VOLUME 49 • NUMBER 11

AZB ARIZONA BUSINESS

NOVEMBER 2002

ARIZONA STATE UNIVERSITY'S MONTHLY NEWSLETTER ON THE ARIZONA ECONOMY

Growth at a snail's pace likely for state and nation

Fourth quarter economic forecast

The economy, both locally and nationally, continues its weak performance in line with expectations. Data revisions to GDP are showing just how poorly the economy performed in 2001, and while the stock market is showing some resiliency there are few other positives in the current economic outlook. At present, the forecast is for a continuing slow recovery rather than a return to recession — but the odds of a double dip are increasing.

The Gross Domestic Product forecast did not change despite significant negative revisions to GDP. There was good reason to expect downward revisions to the GDP figures for 2001 because the figures from the third quarter were just not consistent with most of the rest of the economic data. The magnitude of revision was large, with real GDP in 2001 declining from 1.2 percent growth to 0.3 percent growth. Prior numbers showed only one negative quarter of growth, while revised figures showed three negative quarters. Quarterly GDP is usually expressed as a seasonally adjusted annual rate, meaning that each percentage change is the annual figure that would result if the current quarterly growth occurred for four quarters. This can be misleading since the -0.6, -1.6, -0.3 and 2.7 percent growth rates for 2001 lead to an annual figure of 0.3. Likewise it is hard to figure out the probable annual rate for 2002 when the quarterly rates are quoted as 5.0 and 1.3 so far this year, but year-to-date GDP is growing by 1.8 percent over last year.

The major problem for the economy remains lack of spending by businesses, which may seem surprising given the current low interest rates and the impact they have had on consumer spending. The following characterizations of consumer and business spending patterns are greatly simplified, but do help illuminate the problem:

Consumers typically act as though there is a fixed percentage of their monthly income that is available to purchase consumer goods. This may take the form of direct expenditures or payments on borrowed money. Lower interest rates directly increase spending because consumers can borrow more without increasing the monthly outlay. This is most evident in the market for cars, houses and other big-ticket items. Firms increase spending to increase capacity if demand is increasing, or increase efficiency if competitive pressures are high. They pay for the increased spending out of profits. The first barrier to more business spending is that in general, demand is not rising and firms actually have significant excess capacity. The second barrier to increased spending is that firms went on a capital spending spree during the '90s, capped by the updating for Y2K (the "millennium bug"), so that the physical capital is relatively new. Third, the cost of borrowing has not gone down as much for firms, and in many cases may have gone up because of concerns over accounting irregularities and problems in specific industries. Also, the stock market has been removed as a source of funds for the time being. Fourth and perhaps most disturbing, the lack of pricing power severely limits the potential for profit growth. If demand is flat or falling, firms have two choices for increasing profits: raising prices or cutting costs. The amount of pricing power most firms currently enjoy is very limited, which is evident in the low levels of consumer inflation and producer price inflation. Thus, most firms are cutting costs, which often translates into layoffs or hiring freezes.

It would have seemed heretical even a few years ago to suggest that insufficient pricing power could become a problem for the economy, but such appears to be the case. The lack of pricing power is most severe in business-to-business sales of goods, but is spreading to some parts of the business service sector. This tends to be less of a problem in the consumer sector. The problem has actually been with us for some time, but when demand is increasing and productivity is soaring because of capital investment, the problem tends to be overlooked. If demand stagnates, firms are forced to focus solely on cost-cutting measures, which boost productivity for a time but put further downward pressure on demand. There is also a danger

INSIDE

CENTER FOR BUSINESS RESEARCH

ASU College of Business
ARIZONA STATE UNIVERSITY

that the economy could experience deflation, which could lead to a situation like that of Japan where economic growth has stagnated for a decade. We have fewer and less severe problems than those that led to Japan's struggles, but there are significant parallels.

The one bright spot during the recent recovery has been the consumer's refusal to stop spending — particularly on big-ticket items like cars and houses. Big-ticket spending has been driven by declining interest rates, but this may slow — at least for awhile — as consumer demand is satisfied. The wave of mortgage refinancing has been providing more funds for consumer spending, but refinancing and new home purchases have slowed significantly in the last few weeks as rates have drifted higher. It is unclear how much of an impact the Federal Reserve will have if it lowers the federal funds rate yet again.

There is also the question of how much holiday spending will increase, given the economic climate. The West Coast dock strike could lead to shortages of some high-demand goods, which may have the potential to restrain or at least delay some purchases. The consumer's mood as measured by consumer confidence surveys seems to be deteriorating, but these surveys are notoriously poor indica-

TABLE 1
2002 AND 2003 ECONOMIC FORECASTS: UNITED STATES

	Actual 1998	Actual 1999	Actual 2000	Actual 2001	Forecast 2002	Forecast 2003
Gross Domestic Product						
Billions of 1996 Dollars	8,508.9	8,858.9	9,191.4	9,214.6	9,417.3	9,699.8
Percent Change	4.3	4.1	3.8	0.3	2.2	3.0
Industrial Production (Percent Change)	5.2	3.6	4.5	(3.6)	(0.3)	3.8
Net Exports (Billions of 1996 Dollars)	(221.1)	(320.5)	(398.8)	(415.9)	(480.0)	(505.0)
Housing Starts						
Number in Thousands	1,616.9	1,666.5	1,592.3	1,636.7	1,650.6	1,601.1
Percent Change**	9.7	3.1	(4.5)	2.8	0.9	(3.0)
Unemployment Rate (Percent)	4.5	4.2	4.0	4.8	5.9	5.7
Consumer Price Index (Percent Change)	1.6	2.2	3.4	2.8	1.5	2.4
Three-Month Treasury Bill Rate (Percent)	4.8	4.6	5.8	3.4	1.7	2.0
10-Year Treasury Note Rate (Percent)	5.3	5.6	6.0	5.0	4.7	4.9

**Calculated prior to rounding

TABLE 2
2002 AND 2003 ECONOMIC FORECASTS: ARIZONA

	Actual 1998	Actual 1999	Actual 2000	Actual 2001	Forecast 2002	Forecast 2003
Personal Income						
Millions of Current Dollars	112,895	120,257	130,982	137,314	142,807	150,375
Percent Change	8.9	6.5	8.9	4.8	4.0	5.3
Retail Sales						
Millions of Current Dollars	37,071	40,769	43,940	44,833	45,730	47,559
Percent Change	7.2	10.0	7.8	2.0	2.0	4.0
Unemployment Rate (Percent)	4.1	4.4	3.9	4.7	5.6	4.9
Wage and Salary Employment						
Number in Thousands	2,074.7	2,163.1	2,242.8	2,265.7	2,267.2	2,312.6
Percent Change	4.5	4.3	3.7	1.0	0.1	2.0
Population						
Number in Thousands	4,864	5,017	5,169	5,324	5,469	5,595
Percent Change	3.3	3.1	3.0	3.0	2.7	2.3
Single-Family Units Permitted						
Number	50,997	51,764	48,846	50,930	53,120	50,995
Percent Change	18.6	1.5	(5.6)	4.3	4.3	(4.0)
Multifamily Units Permitted **						
Number	13,218	12,067	10,920	10,414	7,290	7,873
Percent Change	1.3	(8.7)	(9.5)	(4.6)	(30.0)	8.0

** Apartment complexes of three or more units

Source (Tables 1 and 2): Bank One Economic Outlook Center, L. William Seidman Research Institute, College of Business, Arizona State University.

tors of spending. They may, however, portend a shift from big-ticket items to smaller items; this may not boost overall spending but could help retail sectors that have been struggling thus far in the recovery. Anecdotal evidence is somewhat mixed: In one recent report, a family that in past years has spent an average of $150 per family member on holiday gifts claimed that this year, they plan to spend only $20. If this family is at all representative, holiday spending could be in trouble.

Consumer spending, if it does moderate, also could be an indirect drag on the economy because of the impact on our trading partners. Consumer demand in the U.S. has helped to keep the economies of our major trading partners afloat at a time when their domestic demand is somewhat anemic. If the economies of our major trading partners soften further, it effectively adds to the downward pressure on our economy.

