

THE ECONOMIES OF ARIZONA COMMUNITIES

July 2007

Center for Competitiveness and Prosperity Research
L. William Seidman Research Institute
W. P. Carey School of Business
Arizona State University
Box 874011
Tempe, Arizona 85287-4011

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



PREFACE

As part of the Arizona Statewide Economic Study, economic analyses of the state and each of its 15 counties were completed in 2002. Due to the severely limited availability of subcounty economic data by industrial sector, economic analyses were not attempted for cities or other local areas. In 2004, however, the Arizona Department of Commerce contracted with the Center for Business Research (now the Center for Competitiveness and Prosperity Research), L. William Seidman Research Institute, W. P. Carey School of Business, Arizona State University to produce economic analyses for incorporated and unincorporated areas across the state. In 2007, the Arizona Department of Commerce again contracted with the Center for Competitiveness and Prosperity Research to produce updated economic analyses by community.

Economic base studies — see Chapter I for a description — for each of the state’s 11 economic regions, 83 incorporated cities and towns (hereafter referred to simply as cities), and 37 unincorporated areas are included in this report. (The state has 90 incorporated places, but some adjacent cities had to be combined due to data limitations.) Wage and salary employment by industry is the focus of the analyses, though some information also is presented on the number of business establishments and average payroll per employee.

This report includes data for 2004 (the latest available) and data for 2001, which was reported in the first “The Economies of Arizona Communities” report produced in 2004. (Some of the 2001 data have been modified to be consistent with that of 2004, so this report supersedes that produced in 2004.) This report also examines the economic changes that occurred between 2001 and 2004.

The purpose of this project is to identify leading economic activities and provide useful information for decision-making at the local level. Comparing the sectoral distribution of employment in a local area to state or national averages helps determine how different or similar a local economy is to the norm, giving some insight into how dependent an area is on certain economic sectors for employment or income. When the economic forces that mold a local economy are understood, strategic decisions for an area's economic future can begin to be made.

COMMUNITIES INCLUDED IN REPORT
(See specific region for report)

Chapter

I. Introduction

Economic Base Study
Data Sources and Methodology

II. State Summary

Economic Regions
Incorporated Cities and Towns
Unincorporated Areas

III. Canyon Region

Colorado City
Fredonia
Page

Unincorporated Area:

Littlefield-Marble Canyon-North Rim Area

IV. Central Region

Apache Junction
Avondale
Buckeye
Carefree and Cave Creek
Casa Grande
Chandler
Coolidge
El Mirage
Eloy
Florence
Fountain Hills
Gila Bend
Gilbert
Glendale
Goodyear and Litchfield Park
Maricopa
Mesa
Paradise Valley
Peoria
Phoenix
Queen Creek
Scottsdale
Surprise
Tempe and Guadalupe
Tolleson
Wickenburg
Youngtown

Unincorporated Areas:

Aguila-Rio Verde-Tonopah Area
Arizona City-Picacho-Stanfield Area
Fort McDowell and Salt River Reservations
Gila River Reservation
Sun City Area
Sun City West Area

V. Mining Region

Clifton
Duncan
Globe
Hayden
Kearny
Mammoth
Miami
Pima
Safford
Superior
Thatcher
Winkelman

Unincorporated Areas:

Oracle-San Manuel Area
San Carlos Apache Reservation

VI. Mountain Region

Flagstaff
Williams
Winslow

Unincorporated Area:

Grand Canyon-Munds Park-Parks Area

VII. Navajo/Hopi Region

Unincorporated Areas:

Balance of Navajo Nation in Apache County
Balance of Navajo Nation in Navajo County
Chinle Area
Fort Defiance-St. Michaels-Window Rock Area
Hopi Reservation
Kayenta Area
Navajo Nation in Coconino County

VIII. North River Region

Bullhead City
Kingman
Lake Havasu City
Parker
Quartzsite

Unincorporated Areas:

