Economic Change in Greater Phoenix
Final Report

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Prepared by: Maricopa Association of Governments

In Cooperation With: Greater Phoenix Economic Council
Salt River Project

1. INTRODUCTION

Project Purpose

Greater Phoenix is at an important watershed in its economic development. The decline of its high tech production economic base, combined with the 9/11 impacts on its tourist and consumer industries, has exposed the region's weak economic base. Despite 50 years of high population growth, the region's economy produces a great many jobs that have average or below-average wages. Although Greater Phoenix has a population of 3 million, it is still a second- or third-tier region that does not compete well for today's best industries.

Previous strategic initiatives for the region's future economic development have focused on high technology, "new economy" and "knowledge economy" industries and supporting policies. While these are laudable goals that would result in high-wage jobs, a true diversification of the region's economic base should also address key basic industries that are the most realistic for Greater Phoenix and its municipalities on the basis of sustainable location advantages. The need is to develop a sustainable economy. Moreover, to position the region to effectively compete, Greater Phoenix, its municipalities, and its private sector economic development allies should coordinate with one another to prepare and implement economic development strategies that are realistic and compatible.

These are major issues that will require discussion, consensus and collaboration by a large number of stakeholders. This project does not provide a detailed work program on how to improve conditions, but it does serve as a significant step forward in clarifying the existing and future situation and as a benchmark framework for succeeding steps.

Thus, this project is an important interim step towards the ultimate goals of targeting the best realistic key basic industries for the region, and of aligning both regional and municipal economic development through joint collaboration. The project report is intended for use by various stakeholders in identifying and prioritizing industry targets and supporting policies needed to bring Greater Phoenix, its municipalities and its private sector to a sustainable, high value-added economy in the future.

The purpose of this project is to provide an objective assessment that:

1. Consolidates and summarizes the various strategic initiatives and discussions for the region (including the State Economic Strategy, the Greater Phoenix Economic Council's (GPEC's) Regional Economic Development Strategy, and municipal economic development strategies and plans) into a single overall picture that reflects current direction.
2. Identifies Greater Phoenix's key basic industries for the next five years, and its sustainable advantages for those industries.
3. Identifies the probable location of key future industries across Greater Phoenix in the next five years, based on a combination of objective location criteria and probable municipal commitment.
4. Identifies current regional and local conditions, issues and policies that affect economic development, either positively or negatively.

Study Organization

This economic development project is funded by a grant from the Federal Highway Administration. This report consolidates a set of economic development technical reports that together are an integral part of the MAG Regional Growing Smarter Implementation Project,[1] intended to inform policy makers at the community level.

[1] The overall study is a series of technical reports on the current situation and possible future situation based on the most recent municipal general plans plus projections for the years 2010, 2025, 2040 and build-out. The technical reports include: demographics & social change; economic development; regional transportation systems, wastewater treatment facilities, solid waste facilities, school facilities, regional open space, affordable housing, and fiscal balance/sales tax generation.

The Economic Change Technical Papers are organized in a series of reports, of which this report consolidates the major findings:

1. Regional Trends in Greater Phoenix
2. Industry Clusters
3. Regional Strengths, Weaknesses, Opportunities & Threats
4. Sub-Regional Economies and Economic Development Strategies

The information and data assembled in these reports have been selected and furnished by the parties involved in this project, primarily the Greater Phoenix Economic Council (GPEC), the Maricopa Association of Governments (MAG), and the Salt River Project, as well as the GPEC Economic Development Director's Team and the State Economic Strategy through the Arizona Department of Commerce. Additionally, the municipalities that are GPEC members provided local information through a survey conducted in July through September 2002. The project team has compiled and summarized this information and prepared interpretations of the data where appropriate.

This final report is a distillation of all the reports listed above. Readers interested in greater detail are encouraged to view the full reports, available on the MAG website: http://www.mag.maricopa.gov/detail.cms?item=2322

2. ECONOMIC TRENDS IN GREATER PHOENIX

Sheer Growth

The outstanding characteristic of the Greater Phoenix economy is its sustained, rapid growth.

Since 1970, both population and jobs have grown dramatically (Figure 1). Population has increased from 980,000 in 1970 to 3.3 million in 2002. All jobs[2] have grown from 410,000 to 1.9 million in the same period.

For the past thirty years, the growth rate of the Greater Phoenix economy has been nearly three times greater than the nation (Figure 2).

What does sustained, rapid growth mean for the regional economy?

It disproportionately contains industries that respond to sheer growth:

- Construction
- Real estate
- Utilities

It is also disproportionately weighted to industries that are supported by consumer demand:

- Retail
- Personal services
- Health services
- Local government

Despite the magnitude of growth, the Greater Phoenix economy has certain weaknesses:

- A weak economic base
- A low-cost, low-wage economy
- Little economic diversity

Figure 1

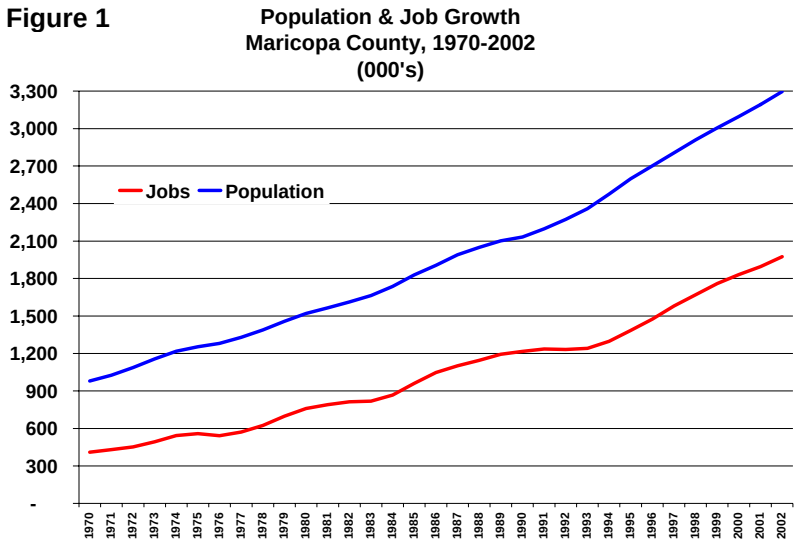
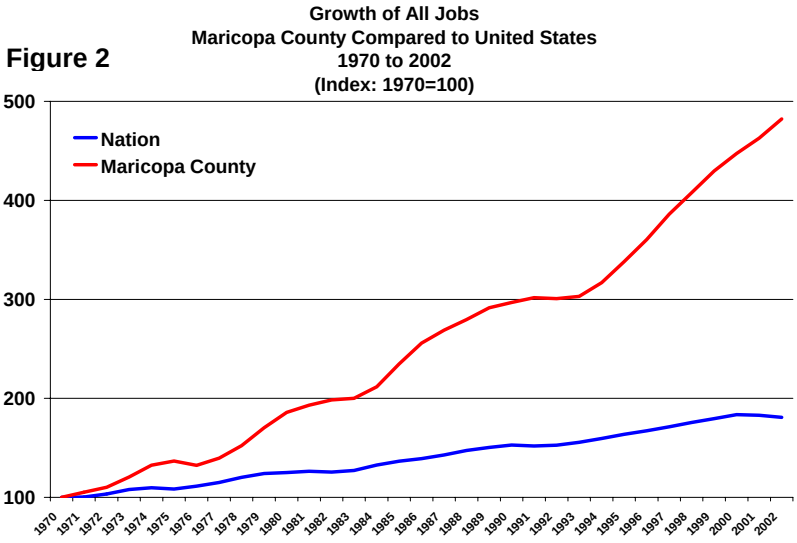


Figure 2



[2] The figures used here are from Regional Economic Models, Inc (REMI). "All jobs" includes private and public sector wage and salary jobs, agricultural jobs, and partners and proprietors jobs.

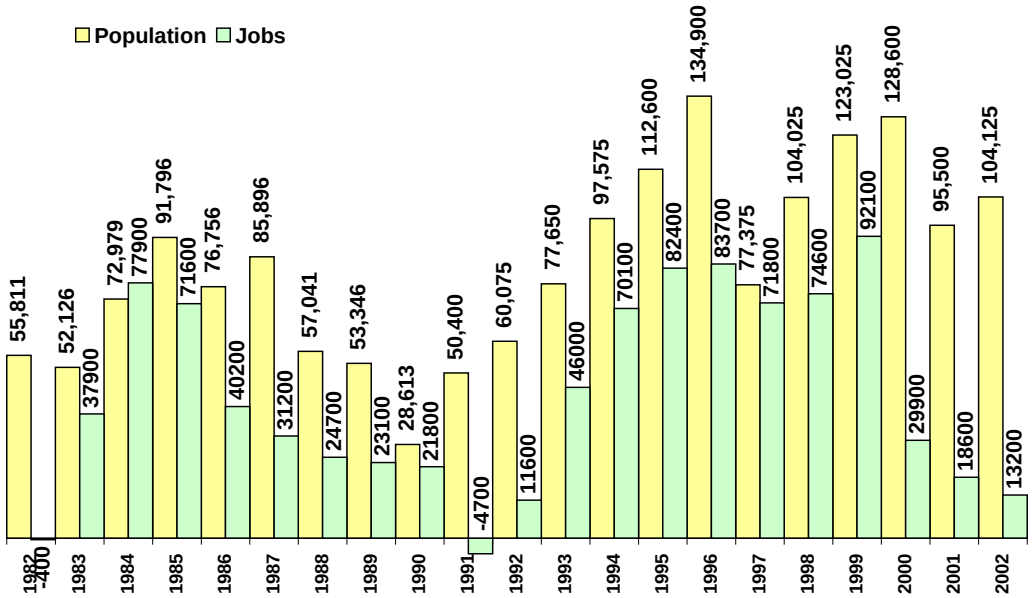
Disconnect Between Population & Job Growth

As strong as is economic growth in Greater Phoenix, it is has not kept up with population growth. There is somewhat of a disconnect between population growth and job growth in Greater Phoenix.

Looking at population change and job change from 1980 to 2001 (Figure 3), although the time period includes parts of three recessions, at no time was population change negative, even in two years of negative job growth.

Figure 3

Annual Change in Population & Wage/Salary Jobs
Maricopa County 1982-2002
Source: MAG & AZ DES



This indicates that migrants come to Phoenix for non-economic reasons or on the promise of economic growth, not necessarily with jobs in hand – the classic Sunbelt phenomenon. Population change was much greater than job change during the current recession, even though the pattern is similar to past recessions.

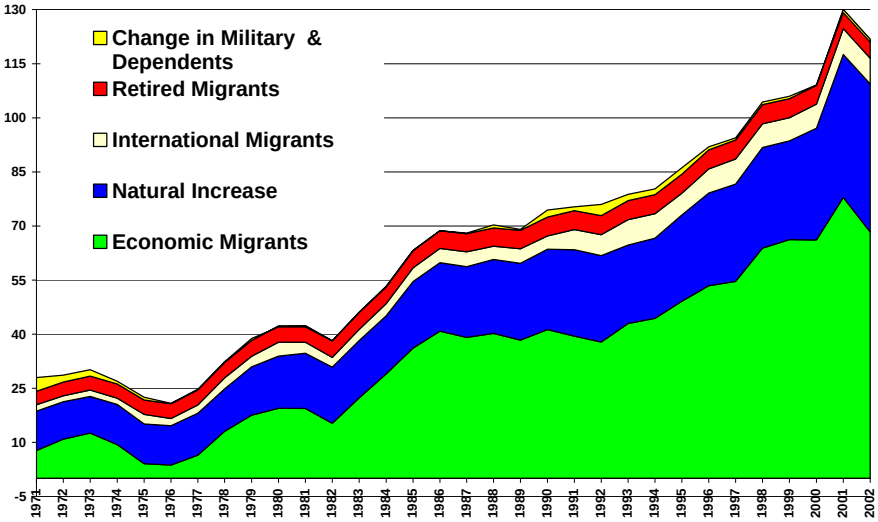
Through the 1970's and up till 1982 – when Greater Phoenix's population was 1 to 1.5 million, economic migration accounted for 30 to 50% of total population change (Figure 4).[3] From the mid-80's to the present – as Greater Phoenix's population grew from 1.5 million to more than 3 million – economic migration increased dramatically, averaging 60-65% of total population change.

What does this mean?

> The influx of economic migrants into the region cannot be sustained without economic growth that is commensurate with population growth.
>
> In general, large numbers of economic migrants entering the region's labor force also serve to dampen wages, a trend that is reinforced by the significant number of international migrants also entering the labor force.

Figure 4

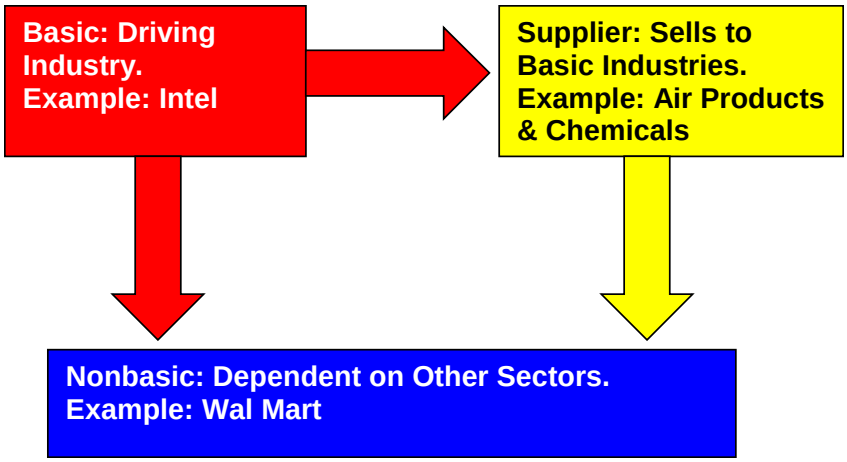
Components of Population Change
Maricopa County, 1971-2002
(000's)



[3] Source: Regional Economic Models, Inc.

Economic Base

Figure 5. Economic Base



The concept of economic base (Figure 5) is fundamental to economic development.

Basic industries support the entire regional economy. Basic industries produce goods or services that are sold to customers *outside the region.* Thus, basic industries *export* goods or services, and bring *new wealth* into the region. The regional economy gains a high value-added boost from basic industries. Without strong basic industries, a region's economy is weak.

Supplier industries sell intermediate goods or services to basic industries, which use these intermediate supplier products in producing their own products for export. Therefore, supplier industries depend on basic industries. Basic and supplier industries are often closely linked in an *industry cluster.*

Nonbasic industries sell consumer goods or services to the employees of basic industries, supplier industries, and nonbasic industries. They serve the local regional market. They are dependent on basic and supplier industries to maintain the health of the regional economy.

Why is this important? Because Economic Development Organizations (EDO's) systematically intervene to create greater regional economic wealth and value-added by attracting or encouraging development of new *basic industries.* One can think of the planning process as a continuum: one pole is prescriptive, such as zoning, which directs where growth goes; the other pole induces, such as economic development programs which gets at the foundation of the economy to stimulate new growth.

There are seventeen industry clusters[4] that make up the economic base of Greater Phoenix. Figure 6 shows the jobs in Maricopa County in 1990 and 2000 for each cluster.

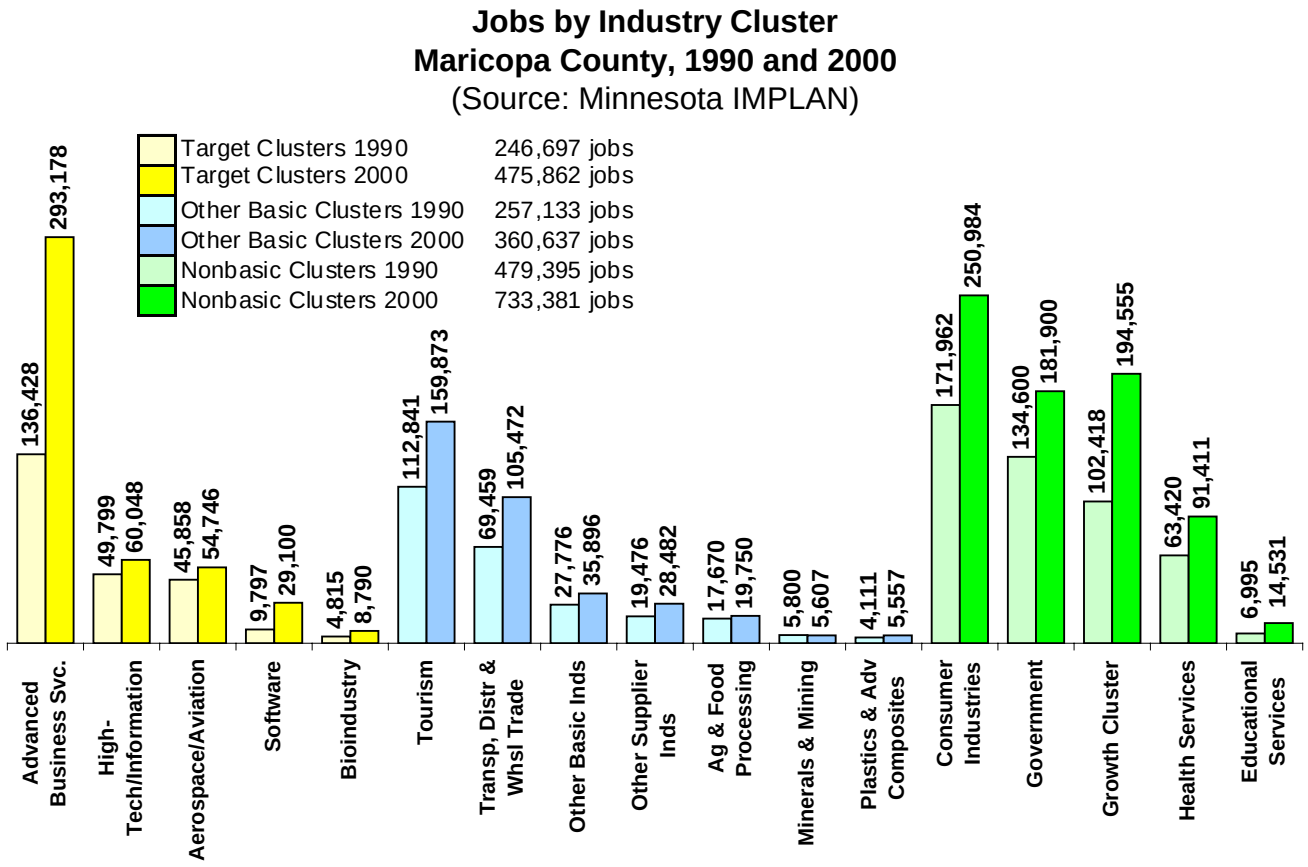
There are five GPEC target clusters (advanced business services, high tech electronics, aerospace & aviation, software and bio-industry). Containing 446,000 jobs in 2000, this group is dominated by advanced business services, which is also the largest and fastest growing cluster in the region. During the 1990's, the GPEC target clusters were the fastest-growing sectors of the economy, expanding by 80 percent.

There are seven "other basic clusters" (tourism, transportation & distribution, other basic industries, other supplier industries, agriculture & food processing, mining & primary metals, and plastics) that contained 361,000 jobs in 2000. Tourism and transportation/distribution are the largest clusters in this group. During the 1990's, "other basic clusters" were the slowest-growing sectors of the economy, expanding by 40 percent.

There are five "nonbasic clusters" (consumer industries, government, growth cluster, health services, and educational services). In total, this group – which is supported by the region's growth and its population – has the largest number of jobs (733,000 jobs in 2000). During the 1990's, this group grew by 52 percent.

[4] Industry clusters are the concept being used by the Greater Phoenix Economic Council and the Arizona Department of Commerce. The industry definition for the 17 clusters used in this report was developed by the Greater Phoenix Economic Council.

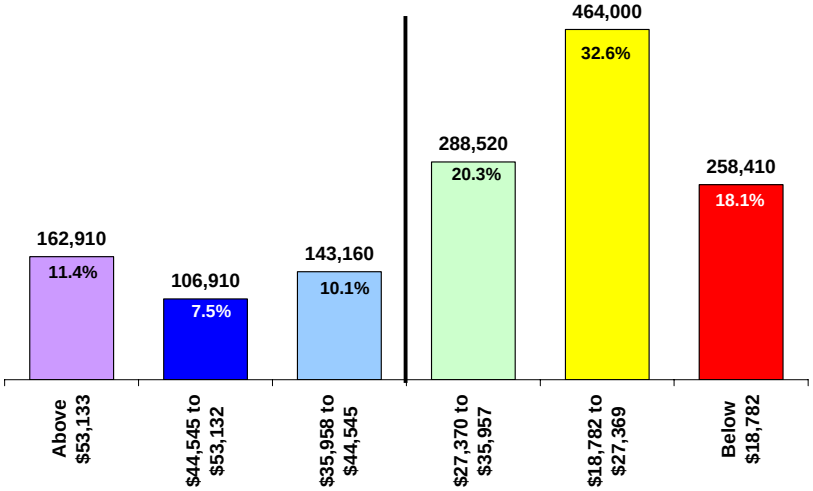
Figure 6



Income and Wages

One of the major economic issues for Greater Phoenix is that its economy produces low-wage jobs. Figure 7 shows the statistical distribution of number of employed persons in salary ranges, based on 452 occupational categories.[5] The wage ranges are taken from national annual averages, and all are adjusted for cost of living.

Figure 7 **Number of Employed Persons by Annual Salary Range**
Metro Phoenix 2000



Major conclusions:

- 70% of wage and salary jobs were below the average wages mean for Greater Phoenix in 2000.
- 18.1% of these jobs were below $8/hour wages. This is about the same as the nation.

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This, of course, has major societal implications.

[5] Source: U.S. Bureau of Labor Statistics, 2001.

How does a low wage economy relate to economic development?

Figure 8 shows the 17 industry clusters for Greater Phoenix, ranked by number of jobs in 2000 and color-coded by average wages & salaries from the same database as the previous charts.[6]

10 clusters pay average wages that are above the region's mean, and 4 clusters pay average wages that are in the highest two categories:

- High tech/electronics
- Aerospace
- Software
- Bioindustry

With the exception of advanced business services, *each of the five GPEC target clusters is a high wage industry*[7]. Clearly, for the region, these target clusters are appropriate in terms of raising the region's wage level.

Figure 9 shows job change by cluster during the 1990's, color-coding average salary ranges with absolute job growth.

The largest job change during the 1990's was in advanced business services, followed by growth in three *non-basic* clusters – the growth cluster, consumer industries, and government. Tourism, the lowest wage cluster in the region, was fourth. Other significant additions were in transportation & distribution, health services, and software. These eight clusters accounted for 90.8% of the job change in the 1990's. Of the top five clusters, 3 had average wages below the mean.