While this analysis has focused on the problems with the economy, the overall conclusion remains that the nation is experiencing a weak recovery, which is expected to continue. The risks remain mostly on the downside, with the impact of an Iraq conflict a big wild card.

ARIZONA

Arizona is being buffeted by the same economic winds that are battering the national economy. The state bears the added burden of a higher dependence on business-to-business spending and business-related tourism. The recovery is expected to continue in the state as well, but clearly it will not be the rapid recovery we have come to expect based on past experience.

Arizona is also subject to data revision problems, particularly for personal income — however, the direction this time is up rather than down. The data released with the initial estimate of first quarter 2002 suggested that personal income growth for Arizona was 5.7 percent in 1999, 8.2 percent in 2000, 4.3 percent in 2001 and 2.7 percent for the first quarter of 2002. The revised

TABLE 3
2002 AND 2003 ECONOMIC FORECASTS: MARICOPA COUNTY

	Actual 1998	Actual 1999	Actual 2000	Actual 2001	Forecast 2002	Forecast 2003
Retail Sales						
Millions of Current Dollars	25,207	27,825	30,167	30,605	30,911	32,302
Percent Change	7.9	10.4	8.4	1.5	1.0	4.5
Unemployment Rate (Percent)	2.7	3.0	2.7	3.9	5.1	4.5
Wage and Salary Employment						
Number in Thousands	1,418.8	1,487.0	1,541.0	1,557.2	1,549.4	1,582.0
Percent Change	5.5	4.8	3.6	1.1	(0.5)	2.1
Population						
Number in Thousands	2,890	2,995	3,097	3,196	3,291	3,377
Percent Change	4.0	3.6	3.4	3.2	3.0	2.6
Single-Family Units Permitted						
Number in Thousands	35,603	35,430	33,107	33,428	33,762	30,892
Percent Change	16.9	(0.5)	(6.6)	1.0	1.0	(8.5)
Multifamily Units Permitted **						
Number in Thousands	10,529	9,524	9,490	8,964	6,364	7,001
Percent Change	(2.4)	(9.5)	(0.4)	(5.5)	(29.0)	10.0

** Apartment complexes of three or more units

TABLE 4
ARIZONA EMPLOYMENT FORECASTS: 2002 and 2003
(In Thousands)

	Actual 1998	Percent Change	Actual 1999	Percent Change	Actual 2000	Percent Change	Actual 2001	Percent Change	Forecast 2002	Percent Change	Forecast 2003	Percent Change
Manufacturing	216.0	4.1	211.7	(2.0)	215.4	1.7	209.6	(2.7)	199.1	(5.0)	201.1	1.0
Mining	13.0	(5.8)	11.4	(12.3)	9.7	(14.9)	9.5	(2.1)	8.8	(7.7)	8.8	0.0
Construction	143.8	9.1	154.7	7.6	161.6	4.5	164.6	1.9	153.1	(7.0)	148.5	(3.0)
TCPU*	100.9	4.5	104.2	3.3	109.8	5.4	111.3	1.4	105.7	(5.0)	104.1	(1.5)
Trade	498.0	3.2	509.7	2.3	526.9	3.4	533.3	1.2	541.3	1.5	557.5	3.0
FIRE**	135.6	6.2	139.6	2.9	144.4	3.4	150.4	4.2	151.9	1.0	156.5	3.0
Services	626.1	4.9	677.8	8.3	708.5	4.5	710.6	0.3	721.3	1.5	750.1	4.0
Government	341.5	4.1	354.1	3.7	366.7	3.6	376.6	2.7	386.0	2.5	386.0	0.0
Total Wage and Salary Employment	2,074.7	4.5	2,163.1	4.3	2,242.8	3.7	2,265.7	1.0	2,267.2	0.1	2,312.6	2.0
Unemployment Rate	4.1%		4.4%		3.9%		4.7%		5.6%		4.9%	

*Transportation, Communications and Public Utilities **Finance, Insurance and Real Estate

Source (Tables 3 and 4): Bank One Economic Outlook Center, L. William Seidman Research Institute, College of Business, Arizona State University.

data show a 6.5 percent increase in 1999, 8.9 percent in 2000, 4.8 percent in 2001, 3.6 percent in first quarter 2002 and 3.3 percent in second quarter 2002. The biggest change affected estimates of dividend, interest and rent income, which are difficult to estimate at the state level. The estimates, if accurate, increase the magnitude of the drop between 2000 and 2001, which seems consistent with the overall economic performance. The upward revisions also would explain why economic performance has held up as well as it has in the face of such slow job growth.

Employment growth has been slow primarily for the reasons discussed above under the lack of pricing power. Employment is not expected to grow appreciably in 2002, and has been flat or negative for 12 consecutive months. Unless there is at least a mild increase in employment for the holiday season, even the 0.1 percent increase forecast for 2002 will be optimistic.

The employment situation may have some impact on the holiday shopping season, but retail sales are expected to increase slightly during the season. Through August, retail sales were up 1.2 percent, so the improvement needed to reach the forecast of 2.0 percent is modest.

The tables do not have numbers for 2004, but the probable outlines of the economy are emerging from the mist. Personal income growth is likely to advance to about 6.0 percent while real personal income is expected to bounce up to more than 3.5 percent. Retail sales should improve, but will not equal the peaks before the recession. Employment growth should be better than 3.5 percent — a vast improvement over this year, but still anemic by historical standards. Interest rates are likely to move up modestly, which will be a reflection of increased demand for funds. Maricopa County should improve the most by 2004, a reflection of the fact that the county currently is lagging the rest of the state.

— Tracy Clark
Associate Director
Bank One Economic Outlook Center

Arizona Leading Index declines in September

The Bank One Arizona Index of Leading Economic Indicators was at 116.0 in September, representing a decline of 1.0 percent from 117.2 in August, and an increase of 3.2 percent over the 112.4 recorded in September 2001 (1987 = 100).

Materials inventories, delivery times, sensitive materials prices, production, new orders, the inflation-adjusted value of Maricopa County residential building permits and employment from the Business Conditions Survey were negative. The inflation-adjusted value of the M2 money supply was positive. Hours worked in manufacturing remained neutral.

It is clear from the local Business Conditions Survey and similar surveys for other regions and the nation as a whole that the goods-producing sectors are considerably weaker than the service-related sectors of the economy. The National Association of Business Economists has found that most firms in the goods-producing sectors do not foresee a turnaround in the next six months.

The forecast article elsewhere in this issue discusses the problems that can plague the economy when businesses have too little pricing power, and it is clear that goods producing firms currently have little pricing power. Many are facing outright price declines. Service firms in general have more pricing power and therefore are facing less of a profit squeeze. Firms are forced to look to cost-cutting measures as the only way to improve profits, which does not bode well for employment trends in these industries.

One of the questions for analyzing the local economy is the relative importance of service- versus goods-producing firms. In terms of employment, service-producing industries accounted for about 84 percent of total wage and salary jobs in September. However, goods-producing jobs tend to be relatively high paying, which means they have a more concentrated impact on the economy overall. Arizona goods-producing firms are more oriented to business goods than consumer goods, which makes their situation even more precarious.

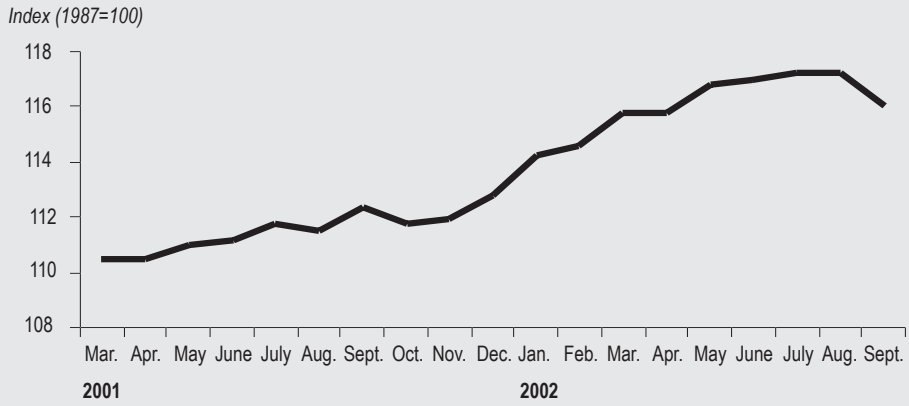
The good news for the service sector is not evenly distributed. Transportation and communications are, at best, struggling. The overcapacity problems of the communications sector are in the news daily and are not likely to clear up any time soon. The aviation segment of transportation also has been discussed at length. In contrast, the difficulties experienced by shipping firms when business is not producing as many goods has been almost ignored.

