in central Phoenix and the southwest. Two of them (Murphy and Roosevelt) are a part of the non-white center (see Table 9). This non-white center was one of the few areas to lose students in the 1970s and 1980s, though the districts are gaining now. At the same time, the best performing school districts were mostly in the fringe areas that are predominantly white. In 1998, northeast elementary school districts – Cave Creek, Scottsdale, and Fountain Hills – had the highest test scores, the highest percentage of white students and, except for Scottsdale, were the fastest growing between 1990 and 1998. Additionally, lower rates of high school completion in the poor, non-white center add to the educational gap (see Map 16).

Metropolitan Phoenix' lowest education test scores are in central Phoenix, while the highest scores are found along the fast-growing, white-dominated fringe.

Because of high rates of growth, all schools and districts are struggling to provide resources for their students. One measure, students per teacher, determines class size and a school district's ability to provide instruction. Of the five school districts in the region with over 20 students per teacher, two are in central Phoenix and two are in the southwest.

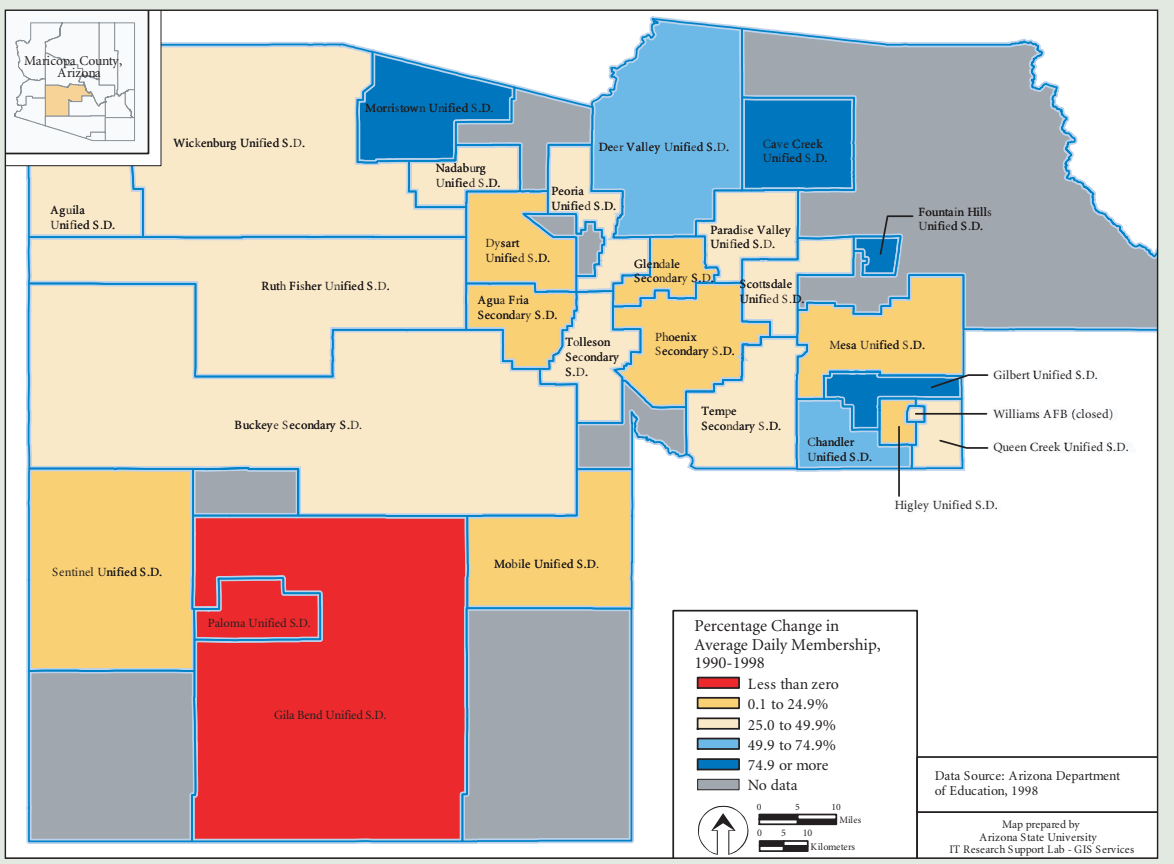
WHAT THIS MEANS

The metropolitan area's school divide creates a greater disadvantage in central Phoenix and the southwest portion of the region. Economic success correlates particularly with educational attainment (the number of years of school completed). Since poverty can reduce the likelihood of finishing high school, for example, the schools in these locations must overcome enormous challenges to providing a quality education. These challenges need to be addressed so Hispanic and other students, especially those in core and southwestern school districts, can compete for high-earning, high-skill technology jobs.

The education divide exacerbates growth at the edges and makes the region's center less economically viable. The weak schools of the center present a powerful impetus for decentralization. Schools with high proportions of low-income, minority or underachieving students may influence where families with children choose to live. Specifically, such schools could drive middle-class families – and the businesses that employ them – away from central Phoenix toward better-performing, white-dominated schools farther out in the metropolitan area. This would perhaps increase the viability of the fringe at the expense of the core.

Poor student performance in the center of the region likely contributes to expansion at the fringe; quality education and growth affect one another. Low-performing schools deter families from moving to or staying in the center of the region, thus further straining the resources of schools elsewhere. The complex interrelatedness of the problems of growth and student performance mean that discussions of one must include the other.

Map 15: Most School Districts in the Region Gained Students between 1990 and 1998



Map 16: 4th Grade Test Score Percentile Rankings, 1998*

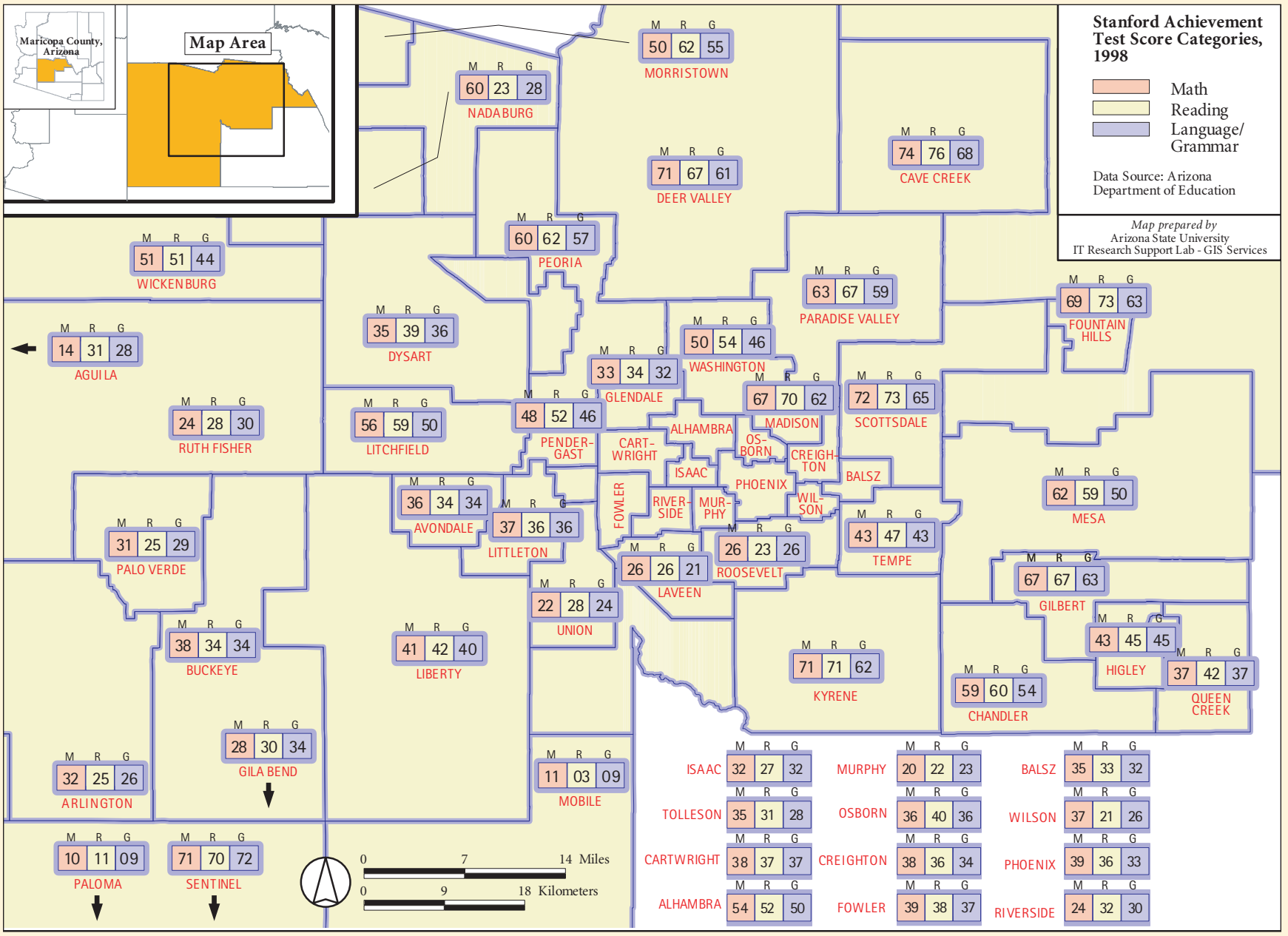


Table 9: Standardized Test Scores and Race by Quadrants, 1998*

	Reading Test Score Rank, Elementary School	Math Test Score Rank, Elementary School	% White Students
Center	33	36	20
Southwest	34	36	41
Northwest	39	50	70
Southeast	59	59	66
Northeast	73	71	87

See Notes and Methodology section for a list of which school districts are in each quadrant. Test score ranks are the median rank of the school districts in each quadrant.
Source: Morrison Institute for Public Policy, data from Arizona Department of Education.

** Based on the Stanford 9 Achievement Tests, score ranks are percentiles, which range from 1 to 99. They show the average of schools in the district compared to all students taking the test nationally. For example, a rank of 33 means that on average, students taking the test in a school district scored lower than 67 percent of students nationwide.*

Aggressive Annexation is a Metropolitan Phoenix Tradition

TREND: Metropolitan Phoenix cities have a history of annexing to capture new revenue and desirable locations and to facilitate planning.

Aggressive annexation by cities has been a distinctive feature of metropolitan Phoenix growth since 1970. Since then, the city of Phoenix has added 230 square miles to its territory. Such geographic expansion makes the city of Phoenix a classic "elastic city," in urban observer and former Albuquerque mayor David Rusk's terms, since it has been able to push its boundaries outward and thus compete for new residential and commercial projects.[12] The larger suburbs also have annexed heavily. In fact, while the city of Phoenix set the pace for annexation before 1970, Scottsdale, Glendale, Mesa and Chandler, moved to the fore in the 1970s (see Figure 9). Only land-locked Tempe, among the five populous suburbs, did not annex large tracts of land during that time. Combined, the five suburbs added some 329 square miles.

More recently, the action on annexation has shifted outwards. Since 1980, the region's municipalities with less than 100,000 population each have annexed land even more aggressively than their more established neighbors. By 1998, these cities and towns encompassed some 667 square miles, compared to Phoenix' 470 square miles and the five large suburbs' 449 square miles.

Since the 1960s, Arizona law has discouraged new municipalities from forming close to existing ones. Territories within three miles of a city or town that has less than 5,000 people, or within six miles of a city or town that has 5,000 or more, cannot form a separate municipality unless the existing city formally agrees. This may encourage these territories to solicit annexation in order to get services, since they cannot incorporate on their own.

Cities say they pursue annexation to gain more control over the development of new territory in their vicinity. Controlling the quality and cost impacts of growth in nearby unincorporated areas was rated the most important reason for annexations in Morrison Institute's survey of cities' growth management techniques. The second most important reason cited by the cities was developers' threats to build in the county where there are fewer land use and zoning regulations. Other important motivations included obtaining additional sales and property tax revenue and water resources.

The 18 less-populous municipalities contain 38 percent of the land in the regional planning area.

WHAT THIS MEANS

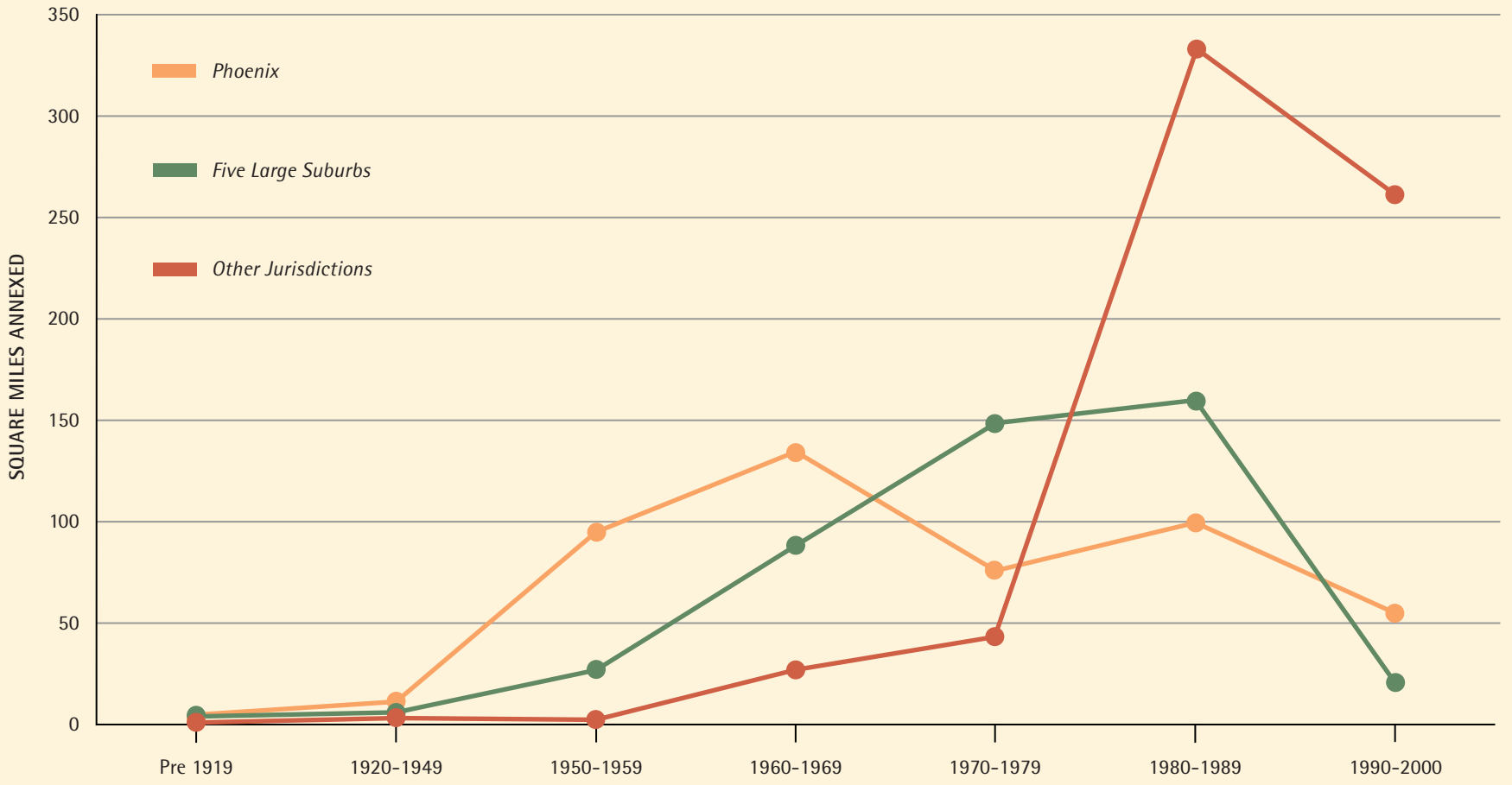
Widespread annexation makes the Phoenix metropolitan area different. In more traditional regions, smaller existing towns or bodies of water have often hemmed in the core city, preventing it from gaining control of lands with attractive growth potential. In metropolitan Phoenix, however, that has not happened. Few geographic or political boundaries have kept the city of Phoenix or its major satellites from absorbing large amounts of desirable new land. The central cities' activism in this area has influenced the region's growth patterns in several ways.

Annexation by the city of Phoenix has helped prevent gross disparities from arising between the regional core and its largest suburbs. By extending its boundaries, the city of Phoenix has been able to compete with the surrounding cities for desirable populations, jobs, residential development and retail activity. This has promoted "balance" in the region; as a result of its annexations, the city of Phoenix contains not just old central core areas and old suburbs, but new suburban areas and recent fringe development. The same goes for the populous suburbs as a group. By expanding aggressively they gained shares of the newest development and population growth.

Annexation has helped to keep the political map simple. Large-scale annexation has brought large amounts of unincorporated land under established government, which is potentially an advantage for more orderly development in the region. But it also has kept at a minimum the number of municipalities that exist in the region. Although one of the largest metropolitan areas in the United States, the region consists of only 24 relatively large cities and towns – the city of Phoenix which contains almost 45 percent of the region's population and nearly 30 percent of its land area, plus 23 other municipalities (see Figure 10). This political map stands in stark contrast to a metropolitan region such as Chicago (with 265 municipalities) or Los Angeles (with approximately 180). Both these effects – annexing unincorporated land and a simple political map – may well have promoted more orderly development in the region by reducing the number of possibilities for excessive fragmentation that can lead to land-use mismanagement.

