

# CHANGING DEMOGRAPHIC CONDITIONS IN THE MEGAMETROPOLITAN AREA OF MARICOPA, PIMA AND PINAL COUNTIES

Revised, June 2008

L. William Seidman Research Institute  
W. P. Carey School of Business  
Arizona State University  
Box 874011  
Tempe, Arizona 85287-4011  
(480) 965-5362  
FAX: (480) 965-5458  
EMAIL: [Tom.Rex@asu.edu](mailto:Tom.Rex@asu.edu)  
[www.wpcarey.asu.edu/seid](http://www.wpcarey.asu.edu/seid)



## **PREFACE**

This report addresses Task 1 — Changing Demographic Conditions — of Part 1 — Megametropolitan (Three-County) Region Projections — of the Pinal County Projections Study.

The focus of Task 1 is the three-county area of Maricopa, Pinal and Pima counties. Little information is presented by county. The three-county area is referred to as the “megapolitan” area in this report.

## CONTENTS

HISTORICAL POPULATION GROWTH	1
Total Population	1
Decennial Census Counts	1
Annual Population Estimates	2
Net Natural Increase	5
Births	5
Deaths	7
Summary of Population Movement	10
Domestic Migration	13
Annual Estimates of Domestic Migration from the Internal Revenue Service	13
Domestic Migration from the Decennial Censuses	19
Domestic Migration by Age	26
Other Characteristics of Domestic Migrants	33
Immigration	37
Legal Immigration	38
Unauthorized Immigration	39
LONG-TERM POPULATION PROJECTIONS	42
Historical Accuracy of Population Projections for Arizona	42
Evaluation of Existing Population Projections	43
Projections of the Arizona Population	43
Projections of the Megapolitan Area	46
Projections of Portions of the Megapolitan Area	47
A Comparison of Growth in the Megapolitan Area to Other Urban Areas	50
Interviews of Experts	51
Population Growth	51
Migration	52
Demographic Changes	52
Workforce	53
Factors Contributing to the Greater Population Gains Since the Early 1990s	53
Immigration	54
Domestic Migration	55
Probable Future Conditions	56
Immigration	56
Working-Age Domestic Migration	57
Retirement-Age Domestic Migration	58
Net Natural Increase	59
Other Factors Likely to Affect Future Growth	59

## CHARTS

1. Megapolitan Estimated Population, 1969-2006	2
2. Megapolitan Estimated Population Change, 1970-2006	3
3. Megapolitan Percentage Change in Estimated Population, 1970-2006	3
4. Comparison of Megapolitan Population Estimates, 2001-06	4
5. Comparison of Megapolitan Estimated Population Change, 2002-06	5
6. Megapolitan Net Natural Increase, 1970-2006	6
7. Megapolitan Births by Ethnicity, 1970-2006	6
8. Megapolitan Fertility Rates by Age and Ethnicity, 2000	7
9. Megapolitan Deaths by Ethnicity, 1984-2006	8
10. Residence Five Years Earlier of Megapolitan Residents, 1990 and 2000	11
11. Residence Five Years Earlier of Megapolitan Residents by Race/Ethnicity, 2000	11
12. Place of Birth of Megapolitan Residents, 2000	12
13. Place of Birth of Megapolitan Residents by Race/Ethnicity, 2000	12
14. Megapolitan Components of Total Net Migration, 2001-06	13
15. Megapolitan Migration Flows, 1981-2006	16
16. Megapolitan Net Migration with Other Arizona Counties, 2006	17
17. Megapolitan Net Domestic Migration by Age Between 1995 and 2000 as a Share of the Total Population in 2000	35
18. Megapolitan Net Domestic Migration Between 1995 and 2000, Selected Characteristics	37
19. Arizona and Megapolitan Legal Permanent Residents Admitted, 1993-2006	38
20. Projected Annual Change in Arizona Population, 2007-37	44
21. Projected Arizona Population by Age Group as a Share of the Total, 2030	45
22. Projected Megapolitan Population Change, 2008-37	47
23. Projected Megapolitan Population Change: University of Arizona Less Department of Economic Security, 2007-37	48
24. Megapolitan Share of National Population and Employment Gain by Economic Cycle	54
25. Net Migration from California to Arizona, 1981-2006	55

## TABLES

1. Megapolitan Mortality Rates by Age, Gender and Ethnicity, 2000	9
2. Arizona Migration with Other States, 2006	15
3. Megapolitan Migration with Individual Counties, 2006	18
4. Megapolitan Migration with Other Arizona Counties Between 1995 and 2000	20
5. Megapolitan Migration with Selected Other States Between 1995 and 2000	21
6. Megapolitan Migration Rates with Other States Between 1995 and 2000	23
7. Megapolitan Migration with Metropolitan Areas in Pacific Coast States Between 1995 and 2000	25
8. Megapolitan Migration with Metropolitan Areas in Selected Rocky Mountain States and Texas Between 1995 and 2000	26
9. Megapolitan Migration with Metropolitan Areas in Selected Midwestern States Between 1995 and 2000	27
10. Efficiency of Megapolitan Migration with Other Arizona Counties by Age Group Between 1995 and 2000	29
11. Megapolitan Migration Rates with Other States by Age Between 1995 and 2000	31
12. Megapolitan Migration with Other States Summary by Age Between 1995 and 2000	32
13. Selected Characteristics of Megapolitan Migrants Between 1995 and 2000	34

## **HISTORICAL POPULATION GROWTH**

Population growth in the megapolitan area results from net natural increase (births less deaths), net domestic in-migration (in-migration less out-migration from outside the megapolitan area but within the United States), and net immigration from other countries (though estimates of emigration do not exist).

Various sources of historical population data are used in this report:

- Annual population estimates produced by the U.S. Census Bureau. In recent years, population change is divided into the components of births, deaths, net domestic migration, and immigration. In years prior to 2000, it is possible to determine overall net migration by applying births and deaths to population change, but the domestic and international components of migration cannot be determined.
- Annual population estimates produced by the Arizona Department of Commerce. The population estimating and projecting functions were transferred at the end of 2007 to the Department of Commerce from the Department of Economic Security (DES). Throughout this report, the reference is to DES since all of the data analyzed were produced under the auspices of DES. International and domestic migration are not separately estimated.
- Annual counts of births and deaths reported by the Arizona Department of Health Services (DHS).
- Annual domestic migration flows from the Internal Revenue Service (IRS).
- Decennial census data, particularly from 1990 and 2000.
- American Community Survey (ACS) results from 2005 and 2006. The ACS is intended to replace the “long form” of the decennial census that was sent to a one-in-six sample of households. In order to approximate the sampling accuracy of the decennial census long form, five years of ACS results must be aggregated. However, 2005 was the first year of fully sampled ACS, and the 2007 results will not be released until August 2008. Thus, considerable caution is urged in using the ACS results for 2005 and 2006, even for an area as populous as the megapolitan area.
- Federal government and nongovernment estimates of immigration.

### **Total Population**

This section on historical population growth largely relies on U.S. Census Bureau data. In addition to producing the decennial census, the Census Bureau has an annual time series of population estimates by county dating back to 1969.

### **Decennial Census Counts**

The megapolitan area has experienced rapid population growth for decades. Looking at decennial census counts from 1900 through 2000, the population of the megapolitan area increased from less than 43,000 in 1900 to nearly 4.1 million in 2000. This numeric increase equates to an annual average growth rate of 4.7 percent over the 100-year period. Except for the first decade of the 20th century, the area’s population grew more rapidly than the rest of Arizona so that the megapolitan share of the state population rose continuously from 33 percent in 1910 to 80 percent in 2000.

With the percentage change inversely related to the size of the base, the greatest percent changes by decade in the megapolitan area all occurred prior to 1960. In contrast, the 10-year numeric increase was greatest during the 1990s, followed by the 1980s and 1970s.

Three quarters of the increase in the megapolitan area’s population during the century occurred in Maricopa County versus 21 percent in Pima County and only 4 percent in Pinal County. Due to these disparate shares, the proportion of the area’s population residing in Maricopa County increased from less than 50 percent in 1900 to 75 percent by 2000. Pima County’s share fell from 34 to 21 percent. Pinal County’s share dropped from 18 to 4 percent, though it rose marginally during the 1990s and by a greater amount since 2000.

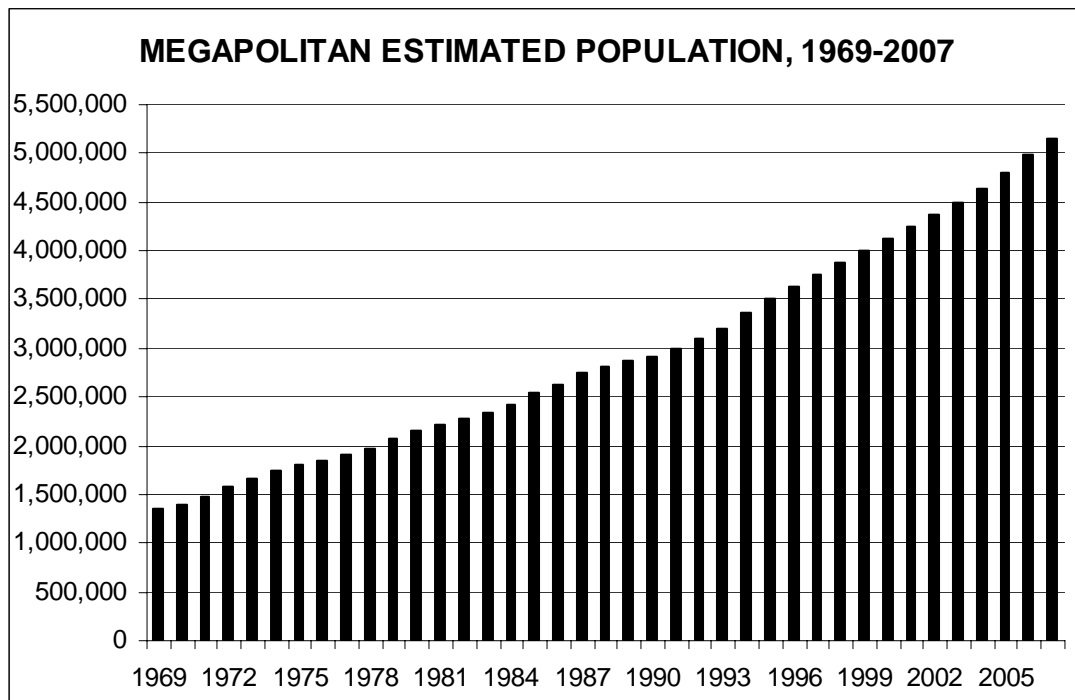
**Annual Population Estimates**

Substate population estimates produced by the Census Bureau are available for 1969 through 2007. Estimates produced by DES are available only from 2001 through 2007. All of the annual estimates from both sources are expressed as of July 1. From both sources, births and deaths can be deducted from population change to obtain an estimate of total net migration (domestic and international migration combined).

The Census Bureau’s estimates of the population of the megapolitan area are shown in Chart 1. The population was less than 1.4 million in 1969 but exceeded 5.1 million in 2007. While the population has grown rapidly, its rate of growth has followed a distinct cycle, as seen in Chart 2. This cycle closely corresponds to the economic cycle. Because of the cyclicity of job availability (and other factors), net migration to the megapolitan area is highly cyclical.

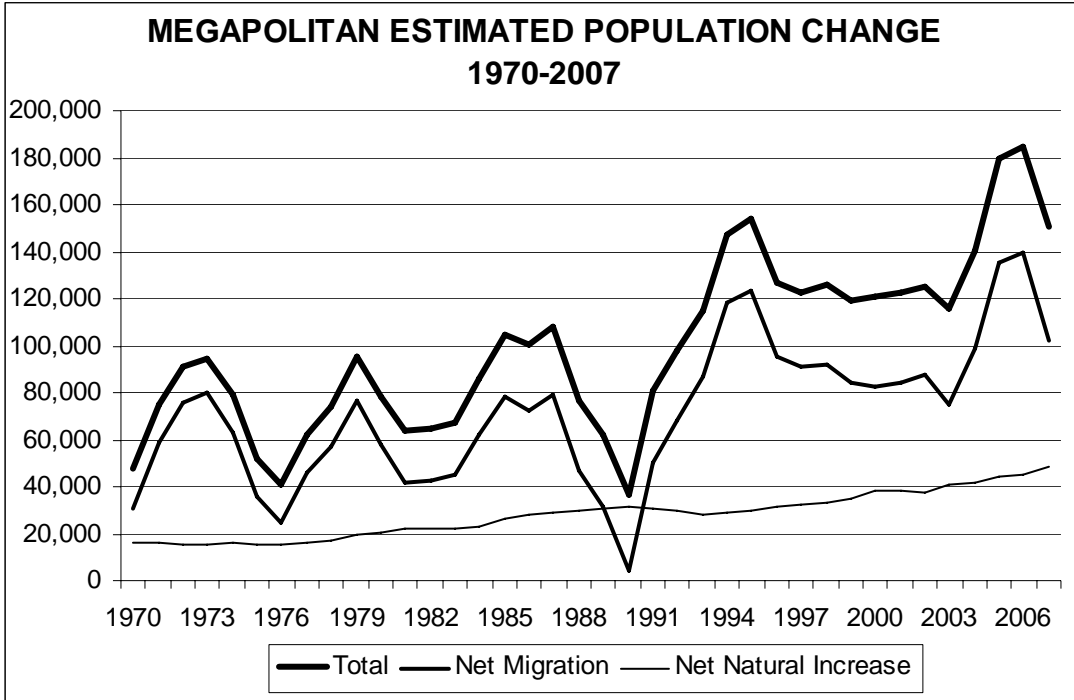
In addition to the ups and downs of net migration due to the economic cycle, numeric population change in the megapolitan area has trended up since the early 1990s. An upward trend in net migration began then, but a more moderate upward trend in net natural increase had begun in the late 1970s. In contrast, as the population base has become larger, the percentage change has fallen, even with higher numeric gains, as seen in Chart 3. Because of this inverse

**CHART 1**



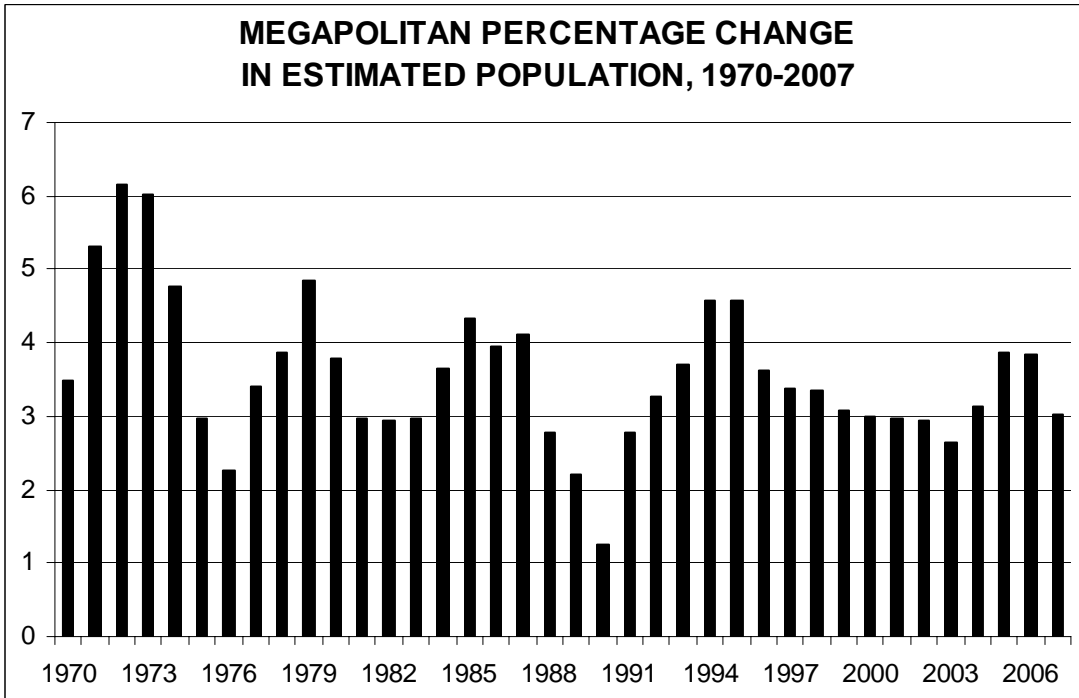
Source: U.S. Department of Commerce, Census Bureau.

**CHART 2**



Source: U.S. Department of Commerce, Census Bureau.

**CHART 3**



Source: U.S. Department of Commerce, Census Bureau.

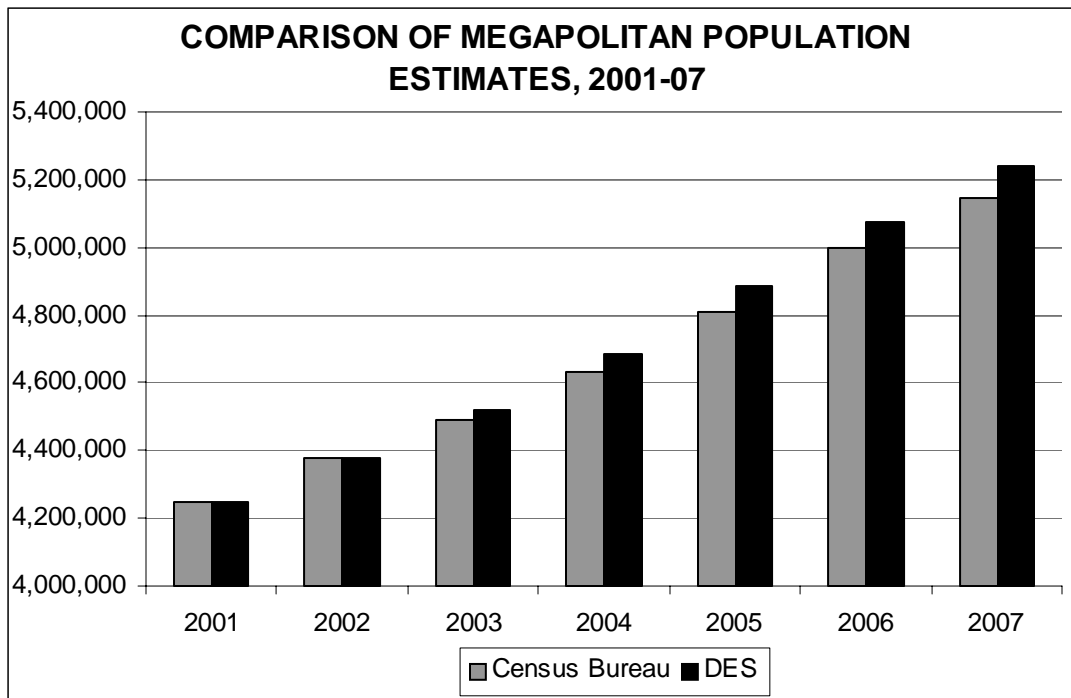
relationship between percentage change and size of the base, percentage changes are difficult to interpret over long time spans.

The Census Bureau's population estimates are based on administrative records. In contrast, the estimates produced by DES largely are based on the housing unit method, which has three primary components: new housing units, household size, and vacancy rate. DES does not have current estimates of either persons per household or vacancy rate; the vacancy rate is highly cyclical. Thus, the DES estimates have serious limitations if used as a time series.

The DES estimates are compared to those of the Census Bureau in Chart 4. The estimates were nearly identical in 2001, since both series were benchmarked to the 2000 decennial census count. Since then, DES has projected greater population gains in each year, with particularly larger figures from 2003 through 2005 (see Chart 5).

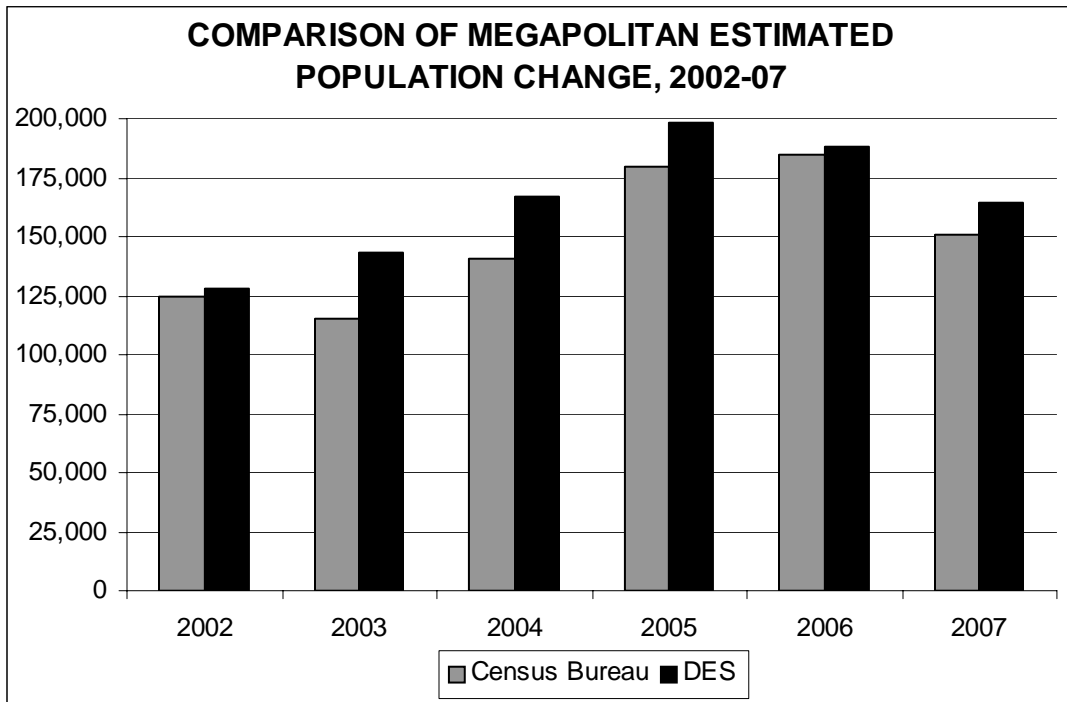
Based on the DES estimates, the peak population change of the current economic cycle occurred in 2005, with a gain of nearly 199,000 in the megapolitan area. The annual increase slowed to 188,000 in 2006 and less than 165,000 in 2007. In contrast, the Census Bureau shows a slightly larger gain in 2006 than in 2005, at nearly 185,000. The estimated gain in 2007 was down considerably to less than 151,000.

**CHART 4**



Source: U.S. Department of Commerce, Census Bureau, and Arizona Department of Economic Security.

**CHART 5**



Source: U.S. Department of Commerce, Census Bureau, and Arizona Department of Economic Security.

### **Net Natural Increase**

In much of the nation, net natural increase is the primary source of population growth, but in the megapolitan area, net migration has been much larger than net natural increase (see Chart 2). As the population has expanded, both births and deaths have increased (see Chart 6). However, births have risen more than deaths so that numeric net natural increase has grown over time.

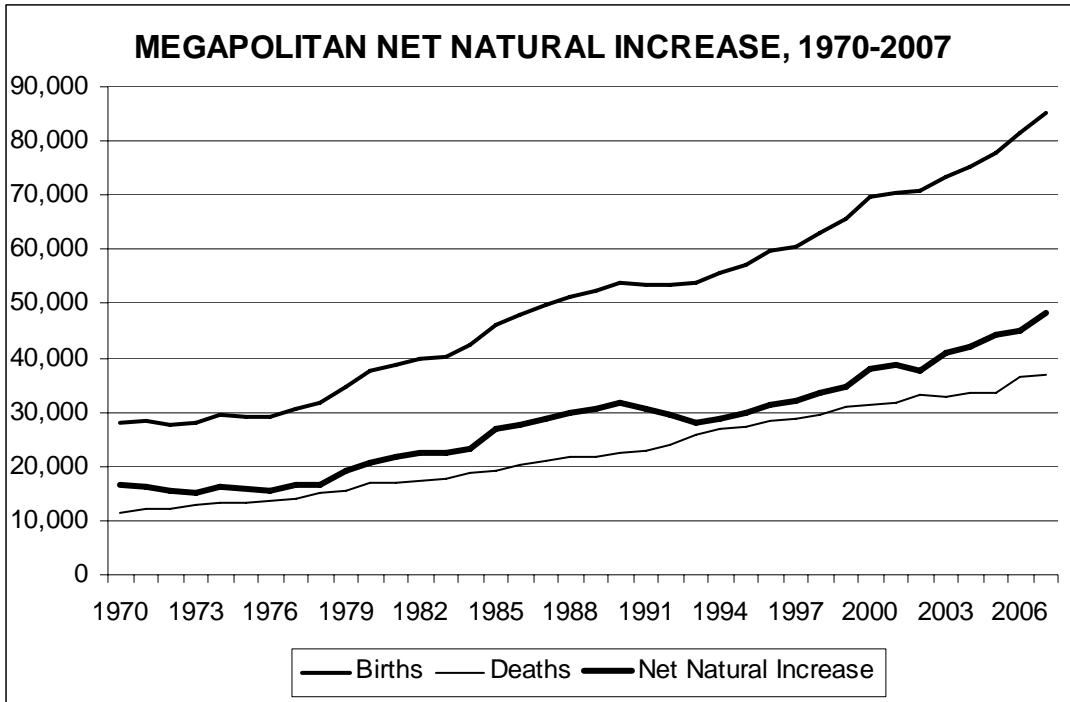
### **Births**

With the rapid growth in the megapolitan population, the number of births increased in nearly every year between 1970 and 2007, rising from less than 28,000 to more than 85,000. Over the entire 1970-to-2007 period, the number of births increased at an average annual rate of 3.1 percent per year.

In Chart 7, the annual number of births to non-Hispanic and Hispanic mothers are presented. The number of births to Hispanics has grown much more rapidly than those to non-Hispanics, so that the Hispanics' share of total births rose from 21 percent in 1970 to 46 percent in 2006 (the latest year for which detailed birth and death data are available), with nearly all of the increase in share occurring since 1985.