Figure 8

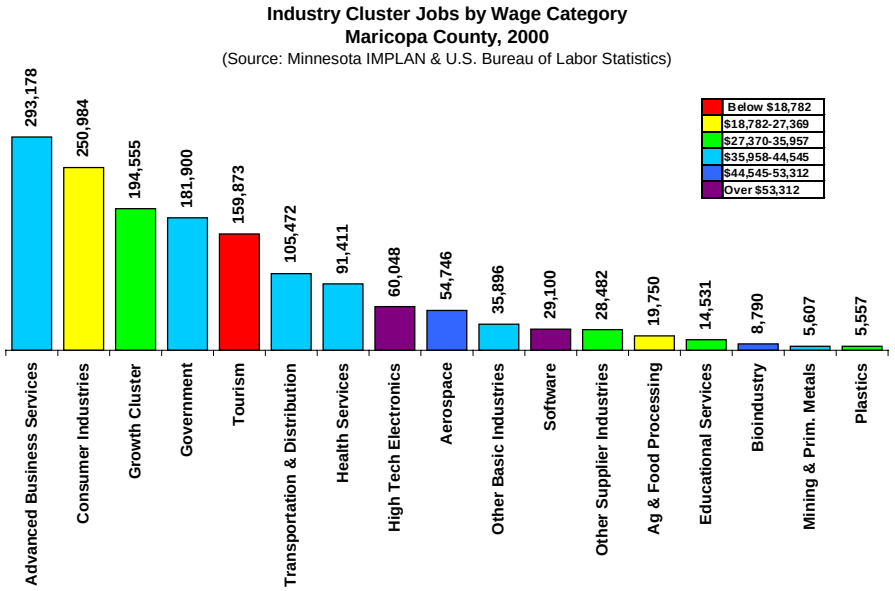
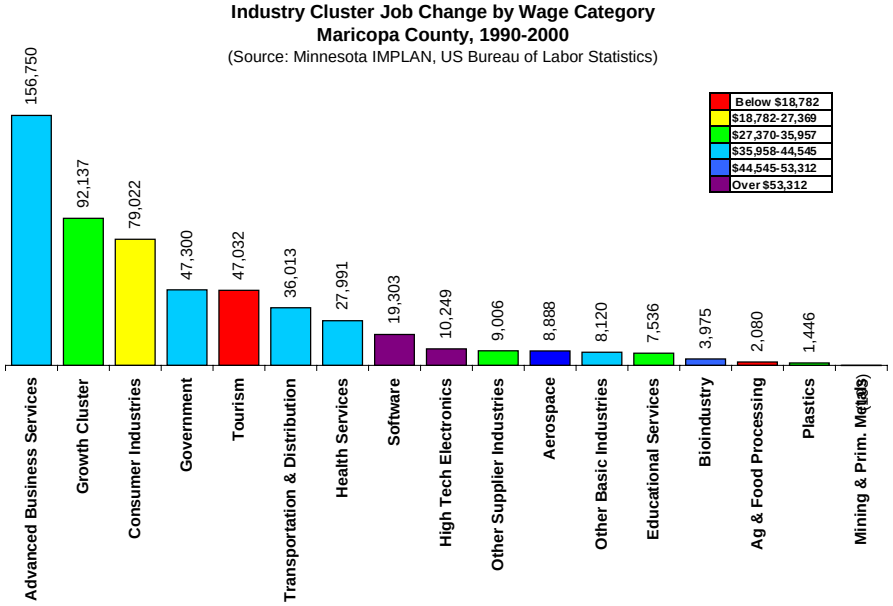


Figure 9



[6] Green, yellow, and red colors indicate ½ standard deviations below the mean, and light blue, dark blue and purple indicate ½ standard deviations above the mean.

[7] Advanced business services contain a large number of jobs in temporary help agencies and call centers, both low-wage industry sectors.

Industry Concentration in Greater Phoenix

Figure 10 shows location quotients (LQ's) for the16 private sector industry clusters in 1990 and 2000.[8]

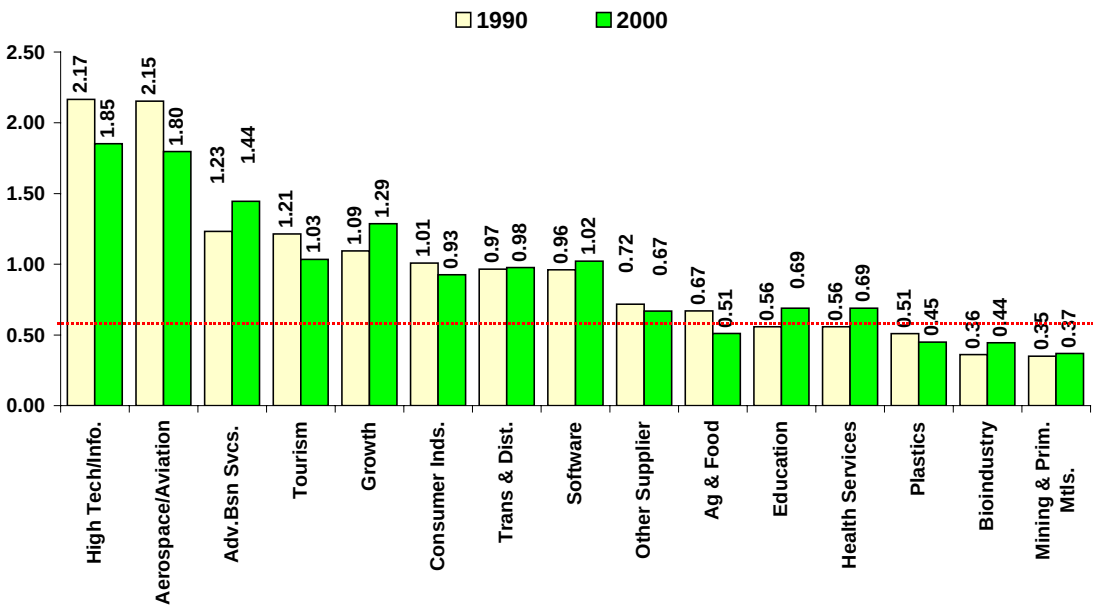
Location quotients measure the "strength of presence" of a cluster in a region, compared to the U.S. as a whole.

Six of the sixteen private sector clusters had a LQ greater than one (signifying a stronger cluster presence than the U.S. as a whole).

A positive finding is that four of the six are GPEC target clusters and only two[9] are non-basic clusters. However, of the six top-ranked clusters, only two – advanced business services and software – increased their strength of presence during the decade. A major downside risk for the Greater Phoenix economy is the decline in two pillars of its economic base: high tech electronics and aerospace.

Figure 10

Location Quotients by Industry Cluster
Metro Phoenix, 1990 & 2000
(Source: Minnesota IMPLAN)



Industry Change in Greater Phoenix

Using a statistical technique[10] to analyze the region's economy reveals that Greater Phoenix is quite competitive for many industries; however, most of those are directly connected to growth or are locally serving an expanding population base.

> Overall, just under 31% of the job change in Greater Phoenix during the 1990's was due to the overall expansion of the national economy;
> Only 2.7% was due to the expansion of the U.S. industry;
> The lion's share – 66.5% -- was due to the competitive advantage of Greater Phoenix.
> Two clusters – advanced business services and the growth cluster – account for 54% of the region's competitive share. The growth cluster is nonbasic, and responds to sheer population growth. Advanced business services is basic, but it contains temporary help services and call centers, neither of which are high-wage industries.

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[8] The clusters are ranked by LQ's in 1990. "Location quotients" are a statistical technique that measures the concentration on an industry locally to that of the nation. A location quotient greater than 1 means that the industry is more concentrated in the local area than it is in the nation.

[9] The Growth Cluster and Consumer Industries, which respond to sheer growth.

[10] Shift-share analysis is a statistical technique that segments localized growth into three components: (1) national growth, which results from the general growth of the national economy, (2) industry mix, which is due to the national growth of the industry, and (3) competitive share, which results from the competitive advantage of the region.

Table 1 lists the *specific industries* that, cumulatively, account for more than 50% of Greater Phoenix's total job change attributed to competitive share. Note that the top two industries (help supply services and eating and drinking places) are low-wage industries. Most of these industries, like Help Supply Services, are more likely to involve local services rather than export-oriented services, and hence are not actually basic. For the most part, the other industries have a direct connection to growth or are clearly non-basic; the employment growth of Greater Phoenix in the 1990's was largely substitution of lower-wage and nonbasic industries for higher-wage basic industries.

Table 1
Top Competitive Share Industries in Metro Phoenix, 1900-2000

SIC	Industry	National Growth	Industrial Mix	Competitive Share	Industry % Region CS	Cumul. % Region
	ALL INDUSTRIES	154,450	34,703	**319,375**	NA	NA
	Positive Competitive Share	NA	NA	**379,832**	100.0%	100.0%
7363	Help supply services	3,557	25,093	41,160	10.8%	10.8%
5810	Eating & drinking places	12,471	2,028	16,971	4.5%	15.3%
5311	Department stores	3,260	-420	8,655	2.3%	17.6%
8011	Offices & clinics of medical doctors	2,340	2,614	8,229	2.2%	19.7%
7389	Business services, nec	1,636	3,269	8,057	2.1%	21.9%
5065	Electronic parts and equipment	531	101	7,872	2.1%	23.9%
6153	Short-term business credit	328	1,284	7,574	2.0%	25.9%
6099	Functions related to deposit banking	627	1,466	7,402	1.9%	27.9%
6141	Personal credit institutions	184	347	6,876	1.8%	29.7%
1520	Residential construction	646	56	5,699	1.5%	31.2%
1742	Plastering, drywall, and insulation	928	-124	5,554	1.5%	32.7%
6021	National commercial banks	1,210	-1,345	5,450	1.4%	34.1%
1711	Plumbing, heating, air-conditioning	1,098	1,030	5,373	1.4%	35.5%
5511	New and used car dealers	1,780	-187	5,212	1.4%	36.9%
1731	Electrical work	1,083	1,655	5,182	1.4%	38.2%
1751	Carpentry work	535	976	4,928	1.3%	39.5%
6211	Security brokers and dealers	401	836	4,243	1.1%	40.7%
5411	Grocery stores	5,412	-3,372	4,081	1.1%	41.7%
4512	Air transportation, scheduled	2,135	-1,316	3,941	1.0%	42.8%
5211	Lumber and other building materials	471	568	3,680	1.0%	43.7%
8742	Management consulting services	423	1,725	3,650	1.0%	44.7%
0780	Landscaping	947	1,815	3,569	0.9%	45.6%
1771	Concrete work	670	997	3,542	0.9%	46.6%
8711	Engineering services	1,122	-75	3,407	0.9%	47.5%
8082	Home health care services	113	649	3,123	0.8%	48.3%
7349	Building maintenance services, nec	1,341	56	3,077	0.8%	49.1%
8721	Accounting, Auditing, & Bookkeepii	1,042	173	3,055	0.8%	49.9%
7374	Data processing and preparation	261	248	2,924	0.8%	50.7%

Source: Minnesota IMPLAN

What about the performance of the target industry clusters? Table 2 lists the specific industries in this group that accounted for the largest competitive share during the 1990's. These are high-target industries that are rapidly growing, for which the region is competitive, and that could be good short-term targets.

Table 2 **Top Target Cluster Industries in Metro Phoenix, 1990-2000**

SIC	Industry & Cluster	National Growth	Industrial Mix	Competitive Share	Industry % Region	Cumul. % Region
	All Target Industry Clusters	**45,609**	**29,447**	**124,504**	**39%**	**39%**
7363	Help supply services	3,557	25,093	41,160	12.9%	12.9%
7389	Business services, nec	1,636	3,269	8,057	2.5%	15.4%
6153	Short-term business credit	328	1,284	7,574	2.4%	17.8%
6099	Functions related to deposit banking	627	1,466	7,402	2.3%	20.1%
6141	Personal credit institutions	184	347	6,876	2.2%	22.3%
6021	National commercial banks	1,210	-1,345	5,450	1.7%	24.0%
6211	Security brokers and dealers	401	836	4,243	1.3%	25.3%
4512	Air transportation, scheduled	2,135	-1,316	3,941	1.2%	26.5%
8742	Management consulting services	423	1,725	3,650	1.1%	27.7%
8711	Engineering services	1,122	-75	3,407	1.1%	28.7%
7349	Building maintenance services, nec	1,341	56	3,077	1.0%	29.7%
8721	Accounting, Auditing, & Bookkeeping	1,042	173	3,055	1.0%	30.7%
7374	Data processing and preparation	261	248	2,924	0.9%	31.6%
4813	Telephone communications, exc. radio	1,695	-1,568	2,894	0.9%	32.5%
7322	Adjustment & collection services	220	586	2,742	0.9%	33.3%
7381	Detective & armored car services	770	449	2,475	0.8%	34.1%
3728	Aircraft parts and equipment, nec	892	-1,896	2,373	0.7%	34.8%
5045	Computers, peripherals & software	544	401	2,342	0.7%	35.6%
3724	Aircraft engines and engine part	1,763	-4,990	1,835	0.6%	36.2%
8741	Management services	566	-5	1,727	0.5%	36.7%
6162	Mortgage bankers and correspondents	303	1,606	1,464	0.5%	37.2%
8748	Business consulting, nec	100	746	1,456	0.5%	37.6%
7377	Computer rental & leasing	101	-108	1,443	0.5%	38.1%
7375	Information retrieval services	26	260	1,412	0.4%	38.5%
4812	Radiotelephone communications	63	1,256	1,351	0.4%	38.9%
6371	Pension, health and welfare funds	63	139	1,320	0.4%	39.3%
3674	Semiconductors and related devices	5,067	-1,836	1,248	0.4%	39.7%
7371	Computer programming services	187	1,761	1,214	0.4%	40.1%
6321	Accident and health insurance	187	140	1,049	0.3%	40.4%
3672	Printed circuit boards	445	219	1,030	0.3%	40.8%
3721	Aircraft	887	-2,480	815	0.3%	41.0%
7373	Computer integrated systems design	119	548	787	0.2%	41.3%
8734	Testing laboratories	129	107	773	0.2%	41.5%
7319	Advertising, nec	90	309	756	0.2%	41.7%
6311	Life insurance	609	-1,355	736	0.2%	42.0%
3678	Electronic connectors	97	107	695	0.2%	42.2%
6794	Patent owners and lessors	74	276	688	0.2%	42.4%
3663	Radio & TV communications equipment	68	-67	654	0.2%	42.6%
6351	Surety insurance	14	40	630	0.2%	42.8%
3845	Electromedical equipment	0	1	628	0.2%	43.0%
3812	Search and navigation equipment	1,400	-4,603	612	0.2%	43.2%
3822	Environmental controls	302	-637	594	0.2%	43.4%
7699	Repair services, nec	313	-332	576	0.2%	43.6%
6061	Federal credit unions	134	200	539	0.2%	43.7%
8731	Commercial physical research	61	-69	533	0.2%	43.9%
7372	Prepackaged software	121	819	512	0.2%	44.1%
6331	Fire, marine, and casualty insurance	945	-944	504	0.2%	44.2%

Economic Diversification

Figure 11 displays "economic diversification" using a statistical technique developed by the metro Houston region.[11] Large scores indicate less economic diversification. The comparative regions are ranked according to the 2000 index score.

Of the ten regions, Greater Phoenix is the third least diversified, ahead of only Albuquerque and Austin, which are smaller metro areas.

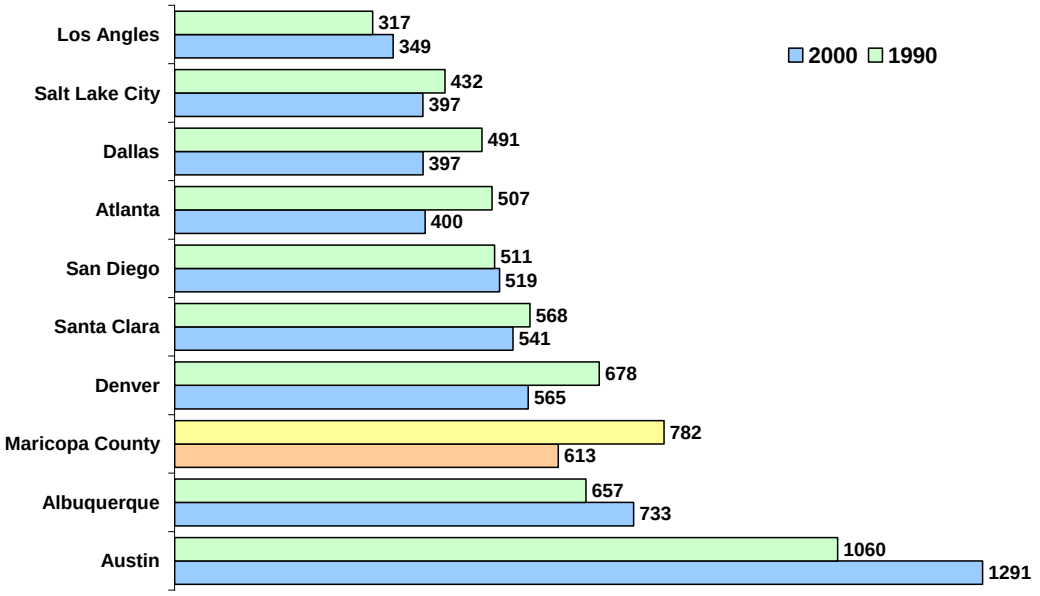
However, during the 1990's Greater Phoenix became more diversified, with the increased shares of advanced business services, bio-industry, software, and "other basic industries" combined with the *decreased* location quotients of optics, high tech electronics, and aerospace/aviation.

In general, economic diversification appears to correlate with size of metro region. Los Angeles, the largest region, has the most diverse economy.

Figure 11

Economic Diversification Index, 1990 & 2000
Metro Phoenix & Comparative Regions

Source: MAG & Minnesota IMPLAN



Industry Cluster Structure in Greater Phoenix

To help explain the Phoenix region's relative lack of economic diversification, Table 3 shows the share and cumulative share of 16 industry clusters that comprise all of the metro economy, as measured by wage & salary jobs.[12] Using the "80/20" rule, 83% of the region's jobs were in 7 of the 16 clusters. All are service or retail industries.

The high-priority, highest-wage clusters – high tech/electronics, aerospace/aviation, software, and bio-industry – account for just fewer than 10 percent of all jobs.

Table 3 **Industry Cluster Jobs, 2000**

Industry Clusters	2000 Jobs	Basic	Nonbasic	Share	Cumulative Share
Advanced Business Services	**293,178**	**293,178**		**19.0%**	**19.0%**
Consumer Industries	**250,984**		**250,984**	**16.3%**	**35.3%**
Growth Cluster	**194,555**		**194,555**	**12.6%**	**48.0%**
Government	**181,900**		**181,900**	**11.8%**	**59.8%**
Tourism	**159,873**	**159,873**		**10.4%**	**70.2%**
Transportation & Distribution	**105,472**	**105,472**		**6.8%**	**77.0%**
Health Services	**91,411**		**91,411**	**5.9%**	**83.0%**
High Tech/Electronics	60,048	60,048		3.9%	86.9%
Aerospace/Aviation	54,746	54,746		3.6%	90.4%
Other Basic Industries	35,896	35,896		2.3%	92.7%
Software	29,100	29,100		1.9%	94.6%
Other Supplier Industries	28,482	28,482		1.8%	96.5%
Agriculture & Food Processing	19,750	19,750		1.3%	97.8%
Educational Services	14,531		14,531	0.9%	98.7%
Bioindustry	8,790	8,790		0.6%	99.3%
Mining & Prim. Metals	5,607	5,607		0.4%	99.6%
Plastics & Advanced Composites	5,557	5,557		0.4%	100.0%
Total Wage & Salary Jobs	1,539,880	806,499	733,381	100.0%	100.0%

[11] It is a variation of location quotient. In this analysis, a score of zero equals an industry share mix that perfectly matches the nations.

[12] Source: Minnesota IMPLAN, 2002.

Of the 7 clusters that dominate the economy, only 3 (advanced business services, transportation & distribution, and tourism) are basic industry clusters.

Consumer industries, the growth cluster, government and health services are predominantly non-basic industries that sell to the Phoenix market. Together, these top 4 non-basic industries were 46.7 percent of all jobs in 2000.

Table 4 Change in Industry Cluster Jobs, 1990's

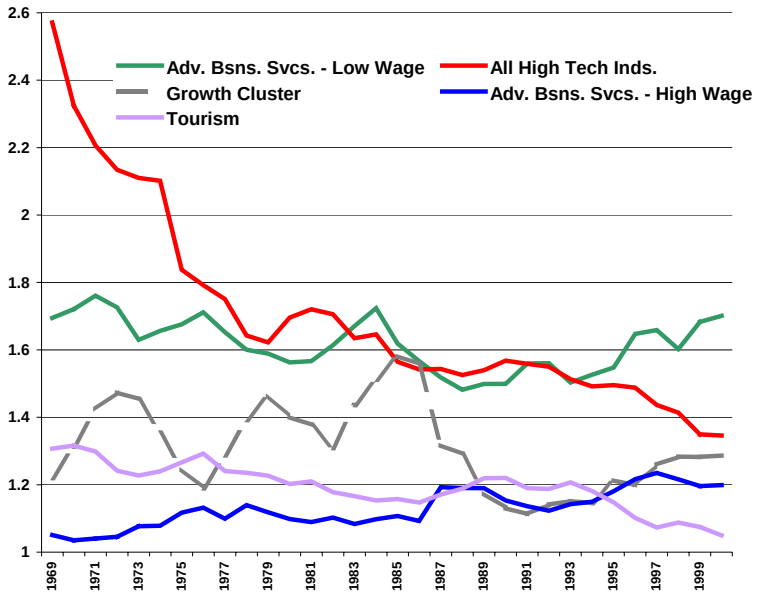
Industry Clusters	1990's Job Change	Basic	Nonbasic	Share	Cumulative Share
Advanced Business Services	**156,750**	**156,750**		**28.2%**	**28.2%**
Growth Cluster	**92,137**		**92,137**	**16.6%**	**44.7%**
Consumer Industries	**79,022**		**79,022**	**14.2%**	**58.9%**
Government	**47,300**		**47,300**	**8.5%**	**67.4%**
Tourism	**47,032**	**47,032**		**8.4%**	**75.9%**
Transportation & Distribution	**36,013**	**36,013**		**6.5%**	**82.3%**
Health Services	**27,991**		**27,991**	**5.0%**	**87.4%**
Software	19,303	19,303		**3.5%**	90.8%
High Tech/Electronics	10,249	10,249		**1.8%**	92.7%
Other Supplier Industries	9,006	9,006		**1.6%**	94.3%
Aerospace/Aviation	8,888	8,888		**1.6%**	95.9%
Other Basic Industries	8,120	8,120		**1.5%**	97.3%
Educational Services	7,536		7,536	**1.4%**	98.7%
Bioindustry	3,975	3,975		**0.7%**	99.4%
Agriculture & Food Processing	2,080	2,080		**0.4%**	99.8%
Plastics & Advanced Composites	1,446	1,446		**0.3%**	100.0%
Mining & Prim. Metals	(193)	(193)		**0.0%**	100.0%
Total Wage & Salary Jobs	556,655	302,669	253,986	**100.0%**	100.0%

Table 4 shows job change during the 1990's. The concentration of job change among the top 7 clusters is even more pronounced – these seven accounted for 87.4% of change.