Bouse-Ehrenberg-Salome Area
Dolan Springs-Golden Valley-Peach Springs Area

- Fort Mojave-Mohave Valley Area
- IX. **Plateau Region**
 - Eager and Springerville
 - Holbrook
 - Payson and Star Valley
 - Pinetop-Lakeside
 - St. Johns
 - Show Low
 - Snowflake
 - Taylor
 - Unincorporated Areas:
 - Alpine-Concho-Greer Area
 - Clay Springs-Heber-Joseph City Area
 - Pine-Tonto Basin-Young Area
 - White Mountain Apache Reservation
- X. **South River Region**
 - San Luis and Somerton
 - Wellton
 - Yuma
 - Unincorporated Area:
 - Dateland-Gadsden-Tacna Area
- XI. **Southeast Region**
 - Benson
 - Bisbee
 - Douglas
 - Huachuca City
 - Nogales
 - Patagonia
 - Sierra Vista
 - Tombstone
 - Willcox
 - Unincorporated Areas:
 - Amado-Sonoita-Tubac Area
 - Elfrida-Pearce-San Simon Area
 - Rio Rico Area
- XII. **Southern Region**
 - Marana
 - Oro Valley
 - Sahuarita
 - Tucson and South Tucson
 - Unincorporated Areas:
 - Ajo-Lukeville Area
 - Arivaca-Sasabe-Three Points Area
 - Catalina-Mount Lemmon Area
 - Green Valley Area
 - Tohono O'odham Reservation

XIII. Yavapai Region

Camp Verde
Chino Valley
Clarkdale
Cottonwood
Dewey-Humboldt
Jerome
Prescott
Prescott Valley
Sedona

Unincorporated Areas:

Ash Fork-Paulden-Seligman Area
Bagdad-Congress-Yarnell Area
Black Canyon City-Mayer Area
Cornville-Lake Montezuma-Rimrock Area

CHAPTER I: INTRODUCTION

ECONOMIC BASE STUDY

An economic base study is a description of an economy's structure and composition. 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. Leading economic activities are identified in the economic base study, which compares economic activity in the local area to that in broader areas: Arizona and the nation. Economic activity in this report is measured by wage and salary employment. Proprietors (those self employed) are not included.

Because of the vast differences in size between a local area, Arizona and the United States, employment is divided by population for each area. This "**per capita employment**" is expressed as employment per 1,000 residents.

To create a comparative measure, per capita employment in the local area is divided by the national average per capita employment. The result is called a "**location quotient**" — a figure greater than 1 indicates that per capita employment in the local area is greater than the national average. For example, a location quotient of 1.32 indicates that per capita employment in the local area is 32 percent *higher* than the national average, while a location quotient of 0.68 shows that per capita employment is 32 percent *less* than the national average. The location quotient calculated relative to the Arizona average typically is similar to the location quotient calculated against the national average, but in some industries it can be considerably different.

When a location quotient is greater than 1, "extra" jobs are present in the local area. This "**excess employment**" is the difference between actual employment and the employment that would exist if employment per capita had equaled the national average. Excess employment is of particular significance in industries that sell their goods and services to companies located outside the city or to individuals who are not residents of the city (nonresidents include tourists and seasonal residents).

"**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.

In contrast, some economic activities 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. While important components of a local economy, such largely nonbasic activities do not directly bring much money into the community and thus do not drive the local economy.

Excess employment can exist in local-support activities. In some cases, the excess results from local purchasing preferences. For example, per capita sales of air conditioning units are above the national average in much of Arizona because of climatic conditions. In other cases, excess employment exists because some communities function as regional trade and service centers. While sales to residents of neighboring communities might be considered to be basic in a particular community, such sales are not basic in the broader area and are not considered to be a driving economic activity in the same way as mining, for example.

Many economic activities, such as wholesale trade and transportation, are a mixture of basic and nonbasic components. If a community has a substantial number of tourists and/or seasonal residents, even retail trade and such services as health care have a basic component. A portion of the construction industry is basic if purchases are made by companies that sell to an external market and/or by individuals migrating to the area to take a job at a basic employer or to retire. Some federal government activities and certain other government activities can be considered to be basic in a community, but most state and local government employment supports the local community primarily with funds raised locally and thus do not qualify as basic activities.

Three special populations are identified in this report:

- (1) Tourists. Spending by tourists has a basic effect on an economy. These expenditures occur across a large number of industries and sectors, most of which also serve local residents. An estimate by community of the number of tourists does not exist. In this report, per capita employment in the accommodation subsector in 2004 is used as a proxy. However, this measure misses the effect of day tourists.
- (2) Seasonal residents. Those living in a community during only a portion of the year are not included in the population of the community. Thus, the effect of seasonal residents is the same as that of tourists. The number of seasonal residents is measured by the proportion of housing units counted in the 2000 census that were held for seasonal use.
- (3) In-migrating retirees. Those moving into a community at retirement age have a basic impact on a community. Their spending derives from income earned elsewhere and thus represents an infusion of money into a community similar to that of tourists and seasonal residents. Like tourists and seasonal residents, the spending of this group occurs across much of the economy and cannot be separated from that of other residents.

