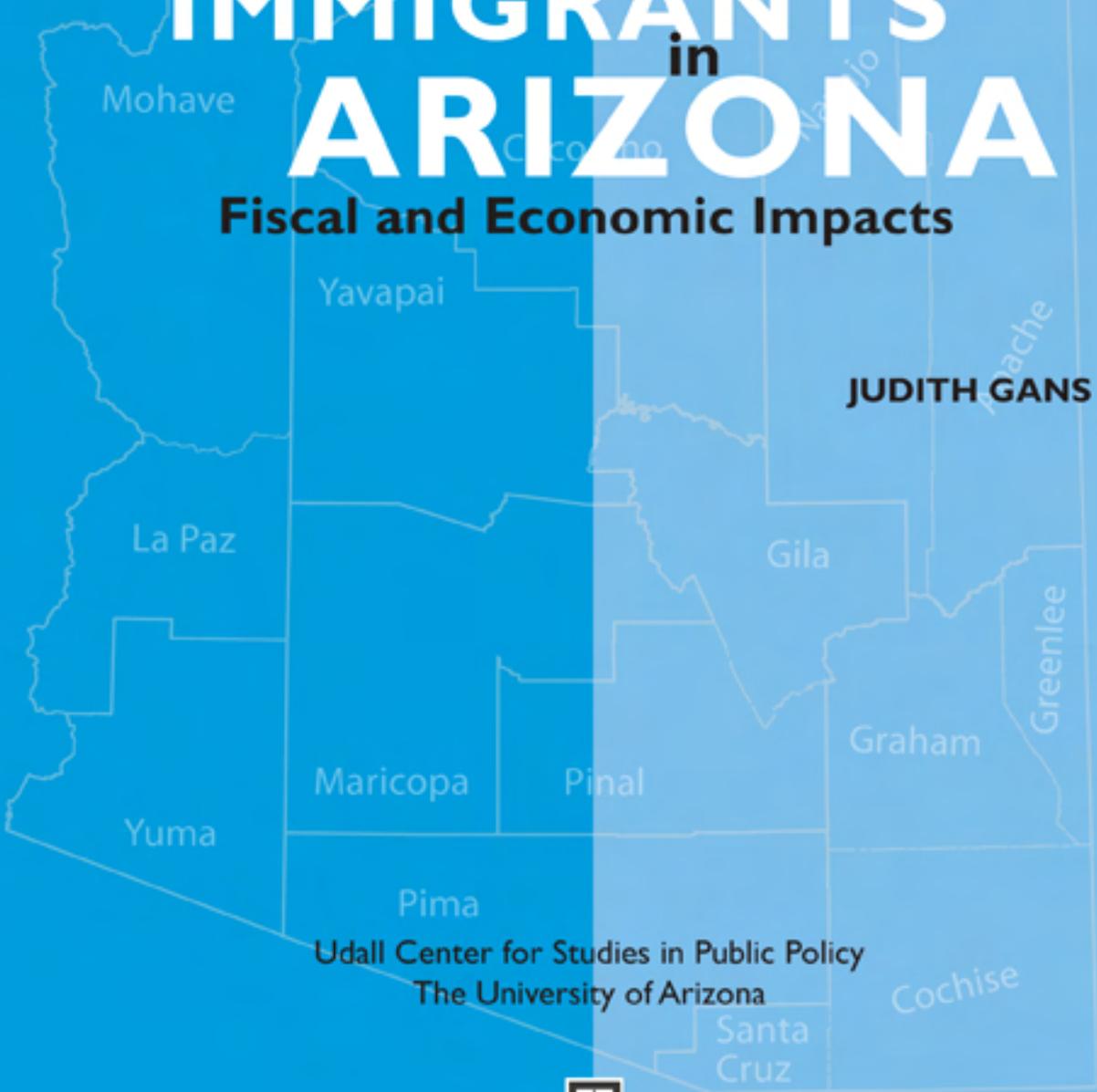




IMMIGRANTS in ARIZONA

Fiscal and Economic Impacts

JUDITH GANS



Udall Center for Studies in Public Policy
The University of Arizona



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About the Author

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by Judith Gans

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Arizona's 362-mile border with Mexico is integral to its history. The border shapes immigration's impacts in the state and the ways Arizona grapples with the myriad elements of immigration debates: numbers and types of immigrants, the extent of illegal immigration, and the impacts of immigrants on the state's fiscal and economic health. This study is intended to provide data and analysis that deepens our understanding of the economic consequences of immigrants (from all nations) in Arizona. To this end, we analyze the role immigrants play as consumers and as workers, and examine their major incremental fiscal impacts on the state's budget. For reasons of data availability, this analysis was done for calendar year 2004.

A few definitions of terms are in order. We use the terms *immigrant* and *foreign born* interchangeably. These terms, in turn, divide into two sub-categories: *naturalized citizens* and *non-citizens*. As in the U.S. Census, immigrants or foreign born are defined as the sum of naturalized citizens plus non-citizens.

Arizona's foreign-born population has grown dramatically since 1990 when there were about 268,700 foreign-born persons in the state. By 2004, that population had grown to 830,900. This is more than a 200 percent increase. The vast majority of these new immigrants are in the non-citizen category, which went from 163,300 to about 619,800, an increase of almost 280 percent. Most immigrants are of working age and have come to the United States seeking employment. This fact is central to their impacts in Arizona.

The likelihood that many of Arizona's non-citizens are undocumented immigrants has fueled anger over lawlessness and made discussion of immigration in Arizona politically contentious. But Arizona's experience is a specific case of a national problem, one that exists because large economic incentives in today's global economy are overwhelming the U.S. immigration system—a system that is widely understood to be in need of reform. Public discourse that equates *immigration* and *illegal immigration* is narrowly focused and risks overlooking broader dimensions of the role of immigrants in the economy.

It is not the purpose of this study to address the myriad issues surrounding illegal immigration or to imply in any way that illegal immigration is not a problem. Rather, the objective of this study is to suspend, for the moment, discussion of this narrow topic and focus instead on a broader examination of all immigrants' impacts on Arizona's economic and fiscal health. By so doing, we hope to create a more thorough understanding of the economic costs and benefits of immigration and of the tradeoffs involved in setting and enforcing immigration policy.

In Brief

Arizona's proximity to Mexico, the growth of its immigrant population, and the proportion of immigrants that are in the United States illegally have made immigration a contentious issue. This study is intended to step back from debates over illegal immigration and deepen our understanding of the costs and contributions of immigrants to Arizona's economy.

This report examines the costs and benefits of immigration in Arizona. It provides estimates the major incremental fiscal cost associated with immigrants—for education, health care, and law enforcement—and measures their contributions to Arizona’s economy both as consumers and as workers. The two categories of immigrants (naturalized citizens and non-citizens) are examined separately to disentangle the economic costs and benefits associated with each.

The bottom line

Based on this study, the total state tax revenue attributable to immigrant workers was an estimated \$2.4 billion (about \$860 million for naturalized citizens plus about \$1.5 billion for non-citizens). Balanced against incremental fiscal costs of \$1.4 billion for education, health care, and law enforcement, immigrants in Arizona generated a net 2004 fiscal contribution of about \$940 million toward services such as public safety, libraries, road maintenance, and other areas. Because the incremental costs incurred by immigrants in these areas are difficult to measure directly, they are not included in this report.

The 2004 total economic output attributable to immigrant workers was about \$44 billion (\$15 billion for naturalized citizens and \$29 billion for non-citizens). This output included \$20 billion in labor and other income and resulted in approximately 400,000 full-time-equivalent jobs.

Fiscal costs of immigration

Estimates of the incremental fiscal costs of immigration were derived from a variety of sources. In summary:

- o **Education:** For this analysis, English Language Learner (ELL) enrollment was used as a proxy for the number of immigrant children in Arizona’s public schools. The 2004 cost of ELL education in Arizona was about \$540 million of which about \$350 million (65 percent) was incurred in Maricopa County.
- o **Health care:** Total uncompensated care costs (reported as bad debt) for hospitals in Arizona was about \$420 million, of which an estimated \$150 million (32 percent) was incurred by immigrants. Of the \$150 million in uncompensated care costs associated with immigrants, nearly \$140 million was incurred by non-citizens.

The total cost in 2004 of Arizona Health Care Cost Containment System (AHCCCS), Arizona’s Medicaid program, was \$4.3 billion, of which an estimated \$640 million was incurred by immigrants. Of the \$640 million in AHCCCS costs associated with immigrants, about \$480 million was incurred by non-citizens.

- o **Law enforcement:** In the area of law enforcement, the cost to the Arizona Department of Corrections of incarcerating immigrants in 2004 was \$91 million, of which \$89 million was for non-citizens.

Immigrants as consumers

As consumers, immigrants bring considerable spending power to Arizona's economy. This spending contributes to Arizona's overall economic performance, and, in turn, generates tax revenues for the state.

- o **Jobs and income:** Consumer spending in 2004 by naturalized citizen households in Arizona was an estimated \$6.1 billion. Approximately 39,000 full-time-equivalent jobs can be attributed to this spending along with \$5.9 billion of output in the state's economy. This output included labor income of \$1.2 billion, and other income (defined as rents, royalties, dividends, and corporate profits) of \$900 million.

Consumer spending in 2004 by non-citizen households in Arizona was an estimated \$4.4 billion. Approximately 28,000 full-time-equivalent jobs can be attributed to this spending along with \$4.3 billion of output in the state's economy. This output included labor income of about \$930 million, and other income (defined as rents, royalties, dividends, and corporate profits) of \$560 million.

- o **Tax revenues:** Consumer spending in 2004 by Arizona's naturalized citizens generated tax revenues of approximately \$460 million, consisting of personal taxes of about \$49 million, sales taxes of about \$210 million, and business taxes of \$190 million.

Consumer spending in 2004 by Arizona's non-citizens generated tax revenues of approximately \$320 million, consisting of personal taxes of nearly \$36 million, sales taxes of \$150 million, and business taxes of about \$130 million.

Immigrants as workers

Immigrants in 2004 were 14 percent of Arizona's workforce, and were a larger proportion of low-skilled labor in agriculture, construction, manufacturing, and certain service industries. High-skilled immigrants were a large percent of the workers in specific areas of medicine and science.

In low-skilled occupations in Arizona:

- o **Agriculture:** Immigrants were 59 percent of the workforce in farming occupations and 22 percent of the workforce in food-preparation-and-serving occupations.
- o **Construction:** Immigrants were between 35 percent and 41 percent of the workforce in certain construction trades such as brick masons, flooring installers, and cement masons. They were 27 percent of the workforce in all construction trades.

- o **Manufacturing:** Immigrants were 35 percent of the workforce in food-related manufacturing, 46 percent of the workforce in textile-related manufacturing, and 22 percent of the workforce in metal-working manufacturing.
- o **Service industries:** Immigrants were 34 percent of the workforce in occupations providing services to buildings, 51 percent of the workforce in landscaping-services occupations, and 38 percent of the workforce in building-and-grounds maintenance. Immigrants were 26 percent of the workforce in traveler-accommodations occupations, 23 percent of the workforce in restaurant-and-food-serving occupations, and 33 percent of the workforce in private-household help.

In high-skilled occupations in Arizona:

- o **Medicine:** Immigrants were 38 percent of medical scientists and 19 percent of physicians and surgeons.
- o **Science:** Immigrants were 36 percent of astronomers and physicists, 16 percent of computer-hardware engineers, 18 percent of computer-software engineers, and 17 percent of electrical and electronics engineers. Immigrants were 15 percent of economists.

Economic contributions of immigrant labor

Approximately \$15 billion, or four percent, of the state's output can be attributed to naturalized citizen workers, resulting in about 120,000 full-time-equivalent jobs. This output included \$4.9 billion in labor income and \$1.9 billion of other income in the state. State tax revenues resulting from this economic activity were approximately \$860 million.

Non-citizens, for their part, contributed about \$29 billion, or eight percent of Arizona's economic output, resulting in about 280,000 full-time-equivalent jobs. Their output included \$10 billion in labor income, and \$3.3 billion in other property income. The state tax revenues resulting from this economic activity were approximately \$1.5 billion.

The role of immigrants as workers can be further understood by analyzing the potential consequences of this source of labor *not* being available. In other words, what would be the impacts if immigrant labor were removed from the economy?