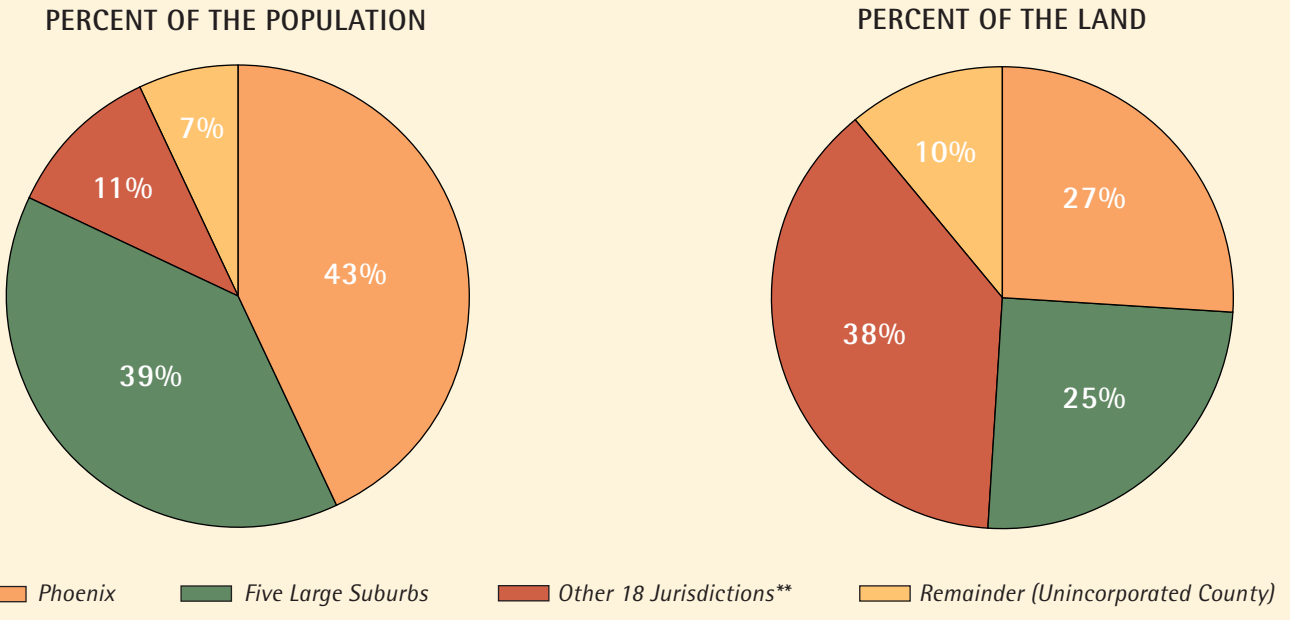
Now that the region's less-populous, farther-out towns control so much land, the future of the region increasingly depends on some new players. Their responses to rapid growth can either undermine or encourage compact development patterns and quality of life in both cities and suburbs. Their involvement in regional cooperation and their access to tools and resources become important issues.

Figure 9: Land Annexation Trends in Metropolitan Phoenix from 1919 to 2000



Note: Five Large Suburbs are Chandler, Glendale, Mesa, Scottsdale and Tempe. Other Jurisdictions are the remaining incorporated cities in Maricopa County.
Source: Morrison Institute for Public Policy, data from Maricopa Association of Governments.

Figure 10: In the Metropolitan Region,* the 18 Less-Populous Municipalities Control 38 Percent of the Region's Land Area



** "Metropolitan Region" here refers to the MAG planning area of 1,768 square miles.*

*** Does not include any portion of Apache Junction, which encompassed only 150 people and one-tenth of a square mile in the MAG planning area in 1995.*

Source: Morrison Institute for Public Policy, data from 1998 population estimates, U.S. Bureau of the Census; 1998 city land is square miles within city limits, from the League of Arizona Cities and Towns.

Summing Up the Trends

Taken together, the trends in population, density, employment, education, transportation, and land-use tell a compelling story about the current state of metropolitan Phoenix.

In some important ways, metropolitan Phoenix' growth is a success story.

- Density is increasing, albeit from a very low point.
- The center is not "hollowing out."
- And in keeping with the vitality of the center, the region retains a measure of "balance" between its core city – Phoenix – and its largest suburbs: Scottsdale, Glendale, Mesa, Tempe and Chandler.

Metropolitan Phoenix, in short, has grown at a phenomenal pace without succumbing to the center-city disinvestment and deep social and economic divides that often accompany metropolitan growth and development patterns. To that extent, the region confounds large parts of the traditional model of urban development and the Sunbelt stereotype. Unlike in older east coast cities, the region's center is holding, city-suburb disparities are relatively few and the innermost municipalities have been able to widen their boundaries, capture suburban growth and prosper. Likewise, the region defies its Sunbelt reputation because it boasts a job-rich core, brims with young people and has grown relatively compactly.

At the same time, fast growth has left some negative imprints on the urban form and the social landscape.

- Serious environmental, open space and air quality problems have resulted from the region's fast growth.
- The sharpening segregation of many of the region's poor and minority residents in the region's heart isolates those populations, keeps families with resources out and can drive business development to the fringe.
- Many residents are dissatisfied and discontent with the growth situation in metropolitan Phoenix.

Each of these impacts unfortunately confirms an aspect of the conventional wisdom. Popular criticism of Sunbelt growth consistently dwells on its environmental costs. Diagnoses of traditional regions' ills dwell on the social divides that can accompany urban development patterns. And both analyses warn of the social and quality of life anxieties provoked by imbalanced growth.

In this respect, cause for concern runs through the story of metropolitan Phoenix' growth. According to the data, the region may not hold any special immunity from the traffic congestion, environmental endangerment and social inequity that now plague traditional cities like Washington, D.C. as well as Sunbelt regions like Atlanta.

The potential for complications challenges metropolitan Phoenix to think carefully as it considers, as this study will next, why it has grown the way it has, and how it might respond to the dynamics now unfolding.

Learning from Atlanta

The rise of metropolitan Atlanta, a region not unlike metropolitan Phoenix, is a cautionary tale. Atlanta resembles metropolitan Phoenix in that it came of age almost entirely during the postwar auto age with its shift of population toward low-density suburbs. The Atlanta region also stands out as a Sunbelt success, having added 650,000 people and 350,000 jobs since 1990. With its strong cluster of Fortune 500 and high-tech corporate headquarters, Atlanta's above average per capita income presages growing regional affluence in the future. Less desirable, through, is the accumulation of negative impacts that has come with Atlanta's development. Some 30 years of unabated freeway building and inner-city school decline have led to vast, unbalanced and low-density growth and major problems.

Atlanta began the construction of its more than 360 miles of highways in 1946. Since 1970, this aggressive infrastructure campaign has attracted new businesses to a major transportation hub, but it has also enabled residential and commercial development to advance farther and farther from the city center. At the same time, the concentration of low-income African-American residents and failing schools in the city of Atlanta and its inner southern suburbs has exacerbated the decentralization of the region and sharpened its divides. Seventy percent of metropolitan Atlanta's massive population growth since 1990 has occurred north of the region's core in far-flung, majority-white suburbs. Almost three-fourths of the region's job growth has occurred in the northern part of the region. And low-income minority residents remain trapped in a segregated, job-thin core far from the job-rich northern suburbs.

These imbalances have caused serious traffic, environmental and social distress. The average per capita driving distance in Atlanta is now the highest of any city at nearly 35 miles a day. The average driver spent 68 hours in traffic delays in 1997. Congestion cost the region more than $2 billion a year in delays and extra fuel costs. Air pollution has become so serious that the region was at one time denied federal transportation funding, and more than 200,000 acres of trees are endangered. Finally, a serious "spatial divide" in Atlanta, combined with the region's neglect of mass transit, keeps many African-American workers isolated from the region's greatest concentrations of jobs and affluence.

Atlanta's experience, then, can serve as a warning for metropolitan Phoenix.

Source: Morrison Institute for Public Policy, data from **Moving Beyond Sprawl: The Challenge for Metropolitan Atlanta.** *The Brookings Institution Center on Urban and Metropolitan Policy, 1999.*

What's Behind the Trends

Metropolitan Phoenix is where it is today – with its good and bad points – because of its special attributes, national factors, and local choices. Patterns common to most post-war metropolitan areas, including auto dependence and the rise of the suburbs, have made a difference here as they have everywhere. But because the Phoenix region is so new (having developed largely since 1970), it may have been affected by these patterns more than other places. The following sections discuss some of the reasons why metropolitan Phoenix is the way it is.

Timing and National Trends

COMING OF AGE IN THE AUTO ERA

Nothing is more important to metropolitan Phoenix' growth than the fact that it has taken place mostly in the automobile era. As late as 1940, this region was a modest provincial hub with 120,000 residents. The transformation to an urban region of almost 3 million took place almost entirely after World War II when cars meant freedom and new work and lifestyle choices. Metropolitan Phoenix expanded as an assemblage of dispersed suburbs because of its time and place.

THE ADVENT OF AIR CONDITIONING

Willis Carrier, the inventor of air conditioning, helped set the stage for metropolitan Phoenix' rapid growth. In 1957, the Federal Housing Administration agreed to accept central air conditioning as part of its mortgages. The conquest of the desert's summer heat made metropolitan Phoenix an attractive Sunbelt destination and gave housing and business a green light to expand as never before.

Local Circumstances

TOPOGRAPHY AND CLIMATE

Phoenix' striking setting and pleasant climate have attracted new residents and businesses, and helped determine its form. The region's mountains and flood plains have fostered the spread of development and shaped it somewhat. The Salt River Valley offers few natural barriers to outward growth. Large rugged mountains just beyond the northern fringe offer some limits to the region's future growth, though few such obstacles exist in the south and west. Phoenix' mild winters and low humidity have made the region a leading western destination for lifestyle seekers and retirees.

THE REAL ESTATE CRASH

The real estate crash of the late 1980s and the national recession about the same time also influenced Phoenix' current form. The "bust" just over a decade ago slowed decentralization and encouraged several years of more cautious in-fill development at a time of phenomenal population growth. Not surprisingly, metropolitan Phoenix' growth industry was affected significantly by the tight financial markets created by the virtual collapse of savings and loan institutions by 1990. Banks in Arizona lost more money in the first half of 1989 than those in any other state.

As a result, development moderated in the early 1990s. Home construction slowed. Where development occurred, developers took fewer risks in site selection and turned their attention inward. The average distance from downtown Phoenix of new home construction barely increased from 16.4 miles in 1990 to 16.5 miles in 1993. Only after the local and national economies rebounded did attention refocus on outer areas. Today, the frontier lies more than 20 miles away from downtown Phoenix, but the 1989 crash may still be affecting fringe expansion. Lenders, according to John Ogden, CEO of Phoenix-based SunCor Development Company, keep a far tighter hold on development financing now than during the 1980s.

GOVERNMENT LAND OWNERSHIP

A vast amount of public land in the Phoenix region is another important local characteristic. Together the federal and state governments and three Indian reservations control a quarter of all land in the MAG planning area, and about two-thirds of the entire county. Public lands have so far played a modest role in determining how the region grew, but their importance will grow in the future as the urbanized area abuts them.

Development patterns have already been shaped to the east and south by the Salt River Pima-Maricopa Indian Community, the Fort McDowell Indian Community and the Gila River Indian Community. Federal holdings and the Indian reservations form a de facto growth boundary for parts of metropolitan Phoenix (see Map 18). A more variable factor is the 275 square miles owned by the state of Arizona in the regional planning area and mandated by the state constitution to be managed to generate the maximum financial benefit for Arizona's schools.

Policies and Effects

Specific state and local policy choices have influenced how and how fast the region has developed in the last 30 years. What follows, then, examines the state and local policy decisions – wise and otherwise – that have determined the way the region has changed, and begins to suggest areas for future decision making.

Water, Land and Transportation Choices

TREND: State policy choices on water, state lands and transportation in the 1980s facilitated fast growth, but also presented some limits.

SECURING WATER

Early, bold federal and state efforts made water a facilitator of regional growth. Without a reliable water supply, Phoenix would never have developed into a large metropolitan region. In the early years of the 20th century, Phoenix-area government and business leaders persuaded the federal government to construct massive dams and water delivery systems. Among these projects were the Salt River Project (SRP). Since 1986, the Central Arizona Project (CAP), a 365-mile long system of aqueducts, tunnels, pumping plants and pipelines, has provided water to Phoenix. Through the SRP and CAP, metropolitan Phoenix can access as much as 1.7 million acre feet per year of surface water. By some estimates, this is enough water to support a population at least double the region's current number.

The Groundwater Management Act (GMA) of 1980 further supported expansion by supplementing dam- and canal-building with conservation. Brokered by then-governor Bruce Babbitt, the act was named by the Ford Foundation as one of the nation's ten most innovative programs in state and local government in 1986. With the act, the state of Arizona moved aggressively to administer its substantial, but finite, water supplies and control groundwater pumping. Specifically, the GMA limits groundwater pumping in the Phoenix region and, until 1998, required developers to verify that projects had a 100-year water supply that would not further deplete the aquifer. These requirements responded to several negative environmental impacts of metropolitan Phoenix' expansion (such as land subsidence due to groundwater pumping) as they rationalized more growth by imposing a semblance of order on the water scene. The indiscriminate proliferation of new homes was replaced by a managed process in which subdivisions were forced to refrain from unrestrained groundwater use and usually had to connect to existing water infrastructure.

The GMA likely has limited the region's spread somewhat. New development can proceed more easily in cities like Tempe, Phoenix or Scottsdale, which have access to CAP water. Conversely, the GMA presents hurdles to development in areas such as Cave Creek or Carefree that are more distant from CAP and lack sufficient groundwater supplies. In these communities, the cost of building infrastructure to deliver CAP water appears to discourage rapid construction. In the western part of the region, community leaders have enough water but are struggling with the cost of a treatment plant.

Other shaping impacts of the water law could be broader. The need to connect to centralized water supplies discourages "wildcat" building, and fewer urban dwellers in Phoenix use wells and septic systems than in most other metropolitan areas. Also, the need to use existing water and sewer infrastructure provides developers and local governments with considerable incentive to use land efficiently. This situation likely has contributed to the region's relatively compact form.

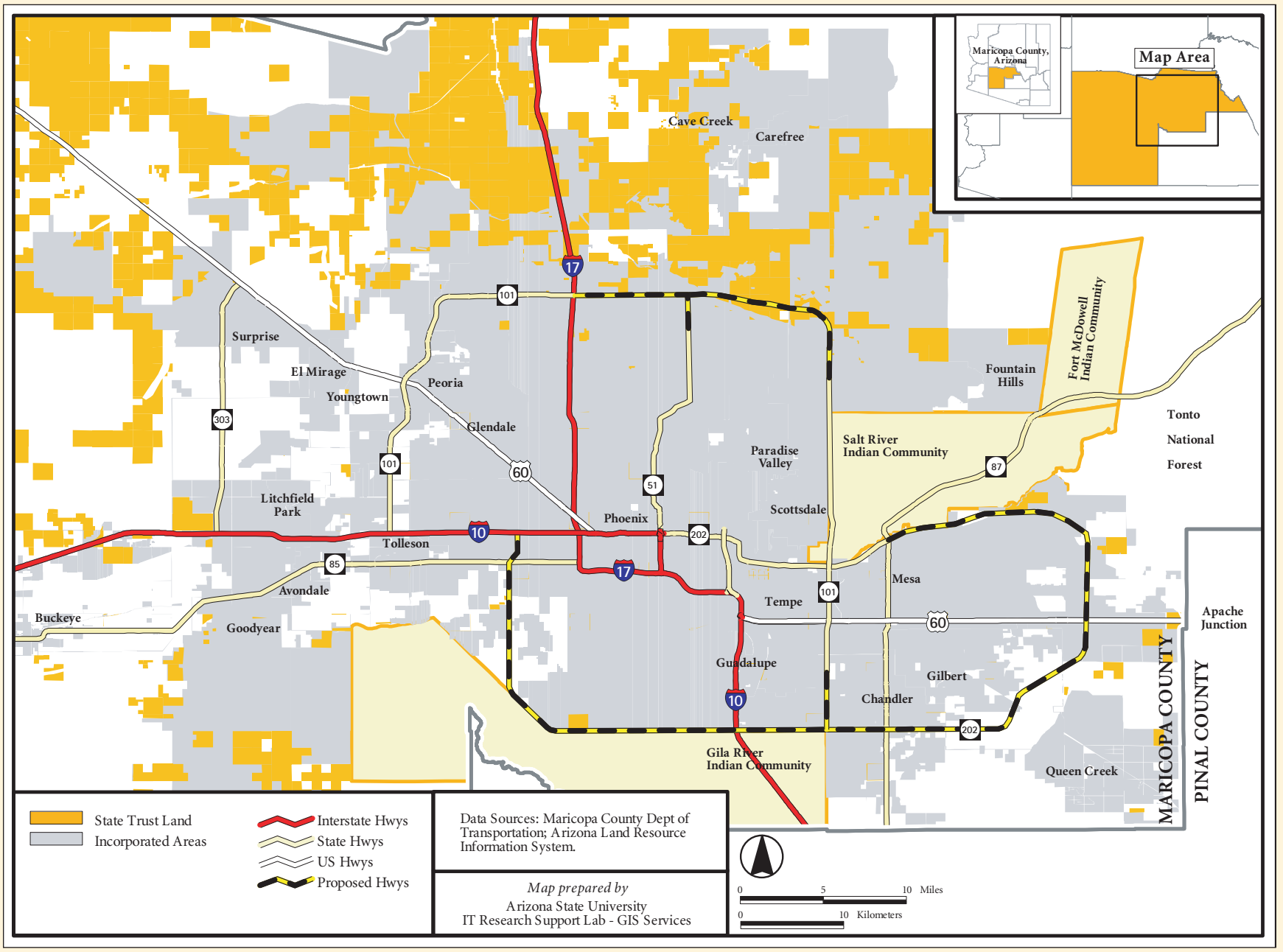
Whether the current water regime does any more to shape the metropolitan area remains a subject of debate. The GMA does not prohibit "leapfrog" development. It only makes developers financially responsible for securing long-term water supplies. The Del Webb Corporation, accordingly, has managed to proceed with its planned community of Anthem, miles beyond the existing northern urban fringe, by purchasing water from tribal interests. Many developments approved since the GMA have fulfilled their obligations by joining a regional "groundwater replenishment district," securing groundwater rights and paying what amounts to a mitigation fee, even if replenishable water supplies are unavailable nearby. Still, metropolitan Phoenix' water regime appears to favor more compact development.