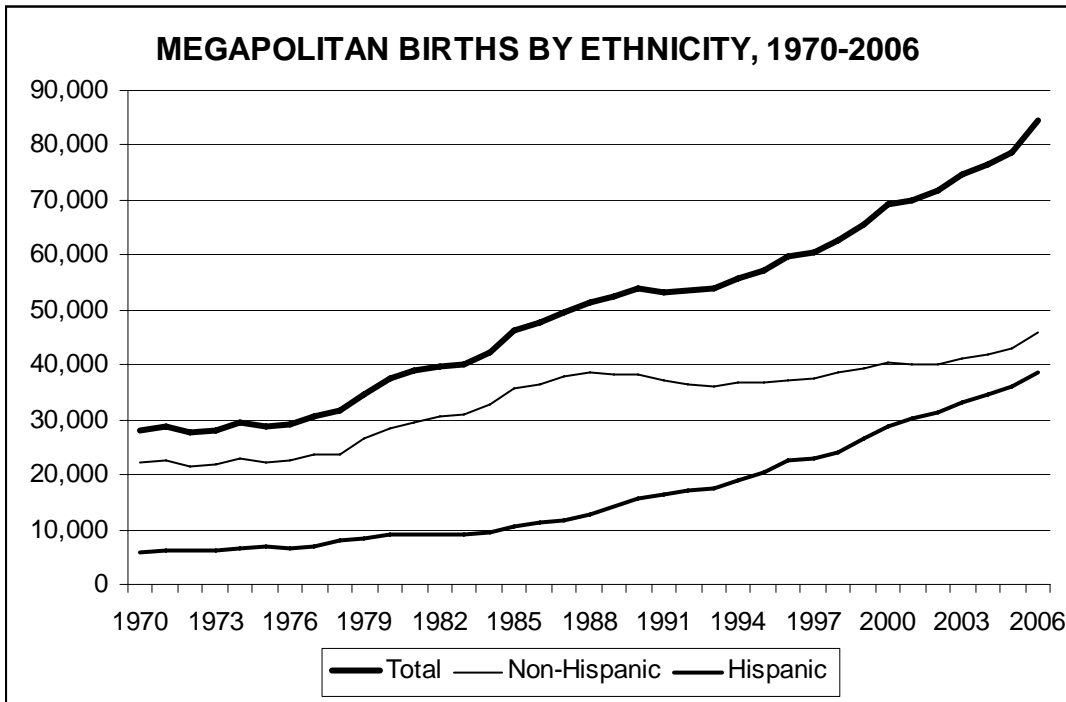
Measured in terms of crude birth rates (the number of births per 1,000 population), U. S. fertility declined substantially from nearly 24 in 1950 and 1960 (during the 1946-to-1964 baby boom) to less than 15 since 2000. The crude birth rate in the megapolitan area of 27 in 1950 and 1960 was higher than the national average. The megapolitan rate remains higher than the national average at around 17.

**CHART 6**



Source: U.S. Department of Commerce, Census Bureau.

**CHART 7**



Source: Arizona Department of Health Services.

When population counts are available by age for women, a more precise measure than the crude birth rate can be calculated. Using the 2000 census, the general fertility rate — the number of births per 1,000 women of ages 15 through 44 — was 78 in the megapolitan area. The fertility rate varies substantially by age; in 2000 in the megapolitan area, it rose from near zero among girls less than 15 years old to a peak of 134 among women 20-to-24 years old, then fell to less than 10 among those 40-to-44 years old.

The general fertility rate among Hispanic women living in the megapolitan area in 2000 was 114, substantially higher than the rate of non-Hispanic women of 63. While the fertility rate of Hispanics was higher than non-Hispanics in all age groups, the difference was small except among those 15-to-29 years old (see Chart 8).

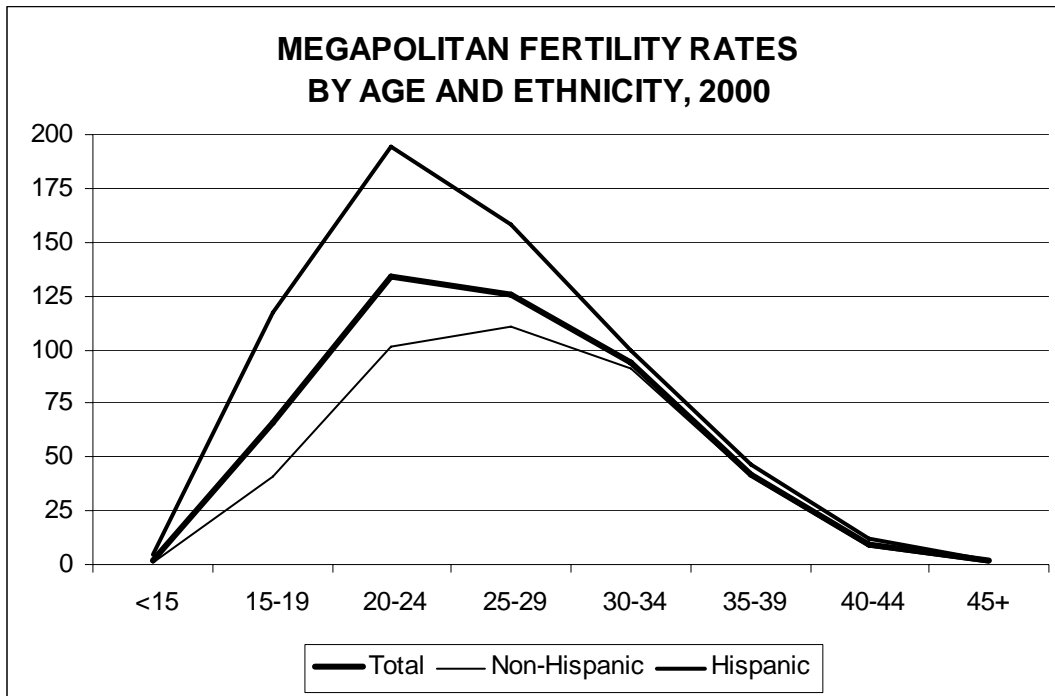
Between 1990 and 2000, the general fertility rate decreased slightly. Birth rates fell among those 15-to-19 and rose among those 30-to-39, in both the Hispanic and non-Hispanic ethnic groups.

Using the American Community Survey results for 2006, the general fertility rate was slightly higher than in 2000, with an increase since 2000 among non-Hispanics and a decrease among Hispanics. As in the 1990s, birth rates declined among those 15-to-19 and rose among those 30-to-39 in both ethnic groups. The fertility rate was inconsistent among those in their 20s, across the two time periods and across the two ethnic groups. Due to the large sampling error in the ACS, the apparent trends between 2000 and 2006 should be interpreted cautiously.

### Deaths

As with births, the rapid growth in the megapolitan population has resulted in the number of deaths increasing in nearly every year between 1984 and 2006. (The time series for deaths

**CHART 8**



Source: Arizona Department of Health Services and U.S. Department of Commerce, Census Bureau.

begins in 1984 since deaths by ethnicity are available only back to 1984). The number of deaths increased from just less than 19,000 in 1984 to a little more than 35,000 in 2006. Over the 1984-to-2006 period, the number of births to the region's residents doubled while deaths rose by 85 percent. During the 1990s, the percentage rise in deaths was higher than births, but since 2000, the rate of increase in deaths has been much less than births. One reason for the lesser rise in deaths in recent years is that the smaller age cohort born during the 1930s depression is aging into the age group with higher death rates.

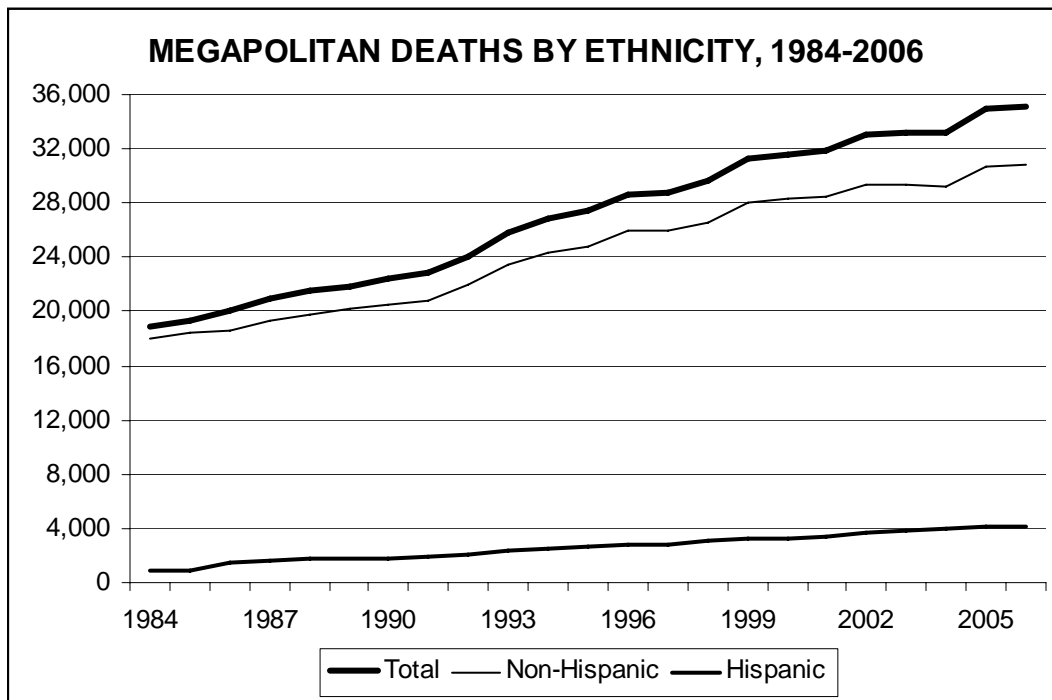
In Chart 9, the annual number of deaths of non-Hispanics and Hispanics are presented. Because of the small share of Hispanics in elderly age groups, the Hispanic share of deaths is much lower than their share of births. The percentage climbed from about 5 percent in 1984 to 12 percent in 2006.

Measured in terms of crude death rates (the number of deaths per 1,000 population), U. S. mortality was approximately 9.5 in 1950, 1960 and 1970. It fell to 8.8 in 1980 and held there in 1990 and 2000. Another decline apparently has occurred since 2000, to 8.1 in 2006. The crude death rate in the megapolitan area has been 1.0 to 1.5 lower than the national average since 1950. Because the 2006 population is an estimate rather than a census count, the 2006 death rate could be revised after the 2010 census count is released.

Using the 2000 census, mortality rates can be calculated by age, gender, and ethnicity. In the megapolitan area, the overall mortality rate of males was 8.0 per 1,000, a little higher than the 7.4 rate for females. Because of the much younger age distribution, the overall mortality rate of Hispanics was much lower than for non-Hispanics (for example, for males, 3.4 versus 9.7).

Mortality rates vary widely by age. Other than in the first year of life, death rates are very low for children and rise only slowly through middle age. For example, only 8 percent of all

**CHART 9**



Source: Arizona Department of Health Services.

deaths of megapolitan residents occurred to persons under 40 years of age in 2006. At the other end of the lifecycle, 71 percent of all those dying in 2006 were 65 years or older. Table 1 shows the age/sex/ethnic-specific death rates for 2000, illustrating the sharp rise in death rates that begins around age 60. Death rates are uniformly lower for females than males, with differences substantial after age 70. Though the overall mortality rate is much lower for Hispanics than non-Hispanics, death rates by age are similar.

Even though the reported number of deaths and the age at death presumably are quite accurate, and the age distribution of the population from the decennial census is based on the complete count rather than a sample, the calculated death rate fluctuates in categories with a relatively small number of people, such as males 85 or older. Part of the reason may be that many census respondents are imprecise in supplying their age. Thus, apparent differences in the death rate by age between Hispanics and non-Hispanics should be interpreted cautiously. The small number of deaths in younger age groups and the small number of older Hispanics can result in noticeable random fluctuations between the two ethnic groups.

Similar fluctuations occur when comparing death rates between 1990 and 2000. For men, death rates apparently declined between 1990 and 2000 in the 60-to-84 age group, but not in the 85 or older group. For women, little change was measured, except for an increase in death rates among those 80 or older. Given the sampling error in the American Community Survey, a

**TABLE 1**  
**MEGAPOLITAN MORTALITY RATES BY AGE, GENDER AND ETHNICITY, 2000**

Age	Male			Female		
	Total	Non-Hispanic	Hispanic	Total	Non-Hispanic	Hispanic
Total	8.0	9.7	3.4	7.4	9.0	2.8
Less than 5	2.0	2.2	1.7	1.6	1.5	1.7
5-9	0.2	0.2	0.3	0.1	0.1	0.2
10-14	0.3	0.3	0.3	0.1	0.1	0.2
15-19	1.1	1.1	1.2	0.4	0.4	0.3
20-24	1.5	1.3	1.8	0.4	0.4	0.3
25-29	1.4	1.3	1.6	0.6	0.5	0.7
30-34	1.8	1.7	1.9	0.7	0.7	0.8
35-39	2.2	2.2	2.1	1.1	1.1	0.9
40-44	3.4	3.6	2.7	1.7	1.8	1.4
45-49	5.0	5.3	3.7	2.5	2.5	2.2
50-54	6.4	6.5	5.6	3.8	4.0	3.1
55-59	9.7	9.7	9.5	5.7	5.7	6.0
60-64	13.9	13.9	14.2	8.4	8.3	9.1
65-69	21.4	21.4	21.1	14.0	13.7	16.0
70-74	32.8	32.5	36.0	21.1	20.7	25.2
75-79	49.0	48.8	52.2	34.2	33.7	40.1
80-84	79.8	79.4	86.1	59.9	60.0	57.8
85 or Older	158.3	159.0	145.5	134.7	135.2	125.8

Source: Arizona Department of Health Services and U.S. Department of Commerce, Census Bureau.

comparison of death rates by age and gender, particularly if also crosstabulated by ethnicity, should not be attempted.

### **Summary of Population Movement**

In order to provide data for the megapolitan area from the decennial censuses and the ACS, the results for the three counties must be aggregated. This produces a problem in that the internal migration flows between the three counties (for example, people moving from Maricopa County to Pinal County) cannot be separately identified in the summary tables produced by the Census Bureau. Thus, the aggregated data discussed below overstate migration flows to and from the three-county area, overall and in the “same state” category.

The decennial censuses asked respondents where they were living five years earlier. The results (see Chart 10) show that the largest percentage was living in the same house; another sizable proportion was living in a different dwelling unit in the same county. Thus, a relatively small percentage of the population move across county lines, with a lesser proportion between 1995 and 2000 than between 1985 and 1990. Relative to the 1985-to-1990 period, the share making an intrastate or interstate move was smaller in the 1995-to-2000 period, especially of those living in the midwestern United States. However, the share of those moving from a foreign country was higher between 1995 and 2000.

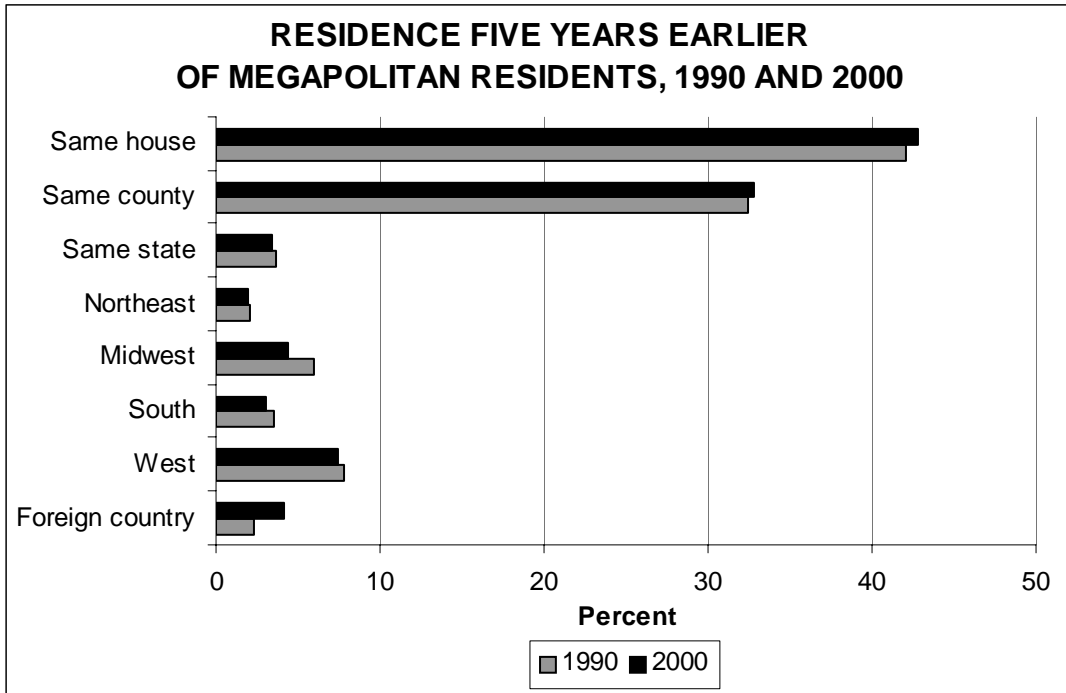
A comparison of the migration statistics between Hispanics and non-Hispanic whites (see Chart 11) shows two primary differences: (1) a lesser share of Hispanics were living in the same house five years earlier, but this was offset by a greater share living in a different dwelling unit in the same county; and (2) a lesser share of Hispanics had moved from another state within the United States, but this was offset by a higher proportion moving from another country.

Looking at place of birth rather than residence five years earlier, only a third of the megapolitan residents in 2000 were born in Arizona. The next-highest proportion was born in the Midwest (see Chart 12). Nearly one-third of the foreign born entered the United States between 1995 and the April 1, 2000 census date; half had entered since 1990. Fifteen percent of the foreign born came from Europe or Canada; the majority of this group were living in the United States by 1980. Thirteen percent were born in Asia, the majority entering during the 1980s or 1990s. Mexico was the birthplace of 65 percent of the foreign born, more than half of whom moved to the United States between 1995 and 2000.

The birthplaces of Hispanics and non-Hispanic whites are compared in Chart 13. A considerably higher proportion of Hispanics were born in Arizona or in another country.

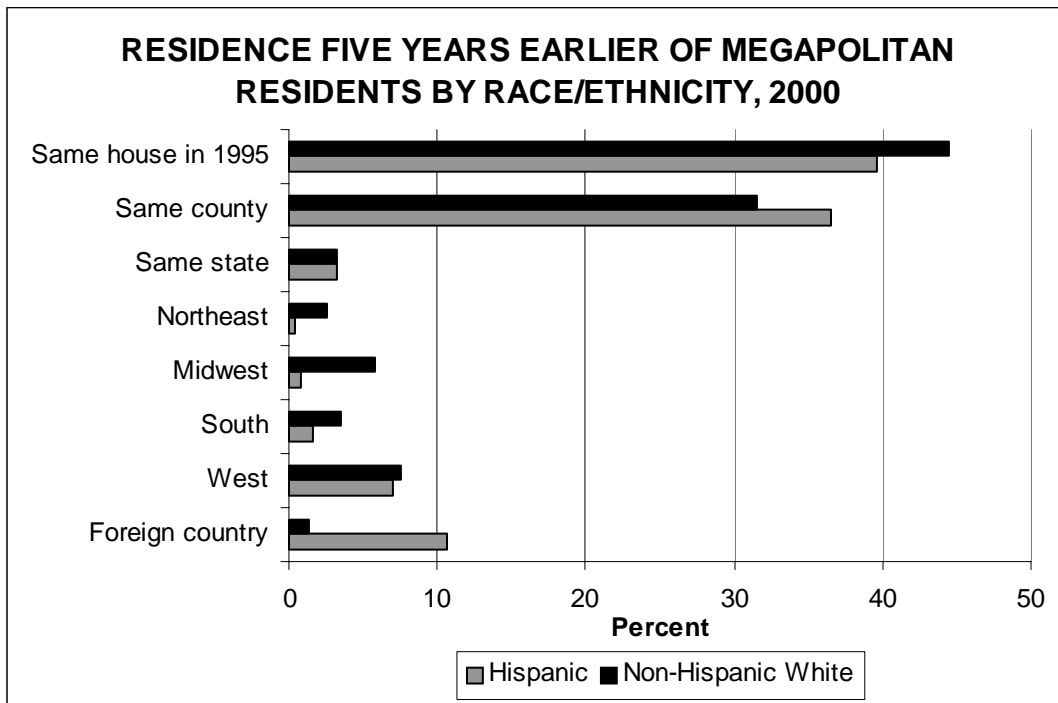
Respondents to the ACS are asked where they lived one year ago, instead of five years earlier in the decennial censuses. Thus, the proportion living in the same house is much higher than in the decennial census (between 75 and 80 percent in 2005 and 2006), with lesser shares in each of the other categories. The basic relationships are consistent with the decennial census results, however. For example, a higher proportion of non-Hispanic whites than Hispanics were living in the same house, but a higher share of Hispanics had moved from another dwelling in the same county.

**CHART 10**



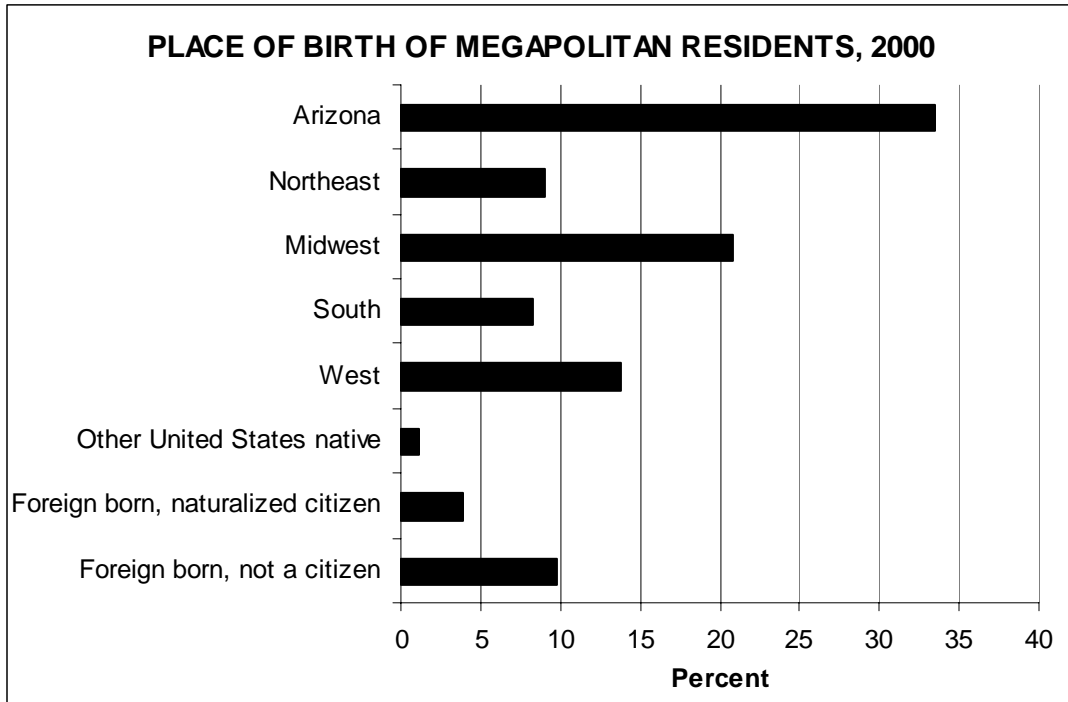
Source: U.S. Department of Commerce, Census Bureau.

**CHART 11**



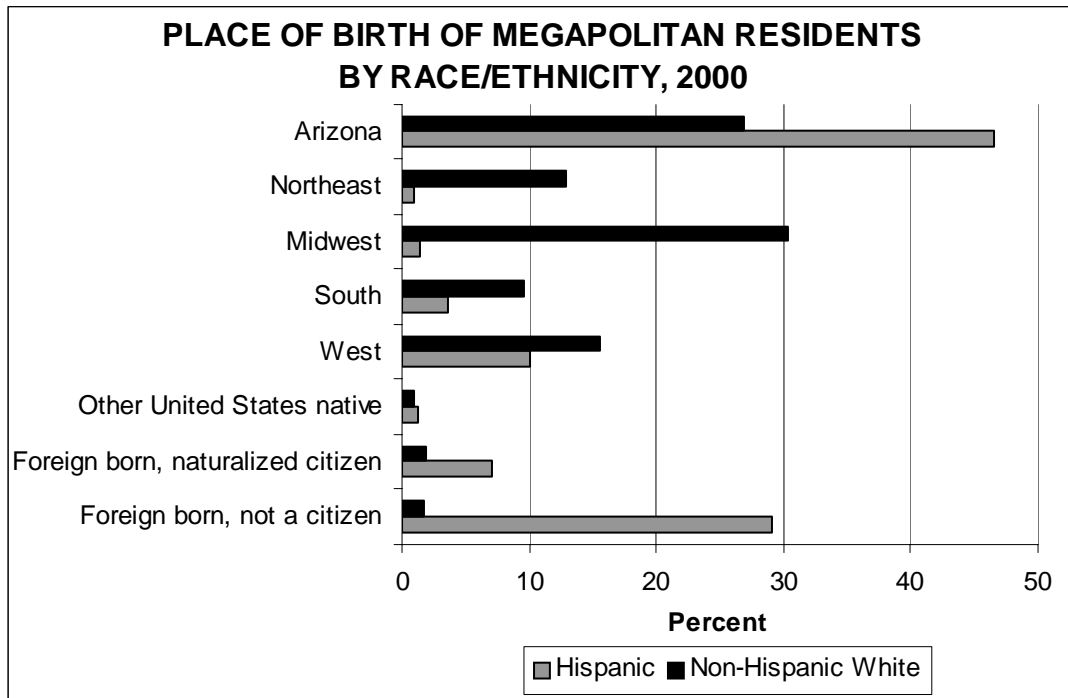
Source: U.S. Department of Commerce, Census Bureau.