To this end, this study used a series of computer simulations to examine the impacts of reduced immigrant labor on the industries that employ relatively large numbers of immigrants. The study focused on industries employing low-skilled, non-citizen workers because this is where recent growth in Arizona's immigrant population has occurred and because we know that significant numbers of these workers are in the country without authorization. Thus, the simulations are designed to estimate the economic consequences of eliminating this segment of the workforce.

- o **Agriculture:** A 15-percent, immigrant-workforce reduction in the agriculture sector would result in direct losses of 3,300 full-time-equivalent jobs, and losses of about \$600 million in output including lost labor income of about \$200 million, and lost other income of about \$110 million. The lost direct state tax revenue would be approximately \$25 million.
- o **Construction:** A 15-percent, immigrant-workforce reduction in the construction sector would result in direct losses of about 56,000 full-time-equivalent jobs, and about \$6.6 billion in output including lost labor income of about \$2.6 billion and some \$450 million in lost other income. The direct lost state tax revenue would be approximately \$270 million.
- o **Manufacturing:** A ten-percent reduction in immigrants in the manufacturing workforce would result in direct losses of about 12,000 full-time-equivalent jobs, and about \$3.8 billion in output including lost labor income of about \$740 million, and lost other income of nearly \$290 million. The lost direct state tax revenue would be approximately \$100 million.
- o **Service industries:** In the service sectors analyzed, a 16-percent reduction in the immigrant labor force would translate to direct losses of 54,000 full-time-equivalent jobs, and lost output of \$2.5 billion including reduced labor income of about \$900 million, and reductions in other income of about \$270 million. The lost direct state tax revenue would be nearly \$160 million.

Net fiscal impacts of immigrants

Total state tax revenue attributable to immigrant workers was estimated to be about \$2.4 billion (\$860 million for naturalized citizens plus \$1.5 billion for non-citizens). Balanced against estimated incremental fiscal costs of \$1.4 billion, immigrants in Arizona generated a net fiscal contribution of \$940 million toward services such as public safety, libraries, road maintenance, and other areas. Because the incremental costs incurred by immigrants in these areas are difficult to measure directly, they are not included in this report.

As 14 percent of the workforce, immigrants make significant contributions to Arizona's economy. There are also specific fiscal costs associated with immigrants. But, by virtue of their contributions as workers to Arizona's economic output, their overall contribution to the state's fiscal health is positive. Certainly, these impacts are changing over time, but looking at data for one year provides a snapshot of the extent and magnitude of the role of immigrants in Arizona's economy.

Note: We have estimated the incremental (marginal) costs of immigrants as individuals. If the immigrants were not present in Arizona, these costs would disappear. Immigrants' impacts on costs of social services, such as fire and public safety protection, are not estimated because it is extremely difficult to measure the incremental costs attributable specifically to immigrants for these services.

DEMOGRAPHIC CHARACTERISTICS

DEMOGRAPHIC CHARACTERISTICS

How large is Arizona's immigrant population? How rapidly is it growing?

Arizona's foreign-born population has grown significantly since 1990 when there were 268,700 immigrants in the state. By the year 2000, the number of immigrants had grown by 143 percent to 652,200 and by 2004 it had grown to 830,900 persons, an increase of over 200 percent from 1990. The largest increases occurred among non-citizens. During the same periods, Arizona's native-born population grew by 32 percent between 1990 and 2000 and another ten percent by 2004 to a total of 4,913,000. The result is that Arizona's total population in 2004 was 57 percent larger than it was in 1990. These data from the U.S. Census Bureau are reported in Table 1.

Table 1. Growth in Arizona's Population (thousands of persons)				
	1990	2000	Change 1990–2000 (%)	2004
Native-born U.S. citizens	3,396.6	4,478.4	32	4,913.0
Foreign-born persons	268.7	652.2	143	830.9
Naturalized citizens	105.4	194.9	85	211.1
Non-citizens	163.3	457.3	180	619.8
Total	3,665.3	5,130.6	40	5,743.9

Note:
Native-born and foreign-born shares of total population for 2004 are assumed to be the same as for 2005 as reported in the American Community Survey (see <http://www.census.gov/acs>).

Sources:
1990 and 2000 U.S. Census and 2005 American Community Survey

How much of Arizona's immigrant population is here illegally?

We do not know. The U.S. Census does not ascertain legal presence in the United States when conducting its surveys and so the non-citizen category includes both legal and illegal non-citizen immigrants. However, there are reasonable, statistically derived estimates. Research by Jeffrey Passel at the Pew Hispanic Center indicates that, in 2002, there were between 250,000 and 350,000 unauthorized immigrants in Arizona, most of whom came from Mexico, and that by 2005 their numbers had increased to as many as 500,000.¹

How does the age-profile of immigrants differ from that of native-born Arizonans?

In contrast to the native-born population, Arizona's immigrants are primarily of working

1. Passel, Jeffrey S., 2006, The Size and Characteristics of the Unauthorized Migrant Population in the U.S.: Estimates Based on the March 2005 Current Population Survey, Washington, DC: Pew Hispanic Center (see <http://pewhispanic.org/files/reports/61.pdf>).

age. Figure 1 illustrates numbers of native-born and foreign-born persons in five-year age groups and reveals large differences in the age structures of these populations in Arizona. It should be noted that children born in the United States to immigrant parents are native-born citizens and therefore counted as such. Of 1,365,000 native-born children ages 18 and under, 263,000 have at least one foreign-born parent. Tables A-1 and A-2 in the Appendix of this document provide additional, more detailed, data on the age structures of Arizona's native-born and foreign-born populations.

**FIGURE 1. AGE DISTRIBUTION OF ARIZONA'S 2000 POPULATION:
NUMBER OF PERSONS PER AGE GROUP**

Source: U.S. Census, 2004

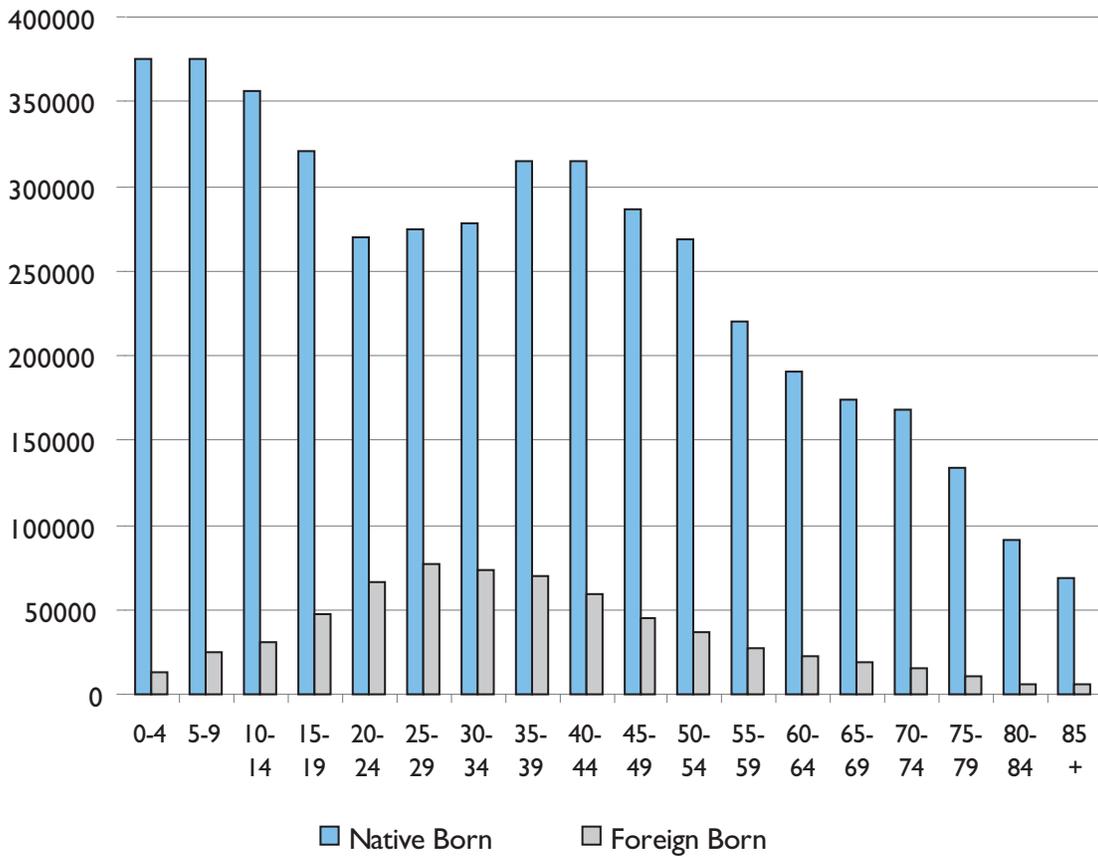
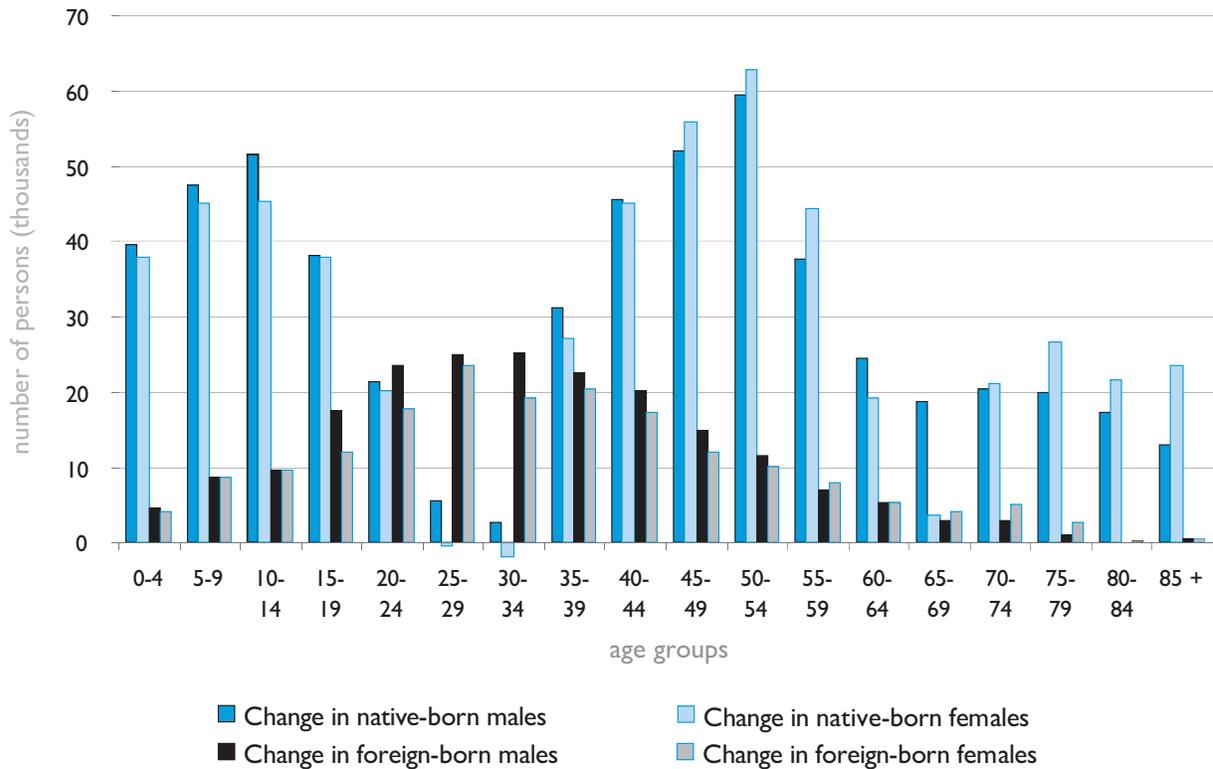


Figure 2 details the changes between 1990 and 2000 in these age groups by gender. The growth in Arizona's immigrant population has been concentrated among people of working age while the native-born population has seen greater growth among people less than 25 and more than 35 years old. The number of native-born women in Arizona between the ages of 25 and 34 actually declined during the period and the number of native-born men increased only slightly. This means that immigrants have been critical to the growth in Arizona's labor force, especially of workers between the ages of 20 and 35.

FIGURE 2. CHANGES (1990 TO 2000) IN THE NUMBER OF ARIZONA RESIDENTS BY AGE GROUP, GENDER, AND NATIVITY

Source: 1990 and 2000 U.S. Census



How does the educational attainment of immigrants compare to that of native-born Arizonans? Why does this matter?