HOLDING ONTO LAND

The restrained pace of the state of Arizona's sales of its school trust land has also fostered compactness, at least thus far. The state constitution requires that the trust lands, part of the 11 million acres Arizona gained at statehood from the federal government, be managed to maximize their benefit to the state's schools. This requirement has always raised the possibility of these lands' sale or lease to developers. However, analysis of State Land Department records suggests that such transactions have had only a minor influence on the region's physical form. Many states sold off their trust lands for short-term gain decades ago. By contrast, Arizona retains more than 90 percent of its original grant, including the vast majority of the acres it controls near the Phoenix urbanized area. Relatively few parcels have been sold to developers; a fact that owes largely to decades during which the Land Department focused on generating revenue primarily from livestock grazing and mineral fees in rural areas.

The Urban Land Management Act of 1981 also has limited sales of state trust land for development. Another accomplishment of the Babbitt years, this law anticipated the approach of the urban edge to state lands and sought to supervise the state's participation in the real estate business. The act gave the State Land Department new authority to plan, zone and merchandise lands within or near the metropolis' urban areas. It directed the Land Department to encourage "appropriate" development and "in-fill," and to discourage "urban sprawl" and "leapfrog" building. To date, the State Land Department has sold off just 7,446 acres of land near all of the state's cities.[13] The net effect is that the state now retains a reservoir of more than 200,000 acres of vacant land around metropolitan Phoenix, much of it just to the north of the current urban fringe. This legacy offers the region an important resource for open space preservation or other growth management projects (see Map 17).

Map 17: State Trust Land



DELAYING THE FREEWAYS

The Phoenix region's initial decision not to build a comprehensive freeway system promoted more compact development, notwithstanding the inconvenience it caused. At least one fortunate effect resulted from the delays neighborhood groups and *Arizona Republic* publisher Eugene Pulliam forced in the construction of Interstate 10 through central Phoenix during the 1970s. By blocking construction until after 1978, freeway opponents delayed the types of highways that in many metropolitan areas facilitated large-scale decentralization. As late as 1987, metropolitan Phoenix' 290 miles of limited-access lane miles ranked last among the largest 22 metropolitan areas while the number of people per highway mile ranked third. Early road-building choices in metropolitan Phoenix spread jobs and people to the urban edge less than they did almost anywhere else.

Delaying freeway construction also promoted reliance on the region's one-mile grid of arterial streets, which has tended to encourage relatively even development patterns. The arterials, a legacy of agricultural service roads, have provided the region with a flexible way to relate transportation and growth. The streets provide the driver with multiple routes and detours around congestion. They are easy to build as they are needed. As development attorney and urban observer Grady Gammage has pointed out, the arterials afford the city a way to serve new areas of settlement in an "incremental" way that does not distort ongoing development patterns with sudden additions of capacity.[14] The delay in freeways and embrace of arterial streets may be said to have encouraged balanced expansion. In road building too, then, state and local policy choices made in the 1970s and 1980s significantly influenced (largely for the better) the current form of the region.

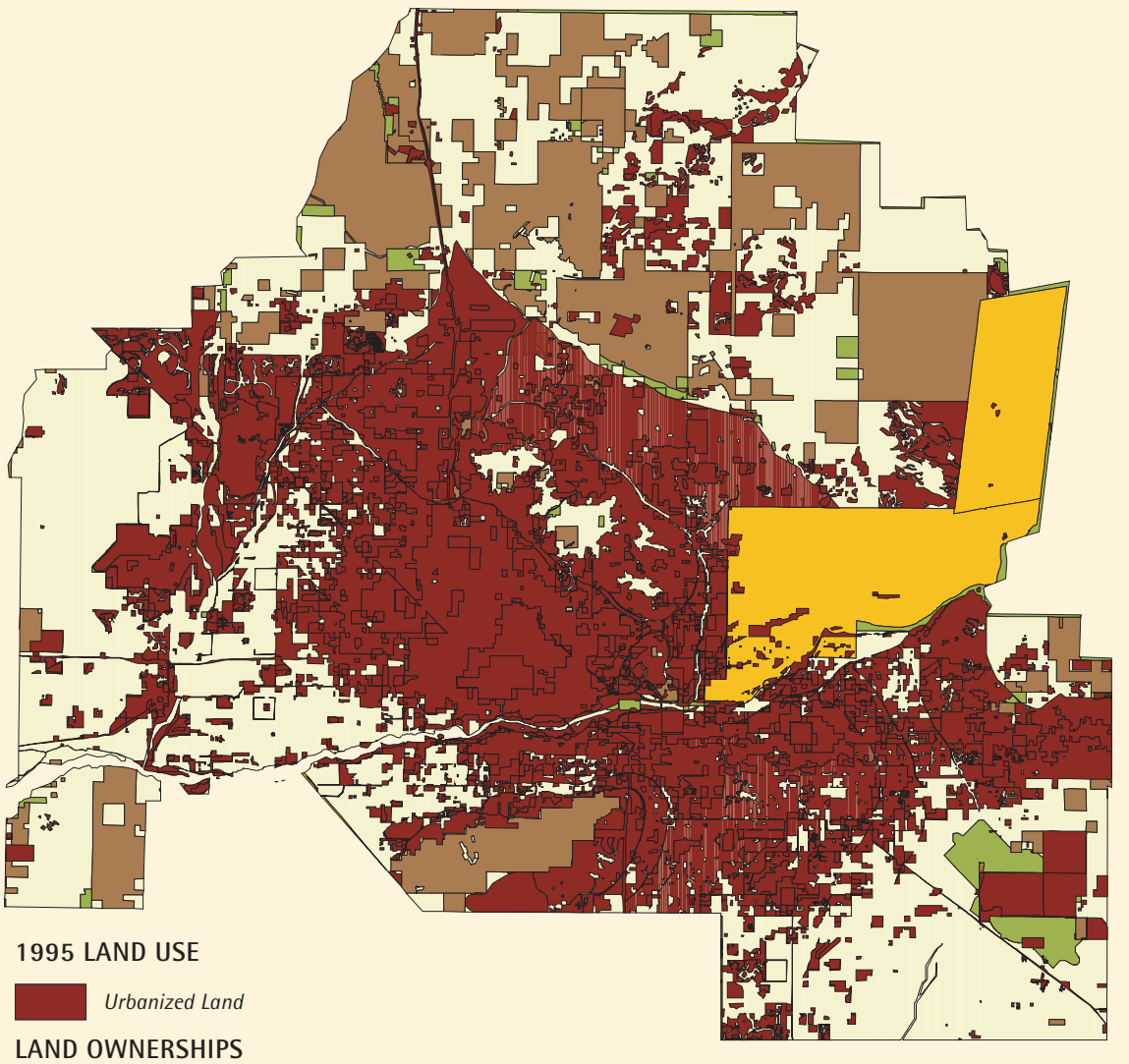
How the future completion of the Loop 101 and 202 beltway will impact the urban form remains to be seen. The decision to expedite this construction may speed the dispersal of employment into affluent suburban areas. If so, the current round of freeway construction may leave a more ambiguous legacy than the last one did.

WHAT THIS MEANS

Metropolitan Phoenix' past policy choices on water issues, state trust land, and transportation priorities on balance have facilitated the region's growth. At the same time, they have offset rapid decentralization and inefficient resource use to an extent. Securing CAP water enabled rapid growth and made it more sustainable by offering an alternative to destructive aquifer pumping. The Groundwater Management Act strongly encouraged connections to established water systems, which promoted development within or adjacent to established neighborhoods. Slow freeway building helped the central core retain and attract employment at a time when the rapid spread of jobs and people to the edge was a feature of urban growth. By holding on to the trust lands, the state retained acres that may soon become critical to promoting livability while staying away from the business of artificially driving fringe development with land sales. These past policies have served the region well.

Now, these past policies need to be updated. To do so, the region will face some tough decisions. Whether water policy can be used to help shape and regulate the region's growth in the future merits careful study, especially since there are not likely to be any big water projects to bail the state out of any future resource binds. The State Land Department's past restraint in land sales also leaves the region with an important choice: Should the state sell big chunks of its holdings to raise money for education, or should it hold this land for use as open space? And the continued neglect of mass transit, coupled with beltway building that may disperse employment and housing, compels dialogue about how the region should proceed on transportation. In each of these areas, failure to adapt and update may threaten the dynamics of the past 20 years.

Map 18: Metropolitan Phoenix: Land Ownership and Urbanized Land, 1995



Source: Morrison Institute for Public Policy, data from 1995 CAP-LTER, "Land Use Change in Phoenix: Phase 1" and Arizona State Land Department, 1997.

Growth Management Efforts

TREND: Though they are late in coming and uncoordinated, more efforts to manage growth are underway in the region than is commonly thought.

Local government growth management programs are fairly widespread in the Phoenix region and more prevalent than conventional wisdom would predict. Morrison Institute surveyed the 25 cities and towns (including Apache Junction) in the metropolitan area and Maricopa County to better understand the nature and level of local growth management efforts. The county and 18 municipalities responded. In developing the questionnaire, the Institute used the Lincoln Institute of Land Policy's description of a systematic growth management framework, including:

- Strategies to discourage sprawl and encourage compact urban development, in-fill and revitalization of blighted or troubled areas
- Provision of infrastructure (roads, schools, water service, parks) at the time of development
- Urban design requirements that aim at aesthetically pleasant urban areas, mixed uses and environmentally friendly places
- Policies and programs that protect sensitive lands, rural areas and open spaces
- Policies and programs to assure that affordable housing is a major component of new development
- Growth management boundaries

Morrison Institute's survey revealed surprising activities in the 19 responding communities (see Table 10).

- Only one municipality – Litchfield Park – employs none of the possible tools.
- Fifteen of the 19 jurisdictions utilize impact fees to help pay for the costs of new growth.
- Fourteen have mandatory downtown urban design guidelines.
- Twelve cities maintain an adequate public facilities ordinance.
- Eight provide revenue for open space.
- Seven cities provide direct incentives for in-fill development.

Taken together, this array of approaches points to the emergence of a "Phoenix style" of growth management practiced which focuses on requiring new development to "pay for itself" rather than on restricting it.

Rules for "adequate public facilities" in 12 cities suggest the relative newness of the present commitment to growth management. Just four of 11 jurisdictions surveyed in a 1994 study reported that they had adopted such ordinances.[15]

Though numerous, the growth management practices cannot be characterized as universal or uniform. The Morrison Institute survey shows that several smaller towns have as many management tools in place as the larger cities. For example, Queen Creek, a small community on the region's southeastern edge, employs every strategy used by Phoenix, Mesa and Scottsdale. Still, smaller jurisdictions generally have fewer growth management tools than their larger counterparts. Contrast Goodyear and Surprise (one and two tools respectively) with Phoenix and Scottsdale (six and five tools). In this regard the smaller jurisdictions often appear to be welcoming growth without hesitation. Another contrast appears when east and west cities are compared. East Valley fringe towns and cities wield more restrictive growth management tools than their counterparts in the West Valley. In the east, Apache Junction, Queen Creek, Mesa and Chandler indicated on average five management instruments. To the west, Glendale, Goodyear, Litchfield Park, Surprise and Peoria have an average of two tools.

Table 10: Prevalence of Growth Management Tools by City

CITY	Impact Fees	Infill Incentives	Adequate Public Facilities Ordinance	Downtown Urban Design Guidelines	Revenue for Open Space	Urban Limit Line*	Limits on Population Growth
Apache Junction	Yes	Yes	No	Yes	No	No	No
Carefree	No	No	Yes	Yes	Yes	No	No
Cave Creek	Yes	No	No	Yes	No	No	No
Chandler	Yes	Yes	Yes	Yes	Yes	No	No
County	No	No	No	No	Yes	No	No
Fountain Hills	No	No	No	Yes	No	No	No
Gilbert	Yes	No	Yes	Yes	No	No	No
Glendale	Yes	Yes	Yes	Yes	No	Yes	No
Goodyear	Yes	No	Yes	No	No	No	No
Litchfield Park	No	No	No	No	No	No	No
Mesa	Yes	No	Yes	Yes	Yes	Yes	No
Peoria	Yes	No	Yes	Yes	No	No	No
Phoenix	Yes	Yes	Yes	Yes	Yes	Yes	No
Queen Creek	Yes	Yes	Yes	Yes	Yes	Yes	No
Scottsdale	Yes	No	Yes	Yes	Yes	Yes	No
Surprise	Yes	No	No	No	No	No	No
Tempe	Yes	Yes	Yes	Yes	No	No	No
Tolleson	Yes	Yes	Yes	Yes	Yes	No	No
Youngtown	Yes	No	No	No	No	No	No
No. Employing *(out of 19)*	15	7	12	14	8	5	0
Percentage	79%	37%	63%	74%	42%	26%	0%

** Examples of "urban limit lines" are urban service area boundaries (lines beyond which public services will not be extended) and greenbelts of dedicated open space around cities designed to limit growth there.*
Source: Morrison Institute for Public Policy Growth Management Survey, 2000.

PAYING FOR GROWTH

Impact fees constitute the region's leading growth management response. The Morrison Institute survey shows 15 of the region's jurisdictions have established impact fees to recoup the costs of infrastructure and public amenities. Cities vary widely in their use of the fees, as Figure 11 and Tables 11 illustrate. Most often the assessments are used to fund water and sewer service. Still, little uniformity characterizes their use. Chandler, Glendale and Peoria charge developers for such projects as parks, police and road construction. Mesa assesses builders of single-family homes $159 per home for cultural programs, and Apache Junction charges $1,368 per home to support its schools (though the fee is facing a legal challenge).

The amount charged by the region's towns varies widely. The fees charged ranged from $1,800 per single-family house in Tempe to $13,000 in parts of Peoria. Also, the Institute survey reveals a staged array of impact fees within the region that clearly responds to regional growth patterns.

Peoria and Phoenix (the Ahwatukee area) clearly outpace the other jurisdictions in total impact fees assessed. However, the breakdown between the amounts charged by categories for these two cities varies. Peoria charges most of its fees for two categories – roads/transportation and water systems. Phoenix' Ahwatukee impact fees break out more subtly, and one of the larger categories is parks. Glendale and Scottsdale sit on a second level of sorts but well above the others. Mesa and Tempe charge the lowest amounts (Carefree does not charge impact fees). Tempe only assesses fees in two areas, water and sewers (similar to but much lower than Scottsdale).

The cities and towns were asked to estimate the percentage of public facilities costs covered by fees. More specifically, they picked ranges of costs for streets, traffic lights, sewers, water, parks, public safety and libraries covered by fees. Respondents replied that impact fees typically balance the majority of costs.

Impact fees often are higher at the fringe and much less in the core of cities. This is both a way to pay for new growth and a de facto in-fill strategy because it is less expensive in such a scenario to develop a subdivision in a vacant area that already has sewer and water. Cities using varying impact fees include Peoria, Phoenix, Scottsdale and Surprise. Table 11 illustrates how some cities charge different impact fees for different locations within their boundary. In addition to these differences, there are areas of some cities (*e.g.* Phoenix) where no impact fees are charged at all.

The region's diverse impact fees turn out to constitute a surprisingly well-ordered system. Though levied independently by an increasing number of the region's cities, the fees together make up a tiered regime that generally exacts more from fringe-area developers than central-area ones.

Whether this array of fees really promotes regional compactness, however, remains unclear. Recent research concluded that metropolitan areas that rely on impact fees rather than tax revenue to finance new public infrastructure are more likely to develop in a compact manner.[16] However, the Morrison Institute analysis did not detect a clear trend in this regard. Suffice it to say that the uncoordinated assessment of impact fees in metropolitan Phoenix – largely out of fiscal self-interest – raises the possibility of an orderly discouragement of extreme sprawl.

A Tale of Two Cores

The full list of reasons for metropolitan Phoenix' relatively strong center can be debated. But a key factor remains the extraordinary lengths to which Phoenix and Tempe have gone to avoid the hollowing out and disinvestment many other cities face.

Phoenix began boosting its center in the 1970s. In the 1980s, Mayor Terry Goddard refocused the city's work on the core, declaring in his 1986 "State of the City and Budget" message that "the downtown is going up." Plans, to be supported with over $300 million in public funds, were drawn up for a third hotel, a sports complex, a new city hall and a science museum. In 1988, Goddard and the City Council initiated a special excise tax earmarked for downtown facilities, and steered a large percentage of a bond election toward central-city cultural projects. Eventually, America West Arena resulted, along with major new office and retail construction spurred by city tax incentives. By the late 1990s the Arizona Science Center, Bank One Ballpark, the Arizona Center retail project and other facilities had given Phoenix a lively downtown oriented toward sports, entertainment and government.

The result is that downtown Phoenix, with the densest concentration of employment in the region, has become a more interesting, connected place. Approximately 9 million people attend events downtown each year. A half-dozen housing projects may double downtown's population from 6,000 to 12,000 within a few years. And a 1998 survey found that half of metropolitan Phoenix' residents had dined downtown in the previous 12 months, compared with only 31 percent in 1997 and 23 percent in 1994.