The holiday shopping season is likely to show modest improvement over last year's results, although it is likely to fall short of retailers best-case scenario. Spending should begin to shift away from big-ticket items and more in the direction of small items. Consumer confidence has taken a nosedive recently, which may provide the impetus to cut back on big-ticket purchases.

The economic recovery is expected to continue despite the difficulties in the goods sector, although the pace will be slow. The picture could change if prospects for manufacturing, mining and construction do not improve.

— Tracy Clark
Associate Director
Bank One Economic Outlook Center

FIGURE I
ARIZONA INDEX OF LEADING ECONOMIC INDICATORS



Source: Bank One Economic Outlook Center, L. William Seidman Research Institute, College of Business, Arizona State University.

Housing payments in Arizona higher than national norm

Arizonans — both homeowners and renters — pay a higher proportion of their income on housing payments than the national norm. According to 2000 census data, median housing costs as a proportion of income for renters in Arizona ranked tied for sixth highest among the 50 states. For homeowners, median housing costs as a percentage of income ranked 18th.

FINANCIAL CHARACTERISTICS

The median value of owner-occupied units was $121,300 in Arizona in 2000, barely higher than the national average of $119,600. The inflation-adjusted increase in value between 1990 and 2000 was nearly identical in Arizona to the national average of 23.5 percent. This increase reflects changes in the housing stock — homes built in the 1990s were larger and more expensive than homes built previously — as well as real appreciation in the value of existing properties.

The median value is subject to respondent bias since some people may not have a good idea of their property's value. However, some likely overstated their value while others provided too low an estimate. Moreover, 20 percent of homeowners (presumably mostly those who did not know the value) did not answer this question.

The median value in Arizona ranked 20th among the 50 states but only seventh among 10 western states. The highest home values in the country (more than $150,000) were in Hawaii, along the Pacific coast, in Colorado, and in some northeastern states, particularly Massachusetts, Connecticut and New Jersey (see Figure I). In contrast, 14 southern states and northern Plains states had medians less than $90,000. These geographic differences in home values reflect variations in housing characteristics such as size and quality as well as price differences.

Coconino and Yavapai counties had the state's highest median values in 2000 at around $140,000, followed by Maricopa's $129,200. More than half of the counties had a median less than $100,000, including $41,700 in Apache and $62,700 in Greenlee.

The median monthly homeowner's cost (including taxes and insurance) was $1,039 for those with a mortgage in Arizona in 2000. The median for those without a mortgage was $268. Each value was several percent less than the national average. The 1990-to-2000 real increase in the Arizona median of those with a mortgage was less than half the national average; the rise in the median without a mortgage was similar to the national average. Arizona ranked tied for 20th among the states on monthly costs for those with a mortgage and tied for 29th among those without a mortgage.

Of those homeowners with a mortgage, Coconino ($1,125) and Maricopa ($1,095) were the only counties with median costs in excess of the state median. Pima County's median was $968, with the figure in Yavapai County nearly as high. In most counties, the median was between $775 and $900, but in Apache and Greenlee counties the figures were less than $650. For those without a mortgage, only Maricopa ($287) and Pima ($276) counties had a median greater than the state median. In most counties, the figure was between $175 and $250.

The median Arizona homeowner household spent 19.2 percent of its income on homeowner costs. Because Arizona incomes were less than the national average, this percentage was slightly higher than the national average of 18.7 percent, despite the lower homeowner costs in Arizona. Arizona's percentage ranked seventh in the West and 18th among all states. Californian homeowners paid the highest proportion of income in housing costs, at 22.5 percent. Despite by far the highest home value and homeowner costs, the percentage of income going to homeowner costs in Hawaii ranked tied for fourth in the nation. Other states with high percentages were in the West and Northeast, with the lowest percentages in the South and northern Plains. This measure does not vary nearly as much across states as median home values, in large part because the states with the highest homeowner costs also have the highest incomes.

In Santa Cruz County, the median homeowner household spent 21.7 percent of its income on homeowner costs (a higher proportion than in Hawaii despite a median home value of only $94,700). Maricopa and Pima counties had the next highest percentages, between 19 and 20. The percentage was very low (less than 12) in Apache and Greenlee counties.

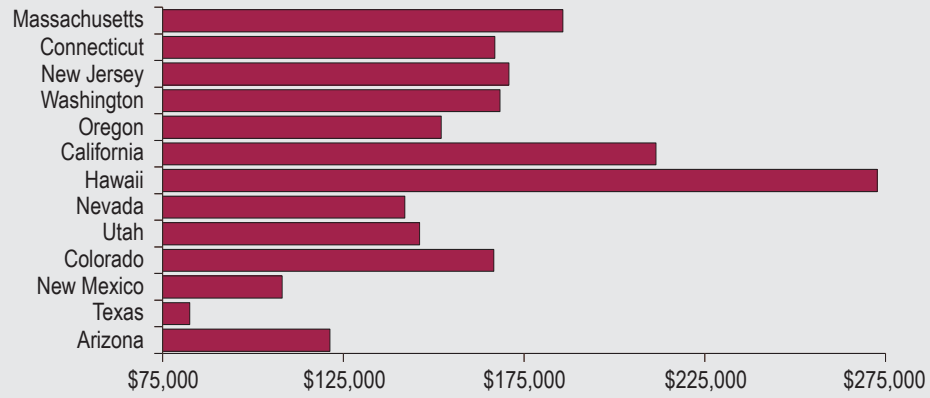
Despite having the state's highest home values and median incomes below the state median, the proportion of income applied to housing payments in Coconino and Yavapai counties was below the state's figure. The proportion of homeowners with a mortgage was below the state total in these counties, lowering the median housing payment. While Yavapai County has an above average proportion of retirees — many retirees do not have mortgage payments — the proportion in Coconino County is below average. Thus, these counties appear to have attracted some people with enough wealth to have made a cash purchase of their home, but not necessarily with a high income.

Renters

Median monthly gross rent (which includes utility costs) also was higher in Arizona in 2000 than the national average ($619 v. $602). The median rent rose an inflation-adjusted 14 percent in Arizona and 9 percent nationally between 1990 and 2000 — a lesser gain than in home value.

Median rents partially followed the geo-

FIGURE I
MEDIAN HOME VALUE
Selected States, 2000



Source U.S. Department of Commerce, Bureau of the Census, 2000 decennial census.

graphic pattern of home values, with the highest figures in Hawaii, Alaska, California, Nevada and New Jersey at $700 or more, and the lowest costs (less than $475) across the South and northern Plains and in Vermont. Arizona's median monthly rent in 2000 was sixth highest in the West and 17th highest among all states.

The median monthly rent within Arizona was highest in Maricopa and Coconino counties at more than $625. It was less than $350 in Apache and Greenlee counties.

The median Arizona renter household spent 26.6 percent of its income on gross rent in 2000, more than the national average of 25.5 percent. Arizona's higher rents caused this differential; the median income of renters in Arizona was nearly identical to the national average. Arizona's proportion tied for third in the West behind California (the least affordable state in the nation) and Oregon. Nationally it ranked tied for sixth, with higher figures in Florida, New York and Hawaii.

The proportion of renter income spent on gross rent was at least as high as the state median in five counties: Yavapai (highest in the state at 28.9 percent), Pima, Santa Cruz, Coconino and Maricopa. Affordability again was best in Apache and Greenlee counties, with proportions far below those in any other county.