Led by the growth cluster, the top non-basic industries accounted for 44.3 percent of all job growth in the 1990's.

The highest wage target clusters (software, high tech electronics, aerospace/aviation, and bioindustry) accounted for only 7.6 percent of all job change during the decade.

Figure 12
Location Quotients, Selected Industry Clusters
Maricopa County, 1969-2000
Source: Regional Economic Models, Inc.



Thus, the 1990's were not good to Greater Phoenix's basic industries, especially its traditional high tech electronics and aerospace industries. In general, Greater Phoenix did not just "not grow" some elements of a diversified economy, but actually "lost share" of diversified elements that had previously existed.

For example, Digital Equipment computer manufacturing had operations in the region, as did Honeywell computer; today, Greater Phoenix does not assemble, ship, or support computers anymore. Several casting companies that used to supply the copper mines are gone. Several apparel manufacturers are gone. Motorola's Semiconductor regional headquarters moved to Austin, and Motorola has a significantly reduced presence in Greater Phoenix today. Goodyear Aerospace/Loral is no more. One of Greater Phoenix's military bases has closed.

The region has lost major pieces of a more diversified economy, especially technology operations, with little replacement (Figure 12[13]). Instead, the growing basic industries of the 1990's were largely in Advanced Business Services – including low wage help supply services and call centers – and industry clusters that are not basic industries and that respond to Greater Phoenix's sheer growth.

[13] "All High Tech" in Figure 12 includes electronics, aerospace, bioindustry and software. "Advanced business services – low wage" includes help supply services, miscellaneous business services, and services to buildings.

3. SUB-REGIONAL ECONOMIES

Broad Industry Clusters In Communities

Dropping from the regional scale to the community scale, a key point about the GPEC target industry clusters are that there are a handful of communities in Maricopa County that are most competitive.

Figure 13 shows location quotients for all target industry clusters by community in 2000. After the top seven communities – Chandler, Tempe, Scottsdale, Phoenix, Mesa, Goodyear, and Glendale – there is a significant fall off of cluster concentration in 2000.[14]

In contrast, as Figure 14 illustrates, there is a widespread distribution of "other basic" industry clusters among communities.[15]

This indicates the need for continued regional business development for the non-priority industry clusters.

Figure 13

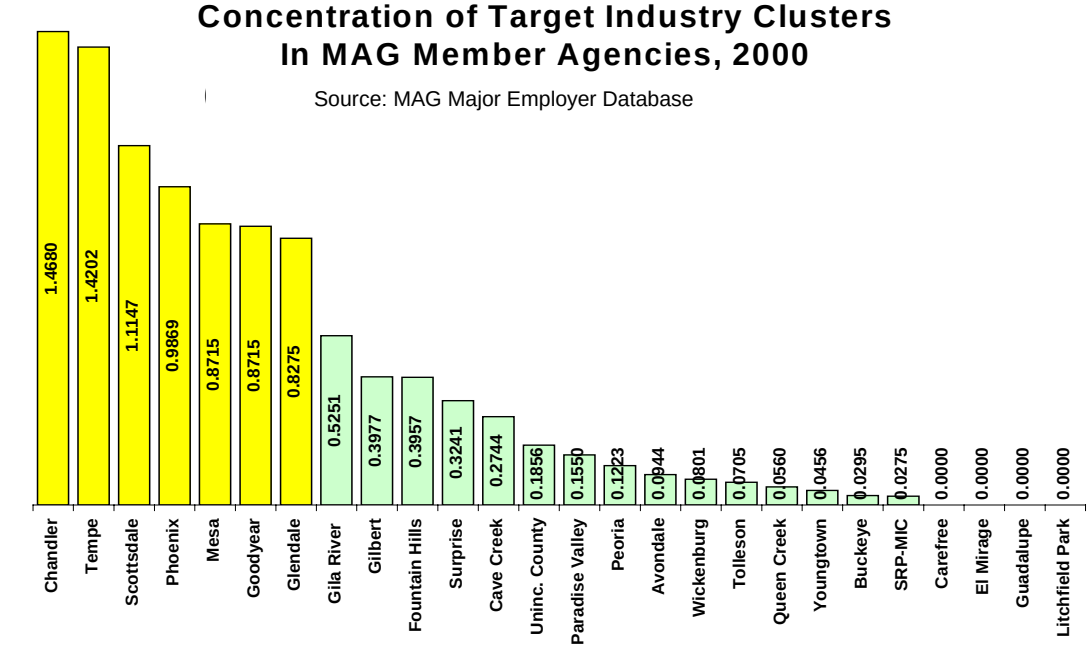
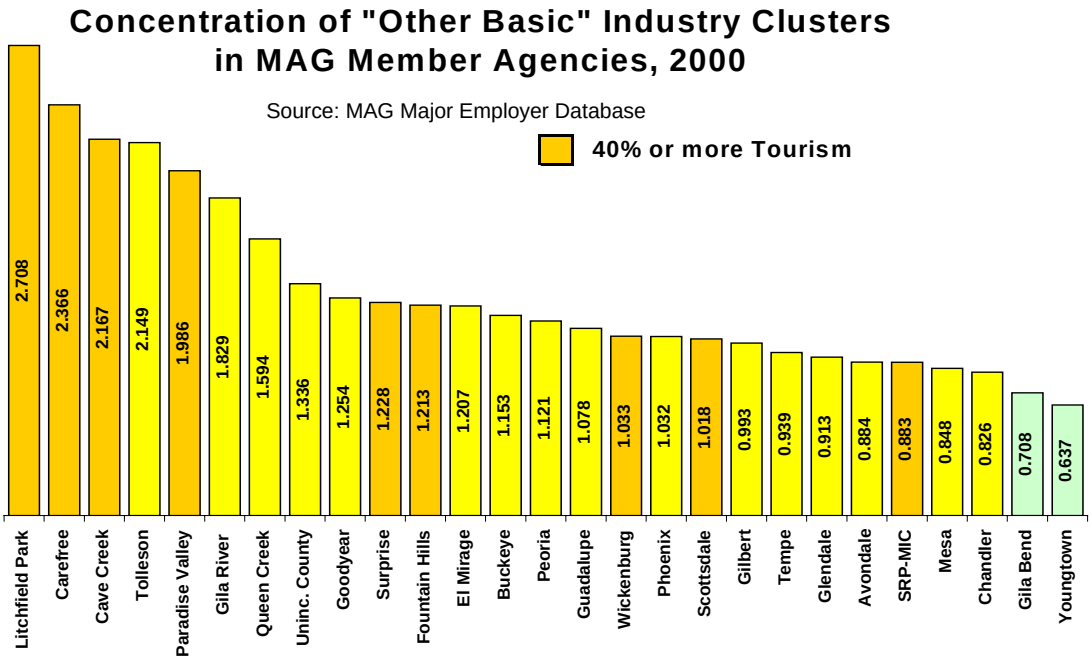


Figure 14



[14] The data source for this and other analyses at the community scale is the major employer database of the Maricopa Association of Governments for the year 2000, which includes all employers with more than five employees.

[15] Much "other basic" employment includes the tourism cluster. Figure 14 also shows those communities in which 40% or more of "other basic" jobs are employed in tourism.

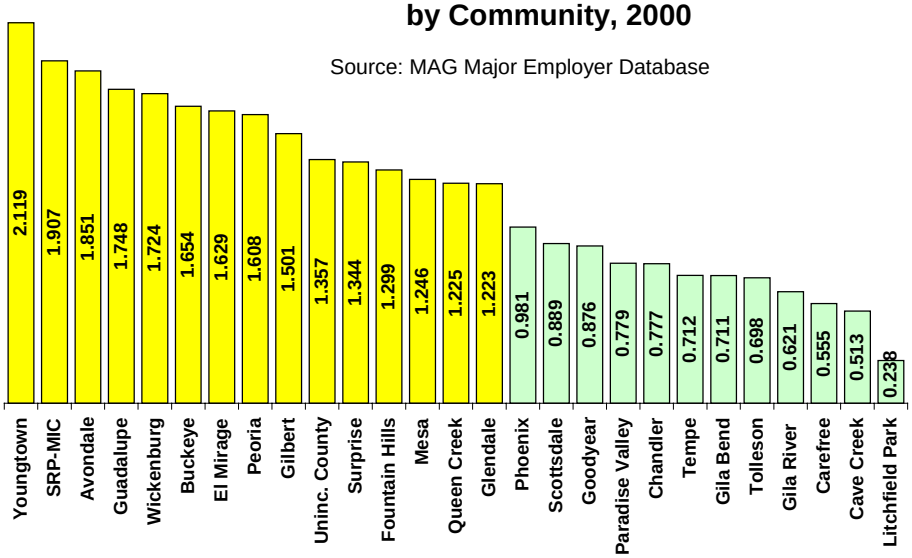
An issue for economic development is that Arizona's tax base for municipalities is skewed toward non-basic industries, especially construction and retail trade. Except for tourism, there is no such revenue stream arising from basic industry clusters.

As Figure 15 shows, 15 of 27 communities in Maricopa County have high concentrations of non-basic clusters.

Figure 15

Concentration of Non-Basic Industry Clusters by Community, 2000

Source: MAG Major Employer Database



Job Centers In The Greater Phoenix Region

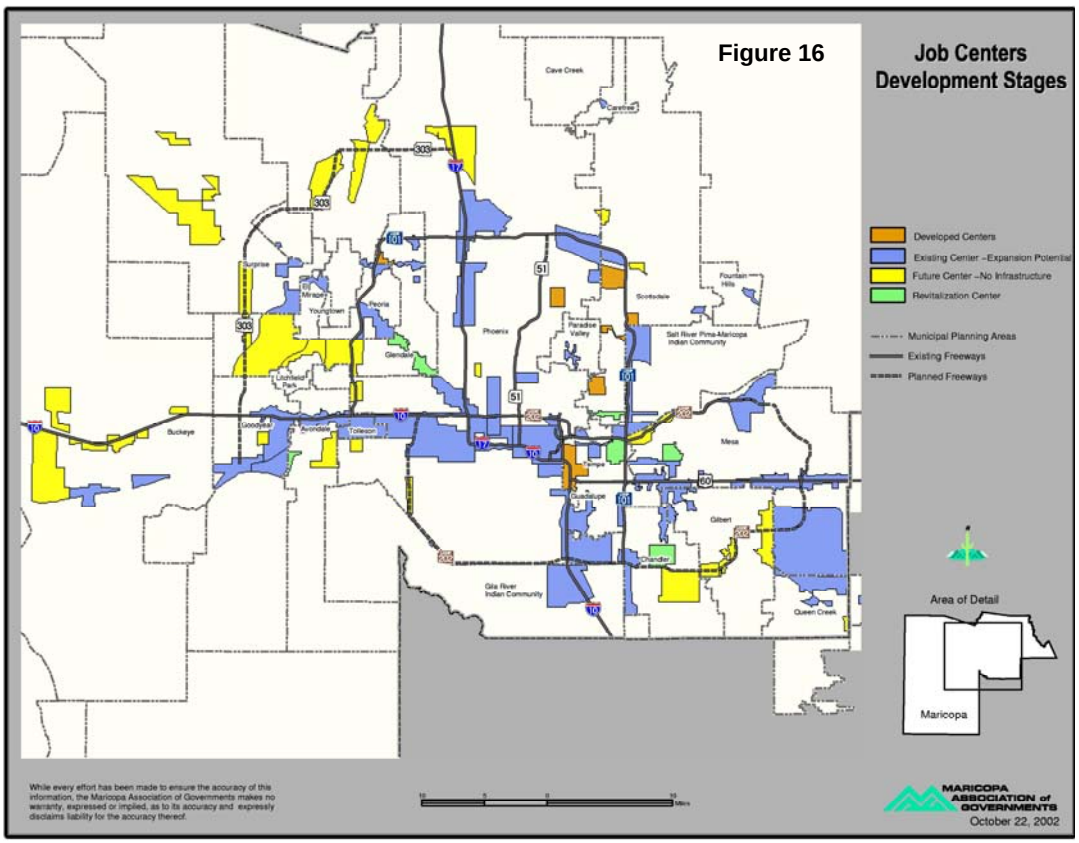


Figure 16 displays 106 community job centers in Maricopa County. These are concentrations of existing or planned nonresidential land uses, defined by city planning or economic development staff of the cities and towns of Maricopa County.

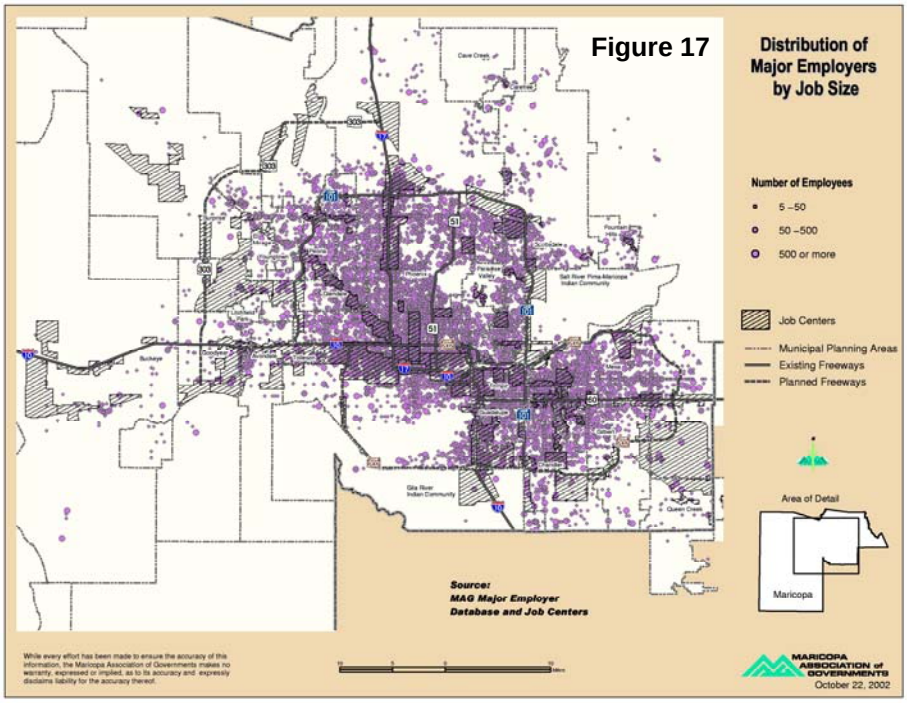
The map is color coded to show the development stage of job centers – blue shows existing centers, red shows centers that are nearly built-out, green shows revitalization centers, and yellow shows future job centers.

In 2000, these job centers contained 55 percent of all jobs in Maricopa County.[16]

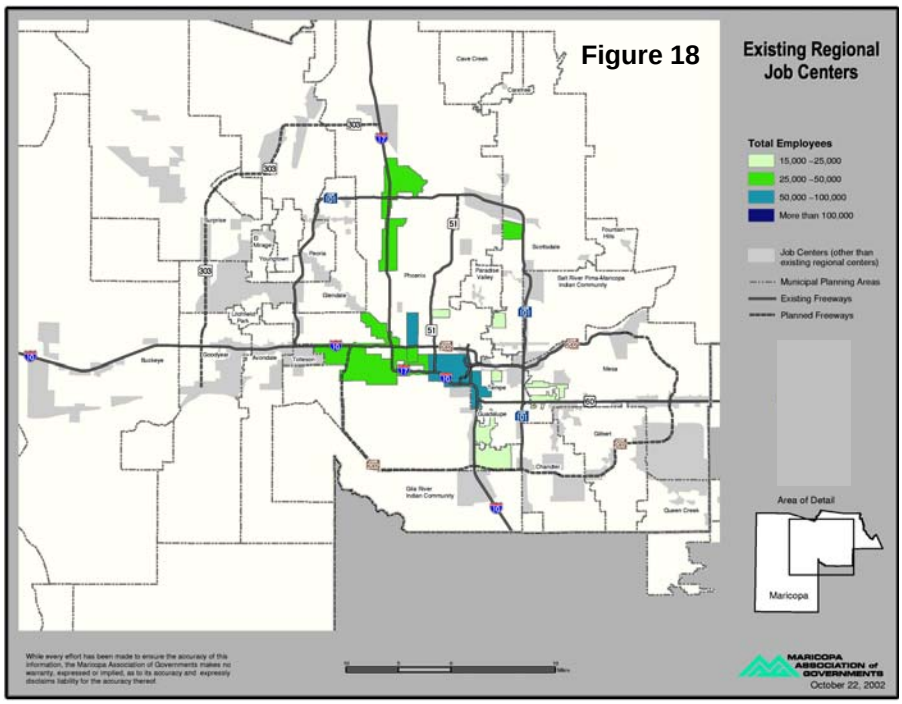
[16] According to the MAG major employer database of all employers with 5 or more employees as of July 1, 2000.

According to the general plans of local jurisdictions in Maricopa County,[17] these job centers will also contain 55 percent of all jobs at build-out.

Figure 17 shows the existing distribution of major employers compared to job centers. Close examination of this map shows that there are several existing concentrations of employers, generally located in proximity to the region's freeway system – in the center of the region, in the southeast valley, in the northeast valley, and in the north central part of the region.



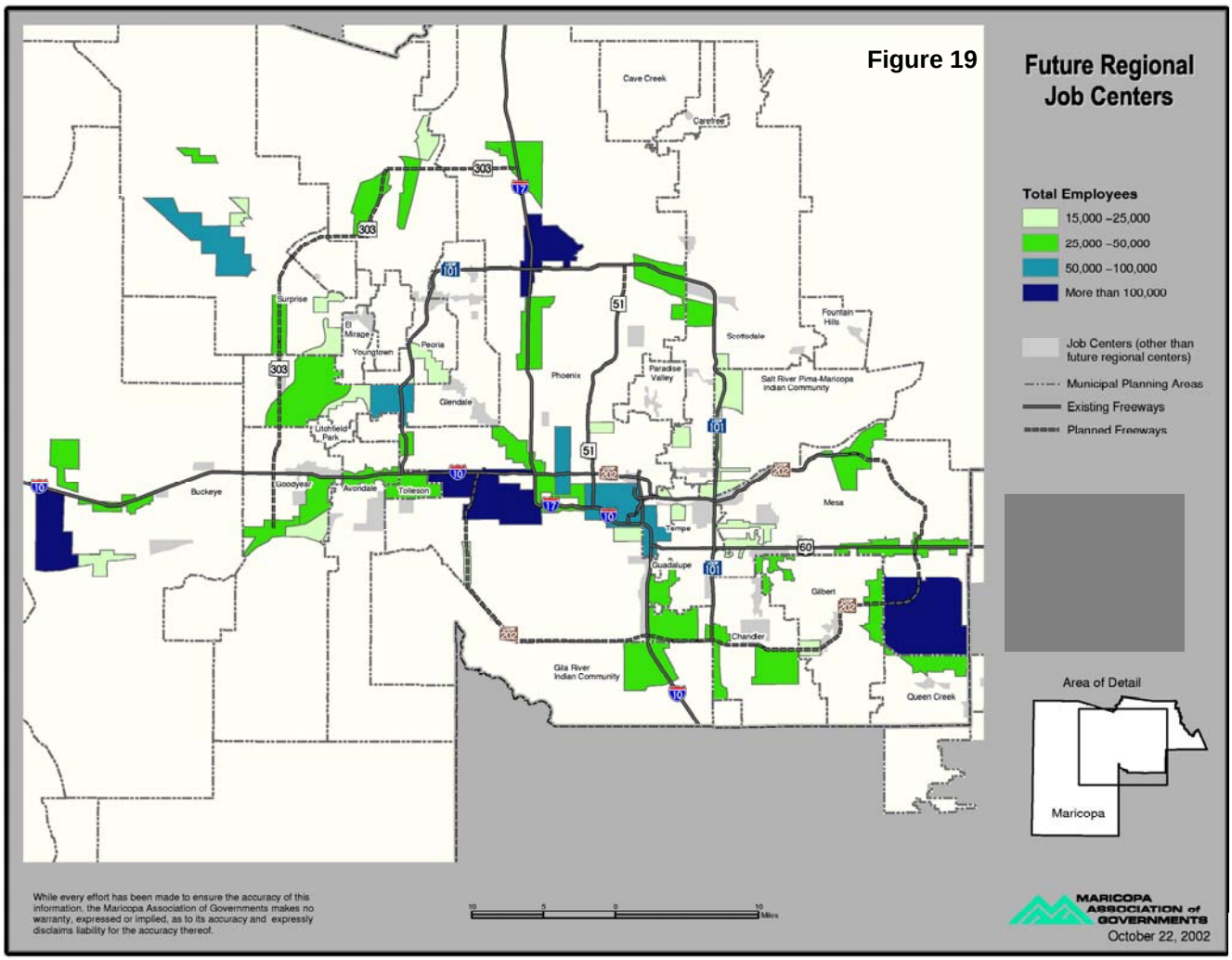
The development capacity of community job centers differs substantially. Based on the number of jobs in 2000 in each center, regional job centers – the largest centers – can be identified[18]. These are shown in Figure 18, which is color coded to show regional centers by size, with light green the smallest and blue the largest. Today's regional job centers contained 44 percent of total jobs in the county in 2000.



[17] As compiled into a "regional composite of future land plans" by the Maricopa Association of Governments. To put planned growth in context, the build-out capacity of the sum of all local land plans is over 8 million people, compared to 3.2 million in 2002.
[18] Regional centers are defined to be those that contain more jobs in 2000 than the corresponding median figure for all job centers.

Figure 19 shows that in the future, there will be a proliferation of regional centers in Maricopa County.[19] At build-out, Greater Phoenix will have more, and much larger, regional job centers, dispersed in many locations throughout the region. They will contain 47 percent of total jobs in the county. Moreover, according to local land plans, there will be very large regional centers in what is now the urban fringe of the region.