Another strong effort has played out successfully in Tempe. Land-locked Tempe could have lost ground to newer suburbs. But like Phoenix, Tempe turned to downtown revitalization as a way to remain prosperous.

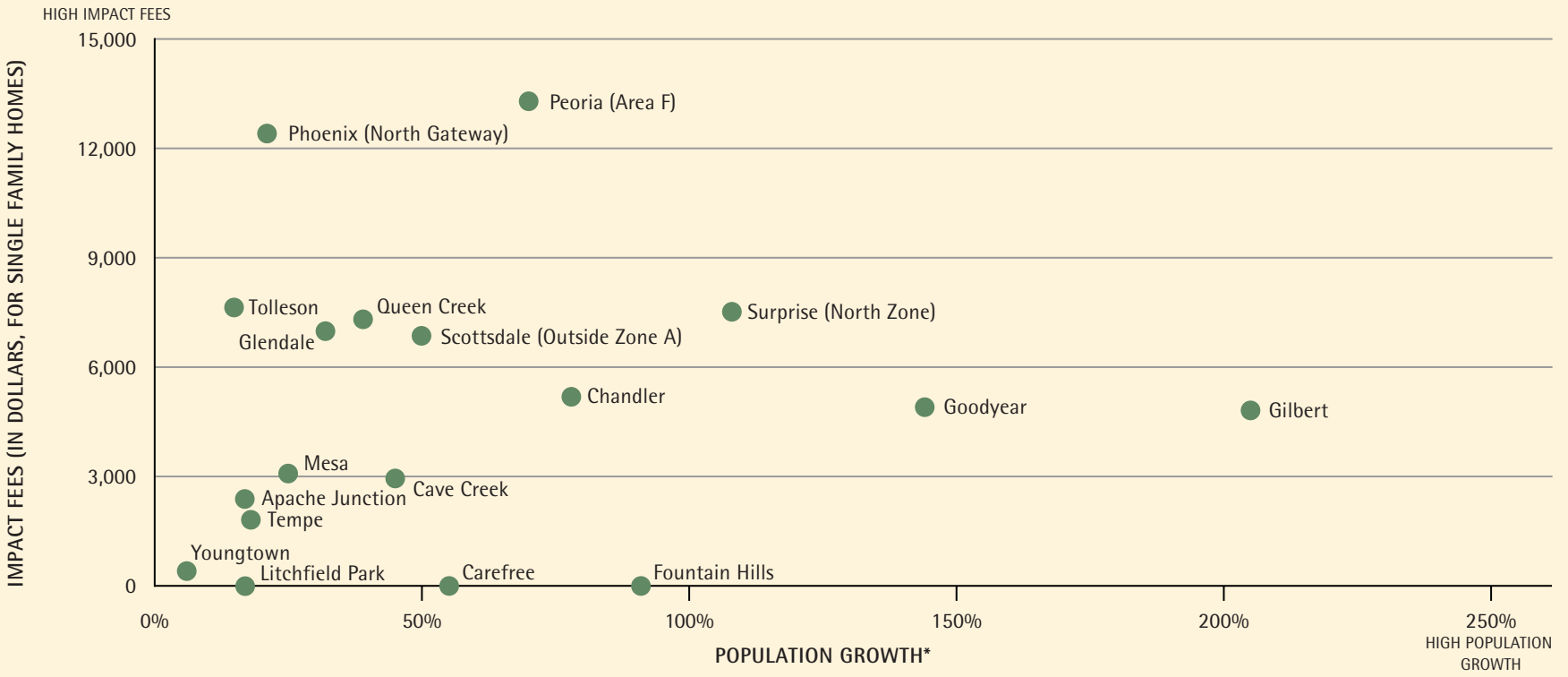
In the 1980s, the city began rejuvenating its downtown area adjacent to Arizona State University. Over time this campaign has fostered an increasingly dense concentration of restaurants, condominiums, retail, entertainment and high-tech business activity. In addition, the city has created a town lake in the dry Salt River bed and turned it into a regional recreational amenity and local economic magnet. The result of Tempe's efforts has been the creation of another strong urban center in metropolitan Phoenix, one that offers a "pedestrian-dominated" environment and an appealing location for recreation and business activity. More recently, the city is focusing on becoming a "Technology Oasis" by building the downtown area into a hub largely for software and other cutting-edge industrial clusters.

KEEPING THE CENTER VITAL

Efforts to revitalize central areas and promote in-fill represent another noteworthy growth management response in metropolitan Phoenix. Seven of the 19 responding jurisdictions have specific in-fill programs. Peoria, Phoenix, Scottsdale and Surprise zone their impact fees to constitute a de facto in-fill program by charging more at their urban fringe than at their cores. And several of the region's cities are also now following Phoenix' and Tempe's efforts over the last decade to boost their downtowns (see Table 10).

The cities of Phoenix and Tempe mounted early, sustained and ambitious campaigns to enhance their downtowns. City of Phoenix reports show that the city took its first major steps toward downtown redevelopment in 1971. Since the 1980s, almost $2 billion of public and private funds have been invested in downtown projects such as a new city hall, Arizona Science Center, America West Arena and Bank One

Figure 11: Cities with High Population Growth Have Moderate Impact Fees



** Rate from 1990 to 1998.*

Source: Morrison Institute for Public Policy Gowth Management Survey, 2000.

Table 11: Single-Family Impact Fees by City and Category*

	PEORIA			PHOENIX				SURPRISE		SCOTTSDALE***	
Facility	Area A: Southern Area**	Area C: Approx. Deer Valley Rd to Jomax Road	Area F: Far Northwest	Estrella	Ahwatukee Foothills	North Gateway	Old/Central Area	South Zone	North Zone	Zone A: Southern-most Tip	Outside Zone A
Roads	362	4,052	4,052	1,972	2,912	3,871	0	0	0	0	0
Sewer	1094	1,612	2,320	1,769	2,161	2,425	0	1,916	2,236	764	2,449
Water System	3,152	3,152	3,152	930	1,112	3,364	0	1,770	1,770	1,871	3,344
Water Resource	0	473	473	0	0	0	0	824	824	914	1,056
Parks	1,506	1,506	1,506	1,133	2,550	1,999	0	590	590	0	0
Cultural	0	0	0	0	0	0	0	604	604	0	0
Public Safety	350	350	350	105	315	170	0	445	445	0	0
Libraries	281	281	281	187	359	263	0	162	162	0	0
Schools	0	0	0	0	0	0	0	0	0	0	0
General Gov.	546	546	546	0	0	0	0	354	354	0	0
Public Works	0	0	0	0	0	0	0	524	524	0	0
Other+	608	608	608	608	365	314	0	0	0	0	0
TOTAL	**7,899**	**12,580**	**13,288**	**6,704**	**9,774**	**12,406**	**0**	**7,189**	**7,509**	**3,549**	**6,849**

Facility	Apache Junction	Carefree	Cave Creek	Chandler	Fountain Hills	Gilbert	Glendale	Goodyear	Litchfield Park	Mesa	Queen Creek	Tempe	Tolleson	Youngtown
Roads	270	0	250	1,455	0	86	542	148	0	0	0	0	644	0
Sewer	0	0	1,635	1,091	0	2,314	2,003	1,134	0	920	2,679	930	2,938	0
Water System	0	0	0	1,312	0	1,111	1,367	1,200	0	901	0	875	3,052	0
Water Resource	0	0	0	373	0	235	0	1,755	0	0	0	0	0	0
Parks	366	0	300	174	0	705	1,094	0	0	559	3,229	0	0	100
Cultural	0	0	0	0	0	0	0	57	0	159	0	0	0	0
Public Safety	118	0	0	309	0	174	600	334	0	212	185	0	634	142
Libraries	199	0	0	52	0	0	452	0	0	322	616	0	0	50
Schools	1,368	0	0	0	0	0	0	0	0	0	0	0	0	0
General Gov.	53	0	760	231	0	178	660	118	0	0	600	0	161	100
Public Works	0	0	0	0	0	0	0	150	0	0	0	0	201	0
Other+	0	0	0	197	0	0	264	0	0	0	0	0	00	
TOTAL	**2,374**	**0**	**2,945**	**5,194**	**0**	**0**	**7,309**	**4,896**	**0**	**3,073**	**7,309**	**1,805**	**7,630**	**392**

** Total dollar amount per single-family dwelling unit. ** Area A of Peoria extends from Northern Avenue to Bell Road. *** Assumed Density of 2-4 dwelling units per acre for Scottsdale.*
+ Reclaimed water fee for Chandler; sanitation fee for Glendale; meter price and solid waste container costs for Peoria; equipment repair facilities and solid waste container for Phoenix.

Source: Morrison Institute for Public Policy Growth Management Survey, 2000.

Ballpark. A structured impact fee system places a heavier burden on development in fringe areas so as to free up funds to support downtown and existing neighborhoods. Fee waivers of up to $2,200 are designed to encourage in-fill. Tempe has focused on creating a diverse, mixed-use "vital center" of the sort valued by the people-centered companies of the new economy. Both cities are now devoting sales tax revenues to a light rail system to connect the Chris Town area, downtown Phoenix, and Sky Harbor International Airport to Tempe and Mesa.

Though it is hard to quantify, it stands to reason that efforts to boost downtown Phoenix and Tempe have helped the region retain a strong center and minimized decentralization. Such investments have clearly fostered the continued concentration of business activity within the region's center. In doing so, they have helped prevent the central-area disinvestment that has "hollowed out" other cities. Beyond that, these cities' significant efforts to provide amenities within their cores have likely offset some of the conditions pushing middle-class families away from region's center. Downtown revitalization continues to be an important strategy for growth management in metropolitan Phoenix.

PROTECTING OPEN SPACE

Open space protection is a strategy of increasing importance in the region. This growth response goes back a long way. In addition to the 16,500-acre purchase that became South Mountain Park in 1924, the city of Phoenix has made major land acquisitions in every decade since the 1950s. In keeping with that, city of Phoenix voters in 1973, 1979, 1984 and 1988 approved bond issues to purchase 9,700 acres to establish the Phoenix Mountains Preserve. Altogether, the city of Phoenix has doubled the size of its parks system since 1964 through the addition of 17,000 acres, more than any other city except San Diego.

Over the same time frame, virtually all of the region's jurisdictions have set aside considerable amounts of open space. Dedicated open space owned by the six largest municipalities doubled from 23 square miles in 1975 to 47 square miles in 1995. Mesa, Fountain Hills and Glendale approved major park bond issues, while Chandler and Peoria used impact fee revenue to expand their park systems. In addition, Queen Creek implemented a development impact fee that mandates at least 20 acres of parkland or open space per 1,000 residents. These efforts have kept vacant or parkland in key areas within the urban form of metropolitan Phoenix.

Scottsdale and Phoenix have been moving beyond preserving "breathing spaces" within the urbanized area toward the creation of major greenbelts. For its McDowell Sonoran Preserve, for example, Scottsdale plans to acquire approximately 57 square miles in the McDowell Mountains. This will ultimately create a preserve significantly larger than Boulder, Colorado's famous "ring of mountains" system. Phoenix plans to purchase about 21,500 acres, or 33 square miles, of natural desert north of the CAP canal. These efforts are funded by municipal sales taxes, and both are designed to offset fast growth toward the urban fringe. Together, the programs aim to create a regionally significant open space belt that will limit the region's outward expansion along its north edge.

For all this activity, though, open space acquisition does not appear to be keeping pace with population growth. The amount of dedicated open space available on a per capita basis county wide declined between 1990 and 1995. Also, much of the new open space acquisition appears to be piecemeal. This spottiness results partly from the differing political orientations and financial conditions of the region's cities. But it also owes something to Phoenix' typography which naturally determines where the region's mountain parks will be. The resulting irregular distribution of parklands means that cities far from the area's mountain preserves (such as Glendale and Chandler) may be significantly under served with open space compared to those containing mountains.

Protecting open space and desert land is a concern among local residents. Two-thirds of the respondents to Morrison Institute's 1999 quality-of-life survey said that the region is doing a "poor" or "fair" job of preserving the desert. And when the Institute asked more broadly about the region's growth, those surveyed expressed deep anxiety about the changes taking place around them. Most dramatically, 80 percent of metropolitan Phoenix residents said they were "concerned" or "very concerned" about the region's growth. These figures were in line with the nearly 75 percent who have said in each of the past three years' surveys that the region's population is growing "too fast." In 1999, nearly half of the respondents indicated they would leave the region tomorrow if they could because of "too many people."[17]

WHAT THIS MEANS

Contrary to conventional wisdom, the Phoenix metropolitan area does practice growth management. A regional or state-level regime does not exert strong management across the urban area, but many local governments employ an array of growth management approaches. Significant tracts of desert are being protected as open space within and near the built-up area. Urban cores are undergoing revitalization. And financial assessments are recouping sizable portions of the costs to cities of new development.

But, questions persist about the effectiveness of this local, largely uncoordinated response to the regionwide challenges of fast growth. The spontaneous rise of a robust, tiered array of impact fees suggests that important policies can be implemented without the establishment of a formal institutional framework. Yet the rate at which residential development is moving outward raises concerns about the adequacy of metropolitan Phoenix' current city-based approach. Likewise, the spottiness of the cities' open space initiatives suggests the need for cooperative planning on this and other issues. For example, the lack of a central authority to plan open space acquisitions in the metropolitan area makes the creation of a comprehensive, widely accessible and equitable system of desert preserves unlikely. ⊙

Conundrum: Metropolitan Phoenix Residents Do Not Connect Density with "Smart Growth"

When asked: "Is this idea 'smart growth' or not?", residents said:	YES	NO	DON'T KNOW
Provide things like roads, schools and parks at the time of development	91%	6%	3%
Work on revitalizing older communities	88%	8%	4%
Protect rural areas, sensitive lands, and open spaces	88%	8%	4%
Build communities with a mix of housing, shopping, and schools in close proximity	87%	10%	4%
Focus new growth in areas that already have some development	78%	15%	7%
Create urban growth boundaries	73%	17%	10%
Widen roads and freeways	79%	16%	5%
Provide more public transportation	86%	9%	5%
Build communities that are taller and more dense instead of wider and more spread-out	38%	53%	9%
Protect private property rights	84%	9%	7%

1999 survey, n=1,020. Totals may not add up to 100% due to rounding; Responses were weighted to correct for a sampling bias.

Source: Morrison Institute for Public Policy, data from Quality of Life Survey, Morrison Institute for Public Policy and The Arizona Republic, 1999.

Governance

TREND: The region's governance is one of strong cities, weak regional entities, polarized civic agendas and spotty state leadership.

WESTERN VALUES

A "frontier spirit" continues to shape the region. Political scientist David Berman points out that metropolitan Phoenix' prevailing political culture has for decades revolved around three "frontier" watchwords – individual rights, a pro-growth view of economic development and a focus on local power and control.[18] These "western" values have clearly played out in every aspect of the region's growth story.

A pervasive mistrust of big government has resisted limitations on personal autonomy, particularly with regard to private property rights. Likewise, a presumption that the area's prosperity depends on development dictates an ethos of constant growth promotion that has frequently discounted residents' and others' concerns about the pace of expansion. Thus, while the region boasts a successful public-private economic development organization – the Greater Phoenix Economic Council – it lacks an equivalent organization to address environmental concerns, land-use patterns and transportation issues. Finally, the intense localism of the area's political culture has helped to make citizens and leaders mistrustful of major regional initiatives. Two cases in point are the public's resistance to freeway expansions in the 1970s, and the region's lack of action on MAG's "Desert Spaces" proposal.

STRONG CITIES

Cities and city-based localism predominate. Cities bulk large in the governance of metropolitan Phoenix. Phoenix, Mesa, Scottsdale, Glendale, Tempe and Chandler are sizable cities with significant fiscal and managerial capacity. Moreover, metropolitan Phoenix cities possess "home rule charters" that guarantee them unusually robust powers. This state of affairs has seen individual cities achieve much in terms of planning, tax-collection and downtown development. But it has also made it difficult for localities to align their agendas to solve problems affecting the whole region. Differing political orientations and financial conditions, for instance, have clearly delayed the now-nascent framing of a light rail system. And open space acquisition has been fragmented.

At the same time, though, the relatively small number of cities in the region and the sheer size of the city of Phoenix have helped to reduce the fragmentation that can lead to gross land-use mismanagement. Thanks to the region's history of annexation, the political map has not seen myriad small suburbs incorporating into separate cities, as has occurred in California, Chicago, St. Louis and elsewhere. Rather, a small number of local governments have aggressively used annexation to increase their population and their land area. As a result, one of the largest metropolitan areas in the United States remains a collection of one county and only 24 relatively large cities and towns (see Map 19). Moreover, 82 percent of the region's population (approximately 2.3 million people) lives in the six largest municipalities. This stands in sharp contrast to metropolitan Chicago's 265 municipalities or Los Angeles' approximately 180 entities. It gives metropolitan Phoenix a potential advantage in its problem solving in the future.

Equally helpful is the city of Phoenix' size. With 470 square miles in the city of Phoenix, much of the region "lives by the same rules." Even better, those rules appear to be good ones. Phoenix consistently wins high marks for its management skills, innovations and problem solving. Over the years, the city has received a number of prestigious awards, including the Bertelsmann world prize for city management and *Governing Magazine*'s top grade for urban management.

WEAK REGIONAL ENTITIES

Maricopa County and the Maricopa Association of Governments (MAG) lack strong authority. Only this year did the Growing Smarter Plus legislative package give counties the same power as cities to impose impact fees, and provide restrictions on further city annexations. Moreover, voters have consistently rejected expanding Maricopa County's powers, most recently in 1996 when they turned down a proposed "home rule" charter for the county much like those of major cities in the region.