Home Value v. Rent

The median value of owner-occupied housing in 2000 was 16.3 times median annual gross rent in Arizona, compared to 16.6 times higher nationally. Each figure was higher than in 1990, due to housing values rising more than rents during the 1990s.

The home value-to-rent ratios were the highest in much of the West and Northeast, with a value of 29 in Hawaii and 24 in California. Thus, in these very expensive housing markets, renting is relatively more affordable than purchasing a home, perhaps because of homeowners' expectation of continued appreciation in value. Arizona's home value-to-rent ratio ranked ninth among 10 western states and 28th among the 50 states. The median home value was only 12 times annual gross rent in Texas and was below average in some of the other southern states.

Within Arizona, home values relative to rents were the highest in Coconino and Yavapai counties, with factors of about 19. In contrast, the median home value was only 10 times higher than median annual gross rent in Apache County. Most counties had values between 15 and 18, including Maricopa County at 16.2 and Pima County at 17.6.

OTHER HOUSING CHARACTERISTICS

The median housing unit in Arizona was about 18 years old in 2000. By county, the median year built was between 1977 and 1986 except in Greenlee (1971). The age of housing is closely correlated with the population growth rate.

Single-family detached units accounted for 57 percent of all housing units in Arizona in 2000. While up from the 1990 figure, this percentage remained below the national average of 60 percent. With the share dropping slightly from 1990, attached single-family units made up another 6 percent of Arizona's housing stock, about the same percentage as the national average. The share of multifamily units in Arizona also declined during the 1990s, with the 2000 proportion 22 percent, compared to 26 percent nationwide. Mobile homes and travel trailers were much more common in Arizona than nationally, with a 2000 share of 14 percent compared to 8 percent. The share decreased a little during the 1990s in Arizona, but held steady nationally.

In 12 of 15 Arizona counties in 2000, the share of dwelling units that were mobile homes or travel trailers exceeded the statewide figure and was more than twice the national average. More than half of the dwellings in La Paz County, and more than a third in Mohave, Pinal and Yuma counties, were of this type. The lowest proportion was in Maricopa County at 7 percent, with the percentages in Pima and Santa Cruz counties also below the state total.

Single-family detached units accounted for at least 60 percent of the units in seven counties; the figure in Maricopa County was 59 percent. Single-family attached units were most common in Maricopa and Pima counties, but were less than a tenth of the housing stock. Multifamily units by far were most common in Maricopa and Pima counties, making up at least a fourth of the housing units. The multifamily proportion was less than 10 percent in seven counties.

The median number of rooms (excluding bathrooms, halls, etc.) per dwelling unit in Arizona was 5.0 in 2000, up from 4.7 in 1990. The national figure in 2000 was 5.3 rooms. More than one person per room is a measure of overcrowding. In Arizona, 8.6 percent of occupied units were overcrowded in 2000; the national figure was 5.7 percent. This proportion increased between 1990 and 2000 by a little more in Arizona than nationally.

The median number of rooms was between 4.6 and 5.1 in 12 Arizona counties in 2000, but was lower in Yuma, La Paz and Apache counties, with the latter figure just 3.4. Less than 9 percent of housing units were overcrowded in 10 of the counties, with the lowest figure at 4.2 percent in Yavapai County. The overcrowded proportion was between 10 and 20 percent in Coconino, Navajo, Santa Cruz and Yuma counties; Apache County's figure was 30 percent.

Just more than 1 percent of housing units in Arizona in 2000 lacked complete plumbing facilities (hot and cold piped water, a flush toilet, and a bathtub or shower), nearly twice the national proportion. The percentage of deficient units was marginally lower than in 1990. A similar percentage lacked complete kitchen facilities (a sink with piped water, a range or stove, and a refrigerator). 3.7 percent of Arizona units had no telephone service in 2000, compared to 2.4 percent nationally. The proportion dropped nearly 5 percentage points in Arizona during the 1990s, compared to less than 3 nationwide.

In 12 Arizona counties in 2000, the proportion of housing units without complete plumbing facilities was less than 2 percent, with the lowest figure in Maricopa County at less than 0.5 percent. However, 5 percent of units in Coconino County, 11 percent in Navajo County, and 26 percent in Apache County had incomplete plumbing. These high figures largely result from housing deficiencies on the Navajo Reservation. Similar percentages had incomplete kitchen facilities. Nearly half of the housing units in Apache County, and a fourth in Navajo County, did not have telephone service in 2000.

Arizona households used electricity as the house heating fuel much more than the national average (54 v. 30 percent) in 2000. Other fuel sources were used less commonly, including utility gas (38 v. 51 percent nationally). A shift toward electricity use occurred during the 1990s, both in Arizona and nationally.

Within Arizona in 2000, more houses used electricity than natural gas only in Maricopa, Pinal, Yuma, La Paz and Mohave counties. The distribution of fuel sources in the other counties more resembled the national average than the Arizona average. Neither electricity nor utility gas was the most common fuel source in two counties: bottled gas was most common in La Paz County and wood heated half the dwellings in Apache County.

— Tom R. Rex
Research Manager

Much of Metro Phoenix employment core is in East Valley

The Valley's employment core in 2000 stretched from West Chandler to the Scottsdale Airport, and from Central Mesa to Metrocenter Mall. Within this area, Central Phoenix — the Downtown and Midtown areas — forms the primary core. A secondary core stretches southeast from Downtown Phoenix to Downtown and Central Tempe. The Metrocenter Mall area also is a secondary core. A disproportionate share of the overall core is in the East Valley; only a small portion extends west of Interstate 17.

Maricopa County had 18 employment centers (which are based on smaller geographic units than the employment core) in 2000. Rapid growth between 1995 and 2000 caused several small employment hubs to develop into employment centers.

This analysis uses the 2000 employment database created by the Maricopa Association of Governments (MAG) and makes comparisons to MAG's 1995 employment database. A prior analysis of employment cores and centers, presented in the October 2000 issue of *AZB/Arizona Business*, is not wholly consistent with the current analysis, as described below.

DESCRIPTION OF MAG DATABASE AND METHODOLOGY

A database of employment sites (establishments) with at least five employees in Maricopa County was created by MAG for 2000. A similar effort had been made for 1995, but for all establishments. Further, the 1995 estimate of employment had been inflated by MAG to match county employment estimates produced by the Arizona Department of Economic Security. (The employment estimate for every establishment in the MAG database was multiplied by a factor — which varied by industry — so that the sum of employment by industry in the database would equal the DES estimates of employment by industry.) This 1995 database was used in the October 2000 report.

To be consistent with the 2000 database, employment sites of less than five employees were deleted from the 1995 database and the original (non-factored) employment estimate was used. Dropping these small employers and the adjustment factor lowered the 1995 estimate of employment by 27 percent. Similarly, the employment counted in the 2000 database is considerably less than the county's total employment as estimated by DES or other sources.

Geography

Three types of geography are assigned to employment locations in the MAG databases (in addition to street address): Metropolitan Planning Area (MPA), Regional Analysis Zone (RAZ) and Traffic Analysis Zone (TAZ).

MPAs are associated with, but generally larger than, city boundaries. Thus, their size (in square miles) varies substantially. The emphasis in this article is on the eight cities in Maricopa County with at least 100,000 residents. Among these eight cities, the MPA population ranged from barely higher than the city population in Scottsdale and Tempe to 10 percent higher in Mesa. The percentage difference was much larger in some of the small fringe cities. The largest numeric difference was in Mesa at 40,000. The difference in square miles between the MPA and city boundaries was more substantial in most cities — including 82 percent in Peoria, 69 percent in Gilbert and 65 percent in Glendale — but the two measures were nearly identical in Scottsdale and Tempe. In some fringe cities with a small population, the MPA area was several times the city area.

MPAs are comprised of one or more RAZs. The typical RAZ consists of between 6 and 20 square miles, though those in outlying areas of the county are much larger. RAZs are used in this analysis to define employment "cores."