**CHART 12**



Source: U.S. Department of Commerce, Census Bureau.

**CHART 13**



Source: U.S. Department of Commerce, Census Bureau.

### Domestic Migration

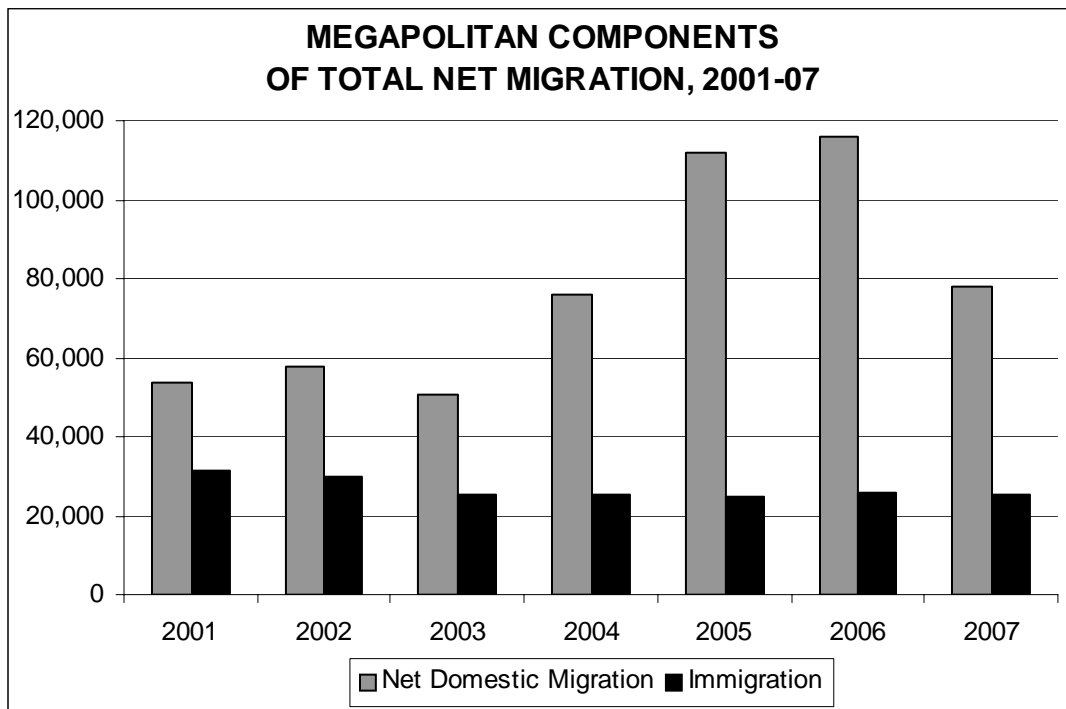
Annual estimates of domestic net migration are not available from the Census Bureau except for recent years. However, decennial census results and estimates of immigration indicate that domestic net migration was the dominant source of population growth in the megapolitan area until the mid-1990s. Since 2001, estimates of the number of net domestic migrants and of immigrants are available from the Census Bureau's annual estimates of population. As seen in Chart 14, net domestic migration to the megapolitan area has been higher than immigration in each year, with wide differences since 2004.

### Annual Estimates of Domestic Migration from the Internal Revenue Service

The Internal Revenue Service annually produces migration data based on addresses filed by taxpayers in consecutive years. The number of personal exemptions reported on the tax returns is counted, providing a measure similar to population. Annual IRS data extend back to 1980, with migration flows available from 1981 (a comparison of addresses reported in spring 1980 and spring 1981) through 2006. Migration flows also are available for selected years prior to 1981. A complete matrix of state-to-state migration flows is produced by the IRS. County-to-county migration data also are available, but only when the number of people moving is above a threshold. County-to-state flows are not available, and it is not possible to calculate the number moving to and from a county with another state because of the incomplete nature of the county-to-county data. Thus, the number of people moving to and from the megapolitan area with California, for example, is not available.

The IRS figures are NOT complete counts of domestic migration — only those taxpayers who could be matched in two consecutive years are included. Adding the number of in-migrants

CHART 14



Source: U.S. Department of Commerce, Census Bureau.

in a year to the number of people in households at the same address in both years (as reported by the IRS) provides an estimate of the total population living in a location. However, the IRS population figures are considerably lower than the estimates of the Census Bureau, since not everyone files tax returns, and the IRS is unable to match the returns for some tax filers. Moreover, the share of the population accounted for by the IRS has been falling. In the megapolitan area, the IRS data accounted for 86 percent of the Census Bureau population estimate in 1980. By 2006, this share was down to 70 percent. The increase in unauthorized immigration presumably is one factor causing this proportion to fall.

**States.** Since county-to-state flows are not available, in order to draw a broad picture of the geographic flows to and from the megapolitan area over time, the migration flows to and from Arizona with other states were analyzed for the 1981-through-2006 period. Since more than 80 percent of the state's residents live in the megapolitan area, patterns at the state level are highly likely to prevail at the megapolitan level as well. County-to-county flows aggregated to the megapolitan level also were analyzed.

Domestic net migration to Arizona is highly cyclical, rising during economic expansions and falling during economic slumps. The fluctuations in migration flows lag a little behind the economic cycle.

To avoid the ups and downs in flows due to the economic cycle, migration flows over the last 10 years (1997 through 2006) — representing a complete economic cycle — were totaled. Net domestic migration to Arizona, according to the incomplete IRS data, was 580,000 — 153,000 (36 percent) higher than the 10 year-period of 1981 through 1990. In the 1980s, the highest annual net domestic migration to Arizona was 69,800; the recent peak was 90,000 in 2005. The lowest annual figure during the 1980s was 33,800; the lowest figure in the last 10 years was 44,200 in 2001. Thus, net domestic migration to the state has increased over time.

California alone has been responsible for the increase over time in total net migration to Arizona. During the 1980s, net migration from California totaled 33,000, only 8 percent of Arizona's net domestic total. In the last 10 years, net migration from California totaled 205,000 (up 172,000) and made up 35 percent of the total. In 2005 and 2006, the highest years of net domestic migration to Arizona on record, the California share exceeded 50 percent. It also exceeded 50 percent from 1990 through 1994, with the last year of that period also having a large overall net inflow.

In contrast, net migration to Arizona from the United States other than California has dropped, with the total for the last 10 years 6 percent less than that of the 1980s. In three consecutive years (1985 through 1987) net migration from the balance of the nation exceeded 57,000 per year, peaking at 65,600. Since 1988, the figure has exceeded 40,000 only twice: 40,100 in 1997 and 44,700 in 2005. (The 2006 figure was just less than 40,000.)

The historical record shows that net migration flows from most states to Arizona follow a cyclical pattern, but that the cyclical pattern varies across the country by region. That is, the cyclicity of net migration flows from some states does not correspond to the Arizona economic cycle (which closely parallels the national cycle). Local conditions in some states do not closely follow national economic conditions. The cyclicity is greatest with nearby states, particularly in the Rocky Mountain region. The cyclicity is least with the northeastern states.

Because of this differing cyclical pattern, the relative importance of states and regions as a source of Arizona's growth has varied over time. The Great Lakes region was the most important source of migrants during the 1980s, particularly during the early-to-mid-1980s. Relatively few on net moved from this region to Arizona during the early 1990s. The Pacific

region provided few net migrants during the 1980s, but net inflows have been much higher since then, especially in the early-to-mid 1990s and again in the last few years. The cyclicity with Rocky Mountain states has been substantial, with strong net inflows during the mid-1980s shifting to net outflows during the early-to-mid-1990s. More moderate net inflows have prevailed since then.

The states with the largest migration flows to and from Arizona in 2006 are shown in Table 2. Note that this year likely is not representative of the flows that will occur in the future given the substantial cyclicity that has been present over time. Besides the record high net in-migration from California in 2006, a net inflow was measured from Nevada, but in most years, Arizona has experienced net out-migration to Nevada. Net migration also was unusually strong from many of the northeastern states.

Though California by far had the largest inflows and outflows in 2006, it was particularly dominant in net migration. The other states with large flows are proximate to Arizona and/or are populous. Despite high overall net in-migration, Arizona experienced net out-migration to certain states, primarily in the South.

In order to control for state population size, migration rates — in- and out-migration divided by population — were calculated. When state population is considered, the list of most important states changes considerably. Migration rates are highest with neighboring states and fall quickly with increasing distance from Arizona. The decline with distance is most rapid with

**TABLE 2**  
**ARIZONA MIGRATION WITH OTHER STATES, 2006**

	Share of Domestic Total			Rate*		
	In	Out	Net	In	Out	Net
<b>Highest Net In-Migration</b>						
California	31.0%	15.9%	55.2%	1.99	0.63	1.36
Illinois	4.2	3.1	5.9	0.76	0.35	0.41
New York	3.0	2.0	4.5	0.36	0.15	0.21
Michigan	2.7	1.7	4.2	0.61	0.24	0.37
Ohio	2.5	2.0	3.2	0.50	0.25	0.25
New Jersey	1.5	0.8	2.7	0.41	0.13	0.28
Florida	3.1	3.5	2.5	0.41	0.28	0.13
Nevada	3.6	4.4	2.4	3.47	2.58	0.89
Washington	3.8	4.7	2.3	1.39	1.07	0.32
Pennsylvania	1.8	1.6	2.1	0.33	0.18	0.15
Minnesota	1.8	1.8	1.9	0.82	0.49	0.32
New Mexico	4.0	5.3	1.8	4.80	3.96	0.84
Wisconsin	1.6	1.5	1.8	0.68	0.39	0.29
<b>Selected Others</b>						
Texas	5.7	9.7	-0.6	0.58	0.61	-0.02
Colorado	3.5	5.6	0.2	1.74	1.69	0.04
Utah	2.5	3.9	0.3	2.31	2.20	0.11
Oregon	2.2	3.1	0.8	1.41	1.22	0.19
Idaho	0.9	1.9	-0.7	1.50	1.95	-0.44
North Carolina	1.2	2.3	-0.6	0.31	0.37	-0.06

\* Migration per 1,000 residents of the other state in 2005.

Source: Internal Revenue Service and U.S. Department of Commerce, Census Bureau.

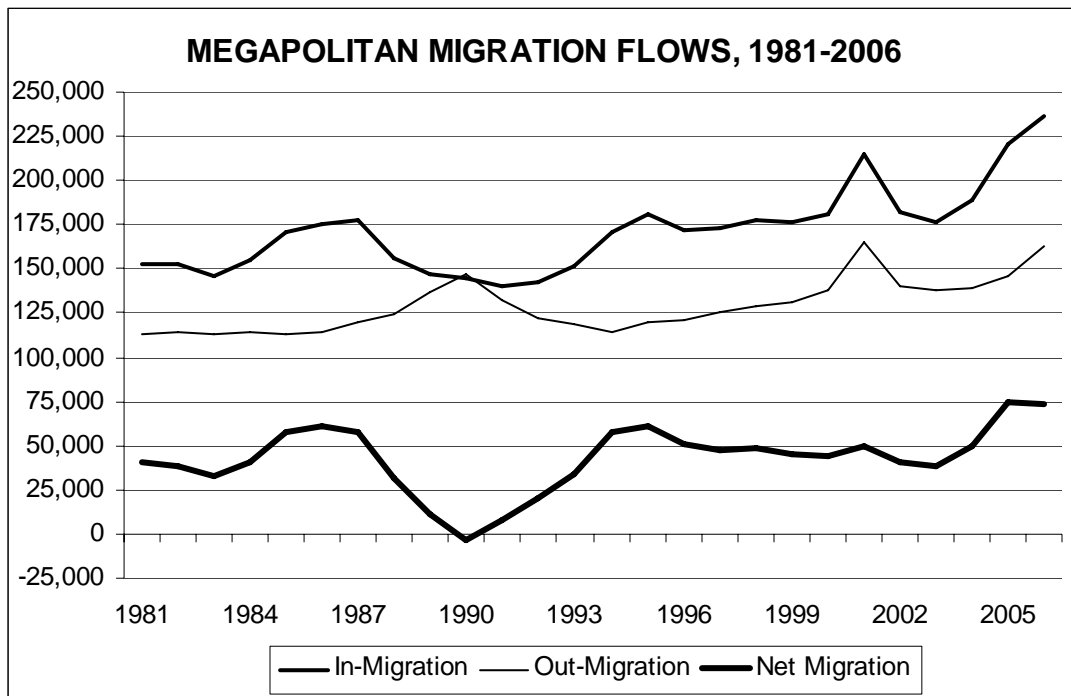
southern states, such that states in the South have particularly low migration rates with Arizona. The highest rates are with the bordering states of New Mexico, Nevada, and Utah. The geographic pattern of net migration rates is not as clear. While the highest net in-migration rates in 2006 were from California, Nevada and New Mexico, only a few years earlier Arizona experienced net out-migration to Nevada and much lesser net in-migration from California. Other than these neighboring states, the highest net in-migration rates were from the northern states of North Dakota, Alaska, Illinois, Michigan and Minnesota.

**Counties.** Total IRS migration flows to and from the megapolitan area from 1981 through 2006 are displayed in Chart 15. Migrants from one county to another within the megapolitan area are included, causing the in- and out-migration figures to be overstated. This intramegapolitan migration does not affect the net migration figure. Net migration to the megapolitan area accounted for 88 percent of the state total between 1997 and 2006, about the same share as during the 1980s. Net domestic migration to the megapolitan area in 2005 and 2006 was nearly equal, with the two years the highest on record.

The analysis of megapolitan migration flows is hampered by the IRS not providing flows between all counties. Many of the county-to-county flows, particularly to and from Pinal County, were not shown by the IRS, limiting the detailed analysis that could be performed. The rest of this analysis focuses on the migration flows from 2001 through 2006.

Little of the megapolitan area’s growth results from net in-migration from other Arizona counties. Small net inflows occurred in 2001 and 2005 but net outflows were registered in the

**CHART 15**



Note: Inflows and outflows are overstated since migration across counties within the megapolitan area is included. However, not all migrants are captured in the IRS data.

Source: Internal Revenue Service.

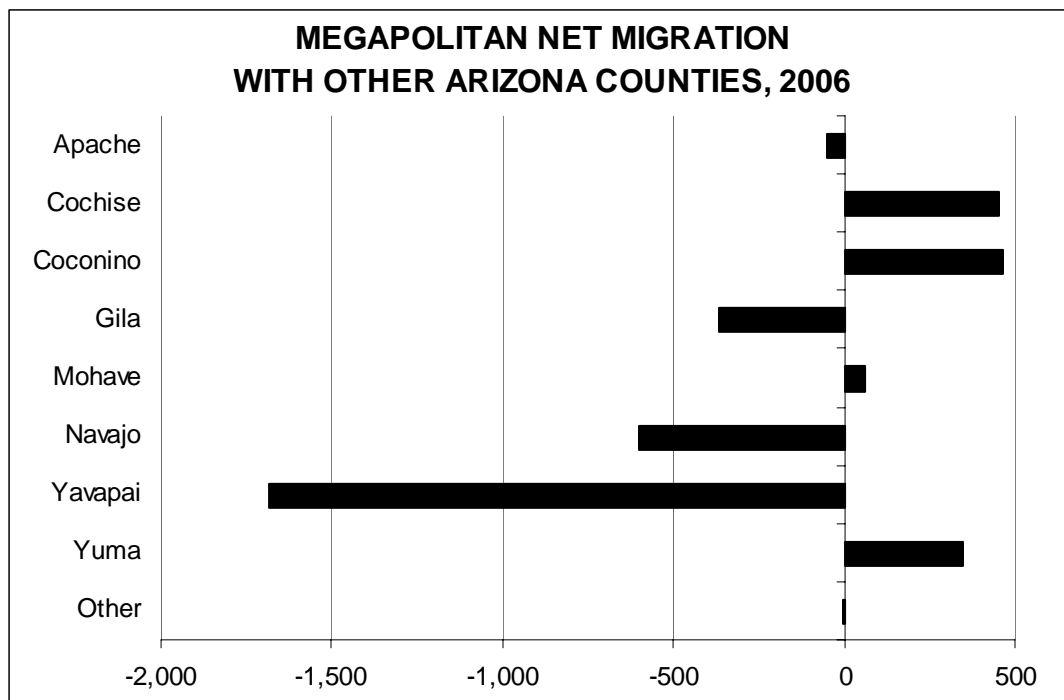
other years from 2001 through 2006. The six-year average is a net outflow of about 100 per year from the megapolitan area to the other Arizona counties. The megapolitan area has experienced moderate net inflows from Cochise, Coconino, and Yuma counties. Net out-migration has been substantial to Yavapai County, moderate to Navajo County, and small to Gila County. The net flows with Arizona counties in 2006 are shown in Chart 16. The overall net outflow to “other” Arizona counties in 2006 was unusual — a moderate, though decreasing, net inflow was registered in the preceding five years.

The net flows to and from the megapolitan area in 2006 are shown in Table 3 for the counties providing the largest net inflows to the megapolitan area. In most of these counties, complete in- and out-migration data were not available for the three constituent counties of the megapolitan area, causing flows to be expressed as less than or greater than the figure shown.

The significance of California is obvious, with California counties filling 10 of the top 12 ranks on net migration. Southern California counties in the Los Angeles and San Diego areas are of particular importance, ranking first through fifth and seventh. Los Angeles County alone accounted for 17 percent of the megapolitan area’s total net domestic migration.

The megapolitan area’s migration flows to and from each county varies over time, mostly as a result of changing economic conditions in the megapolitan area relative to those in the other county. For example, Los Angeles County accounted for 6 percent of the net in-migrants from other states in 2001 and 2002, but 17 percent in 2006. The share of the Los Angeles area as a whole (including Los Angeles, Orange, Riverside, San Bernardino and Ventura counties) increased from 9 percent to 33 percent between 2001 and 2006. Adding San Diego and Santa Barbara counties, the southern California share rose from 10 percent to 40 percent.

**CHART 16**



Source: Internal Revenue Service.

**TABLE 3**  
**MEGAPOLITAN MIGRATION WITH INDIVIDUAL COUNTIES, 2006**

<b>County</b>	<b>State</b>	<b>In</b>	<b>Out</b>	<b>Net</b>
Los Angeles	California	15,458	3,022	12,436
Orange	California	6,270	1,478	4,792
San Diego	California	7,121	2,703	4,418
San Bernardino	California	3,948	997	2,951
Riverside	California	4,085	1,324	2,761
Cook	Illinois	3,394	1,201	2,193
Ventura	California	1,963	> 402	< 1,561
Santa Clara	California	2,125	> 769	< 1,356
Clark	Nevada	4,148	3,097	1,051
Alameda	California	1,373	> 453	< 920
Sacramento	California	1,515	624	891
Contra Costa	California	1,175	> 368	< 807
DuPage	Illinois	1,055	> 339	< 716
Oakland	Michigan	923	> 255	< 668
Wayne	Michigan	862	> 206	< 656
Washoe	Nevada	734	> 105	< 629
King	Washington	1,987	1,410	577
Suffolk	New York	733	> 159	< 574
Hennepin	Minnesota	1,116	> 548	< 568
Lake	Illinois	799	> 234	< 565
Cuyahoga	Ohio	762	> 234	< 528

Note: Migration flows were not available for all three constituent counties of the megapolitan area in some cases, resulting in some migration flows being shown as greater than or less than.

Source: Internal Revenue Service.

Unlike the sharp rise in net inflows from southern California from 2001 to 2006, the net inflows from the San Francisco area rose only modestly. As a share of the total net migration from other states, the Bay area's peak figures were in 2002 and 2003 at around 6.5 percent. Similarly, the share of net migration from the Seattle-Tacoma area peaked in 2003 at 5 percent, and was down to only 1.5 percent in 2006. Net in-migration from the Portland area was moderate in 2006, but was slight in the preceding years. The net inflow from the Denver area accounted for nearly 3 percent of the total in 2003 but less than 1 percent in 2006. The net inflow from the Colorado Springs area was slight during the six years.

Las Vegas received a small number of net in-migrants from the megapolitan area from 2001 through 2004, then the net flow shifted in the other direction. Las Vegas accounted for about 1.5 percent of the net inflow in 2005 and 2006. Net in-migration from the Albuquerque area was consistently positive, but of a relatively small number. The net inflows from the Salt Lake City and Provo-Orem areas were greater than those from Albuquerque in most years, but were slight in 2006. The megapolitan area experienced net out-migration to the Boise area in all six years.

Net out-migration from the megapolitan area also occurred to various areas in Texas in some years. A net outflow to the Dallas area was registered in three of the six years, including 2006. Net outflows to the Austin area occurred in every year, but the number was slight from 2002 through 2005. A small net outflow to the San Antonio area in 2006 was preceded by small

net inflows. Net inflows from the Houston area also were small. In contrast, the net inflow from the El Paso area was moderately large, though it declined over the six years.

Outside the Southwest and West, the Chicago area is the most important source of migrants to the megapolitan area. It accounted for about 10 percent of the net in-migrants in 2001 and 2002, but the share was only 5 percent in 2005 and 2006. The numeric net inflows from the Chicago area declined only a little, but total net in-migration to the megapolitan area jumped during this period, largely due to increased net migration from southern California.

### **Domestic Migration from the Decennial Censuses**

The Census Bureau produced special migration files from the 1990 and 2000 decennial censuses. Some of the data tables consist of county-to-county migration flows, allowing the county-to-county flows within the megapolitan area to be deleted. Other data tables provide various characteristics of those who moved during the five-year period preceding the census; the intramegapolitan flows cannot be removed from these tables.

Of the 2.68 million residents of the megapolitan area in 1990 who were age 5 years or older, 567,401 (21 percent) had lived outside the megapolitan area but within the United States in 1985. In contrast, 387,940 residents of the megapolitan area in 1985 no longer were living in the area in 1990. Thus, net domestic migration over the five years was 179,461. In-migration sometimes is compared to out-migration through the calculation of migration efficiency (in-migration divided by out-migration; when in-migration equals out-migration, the efficiency is 1.0). The efficiency of the domestic migration flows to and from Arizona between 1985 and 1990 was 1.46.

Of the 3.79 million residents of the megapolitan area in 2000 who were age 5 years or older, 696,320 (18 percent) had lived outside the megapolitan area but within the United States in 1995. In contrast, 419,177 residents of the megapolitan area in 1995 no longer were living in the area in 2000. Thus, net domestic migration over the five years was 277,143. The efficiency of the domestic migration flows was 1.66.

These figures include migrants from the other 12 counties in Arizona as well as from the other 49 states and the District of Columbia. Since the pattern of intrastate migration flows was quite different from that of interstate flows, they are examined separately below.

**Intrastate Migration.** In- and out-migration flows between the megapolitan area and the state's other 12 counties were disproportionately large, since the proportion of people moving is inversely related to distance. Intrastate sources accounted for 8 percent of the total domestic in-migration and nearly 12 percent of the total domestic out-migration with the megapolitan area between 1985 and 1990. However, net in-migration to the megapolitan area from the rest of Arizona was only a little more than 2,000 (1.2 percent of the domestic total), as the efficiency of the migration flows barely exceeded 1.

In-migration to the megapolitan area between 1995 and 2000 from the state's other counties accounted for 8.6 percent of the total domestic in-migration and 13.5 percent of out-migration. Both shares were a little higher in the 1995-to-2000 period than between 1985 and 1990, a product of Arizona's higher proportion of the national population in 2000 than in 1990. However, the intrastate share of total net domestic migration was only 1.2 percent, the same as in the 1985-to-1990 period. Net in-migration to the megapolitan area from the rest of Arizona was only 3,200 between 1995 and 2000. The efficiency of the flows was only 1.06, nearly identical to the 1985-to-1990 period.

A net inflow was received from most of the other counties between 1985 and 1990, with the largest from Yuma County. However, there was a significant net outflow to Yavapai County, a moderate net outflow to Coconino County, and slight net out-migration to Gila and Mohave counties. The efficiency of the migration flows was highest with Greenlee County at 3.2, followed by Apache County at 2.5. With Yavapai County, the efficiency was only 0.5.

Between 1995 and 2000, a net inflow was received from nine of the other 12 counties, with the largest from Yuma County (see Table 4), as in the 1985-to-1990 period. However, there was a significant net outflow to Yavapai County and smaller net outflows to Gila and Navajo counties. Efficiencies were highest from Santa Cruz and Yuma counties, each at 2.4, and were between 1.4 and 1.9 in La Paz, Greenlee, Apache, and Cochise counties.

Using efficiency to compare the 1985-to-1990 and 1995-to-2000 periods, significant changes occurred over the decade in the migration flows with some counties. The efficiency fell considerably with Apache and Greenlee counties and also dropped with Gila and Navajo counties. The megapolitan area had received net in-migration from Navajo County between 1985 and 1990. In contrast, the efficiency rose moderately with Santa Cruz and Yuma counties and to a lesser extent with each of the other counties except Yavapai. Net outflows to Coconino and Mohave counties between 1985 and 1990 became net inflows between 1995 and 2000.

**Interstate Migration.** Nearly all of the domestic net migration to the megapolitan area results from interstate migration. Migration flows vary widely by state, as the population size of the state, distance from the megapolitan area, and other factors all affect the number of migrants. Migration flows with any state also fluctuate over time, mostly due to varying economic conditions in the other states relative to the economy of the megapolitan area. With nearby states, swings in migration flows may be significant over time, varying in some cases from net in-migration to net out-migration.

**TABLE 4**  
**MEGAPOLITAN MIGRATION WITH OTHER ARIZONA COUNTIES**  
**BETWEEN 1995 AND 2000**

County	In	Out	Net	Efficiency*
Apache	3,141	2,111	1,030	1.49
Cochise	8,872	6,097	2,775	1.46
Coconino	10,612	9,218	1,394	1.15
Gila	4,310	6,296	-1,986	0.68
Graham	2,107	1,805	302	1.17
Greenlee	745	413	332	1.80
La Paz	878	462	416	1.90
Mohave	4,074	3,445	629	1.18
Navajo	5,876	6,775	-899	0.87
Santa Cruz	4,271	1,756	2,515	2.43
Yavapai	7,864	15,127	-7,263	0.52
Yuma	6,858	2,903	3,955	2.36
Total Intrastate	59,608	56,408	3,200	1.06

\* In-migration divided by out-migration; when in-migration and out-migration are equal, the efficiency is 1.0.