MAG has helped since the 1970s to promote uniformity in planning and programming of various activities, especially as required for various federal transportation and other programs. Still, the association lacks the power to enforce decisions. Even MAG's ability to produce voluntary approaches to regional problems has been limited. Recent efforts to craft a vision for the year 2025 have not been successfully incorporated into the region's culture or governance.

Another conspicuously weak entity is the Regional Public Transportation Authority (RPTA). Fifteen years after its creation the authority remains hobbled by funding constraints. These leave RPTA ill-equipped to adequately address the region's transportation needs, let alone manage growth as similar authorities in other cities do.

POLARIZED CIVIC AGENDAS

The region's civic culture also remains fractious. Discord did not end with the bitter fight against freeways in the 1970s. In recent years, the lack of a regional consensus on a number of growth-related issues has generated new polarization and litigation. Action on air quality issues in the 1990s, for example, came only under the pressure of lawsuits brought by the Arizona Center for Law in the Public Interest. Dissatisfaction with legislative responses to growth pressures has resulted in the placement of a Sierra Club-sponsored initiative requiring cities to create urban growth boundaries on the November 2000 state ballot. Meanwhile, a court challenge embroiled a rival legislative proposition

to dedicate a portion of the state's land near cities to open space. This measure is strongly opposed by various environmental groups, including The Nature Conservancy and Tucson's Sonoran Institute. This coalition wants the state to set aside far more trust land, and it plans to bring its own citizens' initiative to the ballot in 2002. In short, metropolitan Phoenix' political culture has hardly been conducive to the broad-based consensus building likely to drive effective responses to the regional impacts of rapid growth.

SPOTTY STATE LEADERSHIP

The state of Arizona has provided inconsistent leadership in the metropolitan area. The Groundwater Management Act and the Urban Lands Act of the early 1980s underscore the potential for creative regional problem solving by the governor and the Legislature. However for most of the 1990s, the state was essentially a non-player on growth issues. Recently, responses have emerged under the threat of citizens' action, but these have been of mixed quality. State requirements for cleaner gasoline and Maricopa County's vehicle emissions inspection program have been clear wins for the region. Likewise, the state moved in 1998 to require comprehensive land-use and zoning ordinances of local governments. However, this reform has been compromised by the lack of a state agency to monitor compliance.

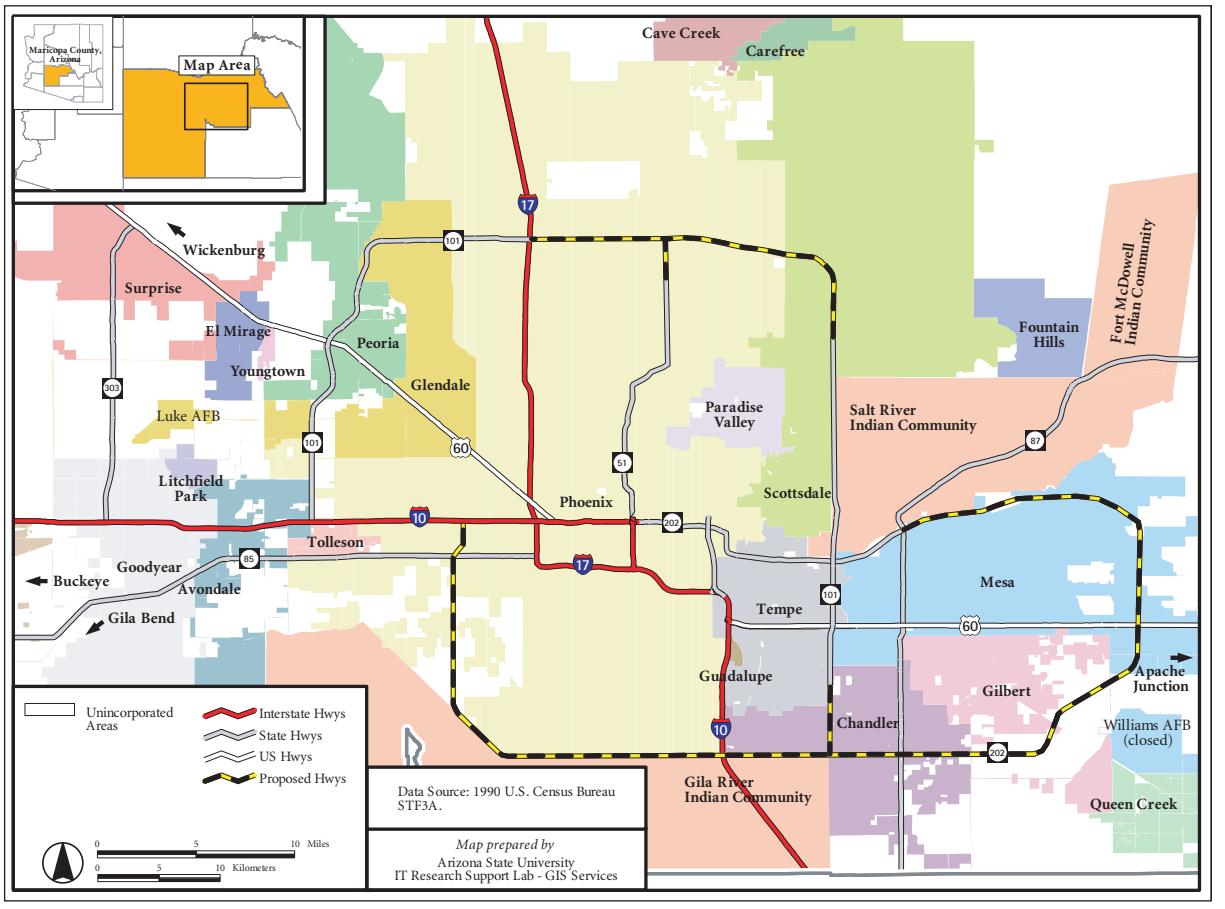
More significant may be the Arizona Preserve Initiative (API), passed by the Arizona Legislature in the spring of 1996. API is designed to encourage the preservation of select parcels of state trust land in and around urban areas like Phoenix as open space. Under the original legislation, only trust land within three miles of municipalities larger than 10,000 persons could be reclassified for conservation sales or leases, and no public funding was available to support the program. However, amendments were enacted to the API in 1997, 1998 and 1999 that expanded the applicable area in Maricopa County an additional ten miles beyond the 1996 boundaries and added land adjacent to the San Tan Mountains to the eligible areas. Equally important, Proposition 303, passed by the voters in November 1998 as part of Governor Jane Dee Hull's Growing Smarter program, required that $20 million be appropriated annually for eleven years, beginning July 1, 2000, primarily for the purchase or lease of state lands classified for conservation, or for the purchase of development rights on the land. This money significantly forwards the open space cause. It allows cities, counties and certain nonprofit organizations like land trusts to apply to Arizona State Parks for matching grants to acquire or lease trust land.

All these initiatives are important, but they cannot be said to constitute a strong or comprehensive approach to the issues raised by fast growth across the region. In the state land conservation program, only a small portion of the region's sensitive lands are eligible for protection. Little grant money is available through a complicated process of fees, hearings and studies. It remains to be seen whether the region's fringe cities will comply with statewide planning requirements and what the state will do if they do not.

WHAT THIS MEANS

Metropolitan Phoenix' decentralized governance may not be up to the challenge of addressing the region's lengthening list of growth complications. In particular, the lack of any robust coordinating authority at the regional level in metropolitan Phoenix leaves it without much ability to craft and enact responses to issues that cut across boundaries, whether it be traffic, open space or urban form. Little interaction now occurs between the public and private sectors on growth issues. The state of Arizona has taken few steps to promote regional thinking or local collaboration on agendas such as light rail. And the continued refusal of voters to entrust either MAG or Maricopa County with any kind of binding managerial power, especially, suggests that the region urgently needs to seek out alternative mechanisms for achieving collaborative planning and cooperative action. However, the moment is far from bleak. Many regions across the U.S. are now experimenting with new forms of regional cooperation; these efforts provide plenty of intriguing ideas for the Phoenix region to consider. One way or another, though, an individualistic metropolis needs to find ways to act as a region on numerous issues facing its cities.

Map 19: Metropolitan Phoenix: Jurisdictional Boundaries, 1997



Summing It Up

Taken together, this report draws a number of conclusions from the multiple research projects on the Phoenix region.

Part I suggested metropolitan Phoenix' extraordinary growth is defying a number of conventional expectations, even as it shows signs of succumbing to familiar pitfalls. Contrary to expectation, the urban area is gaining in density and the central city is remaining robust, despite a proliferation of residential development at the region's fringe. Also, the metropolitan area does not yet display the kind of gross imbalance of investment and fiscal capacity between its core city and its largest suburbs that plague many urban areas. At the same time, cause for worry centers on the region's social and racial divide, and the serious environmental impacts of converting the desert to subdivisions. These problems are interconnected. Poor schools and concentrations of low-income and minority residents in the center of the region tend to push families and businesses out and drive fringe development. Fringe development makes open space less accessible, leads to long commutes, and worsens air pollution.

This section, in looking behind these trends, identified several factors of timing, local conditions and regional policy that have conditioned metropolitan Phoenix' growth. Timing dictated much about how Phoenix grew. In a word, the region grew as a horizontal collection of auto-oriented central city-suburbs because that is how most new American metropolitan areas developed during the post-World War II suburban era.

Similarly, the region's setting and climate – its specific circumstances – attracted and accommodated vast inflows of new residents. Once air conditioning became widespread, few natural barriers impeded the metropolis' geometric expansion across the Salt River Valley. Significant state, federal and tribal land holdings have blocked expansion in just a few places though these tracts could soon become major delimiters of the urban form as the urbanized area begins to abut them.

Finally, particular policy choices have influenced how the region developed. Widespread annexation has limited the imbalances among the region's major cities by giving them shares of new development to complement their older areas. The Salt River Project and the Central Arizona Project, combined with restrictions on the use of groundwater, have facilitated growth while discouraging leapfrog development. And in like fashion, the region's late start on freeway building has promoted more compact development than might have occurred. Conversely, the intense localism of the region's political culture has delayed mass transit and precluded regionalized efforts to manage growth and protect open space. Current freeway building and the imminent disposal of much state-owned land also appear poised to change the region's future growth and development patterns.

The bottom line: Metropolitan Phoenix has grown in ways unlike, and like, other regions of its type.

Considered together, these crosscurrents challenge Phoenix to think carefully now for two reasons.

First, the strong role timing has played in metropolitan Phoenix' rise raises the possibility that the region's relative health thus far owes mainly to its extreme youth. To be sure, a number of particular local twists of topography, land ownership, water policy and massive annexation have made the Phoenix region different than many. Yet, for all that, metropolitan Phoenix' resemblance to cities that have grown since 1970 suggest it may not be so much different as younger than other more troubled cities. And that raises a vexing question: Is it just a matter of time before metropolitan Phoenix grows into a highly decentralized set of suburbs encircling a poverty-impacted, physically decaying downtown?

Otherwise, the region faces the future at a moment when many "givens" about what matters in region building have been changed by the age of knowledge. The new economy is altering much about the way companies, people, cities and governments operate. Most crucially, this new order, so important to metropolitan Phoenix' future, values quality of life more than the old economy – because it depends on people more than the old one. People – particularly skilled workers and entrepreneurs – gravitate to places that combine compelling career opportunities and a desirable lifestyle. Regions, therefore, must now compete on quality just as companies do. This ups the ante as the region weighs its present condition and considers its future.

Metropolitan Phoenix' economic competitiveness now depends on successfully managing its past and current growth trends so as to avoid becoming a region of haves and have nots and to prevail as a lifestyle Mecca for the knowledge workers of the new economy. And yet, the problems on display in Atlanta, Washington, D.C. and Denver may be inseparable from the maturity toward which Phoenix is moving.

If that is so, the region should think hard about how to avoid the pitfalls of maturity while seeking its benefits. More than likely, such planning – as the next section of this report suggests – will require important and potentially controversial policy choices.

What to Do

Phoenix came into its own during the automobile era, but the region's next chapter will be written in the age of knowledge. As the region's leaders and residents decide what to do, actions in three strategic areas seem imperative.

First, the Phoenix region needs to understand the full range of issues that shape its growth and development patterns. The region's emerging divisions, transportation challenges, loss of desert lands, and the many other growth issues that threaten metropolitan Phoenix' quality of life are inextricably linked. The challenges cut across jurisdictional boundaries. Yet the practice of this state has been to approach the region's growth problems piecemeal.

This Arizona-style disconnect is best illustrated by the current collection of high-level state planning and policy commissions that are now, or recently have been, deliberating in isolation on five critical aspects of growth: growth management itself, the new economy, water, transportation and air quality. There is little evidence thus far that these dialogues will be connected into a comprehensive, coordinated response to the overarching issue of growth management.

By contrast, the smartest regions today have embraced the "four E's" of a strong economy, healthy environment, social equity and civic engagement as an integrative framework for analyzing problems and building regional advantages. These metropolitan areas recognize that the times and the terms by which regions compete in the world are changing and their responses relate to the powerful forces of migration, competition, globalization and technology.

They notice that "clusters" of businesses and the talented people they depend on are increasingly attracted to vital, livable places. They see that "livability" has become a rallying cry for companies and their workers who want clean environments, open space and an end to excessive sprawl. And they recognize that everything is connected.

Metropolitan Phoenix' leaders can continue to disregard the relationships among the region's education, social, economic and environmental challenges and hope for the best. But they would do better if together they "connected the dots" among the issues and created new partnerships capable of responding to growth's problems and paradoxes.

Second, the Phoenix region must overcome a number of near "Catch-22s" that are rooted in its history. As the region continues to grow, a number of trends – both positive and negative – have the potential to confront the region with a series of dilemmas. For example:

- **Looming transportation and land use conundrums.** In contrast to other regions, highway building in metropolitan Phoenix has supported the region's central area. The present round of suburb-to-suburb freeway extensions, however, could create problems. By making jobs and homes away from the center more accessible, the presence of freeways will intensify land consumption on the fringe. But should employment remain concentrated in the cores and home building continue to move outward, commute times could worsen. The challenge to unraveling this Catch-22 will be finding transportation and land-use initiatives that create dispersed mixed-use clusters of greater residential and employment density, that do not detract from the vitality of downtown Phoenix, the region's signature core.
- **State trust land questions.** Large tracts of state-owned trust land near the urban fringe constitute an irreplaceable asset for the region's quality of life. This land could serve as a growth boundary that provides a vast reservoir of open space. However, the state constitution requires that these lands be managed to maximize revenues for Arizona's educational needs. The mandate bars wholesale conservation of the lands and increases the likelihood of future land sales to developers. The challenge for the region will be to amend the Arizona constitution and state enabling act to allow for trust land to be dedicated to open space while maintaining the ability to fund schools.
- **Growth agendas in the smaller cities.** Eighteen less-populous cities on the urban fringe now control nearly as much land as the city of Phoenix and the five largest suburbs combined. These areas also lag behind the region in open-space protection and use of growth management tools. This means that the municipalities in the region least equipped to deal with the effects of fast growth will soon be making decisions with enormous implications for the entire region. The challenge will be to bring a regional perspective to the planning efforts of all cities while respecting the region's tradition of local control.
- **Fixing the schools of the core.** The region has reason to worry about the education of children in central Phoenix and the southwest portion of the region. Individual economic success correlates particularly with education attainment (the number of years of school completed). The weak schools of the center present a powerful impetus for decentralization. Schools with high proportions of low-income, minority or underachieving students may influence where people and businesses choose to locate. This increases the viability of the fringe at the expense of the core. Ironically, though, the region and its cities possess limited authority to address the unique problems of schools. The challenge will be encouraging more effective collaboration between school districts and city leaders and including education issues in both fringe growth management and core revitalization strategies.
- **Conflicting views on sprawl and density.** Residents of metropolitan Phoenix decry sprawl, but they also dislike density. Unfortunately, controlling one usually means encouraging the other. To confront this Catch-22, regional leaders and residents will need to find an acceptable way to promote greater density with "quality" development that fosters convenience, diversity, transit options and access to open spaces. One approach will be to re-evaluate traditional zoning ordinances with their rigid and segregated land uses and consider new rules that foster acceptable combinations of residential and commercial uses.

- **Regional authority dilemma.** Although valuable, especially as the 18 less-populous communities become a stronger force in the regional dynamics, city-to-city coordination will only go so far. However, the creation of a binding regional authority has been rejected so often that implementation of such a concept appears unrealistic for metropolitan Phoenix. The challenge will be to reap the benefits of regional "governance" without having to adopt a formal "regional government" structure.
- **An on and off relationship with Washington.** The region historically has benefitted from federal assistance with water and public works projects that have sustained a growing population. In recent years, state leadership – executive and congressional – has disdained federal help with similar projects, believing that the state should be more independent from Washington. This stance handicaps the region's ability to finance major growth management initiatives, such as light rail or open space acquisition, that neither the state nor any single municipality can afford on its own. The challenge will be to get back to a long-term regional agenda so compelling that it would be unthinkable for any elected official not to support it.
- **Tensions that surround state support of metropolitan Phoenix.** In today's economy metropolitan regions are increasingly overtaking states as the drivers of growth. The situation in Arizona is no exception; the metropolitan Phoenix region currently accounts for 70 percent of the state's total personal income and is responsible for over 70 percent of new job growth. Thus, ensuring a viable metropolitan Phoenix should be a top priority of state government. However, other communities across Arizona have needs that also must be addressed at the state level. The challenge will be to support the Phoenix region in a way that does not neglect the needs of other localities, but accepts that prosperity brought forth by a strong regional driver benefits the state as a whole.
- **Water's changing role.** Although the region has ample water for its current population, water management will be more important given that there are no potential projects on the scale of the Central Arizona Project to increase the future supply of water. As such, water management will be increasingly related to growth management, as water becomes an invaluable regulator by influencing where homes and businesses may locate. However, discussions on water management and growth management currently take place in entirely separate spheres. The challenge will be to bring together the water mavens and the urban planners to come to an understanding of how water policies could be used to manage growth.