Educational attainment is a commonly-used proxy for skill and is a demographic characteristic with significant implications in a number of areas. For our purposes, it provides an indication of the extent to which immigrants compete for employment with native-born workers, and is important in estimating the net fiscal impacts of immigrants. The extent of workforce competition between immigrants and native-born persons depends directly on how similar or different the skills of these two groups are.

When immigrants’ skills are very similar to native-born workers, the two groups are more likely to compete with each other in the workplace. This competition leads to lower wages and higher profits, causing a tendency toward increased investment in existing industries.

When immigrants’ skills are very different from those of native-born workers, the two groups are more likely to play complementary roles in the workplace. In this case, the types of production possibilities expand and wages of complementary workers tend to rise. Expanded production possibilities mean that investment in new industries tends to increase or existing industries that rely on immigrants’ skills tend to expand.

It should be noted that using education as a proxy for skill and as a measure of workplace competition is most valid in those occupations where knowing English is not important. New immigrants compete most directly in the workforce with other recent immigrants.

Immigrants differ, on average, from native-born Arizonans in their levels of education. Within the immigrant population, naturalized citizens also differ from non-citizens.

Table 2 shows educational attainment for Arizona adults 25 and older as of the 2000 Census. We see that relatively few native-born Arizonans are low-skilled—over 86 percent of native-born citizens have at least a high-school education. Among naturalized citizens, 63 percent are high-school graduates while only 41 percent of non-citizens have graduated high school. The percentages given in this table tell us how likely individuals within each citizenship category are to have a given level of education.

Table 2. Educational Attainment of Arizona Residents by Citizenship Status (thousands of persons)⁽¹⁾

Educational attainment	Native-born		Foreign-born		Naturalized citizens		Non-citizens	
	Number	%	Number	%	Number	%	Number	%
9th grade or less	124.0	4	150.1	32	38.0	22	112.1	38
Some high school	288.7	10	87.3	19	26.4	15	60.9	21
High-school graduate	715.7	26	85.4	18	36.0	21	49.4	17
Some college	981.1	35	78.0	17	41.3	24	36.7	12
College graduate	436.8	16	38.8	8	19.3	11	19.5	7
Master's degree	163.1	6	16.8	4	8.0	5	8.8	3
Professional degree	47.6	2	8.1	2	3.9	2	4.2	1
Ph.D.	24.5	1	4.9	1	2.1	1	2.8	1
Total:	2,781.5	100	469.4	100	175.0	100	294.4	100

Note:
 (1) includes only number of persons 25 years of age and older in each category
 Source:
 2000 U.S. Census

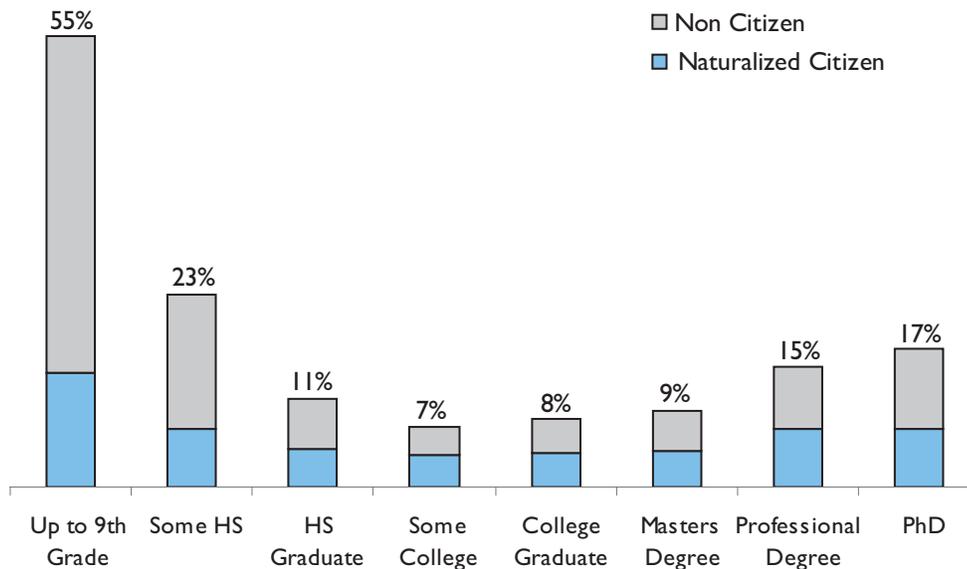
What proportion of those in each educational attainment category are immigrants?

Examining immigrants’ share of a given educational attainment category sheds further light on the role of immigrant and native-born workers in various skill segments of Arizona’s labor force. Figure 3 illustrates that over half (55 percent) of all Arizonans with less than a 9th grade education are foreign born. This is particularly striking in light of the fact that immigrants are only 12 percent of the overall population. Native-born citizens are the majority of all other education categories with the largest concentrations occurring among those with a master’s degree or less. Immigrant shares of those with professional degrees and Ph.D.s are higher than other categories beyond high school. These data indicate that low-skilled immigrants are likely to be working in jobs that most native-born workers, with their higher levels of education, are less well-suited for and that high-skilled immigrants are also filling specific niches in Arizona’s labor markets.

According to the U.S. Census, 38 percent of all medical scientists in Arizona are foreign born, as are 35 percent of astronomers and physicists, 17 percent of chemists and materials scientists, 17 percent of electrical and electronics engineers, and 16 percent of computer-hardware engineers. We see that immigrants are concentrated in the two ends of the skill-spectrum: those with less than a high-school education and (to a lesser extent) those with graduate degrees. This illustrates the economic incentives that fill gaps in the native-born labor force with immigrants.

FIGURE 3. IMMIGRANTS AS A PERCENT OF ARIZONANS IN EACH EDUCATIONAL ATTAINMENT CATEGORY

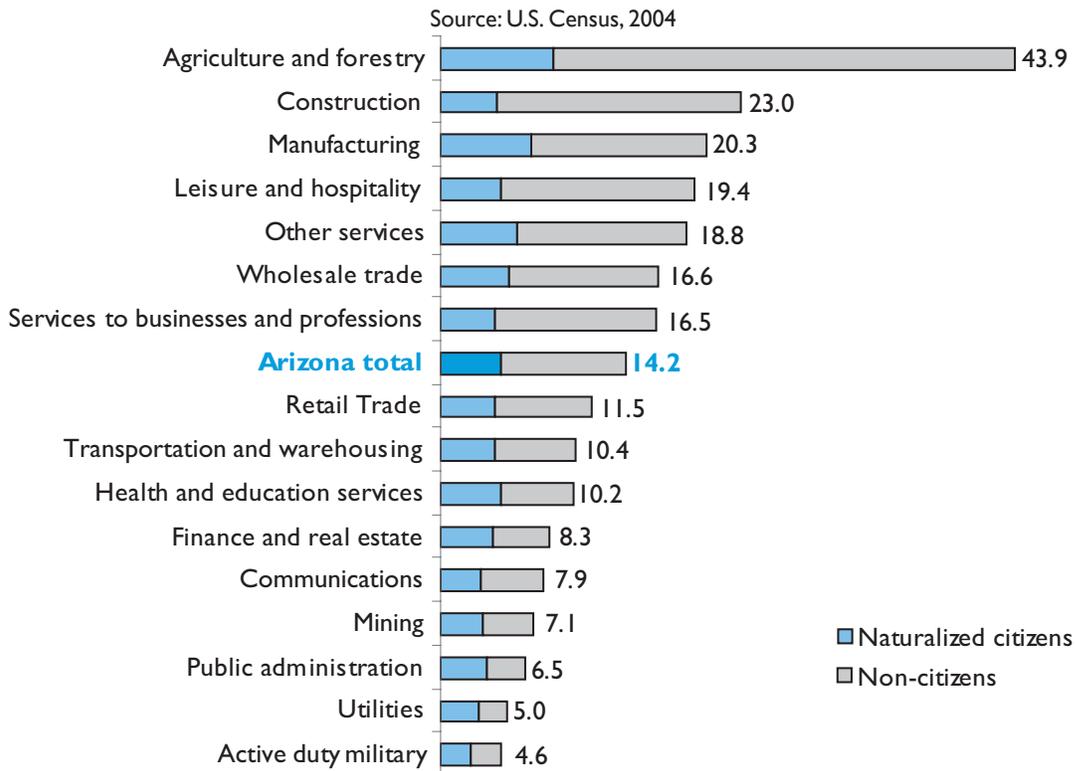
Source: U.S. Census, 2004



Where do Arizona’s immigrants work?

Immigrants as workers are 14 percent of Arizona’s labor force overall and are found in higher percentages in such sectors as agriculture, construction, and manufacturing (Figure 4). Some service industries, such as leisure and hospitality, are also particularly reliant on non-citizen labor.

FIGURE 4. IMMIGRANTS AS A PERCENT OF TOTAL WORKFORCE BY INDUSTRY GROUP IN ARIZONA



Why look at detailed information about immigrant employment and occupations?

Immigrants are important to specific sectors of the economy. Table 3 details their importance to manufacturing, services to buildings, landscaping services, and so forth. They are also vital to specific occupations within industries. This is important because any industry requires a range of skills in its workforce. In construction, for example, completing a building requires filling an array of occupations including construction managers, framers, electricians, brick masons, stone masons, dry-wallers, roofers, and so forth. If one or more of those occupations is heavily reliant on immigrant labor, then the entire enterprise, in a very real sense, also depends on immigrant labor. This is the essence of what is meant by “complementary skills.”

Table 3. Economic Sectors in Arizona with High Immigrant Employment
(immigrants as a percent of workers per sector)

Industries	Foreign-born	=	Naturalized citizens	+	Non-citizens
Manufacturing (by category):					
Food-related	35		10		25
Textile-related	46		15		31
Metal working	22		7		15
Services to buildings	34		6		28
Landscaping services	51		7		44
Traveler accommodations	26		7		19
Restaurant/food serving	23		5		18
Private household help	33		8		25
Occupations	Foreign-born	=	Naturalized citizens	+	Non-citizens
Construction trades (by category):					
Brick masons	35		5		30
Flooring installers	36		6		30
Cement masons	41		11		30
All construction trades	27		5		22
Farm occupations	59		11		48
Production occupations	28		8		20
Building and grounds maintenance	38		8		30
Food preparation and serving	22		5		17
High-skilled occupations (by category):					
Medical scientists	38		14		24
Physicians and surgeons	19		12		7
Astronomers and physicists	36		12		24
Computer hardware engineers	16		9		7
Electrical, electronic engineers	17		9		8
Computer software engineers	18		6		12
Economists	15		5		10
Source: 2000 U.S. Census					

Where are Arizona's immigrants from?

As of 2000, 68 percent of Arizona's 652,200 immigrants were from Mexico, and most were non-citizens (see Table 4). The other 32 percent were from a combination of Asia, Europe, and Central and South America. Europe and Asia are the next largest regions of origin for Arizona's foreign born with 11 percent of immigrants in Arizona from each of these regions. A much higher proportion of non-Mexican immigrants are naturalized citizens. Low naturalization rates among immigrants from Mexico result from a combination of factors including their relatively recent arrival to the United States (it takes time to become a naturalized citizen) and the likelihood that a significant number are unauthorized.

**Table 4. Arizona's Immigrants by Regions of Origin
(thousands of persons)**

Region of origin	Naturalized citizens		Non-citizens		Total foreign-born	
	Number	%	Number	%	Number	%
Mexico	93.3	14	349.1	54	442.4	68
Asia	35.2	5	36.3	6	71.5	11
Europe	40.9	6	29.9	5	70.8	11
Central and South America	12.0	2	20.9	3	32.9	5
Canada	9.7	2	14.3	2	24.0	4
Africa	2.9	<1	5.2	<1	8.1	1
Oceania and other	0.9	<1	1.6	<1	2.5	<1
Total foreign-born	194.9	30	457.3	70	652.2	100

Source:
2000 U.S. Census

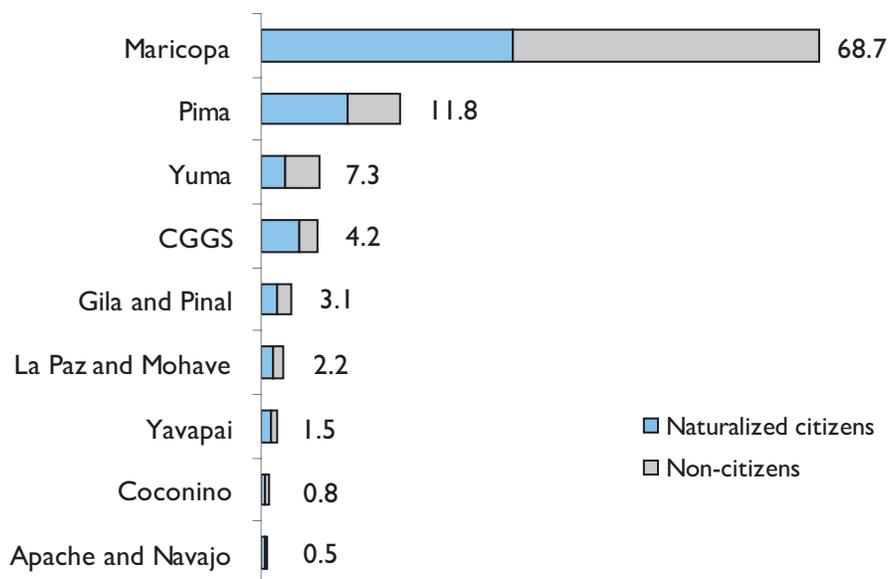
Where do immigrants in Arizona live?