RAZs are divided into one or more TAZs, which generally consist of between one-eighth and two square miles though those in outlying areas may be much larger. TAZs are used in this analysis to define employment "centers."

Limitations

MAG has put considerable effort into creating a complete and accurate listing of employment sites of five or more workers in Maricopa County. Efforts to improve the database continue. Yet, problems remain:

1. Omission of employment sites. It is inevitable that some establishments will be missed. For example, several large state agencies are not included in the 2000 database.

2. Inaccurate information. MAG ultimately is dependent on the employer to provide some types of information. Employment figures in particular are known to be commonly misreported by employers. For example, the employment estimate for the main campus of Arizona State University was 5,847 in 2000 but 12,569 in 1995. The 1995 figure apparently includes part-time student workers and graduate assistants. (According to ASU in 2002, the 2000 employment on the main campus was 6,282 and the employment in 1995 was 5,554. Students add several thousands to these figures.)

3. Address or geocoding issues. Some street addresses may not be accurate and some establishments located at the edge of a TAZ are coded to be in the adjacent TAZ.

4. Assignment of industry and cluster. MAG recently has been working to improve the assigned Standard Industrial Classification (SIC) codes; coding by the North American Industry Classification System (NAICS) is not complete.

The severity of these problems is unknown. However, two conclusions can be made. First, the problems will have less effect on high-level data than on detailed data. Thus, findings at the MPA level are likely to be more

TABLE 1
SUMMARY OF 2000 DATA BY METROPOLITAN PLANNING AREA

					Per 1,000 Residents		Per Square Mile	
MPA	Establishments	Employment	Population	Square Miles	Establishments	Employment	Establishments	Employment
Phoenix	16,287	598,439	1,344,951	651	12	445	25	919
Tempe	3,474	141,226	158,672	40	22	890	86	3,498
Mesa	3,806	114,032	436,558	170	9	261	22	669
Scottsdale	4,037	111,494	202,754	185	20	550	22	604
Glendale	1,668	55,058	229,366	92	7	240	18	599
Chandler	1,321	54,576	183,293	71	7	298	19	764
Gilbert	715	21,896	117,268	73	6	187	10	301
Peoria	576	17,653	112,330	194	5	157	3	91
Rest of County	1,736	62,276	286,957	7,746	6	217	<1	8
COUNTY TOTAL	33,620	1,176,650	3,072,149	9,223	11	383	4	128

Notes: Employment is that in establishments of five or more employees. Only the Maricopa County portion of the MPAs is included.

Source (all tables): Center for Business Research, L. William Seidman Research Institute, College of Business, Arizona State University, from Maricopa Association of Governments Employment Databases for 1995 and 2000.

accurate than those at the TAZ level, and overall employment figures likely are more accurate than those by industry or cluster. Second, calculated changes between 1995 and 2000 are more problematic than data for either 1995 or 2000. This results not only from twice the chance for error, but because MAG is more focused on creating an accurate database for 2000 than one comparable to that in 1995.

Methodology

In order to adjust for differences in area size (by MPA, RAZ and TAZ), employment per 1,000 residents and employment per square mile were calculated. Each measure has limitations. For a city that has annexed considerable acreage that currently is largely vacant, the MPA land area will be large and employment per square mile will be small. Employment per 1,000 residents may be the better measure. At the TAZ level, however, employment per square mile is a good measure. In contrast, employment per 1,000 residents may be misleading by TAZ; for example, most or all of a TAZ may be zoned non-residential.

This analysis uses total employment, employment per square mile and per capita employment as employment measures and uses each of the three units of geography. Emphases are on 2000 data and on the change between 1995 and 2000 in the overall employment estimates.

METROPOLITAN PLANNING AREAS

Establishments, employment, population and land area in 2000 are summarized in Table 1 for the eight large MPAs. With a population at least triple that of every other city, Phoenix had the greatest number of establishments and employment. Belying their population size, Scottsdale ranked second in number of establishments and Tempe was second in employment. The Buckeye and Surprise MPAs ranked second and third to Phoenix in land area, despite not being among the cities with a population greater than 100,000, .

Employment per 1,000 residents by far was the highest in Tempe in 2000. Scottsdale ranked second and Phoenix ranked third, with a gap between Phoenix and the other populous cities, all of which had a figure less than the county average. Including the less populous cities, Tolleson had the highest per capita employment in the county, well above Tempe's figure.

Tempe also had much higher employment per square mile than any other city. Annexation of large mostly undeveloped areas lowered the employment density of some cities. Including the less populous Valley cities, Tolleson ranked second to Tempe on employment per square mile.

Considering both measures at the MPA level, Tempe by far had the greatest employment concentration in the Valley, followed by

TABLE 2
SUMMARY OF CHANGE BETWEEN 1995 AND 2000 BY METROPOLITAN PLANNING AREA

	Numeric Change		Percent Change		Change Per Square Mile	
MPA	*Establishments*	*Employment*	*Establishments*	*Employment*	*Establishments*	*Employment*
Phoenix	972	105,531	6%	21%	1	162
Tempe	564	36,814	19	35	14	912
Mesa	528	26,514	16	30	3	156
Scottsdale	1,031	36,062	34	48	6	195
Glendale	345	9,269	26	20	4	101
Chandler	357	18,475	37	51	5	259
Gilbert	273	8,815	62	67	4	121
Peoria	211	7,062	58	67	1	36
Rest of County	146	9,228	9	17	<1	1
COUNTY TOTAL	4,427	257,770	15	28	<1	28

Notes: Employment is that in establishments of five or more employees. Only the Maricopa County portion of the MPAs is included.

TABLE 3
MARICOPA COUNTY EMPLOYMENT CORES, 2000

RAZ		*Employment*	*Square Miles*	*Employment Density**	*Population*	*Employment Ratio***
	MARICOPA COUNTY	1,176,650	9,223	128	3,072,149	383
	Primary Core					
275	Phoenix - Central	59,031	5.88	10,039	27,917	2,115
270	Phoenix - Midtown	67,568	11.39	5,932	70,180	963
	Primary Core Total	*126,599*	*17.27*	*7,331*	*98,097*	*1,291*
1.4%	*Primary Core Percentage of County*	*10.8%*	*0.2%*		*3.2%*	
	Secondary Core					
288	Tempe - Downtown and West	60,982	13.71	4,449	54,645	1,116
287	Phoenix - East Van Buren Street to I-10	54,089	12.62	4,285	25,419	2,128
297	Tempe - Central	45,304	11.03	4,108	49,688	912
243	Phoenix - Metrocenter	37,485	9.48	3,954	57,913	647
	Secondary Core Total	*197,860*	*46.84*	*4,224*	*187,665*	*1,054*
2.8%	*Secondary Core Percentage of County*	*16.8%*	*0.5%*		*6.1%*	
	Primary-Secondary Core Total	*324,459*	*64.11*	*5,061*	*285,762*	*1,135*
4.1%	*Primary-Secondary Core Percentage of County*	*27.6%*	*0.7%*		*9.3%*	
	Tertiary Core					
296	Phoenix - Southeast	35,078	10.76	3,259	32,850	1,068
272	Scottsdale - Downtown and South	36,332	12.08	3,008	64,297	565
247	Scottsdale - Airport	27,247	9.15	2,979	12,070	2,257
269	Phoenix - West Van Buren to Grand Avenue	31,579	10.70	2,950	67,048	471
271	Phoenix - East Thomas to Camelback Roads	38,385	14.41	2,663	62,452	615
309	Mesa - Southwest	25,914	10.02	2,585	47,151	550
	Tertiary Core Total	*194,535*	*67.12*	*2,898*	*285,868*	*681*
4.1%	*Tertiary Core Percentage of County*	*16.5%*	*0.7%*		*9.3%*	
	Primary-Secondary-Tertiary Core Total	*518,994*	*131.23*	*3,955*	*571,630*	*908*
8.3%	*Primary-Secondary-Tertiary Core % of County*	*44.1%*	*1.4%*		*18.6%*	
	Near-Tertiary Status					
285	Phoenix - Durango	15,098	6.43	2,349	18,249	827
308	Tempe - South	34,940	15.63	2,235	54,339	643
286	Phoenix - South Central	13,557	6.11	2,221	16,427	825
289	Mesa - Northwest	22,390	10.15	2,205	60,856	368
290	Mesa - Central	22,534	11.00	2,049	76,828	293
276	Phoenix - East Van Buren to Thomas Road	17,164	8.44	2,034	42,692	402
263	Scottsdale - McCormick Ranch	20,358	10.15	2,006	34,189	595
261	Phoenix - Biltmore/Squaw Peak	27,324	13.94	1,960	31,455	869
260	Phoenix - Uptown	16,954	8.95	1,894	55,121	308
315	Chandler - West	19,850	10.66	1,863	39,155	507
	Near-Tertiary Total	*210,169*	*101.46*	*2,072*	*429,311*	*490*
6.9%	*Near-Tertiary Percentage of County*	*17.9%*	*1.1%*		*14.0%*	
	Core and Near-Tertiary Core Total	*729,163*	*232.69*	*3,134*	*1,000,941*	*728*
15.2%	*Core and Near-Tertiary Core % of County*	*62.0%*	*2.5%*		*32.6%*	
	Balance of County	*447,487*	*8,990*	*50*	*2,071,208*	*216*