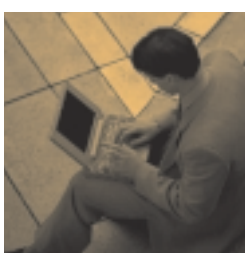
These near Catch-22s will not succumb to old ideas. Bold, innovative policy decisions will be needed. It is unfortunate that the state's past knack for bold and integrated policy making has been noticeably absent in recent years. Nowhere in sight, for example, is the kind of problem solving with which, in the early 1980s, the state of Arizona prepared for growth by enacting its celebrated Groundwater Management Act and Urban Lands Act. Each of these laws brought the outlines of comprehensive, regionalized policy to the management of a key resource stressed by growth. And each has stood the state and the region in good stead.

The challenge for metropolitan Phoenix is also to reinvigorate its past tradition of far-sighted, large-scale action now. This does not mean simply replicating the big ideas of a Seattle or a Denver. It requires the region's key stakeholders to think deeply and creatively about local causes, conditions and future trends and to take action.

Each economic era has evolved its own regional form. What is next?

ECONOMY	GEOGRAPHY
Agricultural (1700-1880)	Towns, Villages, Farms
Industrial (1880-1950)	Central City
Service (1950-1980)	City-Suburbs
Information (1980-)	??

Source: Collaborative Economics, 1997.



The Future at a Glance...

New Faces, New Economy and New Geography Will Shape Future Metropolitan Areas

This report's final suggestion for the region is for it to focus on demographic, technological and cultural trends that are shaping the next metropolitan era. New faces, a new economy, and a new geography of amenities may be as profound a determinant of the size, shape and prospects of cities and their surroundings in the coming years as the post-war suburban boom was. This means decision makers will need to consider different, new trends as they prepare for future growth. Table 12 shows some of the trends to prepare for.

If it is true that "demographics are destiny," two dramatic changes in the make up of the American population will affect the shape of metropolitan regions' character in the future: the aging of America's baby boomers and its increasing population of immigrants. What the boomers buy and where they retire will have significant implications for urban and suburban growth dynamics. The Milken Institute projects that the gains in the elderly population over the next 25 years will result in major migrations by retired people to high-amenity areas such as the south and mountain west. Within these areas, the more affluent "yuppie" elderly will tend to locate on the periphery while less wealthy seniors likely will remain in their home cities and reside closer to the core.[19]

The increasing numbers of immigrants coming to America are already creating new urban dynamics. For example, the most recent influxes of residents from Asia and Latin America exhibit different settlement tendencies from their predecessors from Europe early in the 20th century. Rather than assimilating whole-heartedly into American culture, immigration laws have encouraged the groups to cluster near family members. This congregation is creating a new force in metropolitan areas, especially in a handful of central cities.[20]

The baby boomers' gradual transition out of the workforce will create a talent shortage. After the baby boom's huge bulge in births from 1946 to 1964, population growth fell off sharply in the mid-1960s and did not rebound until the baby "boomlet" began in the late 1970's. This boom-and-bust pattern has created big swings in supply and demand in everything from schools and jobs to housing. For employers the next swing will put a premium on young, well-educated, creative talent. In-migration will supply some of this talent; increased productivity will take up some of the slack. But, fundamentally, communities that attract talent will attract employers.

New economy firms are already reshaping the economic landscape and built environment. If current trends hold, the company of the future will be small. For example, only 11 companies in Silicon Valley have more than 10,000 employees; the average size for software firms is 27 people. That alone dictates vast differences in where companies can locate within the city, and what sort of construction suits them. Although improved infrastructure and communications technology are encouraging the spread of jobs and people to the urban edge, big cities like Phoenix can prevail because they move ideas, engender face-to-face interaction, facilitate specialization, support lots of stores and parks and diversity. They also provide accessibility, and an already built-up, rich infrastructure – both of which are critical to regional competitiveness.

And the new generation of workers is beginning to define a new way to work and live. Where workers in the industrial era went to a factory to make things more efficiently, new economy workers can work from anywhere to apply their knowledge to do things better. Increasingly, they maintain a 24-hour-a-day, 7-day-a-week schedule. Because the time frame in which they must accomplish tasks is highly abbreviated, the new workers value just-in-time amenities, user-friendly transit connections, accessible diversions that blend seamlessly with work. Whether it is cappuccino or a movie, they want it when they want it and they want it to be good. Downtowns and diversified city neighborhoods that cater to their 24 hour-schedule are in; sterile suburban campuses are out. Growth management, access to greenspace and the "mixed-use" clustering advocated by New Urbanist designers are positives; "sprawl," traffic congestion and poor school systems are big turn-offs.

Finally, one of the strongest implications of the current change is that place still matters – but for different reasons.[21] Technological advances make it possible for people and companies to locate anywhere. Just as the dawn of the automobile supported the spread of suburbs, the age of the computer will likewise shape the character of metropolitan regions. Workers in the new economy appreciate physical attributes such as geography or climate, as well as intangible aspects such as quality of place. Although such workers could technically work from anywhere, they tend to choose places that allow them to balance both economic opportunity (jobs) and lifestyle (amenities). In so choosing, the new workers value fundamentals like connectivity and access, but also less quantifiable assets like a sense of place; vital centers where they can interact with peers and draw upon one another's creative energy; or a thriving cultural scene.

How metropolitan Phoenix chooses to take what it has and put it into play amid these emerging trends will determine the region's competitiveness and how it will grow. For example, if present migration trends continue, the region can expect to see even greater concentrations of Hispanic populations around the core. Likewise, the region can expect to see continued clustering of older residents along the outer edge as more retirees settle in age-segregated communities. Talented workers are now becoming the driving force behind business site selections. Each group will demand different amenities and services from their communities.

Because of these trends, metropolitan Phoenix will likely have to change many things about how it competes for prosperity in the next era of growth. Rail lines (rather than lane miles) may become crucial. Mixed-use and "clustering" may need to become the region's watchwords rather than low-density spreads. And downtown revitalization campaigns may need to change strategy to focus on small firms and knowledge workers who want amenities around the clock, individualistic residences and quality schools close by rather than on luring suburban residents to come to the city on weekends to watch professional sports events or attend the theater.

Finally, one thing is certain: The regional imperative is growing stronger. Cities are no longer islands. As groups of cities here and elsewhere have grown into metropolitan areas, the resulting region has become the only meaningful unit, the ultimate nexus of activity. Everything now connects. Every decision and policy of one jurisdiction affects those of all the others. Each jurisdiction within the region is reliant on the others to maintain its strength and the overall region's health. The effects of poorly planned growth management in one jurisdiction will affect the quality of life in the others. The problem of one locality turns out to be everybody's problem.

Let metropolitan Phoenix become one of the first communities in the nation to craft truly innovative, forward looking and regionwide solutions to everyone's problem and opportunity – changing metropolitan development patterns.

TABLE 12: THE FUTURE AT A GLANCE

NEW FACES: New groups are changing the way things are done.

YUPPIE BABY-BOOMERS

What they buy (e.g., smaller homes) and where they retire will have significant implications for urban and suburban growth dynamics. The gains in elderly over the next 25 years are projected to result in retirement migration to high amenity areas of the mountain west and south. Within metropolitan areas the better-off and healthy "yuppie elderly" will tend to locate on the periphery, and the more disadvantaged segments of the older population will reside closer in.

DIFFERENT MELTING POT

The second important demographic player will be the new immigrants, who began arriving in the mid-1960's. These new immigrants appear to be unlike their European predecessors. Past European immigrants felt acculturation was necessary in order to succeed economically and socially. However, today's ethnic minority immigrants are attempting to maintain their cultural identities and statistics show a clustering of new immigrants into a handful of metropolitan areas – Phoenix is one of them.

TALENT SHORTAGE

After the baby boom's huge bulge in births, from 1946 to 1964, the population increases due to natural increase fell off sharply in the mid-1960's and did not rebound until the baby "boomlet" began in the late 1970's. This boom-and-bust pattern has created big swings in supply and demand in everything from schools and jobs to housing. But fundamentally, it means a shortage of talent, such that employers are going to pay a premium for the young well-educated, creative talent critical to their success in the new economy.

NEW ECONOMY: Technology advances mean new challenges for regions.

SMALL IS "IN"

Small, fast growing firms are reshaping the landscape and that means the large "vertical cities" (New York, Chicago) are losing ground to the more mid-sized horizontal cities (San Jose, San Diego). Only 11 companies in Silicon Valley have more than 10,000 employees. Where does everyone else work? Hint: the average size software firm is 27 people.

PLACES TO NETWORK

Large urban areas are particularly exciting centers for people and firms who want to be innovators and need to stay on the cutting edge. They will come to the city-center to reap the benefits of the creative milieu and mixing of ideas. Contrary to some early predictions for a lessening in social relationships as a result of more communication via computers and the Internet, today's urban center is largely sustained by interaction between specific groups who seek out and find each other, uniquely within the urban core.

24/7

The new generation of knowledge workers' life styles fit no earlier pattern in history. They maintain a 24-hour-a-day/7-day-a-week schedule. Because the timeframe in which they must accomplish tasks is highly abbreviated, they value "just-in-time" amenities. Whether it is cappuccino or a movie, they want it when they want it and they want it to be good. Downtowns or funky city neighborhoods that cater to their 24 hour schedule are in. They would not be caught dead in a sterile suburban campus!

NEW GEOGRAPHY: Place still matters – but for different reasons.

QUALITY OF PLACE

Unlike the previous era when companies located near highways, railroads, and waterways to facilitate transportation of their goods, technology has made it possible for many to locate their businesses or work from anywhere. But such flexibility has not decreased the importance of place. As competition to attract talent has become more fierce, the premium placed on a region's quality of life has likewise increased. Geographic and cultural amenities matter. Cities with devastated cores, poor weather, and a relative lack of cultural attractions are disadvantaged in the new economy.

REGIONAL IMPERATIVE

Cities are no longer islands. As groups of cities have grown into metropolitan areas, the resulting regions are becoming the nexus of activity. As such, each jurisdiction within that region is reliant on the others to maintain the region's health. The effects of poorly planned growth management in one jurisdiction will affect the quality of life in the others. This is another argument for greater regional cooperation.

Source: Morrison Institute for Public Policy; Milken Institute; Collaborative Economics; Joel Kotkin.

Endnotes

[1] Rusk, David. (1995). *Cities Without Suburbs.* Washington, D.C.: The Woodrow Wilson Center Press.; U.S. Congress, Office of Technology Assessment. (1995). *The Technological Reshaping of Metropolitan America,* OTA-ETI-634, Washington, D.C.:U.S. Government Printing Office.; Orfield, Myron. (1997). *Metropolitics: A Regional Agenda for Community and Stability,* Washington, D.C.: The Brookings Institution Press and The Lincoln Institute of Land Policy, Cambridge, MA.

[2] Sorkin, Michael. (1997). "Can Williams and Tsien's Phoenix Art Museum Help This Sprawling Desert City Find Its Edge?" *Architectural Record.* 185(1): pp.84-97.

[3] The Brookings Institution Center on Urban and Metropolitan Policy. (1999). *Moving Beyond Sprawl: The Challenge for Metropolitan Atlanta.*

[4] The Citistates Group. (2000). "The San Diego Millennium Project." *San Diego Magazine.*

[5] Definition of Employment Cores:

Indicator	Downtown/ Midtown Phoenix (Primary–Level 1)	Sky Harbor/Tempe/ Scottsdale/Metrocenter (Secondary–Level 2)	Level 3	Level 4
Employment Density[a]	Over 6,800	4,100 to 4,800	2,800 to 3,700	1,700 to 2,700
Employment to Population Ratio[b]	greater than 2	greater than 1.5	greater than 1	n/a
No. of Industries with Concentration	7 to 8	5 to 7	3 to 5	n/a
Total Employment	n/a	n/a	n/a	greater than 15,000

[a]*Based in part on natural breaks. Employment density = employment per square mile.*
[b]*Compared to county figure of 501; employment per square mile.*
n/a = not used in definition.
Source: Calculated from Maricopa Association of Government's data.

[6] Great Cities Institute. (2000). *Summary Findings of the Chicago Metropolitan Case Study* (draft). College of Urban Planning and Public Affairs, University of Illinois at Chicago.

[7] This data is the best available – no alternative source was found.

[8] The Brookings Institution Center for Urban and Metropolitan Policy. (1999). *A Region Divided: The State of Growth in Greater Washington D.C.*; The Brookings Institution Center for Urban and Metropolitan Policy. (1999). *Moving Beyond Sprawl: The Challenge for Metropolitan Atlanta.*; Great Cities Institute. (2000). *Summary Findings of the Chicago Metropolitan Case Study* (draft). College of Urban Planning and Public Affairs, University of Illinois at Chicago.

[9] Gober, Patricia and Elizabeth K. Burns. (2000). "The Size and Scope of Phoenix' Urban Fringe." Submitted to *Journal of Planning Education and Research.*

[10] Downs, Anthony. (1999). "Some Reality About Sprawl and Urban Decline." *Housing Policy Debate*, 10(4); Rusk *op. cit.*; Orfield *op. cit.*

[11] Rusk *op. cit.*; Orfield *op. cit.*

[12] Rusk *op. cit.*

[13] Arizona State Land Department, Annual Report 1998-1999.

[14] Gammage, Grady, Jr. (1999). *Phoenix in Perspective: Reflections on Developing the Desert.* Tempe, AZ: Herberger Center for Design Excellence, College of Architecture and Environmental Design, Arizona State University.

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[17] Morrison Institute for Public Policy. (1999). *What Matters in Greater Phoenix: Indicators of Our Quality of Life.* Tempe, AZ: Arizona State University.

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[19] Frey, William H. and Ross C. DeVol. (2000). *America's Demography in the New Century: Aging Baby Boomers and New Immigrants as Major Players.* Milken Institute Policy Brief Number 9.

[20] Ibid.

[21] Morrison Institute for Public Policy. (1999). *Arizona Policy Choices: The New Economy: A Guide for Arizona.* Tempe, AZ: Arizona State University.

Notes and Methodology

We thank Dr. Charles Redman at the Central Arizona-Phoenix Long-Term Ecological Research project for the use of maps and data, as well as the Maricopa Association of Governments – their land use data, annexation maps, transportation development and financing data, and the1995 Special Census data, etc. greatly enhanced this project. Finally, Scott Smith and Jana Fry at ASU's Information Technology Research Support Lab – GIS Services and Tom Rex at the Center for Business Research provided a great deal of data collection and analysis. We are very grateful.

Map 1: Source: U.S. Bureau of the Census. Map created by ASU Information Technology Research Support Lab – GIS Services.

METHODOLOGY FOR DETERMINING BREAK POINTS:

The work done prior to determining these break points used four categories (three break points) to display data on each map. This was continued for most maps, except when the data were such that fewer (one case of three categories) or more (two cases of seven categories) was appropriate. (For comparison, the Brookings study "A Region Divided" used a standard of six categories.)

Standard Error/Confidence Interval: The census data were obtained from STF 3, which reports sample data obtained from the "long form," which is completed by one-in-six households. As such, the data include sampling error. This sampling error was one of the factors considered in determining break points. The distance between the break points at least equals one-half the confidence interval (discussed below).

The U.S. Bureau of the Census publishes the unadjusted standard error, which varies by universe size (the less populous the area, the higher the standard error) and percentage (the unadjusted error is smallest for a variable category that makes up 2 percent or less of the total universe). The Census Bureau also incorporated a "design factor" which varies by percentage (and to a lesser extent by variable), with the highest factor assigned to the lowest percentages. The unadjusted standard error is multiplied by this design factor to obtain the "adjusted standard error."

The confidence interval is calculated from the adjusted standard error. The U.S. Bureau of the Census reports the intervals at the 90 percent confidence level (in one in 10 samples, the confidence interval will not encompass the "true" value). However, the industry standard is to express intervals at 95 percent confidence. (An interval at 90 percent is not as wide as at 95 percent confidence, but is twice as likely to have the interval not encompass the true value.)

Figure 2: Land Consumption was calculated from the percent change in Urbanized Land Area from 1960 to 1990. Population Growth was calculated from the percent change in the population of Urbanized Areas. Source: U.S. Bureau of the Census.

Figure 3: Density was calculated by dividing the population of the Urbanized Area by the square miles of the Urbanized Areas. Source: U.S. Bureau of the Census.

Map 2: Employment Centers were defined by total employment and by employment density (employment per square mile); the various cores were based on the above, plus the employment-to-population ratio and industry concentration. Source: Calculated from Maricopa Association of Governments 1995 employment database.

Maps 3 and 4: Employment in Major Industry and High Technology Employment are calculated from employment density in each classification.

Table 3 and Map 6: The expenditures are only for federal and state, not local funds, and these results are based on Arizona Department of Transportation records. The Arizona Department of Transportation maintains digital files that record expenditures from 1986 to 1998. These data were prepared annually for statistical traffic reports (ADOT 1989-90 to present). The Maricopa County road network is described by 68 segments that are defined as any Interstate, U.S., or State highway section between its intersection with any other similar system component. Expenditures for each segment were organized for the annual ADOT reports, and obtained from Tony Gonzales of the Transportation Planning Division.