More than two out of three immigrants in Arizona live in Maricopa County, with the second largest concentration, at 14 percent, in Pima County followed by Yuma County at 7 percent. This concentration reflects the high proportion of working-age immigrants in Arizona and the reality that a large share of Arizona's economic activity, especially in manufacturing, is centered in Maricopa County. This means that the economic benefits and costs of immigration—in fact all of the ramifications of integrating large numbers of newcomers to the fabric of society—occur disproportionately in Maricopa County.

Figure 5 illustrates the geographic distribution of immigrants in Arizona. These data are provided in more detail in Table A-3 of the Appendix.

FIGURE 5. ARIZONA'S IMMIGRANT POPULATION BY COUNTY OF RESIDENCE, 2000

percent
Source: U.S. Census, 2004



Note: "CGGS" refers to Cochise, Graham, Greenlee, and Santa Cruz Counties as grouped by the U.S. Census Bureau.

In Brief

Arizona's foreign-born population grew by over 200 percent between 1990 and 2004 to a total of 830,900 persons, with an estimated 450,000 to 500,000 of them unauthorized. Arizona's foreign-born are primarily of working age. Between 1990 and 2000, 52 percent of the increases in 20-to-45-year-olds were immigrants. Immigrants fill specific gaps in the labor force. They comprise 55 percent of those lacking a high school education, making them an important source of low-skilled workers. These workers are concentrated in construction, agriculture, manufacturing, leisure, and service industries. Immigrants are 15 percent of those with professional degrees and 17 percent of those with Ph.D.s in Arizona, and vital workers in some high-skill sectors. Sixty-nine percent of Arizona's foreign born are from Mexico and most live in Maricopa County.

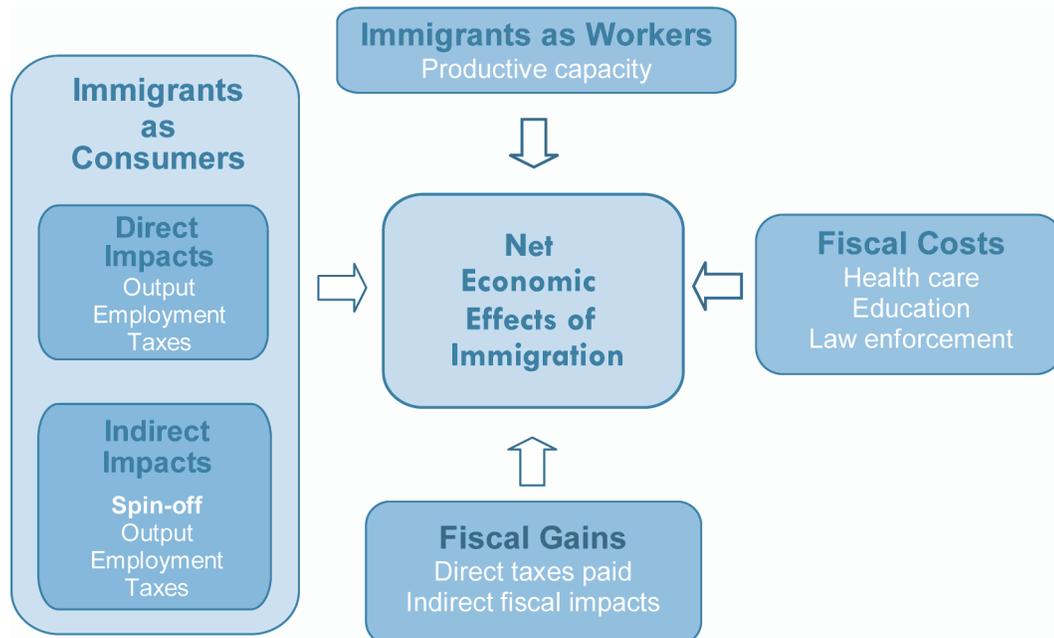
FRAMEWORK FOR ANALYSIS

This report examines the fiscal costs resulting from immigration along with immigrants' contributions to Arizona's economy. Fiscal costs result from providing public services such as education and health care to immigrants. Immigrants' contributions to Arizona's economy result from their roles as consumers and as workers. Examining the role of immigrants in Arizona's economy requires analyzing four areas:

- o What are the fiscal costs of immigrants in the areas of education, health care, and law enforcement? (see p. 27)
- o What are the consequences of immigrants' consumer spending on the economic output, job growth, and incomes of all Arizonans? (see p. 39)
- o What role do immigrant workers play as producers in Arizona's economy? (see p. 43)
- o What are the fiscal gains from immigrant spending and productive contributions to the economy? (see p. 57)

Figure 6 illustrates the approach we used to assess the economic and fiscal impacts of immigrants in Arizona.

FIGURE 6. FRAMEWORK FOR ANALYSIS OF THE ROLE OF IMMIGRANTS IN ARIZONA'S ECONOMY



Source:
American Community Survey of the U.S. Census Bureau and the Arizona Department of Health Service

How do we measure economic impact?

Input-output models, such as IMPLAN® (see p. 40), are designed to analyze the economic and fiscal consequences of specific events for a region's economy. We examined two 'events' with regard to immigrants in Arizona: (1) the economic stimulus resulting from immigrant spending in the economy (immigrants as consumers); and (2) the productive capacity and consequent output of immigrants in the workforce (immigrants as workers). By looking structurally at these two aspects of immigrants' roles in the economy we can disentangle the various economic benefits and costs of immigrants in Arizona.

Are naturalized citizens different from non-citizens? How and why is this important?

For a number of reasons, we distinguish between naturalized citizens and non-citizens in our analysis. Naturalized citizens, by and large, came to the United States through legal channels that favor people with high skills. Naturalized citizens, on average, have been in the country long enough to learn English and achieve the degree of social and economic integration required for naturalization. This means that naturalized citizens are generally older and better educated than non-citizens and their demographic and education profiles more closely resemble those of native-born citizens than non-citizens. Average incomes of naturalized citizens are higher than those of non-citizens and, because household spending patterns differ by income level, their spending has a different type of impact than does that of non-citizens. (For example, lower-income households spend a higher proportion of their earnings on basic needs, such as food and shelter, than do high-income households.) Looking separately at naturalized citizens and non-citizens thus allows us to isolate significant differences between the two groups and their impacts on Arizona's economic and fiscal health.

How do immigrants' demographic characteristics shape their role in Arizona's economy?

Immigrants' numbers affect their share of the overall workforce which, in 2004, was 14 percent. A person's age, skill, and level of education have direct bearing on job qualifications, years of work experience, and, therefore, on incomes earned and taxes paid.

Where do unauthorized immigrants fit into this analysis?

Among non-citizens, the U.S. Census does not distinguish unauthorized immigrants. Arizona's non-citizen population grew dramatically between 1990 and 2000, and that growth has continued through mid-decade. The 2000 Census counted Arizona's non-citizen population at 457,300. According to the Census Bureau, by 2005, Arizona's foreign-born population had reached 843,300, and estimates by Jeffrey Passel indicate that as much as 58 percent (500,000) of this population was unauthorized. (See the demographics section earlier in this report.) This means that our analysis rests on a key assumption: the characteristics of non-citizens are not substantially different from those of unauthorized immigrants. The validity of this assumption is supported by the estimate that, as of the 2000 Census, between 45

and 50 percent of Arizona's non-citizen population was unauthorized and that, by 2005, as much as 66 percent of Arizona's non-citizen population was unauthorized.² Thus, in a real sense, the non-citizen data on incomes, educational attainment, and so forth mirrors the characteristics of people in the country illegally.

In Brief

To understand the role of immigrants in Arizona's economy, we (1) analyzed fiscal costs of immigrants in the areas of education, health care, and law enforcement; (2) examined the consequences of immigrant consumer spending on economic output, job growth, and incomes; (3) measured immigrant contributions as workers to economic output; and (4) estimated the fiscal gains resulting from that economic activity. This was accomplished using the IMPLAN® input-output model (see p. 40), which is a regional accounting system that quantifies the structural relationships among sectors of the economy. Foreign-born naturalized citizens and non-citizens were analyzed separately because of their differing demographic characteristics.

We turn now to a discussion of each of the four areas in our framework.

2. See Passell, 2006, op cit.

We first examined the major categories of fiscal costs associated with immigrants in Arizona. We estimated the costs incurred by immigrant use of the education system, health care, and some aspects of law enforcement. In each of these areas, data availability determined the approach used to estimate these costs and some estimates are more precise than others. In each area examined, however, we are able to provide reasonable measures of the fiscal costs associated with immigrants.

We do not claim to have captured all fiscal costs associated with immigrants. The fiscal categories included are those attributable directly to immigrants as individuals. As such, an increase or decrease in the numbers of immigrants is directly correlated with increases or decreases in these costs. Public expenditures for items such as road maintenance, local law enforcement, and fire protection are fiscal costs of community infrastructure. While we know that immigrants do contribute to these costs, data do not exist to allow us to disentangle the extent to which they do. Further, it is unlikely that there is a one-to-one relationship between decreases in the number of immigrants and decreases in these costs.

EDUCATION

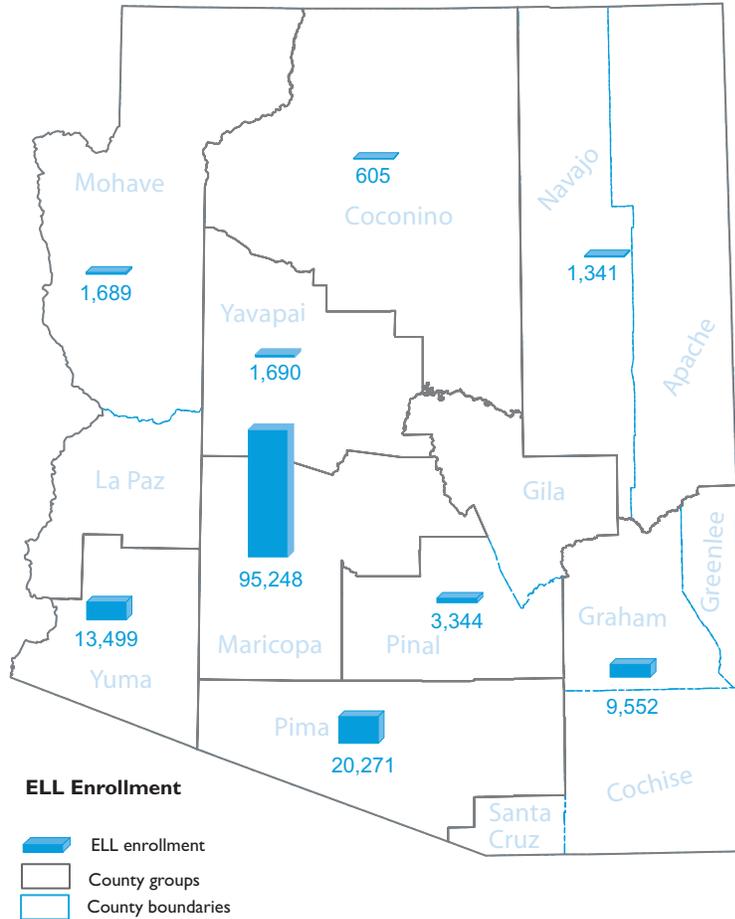
Data obtained from the Arizona Department of Education (ADE) provide an accurate accounting of 2004 funds, by district and by county, spent to educate immigrant children. These data were calculated by ADE staff using the funding formulas followed in actual allocations of funds to schools. English Language Learner (ELL) enrollment was used as a measure of the number of immigrant children in Arizona schools.