Notes: Employment is that in establishments of five or more employees.
** Employment per square mile* ***Employment per 1,000 residents.*

Phoenix. Scottsdale's concentration on the per capita measure was above that of Phoenix, but its employment per square mile was typical of the populous cities. Glendale ranked sixth on each measure despite its relatively central location, with its per capita figure considerably lower than in Tempe, Scottsdale and Phoenix. Mesa's figures were a little higher than those in Glendale on each measure, but were far less than those in neighboring Tempe and less also than those in Chandler.

Tempe also had the greatest number of per capita establishments and establishments per square mile. Scottsdale ranked second to Tempe in the number of establishments per capita and also had a higher than average number of establishments per square mile. With 28 employees per establishment, Scottsdale ranked last among the eight populous cities and among the lowest in the county. Tempe and Chandler had the highest figures among the populous cities at 41; the county average was 35.

The changes between 1995 and 2000 in establishments, employment and the per square mile measures are summarized in Table 2 for the eight large MPAs, using the 2000 MPA boundaries for both years. Scottsdale had the largest 1995-to-2000 numeric gain in establishments in the county, accounting for nearly a fourth of the county total. Its increase in establishments per square mile was second to Tempe.

Phoenix, however, had by far the greatest increase in employment. Scottsdale's numeric increase in employment was barely less than in Tempe. Percentage gains were greatest in the somewhat less populous MPAs close to the fringe: Peoria, Gilbert and Chandler. Some of the low-population MPAs also had high percentage increases in employment, particularly Surprise and Avondale.

The numeric increase in employment per square mile was by far the greatest in Tempe; Chandler, Scottsdale, Phoenix and Mesa followed. Among the less populous MPAs, Tolleson posted greater gains in employment per square mile than any city except Tempe.

REGIONAL ANALYSIS ZONES/ EMPLOYMENT CORES

Employment cores of the Phoenix area were defined for this study using Regional Analysis Zones as the geographic unit of measure. Largely based on employment density (employment per square mile), the employment-to-population ratio and the number of industrial divisions in which each RAZ had a strong employment concentration also were used to define the cores. Depending on the intensity of these measures, cores were split into four categories: primary, secondary, tertiary, and near-tertiary. Only 22 (15 percent) of the 145 RAZs in Maricopa County were designated as part of the employment core.

The primary core in 2000 consisted of two adjacent RAZs in central Phoenix with employment per square mile in excess of 5,000, employment per 1,000 residents at least 2.5 times the county figure of 383, and strong employment concentration in at least seven of the eight major industrial divisions. As seen in Table 3, the employment densities in the Midtown Phoenix RAZ and especially the Central Phoenix RAZ were much higher than those of other RAZs. More than 10 percent of the county's employment was located in just 0.2 percent of its land area.

Three of the four RAZs included in the secondary core are contiguous and abut the primary core, extending southeast from Central Phoenix to Downtown and Central Tempe. The fourth RAZ — the Metrocenter area of Phoenix — stands alone several miles from Midtown Phoenix. The four secondary core RAZs all had employment per square mile between 3,500 and 5,000, per capita employment at least 1.7 times the county figure, and a strong concentration in seven or eight industrial divisions. The combined primary-secondary core included more than a fourth of the county's employment, but less than 10 percent of its population, in less than 1 percent of its area.

TABLE 4
MARICOPA COUNTY EMPLOYMENT CORES, 1995 TO 2000 CHANGE

RAZ		*Employment*	*Employment Density**	*Percent*
	MARICOPA COUNTY	257,770	28	28%
	Primary Core			
275	Phoenix - Central	6,983	1,188	13
270	Phoenix - Midtown	11,555	1,014	21
	Primary Core Total	*18,538*	*1,073*	*17*
	Primary Core Percentage of County	*7.2%*		
	Secondary Core			
288	Tempe - Downtown and West	8,010	584	15
287	Phoenix - East Van Buren Street to I-10	10,025	794	23
297	Tempe - Central	14,141	1,282	45
243	Phoenix - Metrocenter	5,828	615	18
	Secondary Core Total	*38,004*	*811*	*24*
	Secondary Core Percentage of County	*14.7%*		
	Primary-Secondary Core Total	*56,542*	*882*	*21*
	Primary-Secondary Core Percentage of County	*21.9%*		
	Tertiary Core			
296	Phoenix - Southeast	7,532	700	27
272	Scottsdale - Downtown and South	3,877	321	12
247	Scottsdale - Airport	13,246	1,448	95
269	Phoenix - West Van Buren to Grand Avenue	5,107	477	19
271	Phoenix - East Thomas to Camelback Roads	4,897	340	15
309	Mesa - Southwest	6,295	628	32
	Tertiary Core Total	*40,954*	*610*	*27*
	Tertiary Core Percentage of County	*15.9%*		
	Primary-Secondary-Tertiary Core Total	*97,496*	*743*	*23*
	Primary-Secondary-Tertiary Core % of County	*37.8%*		
	Near-Tertiary Status			
285	Phoenix - Durango	2,913	453	24
308	Tempe - South	14,663	938	72
286	Phoenix - South Central	1,961	321	17
289	Mesa - Northwest	1,806	178	9
290	Mesa - Central	3,883	353	21
276	Phoenix - East Van Buren to Thomas Road	-1,350	-160	-7
263	Scottsdale - McCormick Ranch	6,899	680	51
261	Phoenix - Biltmore/Squaw Peak	7,900	567	41
260	Phoenix - Uptown	586	65	4
315	Chandler - West	7,679	721	63
	Near-Tertiary Total	*46,940*	*463*	*29*
	Near-Tertiary Percentage of County	*18.2%*		
	Core and Near-Tertiary Core Total	*144,436*	*621*	*25*
	Core and Near-Tertiary Core % of County	*56.0%*		
	Balance of County	*113,334*	*13*	*34*

Notes: Employment is that in establishments of five or more employees.
** Employment per square mile*

Six RAZs qualify for the tertiary core. Five are adjacent to the primary-secondary core. The Scottsdale Airport RAZ, however, is several miles beyond the edge of even the closest tertiary RAZ. These six tertiary RAZs had employment densities between 2,500 and 3,500 per square mile, an employment-to-population ratio at least 1.2 times the county average, and a strong concentration in five to seven of the eight industrial divisions. Forty-four percent of the county's employment, but less than 20 percent of its population, was located in the primary-secondary-tertiary core.

The near-tertiary classification includes 10 RAZs with employment per square mile between 1,750 and 2,500. Including these RAZs with the primary-secondary-tertiary core results in a contiguous employment core stretching from West Chandler to the Scottsdale Airport and from Central Mesa to Metrocenter. More than 60 percent of the county's employment, but less than a third of its population, was found on just 2.5 percent of its land area in this contiguous area. Employment density in this area was 3,134 per square mile, far in excess of the 50 found in the rest of the county. Employment per 1,000 residents in this area was more than triple that of the rest of the county.