DATA SOURCES AND METHODOLOGY

Total employment is the sum of nonagriculture private-sector employment reported by the U.S. Census Bureau, an estimate of agriculture employment, and an estimate of government employment. Data for 2004 are the latest available by community. These are compared to like data for 2001. (Some of the methodology and data sources used in 2004 in producing the first “The Economies of Arizona Communities” report have changed. Thus, the 2001 data used in this report, rather than that prepared in 2004, should be used as a comparison to the latest data.)

Nonfarm Private Sector

National and state economic data were obtained from the latest edition (2004 data released in 2006) of *County Business Patterns*, which is produced annually by the U.S. Department of Commerce’s Census Bureau. Data for subcounty areas came from a companion product of the Census Bureau, *Zip Business Patterns*; one or more zip codes were combined to approximate each incorporated place and unincorporated area. The Census Bureau uses administrative records to produce these datasets.

County Business Patterns and *Zip Business Patterns* use the hierarchical North American Industry Classification System (NAICS) to provide data by industrial category: broad sectors, subsectors, industry groups, and specific industries. Agricultural production employees, most government employees, railroad employees, self-employed individuals, and employees of private households are not included in either Census Bureau report.

The number of establishments (by employment size: 1 to 4, 5 to 9, 10 to 19, etc.), employment, and payroll are reported in *County Business Patterns* by industrial category. An establishment is a physical location at which business is conducted; a company may consist of one or more establishments. When only a small number of establishments are present in an industrial category (particularly if one establishment within the category is dominant), the Census Bureau withholds the employment and payroll data to protect company confidentiality. Undisclosed data are most frequent at the industry level, but in less populous areas even sectoral data may be withheld. Unlike *County Business Patterns*, employment and payroll data are released *only* for the zip code total in *Zip Business Patterns*.

For industrial categories for which data were not disclosed (including all categories at the zip code level), employment by sector, subsector, industry group, and industry had to be estimated. These estimates were made using the establishment by employment-size class data for each industrial category for each zip code and average employment per establishment by employment-size class by sector for the state. Zip code data were aggregated to the community level. The estimates by industrial category then were forced to add to the total employment of the community. In addition, industrial category estimates across all communities were forced to equal the state total for the industrial category. (The latter summation was approximate due to the number of iterations necessary.)

The data for 2001 came from the same sources and was processed similarly to that for 2004. However, users are cautioned not to place undue importance on the change over time. Some of the apparent change in an industry in a community may be due, for example, to the Census Bureau correcting information regarding the industry or zip code in which an establishment operates. The Census Bureau does not revise earlier data to reflect such a correction.

Agriculture

The agriculture sector has three components: agricultural production (farms and ranches); agricultural support, which consists of such activities as cotton ginning and crop harvesting; and forestry, fishing, hunting and trapping. Employment figures at the community or zip code levels are not available for any of these components of agriculture. *Zip Business Patterns* excludes agricultural production and includes only a portion of the agricultural support and forestry, fishing and hunting components.

Agriculture employment at the county level is available for 2004 from the U.S. Department of Commerce's Bureau of Economic Analysis (BEA). This source divides the agricultural employment into the categories of farm proprietors, farm workers, and agricultural support/other agricultural employment. Because of the federal government's disclosure restrictions, the figure for the latter category was not provided by the BEA in some counties and had to be estimated. Since *Zip Business Patterns* does not include proprietors in nonagricultural industries, proprietors were excluded from the agriculture sector. Thus, the agriculture employment figures used in this report consist of the sum of farmworkers and those employed in agricultural support and other activities, such as forestry.

The county totals of agriculture employment were allocated to cities and unincorporated areas within each county based on data available from the 2002 Census of Agriculture, produced by the U.S. Department of Agriculture. (Economic censuses are produced every five years.) The number of farms and ranches by zip code, as well as a frequency distribution of the number by value of agricultural products sold (less than \$50,000; \$50,000 to 249,999; and at least \$250,000)

is available from the census, though some of the zip code data were withheld due to the federal disclosure restrictions.