Expenditure data are reported as net expenditures per year to reflect multi-year construction periods. Final accounting for individual projects resulted in expenditure deficits for some projects. Expenditure data was then adjusted for inflation using the composite index for price trends for federal-aid highway construction (Federal Highway Administration 1998). Actual expenditures multiplied by the index were converted to the equivalent in 1998 dollars for each year.

The 5,660 entries in the Maricopa County database assigned to a particular segment were identified by fields for the project name, beginning and ending points, length in miles, description, expenditure amount. Over 99 percent of all expenditures were classified by type of activity. Right-of-way activities include land acquisition. Construction includes all activities involving descriptions such as construct, build, widen, and landscape. Design activities include miscellaneous administration, traffic control, signals, and monitoring. Utilities include flood control structures coordinated with the Maricopa County Flood Control District.

GIS intersection procedures linked the 68 route segments to census tract boundaries and attributed expenditures to 78 segments in Table 3 – Transportation expenditures. Source: Arizona Department of Transportation.

Map 7: Retirement communities were designated as those in a senior overlay zone or those with over 1,000 residents.

Tables 5 and 6, Maps 8-10: In Arcview GIS, the MAG planning area boundary was overlaid on the CAP-LTER data for different years to see what the land use status was for each time period, as well as change between periods. Using GIS, the different land uses were calculated. Note that some land may have been over generalized by CAP-LTER, and that GIS is a rough way to geographically categorize data. Overall though, the total acreage of land use as calculated in the GIS is 1,765 square miles which is very close to the 1,768 square miles that make up the MAG planning area. Source: 1995 CAP-LTER data from "Land Use Change in Phoenix: Phase 1."

Figures 7 and 8: Regional balance calculations were based on total numbers of each variable divided by the population, to get a per capita figure. Then, we divided by the regional per capita figure (the total of all cities for each variable, divided by the total population). This created the regional percentage for each city, to determine if there was a balance among jurisdictions. 100 percent is the regional average, and anything above 100 percent is greater than the regional average, and anything below 100 percent is below the regional average. The regional figures do not equal the county figures, in this case, as data was not available for all jurisdictions. These were left out of the regional average, in order to more properly compare the cities. Retail sales were calculated from retail sales tax revenue data, divided by the sales tax rate in each city. Retail sales were used, as opposed to sales tax revenue, because the measure was more closely related to housing units and jobs per capita. Since different cities have different sales tax rates, the revenue would have been skewed toward higher rates, as opposed to showing where the retail activity really is. Source: Housing Units – U.S. Bureau of the Census; Jobs – U.S. Bureau of the Census and Maricopa Association of Governments 1995 Special Census; Retail Sales – Arizona League of Cities and Towns; Arizona State Department of Revenue; Phoenix Department of Revenue; Tempe Department of Revenue.

Map 15: The 50 elementary and unified school districts include the Maricopa County regional school district – although the results do not change if it is removed from the study. There are six high school districts, which cover the same territory as the elementary school districts which feed into them. Unified districts are composed of both elementary and high schools. Because these are percent change figures, displaying unified and high school districts covers elementary school districts, and is the only way to display this data, given the structure of the school district boundaries. Elementary school districts experienced the same increases as the high school districts. Source: Arizona Department Education.

Table 8: The center school districts were Riverside Elementary, Roosevelt Elementary, Wilson Elementary, Creighton Elementary, Isaac Elementary, Alhambra Elementary, Madison Elementary, Osborn Elementary, Balsz Elementary, Phoenix Elementary, Murphy Elementary, and Phoenix Union High School. The northwest school districts were Washington Elementary, Glendale Elementary, Peoria Unified, Dysart Unified, Glendale Union High School, Wickenburg Unified, Morristown Elementary, Agiula Elementary, Nadaburg Elementary, and Ruth Fisher Elementary. The northeast school districts were Deer Valley Unified, Cave Creek Unified, Paradise Valley Unified, Scottsdale Unified, and Fountain Hills Unified. The southeast school districts were Mesa Unified, Tempe Elementary, Kyrene Elementary, Tempe Union High School, Gilbert Unified, Chandler Unified, Higley Elementary, and Queen Creek Unified. Southwest School districts were Litchfield Elementary, Fowler Elementary, Tolleson Elementary, Union Elementary, Littleton Elementary, Avondale Elementary, Liberty Elementary, Cartwright Elementary, Laveen Elementary, Buckeye Union High School, Pendergast Elementary, Aqua Fria Union, Buckeye Elementary, Palo Verde Elementary, Gila Bend Elementary, Arlington Elementary, Paloma Elementary, Sentinel Elementary, Mobile Elementary and Tolleson Union High School. There were determined roughly along major highway divisions, with a few exceptions. 1998 scores were based on the Stanford 9 Achievement Tests.

Map 19: Due to annexations, jurisdictional boundaries are not necessarily uniform, and show up on maps as additional lines – especially in the west and southeast portions of the region. Source: ALRIS (Arizona Land Resource Information System).

Papers Prepared for
Hits and Misses: Fast Growth in Metropolitan Phoenix

RESEARCH PAPERS:

Leonard G. Bower, Economist
- Fiscal Matters in Phoenix Metro Area Cities: Revenues, Capacity, and Zoning
- Arizona Sales Tax in Maricopa County Cities: Structure, Rates, and Yields

Elizabeth Burns, Professor,
ASU Department of Geography
- Transportation Trends, Urban Freeway Expenditures, and Spatial Disparities in Metropolitan Phoenix

Patricia Gober, Professor,
ASU Department of Geography
- Public Policy Ramifications of Elderly Migration and Age Segregation in Metropolitan Phoenix
- Phoenix: A City of Migrants

Kent Hill, Assistant Research Professional,
ASU Department of Economics
- Determinants of (Per Capita) Federal Funds Received by Metro Areas: A County-Level Analysis
- Housing-Related Tax Benefits in the Phoenix Metropolitan Area in 1990

Glen Krutz, Assistant Professor,
ASU Department of Political Science
- City Growth Management Strategies in Greater Phoenix

Tom R. Rex, Research Manager,
ASU Center for Business Research
- Employment in Metropolitan Phoenix
- Development of Metropolitan Phoenix: Historical, Current and Future Trends
- Population Density in Metropolitan Phoenix
- Population Demographics in Metropolitan Phoenix
- Housing in Metropolitan Phoenix

BRIEFING PAPERS:

William Fulton and Alicia Harrison,
Solimar Research Group
- Land Use and Metropolitan Form

Rebecca L. Gau, Senior Research Analyst,
Morrison Institute for Public Policy
- Housing Affordability in Metropolitan Phoenix
- Race and Ethnicity in Metropolitan Phoenix
- Education Trends in Metropolitan Phoenix

Glen Krutz, Assistant Professor,
ASU Department of Political Science
- Explaining Intergovernmental Funding Flows to Cities in Maricopa County
- Local and Regional Governance Structure

Mark Muro, Senior Research Analyst,
Morrison Institute for Public Policy
- The State Lands and Growth
- Open Space and Growth
- Water and Growth

Tina Valdecanas, Senior Research Analyst,
Morrison Institute for Public Policy
- Maricopa County Communities
- Migration in Metropolitan Phoenix
- Underlying Factors in Phoenix' Growth

Mary Jo Waits, Associate Director,
Morrison Institute for Public Policy
- Growth at the Fringe
- Downtown Revitalization Efforts

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Appendix

Map A: Change in Population Density, from 1990 to 1995

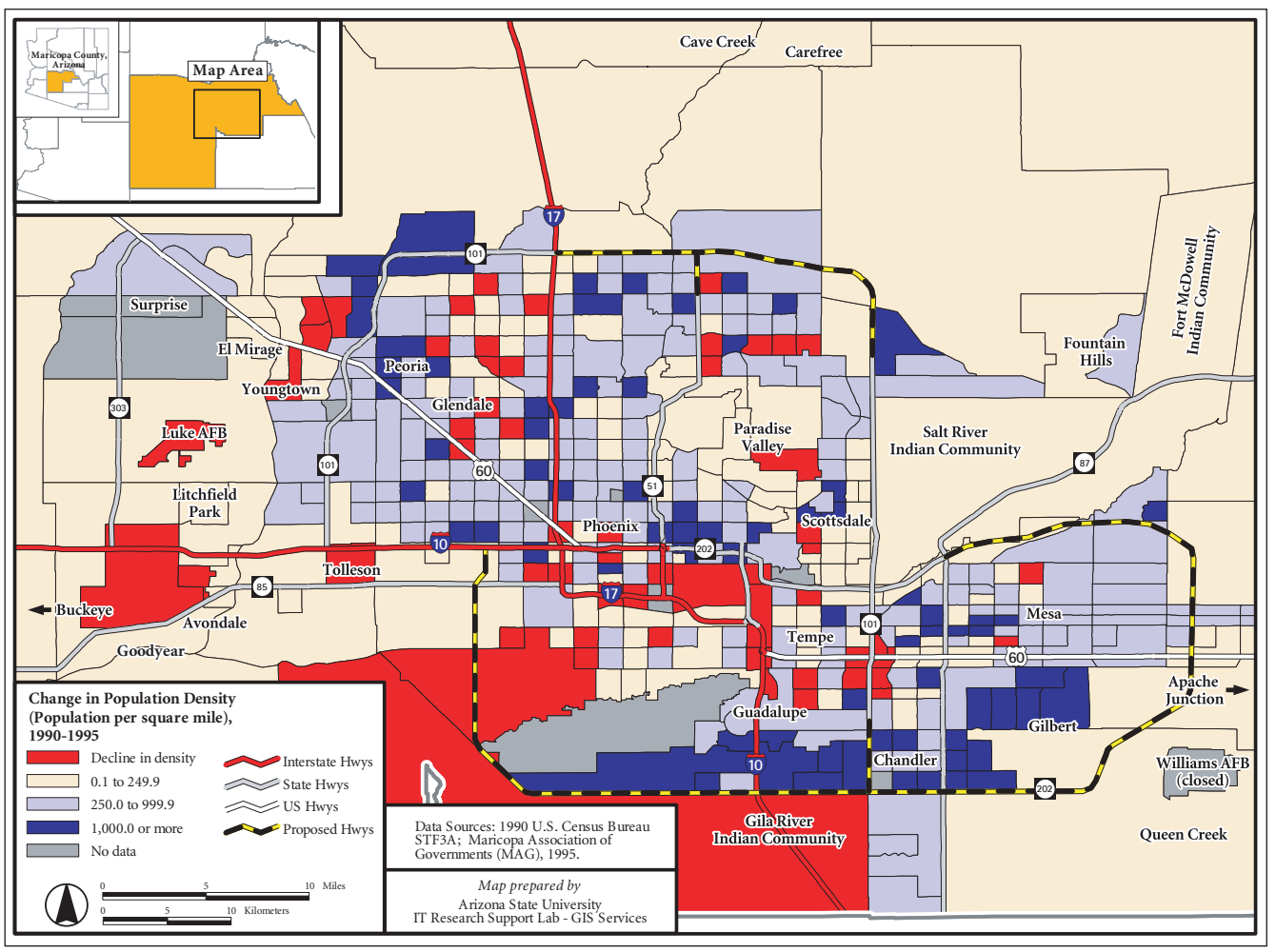


Table A: Median Lot Size by Place (in square feet)

	Total	Built Before 1986	Built Between 1986-98	Built Between 1999-2000
Carefree	50,238	n/a	n/a	n/a
Paradise Valley	43,945	n/a	n/a	n/a
Fountain Hills	9,565	10,006	8,072	9,193
Sun City West	9,000	9,000	8,900	n/a
Queen Creek	8,013	n/a	n/a	n/a
Sun City	7,740	8,873	n/a	7,040
Tempe	7,627	7,667	7,179	9,618
Goodyear	7,605	8,033	6,820	7,680
Scottsdale	7,480	7,658	7,178	8,102
Litchfield Park	7,470	n/a	n/a	n/a
Mesa	7,322	7,562	6,996	6,717
Buckeye	7,290	n/a	n/a	n/a
Glendale	7,266	7,756	6,660	6,820
El Mirage	7,265	n/a	n/a	n/a
Surprise	7,245	n/a	6,300	7,320
Chandler	7,157	7,444	6,334	8,153
Gilbert	7,102	7,279	6,578	8,028
Peoria	7,021	8,205	6,990	6,684
Phoenix	7,000	7,231	6,105	6,600
Tolleson	6,863	n/a	n/a	n/a
Youngtown	6,050	n/a	n/a	n/a
Avondale	6,040	6,650	6,749	5,478
COUNTY TOTAL	**7,166**	**7,462**	**6,604**	**7,062**

Note: Places are defined by zip codes and may not match city boundaries. n/a: not available due to small sample size.
Source: Morrison Institute for Public Policy, data calculated from data provided by Marketron, a Phoenix-based company.

Population Density and Employment Density Vary with Distance from Downtown Phoenix

Figure A:

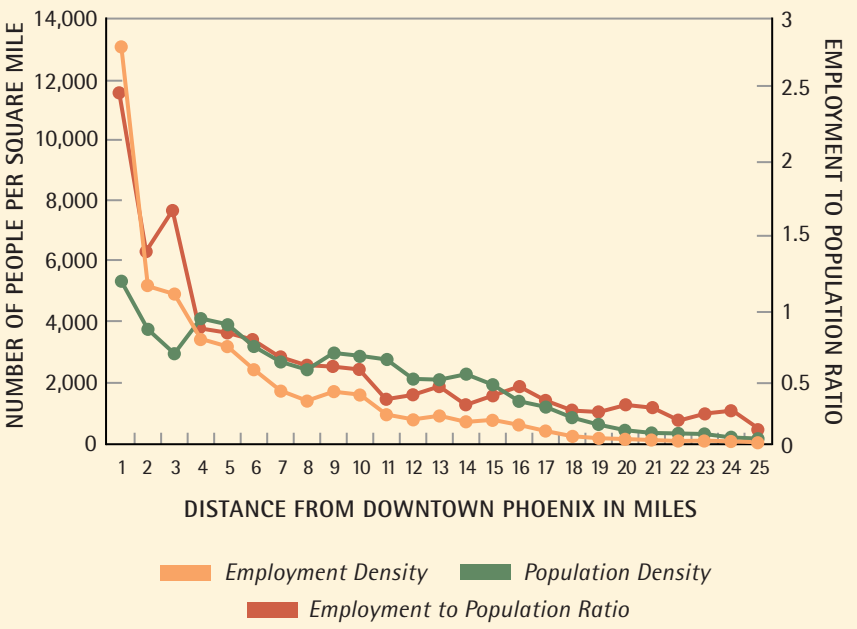


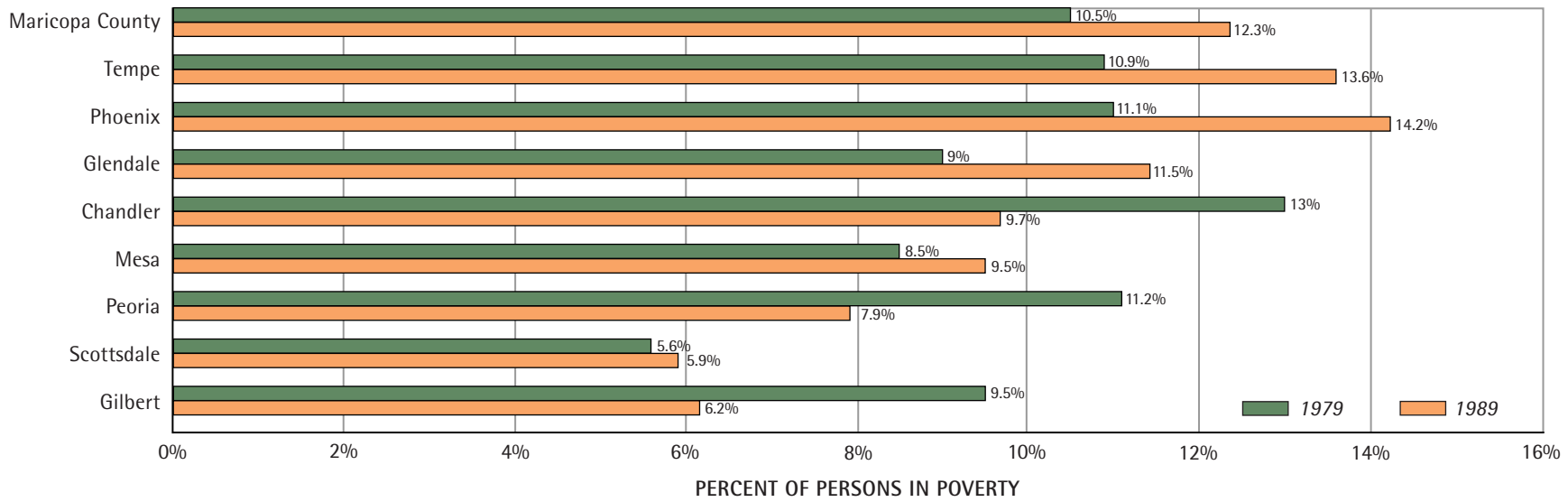
Table B:

2 Miles:	Both population and employment are low because of the Salt River and the flight path west of Sky Harbor.
3 Miles:	Population is very low because of th Salt River and Sky Harbor Airport. The adverse effect on employment, however, is offset by the Grand Avenue employment sub-center, the East Washington/Airport subcenter, and the county's Durango complex.
4, 5 and 6 Miles:	Both population and employment are near trend as no significant abnormalities exist.
7 and 8 Miles:	Both population and employment are below trend because of the considerable land area in parks and mountain preserves: South Mountain, Papago Park, and the edge of the Phoenix Mountains preserve.
9 and 10 Miles:	ASU has a positive effect on employment and population, offsetting the lessened effect of the parks and preserves.
11 Miles:	Until 11 miles out, at least one employment subcenter has been present. Employment is below trend because of the absence of any subcenter.
12 and 13 Miles:	The Gila River and Salt River Indian Reservations considerably reduce population and employment, though the effect on employment is somewhat muted, probably due to a combination of minor factors.
14 and 15 Miles:	While the reservations continue to exert a depressing effect, the Superstition Freeway and Downtown Mesa subcenters offset this for both population and employment.