Source: U.S. Department of Commerce, Census Bureau.

**TABLE 5  
MEGAPOLITAN MIGRATION WITH SELECTED OTHER STATES  
BETWEEN 1995 AND 2000**

					Rank (1=Highest, 50=Lowest)			
	In	Out	Net	Efficiency*	In	Out	Net	Efficiency*
<b>TOTAL **</b>	636,712	362,769	273,943	1.76				
<b>Ranked By Net Migration:</b>								
California	137,124	68,051	69,073	2.02	1	1	1	17
Illinois	43,143	12,841	30,302	3.36	2	7	2	2
New York	27,828	7,772	20,056	3.58	6	14	3	1
Washington	29,618	16,310	13,308	1.82	4	4	4	21
Michigan	21,127	9,321	11,806	2.27	8	11	5	12
Minnesota	16,981	6,650	10,331	2.55	11	16	6	7
Wisconsin	15,636	5,738	9,898	2.72	12	22	7	6
New Mexico	21,842	12,236	9,606	1.79	7	8	8	24
Ohio	17,782	8,422	9,360	2.11	10	12	9	15
Pennsylvania	14,607	6,319	8,288	2.31	14	18	10	11
New Jersey	11,079	3,908	7,171	2.83	18	27	11	4
Texas	37,235	30,585	6,650	1.22	3	2	12	40
Indiana	11,602	5,818	5,784	1.99	17	20	13	18
Massachusetts	8,758	3,733	5,025	2.35	22	28	14	10
<b>Others:</b>								
Colorado	27,897	24,187	3,710	1.15	5	3	18	43
Florida	18,087	13,921	4,166	1.30	9	6	16	38
Oregon	14,857	10,962	3,895	1.36	13	9	17	35
Utah	14,261	10,807	3,454	1.32	15	10	20	37
Nevada	12,814	14,590	-1,776	0.88	16	5	50	49
North Dakota	2,656	886	1,770	3.00	41	45	29	3
Connecticut	5,740	2,054	3,686	2.79	28	37	19	5
Hawaii	5,302	2,104	3,198	2.52	31	36	21	8
South Dakota	3,842	1,589	2,253	2.42	35	40	28	9

\* In-migration divided by out-migration; when in-migration and out-migration are equal, the efficiency is 1.0.

\*\* Excluding Arizona, but including the District of Columbia

Source: U.S. Department of Commerce, Census Bureau.

Between 1995 and 2000, the number of in-migrants from California was more than triple the number from Illinois, the second-ranked state (see Table 5). Other states providing a large number of in-migrants included other western states of Washington, Colorado and New Mexico, other states in the Great Lakes region (Michigan, Ohio, Minnesota and Wisconsin), and the very populous states of Texas, New York and Florida.

Out-migration to California between 1995 and 2000 was more than double that to Texas, the second-ranked state. Other states to which a number of megapolitan residents moved included other western states (Colorado, Washington, Nevada, New Mexico, Oregon and Utah), Florida — the national leader in attracting migrants — and states from which a number of migrants to the megapolitan area had moved, including Illinois, Ohio, and Michigan. This “reverse” migration is common as some migrants return to their prior residence, mostly due to family ties. It is particularly common for elderly in failing health to move closer to family.

Net in-migration between 1995 and 2000 was the greatest from California at more than double the number from Illinois. It also was strong from certain other western states (Washington and New Mexico), from the Great Lakes states of Michigan, Minnesota, Wisconsin, Ohio, and Indiana, and from the Middle Atlantic states of New York, Pennsylvania and New Jersey. The megapolitan area experienced net out-migration to Nevada and Arkansas.

Among the states with the largest migration flows, the ratio of in-migration to out-migration was highest with New York and Illinois at more than 3. Efficiency exceeded 2.25 with Minnesota, Wisconsin, Michigan, New Jersey and Pennsylvania. Among states with lesser numbers of migrants to and from the megapolitan area, North Dakota had the highest efficiency at 3, with figures greater than 2.25 with South Dakota, Massachusetts, Connecticut, and Hawaii. Efficiency was higher than average with California at 2.0, though this ranked only 17th among the states.

Generally, the efficiency was highest with northern states and lowest with southern states. However, the efficiencies in the New England states were less than those in the Middle Atlantic region, and efficiencies in the West did not follow this north-south pattern.

While the efficiency measure is one means of making comparisons over time and place, the efficiency measure does not provide insight on the size of the migration flows. The magnitude of the flows can be examined after adjusting for population size. Ideally, the migration rate — the number of migrants relative to an entire population — would be calculated based on the population at the beginning of the period. Since a census was not taken in 1985 and 1995, and because age detail is not available for those years (see the next section on migration by age), migration rates are calculated from the 1990 and 2000 census populations. The overall migration rate to the megapolitan area is calculated using the United States population less the number living in the megapolitan area, expressed as the number per 1,000 residents. State populations are used to determine the migration rates to and from each of the other states.

In- and out-migration rates are highly correlated with distance, such that all of the western states had the highest rates (see Table 6). The lowest in-migration rate in the West was from California at 4.4 (compared to the national average of 2.5). In-migration rates also exceeded the national average in the northern Plains states and in the western Great Lakes region. The lowest in-migration rates were from southern states, with all of the southern states having rates less than half the U.S. average. A few of the northeastern states also had rates less than half the average.

Out-migration rates from the megapolitan area exceeded 2.1 to all of the western states except Hawaii, compared to a national figure of 1.4. The only other states with an out-migration rate this high were South Dakota and Nebraska. Out-migration rates were less than 1 with most southern states and with most of the northeastern states.

The highest net migration rates were with New Mexico and Alaska. High rates were present with northern Plains states extending to Wyoming and Montana, states in the western Great Lakes region, California and Hawaii. Other than Nevada, the lowest rates were with southern states.

Between the 1985-to-1990 and 1995-to-2000 periods, the interstate in-migration rate to the megapolitan area rose from 2.11 to 2.47. The out-migration rate hardly changed (1.40 to 1.41). The efficiency rose from 1.52 to 1.76.

Significant changes in migration flows occurred with some states between the 1985-to-1990 period and the 1995-to-2000 period. The efficiency, in-migration rate and net migration rate rose with each of the Pacific Coast states and with Nevada; the out-migration rate dropped

**TABLE 6**  
**MEGAPOLITAN MIGRATION RATES WITH OTHER STATES**  
**BETWEEN 1995 AND 2000**

	<b>In</b>	<b>Out</b>	<b>Net</b>		<b>In</b>	<b>Out</b>	<b>Net</b>
United States*	2.47	1.41	1.06	Maine	1.48	0.83	0.66
Alaska	8.05	3.64	4.41	Vermont	1.80	1.24	0.56
Washington	5.39	2.97	2.42	New Hampshire	1.85	1.08	0.77
Oregon	4.65	3.43	1.22	Massachusetts	1.47	0.63	0.84
California	4.37	2.17	2.20	Rhode Island	1.05	0.64	0.41
Hawaii	4.68	1.86	2.82	Connecticut	1.80	0.65	1.16
Idaho	4.73	3.91	0.82	New York	1.57	0.44	1.13
Montana	5.34	3.36	1.98	New Jersey	1.41	0.50	0.91
Wyoming	6.11	3.36	2.75	Pennsylvania	1.26	0.55	0.72
Nevada	6.92	7.88	-0.96	Delaware	1.18	0.70	0.48
Utah	7.05	5.34	1.71	Maryland	1.13	0.59	0.53
Colorado	6.97	6.04	0.93	District of Columbia	1.58	0.73	0.85
New Mexico	12.94	7.25	5.69	Virginia	1.50	1.06	0.44
North Dakota	4.41	1.47	2.94	North Carolina	0.88	0.83	0.06
South Dakota	5.46	2.26	3.20	South Carolina	0.72	0.67	0.05
Nebraska	4.11	2.16	1.95	Georgia	0.95	0.86	0.09
Kansas	2.90	1.95	0.95	Florida	1.20	0.93	0.28
Oklahoma	2.19	1.81	0.39	West Virginia	0.54	0.39	0.15
Texas	1.94	1.59	0.35	Kentucky	0.76	0.70	0.06
Minnesota	3.70	1.45	2.25	Tennessee	0.93	0.90	0.03
Iowa	3.48	1.68	1.81	Alabama	0.67	0.48	0.18
Missouri	2.04	1.52	0.52	Mississippi	0.59	0.48	0.11
Wisconsin	3.11	1.14	1.97	Louisiana	0.66	0.47	0.20
Illinois	3.74	1.11	2.63	Arkansas	1.04	1.25	-0.22
Indiana	2.05	1.03	1.02				
Michigan	2.28	1.01	1.27				
Ohio	1.68	0.79	0.88				

\* Excluding Arizona, but including the District of Columbia

Source: U.S. Department of Commerce, Census Bureau.

with each of these states except Oregon. In each of these six states, the net migration rate rose at least 1. The rate rose more than 5 with Nevada, yet still was negative in the 1995-to-2000 period.

In contrast, the out-migration rate increased to each of the other six Rocky Mountain states and the efficiency with each of these states declined. The in-migration rate dropped with each of these states except New Mexico. The net migration rate fell significantly with each state except New Mexico.

The in-migration rate, net migration rate, and efficiency fell with each of the six western Great Plains states, but the changes were not as large as with the Rocky Mountain states. The adjacent states of Iowa, Arkansas and Louisiana followed the same pattern.

Changes were smaller with the more eastern states, but the net migration rate and efficiency rose more than average with some states, notably Illinois, Massachusetts, Maryland and New York. The efficiency and net migration rate fell with a few eastern states, but only marginally.

The differences between the 1985-to-1990 and 1995-to-2000 periods should not be assumed to represent a trend. Instead, relative economic conditions fluctuate over time by region within the United States, causing migration flows to vary. Based on the IRS annual data, neither of the five-year periods of migration measured by the decennial censuses was representative of the typical migration flows over the last 25 years. The net flows from the IRS by state between 1985 and 1990 and between 1995 and 2000 correlated highly with the net flows measured in the censuses.

**County-to-County Flows.** Migration flows from the 2000 census were reported on a county-to-county basis. Sampling error is obvious in the county-to-county flows of lesser magnitude. For this report, counties were combined into metropolitan statistical areas (MSAs) using the latest definition of those areas. Given the frequently lengthy official MSA names, an abbreviated version has been used in this report. Net migration and migration efficiencies with the megapolitan area for selected MSAs in selected states are shown in Tables 7 through 9. Because of the large migration flows with California, all MSAs in California are shown in Table 7.

Migration flows with the Pacific Coast states have been divided into western and eastern portions because of the differences between inland areas and MSAs on or near the coast (see Table 7). In Washington, efficiencies were higher with the inland MSAs. The Seattle MSA (which includes Tacoma) accounted for 56 percent of the state's net migration to the megapolitan area; the broader Seattle area including the Mount Vernon, Bremerton, and Olympia MSAs was responsible for 63 percent of the total. The efficiency of migration flows with Oregon was lower than with Washington. The Portland MSA accounted for two-thirds of the net migrants from the state.

The Los Angeles MSA (which includes Orange County) was responsible for 47 percent of the net migration from California to the megapolitan area; the broader Los Angeles area (including the Oxnard-Ventura and Riverside-San Bernardino MSAs) accounted for 61 percent. Efficiency was a high 2.7 with the Los Angeles MSA and 2.5 with the entire Los Angeles area. In contrast, not only was the net inflow from the San Diego MSA much smaller, the efficiency was lower at 1.4.

With each of the other metropolitan areas in coastal California, the efficiency was lower than with the Los Angeles MSA, with the next-highest figure with the San Jose MSA. The entire San Francisco Bay area accounted for only 16 percent of the net migrants from California. The efficiencies from inland metro areas in California ranged from low, but greater than 1, figures in the north to some very high figures in the south.

Economic conditions in the megapolitan area from 1995 to 2000 were strong. The economy in California still was weak at the beginning of this period, but was strong in the other years. Thus, this period largely is representative relative to the economies of the two areas and should be a basis for migration flows between California and the megapolitan area in the future.

From most of the rest of the West, net migration to the megapolitan area was not substantial (see Table 8). A net outflow to the Boise MSA kept the net inflow from Idaho small, and a net outflow to the Las Vegas area resulted in a net outflow to Nevada. The efficiency of migration flows with Utah and Colorado also were not that far above 1, though the figure with the Salt Lake City metro was 1.6. In contrast, the net inflow and efficiency from the Albuquerque MSA, and from the rest of New Mexico, was stronger.

**TABLE 7  
MEGAPOLITAN MIGRATION WITH METROPOLITAN AREAS  
IN PACIFIC COAST STATES BETWEEN 1995 AND 2000**

	Net	Efficiency*		Net	Efficiency*
<b>WASHINGTON</b>	13,308	1.8			
<b>Western MSAs</b>	9,979	1.8	<b>Eastern MSAs</b>	2,388	3.1
Greater Seattle Area	8,359	1.8			
Seattle	7,407	1.8	<b>Balance of Washington</b>	941	1.4
<b>OREGON</b>	3,895	1.4			
<b>Western MSAs</b>	3,226	1.4	<b>Eastern MSAs</b>	-21	1.0
Portland	2,625	1.5	<b>Balance of Oregon</b>	690	1.4
<b>CALIFORNIA</b>	69,073	2.0			
<b>Coastal MSAs</b>	59,613	2.1	<b>Inland MSAs</b>	8,086	1.8
San Francisco Bay	11,344	1.9	Redding	262	2.3
Santa Rosa	221	1.2	Chico	41	1.1
Napa	135	1.5	Yuba City	11	1.0
Vallejo	131	1.2	Sacramento	930	1.2
San Francisco-Oakland	6,003	1.9	Stockton	877	2.3
San Jose	4,378	2.5	Modesto	946	2.7
Santa Cruz	476	2.0	Merced	171	1.7
Salinas	435	1.6	Madera	95	1.5
San Luis Obispo	277	1.4	Fresno	1,263	2.4
Santa Barbara	1,205	2.1	Hanford	348	3.3
Los Angeles Basin	42,464	2.5	Visalia	418	1.8
Oxnard-Ventura	1,797	2.0	Bakersfield	1,767	2.6
Los Angeles-Santa Ana	32,784	2.7	El Centro	957	4.1
Riverside-San Bernardino	7,883	2.0			
San Diego	3,888	1.4	<b>Balance of California</b>	1,374	2.4

\* In-migration divided by out-migration; when in-migration and out-migration are equal, the efficiency is 1.0.

Note: In metropolitan areas that cross state borders, only that portion of the migration in the given state is reported.

Source: U.S. Department of Commerce, Census Bureau.

Within Texas, wide variations in migration flows to and from the megapolitan area occurred. Very strong net in-migration from the El Paso MSA to the megapolitan area was an outlier. A moderate efficiency was present with Houston and the smaller (“other”) MSAs. In contrast, the efficiency was less than 1 with the Austin MSA and with nonmetropolitan portions of Texas, and around 1 with the Dallas-Fort Worth and San Antonio MSAs.

Efficiencies were much higher with northern states in the Midwest. The efficiency and net in-migration from the Chicago MSA was especially high, though the efficiency with the Milwaukee MSA also was quite high. Of the four states shown in Table 9, efficiencies were highest with the large MSA in each state (with the exception of the nonmetropolitan portion of Minnesota). With the increasingly large size of the Phoenix area, it likely is becoming

decreasingly attractive to residents of rural areas or small MSAs, but its size is not a drawback to residents of other populous metro areas.

### Domestic Migration by Age

Migration by five-year age group is presented in this section. Age is as of the 1990 and 2000 census dates (April 1), not the age at the time of the move. Since the migration data are derived from a comparison of residence at the time of the census to that five years earlier, the actual migration occurred from zero-to-five years earlier than the census date, and therefore at an age on average 2.5 years younger than expressed. Thus, for example, the 20-to-24 age group on average measures moves made at the age of 18-to-22, though the age at the time of the move ranges from 15-to-24. In the 65-to-69 age group, most of the moves probably occurred at the age of 65 or younger.

In-migration to the megapolitan area totaled 696,320 between 1995 and 2000, up nearly 129,000 (23 percent) from the 1985-to-1990 period. The overall in-migration rate rose from 2.49 to 2.69. A stronger megapolitan economy from 1995 through 2000 relative to that from 1985 to 1990 likely accounts for the increase in rate.

**TABLE 8**  
**MEGAPOLITAN MIGRATION WITH METROPOLITAN AREAS IN SELECTED**  
**ROCKY MOUNTAIN STATES AND TEXAS BETWEEN 1995 AND 2000**

	<b>Net</b>	<b>Effic- iency*</b>		<b>Net</b>	<b>Effic- iency*</b>
<b>IDAHO</b>	977	1.2	<b>NEW MEXICO</b>	9,606	1.8
Boise	-644	0.7	Albuquerque	4,159	1.9
Other MSAs	464	1.7	Other MSAs	2,345	1.8
Balance of Idaho	1,157	1.7	Balance of New Mexico	3,102	1.7
<b>NEVADA</b>	-1,776	0.9	<b>TEXAS</b>	6,650	1.2
Las Vegas	-2,600	0.8	Austin	-1,549	0.6
Other MSAs	179	1.1	Dallas-Fort Worth	317	1.0
Balance of Nevada	645	1.5	El Paso	5,021	4.5
			Houston	2,045	1.5
<b>UTAH</b>	3,454	1.3	San Antonio	-72	1.0
Salt Lake City	2,432	1.6	Other MSAs	1,772	1.4
Other MSAs	558	1.1	Balance of Texas	-884	0.8
Balance of Utah	464	1.6			
<b>COLORADO</b>	3,710	1.2			
Denver	1,732	1.2			
Colorado Springs	457	1.1			
Other MSAs	699	1.2			
Balance of Colorado	822	1.2			

\* In-migration divided by out-migration; when in-migration and out-migration are equal, the efficiency is 1.0.

Note: In metropolitan areas that cross state borders, only that portion of the migration in the given state is reported.

Source: U.S. Department of Commerce, Census Bureau.

**TABLE 9**  
**MEGAPOLITAN MIGRATION WITH METROPOLITAN AREAS**  
**IN SELECTED MIDWESTERN STATES BETWEEN 1995 AND 2000**

	Net	Effic- iency*		Net	Effic- iency*
<b>MINNESOTA</b>	10,331	2.6	<b>ILLINOIS</b>	30,302	3.4
Minneapolis-St. Paul	6,655	2.6	Chicago	25,541	4.1
Other MSAs	1,141	2.3	Other MSAs	2,656	2.4
Balance of Minnesota	2,535	2.7	Balance of Illinois	2,105	1.7
<b>WISCONSIN</b>	9,898	2.7	<b>MICHIGAN</b>	11,806	2.3
Milwaukee	4,255	3.5	Detroit	6,471	2.8
Other MSAs	3,722	2.4	Other MSAs	3,802	2.0
Balance of Wisconsin	1,921	2.5	Balance of Michigan	1,533	1.8

\* In-migration divided by out-migration; when in-migration and out-migration are equal, the efficiency is 1.0.

Note: In metropolitan areas that cross state borders, only that portion of the migration in the given state is reported.

Source: U.S. Department of Commerce, Census Bureau.

Numerically, in-migration between 1995 and 2000 was greatest among those in their 20s, followed by those in their 30s. Numeric increases between the 1985-to-1990 and 1995-to-2000 periods were greatest among those from their mid-30s to mid-50s — the baby-boom generation. The percentage increase was greatest among those 75 or older, followed by the 35-to-54 age group, with the smallest gains among those 15-to-34 — the baby-bust generation.

The in-migration rate to the megapolitan area between 1995 and 2000 was highest among those 25-to-29 years old (4.42), closely followed by those 20-to-24 years old (4.21). The rate also was high among those 30-to-34 (3.38). The other age groups in which the in-migration rate exceeded the overall figure of 2.69 were 35-to-39 years old and 60-to-69. The in-migration rate was lowest among those 75 or older, with other low rates among those 45-to-54 and 10-to-19.

In-migration rates rose the most between the 1985-to-1990 and 1995-to-2000 periods among those 20-to-34 and 55 or older. In-migration rates fell among those 10-to-19 and barely rose among those 45-to-54.

Out-migration from the megapolitan area totaled 419,177 between 1995 and 2000, up 31,000 (8 percent) from the 1985-to-1990 period. The overall out-migration rate fell from 1.70 to 1.62.

Numerically, out-migration between 1995 and 2000 was greatest among those from 25-to-39 years old. The numeric change between the 1985-to-1990 and 1995-to-2000 periods ranged from large increases among the 35-to-54 baby-boom generation to decreases among the 15-to-34 baby-bust generation. The percentage increase was greatest among those 45 or older.

The out-migration rate from the megapolitan area between 1995 and 2000 was highest among those 25-to-29 years old at 2.82. The out-migration rate was higher than the overall figure of 1.62 among those 20-to-39 years old and among children aged 5-to-9. The lowest out-migration rates were among those 45-to-84 years old.

Out-migration rates rose between the 1985-to-1990 and 1995-to-2000 periods among those 55 or older. Out-migration rates fell among those less than 55, particularly among those 15-to-19.

Net in-migration to the megapolitan area totaled 277,143 between 1995 and 2000, up nearly 98,000 (54 percent) from the 1985-to-1990 period. The overall net migration rate rose from 0.79 to 1.07.

Numerically, net in-migration between 1995 and 2000 was greatest among those in their 20s. Numeric increases between the 1985-to-1990 and 1995-to-2000 periods also were greatest among those from 20-to-29, followed by 30-to-34. The percentage increase varied by age; it was greatest among those 30-to-34, 5-to-9, and 75-to-84 and smallest among those 85 or older, 65-to-74, and 10-to-29.

The net migration rate to the megapolitan area between 1995 and 2000 was highest among those 20-to-24 years old at 2.05, followed by those 65-to-69 years old (1.85). The net migration rate was above the overall figure of 1.07 among those 20-to-29 and 55-to-74. The lowest rates were at the two extremes of the age distribution — those 80 or older and those 5-to-14 years old.

Net migration rates rose the most between the 1985-to-1990 and 1995-to-2000 periods among those 20-to-34. The net migration rate fell among those 85 or older and barely rose among those 45-to-54 and 10-to-19.

**Intrastate.** By age, significant variation in the intrastate net flows with the megapolitan area was present between 1985 and 1990. The megapolitan area received net in-migration from the other 12 Arizona counties in the 15-to-29 age group, particularly among those 18-to-24 years old. In contrast, net out-migration occurred among those 55-to-74 years old, as well as among those 35-to-44.

The megapolitan area received a net inflow of young adults from every county except Coconino between 1985 and 1990. Significant net out-migration to Coconino County among those 18-to-24 was not offset by net in-migration of those 25-to-29. Despite a net inflow in most age groups, a net outflow of older adults, particularly age 55-to-64, occurred to Cochise, Gila, Navajo, and Santa Cruz counties. Significant net out-migration to Yavapai County was present among those 30-to-74 years old.

As in the 1985-to-1990 period, significant variation in the intrastate net flows with the megapolitan area were present by age during the 1995-to-2000 period. The megapolitan area received net in-migration from the other 12 counties in the 15-to-34 age group, particularly among those 18-to-29 years old. The net inflow and efficiency was highest among those 20-to-24 years old. Small net inflows also were present among those 75 or older. In contrast, net out-migration occurred among those 35-to-74 years old, with very weak efficiencies among those 45-to-74 years old.

Between the 1985-to-1990 and 1995-to-2000 periods, intrastate migration rates dropped, by similar amounts for in- and out-migration. A change in the age distribution of net intrastate migrants occurred however, as the net rate jumped among those in their 20s, and rose more modestly among those 30-to-34. In contrast, the net rate fell in the 45-to-54 and 5-to-14 age brackets.

The efficiencies of the megapolitan migration flows with each county by age group during the 1995-to-2000 period are shown in Table 10. In some counties, the figures are volatile since the number of people moving in some age groups was very small, making sampling error significant. Efficiencies with several counties — particularly Apache, Navajo, Mohave, Gila,

Graham, and Cochise — were similar to the overall pattern of net inflows among young adults and elderly and net outflows in the other age groups.