Employment rose throughout the county between 1995 and 2000. While the percentage increase was highest outside the core, the difference was only from 25 percent in the core to 34 percent outside the core. Within the core, the percent change was least in the primary core and most in the near-tertiary area. In contrast, within the core, employment density rose the most in the primary portion and the least in the near-tertiary area; the increase in the latter was far higher than that in the rest of the county (see Table 4).

The Scottsdale Airport RAZ stands out among the 22 core RAZs for having both the highest percent change in employment and the greatest increase in employment density between 1995 and 2000. In contrast, Downtown and South Scottsdale had the lowest figures on each growth measure in the primary-secondary-tertiary core. Some of the near-tertiary RAZs posted even slower growth, including an employment decrease in East Phoenix, between Van Buren Street and Thomas Road.

The Valley's employment core in 2000 was centered well southeast of Central Avenue and Washington Street (the zero points in the Valley's street address numbering system), and southeast of the county's population center, which is near 24th Street between Thomas and Indian School Roads. Ten of the 22 core RAZs were located entirely east of 48th Street, while four others in Phoenix extended east of 48th Street. In contrast, only one core RAZ was entirely west of the Black Canyon Freeway (which is aligned between 23rd and 27th Avenues) and only two others extended west of I-17.

Aggregating the 22 core RAZs into six groups — West Phoenix, Central Phoenix, East Phoenix, Scottsdale, Tempe/West Chandler, and Mesa — illustrates the geographical differences. Employment was highest in East Phoenix, followed by Tempe and Central Phoenix. Employment per capita was highest in Central Phoenix, followed by East Phoenix, Tempe and Scottsdale. Employment density was highest in Central Phoenix, followed by West Phoenix and Tempe. The dominance of the East was most apparent in the changes over the 1995 to 2000 period. Employment rose the most by far in Tempe, followed by East Phoenix and Scottsdale. The change in density and the percent change in employment were highest in Tempe and Scottsdale.

Tempe in particular has a high employment density given its distance from Downtown Phoenix. Tempe is bolstered by location factors, including the presence of Arizona State University, being close to Sky Harbor Airport, and being along early highway and railroad routes. More generally, these early highways and railroads run through much of the core. They include U.S. Highway 60, which originally ran along Apache Boulevard, Washington Street and Grand Avenue from east to northwest, and the earliest freeways — I-10 through Tempe to Central Phoenix and I-17 from Central Phoenix north, followed by the Superstition Freeway in Tempe.

These factors do not explain the strong employment density along East Camelback Road in Phoenix and in Scottsdale. This employment concentration in the Northeast is more notable in comparison to weak concentrations in much of the Northwest Valley, even along parts of the early highways.

TRAFFIC ANALYSIS ZONES/ EMPLOYMENT CENTERS

Maricopa County is divided into 1,862 TAZs. Employment centers have been identified as aggregations of TAZs and can cross RAZ and MPA boundaries. The definition of employment centers follows the method used in the October 2000 report, which was based on work done in the Chicago metro area. Since the employment database for 2000 does not include all employment, the thresholds used previously were adjusted. To qualify as an employment center, employment in an aggregation of TAZs must exceed 7,250 and the employment per square mile must exceed 4,650.

The first step in determining these employment centers was to identify all TAZs with employment density of more than 4,650.

TABLE 5
EMPLOYMENT CENTERS IN MARICOPA COUNTY, 2000

		2000		1995 to 2000 Change			
Employment Center	*Square Miles*	*Employment*	*Employment Density**	*Employment*	*Employment Density**	*Percent*	*Core***
Downtown Phoenix***	1.21	35,601	29,398	9,949	8,216	39%	P
North Central Avenue	2.78	53,729	19,348	10,987	3,956	26	P
Downtown Tempe/ASU****	1.04	14,112	13,517	2,366	2,266	20	S
Downtown Scottsdale	1.65	18,269	11,106	4,828	2,935	36	T
West Tempe/Southeast Phoenix	7.73	78,720	10,178	26,348	3,407	50	S/T
90th Street and Via Linda	0.94	8,076	8,628	3,125	3,339	63	O
Metrocenter Mall/Black Canyon Freeway	3.86	32,475	8,420	5,789	1,501	22	S
East Camelback Road	5.73	40,243	7,023	9,788	1,708	32	N/T/P
Squaw Peak	1.11	7,685	6,911	2,788	2,507	57	N
Scottsdale Air Park	3.44	22,135	6,442	11,683	3,400	112	T
Fiesta Mall	2.47	15,579	6,305	6,743	2,729	76	T/N
Grand Avenue	4.46	28,101	6,299	4,251	953	18	T/P/O
Mesa - Center Street	3.44	18,998	5,516	5,350	1,553	39	N/T
East Washington Street/Sky Harbor Airport	10.88	58,694	5,393	7,414	681	14	S/N/P
South Tempe/West Chandler	5.65	29,304	5,191	16,657	2,951	132	N
Indian Bend	1.53	7,921	5,184	4,032	2,639	104	N
I-17 and Loop 101/Deer Valley Airport	4.97	24,334	4,895	12,742	2,563	110	O
East Tempe	2.03	9,519	4,680	1,439	707	18	S
TOTAL, 18 EMPLOYMENT CENTERS	64.92	503,495	7,756	146,279	2,253	41	
Developing Employment Center:							
Superstition Springs	1.49	6,860	4,620	4,429	2,982	182	O

* Employment per square mile

** Core(s) in which employment center is located. If more than one, listed in order of the land area in each core.
P = primary, S = secondary, T = tertiary, N = near-tertiary, O = outside core.

*** The State Capitol area should be included with Downtown Phoenix, but because of data omissions it has been excluded.

**** The 1995 employment estimate for Arizona State University was adjusted to be consistent with the 2000 estimate.

Note: Employment is that in establishments of five or more employees.

Those TAZs with high employment density that were near other TAZs of such density identified potential employment centers. TAZs not meeting the 4,650 criteria (but generally with employment per square mile of at least 3,000) were added to high-density TAZs based on two general criteria: to create a center of somewhat regular dimensions, and to include TAZs commonly considered to be part of an identifiable area, such as a downtown. In addition, a contiguous area of TAZs meeting the density criterion stretched from Central Tempe to Uptown Phoenix, then back east along Camelback Road. This was split into several employment centers. Thus, judgment played a role in the determination of the exact boundaries of the employment centers. Each employment center as a whole had to include at least 7,250 employees with an overall density of at least 4,650 employees per square mile.

Across the Valley, a total of 18 areas qualified as employment centers in 2000. Half of these did not qualify in 1995, illustrating the impact of the Valley's rapid growth in the 1990s. One additional fast-growing area, Superstition Springs in Mesa, did not quite meet the minimum employment and employment density requirements in 2000 and thus was termed a developing center.

Combined employment in the 18 centers exceeded 500,000 in 2000 (43 percent of the county total) in just 65 square miles (less than 1 percent of the county total). Employment in the centers was up 146,000 between 1995 and 2000 (57 percent of the county's total increase). The 41 percent gain compared to 20 percent elsewhere in the county. Employment density in the centers was 7,756 per square mile in 2000, up 2,253 from 1995.

The size and characteristics of these 18 centers vary widely, as seen in Table 5, which is sorted by employment density in 2000. Employment density was highest in the downtowns of Phoenix (including midtown), Tempe and Scottsdale. Particularly notable is the density in the West Tempe/Southeast Phoenix center, the second largest of the centers in square miles. This center's change in density between 1995 and 2000 also was high, ranking behind only the downtown/midtown area of Phoenix. The percentage increase in employment was greatest in the South Tempe/West Chandler center, with rapid gains also in the Scottsdale Air Park, Indian Bend, and the I-17 and Loop 101 freeway area.