Note: Distance is measured from Washington Street and Central Avenue; Employment to Population Ratio = Employment Density divided by Population Density. Employment data based on place of work.

Source: Morrison Institute for Public Policy, data from Maricopa Association of Governments.

Figure B: Percent of Persons in Poverty in Metropolitan Phoenix, Eight Largest Cities, 1979 and 1989*



** The latest data available.*

Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census.

Table C: Location of High and Extreme Poverty Clusters in Metropolitan Phoenix, 1989

	Number of High Poverty Census Tracts*	Number of Extreme Poverty Census Tracts**	Median Percentage Point Change in Poverty Rate, 1969-1979	Median Percentage Point Change in Poverty Rate, 1979-1989
Salt River to McDowell	8	15	4	11
South of the River	11	3	5	12
East Van Buren	3		3	6
Northwest	8		4	15
Northeast	4		3	11
Total for Central-South Phoenix	34	18	3	9
Downtown Chandler	3		n/a	n/a
Mesa	4		n/a	5
Downtown Tempe	3	2	10	8
Guadalupe	0	1	-10	-1
North Phoenix	3		1	12
Downtown Glendale	4		3	11
El Mirage - Surprise	4	1	-1	-1
Avondale - Goodyear	7		-2	2
Western Maricopa County	3		-10	6
Indian Reservations	1	1	-26	16
TOTAL	66	23		

* *High Poverty is defined as between 20% and 39% of residents living in households earning less than the poverty level.*
** *Extreme Poverty is defined as at least 40% of residents living in households earning less than the poverty level.*

Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census.

Table D: Population by Race and Ethnicity in Metropolitan Phoenix, 1980 to 1995

CITY	Total Population			White Population*			Hispanic Population**			African-American Population*			Percent Hispanic and African-American		
	1980	1990	1995	1980	1990	1995	1980	1990	1995	1980	1990	1995	1980	1990	1995
Apache Junction	9,935	18,092	19,666	9,492	16,847		354	1,066		8	20		4%	6%	
Avondale	8,168	17,595	22,771	3,738	6,864	8,994	3,758	8,287	12,252	514	685	927	52%	51%	58%
Buckeye	3,434	4,436	4,857	2,440	3,296	2,773	660	1,391	1,820	258	166	172	27%	35%	41%
Carefree	964	1,660	2,286			2,199			45			3	0%		2%
Cave Creek	1,518	2,394	3,076		2,771	2,759		151	288		–	2	0%	6%	9%
Chandler	29,673	89,862	132,360	21,968	69,826	96,976	6,094	15,473	25,609	845	2,326	3,611	23%	20%	22%
El Mirage	4,307	5,001	5,741	639	917	921	3,441	3,952	4,598	221	80	136	85%	81%	82%
Fountain Hills		10,030	14,146	2,713	9,481	13,478	25	314	376	–	103	72		4%	3%
Gila Bend	1,585	1,747	1,724	4,725		670			869			33	0%	0%	52%
Gilbert	5,717	29,149	59,338	2,291	24,753	49,366	945	3,329	6,669	–	418	1,092	17%	13%	13%
Glendale	97,172	147,070	182,615	81,051	117,180	131,223	12,450	22,162	36,093	1,911	4,252	7,658	15%	18%	24%
Goodyear	2,747	6,258	9,250	2,291	4,032	6,103	249	1,550	2,271	155	431	593	15%	32%	31%
Guadalupe	4,506	5,458	5,369	8	67	59	3,793	3,950	3,961	–	7	36	84%	72%	74%
Litchfield Park		3,303	3,739	3,428	3,159	3,345	173	85	182	–	23	21		3%	5%
Mesa	152,404	289,199	338,117	134,317	245,696	266,769	13,890	30,549	52,273	1,834	5,117	7,675	10%	12%	18%
Paradise Valley	11,085	11,903	12,448	10,870	11,211	11,778	177	286	315	13	10	81	2%	2%	3%
Peoria	12,171	51,080	74,565	8,403	41,038	59,181	3,377	7,693	11,686	90	942	1,698	28%	17%	18%
Phoenix	789,704	988,015	1,149,417	616,649	707,500	741,453	116,875	194,118	303,084	36,912	49,717	56,992	19%	25%	31%
Queen Creek		2,667	3,072		1,528	1,844		891	1,084		21	87		34%	38%
Scottsdale	88,622	130,099	168,176	84,104	120,667	152,501	2,918	6,265	9,771	231	101	1,505	4%	5%	7%
Surprise	3,723	7,122	10,737	1,003	2,871	5,544	2,651	4,093	4,938	64	119	143	73%	59%	47%
Tempe	106,919	141,993	153,821	93,974	114,700	115,207	8,851	14,994	22,577	1,605	4,424	5,009	10%	14%	18%
Tolleson	4,433	4,436	4,261	1,332	1,037	828	3,025	3,393	3,329	55	4	16	69%	77%	79%
Wickenburg	3,535	4,515	4,765	3,377	4,165	4,190	122	261	490	–	13	15	3%	6%	11%
Youngtown	2,254	2,542	2,694		2,356	2,500		160	151		17	18	0%	7%	6%
MARICOPA COUNTY* **	**1,509,175**	**2,122,101**	**2,551,765**	**1,226,362**	**1,641,319**	**1,834,847**	**199,517**	**340,117**	**522,487**	**46,747**	**71,896**	**88,923**	**16%**	**19%**	**24%**

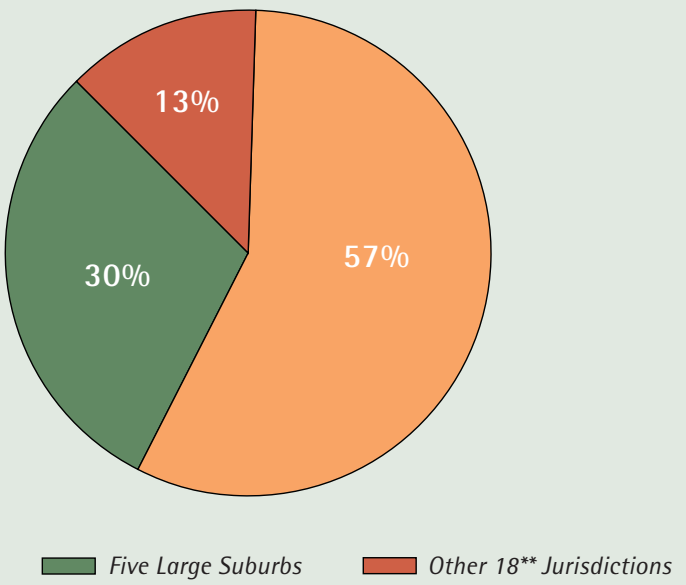
* *Not of Hispanic origin.*

** *Hispanic origin of any race.*

*** *Apache Junction is not included in Maricopa County; the Census race and ethnicity calculations are based on a sample rather than 100% count for 1980 and 1990.*

Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census, 1980 and 1990; Maricopa Association of Governments, 1995 Special Census, except for Apache Junction whose 1995 Total Population data comes from Census Bureau estimates released June, 1999. 1995 race and ethnicity data is only available for the part of Apache Junction that is in Maricopa County, and therefore is not comparable to the other cities on the table.

Figure C: Where Non-white Residents Live, 1995



Source: Morrison Institute for Public Policy, data from Maricopa Association of Governments, 1995 Special Census.

Map B: Phoenix Region's Housing Values, 1990

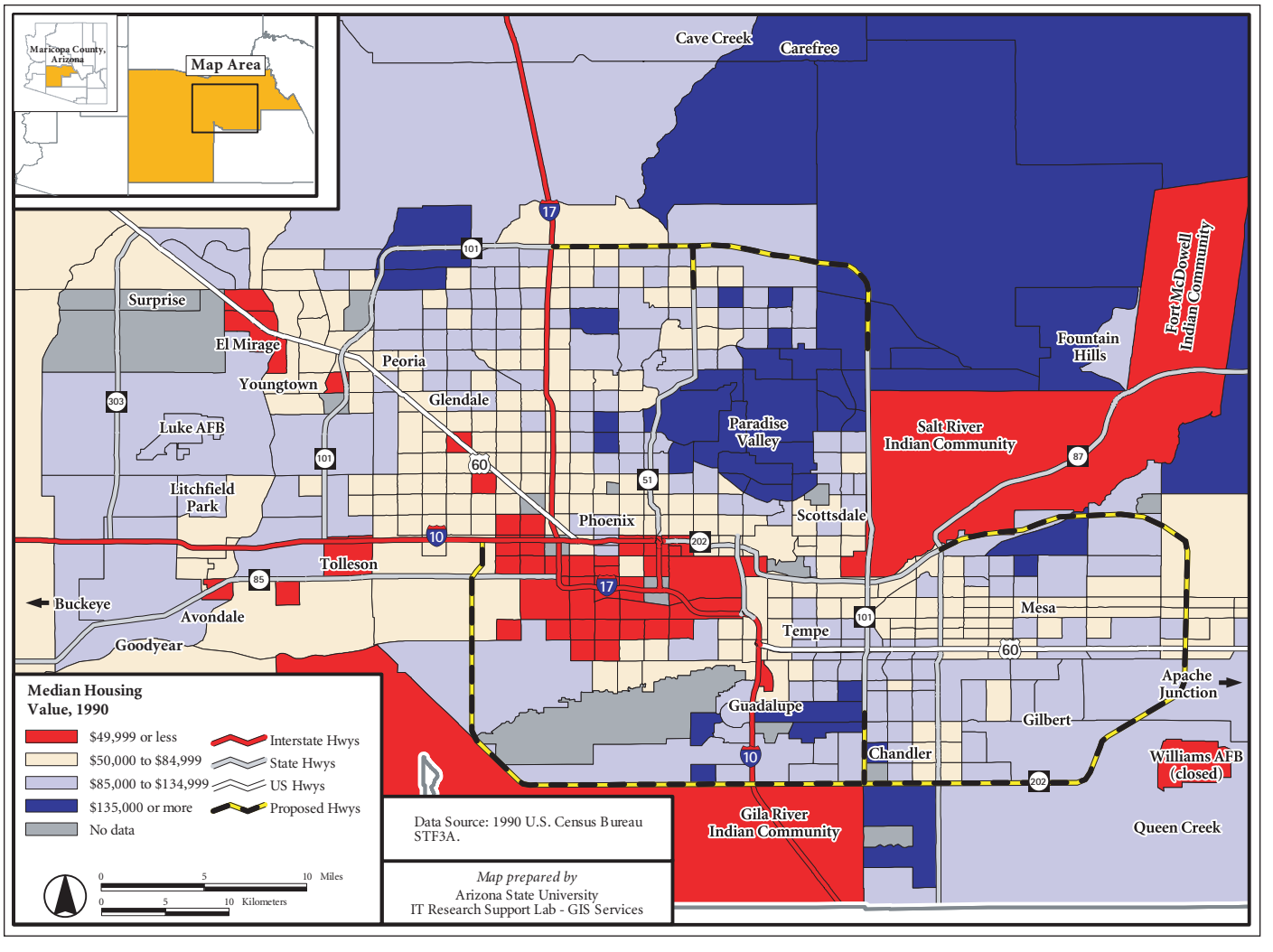
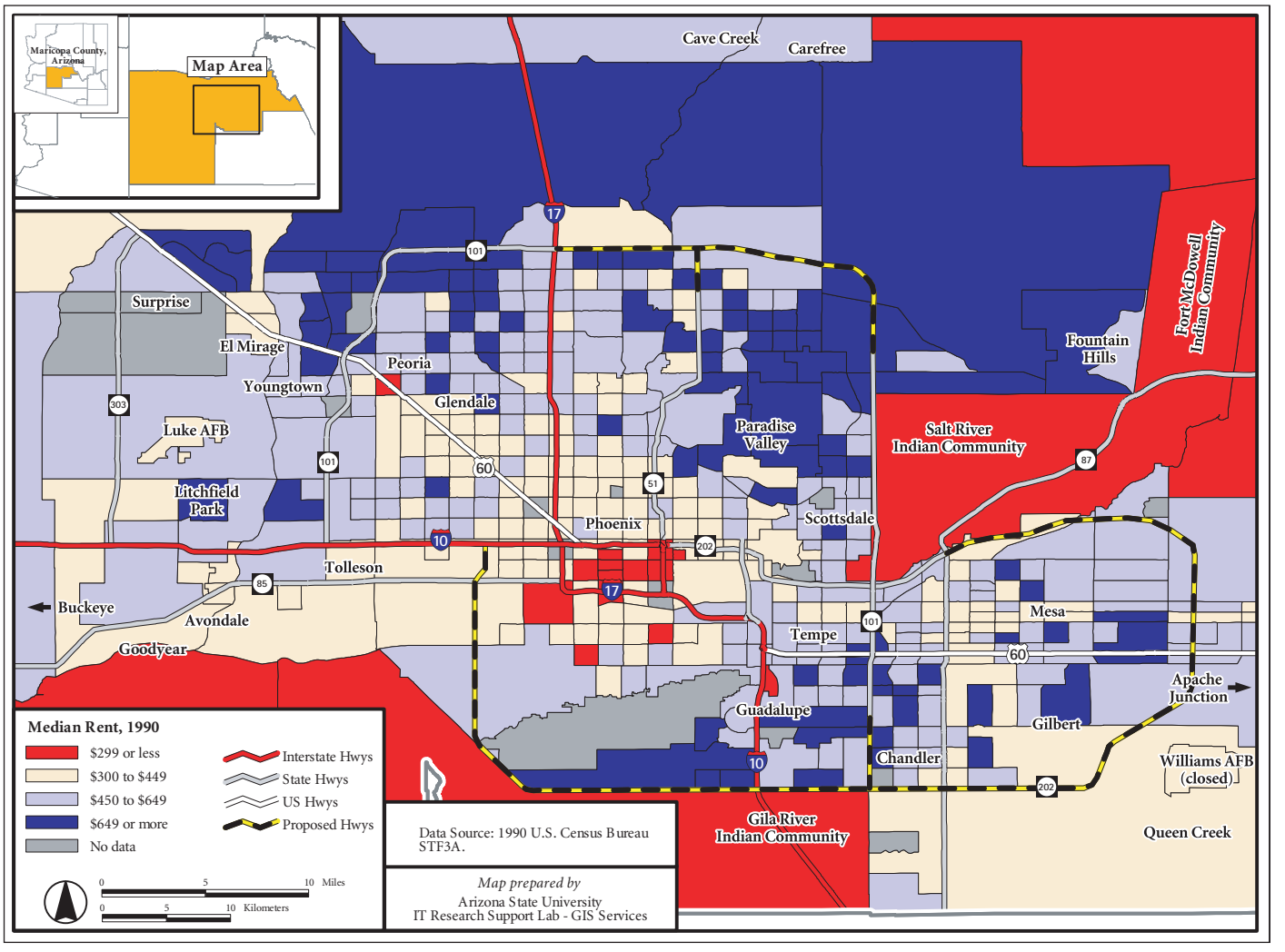


Table E: Metropolitan Phoenix: Average Household Income, 1969 to 1989 (in 1989 dollars)

CITY	Average Household Income 1969	Average Household Income 1979	Percent Change 1969 to 1979	Average Household Income 1989	Percent Change 1979 to 1989	Change 1969 to 1989	Percent Change 1969-1989
Apache Junction	–	23,668		22,568	-5%		
Avondale	17,427	24,528	41%	32,086	31%	14,659	84%
Buckeye	22,367	28,804	29%	27,933	-3%	5,566	25%
Carefree	–	–		74,096			
Cave Creek	–	–		69,494			
Chandler	26,279	32,002	22%	43,540	36%	17,261	66%
El Mirage	14,729	22,019	50%	24,681	12%	9,953	68%
Fountain Hills	–	–		53,406			
Gila Bend	19,568	26,041	33%	32,042	23%	12,474	64%
Gilbert	21,637	32,954	52%	46,587	41%	24,950	115%
Glendale	26,676	33,947	27%	38,743	14%	12,068	45%
Goodyear	24,708	31,847	29%	40,609	28%	15,901	64%
Guadalupe	–	22,967		26,586	16%		
Litchfield Park	–	–		73,034			
Mesa	27,754	32,863	18%	36,846	12%	9,091	33%
Paradise Valley	83,982	98,856	18%	164,004	66%	80,023	95%
Peoria	22,863	31,206	36%	39,396	26%	16,533	72%
Phoenix	27,863	34,290	23%	38,702	13%	10,840	39%
Queen Creek	–	–		41,980			
Scottsdale	37,261	43,476	17%	54,415	25%	17,154	46%
Surprise	19,063	27,282	43%	29,490	8%	10,427	55%
Tempe	30,250	36,631	21%	40,708	11%	10,459	35%
Tolleson	19,629	26,691	36%	33,271	25%	13,642	69%
Wickenburg	17,895	25,513	43%	31,026	22%	13,132	73%
Youngtown	13,870	17,365	25%	21,238	22%	7,368	53%
MARICOPA COUNTY	n/a	**33,610**	n/a	**38,996**	**16%**	n/a	n/a

Source: Morrison Institute for Public Policy, data from U.S. Bureau of the Census, 1970, 1980, 1990.

Map C: Phoenix Region's Rent Values, 1990



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