An economic development issue of concern is the protection of nonresidentially zoned land, especially that in job centers. Because of Greater Phoenix's rapid population growth, there is a history in the region of land zoned for nonresidential use – especially industrial zoned land – being rezoned for shorter-term residential use. In order to protect the region's future economic base, it is important that nonresidential land should be protected – especially in Greater Phoenix's job centers, which will contain most of the region's future basic industries.



[19] The definition of future regional job centers is the same as existing regional centers – those with more jobs per center than the median average in the year 2000.

4. COMPETITIVE METRO REGIONS

This section reviews performance in the 1990's of the 12 basic industry clusters in the Greater Phoenix region in comparison to selected competitor regions. It also reviews the geographic distribution of the basic industry clusters.

Selected Competitors

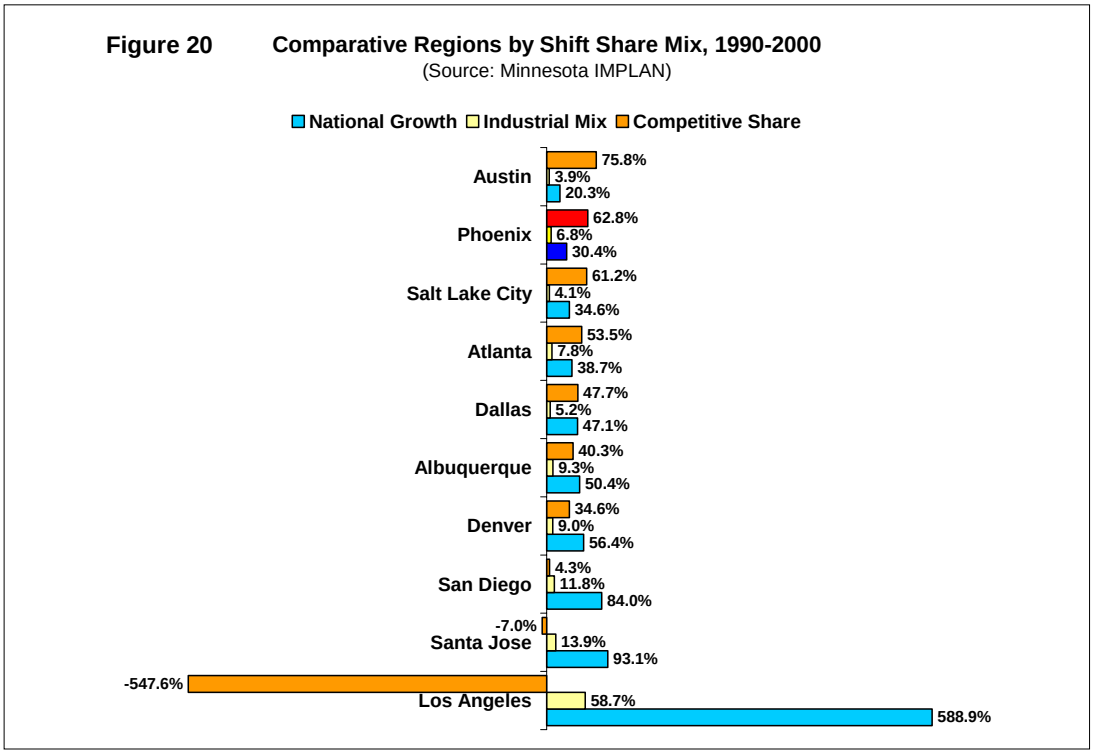
The competitor locations were chosen based on selecting a range of metro size classes, and a history of these metros as either competitors for the Phoenix region, or as markets of prospects for a possible Phoenix location. The nine metro regions include: Los Angeles; Dallas/Ft. Worth; Atlanta; San Diego; Denver; Silicon Valley[20]; Salt Lake City; Austin; and Albuquerque.

Shift Share Comparisons

Figure 20 displays the three components of shift share analysis for the ten competitor regions. The regions are ranked according to competitive share as a percentage of total job change. "National growth" is colored blue, "industry mix" yellow, and "competitive share" is colored orange.

What jumps out is the predicament of Los Angeles, which appears to have been affected by diseconomies of scale. Though it experienced positive job growth, Los Angeles had a negative competitive share that is off the scale. The loss of competitive share was offset by national growth and industry mix growth. In fact, low competitive share is a common theme among the three California metro regions, due to the high cost of doing business, including utilities. This indicates that a regional development strategy based on targeting businesses in California is still viable for Greater Phoenix.

Figure 20 **Comparative Regions by Shift Share Mix, 1990-2000**
(Source: Minnesota IMPLAN)



Greater Phoenix was 2nd among competitive regions for the importance of competitive share, trailing only Austin. Austin, Phoenix, and Salt Lake City form a distinct tier on this measure. Atlanta and Dallas form a second tier, combining both larger population sizes with competitive shares that account for about 50% of job change.

[20] Santa Clara County, California

Basic Industry Cluster Profiles

This section presents profiles of the twelve basic industry clusters, both the GPEC high-wage clusters and seven others. Each cluster profile is organized with the following components:

A chart that combines competitive share with location quotients. The competitive share is measured in this case by a "competitive share index." The latter is the number of jobs due to the competitive share component of change in the 1990's, divided by the 1990 number of jobs in the industry cluster in the metro region. Thus, this is measuring the competitiveness of the region for the cluster in percentage terms. The location quotients are for 1990 and 2000, and show the direction of change in specialization.

A short section that analyzes the comparative chart.

Each cluster also contains a list of site factors weighted by their importance to an industry cluster.[21] The industry cluster need is weighted on a 10-to-0 scale, with ten being the highest and six being the average. For each cluster, only the site factors that are scored 6 or above are displayed. As a rough gauge, this shows the site factors that are more important to a cluster.

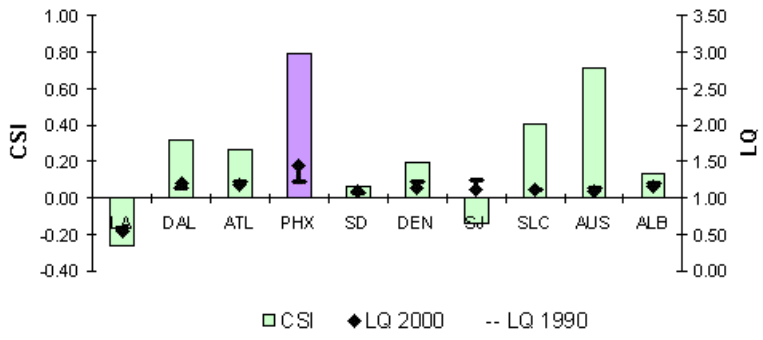
Output projections of the industry cluster for the nation between 2000 and 2010.[22] The growth rate between 2000 and 2010 is presented. Additionally the industry cluster rank (based on growth rate) compared to all 17 industry clusters is presented. This shows the strength of the market for the industry cluster.

Lastly, to show the geographic distribution within the region of major employers, a map that displays the location quotients of each job center in Maricopa County is included. The maps are color-coded – red signifies the highest concentration, orange is above-average concentration, green is below average concentration, and blue is the lowest concentration.

[21] This information is taken from a target industry model maintained by Economic Strategies Group from 1987 through 1997.

[22] Sources: Global Insights, October 2002; Regional Economic Models, Inc., March 2003.

Figure 21 **Advanced Business Services**



Comparative Performance

Very strong cluster for Phoenix, with highest CSI and positive direction of location quotients. Only metro region that has both characteristics.

Critical Site Factors

Access to Markets		Debt	8
Geographic Proximity	7	**Public Sector Investments**	
Telecom. Svcs.	10	Secondary Ed. Quality	8
Access to Resources		Higher Ed. Quality	7
Energy Dependability	8	Local Transp./Commuting	7
Bsns/Prof/Tech Svcs.	8	**Public Sector Costs**	
Work Force		Business Taxes	7
Exec., Adm., Prof.	7	**Quality of Life**	
Technical	6	Cost of Living	7
Admin. Support	7	Housing Costs	7
Cost of Skilled Workers	6	Personal/Property Security	8
Cost of Unskilled Workers	6	Climate/Physical Env	7
Real Estate		Recreatl/Cultural Opps.	6
Built Space Availability	8	Area Image	7
Built Space Cost	7		
Capital Availability			

US Output, 2000-10

31% increase
Cluster rank: 7th

Geographic Distribution

Moderate dispersion throughout region
Most concentrated in center of region
Suburban concentrations in north, south, and southeast
Little concentration in west

Figure 22

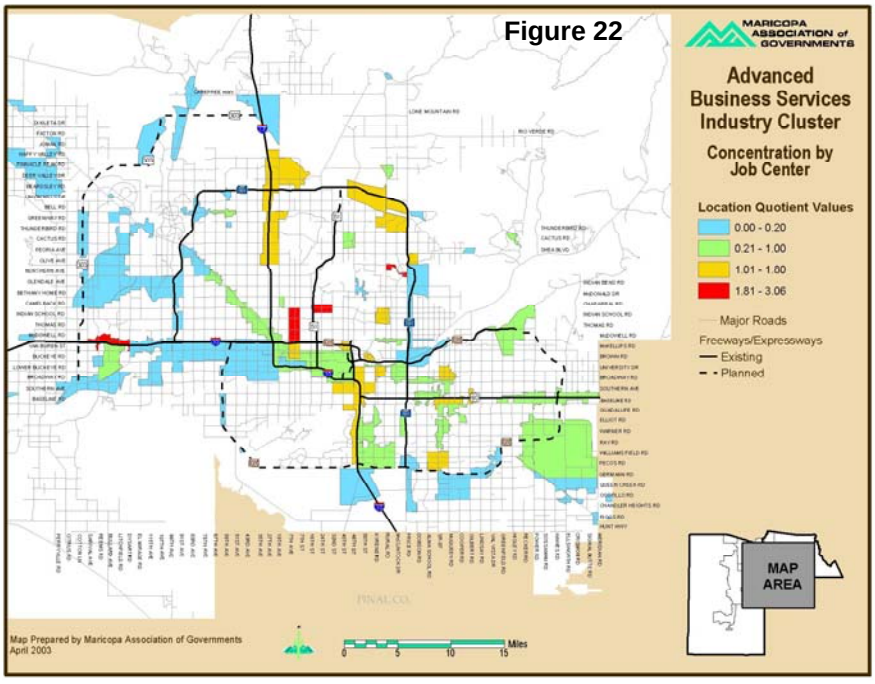
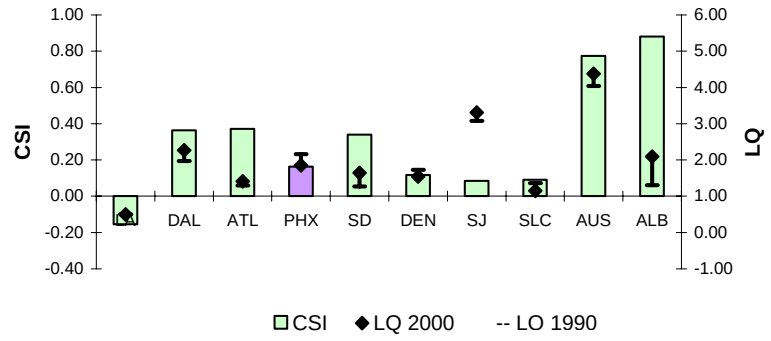


Figure 23 **High-Tech/Information**



Comparative Performance

Greater Phoenix is losing competitiveness in high tech/electronics.
It had a lower location quotient in 2000.
The most competitive regions are Austin and Albuquerque. Dallas, Atlanta, and San Diego are also more competitive than Greater Phoenix.

Critical Site Factors

Access to Markets		Exec., Adm., Prof.	6	Built Space Availability	8	**Public Sector Costs**	
Trans.Svcs. - Cost	6	Technical	7	Built Space Cost	9	Regulatory Policies	8
Telecom. Svcs.	6	Prec. Prod. & Repair	6	**Capital Availability**		Workers Compensation	9
Access to Resources		Operators/Assemblers	6	Debt	7	Unemployment Ins.	9
Energy Dependability	10	Cost of Skilled Workers	8	Venture	6	Business Taxes	7
Intermed. Mfd. Prods.	7	Cost of Unskilled Workers	8	**Public Sector Investments**		**Quality of Life**	
Bsns/Prof/Tech Svcs.	7	**Real Estate**		Secondary Ed. Quality	8	Personal/Property Security	6
Work Force		Land Cost	7	Local Transp./Commuting	6	Climate/Physical Env	7

US Output, 2000-10

137% increase
Cluster rank: 1st

Geographic Distribution

Wide dispersion in east part of region
Little presence in west
Highest concentrations in north and southeast
Many suburban concentrations

Figure 24

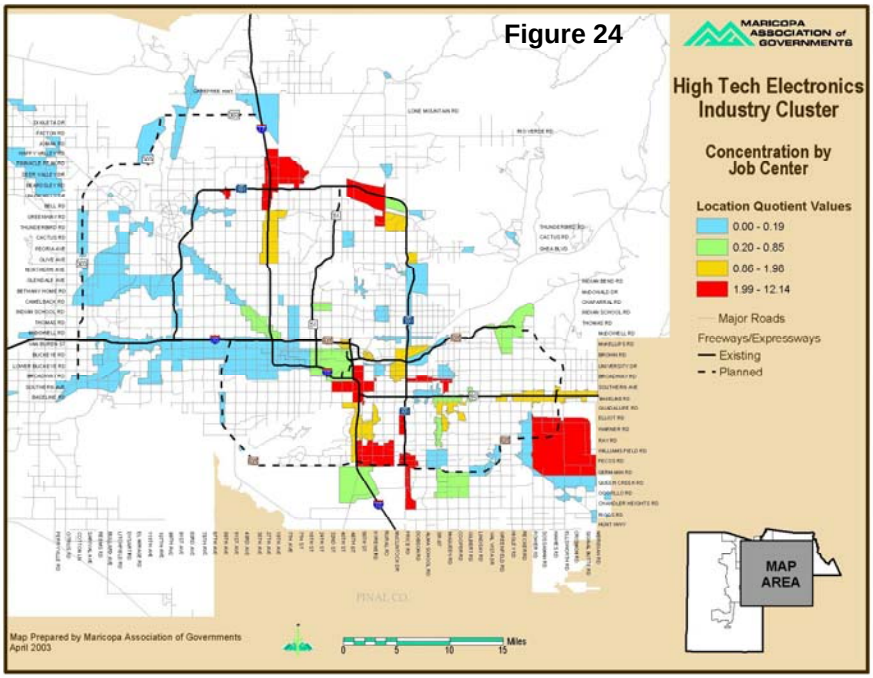
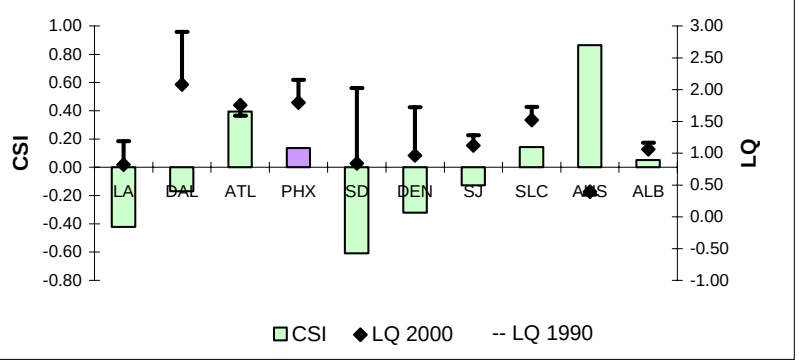


Figure 25



Comparative Performance

Aerospace/aviation concentration declined for all regions except Atlanta, for which aviation is more important than aerospace.
Greater Phoenix has the third highest competitive share index, but trails Austin and Atlanta significantly.
Though the region's location quotient declined during the decade, the magnitude of decline was not as much as Dallas, San Diego, and Denver. These regions may be vulnerable.

Critical Site Factors

Access to Markets		Cost of Skilled Workers	10	Secondary Ed. Quality	7
Geographic Proximity	7	Cost of Unskilled Workers	10	Local Transp./Commuting	6
Telecom. Svcs.	6	**Real Estate**		Business Incentives	6
Access to Resources		Land Availability - Improved	6	**Public Sector Costs**	
Energy Dependability	10	Land Cost	6	Regulatory Policies	8
Intermed. Mfd. Prods.	8	Built Space Availability	8	Workers Compensation	10
Work Force		Built Space Cost	8	Unemployment Ins.	10
Exec., Adm., Prof.	6	**Capital Availability**		Business Taxes	6
Prof. Specialty	8	Debt	6	**Quality of Life**	
Technical	7	Venture	6	Personal/Property Security	6
Prec. Prod. & Repair	7	**Public Sector Investments**		Climate/Physical Env	7

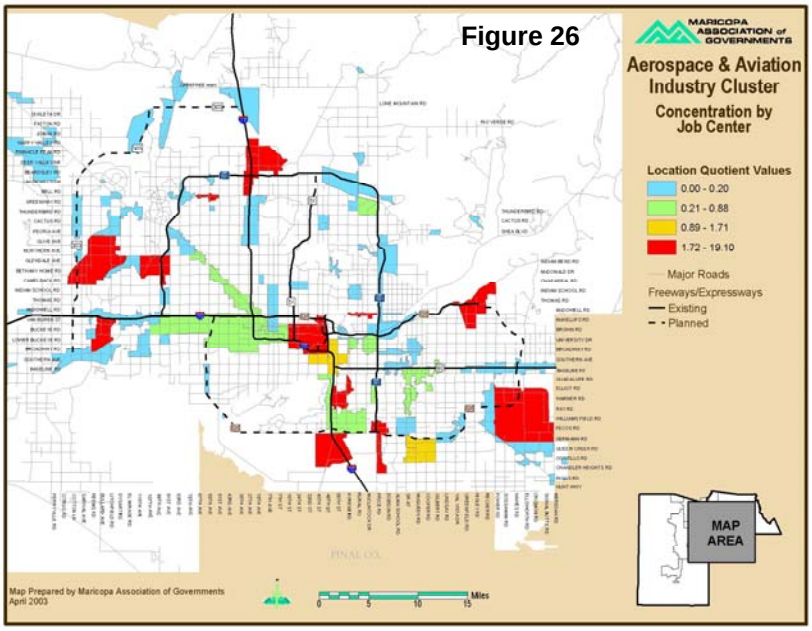
US Output, 2000-10

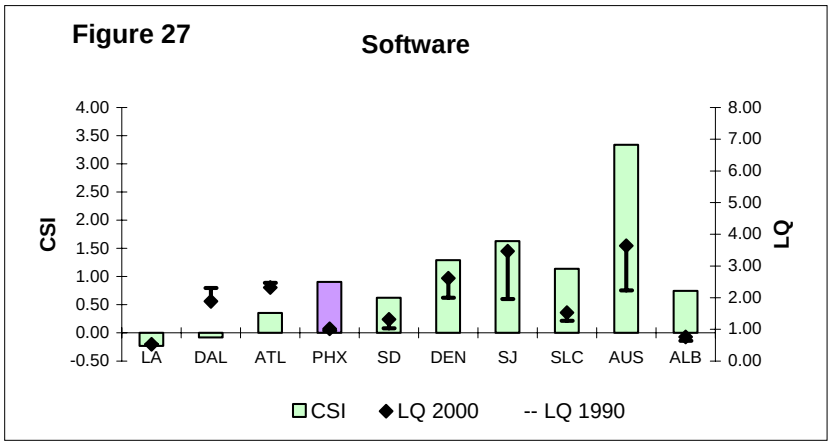
23% increase
Cluster rank: 11th

Geographic Distribution

Wide dispersal throughout the region
Concentration at airports
Concentration on industrial zoned land

Figure 26





Comparative Performance

Software concentration is increasing in most competitive regions, which indicates that its growth is national.
The top competitor markets are Austin, San Jose, and Denver.
Phoenix is in a competitive second tier, along with San Diego, Salt Lake City, and Albuquerque.

Critical Site Factors

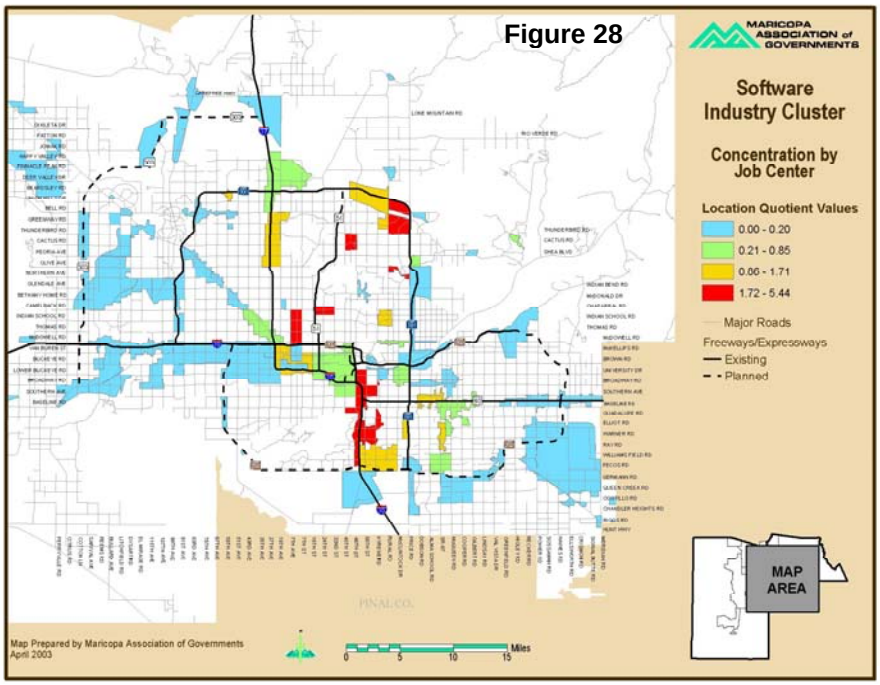
Access to markets		Cost of unskilled workers	9	**Public sector costs**	
Telecom. Svcs.	10	**Real estate**		Regulatory policies	6
Access to resources		Built space availability	9	Workers compensation	8
Energy dependability	10	Built space cost	9	Unemployment ins.	8
Bsns/prof/tech svcs.	10	**Capital availability**		Business taxes	7
Work force		Debt	9	**Quality of life**	
Exec., adm., prof.	6	Venture	6	Personal/property security	7
Prof. Specialty	6	**Public sector investments**		Climate/physical env	7
Technical	10	Secondary ed. quality	8	Area image	6
Admin. Support	6	Local transp/commuting	6		
Cost of skilled workers	9	Business incentives	6		

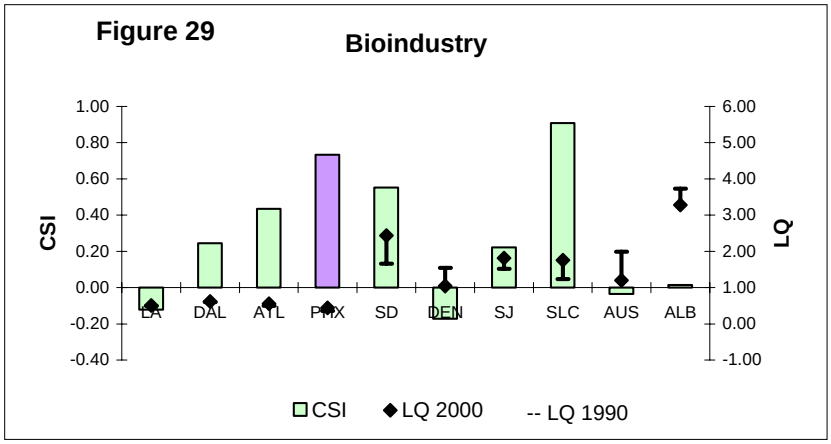
US Output, 2000-10

73% increase
Cluster rank: 2d

Geographic Distribution

Dispersed in central parts of region, both north and south
Highest concentrations in region's center and northeast





Comparative Performance

Greater Phoenix has the second-highest competitive share index, which indicates good potential for the region, particularly with the location of the Translational Genomics Institute.
Tempering that observation is the relatively small change in location quotient.
The most competitive regions are San Diego, San Jose, and Salt Lake City.