How was the number of immigrants in the public schools determined?

The total number of students classified as ELL in 2004 was about 160,700 (see Table 5). These children were either foreign-born or native-born children of immigrant parents living in non-English-speaking households. In light of fact that the total number of foreign-born persons between the ages of five and 19 in Arizona as of the 2000 Census was about 103,100, we consider English Language Learner (ELL) enrollment to be a reasonable proxy for the impacts immigrants in Arizona's public schools. It should be noted, however, that one adjustment was made to ELL numbers. Apache and Navajo Counties had a combined enrollment of almost nine percent of the ELL students in Arizona in 2004, yet as of the 2000 Census just 0.6 percent of the foreign-born population lived in these two counties. We assumed that 90 percent of the ELL students in these counties were Native American children, not immigrants. Similarly, 2004 ELL enrollment in Coconino County was three percent of ELL students in Arizona yet as of the 2000 Census just 0.9 percent of foreign born lived in Coconino County. We assumed that 85 percent of the ELL students in Coconino County in 2004 were Native American rather than immigrants (Map A.)

MAP A

ARIZONA IMMIGRANT STUDENT ENROLLMENT IN ENGLISH LANGUAGE LEARNER (ELL) PROGRAM, 2004
 number of students



Source: Arizona Department of Education. Enrollment numbers for Apache-Navajo and Coconino counties have been adjusted to factor out Native American student enrollment (See Note 4 in Table 5)

What were the costs of educating immigrant ELL students in 2004?

The cost of educating immigrant ELL students in 2004 was about \$544.1 million. The majority (65 percent) of these costs were incurred in Maricopa County. Pima County had the next highest ELL costs at 14 percent of the total. These costs are detailed in Table 5 and Figure 7.

Table 5. Public Education Costs of ELL Students in Arizona

County:	Base support⁽¹⁾	ELL enrollment	Weighted ELL count⁽²⁾	Total ELL costs⁽³⁾ (million dollars)
Apache and Navajo ⁽⁴⁾	2,858	11,341	18,026	51.5
Mohave and La Paz	2,858	1,689	2,332	6.7
Gila & Pinal	2,858	3,344	4,487	12.8
CGGS ⁽⁵⁾	2,858	9,552	12,638	36.1
Pima	2,858	20,271	26,187	74.8
Maricopa	2,858	95,248	123,217	352.2
Coconino ⁽⁴⁾	2,858	4,032	5,540	15.8
Yavapai	2,858	1,690	2,369	6.8
Yuma	2,858	13,499	16,516	47.2
Totals		160,666	211,312	603.9
Native American adjustment				-59.8
Foreign-born ELL costs ⁽⁵⁾				544.1

Notes:

(1) This is the Arizona Department of Education’s per-pupil cost before adjusting for a district’s Teacher Experience Index (TEI). The TEI is a factor by which a district’s funding is further increased to reflect the seniority of its teachers. Because the presence of immigrant children does not influence this index, it was not included in the per-pupil cost of immigrant children. Actual amount is \$2,858.02.

(2) In calculating funding levels, the number of ELL children in a district is further weighted (increased) by other support-level weights such as the child’s grade level.

(3) Total cost equals the Base support level times the Weighted ELL count.

(4) ELL enrollment in these counties is greater than the foreign-born share of the population would indicate. Of Arizona’s immigrant population, 0.6 percent lives in Apache and Navajo Counties and 0.9 percent lives in Coconino County. Because of the large numbers of Native American children in these counties, we presume that the majority of ELL kids in these counties are Native American. We assume that 10 percent of the ELL children in Apache & Navajo Counties and 15 percent of the children in Coconino County are immigrants and calculated the adjustment for Native American students as follows:

$$(-0.9 \times \$51,519,036) + (-0.85 \times \$15,834,157) = -\$59,826,166$$

(5) “CGGS” refers to Cochise, Graham, Greenlee, and Santa Cruz Counties as aggregated by the U.S. Census Bureau in its data collection.

Source:

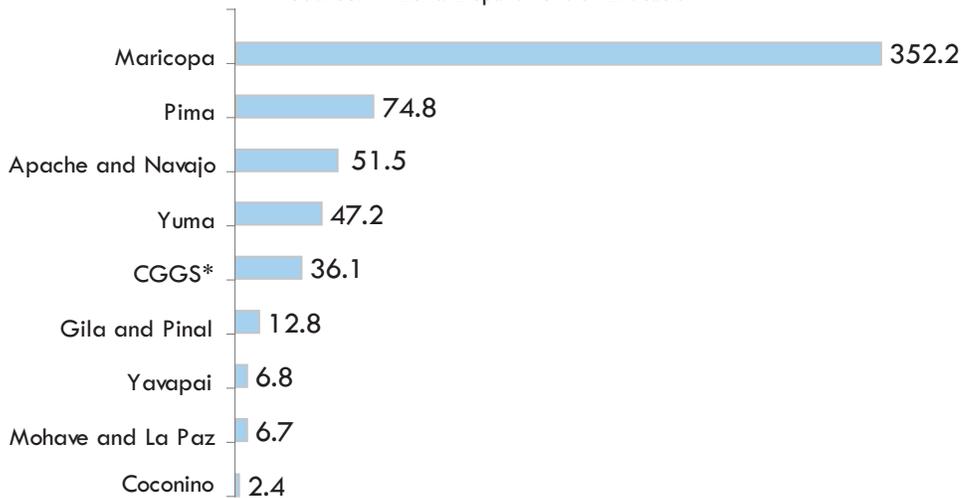
Arizona Department of Education

Figure 7, below, illustrates the extent to which ELL costs concentrate in Maricopa County, reflecting the fact that nearly 70 percent of Arizona’s immigrants live in Maricopa County.

FIGURE 7. 2004 ELL COSTS BY COUNTY

million dollars

Source: Arizona Department of Education



Note: "CGGS" refers to Cochise, Graham, Greenlee, and Santa Cruz Counties as grouped by the U.S. Census Bureau.

HEALTH CARE

Measuring immigrants' impacts on health care costs requires examining two areas: uncompensated care costs incurred by hospitals and immigrant reliance on the public health care system through the Arizona Health Care Cost Containment System (AHCCCS).

How did we approach measuring these costs?

Because hospitals and community health clinics do not consistently collect information on patients' nativity and citizenship status, we have relied on a combination of information sources to estimate these costs. Reliable data on insurance rates for native born, naturalized citizens, and non-citizens in Arizona does exist through the U.S. Census Bureau's American Community Survey (ACS). We can readily calculate the percentages and numbers of people in each nativity category (i.e., native born or foreign born) who have private insurance, rely on public insurance, or are uninsured. We then used these data can to estimate immigrant impacts on health care costs.

How accurate are the estimates generated in this way?

This approach relies on one central assumption: that immigrants use the health care system at the same rates as do native-born people. To the extent that immigrants might use health care more than native born people, this approach underestimates their impacts on health care costs. To the extent that immigrants might use health care services less than native-born people, our approach overstates their impacts on health care costs.

Numerous national studies have indicated that, across the board, immigrants use health care at lower rates than do native-born people.³ This suggests that the estimated health care costs in this report may be overstated. However, in light of the sensitivities that exist about the fiscal costs of immigrants, we have taken a conservative approach by basing our calculations by assuming similar use of health care by immigrants and native-born persons. With this approach, we are confident that these costs are not likely to be underestimated.

How were uncompensated care costs of hospitals estimated?

The ACS provides data on access to insurance by nativity and by type of insurance. The Arizona Department of Health Services (ADHS) publishes annual reports for all hospitals in the state. These reports include data on bad debt, which we use as a proxy for uncompensated care costs. Working with the ACS data and the ADHS data, we were able to arrive at estimates of immigrants' impacts on uncompensated care costs in Arizona.

The analysis included the following steps:

- o With 2004 ACS insurance data for Arizona, we calculated the number of native-born persons, naturalized citizens, and non-citizens who were uninsured in 2004.
- o These numbers were then used to calculate the percentages of uninsured Arizonans who were native born, naturalized citizens, and non-citizens.
- o These percentages were then applied to 2004 hospital bad debt data as reported by the ADHS. These data are reported by hospital, allowing for aggregation to county and state levels.

The results of this analysis, depicted in Figure 8 and Table 6, are presented by nativity to illustrate naturalized citizens' and non-citizens' impacts on uncompensated care costs relative to those of native-born persons.

3. See Udall Center Immigration Policy Fact Sheet No. 2, "Immigrants and Health Care" (<http://udallcenter.arizona.edu/immigrationpolicy>).

FIGURE 8. ESTIMATED 2004 HOSPITAL UNCOMPENSATED CARE COSTS

Sources: American Community Survey of the U.S. Census Bureau and the Arizona Department of Health Services

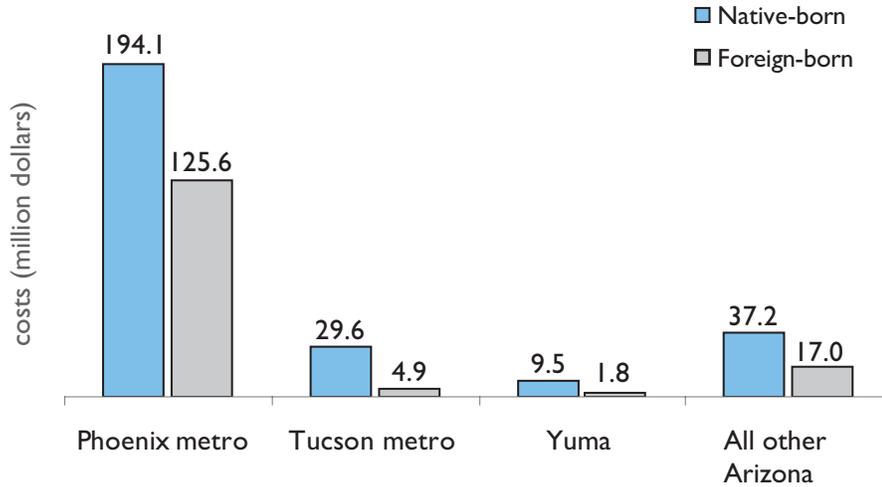


Table 6. 2004 Hospital Uncompensated Care Costs⁽¹⁾
(million dollars)

	Arizona total	Phoenix metro area	Tucson metro area	Yuma	Other Arizona
Naturalized citizens	13.9	9.3	1.4	0.01	3.2
Non-citizens	135.4	116.4	3.4	1.7	13.8
Total foreign-born	149.3	125.6	4.9	1.8	17.0
Native-born	270.3	194.1	29.6	9.5	37.2
Totals	419.6	319.7	34.4	11.3	54.2

Note:
 (1) Hospital bad debt as reported by the Arizona Department of Health Services
 Sources:
 American Community Survey of the U.S. Census Bureau and the Arizona Department of Health Services

Several observations can be made from this information. First, the majority of uncompensated care costs are incurred in the Phoenix metropolitan area (Maricopa County). Second, native-born people have a larger impact on uncompensated care costs (\$270.3 million) than do immigrants (\$149.3 million). Third, non-citizens have a much larger impact (\$135.4 million) than do naturalized citizens (\$13.9 million), reflecting the fact that a greater proportion of non-citizens than naturalized citizens lack health insurance. Tables A-6 and A-7 in the Appendix detail the numbers and percentages of people in the various nativity and insurance categories used to perform these analyses.

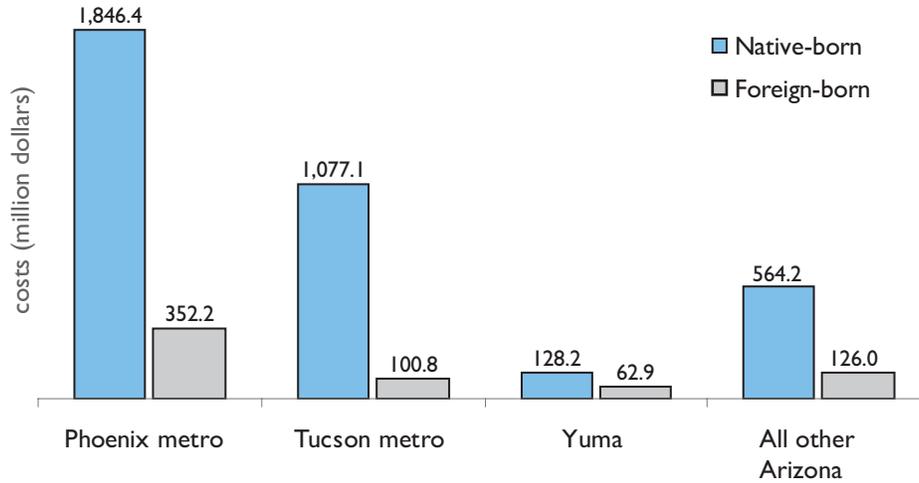
What about immigrant use of Arizona’s AHCCCS system?