Ten of the 18 employment centers are in the East Valley cities of Scottsdale, Tempe and Mesa (with one Tempe center extending into Chandler and another extending into Phoenix). Two are located outside the employment core: the 90th Street and Via Linda site in Scottsdale, which is adjacent to the core, and the I-17 and Loop 101 location, which is several miles north of the core. Other employment centers at some distance from Downtown Phoenix include the Scottsdale Air Park and Indian Bend centers in Scottsdale, the South Tempe/West Chandler center, the Center Street and Fiesta Mall sites in Mesa, and the developing center in East Mesa.

Of the nine employment centers reaching that status between 1995 and 2000, seven are located in the East Valley. The exceptions are the small Squaw Peak center near Glendale Avenue and 16th Street and the center near the I-17 and Loop 101 interchange. The large Honeywell facility near 19th Avenue and Deer Valley Road, built more than 40 years ago, is included in this employment center.

— Tom R. Rex
Research Manager

Arizona Business Conditions Index falls in September

The seasonally adjusted Arizona Business Conditions Index fell to 44.6 in August. An Index reading of over 50 indicates that the local economy is growing, while a reading below 50 suggests a slowdown in the overall level of economic activity in the near term.

ANALYSIS

Once again the index has fallen below the critical value of 50, dropping 6.6 points in September. Uncertainty is not good for the economy, and currently we are facing the possibility of war in Iraq, along with scandals involving corporate conduct and faltering consumer and business spending.

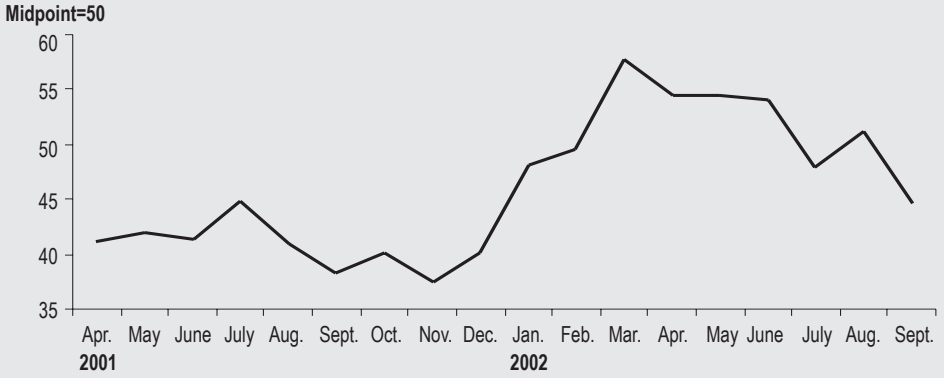
While consumers had continued to spend during the worst of the recession (thanks to automobile dealers' incentives) and the housing market fared well, employment and the stock market remained dismal and do not yet show signs of recovery.

The employment component of the index fell to 39.3, a drop of just 2.0 points, but important to job-seekers and the general mood about the economy. The New Orders sub-index fell by 4.8 points to 46.1 from a fairly neutral position in August, and the Production sub-index fell to 47.2. The Purchased Materials Inventory Level sub-index recorded the most dramatic drop, 19.5 points, to 31.1. The only component of the overall index to remain above the 50-point mark was Delivery Times.

The Price Index joined the overall index by falling to 49.0 from 57.7 the previous month. The Price Index is the reflection of the supply and demand balance in the economy, as well as inflation and other factors. Currently, the Price Index is signaling a fragile economy.

— Dawn McLaren
Research Economist
Bank One Economic Outlook Center

FIGURE I
ARIZONA BUSINESS CONDITIONS INDEX*



*Excludes Price Index
Source: Bank One Economic Outlook Center, L. William Seidman Research Institute, College of Business, Arizona State University

College of Business

AZB/ARIZONA BUSINESS

Larry Edward Penley, Dean
Timothy D. Hogan, Center Director
Nancy A. Maneely, Editor

AZB/ARIZONA BUSINESS (ISSN 1079–4255) is published monthly by the Center for Business Research, L. William Seidman Research Institute, College of Business, Arizona State University, PO Box 874011, Tempe, AZ 85287–4011; phone (480) 965–3961. Annual rate: $24 per year to Arizona residents, $30 per year out-of-state, $36 per year foreign. Checks must be made payable to ASU Foundation, a separate non-profit organization which exists to support ASU. Your payment is not considered a charitable contribution. Fees will be applied to the printing and mailing of AZB/ARIZONA BUSINESS, which is not printed or mailed at state expense. Periodicals postage paid at Tempe, Arizona. POSTMASTER: Send change of address to AZB/ARIZONA BUSINESS, Center for Business Research, College of Business, Arizona State University, P.O. Box 874011, Tempe, AZ 85287–4011.

AZB/ARIZONA BUSINESS is also available online at:
www.cob.asu.edu/seid/cbr/

© 2002 Arizona Board of Regents for Arizona State University. Reprinting information contained in this publication requires the prior written permission of the Center for Business Research at the Seidman Research Institute, Arizona State University. Articles do not necessarily reflect the views of the Center, College, or University. Authors are solely responsible for the accuracy and content of their articles.

Arizona State University vigorously pursues affirmative action and equal opportunity in its employment activities and programs.

ARIZONA ECONOMIC INDICATORS

	Month or Quarter	Current Value	Previous Value	Percent Change Previous Period	Percent Change from Year Ago	Year-to-Date Value	Year-to-Date Percent Change from Year Ago
LEADING ECONOMIC INDEX (1987 = 100)							
Arizona	September	116.0	117.2	-1.0	3.2	NA	NA
BUSINESS CONDITIONS INDEX							
Arizona	September	44.6	51.1	-12.9	16.2	NA	NA
BUILDING PERMITS (Thousands of $)							
Maricopa County	August	696,286	731,774	-4.8	-17.5	5,901,462	-14.4
Pima County	August	158,196	117,634	34.5	34.8	1,049,336	13.1
Balance of State	August	224,172	246,504 r	-9.1	20.2	1,606,287	26.1
Arizona	August	1,078,654	1,095,912 r	-1.6	-6.0	8,557,085	-5.9
TOTAL HOUSING UNITS AUTHORIZED							
Maricopa County	August	3,752	4,109	-8.7	4.1	29,545	-8.4
Pima County	August	826	655	26.1	11.5	5,829	0.3
Balance of State	August	1,761	1,871 r	-5.9	24.7	12,705	19.5
Arizona	August	6,339	6,635 r	-4.5	10.1	48,079	-1.3
HOME SALES							
Maricopa County - Number	August	8,200	10,190	-19.5	-1.3	68,510	-0.8
Maricopa County - Median Price($)	August	145,000	145,000	0.0	4.3	142,500	4.4
HOUSING AFFORDABILITY INDEXES							
Metropolitan Phoenix - New Homes	2nd Quarter	114	108 r	5.6	7.5	NA	NA
Metropolitan Phoenix - Resale Homes	2nd Quarter	122	122 r	0.0	-0.8	NA	NA
MORTGAGE RATES (30-year Fixed)							
Maricopa County	September	5.8	6.0	-3.3	-10.8	NA	NA
POPULATION ESTIMATES (Thousands)							
Maricopa County	2nd Quarter	3,291	3,269	0.7	3.0	NA	NA
Pima County	2nd Quarter	884	881	0.3	1.8	NA	NA
Balance of State	2nd Quarter	1,295	1,286	0.7	2.9	NA	NA
Arizona	2nd Quarter	5,469	5,436	0.6	2.7	NA	NA
RETAIL SALES (Millions of $)							
Maricopa County	August	2,467	2,315	6.6	3.7	20,012	-0.2
Arizona	August	3,721	3,443	8.1	4.7	29,693	1.2

Note: The above figures reflect the latest data available as of date of publication and are subject to revision.

NA = Not Applicable r = Revised

Source: Center for Business Research, Arizona Real Estate Center, and Bank One Economic Outlook Center, affiliates of the L. William Seidman Research Institute, College of Business, Arizona State University. Retail sales data are from the Arizona Department of Revenue.