Critical Site Factors

Access to Markets	
Geographic Proximity	7
Trans.Svcs. - Cost	6
Access to Resources	
Energy Dependability	10
Intermed. Mfd. Prods.	8
Bsns/Prof/Tech Svcs.	8
Work Force	
Exec., Adm., Prof.	6
Technical	6
Operators/Assemblers	6

Cost of Skilled Workers	8
Cost of Unskilled Workers	8
Real Estate	
Land Availability - Improved	6
Land Cost	8
Built Space Availability	8
Built Space Cost	9
Capital Availability	
Debt	8
Venture	10
Public Sector Investments	

Secondary Ed. Quality	7
Local Transp./Commuting	6
Public Sector Costs	
Regulatory Policies	9
Workers Compensation	8
Unemployment Ins.	8
Business Taxes	9
Quality of Life	
Personal/Property Security	6
Climate/Physical Env	7

US Output, 2000-10

46% increase
Cluster rank: 3d

Geographic Distribution

Wide dispersal across region, excepting west
Highest concentrations in central part of region, in southeast, and in northeast

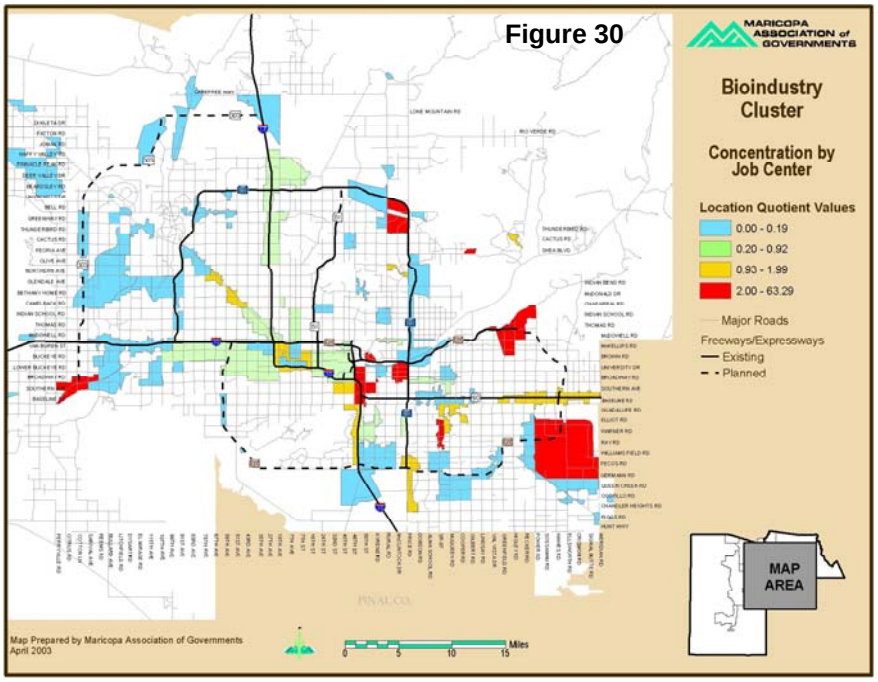
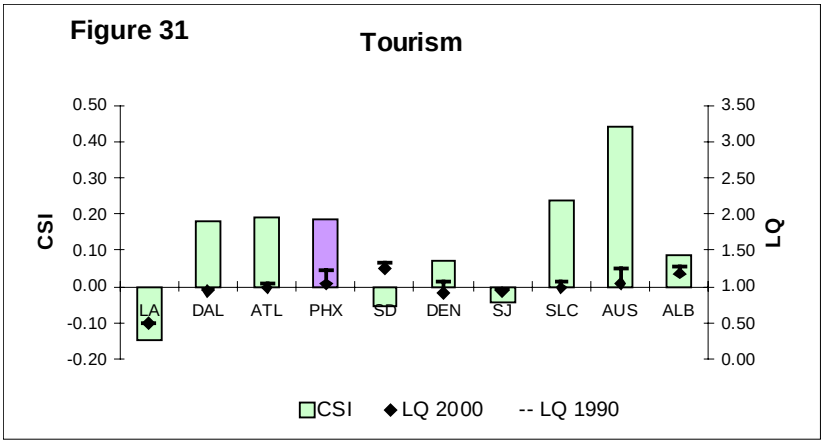


Figure 31



Comparative Performance

Across the board, tourism cluster location quotients declined for all competitive regions, though the Greater Phoenix decline was one of the greatest.
All California regions also have negative competitive share indices.
Austin and Salt Lake City are in a first tier of competitiveness, followed by Dallas, Atlanta and Phoenix.

Critical Site Factors

Access to Markets		Cost of Unskilled Workers	10	**Public Sector Costs**	
Geographic Proximity	10	**Real Estate**		Workers Compensation	10
Telecom. Svcs.	8	Land Availability - Improved	10	Unemployment Ins.	10
Access to Resources		Land Cost	10	Business Taxes	10
Energy Dependability	8	**Capital Availability**		**Quality of Life**	
Work Force		Debt	10	Personal/Property Security	7
Prof. Specialty	6	Venture	7	Climate/Physical Env	10
Service	9	**Public Sector Investments**		Recreatl/Cultural Opps.	10
Farm, Forest, Fish	7	Local Transp./Commuting	10	Area Image	10
Cost of Skilled Workers	10	Business Incentives	8		

US Output, 2000-10

35% increase
Cluster rank: 5th

Geographic Distribution

Wide dispersal across all parts of region
Concentrations in all parts of region
Concentrations in retail zoned land

Figure 32

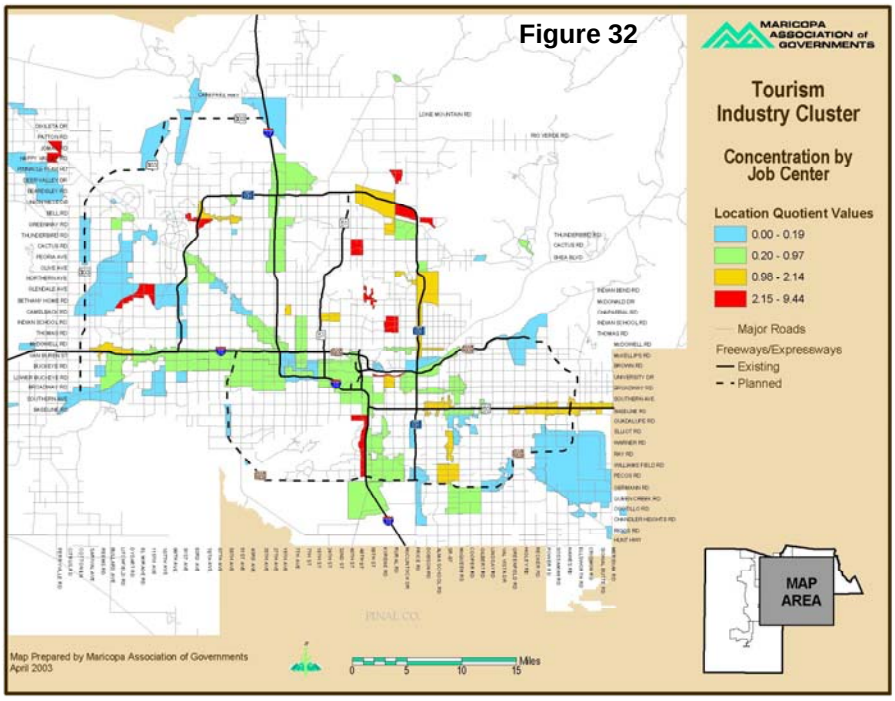
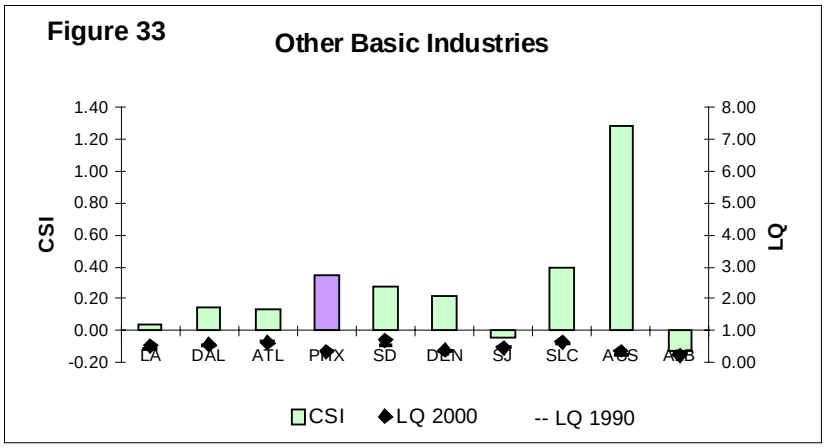


Figure 33



Comparative Performance

This is a wide range of industries that normally do not belong together in a cluster. These industries contain several basic industry clusters that normally are identified individually, but for this study are grouped together as a residual.
It is, therefore, difficult to interpret the competitiveness results, since dissimilar industries are bundled together.

Some of these industries may be large enough to form other industry clusters for the region, especially if there is a concentration in certain communities. Greater Phoenix has the third-greatest competitive share index, which indicates growth potential.

Critical Site Factors

Access to Markets		*Cost of Skilled Workers*	7	*Local Transp./Commuting*	6
Geographic Proximity	6	*Cost of Unskilled Workers*	9	**Public Sector Costs**	
Trans.Svcs. - Cost	6	**Space**		*Regulatory Policies*	8
Access to Resources		*Land Availability - Improved*	6	*Workers Compensation*	8
Energy Dependability	9	*Land Cost*	7	*Unemployment Ins.*	8
Intermed. Mfd. Prods.	9	*Built Space Availability*	7	*Business Taxes*	7
Work Force		*Built Space Cost*	8	**Quality of Life**	
Prec. Prod. & Repair	7	**Public Sector Investments**		*Personal/Property Security*	6
Operators/Assemblers	8	*Secondary Ed. Quality*	7	*Climate/Physical Env.*	7

US Output, 2000-10

20% increase
Cluster rank: 13th

Geographic Distribution

Wide dispersal throughout the region
Greatest concentrations in center of region, its west and its south
Fewest concentrations in northeast and southeast
Concentrations in industrial zoned land

Figure 34

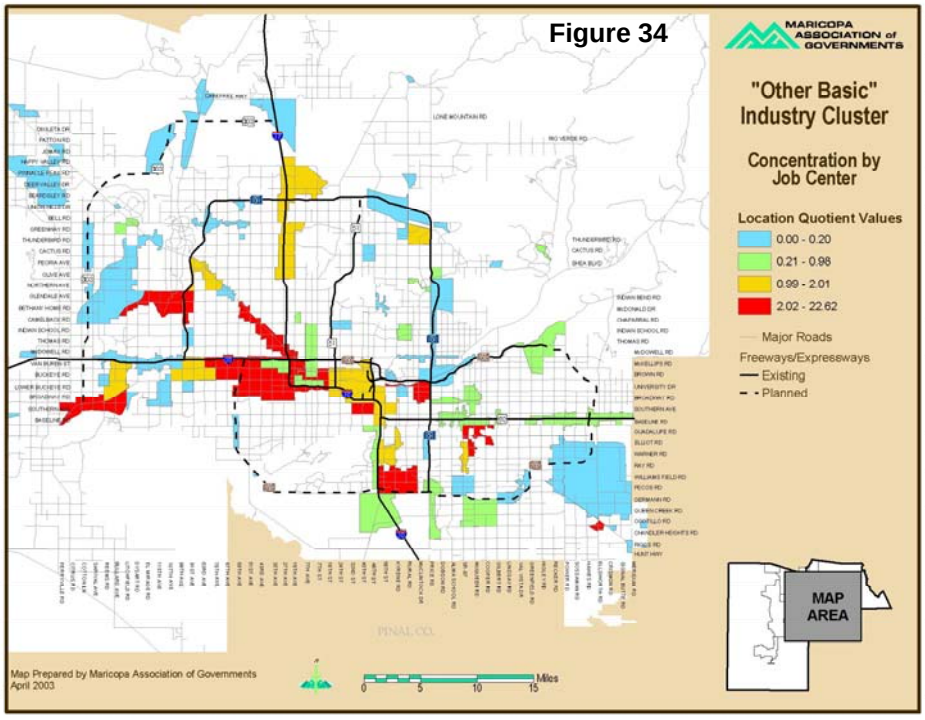
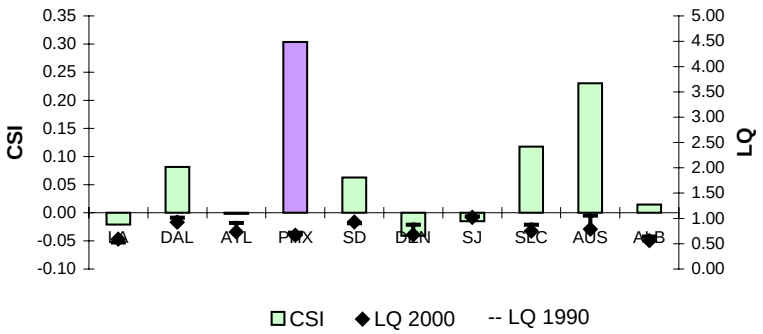


Figure 35



Comparative Performance

This is a mixed group of industries that provide widely used products and services to a variety of other industries in metropolitan region markets. The general direction of the location quotients is downward for all regions. Greater Phoenix's competitive share index was the highest of all regions, indicating good development potential for this "cluster."

Critical Site Factors

Access to Markets		*Cost of Unskilled Workers*	7	*Local Transp./Commuting*	6
Geographic Proximity	6	**Space**		*Business Incentives*	6
Trans.Svcs. - Cost	7	*Land Cost*	7	**Public Sector Costs**	
Access to Resources		*Built Space Availability*	8	*Regulatory Policies*	8
Energy Dependability	9	*Built Space Cost*	7	*Workers Compensation*	7
Intermed. Mfd. Prods.	8	**Financial Capital**		*Unemployment Ins.*	7
Work Force		*Debt*	7	*Business Taxes*	7
Prec. Prod. & Repair	6	*Venture*	6	**Quality of Life**	
Operators/Assemblers	7	**Public Sector Investments**		*Personal/Property Security*	6
Cost of Skilled Workers	7	*Secondary Ed. Quality*	7	*Climate/Physical Env.*	7

US Output, 2000-10

26% increase
Cluster rank: 9th

Geographic Distribution

Contained within central corridor of region, north to south
Several concentrations within that corridor
Concentrations in industrial zoned land

Figure 36

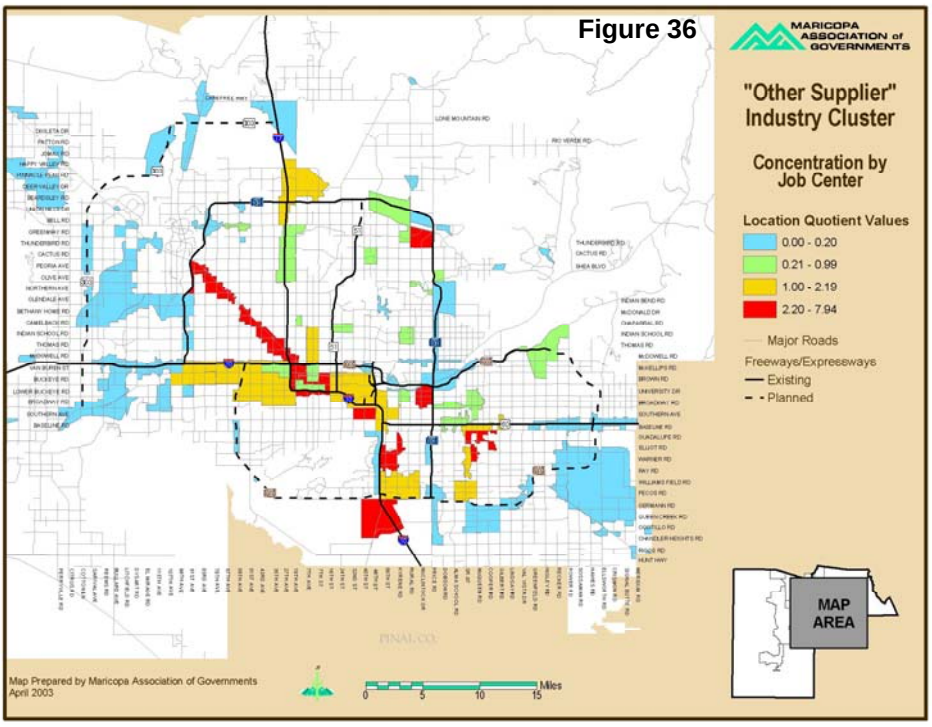
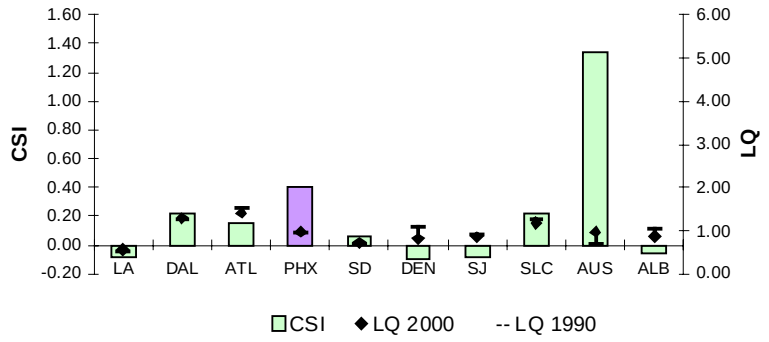


Figure 37 **Transportation & Distribution**



Comparative Performance

Greater Phoenix has the second-highest CSI and no change in location quotient. There is good growth potential in this cluster. Of the Western state regions, Austin, Salt Lake City and Dallas appear to be the closest competitors. All California metro regions have weak competitiveness, as does Denver and Albuquerque.

Critical Site Factors

Access to Markets		Handlers, Cleaners, Laborers	6	**Public Sector Investments**	
Geographic Proximity	9	Cost of Skilled Workers	8	Business Incentives	6
Trans.Svcs. - Cost	8	Cost of Unskilled Workers	8	**Public Sector Costs**	
Telecom. Svcs.	8	**Real Estate**		Regulatory Policies	6
Access to Resources		Land Availability - Improved	9	Business Taxes	9
Energy Dependability	7	Land Cost	9	**Quality of Life**	
Work Force		Built Space Availability	7	Personal/Property Security	9
Sales	7	Built Space Cost	8	Climate/Physical Env	7

US Output, 2000-10

32% increase
Cluster rank: 6th

Geographic Distribution

Wide distribution throughout the region, except Far East valley
Highest concentrations in west
Concentrations along rail lines and at airports
Concentrations in industrial zoned land

Figure 38

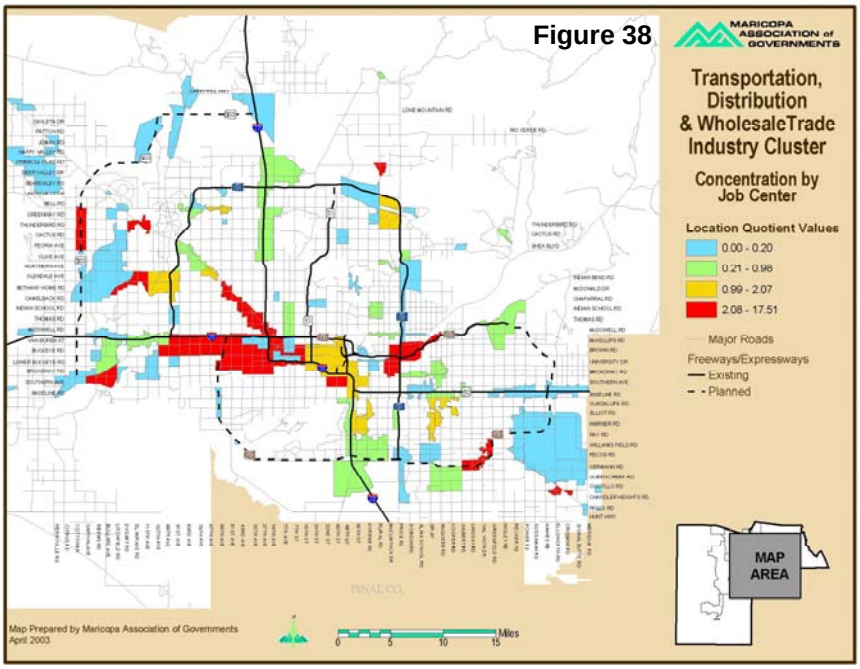
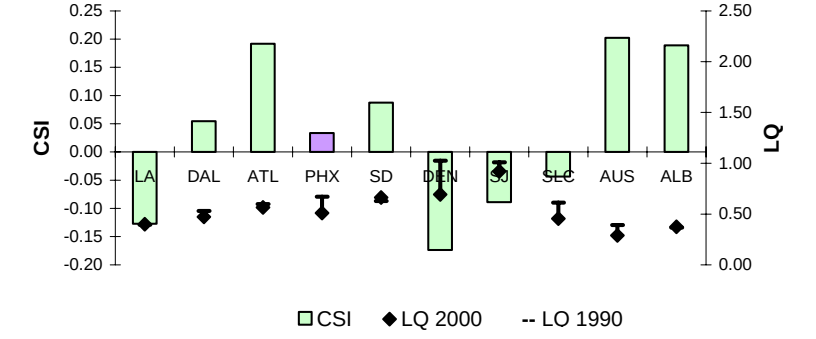


Figure 39



Comparative Performance

Downward direction of location quotients in 8 of 10 regions, including a significant drop for Phoenix.