Again, using the ACS data, the number and percent of native born, naturalized citizens, and non-citizens who rely on public insurance was calculated. These percentages were then used

to allocate total 2004 AHCCCS expenditures to native born, naturalized citizens and non-citizens as a way of estimating each cohort's share of these costs. The results of this analysis are depicted in Figure 9 and Table 7.

FIGURE 9. 2004 AHCCCS ESTIMATED COSTS BY NATIVITY

Source: American Community Survey of the U.S. Census Bureau and AHCCCS Appropriations Status Reports to the Arizona State Legislature



As with uncompensated care costs, the majority of AHCCCS costs are attributable to native-born persons living in Maricopa County. The next largest share is incurred by native-born persons living in Pima County. Immigrant use of AHCCCS is approximately \$640 million out of \$4.26 billion in total expenditures. Again, the majority (about \$480 million) of immigrant AHCCCS costs are attributable to non-citizens.

Table 7. 2004 AHCCCS Costs: Allocations by Nativity⁽¹⁾
(million dollars)

	Total Arizona	Phoenix metro area	Tucson metro area	Yuma	Other Arizona
Naturalized citizens	164.6	63.3	38.0	12.7	50.6
Non-citizens	477.4	288.9	62.8	50.2	75.4
Total foreign-born	642.0	352.2	100.8	62.9	126.0
Native-born	3,615.9	1,846.4	1,077.1	128.2	564.2
Arizona totals	4,257.9	2,198.7	1,177.9	191.1	690.2

Note:

(1) Calendar year expenditures calculated from fiscal year data reported in AHCCCS Appropriations Status Reports to the Arizona State Legislature.

Source:

American Community Survey of the U.S. Census Bureau and AHCCCS Appropriations Status Reports to the Arizona State Legislature

LAW ENFORCEMENT AND OTHER COSTS

There are two elements to law-enforcement costs: those incurred by local police and sheriff’s departments in the normal course of providing for public safety and those incurred through the department of corrections to incarcerate immigrants convicted of crimes. Conversations with local law enforcement officials revealed that the records kept by local and county public safety departments do not allow systematic identification of costs that result from the presence of immigrants in Arizona. While anecdotal reports are made regarding specific costs, there is no systematic, comprehensive way to allocate these costs by nativity.

What about immigrants convicted of crimes?

Incarceration costs of immigrants provided by the Arizona Department of Corrections are shown in Table 8. The vast majority of incarceration costs are for non-citizens. The total cost to Arizona of immigrant inmates for calendar year 2004 was \$91.0 million, of which \$89.1 million was for non-citizens. And, again, the vast majority of these cases were in Maricopa County.

**Table 8. 2004 Costs of Immigrant Inmates
(state total and by county of residence)**

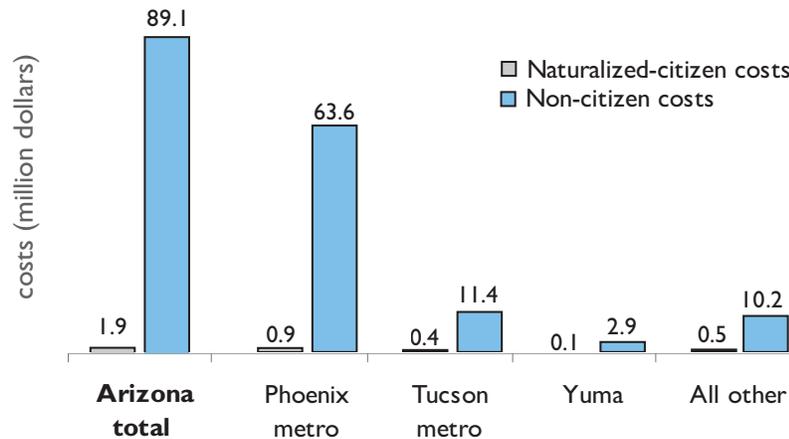
	Arizona total	Phoenix metro area	Tucson metro area	Yuma	Other Arizona
Naturalized citizens					
Number of inmates	129	55	29	8	37
Average length of incarceration (days)	260	277	269	271	229
Average cost per day ⁽¹⁾	\$56	\$56	\$56	\$56	\$56
2004 total cost	\$1,890,000	\$855,000	\$438,000	\$122,000	\$476,000
Non-citizens					
Number of inmates	6,367	4,469	768	235	895
Average length of incarceration (days)	249	253	265	219	204
Average cost per day	\$56	\$56	\$56	\$56	\$56
2004 total cost	\$89,100,000	\$63,600,000	\$11,400,000	\$2,890,000	\$10,200,000
Total cost of immigrant inmates	\$91,000,000	\$64,400,000	\$11,900,000	\$3,010,000	\$10,700,000

Note:
 (1) Actual average amount is \$56.19.
 Source:
 Arizona Department of Corrections; fully allocated costs; department FY2004 actual operating budget was \$644,000,000.

The data on incarceration costs are depicted graphically in Figure 10.

FIGURE 10. 2004 COSTS OF INCARCERATING FOREIGN-BORN PERSONS IN ARIZONA

Source: Arizona Department of Corrections



Does Arizona receive federal monies to compensate for law-enforcement costs associated with immigrants?

Yes, as appropriated by Congress. In 2004, Arizona received \$12.1 million as a State Criminal Alien Assistance Program (SCAAP) grant. These monies can vary widely from year to year.

Are there other costs associated with immigration?

While we are confident that we have provided accurate estimates of the incremental fiscal costs associated with immigrants, we recognize that not all of the costs associated with immigration (especially unauthorized immigration) have been captured in this report. Our attempt has been to measure, when reliable data are available, the most significant costs to Arizona's taxpayers of immigrants (whether authorized or unauthorized) residing in Arizona.

Certainly communities along the U.S.-Mexico border bear additional costs associated with unauthorized entry to the United States from Mexico. One such cost is for cleaning up the trash left behind by unauthorized migrants. Authorities estimate that each unauthorized crosser leaves behind about eight pounds of trash. In 2002, the United States estimated that the cost of removing all of the trash left by unauthorized immigrants in just a portion of southeastern Arizona would be about \$4.5 million. Not all of these costs are incurred by Arizona's border communities because Congress has appropriated, since 2002, some \$3.4 million for environmental remediation in southern Arizona. Over a five-year period, Congress is expected to spend on the order of \$62.9 million for environmental remediation in southern Arizona.⁴ As with local law enforcement costs, consistently gathered, accurate estimates of the costs of illegal entry incurred by communities along the border are not available.

4. Davis, Tony, "Crossers Burying Border in Garbage," *Arizona Daily Star*, July 30, 2006 (see <http://www.azstarnet.com/sn/environment/140004>).

In Brief

The majority of fiscal costs of immigrants fall into three broad categories: education, health care, and law enforcement. In education, 2004 immigrant ELL (English Language Learner) costs were \$544.1 million. Arizona's hospital uncompensated care costs in 2004 totaled \$419.6 million of which approximately \$149.3 million was incurred by immigrants (\$13.9 million for naturalized citizens and \$135.4 million for non-citizens). Total AHCCCS costs in 2004 were \$4.3 billion, of which approximately \$642 million was incurred by immigrants (\$164.6 million for naturalized citizens and \$477.4 million for non-citizens). Arizona's cost of incarcerating immigrants in 2004 was \$91 million out of a total Arizona Department of Corrections' budget of \$644 million. Arizona received \$12.1 million from the federal government through the State Criminal Alien Assistance Program in 2004.

Having examined the fiscal costs associated with immigrants, we now turn our attention to immigrants' contributions to Arizona's economy as consumers and as workers. These are examined separately for naturalized citizens and non-citizens.

AS CONSUMERS

How did we assess immigrants as consumers?

Understanding the impacts of immigrant consumer spending requires estimating the after-tax disposable income available to immigrant households—referred to as buying power—for spending on goods and services. This spending has direct as well as indirect consequences for output, employment, incomes, and tax revenues. Input-output models allow us to trace the way that consumer spending drives economic activity and generates tax revenues.

How did we measure the buying power of immigrant households?

The Census Bureau's American Community Survey (ACS) estimates that there were 2,156,000 households in Arizona in 2004. An estimated 5.6 percent, or 120,720, were naturalized citizen households and 6.9 percent, or 148,700, were non-citizen households. ACS estimates that average 2004 income was \$71,700 for naturalized citizen households and \$42,300 for non-citizen households. (Note that the income for non-citizen households may seem high, but household incomes are higher than individual incomes because households often have multiple earners.) This income was then adjusted to account for savings, tax payments, and remittances sent to countries of origin to arrive at estimates of disposable income for each category of household. Total buying power was calculated for each group by multiplying the number of households by average disposable income.

What was the buying power of immigrants in Arizona in 2004?

Buying power in 2004 was estimated to be \$6.1 billion for Arizona naturalized-citizen households and \$4.4 billion for non-citizen households. Please refer to Table A-4 in the Appendix for the step-by-step calculations of these numbers and for assumptions on savings, taxes, and remittances.

IMPLAN® Model

IMPLAN® is an economic impact assessment modelling system (see www.implan.com) that quantifies the structural relationships among sectors of the economy, tracing flows between producers, intermediate users and final consumers. It calculates the consequences of these flows for incomes, output, employment, and taxes. It is widely used to estimate the impacts of specific “events” on a region’s economy.

Final demand (purchases by consumers) drives the IMPLAN® model. To meet final demand, industries produce goods and services for use by consumers, which, in turn, requires the purchase of goods and services from other producers. Other producers, in turn, purchase goods and services, and so on. These subsequent purchases create multiplier effects beyond the initial purchases by consumers.

The IMPLAN® model mathematically describes this buying and selling of goods and services throughout a region’s economy and estimates a set of multipliers that quantify the change in output for all industries caused by a one-dollar change in final demand for any given industry. These multipliers measure the consequences for a region’s economy of specific ‘events’ such as an increase in final demand or an increase in the labor supply, and calculates the tax consequences of the event under consideration. When these multipliers result in economic activity that otherwise would not have happened, they represent net additions to a region’s economy.

A word about multipliers: It can be difficult to determine how much of the spin-off, or multiplier, effects result in net additions to the economy and how much are a reallocation of activity that would have occurred anyway. While direct impacts are accurate measures of the economic costs and benefits of an event, indirect, or spin-off, effects can be understood as additional possible impacts. Some portion of these indirect impacts are net additions to the economy but to count 100 percent of them is to risk over stating the benefits (or costs) of an event. For this reason, the direct and spin-off impacts are listed separately in this report.

What did this buying power contribute to Arizona's economy?

Immigrant buying power made significant contributions to Arizona's economy in 2004. Table 9 describes direct impacts that include private-sector output of approximately \$10.2 billion dollars, an increase in *employment* of an estimated 66,500 full-time-equivalent jobs. The *output* attributed to immigrants included increased *labor income* of about \$2.2 billion and increased *other income* of about \$1.5 billion. The share of these impacts attributable to naturalized and non-citizens is also shown.

Table 9. 2004 Immigrant Consumer Spending				
Estimated Contribution to Economic Activity				
	thousands	million dollars		
	Employment⁽¹⁾	Output⁽²⁾	Labor income	Other income⁽³⁾
Naturalized citizens	38.5	5,937	1,230	903
Non-citizens	28.0	4,310	926	563
Total impacts	66.5	10,247	2,156	1,466
Estimated Contribution to Taxes⁽⁴⁾				
	million dollars			
	Personal taxes⁽⁵⁾	Business taxes⁽⁶⁾	Sales taxes	Total
Naturalized citizens	49	194	214	457
Non-citizens	36	134	148	319
Total impacts	85	328	362	776
Fiscal				

Notes:

- (1) *Employment* in IMPLAN[®] is measured in full-time-equivalent jobs and thus appears lower than estimates from other sources.
- (2) *Labor income* and *Other income* are subcategories of *Output*.
- (3) *Other income* includes payments to individuals for rents, royalties, dividends, and corporate profits.
- (4) The IMPLAN[®] model calculates total tax impacts by category of taxes. The direct share of business tax impacts was estimated to be in proportion to direct-to-total output impacts. The direct share of sales and personal taxes were estimated to be in proportion to direct-to-total labor income impacts.
- (5) *Personal taxes* includes income taxes, personal motor vehicle taxes, property taxes, fines and fees.
- (6) *Business taxes* includes taxes on corporate profits and dividends, business motor vehicle taxes, business property taxes, severance taxes, and other state/local business non-tax fees.