Various other data from the census also were examined, including the number of farmworkers in the state in each of two categories: those working less than 150 days during the year (about 60 percent of the total number of work days) and those working at least 150 days. Excluding those working less than 150 days, the number of farmworkers counted in the census still exceeded the number reported by the BEA for 2002. Thus, some of those working at least 150 days were part-year workers who were not included in the BEA figures.

The census also presents a table for the state on the number of farms with farmworkers employed at least 150 days and the number of workers per farm. This table was compared to a table of agriculture sales by amount. This comparison suggests that farms with sales of less than \$50,000 do not employ workers except on an occasional basis and those farms with sales of between \$50,000 and \$250,000 employed on average only one worker. Using this information and the zip code data on number of farms and volume of sales, farmworker employment by zip code was estimated. These estimates by zip code were tallied to the county level and controlled to the BEA county totals. The controlled zip code figures then were aggregated to the community level.

The BEA estimates of county employment in agricultural support/other agricultural activities were allocated to cities and unincorporated areas based on the total number of farms with sales of at least \$50,000. If the agricultural support employment reported in *Zip Business Patterns* exceeded this estimate, the estimate was adjusted to match the *Zip Business Patterns* total. By community, the estimate of employment in agricultural support/other agricultural activities was added to the estimated number of farmworkers to reach an estimate of total agriculture employment.

Data for 2001 were estimated in the same way as that for 2004, except that the estimates were controlled to 2001 BEA estimates. Thus, the 2002 census data were used in the allocation of both the 2001 and 2004 estimates. (In the original study done in 2004, the 2002 census data were not yet available, so the 1997 census was used. Thus, the estimates made at that time have been superseded.)

Government

In many Arizona communities, government employs more than any of the other 19 economic sectors defined in the NAICS. Thus, for this report, it was deemed important to supplement the *Zip Business Patterns* data with an estimate of government employment. Public-sector employment is found at a number of types of government organizations. For this report, the government sector is divided into 10 types: federal civilian, military, state universities, other state, county, municipal, tribal, community college, school district, and special district (such as an irrigation or fire district).

Few government employment figures are available at the community or zip code level. Even at the county and state level, the detail generally is limited to federal government, state government, and local government (a combination of the last six types of government in the above list). The 2002 Census of Governments provides employment for several levels of government, but does not allocate that employment by community if the government entity crosses jurisdictional boundaries. For example, it provides no indication of federal government employment in Arizona and provides only the overall state government figure (which includes public universities). County government employment is reported by county, but not by

community. The census also reports municipal, school district (including community colleges) and special district employment, but does not address tribal government.

Because of the limitations of the census data, it was of little value in estimating government employment by community. A variety of methods were used to estimate government employment by community, most of which included primary data collection. Since these data were collected in 2007, but need to be expressed as of 2004 in order to be consistent with the *Zip Business Patterns* data, these estimates were controlled to 2004 county and/or state totals provided by the BEA of federal civilian, military, state, and local government employment. (Data collected in the initial study in 2003-04 were controlled to 2001 state and county figures.)

Federal civilian government employment was estimated by (1) attempting to identify all federal offices in the state and (2) calling each of these offices to determine their employment. Some federal government offices (particularly Homeland Security and the Postal Service) refused to provide such information; a rough estimate was made in such cases. An inability to identify all federal offices also limits the accuracy of these estimates. In some counties, the employment figure derived from this technique was less than the BEA control total as expected, but in other cases exceeded the BEA figure.

In the initial community economic base studies project, military employment figures at each of the major facilities were obtained from the May 2002 report "Economic Impact of Arizona's Principal Military Operations," prepared by the Maguire Company. Smaller military facilities were contacted directly. An update of that report, underway in Spring 2007, was used to update the military figures (controlled to the 2004 military state total reported by the BEA).

Arizona state government was able to provide employment figures by city in 2007. These figures were controlled to the BEA's 2004 state government totals by county. Such detail was not available in the initial study in 2004. At that time, state government offices were contacted across the state to obtain employment, but in most counties it was not possible to identify all of the employment reported by the BEA. In these counties, each community's estimate was increased so that the sum of state government employment by community equaled the county total.

The three state universities reported employment by location. These figures include student workers, since this group is included in the BEA numbers.