The competitive share index for Phoenix is not encouraging.

In Greater Phoenix, this cluster contains many industries that serve the local regional market.

Critical Site Factors

Access to Markets		Operators/Assemblers	6	Secondary Ed. Quality	7
Trans.Svcs. - Cost	8	Handlers, Cleaners, Laborers	6	Local Transp./Commuting	6
Access to Resources		**Real Estate**		**Public Sector Costs**	
Energy Dependability	9	Land Availability - Improved	7	Regulatory Policies	9
Raw Materials	6	Land Cost	6	Business Taxes	7
Intermed. Mfd. Prods.	7	Built Space Availability	6	**Quality of Life**	
Work Force		Built Space Cost	6	Personal/Property Security	6
Prec. Prod. & Repair	6	**Public Sector Investments**		Climate/Physical Env	7

US Output, 2000-10

5% increase
Cluster rank: 17th

Geographic Distribution

Wide distribution across region, mainly south
Greatest concentrations in west valley, closer to agricultural lands in far west
Concentrations in industrial zoned land

Figure 40

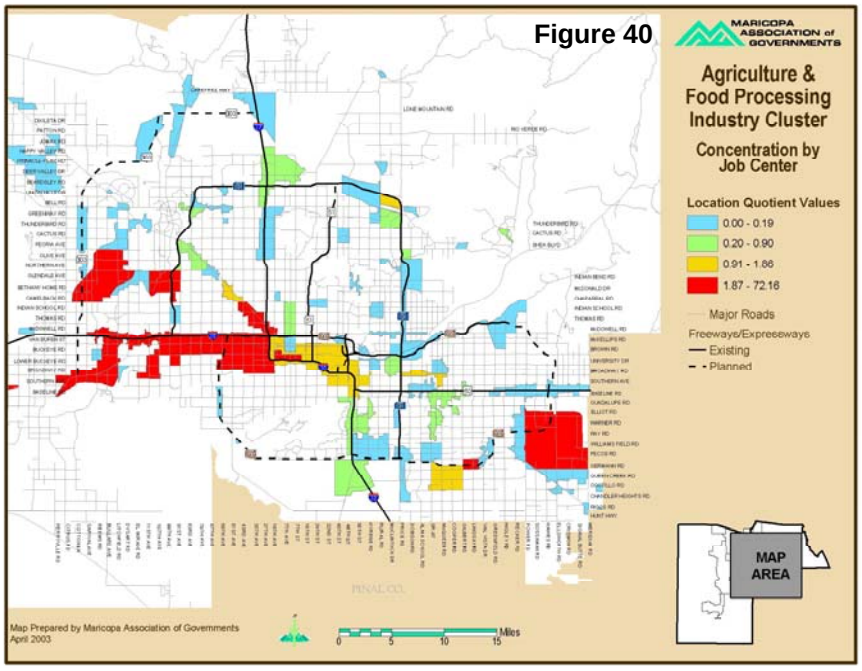
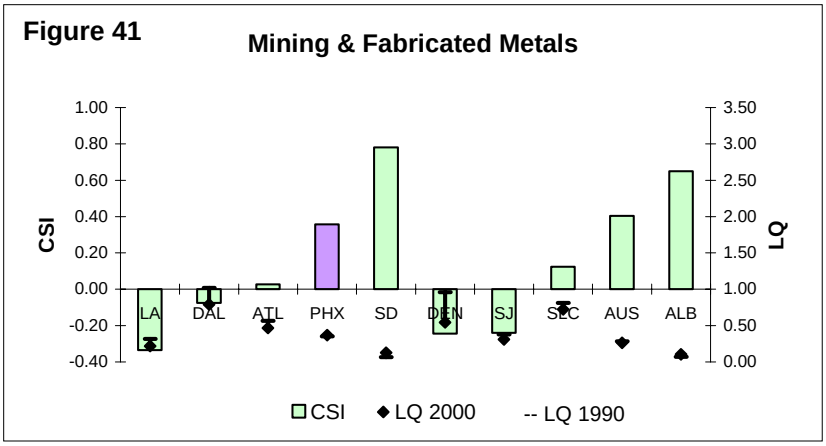


Figure 41



Comparative Performance

There are more jobs in primary metals than in mining for this cluster.

Half the metro regions had greater concentration of the cluster in 2000.

Phoenix's concentration barely changed, but it was in a positive direction.

Critical Site Factors

Access to Markets		*Cost of Skilled Workers*	6	*Local Transp./Commuting*	7
Geographic Proximity	6	*Cost of Unskilled Workers*	8	**Public Sector Costs**	
Trans.Svcs. - Cost	7	**Space**		*Regulatory Policies*	10
Access to Resources		*Land Availability - Improved*	7	*Workers Compensation*	7
Energy Dependability	9	*Land Cost*	7	*Unemployment Ins.*	7
Intermed. Mfd. Prods.	8	*Built Space Availability*	7	*Business Taxes*	6
Work Force		*Built Space Cost*	8	**Quality of Life**	
Prec. Prod. & Repair	7	**Public Sector Investments**		*Personal/Property Security*	7
Operators/Assemblers	8	*Secondary Ed. Quality*	8	*Climate/Physical Env.*	7

US Output, 2000-10

10% increase
Cluster rank: 16th

Geographic Distribution

Little dispersion; concentrated along freeway and rail corridors
Concentrations in industrial zoned land
Greatest concentrations in west and south

Figure 42

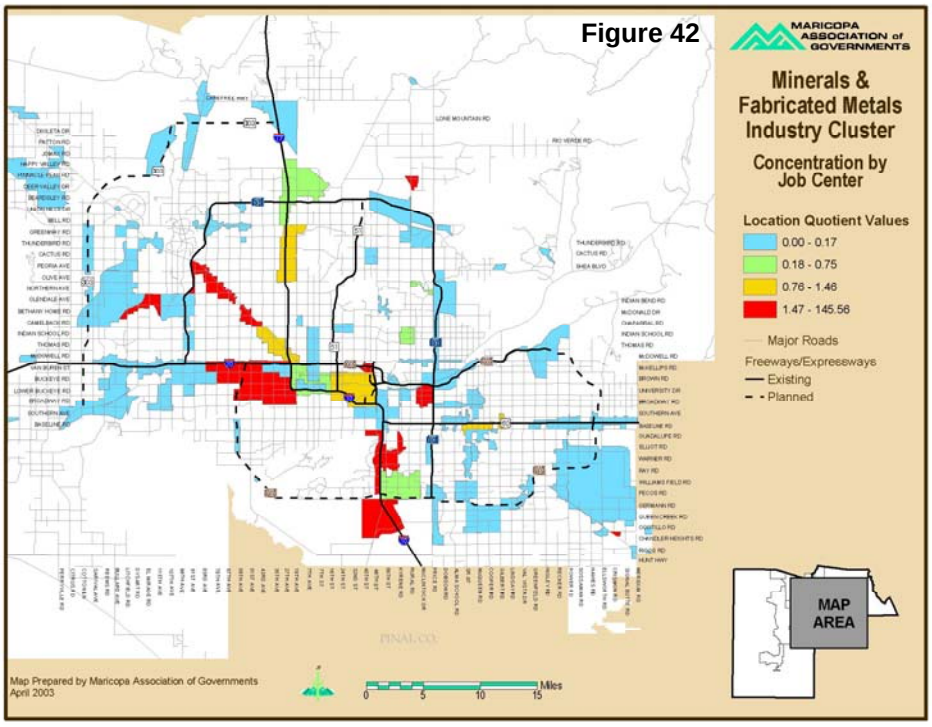
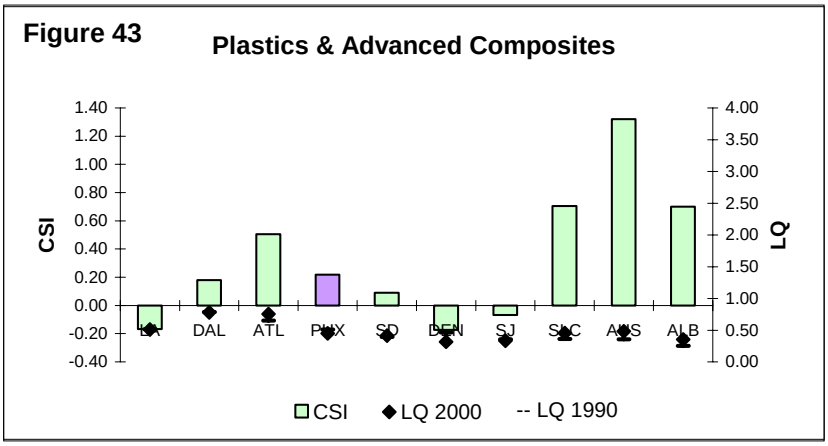


Figure 43



Comparative Performance

Phoenix is a third-tier competitor for plastics, with no change in its location quotient.

The top competitors are Austin, followed in a second tier by Atlanta, Salt Lake City, and Albuquerque.

Critical Site Factors.

Access to Markets		**Space**		*Business Incentives*	6
Geographic Proximity	9	*Land Cost*	6	**Public Sector Costs**	
Access to Resources		*Built Space Availability*	7	*Regulatory Policies*	8
Energy Dependability	9	*Built Space Cost*	6	*Workers Compensation*	8
Intermed. Mfd. Prods.	9	**Financial Capital**		*Unemployment Ins.*	8
Work Force		*Debt*	6	*Business Taxes*	8
Prec. Prod. & Repair	6	*Venture*	6	**Quality of Life**	
Operators/Assemblers	9	**Public Sector Investments**		*Personal/Property Security*	6
Cost of Skilled Workers	8	*Secondary Ed. Quality*	7	*Climate/Physical Env.*	7
Cost of Unskilled Workers	9	*Local Transp./Commuting*	6		

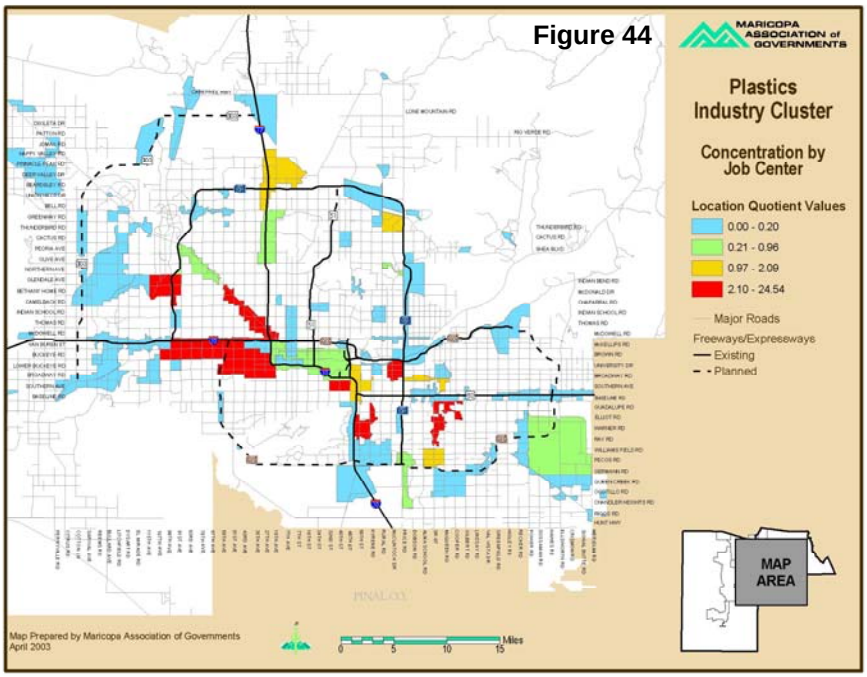
US Output, 2000-10

41% increase
Cluster rank: 4th

Geographic Distribution

Wide dispersion across region, west to east and north to south
Concentrations in suburban and exurban areas as well as most urbanized parts of region
Concentrations in industrial zoned land

Figure 44



Basic Industry Cluster Summary

Figure 45 summarizes the most salient points about the basic industry clusters:

Size of the cluster in Greater Phoenix, as measured by jobs
Average industry cluster wages in 2000 (when the regional average of all industries was $35,166)
Growth of the industry in the nation
The competitiveness of Greater Phoenix
How the cluster is geographically dispersed in Greater Phoenix
Where the areas of greatest concentration lie within Greater Phoenix
Other comments

Figure 45

Summary Matrix - Basic Industry Clusters

	Jobs in Metro Phoenix, 2000	Average Phoenix Wages, 2000	National Industry Growth	Metro Phoenix CSI Rank	Metro Phoenix Sub-Region Dispersion	Area of Heaviest Concentration	Comments
Advanced Business Services	293,178	$ 37,108	**31%**	**First Tier**	Very widely dispersed; concentrated in few locations	Multiple nodes, but highest concentration is central	40% jobs below mean wage
High Tech/Electronics	60,048	**$ 69,439**	**137%**	Third Tier	Widely dispersed; concentrated in few locations	Multiple nodes, north & southeast regions	Offshore production risk
Aerospace & Aviation	54,746	**$ 47,898**	23%	Third Tier	Widely dispersed, except for west side	Multiple nodes throughout region	9/11 Impact
Software	29,100	**$ 63,639**	**73%**	Third Tier	Widely dispersed, few in west	Multiple nodes within central region	Opportunity
Bio-Industry	8,790	**$ 49,886**	**46%**	**Second Tier**	Widely dispersed, few in west	Multiple nodes, but more in central	Opportunity
Tourism	159,873	$ 17,471	**35%**	**Second Tier**	Very widely dispersed	Multiple nodes throughout region	Low wages,high taxes, 9/11 impact
Transportation & Distribution	105,472	**$ 42,801**	**32%**	**Second Tier**	Widely dispersed; concentrated in central area	Multiple nodes, especially western region	Opportunity
"Other Basic" Industries	35,896	$ 35,811	20%	**Second Tier**	Widely dispersed; concentrated in few locations	Multiple nodes throughout region	Selected opportunities
Agriculture & Food Processing	19,750	$ 26,431	5%	Fourth Tier	Widely dispersed	Western region	Produces for local regional market; low wages
"Other Supplier" Industries	28,482	$ 34,704	26%	**First Tier**	Widely dispersed; concentrated in few locations	Multiple nodes throughout region	Opportunity
Plastics & Advanced Composites	5,557	$ 33,687	**41%**	**Second Tier**	Mostly centrally located	Multiple nodes throughout region	Opportunity
Mining & Primary Metals	5,607	**$ 43,360**	10%	**Second Tier**	Mostly centrally located	Multiple nodes throughout central region	Contracting nationally, but may be regional opportunity

Target Clusters and Job Center Cluster Focus

For this project, local jurisdictions were asked to identify their own set of target industries. Figure 46 shows the cities' targets, along with the presence of the industry clusters in each city's job centers.[23]

Reviewing the figure, there is a good fit between target industries and industry presence, indicating that most communities have their target clusters already established in the city to some degree. However the urban-fringe cities with newer job centers are of course less likely to have an existing presence of, especially, higher-order cluster activities.[24]

Figure 46
City Target Clusters and Presence of Cluster in City

City/Clusters	GPEC Priority Clusters					Non-Priority Basic Industry Clusters								Nonbasic Industry Clusters					Other Clusters - Not GPEC			
	Advanced Business Services	Aerospace & Aviation	High Tech Electronics	Software	Bio-industry	Optics	Tourism	Plastics, Advanced Composite Materials	Transp., Distrib. & Wholesale Trade	Agriculture & Food Processing	Minerals & Mining	Other Basic Industries	Other Supplier Industries	Consumer Industries	Educational Services	Government	Health Services	Growth Cluster	Environmental Tech.	Senior Living	Telecommunications	Data Processing
GPEC Target Clusters	X	X	X	X	X														[No lLQ values available for these clusters]			
Avondale	X		X	X	X		X							X		X	X				X	
Chandler	X	X	X	X	X																	
El Mirage	X								X	X		X		X								
Gilbert	X	X	X	X	X							X	X	X				X				
Glendale	X																					
Goodyear	X	X			X			X		X				X								
Mesa	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X				
Peoria		X	X	X	X		X													X		
Phoenix	X	X	X		X				X	X		X							X			
Scottsdale	X	X	X		X		X							X								
Surprise			X		X															X		
Tempe	X (ins.)	X	X	X	X			X	X												X	X
Tolleson														X								

Source is cities' data for target clusters, and MAG, for LQ values.

Legend:

X = target

= LQ value of .5 to 1 in one or more job centers or elsewhere in the city

= LQ value of more than 1 in one or more job centers or elsewhere in the city

[23] "Presence" is measured by the location quotient for each industry cluster for each job center, using the major employer database of the Maricopa Association of Governments.

[24] For cities with "hybrid" or unique cluster types, no LQ data are available.

5. REGIONAL STRENGTHS, WEAKNESSES, OPPORTUNITIES & THREATS

Purpose

The full report for this topic is a detailed compilation of opportunities and threats for Greater Phoenix, as well as site factor strengths and weaknesses[25]. For this summary, the SWOT report is consolidated considerably and individual references to sources included in the full report are not made[i]. There are three sections:

1. **Long-Term Changes.** Its purpose is to orient economic development strategies well beyond the near term, looking at trends that are 10 to 50 years in the future.
2. **Opportunities and Threats.** This section describes trends and possible change in the short to mid-term that present possible economic development opportunities and threats
3. **Site Factors at the Regional Level: Business Climate Strengths and Weaknesses**. This section focuses on site factors that industry considers when locating to an area. The section is organized according to various site factors, and presents the regional strengths and weaknesses for each.

Long Term Change

High Population Growth Will Remain for at Least 50 Years

Table 5. Population Growth (Millions)

		Projections		
	2000	Low	Medium	High
World, 2050	6,057	7,866	9,322	10,934
US, 2050	281.4	313.5	403.7	552.7
Annual US Immigration, 2050	1.1	0.6	1.3	1.4
Maricopa County, 2040[26]	3.1	NA	7.3	NA

Global Trading Blocks Will Emerge

NAFTA likely expand to include South America
East Asia & Europe emerge as more formal trading blocks
Growth of huge China market and its entrance into the World Trade Organization will generate major shifts in global trade patterns

Technology Change Will Create New Products & Industries

Science will be the undisputed primary driver of economic and cultural change in the twenty-first century It is now clear that the entire digital revolution is only the first phase of an even larger, longer process. In the first phase, information technology revolutionizes biology. In the next phase, biology will revolutionize information technology. And that will totally, once again, revolutionize economies. The next 100 years will include the following five general trends:

Movement away from a silicon-based electronics economy
Increased rates of technical advance and revolutionary breakthroughs on the smallest of scales (even molecular manipulation)

[25] Its purpose is to organize and summarize the facts and conclusions of recent major studies, reports, and strategies about the economy and economic development issues of the region. Thus, this report does not plow new ground – instead, it consolidates findings into a single report.

[26] Maricopa Association of Governments, interim draft projections subject to change, May 2003.

The nanotechnology - the science of the extremely small - wave of technology integration and societal transformation (artificial cells, artificial enzymes)
Convergence of diverse fields of study and development, such as information technology and biotechnology
Genetically modified everything[27]

Most Significant Technologies of the 21st Century

Computers. Computers will become powerful extensions of human beings designed to augment intelligence, learning, communications & productivity.
Networks. The Internet will become the first global knowledge network connecting billions of people with an unlimited number of channels.
Biotech. The convergence of biotech and computers will accelerate the genetic redesign of all living things.
Nanotech. Nanotech enterprises will provide the ultimate convergence of computers, networks, and biotech, and create products never before even imagined. Nanotech will revolutionize the global economy, providing power tools that will manufacture high-tech products with low-cost and low-tech resources.
Space. Many innovations will accelerate the establishment of a global space market.

[27] Morrison Institute, *Five Shoes Waiting to Drop,* 2001.

Regional Opportunities and Threats

Topic	Opportunities	Threats
Global Economy		Terrorism & war in unstable regions
Emergence of global trading blocks	Improved demand for US exports and US-made capital equipment and knowledge-intensive services. China market.	Southeast Asian economies shift toward higher-value goods and services, competing with US
Increased standardization in existing high-tech industries	Increased importance in US for developing emerging industries	Will lead to further transfers of business operations to low-cost economies
Mexico, CANAMEX Corridor, Southwest Passage	Maquiladoras have less reason to locate close to US border. Lengthening transport links between production locations as Hermosillo, Guadalajara and even Monterrey with markets in the Southwest and Pacific Northwest place Arizona squarely in the middle of this pattern. Further improvements of trade links to Mexico would help redefine Arizona as a hub and as an integral part of the CANAMEX region	Short-term decline in maquiladoras will create further incentives for Mexican immigration
National Economy	US macroeconomic outlook over next decade is bright. Nation's business cycle becoming less volatile Heightened pace of technological change; diffusion of technology is more rapid.	Shorter product cycles caused by tech change causes manufacturing plants to become obsolete more quickly than in the past. Product manufacturing will be an increasingly volatile activity in terms of capacity and location
New Economy	People or talent is the key factor of production in this new system. A region's future will be increasingly decided by its ability to attract people than to attract firms.	Dispersion of talent and technology to various parts of the country and the world has altered the once-fixed geographies of talent. Terrorism potential to demolish agglomeration economies.
		Arizona suffers from an image problem among the cutting-edge young knowledge workers. Arizona lacks the urban fabric, “coolness” and public schools they want.
Arizona Economy		Arizona no longer has a balanced and efficient tax structure..
Greater Phoenix Economy	In large measure, Phoenix is built on the fact that people want to be here – as a place to live, work, and/or retire because they enjoy the lifestyle.	
Stable industries of the coming decade	Air transportation Electronic components & accessories manufacturing	<u>Downside risks:</u> Airline industry in serious financial trouble.