Source:
Based on IMPLAN[®] simulations

How did immigrants' consumer spending impact Arizona's tax revenues?

Because of the economic activity it generated, immigrant consumer spending also had significant direct impacts on tax revenues in Arizona. The tax consequences of immigrant consumer spending include incremental *personal taxes* estimated at \$85 million, *business taxes* by \$328 million, and *sales taxes* by \$362 million, for a total of \$776 million (see Table 9).

What about non-citizens who are unauthorized immigrants? Do they pay taxes?

Questions are often raised about the extent to which unauthorized immigrants pay income taxes. This depends on two factors:

- o the proportion of unauthorized immigrants working with forged documents, and
- o the number of exemptions claimed for withholding purposes by those using such forged documents.

Those using forged documents do have taxes withheld from their paychecks, but anecdotal evidence suggests that unauthorized immigrants often minimize the amounts withheld by claiming large numbers of exemptions on W-2 Forms. Because we know that the non-citizen category includes a significant number of unauthorized immigrants, the estimated personal tax impacts of \$36.5 million may be overstated. However, personal taxes of non-citizens are just 11 percent of the estimated direct tax impacts of non-citizens and only five percent of the total estimated direct tax increases resulting from consumer spending by immigrants.

What were the spin-off impacts of immigrant consumer spending?

These were also significant. While we cannot claim that all of these impacts represent net additions to the Arizona economy (see the side-box on the IMPLAN® model, p. 40), we do know that some of them represent net growth in the economy. The estimated spin-off impacts presented in Tables 10 and 11 should be viewed as a measure of possible additional impacts.

Table 10. Immigrant Consumer Spending (2004 spin-off contributions)				
Maximum Possible Additional Economic Activity				
	thousands	million dollars		
	Employment	Output⁽¹⁾	Labor income	Other income
Naturalized citizens	22.8	2,436	811	458
Non-citizens	16.8	1,796	597	349
Total impacts	39.6	4,232	1,408	799
Maximum Possible Additional Taxes⁽²⁾				
	million dollars			
	Personal Taxes	Business taxes	Sales taxes	Total
Naturalized citizens	80	85	20	185
Non-citizens	54	58	14	127
Total fiscal impacts	134	143	34	312

Notes: (1) *Labor income* and *Other income* are subcategories of *Output*; (2) The spin-off share of taxes was estimated to be the total tax impacts minus the direct tax impacts calculated above.
Source: Based on IMPLAN® simulations

In Brief

The 2004 spending power of naturalized citizens was approximately \$6.1 billion and of non-citizens was approximately \$4.4 billion. The economic activity that can be attributed to this spending power includes 66,500 full-time-equivalent jobs and \$10.2 billion in output. The state tax revenues attributable to this spending power were approximately \$780 million.

AS WORKERS

As was detailed earlier in this report, immigrants are 14 percent of the workforce in Arizona and a much larger share of the workforce in specific sectors of the economy such as agriculture, manufacturing, construction, hotels, restaurants, and certain service sectors. But naturalized-citizen and non-citizen immigrants also work in, and, therefore, contribute to, virtually every sector of Arizona's economy. Measuring immigrants' contributions as workers in Arizona's economy requires examining their participation across the economy as a whole, not just in those sectors that employ large numbers of immigrants.

Our purpose in this section on immigrants as workers is to examine two broad areas. First we look at immigrants as workers across all sectors of Arizona's economy to measure the portion of output, employment, labor and other income, and state tax revenues (personal, business, and sales taxes) that can be attributed to immigrants. Naturalized citizens and non-citizens are analyzed separately because they tend to work in different areas of the economy. Second, we analyze what would occur if specific industries—agriculture, construction, manufacturing, and certain service sectors—were to lose a large share of their non-citizen workers. This analysis quantifies the consequences of such a hypothetical workforce reduction for employment, output, labor and other incomes, and state tax revenues.

CONTRIBUTIONS TO ALL SECTORS

How did we measure the role of immigrants across all sectors of Arizona's economy?

Immigrants work in virtually every sector of Arizona's economy. The share of foreign-born persons in each sector's workforce was calculated using data from the U.S. Census, which indicate the number and share of native-born, naturalized-citizen, and non-citizen workers in each industry sector in Arizona.⁵ These share-of-workforce calculations provide estimates of the number of naturalized citizen and non-citizen workers in each of the 495 different IMPLAN[®] industry sectors for Arizona. The IMPLAN[®] model, in turn, calculates the proportion of employment, output, labor and other income, and tax revenues that can be attributed to these workers.

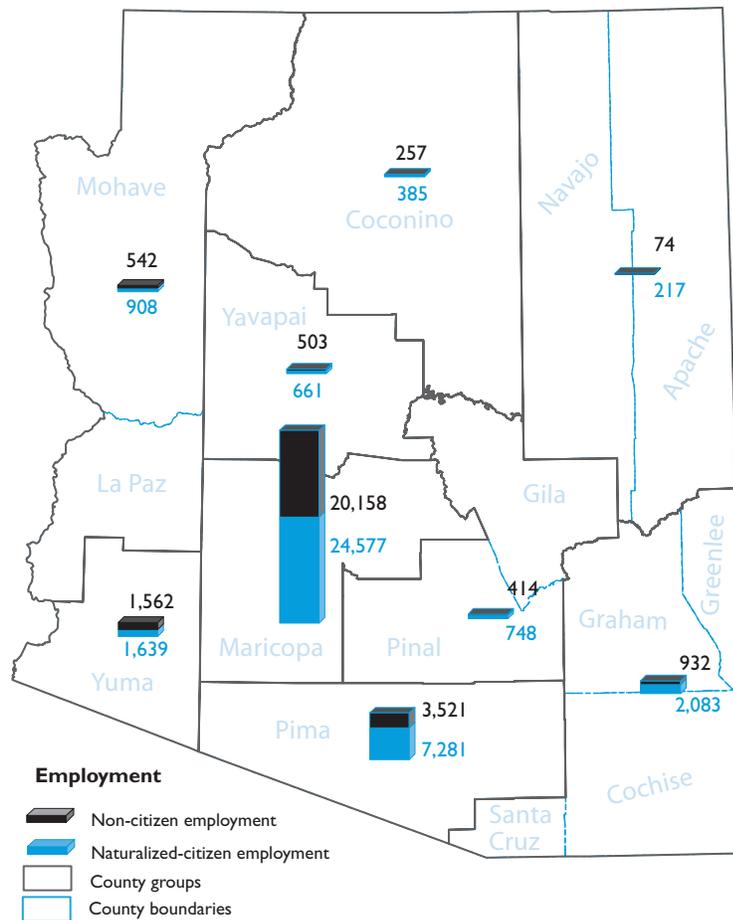
5. See data table, "Employment by Industry and Occupation," for data on the share of foreign-born workers by industry sector and occupation. Available at <http://udallcenter.arizona.edu/immigrationpolicy>.

What were the impacts of immigrants in the workforce in Arizona?

Approximately 121,400 full-time-equivalent jobs in 2004 can be attributed to naturalized-citizen workers along with output of \$14.8 billion, including \$4.9 billion in labor income and \$1.9 billion in other income. Approximately 278,000 full-time-equivalent jobs can be attributed to non-citizen workers along with an estimated \$29 billion in output that includes \$10 billion in labor income and \$3.3 billion in other income. These estimates are described in Table 11 and Maps B through E.