The pattern was somewhat-to-very different in the other counties. In Yuma and Santa Cruz counties, net in-migration occurred among all age groups, though the strongest efficiencies were in the young-adult and elderly age groups. Net in-migration in most age groups was

**TABLE 10**  
**EFFICIENCY\* OF MEGAPOLITAN MIGRATION WITH OTHER ARIZONA COUNTIES**  
**BY AGE GROUP BETWEEN 1995 AND 2000**

Age	Total	Apache	Navajo	Coconino	Mohave	La Paz	Yuma
5-9	0.88	0.8	0.6	1.1	1.3	1.0	1.7
10-14	0.73	0.6	0.6	1.0	0.7	2.2	1.8
15-19	1.51	5.1	1.2	0.8	3.9	1.9	3.0
20-24	2.33	5.7	3.3	0.7	3.7	5.0	5.2
25-29	1.81	1.5	1.5	2.7	1.3	2.5	3.9
30-34	1.08	0.9	0.7	1.7	1.1	1.9	1.1
35-39	0.77	0.9	1.0	0.9	0.7	0.9	1.8
40-44	0.92	1.4	0.8	1.5	0.9	6.1	1.8
45-49	0.67	0.5	0.5	1.2	0.9	2.1	1.3
50-54	0.67	0.7	0.6	1.2	0.9	1.2	2.6
55-59	0.57	0.4	0.5	0.9	0.6	0.8	2.2
60-64	0.42	0.2	0.2	0.9	0.6	0.4	1.5
65-69	0.54	0.7	0.5	0.4	0.4	1.2	1.6
70-74	0.71	0.3	0.3	1.0	1.0	4.5	1.7
75-79	1.24	5.3	1.4	1.5	0.9	0.5	2.7
80-84	1.65	14.7	1.0	4.3	2.0	2.3	-
85+	1.26	4.0	1.3	3.6	4.4	3.5	3.4
Total	1.06	1.5	0.9	1.2	1.2	1.9	2.4

	Total	Yavapai	Gila	Greenlee	Graham	Cochise	S. Cruz
5-9	0.88	0.3	0.7	1.2	0.9	1.2	1.9
10-14	0.73	0.3	0.6	1.6	0.6	1.0	2.0
15-19	1.51	0.7	2.1	4.0	0.7	2.2	3.8
20-24	2.33	2.0	2.8	8.1	4.0	6.9	12.1
25-29	1.81	0.7	1.2	0.7	1.6	1.6	3.8
30-34	1.08	0.6	0.5	3.9	1.5	1.5	1.6
35-39	0.77	0.3	0.5	0.4	0.7	0.9	1.5
40-44	0.92	0.4	0.6	0.8	1.6	1.3	1.6
45-49	0.67	0.4	0.4	0.2	0.6	0.7	1.8
50-54	0.67	0.4	0.3	1.4	0.7	0.9	1.3
55-59	0.57	0.3	0.3	1.5	0.8	0.8	1.3
60-64	0.42	0.3	0.3	1.1	0.5	0.5	1.2
65-69	0.54	0.3	0.4	0.0	0.3	1.4	1.1
70-74	0.71	0.6	0.4	-	1.7	1.0	4.3
75-79	1.24	0.8	1.1	-	2.2	1.3	3.6
80-84	1.65	0.7	1.4	2.5	0.6	1.9	20.7
85+	1.26	0.9	0.5	1.8	1.9	1.5	1.1
Total	1.06	0.5	0.7	1.8	1.2	1.5	2.4

\* In-migration divided by out-migration; when in-migration and out-migration are equal, the efficiency is 1.0.

Source: U.S. Department of Commerce, Census Bureau.

registered with La Paz County. In sharp contrast, net out-migration occurred to Yavapai County in every age group except 20-to-24. The pattern was different with Coconino County, with a net outflow of the college aged and a net inflow of those 40-to-54 years old.

The intrastate net in-migration to the megapolitan area among young adults results both from educational and work motivations, as opportunities for each are greater in the megapolitan area than in most of the rest of Arizona. The net in-migration among those 75 and older is due to elderly residents needing more health care than is available in many of the rural areas. Some of these elderly in-migrants likely were earlier out-migrants from the megapolitan area and return to the megapolitan area to be closer to family. The lowest efficiencies were among megapolitan residents leaving at retirement, mostly moving to less populated areas with a more moderate climate. Prime destinations were the Prescott area and the Verde Valley in Yavapai County, the Payson area of Gila County, and southern Navajo County.

**Interstate.** The age distribution of interstate migrants to and from the megapolitan area differed from that of intrastate migrants. Based on the ranking of migration rates across the 17 age groups during the 1995-to-2000 period, interstate migration was much stronger (higher in-migration, lower out-migration, and higher net migration) than intrastate migration among those 50-to-74 years old, particularly those 55-to-69. In contrast, interstate migration was much weaker than intrastate migration in the 15-to-19 age group and among those 80 or older.

Interstate migration rates by age for the megapolitan area between 1995 and 2000 are displayed in Table 11, along with the change in rates from the 1985-to-1990 period. With interstate migration dominating the domestic migration, the interstate rates follow an age pattern nearly identical to that of total domestic migration. However, since intrastate migration rates are so much higher than interstate rates, the interstate in- and out-migration rates shown in Table 11 are lower than those of total domestic migration. The overall interstate net migration rate, however, was nearly identical to the overall domestic net migration rate. In most age groups, the net rates of interstate flows were almost the same of the overall domestic flows. However, interstate rates were higher among those at retirement age, particularly 55-to-69, and lower among those in their 20s.

As seen in Table 11, interstate net migration rates in the 1995-to-2000 period were higher than those during the 1985-to-1990 period, a result of slightly higher in-migration rates and slightly lower out-migration rates. The net rate particularly rose among those 20-to-34, with a lesser gain in the 55-to-69 age group. The higher net migration rates between 1995 and 2000 than between 1985 and 1990 likely results from the stronger megapolitan economy in the late 1990s than in the late 1980s, relative to the rest of the nation — not to a trend increase in migration rates. The megapolitan economy was strong at the beginning of the 1985-to-1990 period, but weakened considerably during the period (compared both to earlier growth and to growth during the period nationally) as a severe real estate slump and a cutback in federal spending for manufactured military goods disproportionately affected the megapolitan economy.

A summary of the interstate migration flows by age group between 1995 and 2000 is presented in Table 12. The net migration rate, as well as efficiency, was highest in the 65-to-69 age group, followed by 60-to-64. Rates also were high among those 50-to-59 and 70-to-79. However, the number of net migrants did not rank as high among the 50-to-74 age group, as the number of Americans born during the Great Depression and World War II was substantially lower than in the baby-boom generation.

**TABLE 11  
MEGAPOLITAN MIGRATION RATES WITH OTHER STATES  
BY AGE BETWEEN 1995 AND 2000**

Age in Years	1995-2000*			Change from 1985-90 to 1995-2000		
	In	Out	Net	In	Out	Net
<b>TOTAL, 5 or Older</b>	2.47	1.41	1.06	0.18	-0.10	0.28
5-9	2.34	1.61	0.74	0.20	-0.13	0.34
10-14	1.93	1.23	0.70	-0.01	-0.15	0.15
15-19	1.97	1.15	0.82	-0.15	-0.23	0.08
20-24	3.56	1.89	1.67	0.34	-0.08	0.42
25-29	4.00	2.58	1.42	0.68	-0.13	0.81
30-34	3.14	2.15	0.99	0.37	-0.14	0.51
35-39	2.57	1.71	0.86	0.20	-0.04	0.24
40-44	2.16	1.32	0.85	0.03	-0.08	0.12
45-49	1.86	1.04	0.82	-0.13	-0.12	0.00
50-54	1.98	0.93	1.05	0.24	-0.01	0.25
55-59	2.31	0.87	1.45	0.62	0.16	0.47
60-64	2.64	0.85	1.79	0.55	0.17	0.38
65-69	2.77	0.80	1.97	0.48	0.16	0.32
70-74	2.13	0.81	1.32	0.29	0.11	0.18
75-79	1.75	0.83	0.92	0.36	0.13	0.23
80-84	1.60	1.06	0.54	0.46	0.21	0.25
85 or Older	1.57	1.28	0.29	0.45	0.49	-0.04

\* Calculated from 2000 Census, U.S. population less Arizona population

Source: U.S. Department of Commerce, Census Bureau.

The net number of migrants was highest among those 20-to-34, with the number in the 35-to-44 age group also above the norm. However, the net migration rate was high only among those 20-to-24, and the efficiency was higher than the overall figure only among those 20-to-24.

On all measures, migration flows were weak among those 5-to-14 and 80 or older. Those from 40-to-49 ranked near the middle on each measure.

An analysis of the migration flows to and from the megapolitan area by state and age group follows, based on the efficiency of the flows and on the net migration rate, both relative to the national average for the age group and to the overall total of the state's flows. The average interstate efficiency was 1.8, with particularly strong efficiencies in the 50-to-79 age group and in the 20-to-24 group. In contrast, efficiencies were weak among those 25-to-39, 5-to-9, and 80 or older. The average net migration rate was 1.06 and was especially strong among those 55-to-74 and 20-to-29, and weak among those 5-to-19 and 80 or older. The two measures coincide in strong flows among those 20-to-24 and 55-to-74 and weak flows among those 5-to-9 and 80 or older.

Along the Pacific Coast, the overall net migration rate was well above average except in Oregon. The overall efficiency ranged from below average in Oregon to well above average in Hawaii. The five states combined to account for one-third of the net in-migration to the megapolitan area, with a very large net inflow from California and sizable net in-migration from Washington. In the northern states, the strongest flows were among retirees, but California and Hawaii did not follow the national pattern. The strongest flows from California were among

**TABLE 12**  
**MEGAPOLITAN MIGRATION WITH OTHER STATES**  
**SUMMARY BY AGE BETWEEN 1995 AND 2000**

Age in Years	Net Migrants	Net Rate	Efficiency*	Rank (1=Highest, 17=Lowest)		
				Net Migrants	Net Rate	Efficiency*
<b>TOTAL, 5 or Older</b>	273,943	1.06	1.76			
5-9	14,884	0.74	1.46	12	14	16
10-14	14,006	0.70	1.56	13	15	11
15-19	16,253	0.82	1.71	10	12	9
20-24	31,127	1.67	1.89	1	3	7
25-29	26,932	1.42	1.55	2	5	12
30-34	20,035	0.99	1.46	3	8	15
35-39	19,098	0.86	1.50	5	10	14
40-44	18,688	0.85	1.64	7	11	10
45-49	16,165	0.82	1.79	11	13	8
50-54	18,240	1.05	2.14	9	7	5
55-59	19,141	1.45	2.67	4	4	3
60-64	18,966	1.79	3.10	6	2	2
65-69	18,419	1.97	3.47	8	1	1
70-74	11,470	1.32	2.64	14	6	4
75-79	6,704	0.92	2.11	15	9	6
80-84	2,613	0.54	1.51	16	16	13
85 or Older	1,202	0.29	1.23	17	17	17

\* In-migration divided by out-migration; when in-migration and out-migration are equal, the efficiency is 1.0.

Source: U.S. Department of Commerce, Census Bureau.

children, and to a lesser extent, those 30-to-44 years old. Flows were weak among the retirement aged. With Hawaii, flows were strongest among those less than 45 and weakest among those 50 or older.

Among the Rocky Mountain states, the overall efficiency ranged from average to considerably below average. The overall net migration rate ranged from very high with New Mexico to high with Wyoming, Montana and Utah, to below average with the other states, especially Nevada. The seven states combined to account for only 7 percent of the net in-migration to the megapolitan area, with more than half the net inflow coming from New Mexico. The age pattern was quite different from the national average. From most of the states, flows were weak among the retirement aged, though Idaho and Colorado followed the national pattern. Flows also were weak in most states among those 30-to-39. In most states, the strongest flows were among young adults (mostly 18-to-24). In Utah, it was among those 25-to-34.

The six western Great Plains states accounted for only 6 percent of the net in-migration to the megapolitan area. The efficiency and the net migration rate ranged from well above average in the Dakotas to below average in the southern states. From the northern states, the strongest net flows were among the retirement aged but not elderly. The southern states did not have a strong relationship with age, though retirement-age flows were weak.

The seven states in the Great Lakes region, extending west to include Iowa and Minnesota, accounted for 30 percent of the net in-migration to the megapolitan area, with

substantial net inflows from Illinois, Michigan, Minnesota, Wisconsin and Ohio. The overall efficiency was above average in all states, by a sizable margin with Illinois, Minnesota and Wisconsin. The net migration rate was above average in the western states, especially Illinois, but was average in the eastern states. Retirement-aged migration was strong in each state, though less so from Indiana and Ohio. In most states, the weakest flows were among children and those in their 30s.

The six New England states accounted for only 4 percent of the net in-migration to the megapolitan area. The overall efficiency was about average, except for above average with Massachusetts and Connecticut. The overall net migration rate was below average except for average with Connecticut. In most of the states, the strongest flows were among the retirement aged; in some of the states, flows among young adults also were strong. The weakest flows generally were among those 25-to-39 and 5-to-9.

Net inflows were larger from the Middle Atlantic region, accounting for 14 percent of the megapolitan total. The efficiency was far above average with New York and New Jersey, and also above average with Pennsylvania and the District of Columbia. The net migration rate was below average except in New York. Retirement-age migration again dominated.

Net in-migration was weak from the southern states, accounting for only 5 percent of the megapolitan total. With all of the states, the efficiency was below average, mostly considerably below average. The overall net migration rate was consistently substantially below average. The flows exhibited little age pattern, though retirement-age migration was weak except from the northernmost of the states.

### **Other Characteristics of Domestic Migrants**

The special migration file from the 2000 census provides basic information on migrants cross-tabulated by a number of characteristics. Since the migration data are based on the long-form sample, survey error may become significant in some of these cross-tabulations. Also note that moves across county lines within the megapolitan area are included in the numbers of in- and out-migrants.

The available information includes the number of people not moving between 1995 and 2000, the number moving to a different dwelling within the same county, the number moving across county lines domestically, and the number moving from abroad. Data are available on movement to and from each county. For a few of the broadest characteristics, the domestic movement is subdivided into moves within the same state and moves across state lines. The raw data reported by the Census Bureau have been converted into shares of the population age 5 or older in 2000 in each category (see Table 13).

More than half of the megapolitan residents in 2000 lived at a different address in 1995. More than half of those who moved — nearly a third of the total population — moved from one dwelling to another within the same county. More than one-in-five residents lived in a different county in 1995, and less than 5 percent lived abroad (this includes American citizens who had been residing in another country as well as immigrants.) The rest of this section focuses on movement from outside the county, expressed as the percentage of the characteristic's 2000 census population.

A slightly higher proportion of males than females moved domestically across county lines and from other countries. Net domestic migration was marginally higher for males. Differences were more apparent across three broad ethnic/racial groups. Domestic migration of Hispanics to and from the megapolitan area was considerably lower than the migration of non-

**TABLE 13**  
**SELECTED CHARACTERISTICS OF MEGAPOLITAN MIGRANTS**  
**BETWEEN 1995 AND 2000**  
**Expressed as a Percentage of the Category's 2000 Population Age Five or Older**

	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Non-Hispanic White</b>	<b>Non-Hispanic Other</b>	<b>Hispanic</b>
Total Movers	57.2%	58.2%	56.3%	55.5%	61.2%	60.4%
Same County	32.8	32.8	32.9	31.5	32.5	36.5
Different County	20.2	20.7	19.7	22.6	21.9	13.1
Same State*	3.4	3.6	3.2	3.3	4.7	3.2
Different State	16.8	17.1	16.5	19.3	17.2	9.9
Abroad	4.2	4.7	3.7	1.4	6.8	10.7
Out-Migrants	12.9	13.1	12.6	14.9	14.7	6.8
Same State*	3.3	3.4	3.2	3.6	3.9	2.3
Different State	9.6	9.7	9.5	11.3	10.8	4.5
Domestic Net Migration	7.3	7.5	7.1	7.7	7.3	6.3
Same State	0.1	0.2	0.0	-0.3	0.8	0.9
Different State	7.2	7.4	7.0	8.0	6.4	5.4

\* Includes moves from one county to another within the megapolitan area.

Source: U. S. Department of Commerce, Census Bureau.

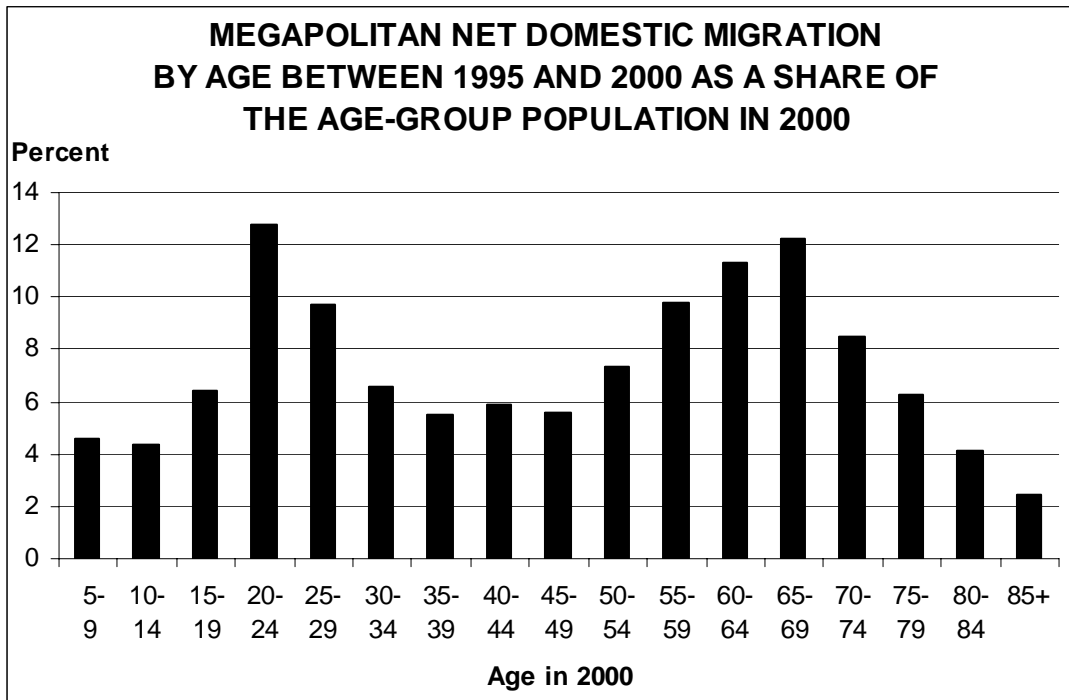
Hispanic whites and other non-Hispanics. However, domestic net migration of Hispanics was not substantially less. A considerably higher proportion of Hispanics moved from another nation.

Without considering ethnicity, the racial categories are of limited value since some Hispanics identify themselves as white while others indicate their race to be “other.” Among seven categories of race, domestic in-migration was lowest in the “other” category, which consists mostly of Hispanics. It also was lower than average among American Indians and those of two or more races. Domestic net migration of American Indians was less than that of other racial groups. While a high percentage of Native Americans moved from another county within Arizona, a low proportion moved from another state. A high percentage of Asians moved from abroad, with the percentages from other nations also high among the “other” and two-or-more racial groups.

Age is highly correlated with moves. Among all types of moves — local, intrastate, interstate, across national borders — the percentages are highest among young adults (20-to-34 years old). The lowest percentages of movers in all categories are among those 50 or older, particularly those 70-to-84 years old. Net domestic migration, however, was high among those 55-to-74 years old. Net migration in this age range was especially high among interstate migrants; net out migration to other Arizona counties occurred in this age range. In contrast, domestic net migration rates — both interstate and intrastate — were high among those 20-to-29. The only age groups with an overall net domestic migration rate above the overall average of 7.3 percent were 20-to-29 and 55-to-74. Net domestic migration rates were lowest among those 5-to-14 and 80 or older (see Chart 17).

Domestic migration — in, out and net — was highest among individuals living in nonfamily households in 2000, since young adults are disproportionately numerous in that

CHART 17



Source: U.S. Department of Commerce, Census Bureau.

household type. Net domestic migration also was above average among married couples without children, and lowest in households with children less than 18 years of age.

Similarly, in- and out-migration rates were much higher among those living in rented dwellings in 2000, though the net domestic migration rate was not much different between renters and homeowners. Net domestic migration was nil among those living in group quarters.

Domestic in-migration was highest among those born in the United States and naturalized citizens who had entered the country between 1970 and 1994. Net domestic migration rates were highest among these naturalized citizens and among noncitizens who were long-time residents of the United States.

Net domestic migration rates varied considerably by place of birth. Net out-migration of those born in Arizona occurred between 1995 and 2000. Otherwise, net domestic migration was below average only among those born in North America other than the United States, Latin America, a few southern states, and New Hampshire. Net domestic migration rates were highest among those born in Alaska, Washington, North Carolina and Hawaii.

Domestic in-migration and net migration of those age 25 or older was highest among those with at least a bachelor's degree and lowest among those without a high school diploma. The proportions moving from abroad were highest among those not graduating from high school.

Domestic in-migration and net migration rates were highest among those with the highest individual incomes. The net domestic migration rate was lowest among the lowest income earners and those earning no income. In contrast, immigrants were clustered in the lowest income categories.

Based on household income, the same relationships prevailed, with the net domestic migration rate rising with income while the immigration rate fell with income. Domestic

migration was greater among those living above the poverty level, while a higher proportion of those living in poverty had moved from another country.

Migration rates of those actively serving in the Armed Forces were very high, with the megapolitan area experiencing net out-migration of active military between 1995 and 2000. Of those unemployed in 2000, the net domestic migration rate was below average. The net domestic migration rate was nearly identical between those employed and those not in the labor force, though migration into and out of the megapolitan area was higher among those employed.

Migration rates also varied by occupation. Net domestic in-migration rates were highest among those working in protective service, sales, and administrative support occupations in 2000. Net domestic out-migration of those in farming occupations occurred, and net domestic in-migration rates were subpar among construction workers and those in production occupations. In contrast, immigration rates were highest among those working in farming and construction occupations.

Among those working in the agriculture and mining sectors, net domestic out-migration from the megapolitan area between 1995 and 2000 was measured. However, the immigration rate was high in agriculture. The construction and other services sectors had below-average net domestic in-migration rates, though the immigration rate was high in construction. The highest net domestic in-migration rates were among those working in the category including the finance, insurance and real estate sectors, and in the category including the administrative support sector and the professional, scientific and technical services sector.

A summary of the categories with the highest and lowest net domestic migration rates to the megapolitan area between 1995 and 2000 is shown in Chart 18.

**ACS.** The ACS routinely presents migration data crosstabulated against a variety of characteristics, but because of the sampling error, the results must be interpreted cautiously. The ACS data also include intramegapolitan migration. A summary of the results from the 2005 and 2006 ACS surveys for the megapolitan area follows.

The propensity to move is much higher among young adults than older adults. In every age group starting at 40, a disproportionate share had not moved. Particularly among those 20 to 24, the proportion moving to another dwelling in the same county, or elsewhere in Arizona, are high. Males make up a somewhat disproportionate share of the movers in all categories, especially those moving from abroad.

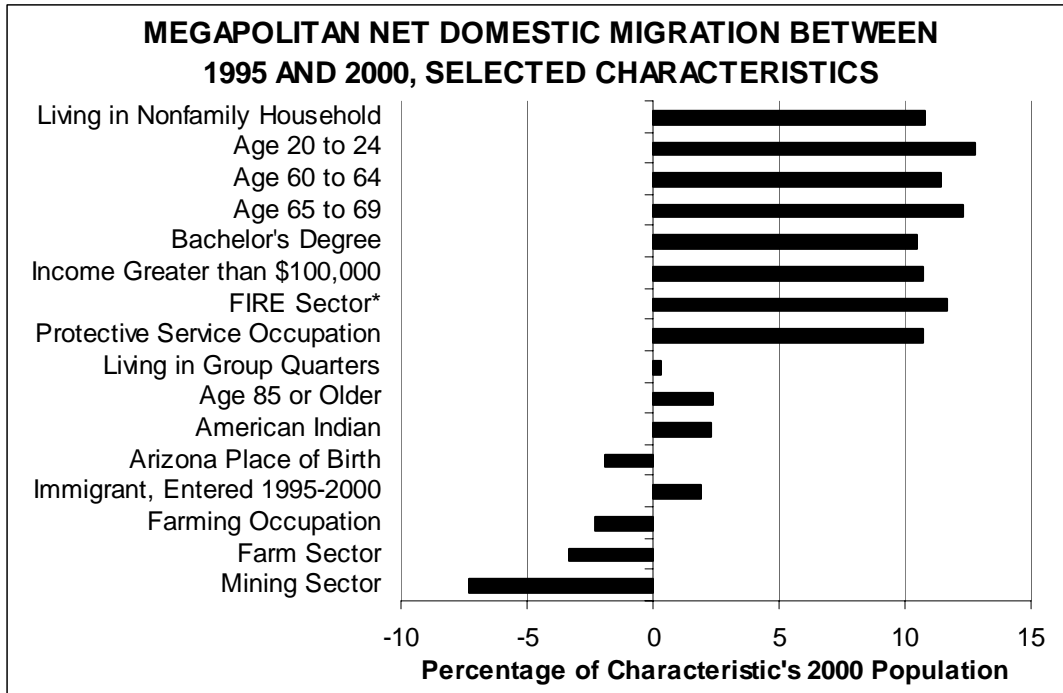
Native-born Americans were more likely to move long distances — from other states and from other counties in Arizona. Those who were not citizens were far more likely to have moved from abroad, but also disproportionately moved within the same county.

Movement by marital status was related to age. Those who had never married were more likely to move, especially within the same county. Those currently married had the opposite pattern. Those divorced and widowed were less likely to have moved from abroad.

Educational status also is related to migration. Those moving from abroad were much more likely not to have graduated from high school and less likely to have attended college. Those with a bachelor's degree or more education were more likely to have moved from another state and less likely to have moved from within the same county.

Those with higher incomes were more likely to have not moved and less likely to have moved from abroad. Those with the lowest incomes were far more likely to have moved from abroad. As expected, poverty rates are related to incomes.

**CHART 18**



\* Finance, insurance and real estate

Source: U.S. Department of Commerce, Census Bureau.

### **Immigration**

Since the 2000 census, the Census Bureau in their annual population estimates has estimated immigration separately from domestic net migration. Overall net migration to the megapolitan area remained in a recessionary slump until mid-2003; employment growth was quite weak during this period. During this period, domestic net migration was largely steady, but immigration declined.

Since mid-2003, a huge rise in total net migration has occurred, as employment growth entered a strong expansionary phase. All of the increase in net migration was in the domestic category; immigration remained steady. A primary reason for the large rise in domestic migration but not immigration is that the number of young Americans entering the workforce is rising — by the late 1980s, the number of annual births in the United States was not much below that of the baby-boom generation. Tightened border security and changing attitudes in the United States towards undocumented immigrants likely also were factors in the number of immigrants not rising with the increase in job availability.

Other than the annual estimates from the Census Bureau, the Citizenship and Immigration Service (CIS) of the U.S. Department of Homeland Security is the primary source of immigration statistics. The data are compiled in an annual report that provides considerable information on legal residents. Much of this information is available by state; in recent years, metropolitan area data also have been provided. In contrast, only limited information is available on unauthorized immigration, with no data for substate areas.