Topic	Opportunities	Threats
	Measuring & controlling instruments Aircraft & parts manufacturing Restaurants Insurance carriers, esp. regional and back-office ops. Real estate & insurance agents Federal government Farm labor & management services	Electronics manufacturing faces serious competitive threats from overseas producers. electronics health depends on amount of research & development work that continues locally and that generates new products Phoenix hotels, restaurants & resorts hard hit by 9-11
Growth industries of the coming decade	Amusement & recreation Public relations & management services Missiles and space vehicles Banking industry Business services, including software & temporary help services Defense spending impact on aircraft & parts industry Tourism - if it had a larger component within cultural activities and the arts Hotels and lodging - after current oversupply wears off Trucking & general transport services Arrangement of transportation services	<u>Downside risks:</u> Transportation services will have to change rapidly as ticketing & freight brokerage services & logistics come to rely increasingly on the Internet. Banking industry - not likely to accelerate unless regional or national financial service operations stake a greater presence in Arizona and adapt to changing financing needs of emerging industries
Industries subject to waning demand in Greater Phoenix		Semiconductors & other electronic equipment Aerospace
Healthcare/Bioindustry	Development of cutting edge science and technology, and their application to business enterprise creates viable bio-industry cluster stemming from Translational Genomics Institute and other improvements made to attract it.	Direct impact of biotechnology can be limited. Not profitable business in the aggregate, and probably remains unprofitable in the next decade. Arizona industry faces long-term battle to establish itself versus high concentrations elsewhere.

Site Factors: Regional Business Climate Strengths and Weaknesses

Site Factor	Strengths	Weaknesses
Economic Vibrancy	State ranks well on measures of innovation Top-ranked region in terms of high technology location and growth	3d tier in several industry R&D measures 3d tier average yearly growth of high-tech industries An economic base dependent on only a few driver industries
Access to Markets	Multi-state regional markets Proximity to international markets	In terms of geographic location, Phoenix is in many ways more of a way station between southern California and Texas rather than a node or hub
Transportation Services	Direct air flights – 126. Sky Harbor positive factor, with	Traffic at the airport, congestion within the airport,

Site Factor	Strengths	Weaknesses
	sufficient capacity including parallel runways and ample gate and terminal space over next ten years. Above average government outlays on air transport Williams Gateway available as a reliever airport, which Sky Harbor will need to protect its effectiveness Robust freight trucking industry	and complaints regarding air travel could become a barrier to growth. Rail access diminished with Union Pacific abandonment of mainline; adds time delay for freight scheduling.
Telecommunication Services	Telecommunications access is plentiful for both telephone and broadband service 2d tier percent of households with computers and Internet access (2000) 2 communications satellites can be seen, unlike just one for most locations	Access to best telecom services is still an issue in some communities
Access to Resources	Energy costs 20% lower than California	Cost of electricity for industrial users 8% above national average
Work Force	Favorable demographic trends Overall workforce availability is good Workforce quality is favorable Top ten states for intensity of engineers 2d tier intensity of computer & information science experts, 2000 2d tier percent of population with advanced and bachelor's degrees, 2000 2d tier science & engineering post-doctorates awarded per 100,000 people, 1998 2d tier doctoral engineers per 100,000 people	Shortages in some skilled machine trades, technical & professional occupations Low share of higher education students as % of population 3d tier percent of population with PhD degree
Space Availability & Cost	Infrastructured land of appropriate size Favorable real estate prices Existing building space availability is good	Projects usually locate into existing space, and some communities lack these. Continual threat of converting industrial land needed for economic base development to residential because of real estate opportunities due to population growth. Strong need to protect nonresidential land, especially after infrastructure investments made for economic base development.
Financial Capital	Second tier among states for certain financial measures.	Weak capital formation. There is a mismatch between the amount of innovation that takes place in the economy and the financial resources available to turn the innovation into commercial products.
Public Sector Investments		
Secondary Education Quality	2d tier average SAT scores 2001	Last in nation in terms of high school completions.

Site Factor	Strengths	Weaknesses
		47th in nation for high school grads going to college.
Higher Education Quality	Strong community college system Dynamic university & college presence High share of college degrees conferred Signficant assets in state university system	Funding deficiencies for Arizona's higher-education facilities compromises its competitiveness as a center for research & innovation in the nation
Infrastructure Capacity	Substantial infrastructure investments by local governments	Physical infrastructure and its funding will have to keep pace with the growth of Greater Phoenix
Cost of Living	When compared to other tech centers nationwide, Greater Phoenix fares better on living costs	Every year since 1995, increase in median sales price of single family housing has outpaced household income growth
Climate/Physical Environment	Trend of less air pollution measured by number of days not meeting US EPA air quality standards	Measures to improve air quality will be increasingly important as population and the economy expands.
Recreational & Cultural Amenities	Considerable cultural and recreational activities	
Personal/Property Security		Crime rate at 63.7 reported crimes per 1,000 persons, well above national rate of 42.7. Teen pregnancy rate highest in Arizona, among highest nationwide
Area Image	Corporate executives' positive images of Greater Phoenix (more than 50% of respondents)	Arizona's deep, broad and longstanding economic sectors - tourism, golf, construction and retirement - are based on the state's traditional "old economy" assets such as climate and low costs. These realities, along with other factors, set Arizona up for "blue collar" status in the new economy.

6. SUB-REGIONAL STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS

Analysis Model Structure

The information in this section is taken from an inventory of site factor conditions pertaining to job centers[28] and their commute sheds[29]. In order to summarize this voluminous information in an evaluative format that is easier to grasp, an analysis model was prepared that would provide a quantitative assessment of job centers' attractiveness for each of the clusters addressed in this study. In essence, the model matches industry cluster *need* for local site factors with the *competitiveness* of local site factors.

While this approach as has a rational basis, the results represent a current and historic perspective on conditions and cannot capture all the nuances of a location's or city's appeal. However, the information highlights competitive conditions that would benefit from additional attention, and it also provides a way of comparing a location's competitive strength in specific clusters with other locations.

Model Results

The results of this process are summarized in Table 6, which shows the ranking of scores, within each cluster, for each job center. Cells are highlighted at two different ranks: (1) those that are in the top quartile, and those that are in the second quartile.

[28] Proximity to freeways, rail, and airports; presence of business/professional/technical services and intermediate product manufacturers; and building cost and availability

[29] Number of workers by broad occupational category; Stanford test scores of 8th graders and high school dropout rates; housing values; and educational attainment of persons in workforce.

Table 6. Job Centers: SWOT Model Indexed Scores

= median value to top quartile. = top (4th) quartile.

Scores range from 0 to 1, and are determined cluster-by-cluster

			GPEC Priority Clusters					Non-Priority Basic Industry Clusters							
	Code	Job Center Name	Advanced Business Svc	Aerospace & Aviation	High Tech Electronics	Software	Bioindustry	Optics	Tourism	Trans, Distr & Whlsl Trade	Other Basic Industries	Ag & Food Processing	Other Supplier Ind.	Plastics	Minerals & Fabr. Metals
Avondale	AV_1	North Avondale	0.52	0.51	0.52	0.56	0.52	0.50	0.64	0.56	0.52	0.57	0.55	0.54	0.56
	AV_2	Southwest Avondale	0.22	0.43	0.42	0.23	0.41	0.38	0.32	0.44	0.42	0.35	0.44	0.42	0.43
	AV_3	Govt. Complex/115th Ave. Corridor	0.42	0.37	0.35	0.39	0.38	0.32	0.45	0.42	0.39	0.52	0.40	0.41	0.38
		Other Avondale	0.02	0.12	0.06	0.03	0.05	0.09	0.04	0.03	0.10	0.13	0.08	0.06	0.07
Buckeye	BU_1	Baseline/SR 85	0.27	0.35	0.34	0.24	0.34	0.30	0.30	0.38	0.34	0.35	0.34	0.38	0.32
	BU_2	West Buckeye	0.33	0.24	0.25	0.37	0.24	0.22	0.25	0.29	0.26	0.37	0.25	0.27	0.26
	BU_3	Southern/Apache	0.44	0.48	0.48	0.44	0.48	0.46	0.41	0.49	0.48	0.54	0.49	0.52	0.49
	BU_4	I-10/Lower Buckeye	0.34	0.27	0.27	0.38	0.27	0.24	0.38	0.27	0.28	0.27	0.27	0.26	0.28
	BU_5	Yuma/Watson	0.31	0.23	0.24	0.35	0.23	0.21	0.28	0.25	0.25	0.25	0.24	0.24	0.24
	BU_6	North Buckeye	0.27	0.26	0.26	0.25	0.26	0.23	0.29	0.19	0.27	0.22	0.27	0.25	0.27
	BU_7	Whitestone	0.19	0.19	0.19	0.20	0.19	0.19	0.26	0.18	0.22	0.19	0.21	0.20	0.21
		Other Buckeye	0.02	0.02	0.02	0.02	0.02	0.06	0.00	0.06	0.01	0.06	0.02	0.02	0.02
CA	CA_1	Carefree City Center	0.44	0.40	0.40	0.44	0.39	0.31	0.43	0.35	0.37	0.32	0.39	0.37	0.36
		Other Carefree	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Chandler	CH_1	North Chandler	0.77	0.93	0.86	0.82	0.98	0.90	0.86	0.85	0.94	0.91	0.94	0.98	0.88
	CH_2	Downtown Chandler	0.81	0.77	0.76	0.79	0.72	0.86	0.77	0.65	0.72	0.78	0.82	0.90	0.76
	CH_3	Airpark Area	0.62	0.64	0.62	0.65	0.56	0.60	0.52	0.60	0.59	0.66	0.58	0.60	0.57
	CH_4	Price Corridor	0.71	0.89	0.92	0.74	0.87	0.73	0.65	0.84	0.79	0.72	0.73	0.79	0.75
	CH_5	West Chandler	0.90	0.96	1.00	0.97	0.89	0.91	0.82	0.98	0.98	0.94	0.97	0.93	0.98
		Other Chandler	0.13	0.10	0.21	0.12	0.15	0.13	0.13	0.12	0.10	0.11	0.13	0.17	0.17
EM	EM_1	El Mirage	0.48	0.41	0.40	0.48	0.40	0.35	0.52	0.43	0.41	0.40	0.42	0.43	0.40
		Other El Mirage	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.05	0.00	0.00	0.00	0.00
FH	FH_1	Fountain Hills	0.64	0.53	0.55	0.62	0.63	0.58	0.66	0.50	0.54	0.50	0.52	0.48	0.52
		Other Fountain Hills	0.07	0.04	0.08	0.04	0.07	0.07	0.11	0.08	0.08	0.04	0.04	0.04	0.04
Gilbert	GI_1	Regional Mall Area	0.60	0.58	0.59	0.67	0.58	0.59	0.62	0.61	0.58	0.58	0.60	0.61	0.59
	GI_2	Northwest Employment Area	0.84	0.98	0.94	0.86	0.99	0.96	0.92	0.97	1.00	0.98	1.00	1.00	0.96
	GI_3	Gilbert/Germann	0.75	0.42	0.41	0.70	0.40	0.45	0.69	0.40	0.38	0.42	0.40	0.40	0.37
	GI_4	Power Rd/Gateway	0.48	0.40	0.38	0.50	0.35	0.34	0.44	0.36	0.36	0.52	0.38	0.35	0.35
		Other Gilbert	0.07	0.05	0.05	0.09	0.06	0.10	0.07	0.09	0.08	0.10	0.07	0.05	0.05
Glendale	GL_1	Loop303/Peoria	0.37	0.27	0.29	0.42	0.29	0.26	0.35	0.30	0.29	0.30	0.29	0.29	0.29
	GL_2	Loop303/Northern	0.35	0.45	0.46	0.40	0.46	0.42	0.40	0.52	0.45	0.44	0.47	0.45	0.47
	GL_3	Luke Compatibility Area	0.32	0.57	0.45	0.40	0.44	0.43	0.31	0.48	0.44	0.55	0.45	0.49	0.44
	GL_4	Western Area	0.54	0.73	0.61	0.58	0.60	0.63	0.49	0.69	0.65	0.69	0.61	0.73	0.60
	GL_5	City Center	0.55	0.81	0.69	0.52	0.85	0.77	0.53	0.72	0.77	0.81	0.89	0.87	0.92
	GL_6	Glendale Grand Ave.	0.57	0.80	0.69	0.57	0.82	0.76	0.73	0.68	0.87	0.85	0.86	0.91	0.90
	GL_7	Talivi Business Center	0.74	0.90	0.74	0.64	0.73	0.77	0.85	0.88	0.77	0.73	0.81	0.77	0.81
	GL_8	Midwestern University Area	0.72	0.63	0.79	0.85	0.64	0.70	0.77	0.81	0.65	0.67	0.67	0.65	0.69
	GL_9	Arrowhead Mall Area	0.69	0.59	0.60	0.71	0.60	0.64	0.68	0.63	0.60	0.56	0.60	0.60	0.60
	GL_10	Future Industrial	0.45	0.52	0.53	0.45	0.55	0.51	0.55	0.57	0.61	0.51	0.56	0.55	0.64
	GL_11	Thunderbird Area	0.43	0.38	0.39	0.35	0.35	0.35	0.48	0.35	0.40	0.36	0.41	0.39	0.39
		Other Glendale	0.07	0.08	0.11	0.11	0.15	0.00	0.09	0.10	0.06	0.09	0.10	0.13	0.08
Goodyear	GO_1	City Center	0.40	0.44	0.44	0.43	0.43	0.39	0.57	0.45	0.43	0.39	0.44	0.44	0.44
	GO_2	Southeast Goodyear	0.17	0.36	0.35	0.16	0.36	0.49	0.22	0.46	0.46	0.43	0.36	0.40	0.34
	GO_3	Southwest Goodyear	0.28	0.44	0.43	0.31	0.57	0.36	0.23	0.48	0.52	0.53	0.43	0.44	0.42
	GO_4	North Goodyear	0.79	0.56	0.58	0.73	0.59	0.44	0.84	0.62	0.55	0.64	0.57	0.58	0.56
	GO_5	Goodyear Airport Area	0.50	0.60	0.51	0.46	0.52	0.41	0.65	0.55	0.57	0.56	0.53	0.56	0.54
		Other Goodyear	0.02	0.07	0.02	0.10	0.02	0.12	0.06	0.02	0.02	0.06	0.02	0.10	0.02

Table 6, cont'd. Job Centers: SWOT Model Indexed Scores

= median value to top quartile. = top (4th) quartile.

Scores range from 0 to 1, and are determined cluster-by-cluster

			GPEC Priority Clusters					Non-Priority Basic Industry Clusters							
	Code	Job Center Name	Advanced Business Svc	Aerospace & Aviation	High Tech Electronics	Software	Bioindustry	Optics	Tourism	Trans, Distr & Whlsl Trade	Other Basic Industries	Ag & Food Processing	Other Supplier Ind.	Plastics	Minerals & Fabr. Metals
Gila R.	GR_1	Northern Borderlands	0.46	0.62	0.57	0.55	0.51	0.47	0.46	0.40	0.56	0.60	0.62	0.59	0.63
	GR_2	Vee Quiva Casino	0.18	0.16	0.15	0.28	0.13	0.19	0.15	0.23	0.16	0.17	0.15	0.15	0.15
		Other Gila River	0.02	0.14	0.10	0.07	0.10	0.10	0.00	0.05	0.15	0.16	0.16	0.14	0.13
Mesa	ME_1	Falcon Field Airport	0.66	0.83	0.71	0.69	0.84	0.57	0.56	0.76	0.69	0.60	0.73	0.66	0.68
	ME_2	Downtown Mesa	0.91	0.71	0.70	0.72	0.70	0.78	0.78	0.66	0.74	0.65	0.76	0.70	0.73
	ME_3	Fiesta Quadrant	0.97	0.77	0.77	0.98	0.75	0.83	0.95	0.83	0.82	0.80	0.80	0.75	0.79
	ME_4	Union Pacific Business Corridor	0.90	0.81	0.97	0.84	0.88	0.89	0.73	0.93	0.86	0.94	0.85	0.92	0.83
	ME_5	Red Mountain Business Corridor	0.56	0.61	0.64	0.56	0.62	0.84	0.60	0.77	0.64	0.63	0.65	0.62	0.65
	ME_6	Superstition Freeway Corridor	0.98	0.98	0.95	0.95	0.94	0.92	0.98	1.00	0.98	1.00	0.98	0.95	1.00
	ME_7	Superstition Springs Freeway Cor.	0.80	0.65	0.80	0.80	0.77	0.69	0.81	0.74	0.68	0.62	0.65	0.64	0.66
	ME_8	Williams Gateway Airport	0.69	0.79	0.78	0.68	0.77	0.97	0.60	0.73	0.62	0.79	0.63	0.73	0.62
		Other Mesa	0.07	0.08	0.11	0.06	0.11	0.07	0.09	0.10	0.12	0.09	0.10	0.09	0.11
Peoria	PE_1	South Peoria	0.63	0.72	0.68	0.77	0.66	0.65	0.69	0.70	0.85	0.83	0.84	0.84	0.90
	PE_2	Bell Rd/Sports Complex	0.73	0.60	0.63	0.78	0.61	0.75	0.74	0.78	0.63	0.71	0.64	0.63	0.65
	PE_3	North Central Peoria	0.30	0.22	0.23	0.34	0.23	0.40	0.23	0.26	0.24	0.23	0.23	0.23	0.23
	PE_4	Carefree/Lake Pleasant	0.24	0.21	0.22	0.23	0.22	0.25	0.24	0.20	0.23	0.19	0.23	0.22	0.23
	PE_5	Northwest Peoria	0.29	0.18	0.17	0.31	0.17	0.16	0.19	0.23	0.19	0.21	0.18	0.18	0.19
		Other Peoria	0.02	0.06	0.06	0.08	0.09	0.00	0.00	0.03	0.05	0.08	0.08	0.06	0.14
Phoenix	PH_1	Deer Valley	0.92	0.97	0.94	0.93	0.94	0.66	0.80	0.92	0.96	0.93	0.96	0.96	0.94
	PH_2	North Black Canyon	0.51	0.31	0.44	0.51	0.37	0.27	0.39	0.31	0.40	0.33	0.35	0.36	0.41
	PH_3	North I-17	0.94	0.82	0.90	0.94	0.81	0.67	0.81	0.90	0.83	0.82	0.88	0.81	0.84
	PH_4	Desert Ridge/Kierland	0.99	0.76	0.84	1.00	0.74	0.55	0.90	0.64	0.73	0.77	0.79	0.76	0.77
	PH_5	Camelback Corridor	0.96	0.86	0.85	0.90	0.79	0.87	0.91	0.86	0.81	0.73	0.70	0.69	0.87
	PH_6	Gateway	0.89	0.74	0.75	0.77	0.73	0.94	0.90	0.89	0.78	0.77	0.78	0.71	0.74
	PH_7	Downtown Phoenix	0.95	0.78	0.77	0.98	0.86	0.80	0.93	0.79	0.84	0.88	0.85	0.82	0.80
	PH_8	North Central Avenue	0.88	0.94	0.85	0.92	0.90	0.79	0.89	0.85	0.93	0.92	0.93	0.88	0.93
	PH_9	Sky Harbor Airport	0.83	0.92	0.93	0.87	0.90	0.94	0.72	0.90	0.91	0.90	0.91	0.85	0.85
	PH_10	Phoenix Broadway Curve	0.85	1.00	0.98	0.83	1.00	0.82	0.98	0.95	0.99	0.98	0.99	0.99	0.95
	PH_11	Southwest Phoenix	0.65	0.73	0.65	0.69	0.69	0.85	0.59	0.60	0.81	0.84	0.77	0.86	0.85
	PH_12	South Central Industrial	0.76	0.84	0.73	0.89	0.78	0.98	0.63	0.75	0.90	0.90	0.90	0.89	0.86
	PH_13	Phoenix Grand Avenue	0.73	0.85	0.83	0.81	0.80	0.81	0.67	0.80	0.92	0.95	0.92	0.94	0.91
	PH_14	Paradise Valley Mall Area	0.86	0.54	0.54	0.88	0.53	0.69	0.94	0.44	0.49	0.47	0.56	0.51	0.52
	PH_15	South Mountain Foothills	1.00	0.90	0.89	0.99	0.95	1.00	1.00	0.98	0.89	0.86	0.81	0.80	0.94
	PH_16	Future South Mountain Loop	0.26	0.20	0.20	0.30	0.20	0.37	0.27	0.28	0.23	0.23	0.22	0.21	0.22
	PH_17	Phoenix Loop 101	0.53	0.35	0.33	0.59	0.33	0.52	0.71	0.39	0.35	0.38	0.35	0.33	0.33
	PH_18	Camelback/19th Ave.	0.68	0.65	0.66	0.60	0.71	0.56	0.83	0.56	0.73	0.65	0.75	0.72	0.71
	PH_19	Buckeye/107th Ave	0.35	0.56	0.56	0.29	0.56	0.56	0.44	0.58	0.56	0.59	0.59	0.57	0.58
	PH_20		0.15	0.15	0.14	0.14	0.12	0.29	0.31	0.19	0.15	0.15	0.15	0.15	0.15
		Other Phoenix	0.10	0.10	0.10	0.12	0.10	0.20	0.14	0.11	0.10	0.07	0.08	0.10	0.10
PV	PV_1	Paradise Valley	0.56	0.39	0.36	0.52	0.42	0.71	0.79	0.34	0.35	0.40	0.37	0.35	0.35
		Other Paradiise Valley	0.06	0.05	0.05	0.05	0.06	0.15	0.03	0.07	0.02	0.03	0.05	0.05	0.05