While most county government employment is located within the boundaries of the county seat, county offices commonly are found in other communities as well. Several county governments in Arizona provided employment by location. In the other counties, county offices outside the county seat were individually contacted to obtain employment. In these counties, employment in the county seat was calculated as the difference between the county total and the number tallied in other locations. This process probably understates county government employment outside the county seat and overstates it at the seat.

Municipal government data were the least problematic to collect, since all locations of work are within the same community. For most tribes, the situation is similar in that all employment is in one community. (The Navajo Nation is an important exception.) The challenge with tribes is to separate casino employment, most of which is captured in *Zip Business Patterns*, from other tribal administration.

Most of the community colleges have multiple campuses in different cities. Data on employment at each campus was collected either from the community college district office or from the individual campuses, and used to allocate the overall community college employment by community.

A secondary source was used for school district employment. The Arizona Department of Education (ADE) annually reports employment by district, but these figures are expressed as full-time-equivalent employees. In order to be consistent with the other employment figures, the FTE numbers were adjusted to total number of employees using the relationship reported in the Census of Governments. If a school district extends across city boundaries (common in the metropolitan areas), ADE employment data by individual school were used to allocate the overall school district employment by city.

A list of special districts was included in the 2002 census. These districts were contacted to obtain their employment.

Significant inconsistencies often were seen between the 2002 census data (where available), the figures collected in 2004, and the figures collected in 2007 for a given government organization. It was not always possible to rectify the inconsistencies. Some of the differences in the employment figures result from differing interpretations of whether to include temporary or seasonal workers, but some of the inconsistency is caused by misreporting by the source.

Government employment figures for the nation comparable to those for Arizona are not available by type of government. Thus, the economic base study calculations are limited to the totals for the government sector.

Population

The Arizona Department of Economic Security (DES) produces annual estimates of the population of Arizona and each county. They also produce an estimate of each incorporated place in Arizona, as well as a figure for the unincorporated area in each county. Since these estimates align with city boundaries, while zip codes are used in this project to approximate city areas, the DES estimates cannot be used directly. The estimates for incorporated and unincorporated areas as defined in this report, however, were tied to the DES estimates.

The first step was to determine the 2000 census population of each incorporated place and unincorporated area based on the zip code-defined boundaries. For incorporated places, the difference between the census count for the place and the count by zip code represents the unincorporated area surrounding each incorporated place that is included in the zip code boundaries. In the second step, the census count for incorporated places was adjusted to reflect any annexations that occurred after the 2000 census (shifting population from the surrounding unincorporated area to the city). This formed the estimates base for the 2001 and 2004 estimates.

Third, the DES estimate of the percentage change in population of each county's unincorporated area was applied equally to all unincorporated portions of the county. This potentially introduces significant error into the estimates (for example, the population of Sun City is largely stable while the growth in other portions of unincorporated Maricopa County is quite significant). However, no other information is available to distribute this unincorporated population. Thus, unincorporated areas surrounding each incorporated place as well as the one or more unincorporated areas in each county identified for this project each was assigned the same rate of growth. Thus, the population of each incorporated place, as defined by zip codes, was the sum of the DES estimate for the city boundaries and the estimated population in the surrounding unincorporated area.

EXCEL Spreadsheets

Complete economic data for each region, city, and unincorporated area are available in an EXCEL file consisting of several spreadsheets. One sheet (labeled “2004, Establishments”) provides the number of establishments in 2004 by employment-size class for those sectors, subsectors, industry groups, and industries with at least one establishment in the local area. Government data are shown in addition to the nonfarm private-sector data from the Census Bureau. Estimated employment also is included.

A second spreadsheet (“2004, Economic Base”) compares 2004 employment in the local area to that in Arizona and the nation. All sectors, subsectors, industry groups, and industries are included. For the United States, Arizona, and the local area, per capita employment (expressed as employment per 1,000 residents) is calculated for each industrial category. The per capita figures for the local area (and Arizona) are divided by the national average for each industrial category to create the location quotient. For industrial categories with location quotients greater than 1, excess employment in the local area (and Arizona) is calculated from employment and the location quotient. For the local area, the location quotient and excess employment by industrial category also is calculated relative to the Arizona average. Total employment is the sum of the estimates of agriculture and government employment and the Census Bureau’s figures for the nonagriculture private sector (the total nonfarm private-sector total minus the agricultural support category).

These two spreadsheets are repeated with 2001 data. Changes between 2001 and 2004 are included in a fifth spreadsheet.