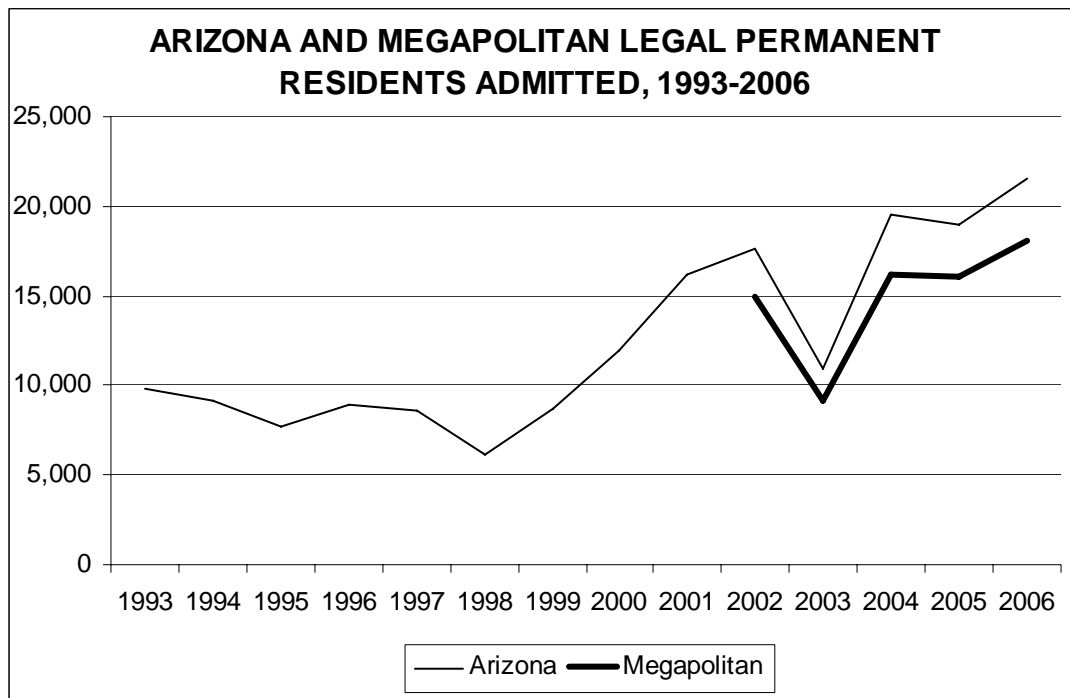
## Legal Immigration

A long time series of annual data are available on the number of new legal admissions to the United States. Since 1985, the annual figure has fluctuated between 350,000 and 450,000, except for three years of higher figures from 1992 through 1994. A separate time series is kept on adjustments — those already in the United States legally but in a nonpermanent status who receive an adjustment to permanent status. This figure has increased substantially (though year-to-year fluctuations have been considerable), from 220,000 in 1990 to 819,000 in 2006. In addition, more than 2.6 million became legal residents of the United States under the IRCA program between 1989 and 1992, with small additional numbers legalized over the several years after 1992. (The Immigration Reform and Control Act of 1986 allowed immigrants who arrived in the United States prior to 1982 to apply for legal residency.) Combined, these three categories — admissions, adjustments, and IRCA — represent the number of legal permanent residents (LPRs) admitted in each year.

An annual time series of the number of legal permanent residents admitted by state of intended residence is available back to the 1980s, but these figures are not subdivided into the three categories. The number of legal permanent residents admitted who intended to live in Arizona prior to IRCA were small at less than 7,200 in each year. During the four peak IRCA years, the average was nearly 23,000, but after 1992 the numbers were less than 10,000 per year through 1999. Since then, the annual number has increased, exceeding 21,000 in 2006.

Figures for the megapolitan area could be compiled only for the last few years (see Chart 19). Other than in 2003, the number of LPRs admitted who intended to live in the megapolitan area rose from about 15,000 to 18,000. Since 2002, the megapolitan area has accounted for approximately 84 percent of the state total, a share slightly higher than the 80 to 81 percent share of the state's entire population.

**CHART 19**



Source: U.S. Department of Homeland Security, Citizenship and Immigration Service.

The CIS provides a profile of LPRs by metro area. The number of legal permanent residents admitted during 2006 (the federal government's October 2005 through September 2006 fiscal year) intending to reside in the megapolitan area was 18,129 (84 percent of the state total). Only 26 percent were new arrivals; the remainder received an adjustment of status. Fifty-two percent were admitted as immediate relatives of U.S. citizens and another 21 percent were admitted under family-sponsored preferences. Sixteen percent were refugees or asylees. Only 8 percent were admitted in the employment-based preference classification.

Close to 60 percent of the LPRs admitted in 2006 were female. Only 21 percent of the LPRs were under the age of 18, a lesser share than the entire population, but the adult LPRs were younger on average than the entire adult population, with only 5 percent 65 or older. Sixty percent (three-fourths of the adults) were married. More than 40 percent came from Mexico; the Philippines was the homeland of the next highest number, but accounted for just 4 percent of the total.

### **Unauthorized Immigration**

The Pew Hispanic Center is a source of estimates of the undocumented population. It uses federal government data from the decennial censuses, ACS, and Current Population Survey to make its estimates.

Pew has estimated the annual number of undocumented and legal immigrants entering the country from 1990 through 2004. Total immigration (LPR and undocumented, but not temporary admissions) fluctuated during the 1990s. While the peak was in 1999 at 1.315 million, this was not significantly higher than the 1.273 million in 1990. Subsequent to the 1999 peak, the number dropped below 1 million in 2002 and 2003 (lower than in any year during the 1990s) before recovering to 1 million in 2004.

While the total number of immigrants has not increased substantially, the undocumented share of the total has risen. Prior to 1994, the undocumented share was 36-to-38 percent of the total immigration. It jumped to 45 percent in 1994. Since then, the undocumented share has fluctuated but generally risen, reaching 55 percent in 2004. Undocumented immigration was about 400,000 per year from 1991 through 1993, down from the 1990 figure. It peaked at a little more than 650,000 per year from 1998 through 2000, then dropped to 450,000 per year in 2002 and 2003. The 2004 figure was higher at more than 550,000.

Estimates of the total number of unauthorized immigrants living in the United States have occasionally been produced by various sources. These estimates also are available by state, but are not produced at a substate level. The CIS (and its forerunner the Immigration and Naturalization Service) estimated that the national total was 3.87 million in 1992, 4.95 million in 1996, 7.91 million in 2000, 10.76 million in 2005, and 11.55 million in 2006. These estimates imply that the annual average increase in unauthorized number has risen over time, but these estimates were produced independently at different times and should not be used as a time series. Pew's estimates for 2005 are very close to those of the CIS for 2005, while the Federation for American Immigration Reform (FAIR) estimates for 2007 are considerably higher than the CIS estimates for 2006. (FAIR has been criticized as not being an unbiased source of information.)

The comparable CIS estimates for Arizona show an unauthorized population rising from 95,000 in 1992 to 115,000 in 1996, 283,000 in 2000, 480,000 in 2005 and 500,000 in 2006. Unlike the national figures, these estimates imply that the annual average increase in Arizona peaked between 1996 and 2000, but these estimates should not be used as a time series. Pew and FAIR's recent estimates are reasonably similar to the CIS estimates for 2005 and 2006. The

Arizona estimates indicate that the state's share of the nation's unauthorized population has climbed from around 2.5 percent in 1992 and 1996 to around 4 percent in recent years.

The estimates of the undocumented population living in Arizona represent about 2.5 percent of the state's residents in 1992 and 1996, with the share rising to 7 to 8 percent in the 2004-through-2007 estimates. Undocumented workers may have made up 10 percent of the state's labor force during this period. In contrast, the share of the nation's population believed to be unauthorized immigrants rose from 1.5 percent in 1992 to close to 4 percent in 2006 (4.4 percent according to FAIR in 2007). The number of undocumented immigrants living in Arizona in recent years is between the fifth- and seventh-highest of the states, while the undocumented share of the state's population is close to the highest in the country (some estimates place the share in California and/or Nevada as slightly higher).

The percentage of the state's unauthorized immigrants living in the megapolitan area in 2000 likely was similar to the 83 percent share of legal immigrants, slightly higher than the megapolitan area's overall share of the state's population. If so, the number living in the megapolitan area at the time of the census in 2000 probably was a little more than 275,000. Somewhat more than 400,000 unauthorized immigrants likely were living in the megapolitan area at the beginning of 2006 based on the CIS state estimate. This number probably has increased somewhat since then.

It also is possible to estimate changes in the number of unauthorized immigrants living in the megapolitan area from data reported in the decennial censuses and ACS. Census Bureau estimates of total immigration are another source.

According to the 1990 census, 221,778 residents of the megapolitan area were foreign born. In the 2000 census, this number was 557,533. However, this increase of 335,755 is larger than the 283,850 residents of the megapolitan area counted in the 2000 census who were foreign born and had entered the United States since 1990. This suggests a significant undercount of the foreign-born population in the 1990 census relative to the 2000 census. (The overall population undercount in 1990 was considerably larger than in 2000, according to the Census Bureau.) Further, undocumented immigrants almost certainly were undercounted even in 2000.

A rough estimate of the number of legal permanent residents admitted during the 1990s and living in the megapolitan area — based on the state total — is less than 70,000. Thus, not even one-fourth of the megapolitan area's 283,850 immigrants during the 1990s were authorized. Approximately 215,000 undocumented immigrants entered the state during the 1990s.

Since 2000, the number of legal permanent residents admitted has climbed in Arizona. The Census Bureau, however, in their annual population estimates, indicate that total immigration has dropped a bit. This suggests that the number of undocumented immigrants entering the state has fallen since 2000. In 2006, legal immigrants to the megapolitan area made up more than 60 percent of the Census Bureau's estimate of total immigration, considerably higher than the 25 percent share estimated during the 1990s.

The ACS data provide another source of information, through the questions on place of birth and residence one year earlier. These data in conjunction with the CIS figures suggest that nearly half of the immigrants in both 2005 and 2006 were legal and that the number of unauthorized immigrants was about 18,000 per year — less than the average of the 1990s and considerably lower than the peak years.

Piecing together the available information, immigration to the megapolitan area likely was insignificant during the early 1990s, but surged in the mid-1990s and peaked in the late 1990s. The change in number over time largely was due to undocumented immigration from

Mexico. Thus, despite the largest inflows occurring from 1998 through 2000, the increase in public attention to the undocumented immigrants issue has occurred since 2000.

An increase in unauthorized immigration during the 1990s and a decline since then makes sense for several reasons:

(1) The surge in unauthorized immigration largely was due to immigrants from Mexico. Two conditions contributed to the exodus: (a) the North American Free Trade Agreement (NAFTA) that went into effect at the beginning of 1994 initially caused economic difficulties in Mexico, with many Mexicans (mostly farmers) losing their jobs in Mexico, and (b) the peso devaluation of December 1994 widened the wage differential between the two countries. No further monetary devaluations have occurred and negative effects from NAFTA should no longer be present as the 10-year phase-out period for tariffs has passed. Thus, this factor no longer should be a cause of unauthorized immigration.

(2) Most undocumented immigrants enter the United States seeking work. Strong employment growth occurred in the United States and the megapolitan area for several consecutive years during the 1990s. Because of the 2001 recession, job creation was much reduced from 2001 into 2003, and the current economic slowdown began to affect employment growth in 2007. From 2004 through 2006 in the megapolitan area, job creation was very strong, but it remained considerably weaker nationally than during the 1990s.

(3) A worker shortage was present in the United States during the 1990s, particularly in less-skilled positions. This shortage currently is dissipating. The number of American-born young adults entering the workforce during the 1990s was low relative to the size of the older generation because the number of births in the United States was much lower from the mid-1960s into the 1980s (the baby-bust generation) than during the 1946-to-1964 period (the baby-boom generation). In addition, a stabilization in the female workforce participation rate in the 1990s followed substantial gains. However, the number of births rose throughout the 1980s, reaching a level in 1990 not much less than during the baby boom. The number of births essentially has held steady since then. Thus, job opportunities for immigrants currently are declining as they face more competition from American-born youths entering the workforce.

(4) Increased border security since 2001 likely has reduced the number of unauthorized immigrants. Recently, the public outcry regarding undocumented immigrants and tightened hiring practices probably is having the effect of reducing the number of unauthorized immigrants.

## **LONG-TERM POPULATION PROJECTIONS**

The projection of economic and demographic conditions in the long term (more than a few years into the future) is a much different exercise than the forecasting of conditions in the near term. The economic cycle is of primary significance in the near term, such that a well-constructed econometric model based on historical data from recent economic cycles should produce reasonable results with minimal modeler intervention. In contrast, much more uncertainty is present in the long term, with changes in trends and other basic conditions not experienced in the past increasingly possible with the length of the forecast horizon. In the long term, the economic cycle becomes irrelevant and historical data are of less value. Instead, basic assumptions on a wide range of conditions, noneconomic as well as economic, are of primary significance. Because of this uncertainty, multiple forecast scenarios typically are presented in long-term projections.

Generalized forecasts, say of overall migration and employment growth, can be made without the assistance of a formal demographic/econometric model. In fact, if a largely econometric model is used for long-term forecasts in an area that has been experiencing growth or decline beyond that due to the economic cycle, the modeler must apply significant interventions to keep the model from generating unrealistic long-term forecasts. Typically, a long-term model run after an extended period of slower-than-usual growth will underproject growth while the same model run after a period of unusually strong growth will overproject growth. Long-term projections for Arizona issued in the early 1990s, following a protracted period of slow growth from 1987 through 1992, were considerably lower than those issued either previously or subsequently.

Even if a highly sophisticated demographic/econometric model is used, the primary importance of the assumptions used in generating long-term projections must be recognized. Regardless of the sophistication of any model used, the further into the future, the more speculative the projections become.

### **Historical Accuracy of Population Projections for Arizona**

A perception exists that the population of Arizona consistently has been underprojected. This perception is not completely accurate. While some organizations outside of Arizona generally have underprojected the state's growth, the accuracy of forecasts issued by the Census Bureau and by organizations within Arizona has varied. At times, these forecasts have underprojected population growth, but at other times the forecasts have been accurate and at other times have overprojected growth. The forecast accuracy has been correlated with conditions at the time the projection was issued. That is, a projection issued during a boom economy, particularly one associated with a housing boom as in the early 1960s and early-to-mid-1980s, has overprojected long-term growth, while forecasts issued during recessions generally have underprojected long-term growth.

Another factor affecting forecast accuracy has been the source of the forecast. Before the period of "official" forecasts issued by DES, local financial institutions frequently issued population projections; these projections generally were too high. More recently, compared to the 2000 census, most forecasts regardless of source proved to be too low. This was true not only in Arizona, but across the country, as population growth during the 1990s was stronger than expected, in large part due to the surge in unauthorized immigration. Despite this, the projections issued by DES around 1987 proved to be too high, relative to both the 1990 and 2000 census counts.

Relative to Maricopa County and the rest of the state, Pima County's population consistently has been overprojected. Even relative to the 2000 census, the population of Pima County was underprojected by only a modest degree.

Historically, DES issued new population projections in most years. Since 1993, however, only in 1997 and 2006 were new projections offered. The 1997 projections for the megapolitan area population in 2000 were approximately 125,000 (3.1 percent) less than the census count. The 1993 projection series was lower, having been issued at the end of a long down period related to the real estate crash of 1987.

In addition to the overall underprojection of the 2000 census count, the 1997 projection series had some notable errors in the age distribution. The under-30 population was underprojected by considerably more than the average percentage undercount, while the 70 and older population was significantly overprojected. The young-adult population rose faster-than-expected due to undocumented immigration, while the net in-migration of retirees to the megapolitan area has not kept pace with the net in-migration of the working-age population.

### **Evaluation of Existing Population Projections**

The projections issued by the Arizona Department of Economic Security in 2006 are important to review because they are the only publicly available set of projections produced at multiple levels of geography: state, counties (which can be combined into metropolitan and megapolitan areas), and places. In particular, few other sources produce megapolitan projections.

In order to evaluate the reasonableness of the 2006 projection series issued by DES, projections for the state were compared to those issued by the Census Bureau (and other sources). The Census Bureau does not prepare substate projections. Given that the megapolitan share of the state population is 81 percent and still rising, the assessment of Arizona projections should be largely relevant to the megapolitan projections.

### **Projections of the Arizona Population**

**DES Compared to the Census Bureau.** The DES projection series was issued in 2006 and was based on estimates through 2005. Projections were made for 2006 through 2055. The Census Bureau series was issued in 2005, based on estimates through 2003; projections are available for 2004 through 2030. This earlier timing of the Census Bureau series accounts for some of the difference between the DES and Census Bureau projections, since population growth in 2004 and especially 2005 was estimated to have been far above the long-term trend. This above-trend growth is associated with the peak of the economic cycle, a peak exaggerated by the housing boom during 2004 and 2005.

Both DES and the Census Bureau issue projections by age and gender. The Census Bureau projections are available by single year of age (through age 84, with one category for 85 or older). DES issues projections by single year of age through age 19 and by five-year age groups (through age 94). DES also provides a breakout of annual population change into births, deaths, and net migration (domestic and international combined).

The DES projections are based on a cohort-survival model that does not have an economic component. The basis for the model is the age-specific migration rates from the 2000 census and age-specific birth and death rates calculated from the average of births and deaths from 1999 through 2001 and the 2000 census. These rates are adjusted by population estimates and births and deaths registered subsequent to 2000. The Census Bureau methodology is similar, with two exceptions: (1) the Census Bureau series by state is controlled to the national

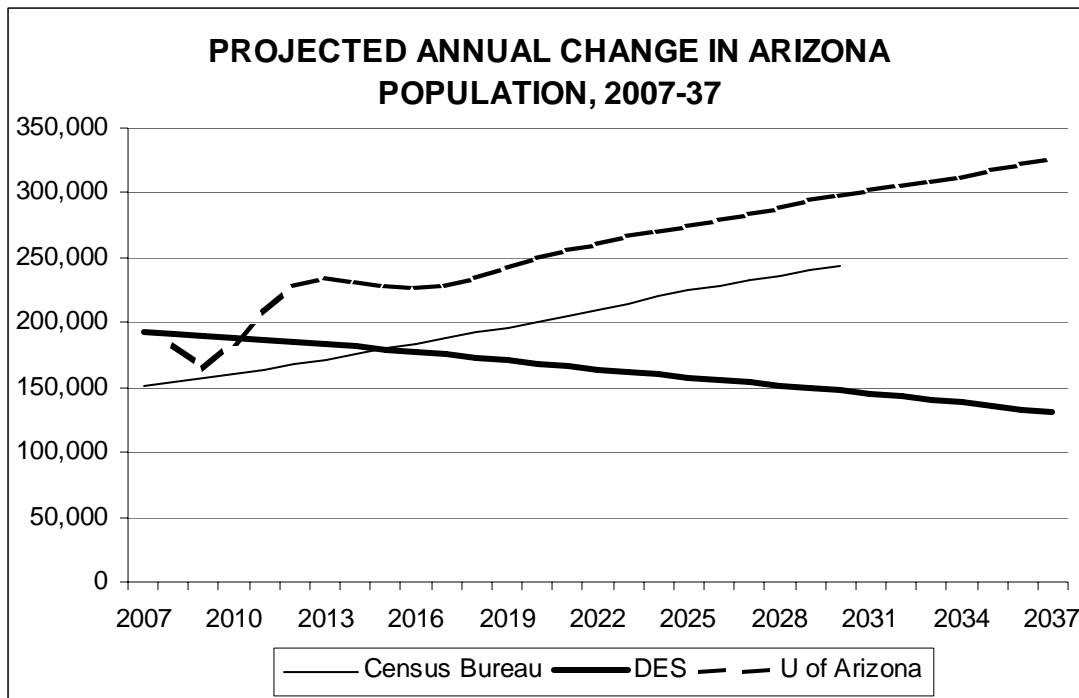
population projections produced prior to the state projections; and (2) the Census Bureau separately projects immigration and domestic migration.

Though the 2030 population projected by DES is not substantially different from the Census Bureau projection, sharp differences exist between the two projection series. The Census Bureau series shows much lesser annual population growth in the early years of the projection period. For example, in 2007, the Census Bureau’s projected population change is 151,000 while the DES change is 193,000. However, the annual change continually and substantially increases in the Census Bureau series, reaching 244,000 in 2030, while the annual change in the DES series continually decreases, to 148,000 in 2030 (see Chart 20).

The DES projection for 2007 is considerably higher (265,000, or 4.3 percent) than that of Census Bureau. In large part this results from the two-year difference in start date — the recently issued Census Bureau estimate for 2007 is 171,700 higher than its previously issued projection for 2007. The differential between the DES and Census Bureau projections grows to 421,000 (5.8 percent) in 2014. By 2026, however, the DES projection is less than the Census Bureau figure. In 2030, the DES figure is 365,000 (3.4 percent) less than the Census Bureau projection.

That a similar model using largely the same data can produce such widely different results demonstrates the importance of assumptions and forecaster intervention in the modeling process. The Census Bureau intervened only by controlling the projections to the national total. In contrast, DES tamped down migration rates so that the number of people moving to the state would not grow continuously. If the Census Bureau model had been run a couple of years later incorporating the peak of the economic cycle, its projection in 2030 would be substantially higher.

**CHART 20**



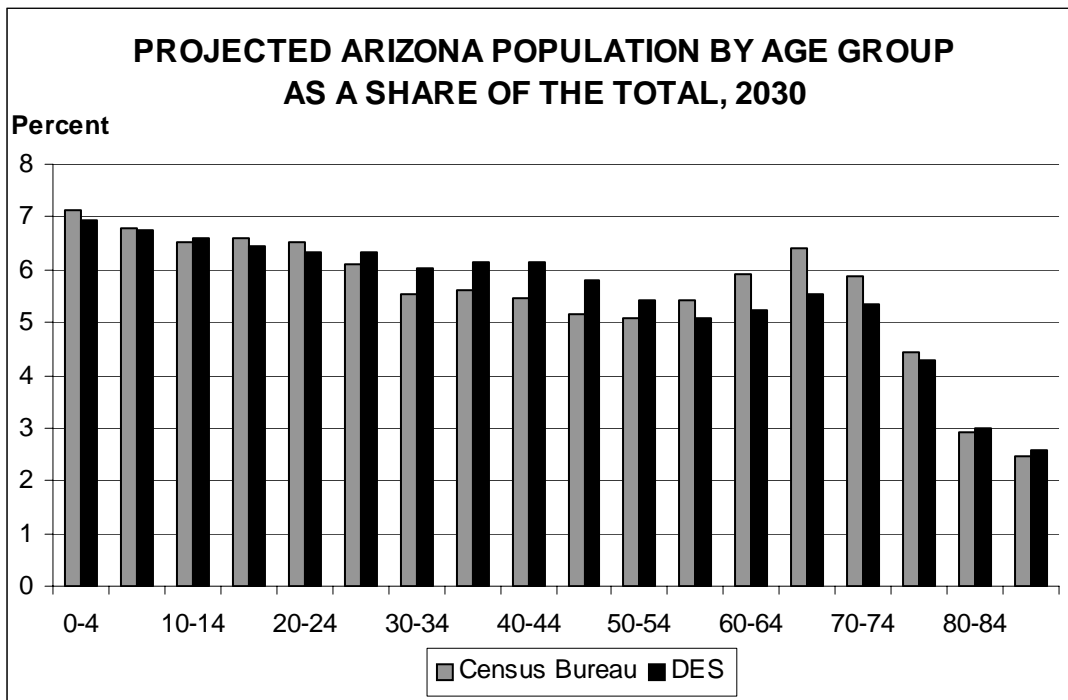
Source: U.S. Department of Commerce, Census Bureau; Arizona Department of Economic Security; and University of Arizona, Economic and Business Research Center.

Based on the historical time series of population estimates and taking into account the substantial effect of the economic cycle on population growth in Arizona, it appears that the Census Bureau starts its series with too little annual population change because of being controlled only to estimates from 2001 through 2003, an unrepresentative period consisting of a recession and slow recovery. In contrast, the DES series starts with too much population change by overweighting the population gains in 2004 and 2005, not recognizing that these gains occurred at the peak of the economic cycle. An annual change of about 179,000 is deemed reasonable based on a comparison of annual change in like years of the current and prior economic cycles. Using this figure and holding it steady through 2030 results in a 2030 projected population between that of the Census Bureau and DES.

Projected changes in the age distribution are similar in the DES and Census Bureau projections. Between 2000 and 2030, both series show a decline in share in all age groups less than 55, particularly in the 25-to-44 age bracket, and an increase in share in each older age group. The Census Bureau shows somewhat larger declines than DES in the 25-to-54 age groups, with larger increases in the 55-to-74 age groups. Projected shares of the population in 2030 are shown in Chart 21.

The proportion in the 65-or-older age group is projected to rise from 13.0 percent in 2000 to 20.8 percent in 2030 according to DES and to 22.1 percent according to the Census Bureau. The proportion less than the age of 15 is expected to fall from 22.5 percent to 20.3 percent (DES) or 20.4 percent (Census Bureau). In the 25-to-44 age group, the drop is from 29.5 percent to 24.5 percent (DES) or 22.7 percent (Census Bureau).

**CHART 21**



Source: U.S. Department of Commerce, Census Bureau, and Arizona Department of Economic Security.

**DES Compared to the University of Arizona.** The University of Arizona also produces long-term forecasts of population, for a 30-year time period. Unlike the Census Bureau and DES forecasts, the U of A uses an econometric model. Population, net migration, births and deaths are among the indicators projected, but no detail is available by age.

In the first few years of the projection series, the change in the state's population is a little less in the U of A series than in the DES series. After that, however, the U of A projects more growth in every year, with the differential widening over time, reaching nearly 200,000 per year in 2037. The U of A's projected population gain in 2037 is 2.5 times larger than the DES projection. The projected population in 2037 is 3 million higher in the U of A series.

**U of A Compared to Census Bureau.** The U of A projects greater population change in Arizona in every year relative to the Census Bureau. The differential is less than 30,000 per year in the first few years, but from 2011 through 2030 the differential is between 40,000 and 63,000 in each year. By 2030, the state's population is nearly 1.5 million higher in the U of A projection.