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Queen Creek	QC_1	Queen Creek Gateway Area	0.40	0.52	0.52	0.36	0.54	0.48	0.33	0.59	0.60	0.48	0.54	0.56	0.55
	QC_2	Town Center	0.38	0.33	0.31	0.32	0.31	0.40	0.36	0.32	0.32	0.29	0.32	0.31	0.31
	QC_3	Riggs/Meridian	0.20	0.19	0.18	0.19	0.18	0.17	0.18	0.17	0.20	0.18	0.19	0.19	0.19
	QC_4	Rittenhouse/Meridian	0.23	0.34	0.32	0.21	0.32	0.28	0.20	0.37	0.33	0.31	0.33	0.34	0.45
	QC_5	Rittenhouse/Ocotillo	0.23	0.31	0.31	0.21	0.31	0.27	0.20	0.33	0.31	0.31	0.31	0.32	0.31
	QC_6	Ocotillo/Vineyard	0.20	0.29	0.18	0.19	0.18	0.17	0.18	0.21	0.20	0.28	0.19	0.19	0.19
		Other Queen Creek	0.02	0.02	0.02	0.02	0.02	0.00	0.06	0.02	0.01	0.02	0.02	0.02	0.02
SRP-MC	SA_1	101 Corridor	0.58	0.50	0.60	0.61	0.50	0.48	0.48	0.52	0.47	0.45	0.48	0.46	0.48
	SA_2	101/202 Interchange	0.47	0.49	0.50	0.49	0.48	0.52	0.47	0.53	0.53	0.48	0.50	0.47	0.50
		Other SRP-MIC	0.12	0.02	0.02	0.06	0.02	0.00	0.08	0.06	0.02	0.02	0.05	0.02	0.06
Scottsdale	SC_1	Downtown Scottsdale	0.81	0.67	0.81	0.73	0.68	0.53	0.85	0.65	0.69	0.70	0.72	0.65	0.67
	SC_2	McCormick Ranch Center	0.98	0.85	0.87	0.96	0.91	0.72	0.87	0.82	0.85	0.81	0.83	0.83	0.77
	SC_3	Scottsdale Airpark	0.77	0.94	0.90	0.85	0.96	0.93	0.94	0.94	0.95	0.96	0.95	0.94	0.97
	SC_4	Future Job Center	0.61	0.32	0.37	0.60	0.44	0.54	0.50	0.31	0.31	0.34	0.31	0.31	0.30
	SC_5	Perimeter Center	0.67	0.87	0.72	0.66	0.83	0.98	0.51	0.81	0.66	0.68	0.69	0.68	0.72
	SC_6	Los Arcos/McDowell Corridor	0.82	0.68	0.67	0.76	0.81	0.68	0.76	0.77	0.71	0.61	0.74	0.74	0.78
	SC_7	Via de Ventura/Doubletree Corridor	0.60	0.55	0.56	0.53	0.65	0.61	0.54	0.41	0.50	0.46	0.52	0.50	0.53
	SC_8	Mayo Clinic Area	0.41	0.30	0.30	0.27	0.30	0.31	0.37	0.27	0.30	0.26	0.30	0.30	0.40
	SC_9	Rawhide Area	0.65	0.70	0.81	0.54	0.76	0.85	0.56	0.69	0.70	0.69	0.68	0.67	0.70
		Other Scottsdale	0.10	0.10	0.09	0.10	0.08	0.00	0.09	0.14	0.06	0.05	0.06	0.08	0.08
Surprise	SU_1	SR 303 Corridor	0.36	0.47	0.48	0.41	0.47	0.60	0.35	0.54	0.51	0.49	0.48	0.52	0.48
	SU_2	Original Townsite- Surpise Center	0.49	0.48	0.49	0.48	0.49	0.65	0.40	0.51	0.48	0.44	0.51	0.53	0.51
	SU_3	South Dysart Road	0.31	0.46	0.47	0.27	0.45	0.44	0.42	0.47	0.44	0.41	0.46	0.48	0.46
	SU_4	Jomax-Grand Avenue	0.39	0.25	0.27	0.33	0.25	0.23	0.34	0.24	0.27	0.27	0.26	0.28	0.27
	SU_5	Northwest Job Center	0.19	0.17	0.16	0.17	0.16	0.15	0.17	0.22	0.19	0.20	0.17	0.23	0.18
	SU_6	West Job Center	0.25	0.23	0.15	0.15	0.28	0.14	0.27	0.16	0.17	0.24	0.28	0.16	0.16
	SU_7		0.15	0.15	0.23	0.18	0.14	0.11	0.16	0.15	0.14	0.12	0.12	0.12	0.12
		Other Surprise	0.13	0.28	0.28	0.26	0.27	0.00	0.12	0.13	0.18	0.15	0.20	0.27	0.25
Tempe	TE_1	ASU Research Park	0.94	0.91	0.96	0.94	0.92	0.73	0.97	0.96	0.88	0.87	0.87	0.85	0.81
	TE_2	Southwest Tempe	0.93	0.99	0.91	0.90	0.97	0.95	0.96	0.99	0.97	0.99	0.98	0.98	0.99
	TE_3	Northwest Tempe	0.87	0.88	0.99	0.81	0.98	0.81	0.70	0.94	0.90	0.89	0.90	0.90	0.89
	TE_4	Downtown Tempe	0.78	0.75	0.88	0.75	0.85	0.88	0.99	0.73	0.75	0.74	0.77	0.81	0.82
	TE_5	Papago Park Center	0.70	0.69	0.82	0.63	0.69	0.99	0.75	0.87	0.80	0.75	0.66	0.69	0.69
	TE_6	McClintock-Apache Corridor	0.85	0.95	0.98	0.91	0.93	0.90	0.88	0.91	0.94	0.97	0.94	0.97	0.98
	TE_7	Rio Salado Parkway	0.52	0.69	0.73	0.47	0.67	0.74	0.61	0.71	0.67	0.76	0.69	0.78	0.61
		Other Tempe	0.16	0.13	0.13	0.15	0.21	0.33	0.15	0.15	0.12	0.14	0.14	0.11	0.10
TO	TO_1	Tolleson	0.59	0.66	0.65	0.65	0.65	0.62	0.58	0.67	0.76	0.85	0.71	0.77	0.73

Table 7

Cities with Top-Ranking Job Centers (top quartile of score rankings)																		
	GPEC Priority Clusters					Non-Priority Basic Industry Clusters								Nonbasic Industry Clusters				
Cities \ clusters	Advanced Business Svc	Aerospace & Aviation	High Tech Electronics	Software	Bioindustry	Optics	Tourism	Trans, Distr & Whlsl Trade	Other Basic Industries	Ag & Food Processing	Other Supplier Ind.	Plastics	Minerals & Fabr. Metals	Growth Clster	Consumer Industries	Health Svcs.	Educational Services	Government
Chandler	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gilbert	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Glendale		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Goodyear	X						X								X			
Mesa	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Paradise Valley							X											
Peoria				X		X		X	X	X	X	X	X		X	X	X	X
Phoenix	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Scottsdale	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tempe	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tolleson									X	X		X						

Table 7 is a further consolidation of the information, and shows the cities that have cluster scores in the top quartile for at least one of their job centers. Of these cities, six have at least one high-ranking job center for every cluster:

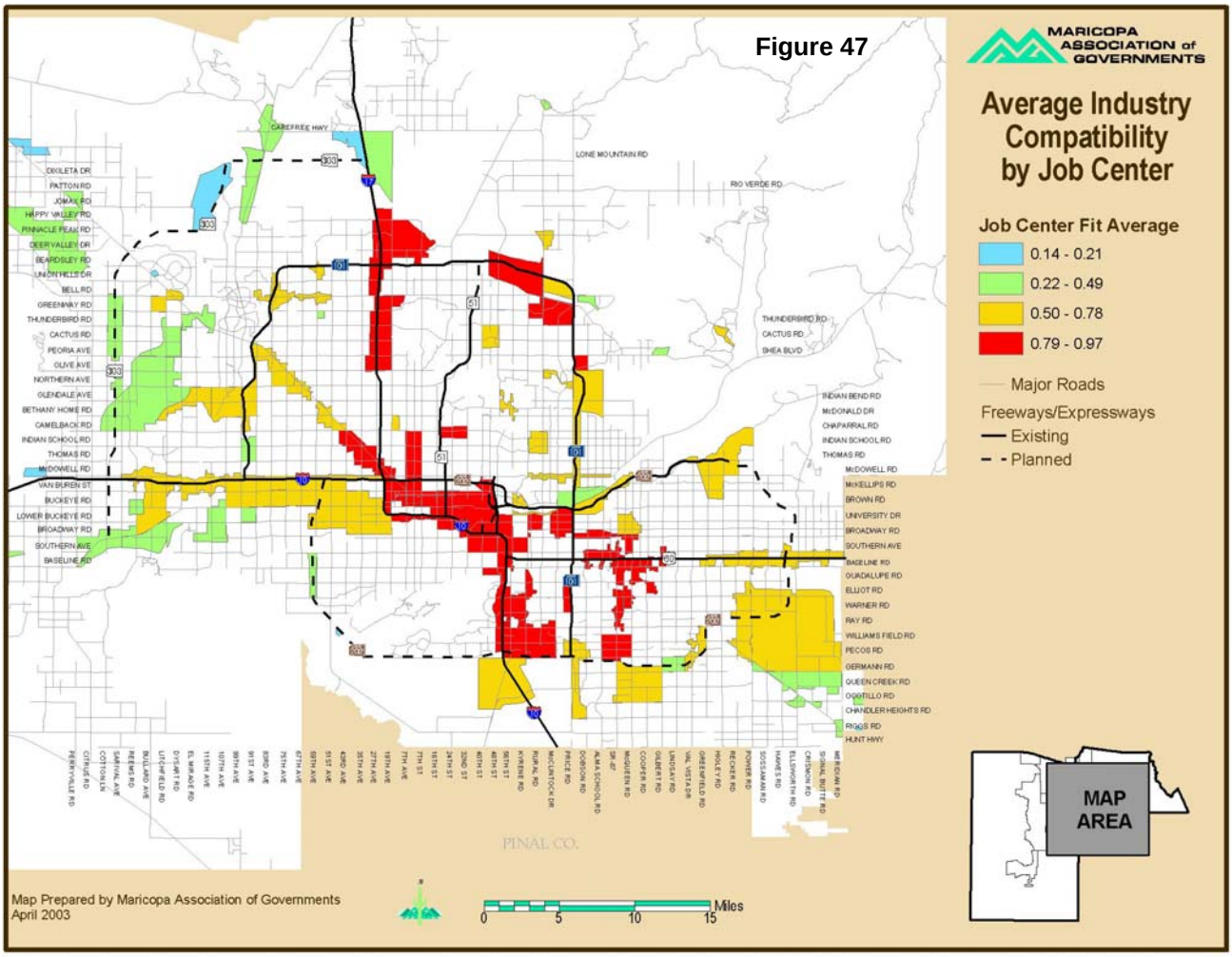
Chandler
Gilbert
Mesa
Phoenix
Scottsdale
Tempe

Additionally, Glendale and Peoria are in the "next tier" of high-ranking job centers, while Goodyear and Tolleson each have three centers in the top quartile.[30]

Figure 47 is a map that shows job centers by their competitiveness, as measured by their average match with all industry clusters, both basic and nonbasic. A clear pattern is evident in Figure 47: job centers that are more centrally located in the more maturely developed parts of the urban area are the most competitive. The reason for this is because job centers in the more developed areas have strengths in two site factors that are especially important to business: (1) availability of work force and (2) availability of building space and improved sites. This is a powerful combination for local economic development. As the region's population grows, job centers that are currently near the periphery of the urban area will improve their access to work force, and real estate investment will follow once they are in a clear path of development.

[30] While this result is interesting, it must be emphasized that this particular finding is not necessarily a "definitive" one. The site factor information on job centers and cities prepared for this study, while solid secondary information, is only a start. This type of model can be organized in different ways, which could be based on more comprehensive site factor information.

Figure 47


MARICOPA ASSOCIATION of GOVERNMENTS
Average Industry Compatibility by Job Center
Job Center Fit Average
0.14 - 0.21
0.22 - 0.49
0.50 - 0.78
0.79 - 0.97
Major Roads
Freeways/Expressways
Existing
Planned
MAP AREA
Map Prepared by Maricopa Association of Governments
April 2003
Miles
0
5
10
15
PINAL CO.

7. ECONOMIC DEVELOPMENT STRATEGIES

Regional (GPEC) Strategies

The Greater Phoenix Business Leadership Coalition is a collaboration of ten regional business leadership organizations which are committed to collaborate and build a purposeful, meaningful business agenda that would build the Phoenix metropolitan region into an internationally competitive, vital economy.

As part of this mission, the Coalition has formed a Continuous Agenda composed of long and short-term strategies. By late summer 2002, the Steering Committee had honed in on approximately 60 priority strategies, and ranked nine of those issues as first priorities.

The first five of the nine priority items have been adopted by the entire Coalition. Each organization within the Coalition agrees to support these strategies as the issues are moved into the legislative and public arenas. The five priorities include:

Enhance the competitive position of the state and region in targeted high-wage industries
Support an extension of the transportation sales tax
Support a competitive analysis of the tax policies of neighboring and competitive states to determine Arizona's competitive position with other states
Support the expansion of Phoenix Civic Plaza
Preserve and enhance Arizona's key military operations that collectively constitute the military industry in the state.

Of these priorities, enhancing the competitive position of the region in the targeted high-wage industries has become the most urgent. A responsibility of GPEC, the regional economic development strategy is to develop a targeted number of direct jobs in each of the high-wage target clusters:

Advanced Business Services – 27,700 new jobs by 2010
Aerospace & Aviation – 12,300 new jobs by 2010
High Tech Electronics – 20,500 new jobs by 2010
Software – 32,500 new jobs by 2010
Bioindustry – 12,900 new jobs by 2010

Strategy Overview.[31] As Greater Phoenix works its way out of the current recession emboldened by greater collaboration among regional organizations, it is confronted with a choice. It can either continue an economic development path that has brought about positive growth, but that has not achieved a full measure of excellence, or it can commit to building on its strengths to make substantive change to move to the next level. A major component of the comprehensive regional economic development strategy is to change the mix of industries in the region so that one out of every six new jobs created over the next ten years is in one of five identified high-wage industries—aerospace and aviation; advanced business services; bioindustry; high-technology manufacturing; and software.

These goals will be accomplished by the regional and local organizations in the Valley involved in economic development working cohesively together to ensure that all activities of business development in the region—attraction, expansion and retention, and new company start-ups—are aligned with the strategy. Regional priorities do not exclude or replace local or community-specific ones.

As businesses begin to look at the comprehensive "value" a region offers—in addition to its cost competitiveness—Greater Phoenix will need to set itself apart by its overall business, social and economic climate, as well as the expertise of specific strengths in focused industry clusters. A comprehensive regional economic development strategy will help Greater Phoenix build such a case. It will also serve as the "glue" to tie together the various initiatives underway within the Coalition, showing

[31] The text in this section is taken from GPEC's 11-14-02 BD Pre-reads memo

how they all work together to build an internationally competitive, vital, economy that provides continuing opportunities for the region's residents to live, work and recreate.

Local Strategies

The survey of economic developers conducted in 2002 asked for information about local economic development strategies, and this information was provided primarily through documents that the local practitioners indicated were used to currently guide economic development policy. A wide variety of documents were furnished, from economic development strategic plans to organizational work plans.

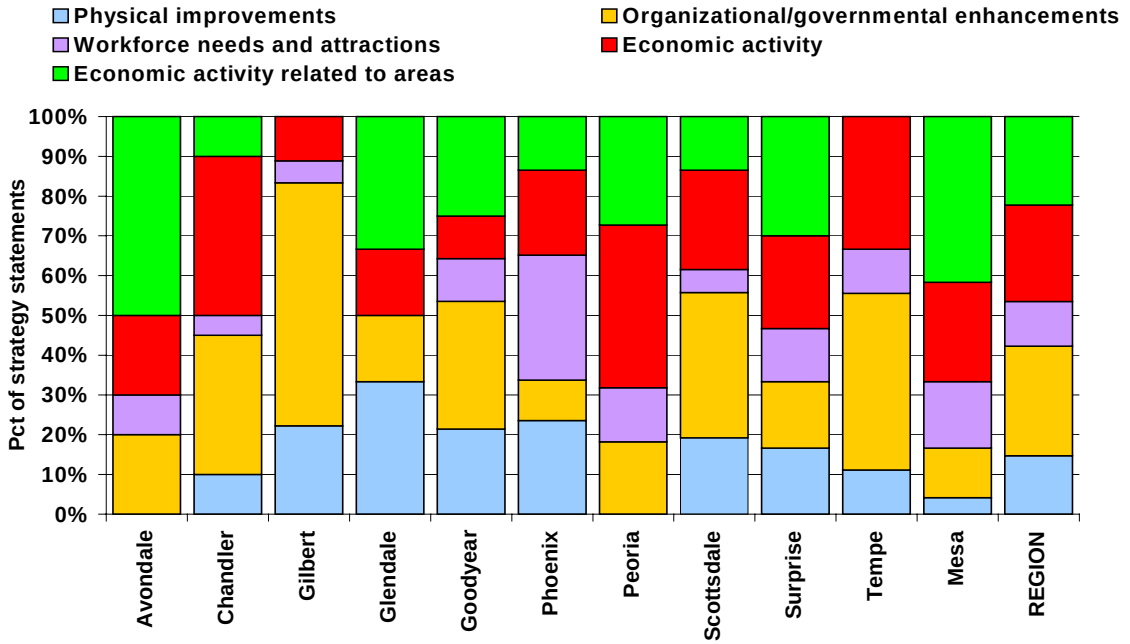
The approach to processing this material was, first, to identify as many common themes as required to capture the full range of ideas or tasks presented, and also keep that list as concise as possible. The list thereby generated, containing 27 entries, was then organized under 5 major headings:

Physical improvements
Organizational/governmental enhancements
Workforce needs and attractions
Economic activity
Economic activity related to areas

In an attempt to demonstrate the relative attention given to each strategy category, the number of times strategies fell into some particular category was counted as a "mention," so that a matrix of the 27 line items by city was produced with the number of mentions in each matrix cell. This process was imperfect at best, given the different types of documents and the variations in level of detail, comprehensiveness of the material, etc. The method also required a series of judgment calls about the content of the material reviewed. However, because our focus was on a qualitative rather than quantitative assessment, the method can still produce valid and useable results.

Figure 48, a chart of the strategic emphasis, by city, at the level of the 5 major headings, indicates that the focus of strategies varies considerably among cities. Summing all the "mentions" (of the 11

Figure 48
Strategy Emphasis by Community



communities that have economic development policy documents), the regional composite has the following local economic development priorities:

Organizational/governmental enhancements – 24% of mentions
Economic activity – 23.7% of mentions
Economic activity related to areas – 19.5% of mentions
Physical improvements – 16.9% of mentions
Workforce needs and attractions – 15.9% of mentions

This material should be useful to economic development practitioners as a way of gauging their own program focus in comparison to that of other communities. Differences in program emphasis are to be expected, based on the following as well as other conditions:

The areas of responsibility assigned to the economic development operation;
Cities' degree of direct involvement in real estate development, revitalization, etc.; and
The relative attractiveness of cities for certain industries, compared to the industries that cities are targeting.

Table 8 shows the 27 categories of strategies and supporting policies and the 5 major categories, along with the percent of mentions, for all cities combined, attributed to each. The table demonstrates that overall the cities are addressing economic development in a comprehensive manner. Drilling down beneath the 5 major categories, the top local priorities are:

Target specific industry cluster or industry type – 12.7% of mentions
Build up organizational/community responsiveness to economic development process – 11% of mentions
Coordinate growth areas/industries with community development policies/actions – 10.7% of mentions
Enhance quality of life – 8.8% of mentions
Build up physical capacity – 8.4% of mentions
Revitalize existing areas – 8.1% of mentions
Focus on citizen job/training needs and income enhancement – 6.8% of mentions
Promote retention/expansion through outreach and other programs – 5.8% of mentions
Promote certain areas (including undeveloped) – 4.9% of mentions
Enhance fiscal strength/stability – 3.9% of mentions
Leverage/protect existing assets – 3.9% of mentions

For the most part cities' strategies reflect a community-specific rather than regional focus. The strategy area that is shared by regional and local economic development is targeting of industries. Current Business Leadership Coalition strategies also address the regional transportation sales tax, the need for a comparative tax analysis, expansion of the Phoenix Civic Plaza, and support for Luke Air Force Base and other military installations. One city mentioned support for the regional transportation system, one mentioned the need for an improved business climate in the state, the need to protect Luke was included in the category "leverage/protect existing assets," and as a general reference to regional issues, there were two mentions among the cities of the need to cooperate with regional and local allies in economic development.

Table 8 **Strategy Categories & Supporting Policies Mentioned in Community General Plans or Economic Development Strategies and Plans**	**No. of Mentions**	**% of Mentions**
Organizational/governmental enhancements	***74***	**24.0%**
Build up organization/community responsiveness to economic development process	*34*	11.0%
Enhance fiscal strength/stability	*12*	3.9%
Conduct focused research; develop databases	*7*	2.3%
Expedite permitting; minimize costs for development	*7*	2.3%
Develop/apply incentives	*4*	1.3%
Enhance cluster awareness and general responsiveness	*4*	1.3%
Encourage new/expanded roles for institutions of higher learning	*3*	1.0%
Cooperate with regional and local allies	*2*	0.6%
Encourage positive change in business climate, statewide	*1*	0.3%
Economic activity	***73***	**23.7%**
Target specific cluster or industry types	*39*	12.7%
Promote retention/expansion through outreach and other programs	*18*	5.8%
Diversify economy	*4*	1.3%
Encourage start-up businesses	*3*	1.0%
Encourage existing industries to update to new/emerging technologies	*2*	0.6%
Focus on specific land use types	*2*	0.6%
Increase ratio of jobs per resident	*2*	0.6%
Promote sustainable economy	*2*	0.6%
Provide jobs for less urbanized hinterlands	*1*	0.3%
Economic activity related to areas	***60***	**19.5%**
Coordinate growth areas/industries with community development policies/actions	*33*	10.7%
Promote certain areas (including undeveloped)	*15*	4.9%
Leverage/protect existing assets	*12*	3.9%
Physical improvements	***52***	**16.9%**
Build up physical capacity	*26*	8.4%
Revitalize existing areas	*25*	8.1%
Support development of regional transportation system	*1*	0.3%
Workforce needs and attractions	***49***	**15.9%**
Enhance quality of life	*27*	8.8%
Focus on citizen job/training needs and income enhancement	*21*	6.8%
Enhance community image	*1*	0.3%
Sum of Mentions	***308***	**100.0%**

[i] Information sources for the SWOT analysis include the following:

Canton, James, *Techno futures,* 2001.
Economy.com, *State Economic Study, Phase II*, Summer 2002.
Florida, Dr. Richard, *speech at Greater Phoenix Economic Council Summit*, 2001.
GPEC Competitiveness Committee, *Framing the First Year Charge: 2002 Report & Recommendations,* 2002.
Greater Phoenix Economic Council, *Survey of Corporate Executives,* Summer 2002.
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Kotkin, Joel, The Declustering of America, *The Wall Street Journal*, August 15 2002.
Maricopa Association of Governments, *draft projections subject to change*, October 2002.
Maricopa Association of Governments, Greater Phoenix Economic Council and Salt River Project, *Maricopa County Regional & Local Economic Developers Survey,* Summer 2001
Maricopa Association of Governments, *Regional Council Presentation,* 1998.
Maricopa Association of Governments, *Regional Growing Smarter Implementation Project – Demographic Trends,* 2001
Milken Institute, *State Technology and Science Index,* September 2002.
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San Diego Association of Governments, *Indicators of Sustainable Competitiveness,* May 2002.
The Wadley-Donovan Group, *Labor Market Analysis of Greater Phoenix,* April 2000.
U.S. Bureau of Census, medium projections
United Nations, medium projections