**Other Projections.** Arizona State University's Center for Business Research used to produce population projections for Arizona, Maricopa County, Pima County, and the balance of the state as a whole. The last set of projections was issued in late 2001, benchmarked to the 2000 census results. A cyclical and trend projection was produced for each year through 2020, with the components of change (births, deaths, and total net migration) shown. No other details, such as age distribution, were produced.

ASU essentially used a cohort-survival approach informed by economics, particularly the impact of the economic cycle on population growth. However, the ASU methodology was not as detailed as that used by DES or the Census Bureau. The detail from the 2000 census on 1995-to-2000 migration was not yet available.

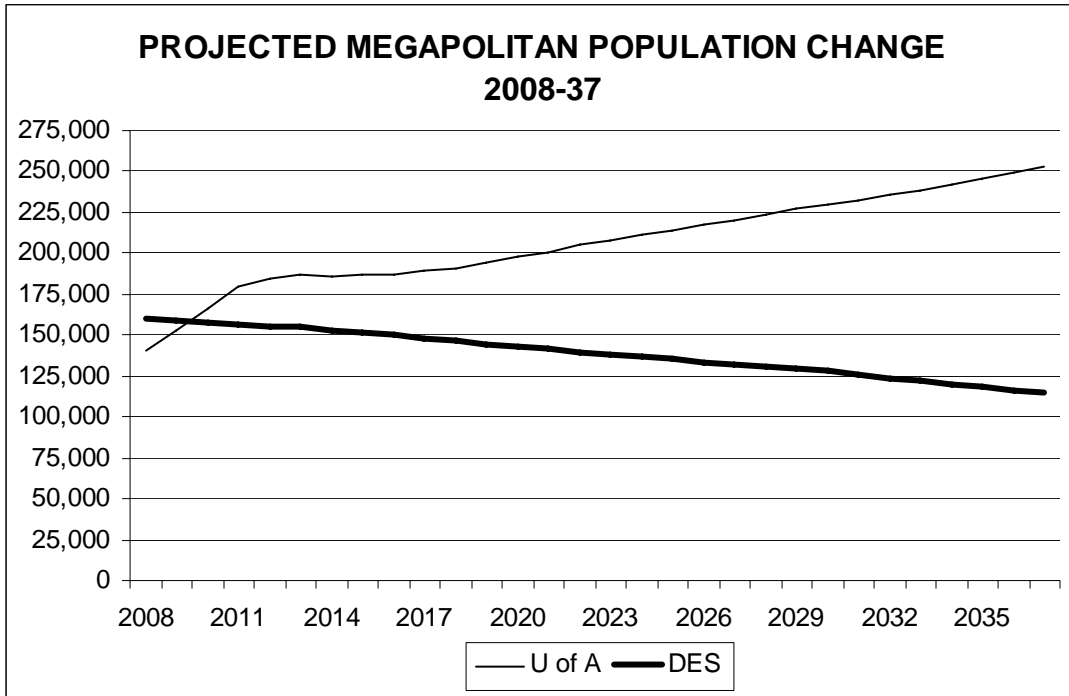
The ASU projections assumed that population change would stay nearly constant, a result of a slight decline in net migration being offset by a small gain in net natural increase. Population change in the trend forecast began at the average of the prior economic cycle (155,000). This starting point now is seen to be too low since net migration since 2001 apparently has been higher than projected. The longer-term assumption of population gains holding nearly steady, however, are between the declines over time projected by DES and the gains projected by the Census Bureau.

### **Projections of the Megapolitan Area**

Projections for the megapolitan area can be derived from the county forecasts of DES and the metropolitan forecasts of the University of Arizona. Through 2010, the projections for the megapolitan area made by the U of A are only a little higher than those of DES. Both assume that population growth in the next few years will remain rapid, but be a little lower than the peak of the economic cycle in the mid-2000s. After that, however, the two forecasts diverge substantially (see Chart 22). Numeric population gains gradually slow throughout the rest of the DES forecast. In contrast, the UA forecast shows an ever-increasing acceleration in numeric gains, with the annual increase in 30 years about 100,000 (67 percent) higher than in the first couple years of the projection period.

An increase in population growth occurred during the 1990s, with the annual average increase of just under 100,000 during the 1980s economic cycle rising to a bit more than 150,000 during the 1990s economic cycle. So far in the current cycle, the annual average increase again is higher, running at a projected pace of about 180,000 per year for the entire cycle. (Though the

CHART 22



Source: Arizona Department of Economic Security and University of Arizona, Economic and Business Research Center.

actual growth may prove to be less than this due to the severity of the current real estate slump and the enactment of the employer sanctions law.)

While a historical basis for an increase in future numeric population gains exists, continued increases would be highly unusual from a historical perspective compared to other metro areas in the United States (see the Comparison of Growth to Other Urban Areas subsection for a discussion of this topic).

The larger population increases projected by the U of A result from higher figures in each of the components of population change. From the beginning, the U of A projects more births than DES, with the differential steadily growing after 2010. Despite a much larger population base, the U of A projects fewer deaths than DES, beginning in 2009 with a growing differential over time. Net migration (immigration and domestic migration combined) also is higher in the U of A series beginning in 2010. This differential also rises throughout the remainder of the 30-year projection horizon (see Chart 23).

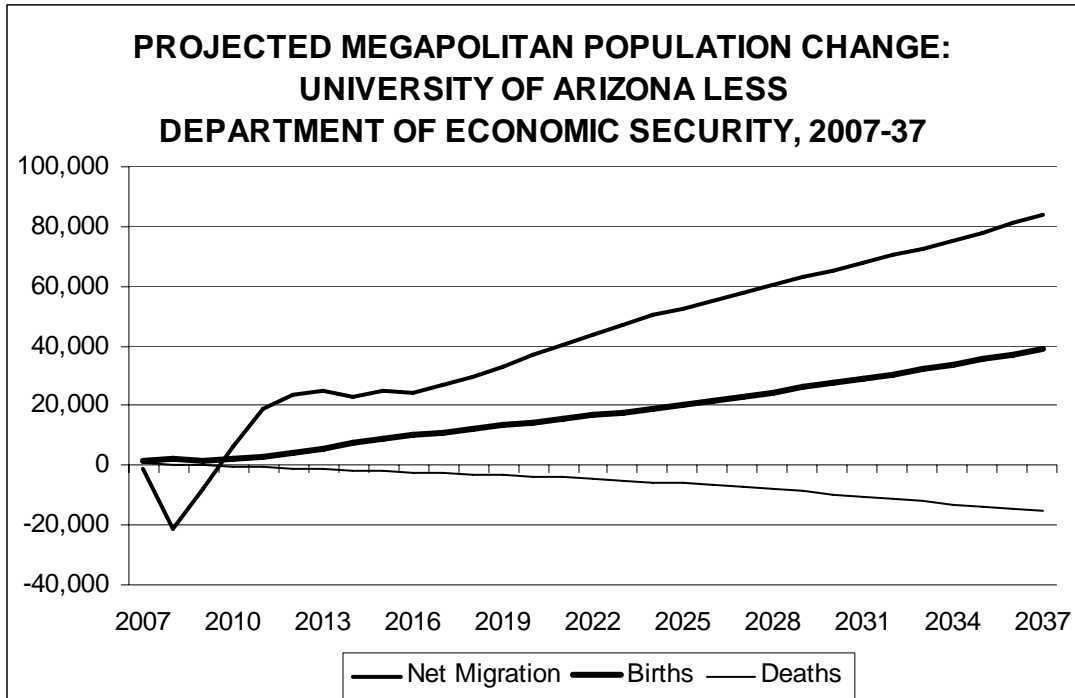
### Projections of Portions of the Megapolitan Area

Additional population projections have been made for pieces of the megapolitan area, particularly Pinal County, but not for the entire megapolitan area.

**Applied Economics.** As part of the Central Arizona College Bond Feasibility Study, this group issued a set of projections for Pinal County in May 2004, going out to 2025. In addition to projections of the total population, Applied Economics projected the housing market, the age distribution, the racial composition, and income.

The methodology used by Applied Economics was very different from that used by DES and the Census Bureau. In essence, a housing unit method was applied, starting with a projection

CHART 23



Source: Arizona Department of Economic Security and University of Arizona, Economic and Business Research Center.

of new housing based on active developments, known plans, and overall potential. Occupancy rates and household size were projected based on the types of housing units likely to be built and assumptions about the characteristics of those likely to occupy the units. This methodology obviously requires assumptions regarding the rate at which the housing would be built and occupied. Applied Economics also broke down the population by age and race/ethnicity using a modified shift-share approach.

Relative to the subsequent projections issued by DES, the Applied Economic figures are similar in the early years, with nearly identical figures for 2005 and slightly higher figures in 2010. After that, Applied Economics shows rising numeric population gains, from 26,000 per year in the 2005-10 period to 44,000 in 2015-20. In contrast, DES holds the numeric gains nearly steady at about 24,000 per year.

The age distribution projected by Applied Economics is considerably different from the DES age distribution. Compared to the 2000 census, Applied Economics shows increases in share in each age group under the age of 35, with significant gains among children. All age groups beginning with 40 show a decline in share, particularly from 45 to 64. In contrast, DES shows declines in share among younger age groups, extending through age 54, and increases in age groups 60 or older, particularly among those 75 or older. Relative to the DES and Census Bureau projections for the state, the DES projections for Pinal County appear to move too many senior citizens into the county, and too few young adults and children.

Another way to evaluate the age distributions of Applied Economics and DES is to compare the assumed age distribution in 2005/06 to the ACS results for the same years. Unfortunately, sampling error is apparent in the ACS figures, with substantial differences in share in some age groups between 2005 and 2006. Using the average of the two years, the

Applied Economics forecast had too many children, too few young adults (20-29), too few preretirement age (50-64), and too many retirees from 65 to 74. The DES projection had too few children and young adults and too many 55 or older.

The projections issued by Applied Economics were made prior to most of the housing boom and therefore are not as subject to the overprojection bias seen historically in projections issued under such conditions. However, the projections also were made prior to the current housing recession and prior to the development of the worst traffic congestion woes that currently are slowing growth in Pinal County. Thus, these projections may prove to be too high.

**Elliot D. Pollack & Co.** This group issued projections for Pinal County in September 2005. This study had a focus on transportation issues. Projections of Pinal County were done in the context of the Phoenix metropolitan area, out to 2020. No characteristics of the population were projected.

One basis for the Pollack forecast was the U of A projections for the Phoenix metro area available in 2005 and the 2003 MAG projections for Maricopa County. The difference in the two forecasts was assigned to Pinal County. This logic is faulty in that the two forecasts were made by completely different methodologies and assumptions. The U of A forecast was much more optimistic than the MAG forecast. (The U of A forecast used by Pollack in 2005 was somewhat different from the U of A's latest forecast discussed above, but like the latest forecast, shows a substantial increase in annual population gains.)

The other basis for the Pollack forecast was an analysis of the housing market. It again used U of A forecasts, of housing units permitted. Based on a short half year of actual data in which Pinal County reached 30 percent of the metro single-family building permits, a rather arbitrary projection of the share rising to 35 percent and then holding steady was made by Pollack. This formed the basis of the 'conservative' forecast. An 'aggressive' forecast was generated using an assumption of a 40 percent share.

That Pinal County will capture 35-to-40 percent of the Phoenix metro single-family housing market seems high, given the amount of land in the western and northern portions of Maricopa County that are closer to employment centers and amenities and which are served by a better infrastructure (particularly roads). Moreover, limiting the analysis to the single-family market is curious and inappropriate. The entire housing market needs to be considered. Multifamily housing is much more likely to be built in Maricopa County than Pinal County for the foreseeable future, meaning that the Pinal share of the total housing market will be less than the single-family share used by Pollack.

Using the housing data collected by the Realty Studies program at ASU, Pinal County's share of the metropolitan total, even of the single-family market, never reached 30 percent in the recent boom. The share was 26 percent in 2006, and has been less than that in 2007. Measured by total housing units, the Pinal County share is a few percentage points lower. Similarly, using the completion data collected by CAAG and MAG, Pinal County's proportion has not reached 30 percent, with 26 percent the highest in 2006.

Even Pollack's conservative series shows growth faster in Pinal County than in the Applied Economics series. Pollack assumes much faster growth immediately (annual average increase of 41,000 between 2005 and 2010 — 58 percent higher than the Applied Economics forecast). After that, both series show increases in the annual average increase of around 9,000 in each of the next two five-year periods. The aggressive series starts with annual average gains in the 2005-to-2010 period 4,000 higher than in the conservative series, and shows a greater numeric rise in the next two five-year periods. By 2020, the aggressive series projects a

population of 1,075,000, compared to 977,000 in the conservative series, 769,000 in the Applied Economics forecast, and 610,000 in the DES projection.

The projections created by Pollack were made at the peak of the housing boom, before the slump developed. As such, they likely overproject population growth. The methodology for creating this series also was faulty. Thus, Pollack's projected growth is unlikely, even in the conservative series, and probably significantly overprojects population gains in Pinal County.

**Other.** In contrast to these forecasts specific to Pinal County, the ASU projections include figures for Maricopa and Pima counties but not Pinal County. Like the forecast for Arizona, net migration to Maricopa County lowered a little over time (through the end year of 2020) but was offset by gains in net natural increase. In contrast, net migration to Pima County was expected to rise a little. The reason for the difference between the two counties is the large number of people already living in the Phoenix area and the depletion of available land to develop. In contrast, Pima County's population is less than one-third as large and land remains available to develop not far from downtown Tucson.

### **A Comparison of Growth in the Megapolitan Area to Other Urban Areas**

An analysis of historical population change in each of the nation's other large metropolitan areas indicates that the growth experienced by the Phoenix area in the 1990s, and the apparent growth between 2000 and 2010, has not been matched by most of the other metro areas. This is true whether measured on a numeric population change basis, or as population change as a percentage of the national population change. (This analysis looks only at the Phoenix metro area — Maricopa and Pinal counties — not at the megapolitan area.)

(Note: the metropolitan area definitions used in this analysis are those that were in place at the time of the 2000 census. In that definition, two or more metro areas could be combined into a consolidated metro area. For example, the Los Angeles Consolidated Metropolitan Area consisted of four metro areas. The consolidated areas were the primary unit used in this analysis. The Phoenix area was the 14th-largest consolidated metro area/metro area in 2000.)

Between 1990 and 2000, the Phoenix metro area's population rose by slightly more than 1 million, a gain that represented 3.1 percent of the national total. Among the metro areas less populous than Phoenix in 2000, none ever had a decade of population gain approaching 1 million, and only two achieved a decadal gain as a percentage of the national average at least equal to the 3.1 percent in the Phoenix area in the 1990s: St. Louis in the 1860s and Cleveland in the 1910s. Among the 13 areas larger than Phoenix, five never experienced a decadal gain as large as in Phoenix.

Extending the growth estimated by the Census Bureau between 2000 and 2006 to the entire decade, the population gain in the Phoenix area would exceed 1.25 million, 4.4 percent of the national total. (The DES and U of A projections show gains of just more than 1.3 million.) In terms of the share of the national average, four of the larger metro areas never had a gain as large as the projected 2000-2010 figure for the Phoenix area.

Most metro areas have exhibited a life cycle in which growth as a share of the national average rises for some decades, perhaps levels off for a few decades, then drops back. Only the two largest areas — New York and Los Angeles — have experienced a longer period of strong growth.

Looking beyond 2010, using the DES projections, the Phoenix metro area's decadal population gains will exceed 1 million for four more decades — a total of six in a row. Only the Los Angeles consolidated area (the Los Angeles, Orange County, Riverside, and Ventura metro

areas combined) has had such an extended period of such strong growth. Even the Los Angeles metro area did not have such a long period of strong gains. Viewed as a percentage of the national total (using the Census Bureau projections for the nation), the growth projected by DES is not as abnormal, but still is quite strong. The Phoenix area share would exceed 4 percent for four straight decades. Besides New York and Los Angeles, Chicago (the third largest consolidated area) also had a period of such strong growth (from 1880 to 1930).

Using the metropolitan area growth forecast by the U of A and utilized by Pollack in his forecasts, the decadal population change would rise to nearly 2 million in the 2020s and 2.4 million in the 2030s. Only the New York and Los Angeles consolidated areas ever achieved gains this large; no single metro area ever has had such a large gain. As a percentage of the nation's total, the Phoenix area share would exceed 7 percent in the 2020s and 8 percent in the 2030s. Again, only the New York and Los Angeles consolidated areas ever had such a large share of the nation's growth. The Los Angeles metro area reached a share of 7 percent, but never 8 percent; the New York metro area is the only one to reach 8 percent (in the first decade of the 20th century and again in the 1920s).

Thus, in the U of A projections, the Phoenix area by 2040 would be in an exclusive group of three with New York and Los Angeles, despite not having a seaport or an otherwise strategic location. Further, the Phoenix area has not yet distinguished itself by forcefully acting to preserve its quality of life — to mitigate the growing disamenities of urban size. Thus, it is difficult to rationalize the Phoenix area becoming a member of this exclusive group.

### **Interviews of Experts**

Interviews of demographic and economic experts throughout the megapolitan area were conducted for this study. A summary of the results for questions related to megapolitan population growth and demographics follows. Questions that were specific to Pinal County are not summarized in this report, and questions focusing on economic topics are discussed in the report “Changing Economic Conditions.” The most important/most frequently mentioned issues identified in the interviews are addressed in more depth in the following section “Probable Future Conditions.”

### **Population Growth**

Interviewees were asked to identify the factors contributing to the rapid population growth of the megapolitan area. Two factors were identified by many respondents: (1) job creation and employment opportunities, and (2) the housing market, in particular home and land prices, affordability, and availability. Less frequently cited factors include the business climate, changing demographics, the climate, attractiveness to Californians and Midwesterners, retirement, and quality of life.

The experts also were asked to identify constraints that could cause the population growth rate to slow or change. Opinion was mixed on whether water would become a constraint by 2040. Some mentioned that while not a general constraint, the lack of available water and/or its cost could affect growth in localized areas.

Other than water concerns, fiscal issues were the most often cited. Respondents noted both the high cost of building infrastructure, particularly roads, and the uncertainty of adequate revenue sources.

A number of respondents identified traffic congestion as a problem that could affect population growth. Among the other issues cited as having the potential for constraining growth were air pollution, housing costs, educational quality, and climatic warming.

## **Migration**

The factors driving migration are the same as those identified as contributing to the rapid population growth. A number of respondents indicated that an adequate supply of affordable housing does not exist in the megapolitan area. However, opinion was split as to whether this would affect in-migration. Those not feeling that this would affect migration noted that housing prices are higher in California and in some other parts of the country than in the megapolitan area, and that most people can find affordable housing in the megapolitan area if they are willing to drive to more distant locations, especially in Pinal County.

One question focused on retirement-age migration. Most respondents thought that Arizona as a whole will remain a retirement destination. Some felt that retirement migration to the megapolitan area was endangered by higher housing prices and disamenities resulting from the increased size of the urban area, such as air pollution, higher temperatures, and traffic congestion.

Another question asked whether strong in-migration from California and the Midwest would continue. Many felt that migration from California would continue. High living costs, a poor business climate, and natural disasters were among the reasons cited for the out-migration from California. However, nearly as many of the respondents felt that overall migration to Arizona would slow. Among the factors cited were the higher housing prices in the megapolitan area relative to the Midwest, worsening traffic congestion, and more generally the increasing size of the megapolitan area. Some respondents suggested that some of the migration to the megapolitan area will shift to other parts of Arizona and to less populous neighboring states. Such a shift in destination more likely will occur among retirees and those living in less populous areas in the Midwest.

The impact on migration of global warming — assuming that it results in hotter temperatures and drier conditions in Arizona — was the subject of another question. Generally, it was believed that this set of conditions would slow migration to the state, with the negative impact on the water supply as well as the hot temperatures contributing to slower growth.

## **Demographic Changes**

One question focused on the most important demographic changes expected to occur over the next 35 years. No topic was cited by most respondents, with the largest number of responses related to the age distribution. In particular, the general aging of the population and the retirement of the baby-boom generation were most often cited. The possibility of a minority majority and concerns about the educational attainment levels of those growing up in Arizona also received some attention.

Some questions focused on specific demographic issues. One was the Hispanic birthrate. It generally was felt that the historical pattern of immigrants having higher birthrates than their descendants would hold. The rate of decline in the birthrate depends on the degree of assimilation, educational attainment, and incomes of the immigrants and their descendants. It also was noted that reducing undocumented immigration would lower the Hispanic birthrate. Another question was specific to the ethnic mix. A continued rise in the proportion of Hispanics is expected, with the possibility that non-Hispanic whites could become less than half of the

population. The experts also were asked about changes in educational levels. Educational attainment was a concern of some respondents. The low high school graduation rate and limited funding for education relative to other states were particularly identified as issues.

## **Workforce**

A series of questions addressed workforce issues. One question was specific to the retirement of the baby-boom generation. Some of the experts expect short-term labor shortages among highly skilled workers to develop as baby boomers retire. The magnitude of the shortages may be minimized by some baby-boomers remaining in their jobs past standard retirement age and by others periodically participating in the workforce or working part time well past traditional retirement age.

Another question specifically addressed the impact on the workforce of undocumented immigrants. The new employer sanctions law dominated the discussion. It generally was believed that the new law will damage the Arizona economy, with certain economic activities especially affected. Labor shortages are expected, particularly at the low end of the wage distribution. Costs are predicted to rise. Some businesses are expected to fail due to the law, and new business formation could be slowed.

Workforce preparation was the topic of another question. It was generally believed that the local workforce will not be prepared for the jobs of the future and that action will need to be taken to train the workforce.

Most respondents thought that incomes in the megapolitan area would remain below the national norm. Among the factors cited were a job mix tilted to low-wage jobs, such as in tourism, and lower productivity in Arizona, in part due to subpar educational attainment.

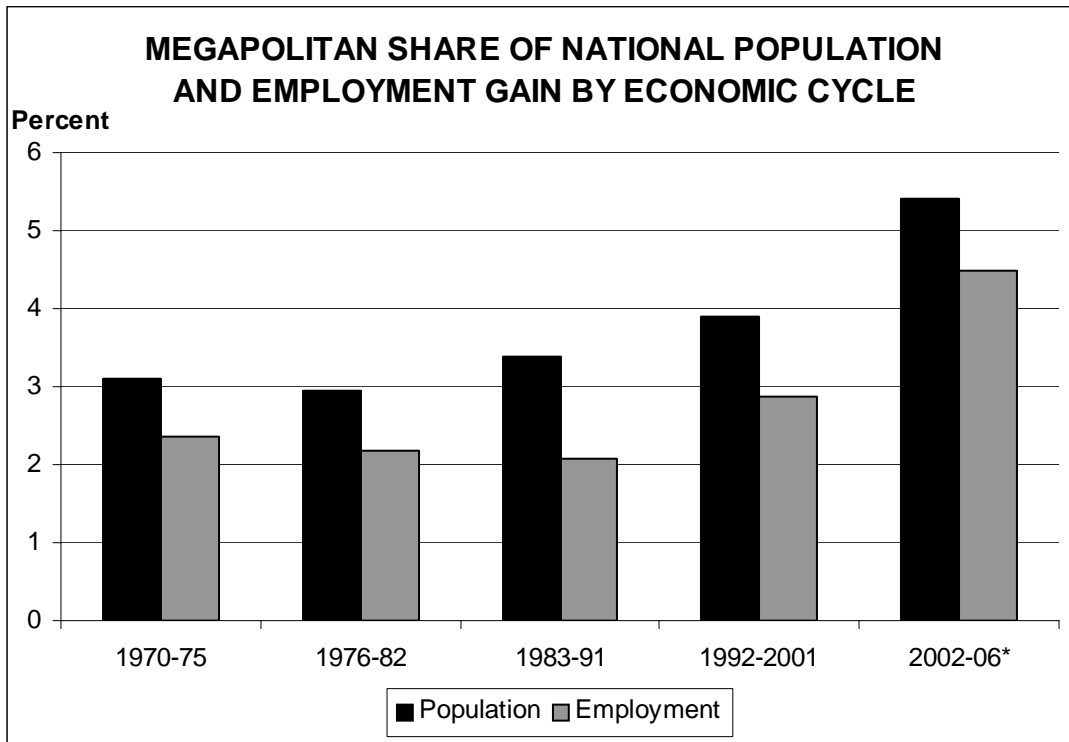
### **Factors Contributing to the Greater Population Gains Since the Early 1990s**

Understanding the past is necessary to accurately project the future. In order to forecast conditions over the next 30 or more years in the megapolitan area, the relatively high numeric population and employment gains over the last 15 years — relative to the historical period prior to the mid-1990s — first must be explained. After largely holding steady over the three economic cycles from 1970 through 1991, annual average population change in the megapolitan area shot up during the 1992-to-2001 cycle, and apparently increased further during the current cycle. The average annual change in employment also rose.

Without an understanding of the causes of the more rapid growth of the last 15 years, it is not possible to choose between such basic scenarios as (1) continued increases in annual average numeric population and employment change, as in the University of Arizona and Census Bureau projections — the “high” scenario discussed later, (2) stabilization near the current level of annual average numeric population and employment change, as in the ASU projections — the “middle” scenario, or (3) decreases in annual average numeric population and employment change, as in the DES projections — the “low” scenario.

During the 1992-to-2001 economic cycle, the greater population and employment gains in the megapolitan area partially were a reflection of greater increases nationwide. The megapolitan share of the national gain in population and employment was higher than in the three prior cycles, but not significantly so (see Chart 24). In the current economic cycle (beginning in 2002), however, a larger increase in the megapolitan share of the national increase in population and employment has occurred, putting the megapolitan shares significantly above the shares of the 1970s and 1980s.

CHART 24



\* Through 2005 for employment.

Source: U.S. Department of Commerce, Census Bureau and Bureau of Economic Analysis.

The data examined earlier in this report indicate that both immigration and net domestic migration to the megapolitan area have been higher since the early 1990s than in the previous years. Thus, an examination of the causes of the acceleration in each source of population gain will inform the forecast of future growth in the megapolitan area.

### Immigration

Based on the fragmentary data available, immigration to the megapolitan area likely surged in the mid-1990s and peaked in the late 1990s. While legal immigration has increased since then, it appears that undocumented immigration has declined. The section on immigration discussed the reasons for the peaking and subsequent decline in undocumented immigration.

Most of the immigrants, particularly unauthorized immigrants, to the megapolitan area have been from Mexico. Mexicans were “pushed” out of Mexico by the demographic condition of too many seeking work in Mexico for the number of jobs available. Wage rates were depressed by this imbalance. Economic fallout from the implementation of NAFTA that began in January 1994 also pushed people from Mexico due to job losses and lowered wages due to the peso devaluation that occurred in December 1994. At the same time, Mexicans were “pulled” to the United States by the large number of jobs available and the relatively high wages of those jobs. While a strong economy contributed to the job creation in the United States, the reduced number of Americans entering the workforce largely was responsible for the imbalance between the number of jobs available and the number of Americans available to fill those jobs.

## Domestic Migration

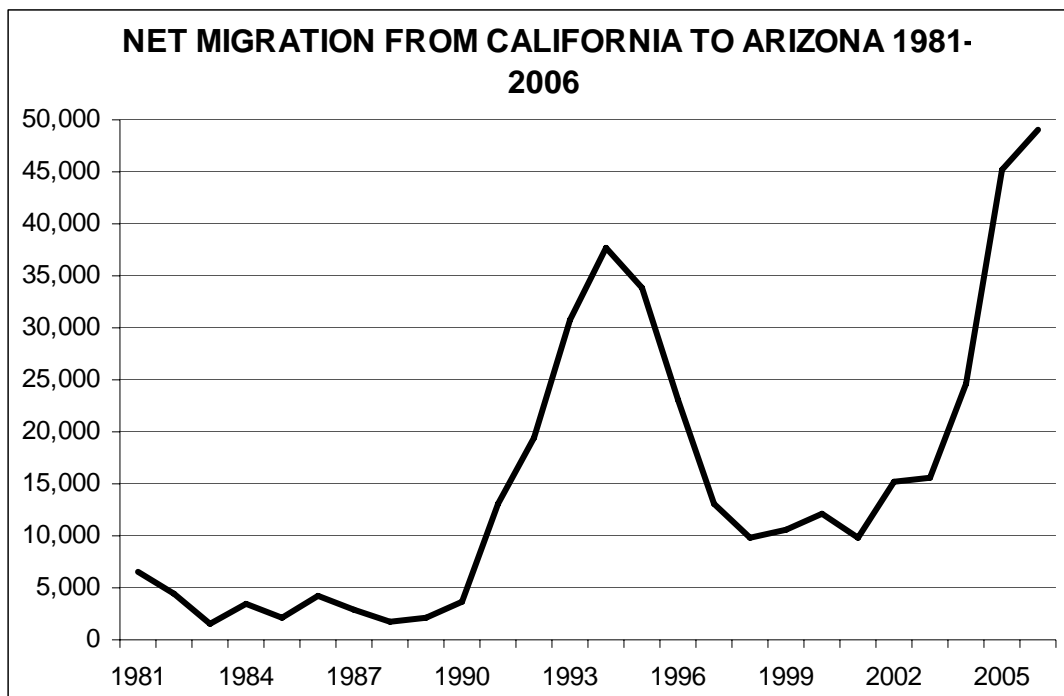
Net domestic in-migration to the megapolitan area also increased during the 1990s and rose further in the 2000s. In particular, net domestic in-migration from California since the early 1990s has been much higher than in the preceding decades. (Prior to the 1980s, Arizona frequently experienced net out-migration to California.). With net domestic migration from the rest of the country falling, the importance of California as a source of workers has soared.

Migration flows between California and Arizona are high because of California's large size and proximity to Arizona. Southern California, especially the Los Angeles area, is of particular importance.

Economic conditions in California have been a major driver of migration from California to Arizona. A weak economy in California during the early-to-mid-1990s resulted in a surge of domestic migrants from California to Arizona (and to most of the nation), as well as the movement of businesses from California to Arizona. Using IRS data, net in-migration from California to Arizona rose from a few thousand a year throughout the 1980s to a peak of more than 37,000 in 1994. While the number subsequently fell back as the California economy improved, it remained approximately 10,000 per year or higher — more than in any year prior to 1991.

From 2001 through 2005, the California economy again was weak, creating relatively few jobs for an economy of its size. Net in-migration to Arizona from California again surged, reaching 49,000 in 2006 (see Chart 25). Almost certainly, this will prove to be the peak figure of the current economic cycle. Employment growth in California jumped in 2006 and employment opportunities in Arizona since 2006 have decreased.

CHART 25



Source: Internal Revenue Service.

In the 1992-to-2001 economic cycle, annual average net migration from California to Arizona was about 20,000 per year. In the first five years of the current cycle, the average was only 1,000 higher than in the first five years of the prior cycle.

Economic conditions have not been the only reason for the increase in net migration from California. Between 1995 and 2000, strong employment growth occurred in California, yet net out-migration to Arizona remained at least 10,000 per year. The disamenities that come with urban size, particularly high costs, likely have been a factor pushing people from California, particularly from the Los Angeles area. Experts also noted the effect of natural disasters.

### **Probable Future Conditions**

In this section, likely conditions in each of the components of population change — net natural increase, immigration, working-age domestic migration, and retirement-age domestic migration — are examined. In addition, a number of additional factors that could affect population and employment growth in the future are examined. The farther into the future, the more likely one or more of these additional factors will have a significant impact on the growth of the megapolitan area.

### **Immigration**

A continued decrease in unauthorized immigration to the United States is likely. In Mexico, a reduction in birth rates has been ongoing for some time. According to projections made by the Consejo Nacional de Poblacion, by 2015 the number of youths entering the workforce will begin to decline. This should create less competition for jobs and result in wage increases in Mexico, reducing the “push” factors. “Pull” factors also will be reduced. The greater number of American youths seeking work should result in fewer employment opportunities for unauthorized immigrants in the United States.

As Americans fill jobs that had been filled by immigrants, overall numeric population gains in the megapolitan area should slow for three reasons. First, the average household size of young Americans is less than that of young immigrants — American workers have fewer dependents than immigrant workers. Second, the large increase in immigrant workers created an opportunity for other immigrants to come to the megapolitan area to serve the immigrant community. For example, restaurants and stores have opened that largely serve the immigrant population. As the number of new immigrant workers declines, so will the opportunities for this secondary flow of immigrants. Third, some of the jobs that have been filled by immigrants likely will remain unfilled. Some of these jobs, such as janitorial positions and lawn care, are viewed as undesirable by American-born youths. This attitude is unlikely to change even if wages for such jobs increase.

**Arizona’s Employer Sanctions Law.** The discussion up to this point implies that immigration to the megapolitan area is likely to decline — without considering the effects of the employer sanctions law that went into effect in Arizona on January 1, 2008. Much uncertainty remains regarding this law. First, though legal challenges to the law thus far have been unsuccessful, the law still could be found to be unconstitutional. Second, it has not been determined to what extent undocumented workers hired prior to 2008 will be affected by the law. Third, the degree of effort to enforce the law remains to be seen. Fourth, anecdotal evidence suggests that workers and employers are circumventing the law by having the workers serve not as employees but as independent contractors.

So far, data are not available to ascertain the effects of the law. Anecdotal evidence suggests that since late 2007 a number of immigrants have left the megapolitan area, but the number leaving is unknown. Further, it is not clear to what extent the new law is the cause of the departures, given the rapidly weakening economy that has coincided with the law taking effect. Regardless of the cause, if undocumented workers are leaving the megapolitan area, population growth in the megapolitan area temporarily is slowing.

In the near term, the negative effect of the loss of undocumented immigrant workers will be mitigated by the current slowing of the megapolitan economy due to cyclical reasons. Thus, the full ramifications of the employer sanctions law may not be realized until the next upturn in the economy. At that time, it seems likely that the megapolitan area will be unable to attract an adequate workforce in certain occupations. Some increase in domestic migration is likely in response to the decline in unauthorized immigration. However, the net effect of the law should be lesser population growth in the megapolitan area.

A number of the experts interviewed are concerned that as a result of the employer sanctions law, immigration will decline and labor shortages will ensue. They see additional risks of increased costs and business failures resulting from the law.

In summary, immigration — one of the main causes of the more rapid growth in the megapolitan area in the last 15 years — is highly likely to decline in coming years. The rate of decline will be greater if the employer sanctions law remains in effect and is enforced. A decline in immigration is a major factor supporting the low scenario of slowing growth in the megapolitan area.

### **Working-Age Domestic Migration**

Working-age domestic migration flows will continue to be affected by the changing age distribution. The number of young adults in the United States entering the workforce and of the prime migration age of 18-to-29 should rise a bit more in the next few years, then stabilize. In contrast, the number of older adults retiring should rise considerably in the next decade and remain high for several years after that.

While a large number of young American-born adults will be present, it is not clear to what extent they will migrate to the megapolitan area. As a group, they are not likely to be willing to take some of the jobs that recently have been filled by undocumented immigrants. Thus, the increased number of people in the young-adult age group will not preclude the development of labor shortages in certain types of less-skilled jobs.

While baby-boomer retirees are a potential source of new residents in the megapolitan area, as discussed below, the retirement of baby boomers already working in the area could cause short-term economic dislocations. Those in the young-adult age group will not be prepared to fill the jobs of retiring baby boomers. The experts interviewed expressed a concern that the retirement of the older age group could result in temporary shortages in the more highly skilled portion of the workforce. While the large number of retirements will present an opportunity for more workforce migrants to move to the megapolitan area, migration rates are low among those of middle age, and the baby-bust generation will occupy this age group as the baby boomers retire. Thus, it is likely that some of the job openings may not be filled.

For the foreseeable future, the conditions causing the net out-migration from California seem likely to remain in place, as does the relative attractiveness of the megapolitan area to Californians. The experts interviewed expect migration from California to continue. Thus, net in-migration from California to the megapolitan area likely will cycle in magnitude with changing

economic conditions in California and the megapolitan area. The annual average in the next few economic cycles probably will range from similar to the average of the prior and current cycle to somewhat higher. Higher net migration from California could result if immigration to the megapolitan area slows. Later, however, the increased size of the megapolitan area will result in its own disamenities worsening (as discussed below), lessening its apparent advantages with California. This should reduce the net inflow from California to the megapolitan area, contributing to a slowing in the population growth of the megapolitan area.

In contrast, net migration from the rest of the country, particularly the Midwest, may continue to decline slightly. The experts feel that the disamenities resulting from urban size may slow the migration to the megapolitan area from less populated areas. However, if immigration to the megapolitan area slows, a reduction in domestic migrants from the rest of the country may not occur in the short term.

In summary, net migration of working-age individuals and businesses from California — one of the main causes of the more rapid growth in the megapolitan area in the last 15 years — is likely to continue at about the same or a somewhat increased pace in the short term, but probably will begin to slow in the longer term. Overall working-age domestic migration likely will continue at about the same pace, or perhaps be slightly higher in response to a decrease in immigration, before beginning to slow in the longer term. Thus, working-age domestic migration is a major factor supporting the middle scenario of roughly stable growth in the megapolitan area.

### **Retirement-Age Domestic Migration**

The aging of the baby-boom generation has the potential to significantly increase retirement-age net domestic migration to the megapolitan area. Already, the oldest of the baby-boom generation have reached early retirement age. In coming years, many more will reach early and traditional retirement age; the key age for retirement migration is from the mid-50s to mid-60s. If the net migration rate of this age group remains constant to the megapolitan area, the result will be considerably more retirement-age migrants during the next 15 years than during the last 15 years.

However, growing urban disamenities are likely to affect retirement migration sooner than working-age migration. Retirees benefit less from increased urban size (for example, from increased employment opportunities), and are more sensitive to environmentally related health concerns. Retirees also are sensitive to housing prices. Further, they have shown a preference for living in small-to-moderate-sized urban areas, or outside large urban areas, not within a megapolitan area. Retirement migration in the megapolitan area already has declined as a share of total migration. The experts interviewed believe that the Southwest will remain a retirement destination, but some are concerned that the megapolitan area's size and growing disamenities may cause its retirement migration to slow in favor of less populous areas.

The megapolitan area may remain a popular destination for those retiring from large and expensive metro areas. However, retirement migration may continue to slip from the remainder of the country.

Thus, the potential supply of retiree migrants is rising substantially due to the aging of the baby-boom generation, though it is not clear to what extent the megapolitan area will receive an increased number of retirees. However, the strong positive potential during the next 15 or so years quickly will swing to a negative effect as the baby-boom generation is replaced by the baby-bust generation in this age group. Retirement migration therefore supports the high

scenario for the first half of the projection horizon, but better fits with the low scenario in the second half of the projection period.

### **Net Natural Increase**

Natural increase from the excess of births over deaths has been a much smaller factor in the growth of the megapolitan area than migration flows and likely will remain a relatively less important source of population gains over the projection horizon.

Birth rates likely will gradually decline in the megapolitan area. Initially, this will result from a decreasing number of immigrants. Later, birth rates among Hispanics should continue to drop as the higher rates of the immigrant generation are replaced by lower rates among their descendants.

The number of births likely will continue to rise rapidly in the next several years in response to the increasing number of young adults. After that, the number of births likely will increase much more slowly.

Continued slight declines in death rates seem likely. For the next decade or so, the number of deaths should continue to rise at the recent historical pace. However, the number of deaths should increase significantly during the 2020s due to the aging of the baby-boom generation.

Thus, population growth from net natural increase probably will continue to rise at the existing pace for several more years. After that, slowing gains in the number of births, followed by a substantial increase in the number of deaths should result in the number of new residents resulting from net natural increase to decline. Net natural increase therefore will swing from a minor factor supporting the high scenario in early years of the forecast to a factor supporting the low scenario.

### **Other Factors Likely to Affect Future Growth**

**Economic Development.** Job availability has been crucial to the megapolitan area's growth, since most of the population growth has been of working-age people who need a job in order to move to, or stay in, the megapolitan area. The fluctuation in job availability in the short term has resulted in the cyclical pattern observed in population growth. That is, job growth leads population growth for the working-age population and their dependents.

Regional economic theory states that a local economy is driven by economic activities that import money into the local area through the sales of goods and services to customers who do not live in the area. "Basic" or "export" activities are those involving sales to nonlocal businesses and individuals. Such activities drive the local economy by bringing money into the community. Basic industries with excess employment are the primary forces driving the local economy. Mining, most types of manufacturing, most agriculture, and tourism are classic examples of basic activities, but a variety of service activities also are basic. Continued creation of basic jobs is necessary for the expansion of the megapolitan area.

In the longer term, not only does employment have an effect on population growth, but population growth has an impact on job growth as well. Employers view the megapolitan area favorably in part because of the long history of the area's attractiveness to the workforce. Further, most of the area's jobs are in economic activities that primarily serve local residents. Retail trade and services such as health care, finance, and real estate are examples of largely nonbasic, local-support activities, since most sales are to local residents. Similarly, most construction work is purchased by local residents and local businesses.

As the megapolitan area has grown, it has become more attractive to a wider range of businesses, in part due to economies of scale. Problems in California also have boosted business growth in the area. While agglomeration economies will continue, businesses also are sensitive to many of the same factors that influence location decisions of individuals. Thus, the other factors affecting future growth discussed below will affect not only the attractiveness of the area to individuals, but also to businesses.

In addition, other factors influence business location and expansion decisions. Not only do businesses require a workforce of sufficient size, but the workforce must be qualified. The experts interviewed are concerned with the educational attainment of that portion of the workforce educated in Arizona and with the general preparedness of the workforce for the types of jobs being created now and in the future. The implication is that without action to correct educational and job training deficiencies, future employment growth may be slowed.

As noted earlier, the Arizona employer sanctions law has the potential to greatly affect the Arizona workforce, causing a labor shortage in certain occupations, as well as cause other economic dislocations. Some basic economic activities, including agriculture and tourism, likely will be disproportionately affected by this law. The result could be slower growth in these sectors than would be the case in the absence of the employer sanctions law.

In summary, job creation in basic and nonbasic activities (and the number of workers filling the jobs) probably will continue close to the same pace as in the recent past in the megapolitan area, supporting the middle scenario. However, a number of risks to this assumption exist, which could result in conditions more approximating the low scenario. It is difficult to build a case why the megapolitan area's economic development will be more successful in the future than in the recent past, a necessary component to faster growth in the high scenario.

**Real Estate Prices.** For many years, affordable home prices in the megapolitan area enabled its strong growth. This situation changed with the sharp increase in housing prices in 2004 and 2005. As recently as 2004, the median resale home price in the Phoenix area was 10 percent less than the national average. In 2006, it was 17 percent higher. Even with low interest rates, housing affordability fell sharply in the megapolitan area, to the lowest in the Phoenix area since the period of very high interest rates in the early-to-mid-1980s. The affordability index for the Phoenix area produced by the Realty Studies group at ASU Polytechnic was much less than the national average produced by the National Association of Realtors in fourth quarter 2007.

The increase in megapolitan home prices from the beginning of 2000 through October 2007 of 101 percent in the Phoenix metro area was comparable to increases along the West Coast and in Nevada, Florida, and selected other areas, such as Washington D.C. (These figures are based on the Standard and Poor's Case-Shiller repeat sales index.) However, the megapolitan increase was much greater than in most of the country. For example, the rise in Dallas was only 24 percent, Atlanta and Charlotte had increases of 34 percent, and Denver's figure was 36 percent. The wide differential in prices between Arizona and most of the South, including Texas, Georgia and North Carolina, make those states relatively more attractive to migrants from the North. Economic development in Arizona also could be affected as businesses find the much lower real estate prices in the South to be a significant factor in location decisions.

In the Great Plains and Great Lakes regions, historically the source of many of the megapolitan area's in-migrants, increases in home prices from 2000 through late 2007 were just more than 60 percent in Chicago and Minneapolis, but less than 20 percent in Cleveland and Detroit. Thus, the now-higher home prices in the megapolitan area relative to prices in the Upper Midwest should have the effect of reducing migration from that region.

Looking ahead, the current slump in the local real estate market, with falling home prices, likely will result in the megapolitan area's home prices coming into alignment with the national average. As this occurs, the negative effect on migration to the area should diminish. However, future prices in the megapolitan area may not be less than the national average as in the past. In particular, prices are likely to remain higher than those in the Midwest, holding down migration from that region, and higher than in the South, resulting in that region being more competitive for migrants and businesses than in the past. The experts interviewed are concerned that the megapolitan area's higher real estate prices will slow migration from less expensive parts of the country.

In summary, an analysis of housing and land prices in the megapolitan area suggest that they will not affect migration from California and other high-priced metropolitan areas, but may diminish migration from much of the rest of the country. Higher prices likely will reduce the economic competitiveness of the megapolitan area, relative to the historical relationship. Thus, if real estate prices in the megapolitan area fall considerably in coming months, then rise at the national average pace, they will support the middle scenario. Less of a decline in price could result in slower long-term population growth, as in the low scenario.

**Urban Disamenities.** As an urban area grows, many advantages accrue to individuals living in the area, and especially to local businesses. While the agglomeration economies may continue indefinitely, urban disamenities rise with increased size. Gradually, the advantages of growth become offset by the disadvantages. This has the effect of gradually slowing the growth of an urban area. As discussed in a prior section, all of the nation's older large urban areas have experienced a life cycle in which a period of fast growth has been succeeded by slower growth. Eventually, many large urban areas experience net domestic out-migration, though most continue to grow slowly due to net natural increase and immigration.

The northern portion of the megapolitan area (Maricopa County and the bordering portion of Pinal County) already is showing signs of growing disamenities. Air pollution and traffic congestion, despite a substantial freeway-building program, are among the obvious disadvantages of the area's increased size. The experts interviewed believe that traffic congestion and long commutes could reduce the growth of the megapolitan area.

As already demonstrated by the traffic woes in northern Pinal County, transportation will be a key issue in the rate of growth of the megapolitan area in coming years. Yet as demonstrated in the Phoenix area, even a freeway-building program can fail to keep up with demands caused by substantial population and business growth. However, the construction of roads and other infrastructure is expensive. The experts interviewed are concerned that an unwillingness and/or inability to pay for the needed infrastructure could result in slower growth in the future.

In addition to congestion, increased distances to travel, especially from work to home, are inevitable with increased urban size and are a major contributor to the slowing of growth in large urban areas. The distance issue is particularly relevant in the megapolitan area compared to most urban areas in the country because unbuildable land — Indian reservations and mountains — increases distances. The distance issue is complicated by the weak public transportation system in the megapolitan area and the possibility of increased transportation costs (mostly due to higher gasoline prices). Should fuel costs rise further, large urban areas, particularly those without a strong public transportation system, likely will be disproportionately affected.

Related to the transportation issue is the location within the megapolitan area of future employment growth. Historically, most of the employment in the Phoenix area was located in several employment centers that stretched from central Phoenix to central Tempe and central

Scottsdale. Currently, employment centers are diversifying, particularly in north Scottsdale and Mesa. Still, many people face long commutes to their jobs in these employment centers. Of particular importance to the future growth prospects of the megapolitan area will be the development of employment centers outside the cores of the Phoenix and Tucson areas, including the development of employment centers in Pinal County, or at least close to Pinal County (for example, at the old Williams Air Force Base).

Thus, growing urban disamenities are inevitable in the megapolitan area. However, it is under the control of the community to largely mitigate these disamenities, for example by strong planning, aggressively building infrastructure, putting pollution controls in place, etc. In the lack of strong-enough action, growing disamenities will be a major factor in support of the low scenario. In contrast, actions that largely mitigate the growing disamenities likely will result in little effect on population growth, as in the middle scenario.

**Resource Limitations.** Despite large expanses of unbuildable land, substantial developable land remains in the megapolitan area. A shortage of private land, per se, is not likely to be a limiting factor to growth in the foreseeable future. The experts interviewed do not see land availability as being a limiting factor in the megapolitan area's growth through 2040. Thus, land availability in itself is unlikely to be a factor before 2040 in the choice of projection scenario. However, should transportation costs increase and employment centers not be dispersed, then the distance to available land could play a role in conjunction with these other factors in slowing growth.

Another factor disproportionately affecting the megapolitan area relative to most of the nation's urban areas is water availability, due to the arid climate. As part of the Superstition Vistas project conducted by ASU's Morrison Institute, water availability in the megapolitan area was assessed. It was determined that the currently secured water supply is adequate *on average* to serve 8.5 million residents in the three-county area. It is highly likely that a supply will be developed to serve 10.2 million, and a likely available supply would serve 12.2 million.

Using DES projections, the megapolitan area would reach 8.5 million in 2030 and 10.2 million in 2045. The 12.2 million figure would not be reached until after 2055, perhaps around 2070. Using these projections, water is unlikely to be a limiting factor to megapolitan growth before the 2040 forecast horizon of this project. However, in the higher projections, such as those issued by the U of A, 8.5 million residents will be reached in 2025 and 10.2 million by 2032. Extending the U of A projections suggests that the 12.2 million figure will be reached in 2040.

The experts interviewed are divided on whether water will become a limiting factor on the area's growth by 2040. The differences in opinion likely reflect in part differing expectations of the future rate of growth.

Several additional factors complicate the analysis of water availability. One is that the projected supply is based on average conditions. Should an extended drought occur in the future when there are substantially more residents than today, serious temporary water supply problems could develop before the indicated years. The rate of retirement of farmland (either conversion into urban uses or laying fallow) also will have an impact. Conservation measures also could allow more people to live in the megapolitan area. However, if the conservation is achieved through either cost increases or limits on water use, the area might become less popular, slowing its growth rate.

Further, if water becomes an issue, it likely will have an effect on growth some years before the supply is fully allocated. Increased charges for water use and increased conservation efforts are likely to begin well in advance of a pending shortfall of water.

In summary, on average the water supply appears adequate to support growth through 2040 in the low and middle scenarios. However, in the high scenario, water could be a constraining factor before 2040.

**Climate Change.** A change in the climate of the megapolitan area could result from any of three conditions: (1) continued and expanded heat island effect, (2) natural fluctuations in temperatures and rainfall, and (3) global warming, which also could affect rainfall.

The heat island is entirely human caused and already has increased nighttime temperatures several degrees in the core of the Phoenix area. With the growth of the megapolitan area, daily low temperatures are likely to rise more extensively geographically, and perhaps to a greater extent in areas already affected. Daily high temperatures hardly are affected by this condition. Given the apparently limited reaction to the heat island effect in location decisions up to the current time, it seems unlikely that this factor alone will have much impact on the area's growth, at least in the next 30 or so years.

The natural short-term cyclicity of temperatures and rainfall also is unlikely to have much of an effect by itself. Whether human caused or part of a long-term natural climatic change, global warming is not expected to have enough of an impact in the next few decades to affect the growth of the megapolitan area. Global warming is most prevalent in the high latitudes; the megapolitan area's relatively low latitude suggests that effects are likely to be minimal, at least in the next few decades.

Thus, the chance of climate change being great enough before 2040 to affect the area's growth is small. However, given the high summer temperatures in the megapolitan area, increases in temperatures eventually could be a deterrent to growth, simply due to discomfort. The effect would be magnified if the higher temperatures are accompanied by less rainfall and higher energy costs. The experts interviewed believe that global warming — *if* it results in higher temperatures and drier conditions — will have a negative effect on migration to the megapolitan area.

Similarly, a combination of factors could cause an effect in the shorter term. A natural drought cycle accompanied by higher-than-normal temperatures could not only bring discomfort, but could result in temporary water shortages. Water shortages likely would be accompanied by mandatory lifestyle changes, and may be accompanied by higher water prices. Higher energy bills, even if not accompanied by an increase in rates, could affect the economics of living in the megapolitan area.

In summary, climate change is unlikely to affect the growth of the megapolitan area before 2040. However, it has the potential to slow growth under an adverse combination of conditions.