MAP B

EMPLOYMENT GENERATED BY IMMIGRANTS IN ARIZONA, 2004 number of jobs

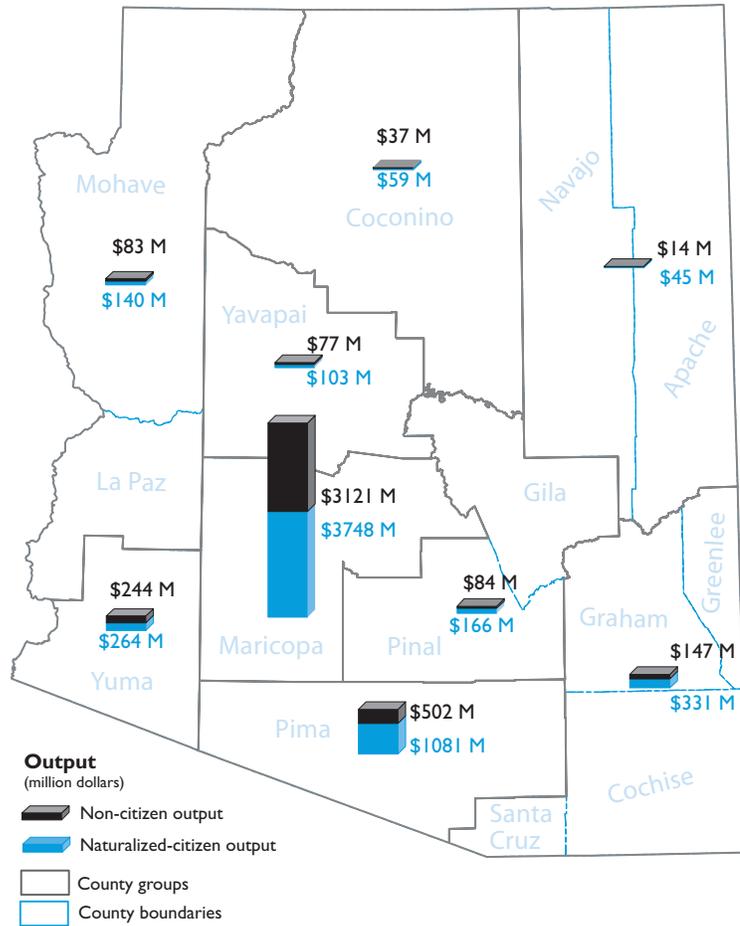


Source:
Based on IMPLAN® simulations

MAP C

ECONOMIC OUTPUT GENERATED BY IMMIGRANTS IN ARIZONA, 2004

M = million dollars

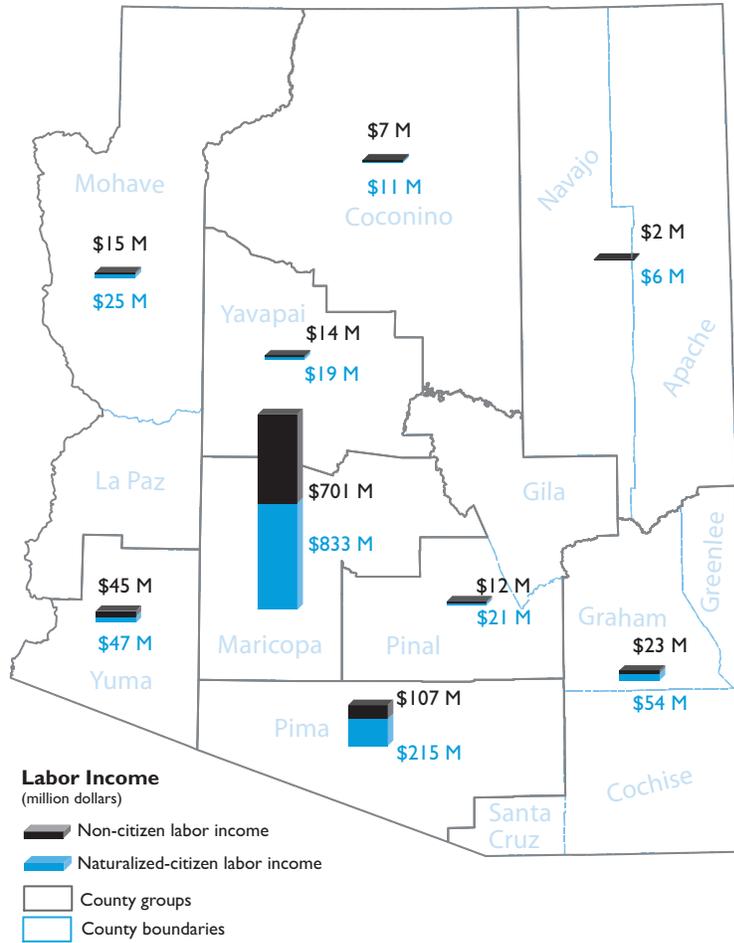


Source:
Based on IMPLAN® simulations

MAP D

LABOR INCOME GENERATED BY IMMIGRANTS IN ARIZONA, 2004

M = million dollars

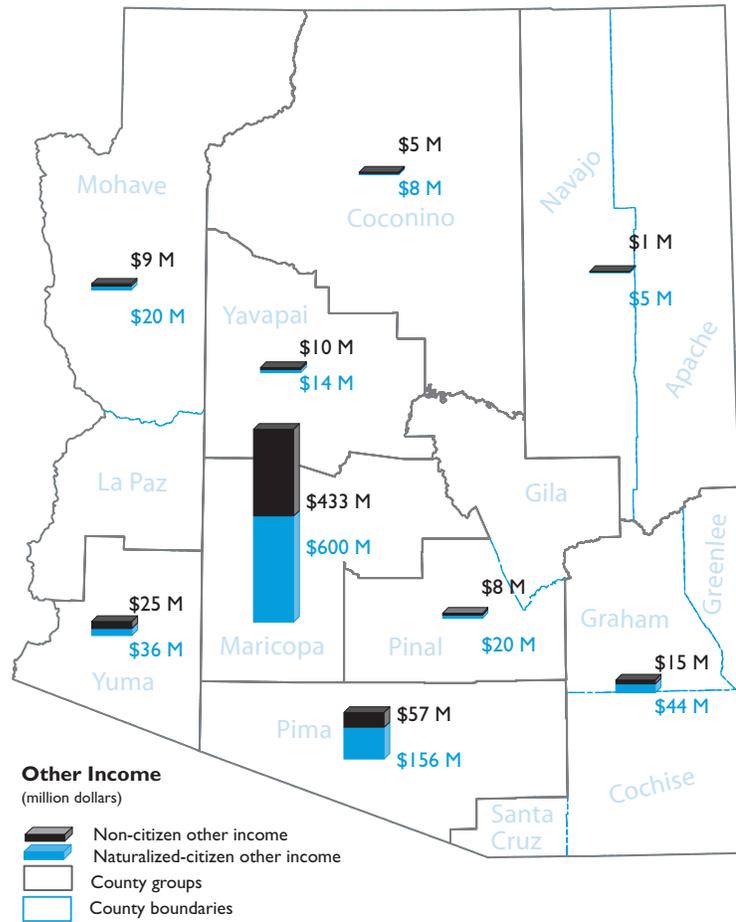


Source: Based on IMPLAN® simulations

MAP E

OTHER INCOME GENERATED BY IMMIGRANTS IN ARIZONA, 2004

M = million dollars



Source:
Based on IMPLAN® simulations

What were the tax consequences of this economic activity?

As we see in Table I I, the IMPLAN® model estimates that the economic activity generated by naturalized citizens resulted in approximately \$862 million in taxes, of which 44 percent were business-related taxes and 41 percent were sales taxes. Economic activity generated by non-citizens resulted in tax revenues to the state of approximately \$1.5 billion, of which 39 percent were business-related taxes and 45 percent were sales taxes. Total tax revenues were \$2.4 billion of which 41 percent were business-related taxes and 43 percent were sales taxes.

Table I I. Immigrants in the Workforce—2004 Direct Impacts

	thousands		million dollars					
	Employment ⁽¹⁾		Output	Labor income	Other income ⁽²⁾			
AZ baseline totals in IMPLAN®	3,058		351,625	127,196	57,084			
Direct Contribution by Immigrants								
	Employment ⁽¹⁾		Output	Labor income	Other income ⁽²⁾			
	thousands	percent of AZ baseline	million \$	percent of AZ baseline	million \$	percent of AZ baseline	million \$	percent of AZ baseline
Naturalized citizens	121.4	4.0	14,804	4.2	4,941	3.9	1,876	3.3
Non citizens	278.1	9.1	28,965	8.2	10,034	7.9	3,314	5.8
Total economic impacts	399.0	13.1	43,768	12.4	14,975	11.8	5,192	9.1
Estimated Direct Contributions to Taxes ⁽⁴⁾								
million dollars								
	Personal taxes ⁽⁵⁾	Business taxes ⁽⁶⁾	Sales taxes			Total		
Naturalized citizens	133	377	353			862		
Non citizens	234	590	669			1,490		
Total tax revenue	367	967	1,020			2,360		
Notes:								
(1) Labor income and Other income are subcategories of Output.								
(2) Employment is measured in full-time-equivalent jobs.								
(3) Other income includes payments to individuals for rents, royalties, dividends, and corporate profits.								
(4) The IMPLAN® model calculates total tax impacts by category of taxes. The direct share of business tax impacts was estimated to be in proportion to direct-to-total output impacts. The direct share of sales and personal taxes were estimated to be in proportion to direct-to-total labor income impacts.								
(5) Personal taxes includes income taxes, personal motor vehicle taxes, property taxes, fines and fees.								
(6) Business taxes includes taxes on corporate profits and dividends, business motor vehicle taxes, business property taxes, severance taxes, and other state/local business non-tax fees.								
Source:								
Based on IMPLAN® simulations								

Where do naturalized citizens generate the largest dollar impacts on output in Arizona?

In addition to examining sectors where immigrants are a large share of the workforce, we look at sectors where immigrants, in this case naturalized citizens, generate large dollar impacts as a small share of the workforce because the sectors themselves are large. Table 12 lists in rank order those sectors where the size of the output contributed by naturalized citizens is large and the share of each sector’s workforce that is a naturalized citizen. The cumulative contributions indicate that almost 50 percent of the output contributed by naturalized citizens in Arizona occurs in these 20 sectors. The remaining 50 percent of output generated by naturalized citizens in Arizona is spread across the other 475 sectors of the economy.

Table 12. Direct Output Generated by Naturalized Citizens
(dollar amount and rank by industry sector)

Rank	Sector	Share of workforce (%)	Direct contribution (million \$)	Cumulative contribution (million \$)	Cumulative contribution (%)
1	Real estate	4	1,131	1,131	7.6
2	New residential unit structures (non-farm)	5	909	2,041	13.8
3	Wholesale trade	5	884	2,925	19.8
4	Semiconductors and related device manufacturing	8	783	3,707	25.0
5	Offices of physicians, dentists, and other health	5	344	4,051	27.4
6	Hospitals	5	321	4,372	29.5
7	Food services and drinking places	3	307	4,679	31.6
8	Management of companies and enterprises	7	287	4,966	33.5
9	Non-depository credit intermediation and related	4	279	5,245	35.4
10	Commercial and institutional buildings	5	274	5,518	37.3
11	Search, detection, and navigation instruments	9	237	5,755	38.9
12	Telecommunications	3	215	5,970	40.3
13	Guided missile and space vehicle manufacturing	2	204	6,174	41.7
14	Other ambulatory health care services	5	179	6,353	42.9
15	Automotive repair and maintenance (except car washes)	5	178	6,531	44.1
16	Motor vehicle and parts dealers	4	173	6,704	45.3
17	Insurance carriers	3	165,	6,869	46.4
18	Architectural and engineering services	4	156	7,025	47.5
19	Miscellaneous store retailers	11	151	7,176	48.5
20	Hotels and motels, including casino hotels	7	149	7,324	49.5

Source:
Based on IMPLAN® simulations

Where do non-citizens generate the largest dollar impacts on output?

Table 13 details those sectors, in rank order where non-citizens made the largest dollar contributions to Arizona's economy. The specific sectors and rankings are different than those for naturalized citizens, reflecting the fact that these two categories of immigrants tend to have different levels of education and skills. The cumulative contributions indicate that about 13 percent of the output generated by non-citizens occurs in one sector—new residential construction—and that about 56 percent of the total output generated by non-citizens occurs in these 20 sectors. The remaining 44 percent of output generated by non-citizens is spread across the other 475 sectors of the economy.

Table 13. Direct Output Generated by Non-Citizens
(dollar amount and rank by industry sector)

Rank	Sector	Share of workforce (%)	Direct contribution (million \$)	Cumulative contribution (million \$)	Cumulative contribution (%)
1	New residential unit structures (non-farm)	20	3,637	3,637	12.6
2	Wholesale trade	11	1,938	5,575	19.2
3	Food services and drinking places	18	1,715	7,290	25.2
4	Real estate	5	1,337	8,627	29.8
5	Commercial and institutional buildings	20	1,095	9,722	33.6
6	Semiconductors and related device manufacturing	9	862	10,584	36.5
7	Services to buildings and dwellings	28	633	11,217	38.7
8	Vegetable and melon farming	45	547	11,764	40.6
9	Automotive repair and maintenance (except car washes)	15	524	12,288	42.4
10	New residential additions and alterations	20	481	12,769	44.1
11	Hotels and motels, including casino hotels	19	419	13,187	45.5
12	Motor vehicle and parts dealers	8	410	13,597	46.9
13	Employment services	10	384	13,981	48.3
14	Cattle ranching and farming	25	351	14,332	49.5
15	Telecommunications	5	334	14,666	50.6
16	All other miscellaneous professional services	9	322	14,988	51.7
17	Hospitals	5	321	15,308	52.9
18	Offices of physicians, dentists, and other health	4	313	15,622	53.9
19	Other new construction	15	277	15,899	54.9
20	Non-depository credit intermediation and related	4	246	16,145	55.7

Source: Based on IMPLAN® simulations

Would this economic activity occur if immigrants were not part of the workforce?

Our analysis to this point has focused on measuring the portion of Arizona's economic activity attributable to immigrants in its workforce. This raises the following question: would the jobs filled by immigrants be taken instead by native-born workers if immigrants were not part of the labor force in Arizona? The answer to this question is complex but largely depends on the availability of native-born workers with skills similar to immigrants. Educational attainment data, both for Arizona and for the United States, indicate that immigrants and native-born workers tend to have different skills, with immigrants filling specific gaps in the native-born workforce by providing needed low-skilled and high-skilled workers. Immigrants in Arizona are an important source of low-skilled labor and of specific high-skilled labor that is relatively scarce in the native-born population and thus are vital to the total output of the industries that employ them. It is difficult to make the case that all or even most jobs filled by immigrants would, instead, be filled by native-born workers if immigrant workers were not available.

In Brief

Immigrants are 14 percent of the workforce in Arizona. For naturalized citizens, the share of Arizona's economic activity that can be attributed to them includes 121,400 full-time-equivalent jobs and \$14.8 billion in output, including \$4.9 billion in labor income and \$1.9 billion in other income. For non-citizens, the share of Arizona's economic activity that can be attributed to them includes 278,100 full-time-equivalent jobs and \$29.0 billion in output including \$10 billion in labor income and \$3.3 billion in other income. The state tax revenues that can be attributed to immigrants (both naturalized citizens and non-citizens) is approximately \$2.4 billion.

CONTRIBUTIONS TO SPECIFIC INDUSTRIES

Measuring immigrant workers' contributions to specific sectors of the economy is accomplished by analyzing what would occur if certain industries were to lose their immigrant workers. We focus on agriculture, construction, manufacturing, and certain service sectors because they employ large numbers of low-skilled, non-citizen workers. This analysis quantifies the magnitude of the consequences of such a workforce reduction for output, employment, labor and other incomes, and state tax revenues.

How did we decide the industries and the size of employment reductions to analyze?

The 2000 U.S. Census was used to identify those industries in Arizona whose workforce is significantly made up of non-citizen immigrants. We focused on non-citizen workers because they are the most recent additions to Arizona's workforce, a significant number are low skilled, and a significant number are unauthorized. The number of employees in the selected industries was reduced in the IMPLAN® model by the percentage comprising mostly non-

citizen workers to allow for some replacement of immigrants by native-born workers. The IMPLAN® model then calculated the resulting reduction in employment, output, incomes, and tax revenues for Arizona. These simulations should be understood as a series of “what ifs” that quantify the magnitude of the reductions in output, employment, income, and taxes consequent upon a specific reduction in employment. Table A-5 in the Appendix details the employment reductions that were used in the simulations.

What were the consequences of these reductions?

The reductions in employment and output including labor and other income that resulted from these workforce reductions are detailed in Table 14, below.

Table 14. Workforce Reduction Simulations				
Consequences of Workforce Reductions Direct Industry Impacts				
Sector	Employment⁽¹⁾ (thousands)	Industry output⁽²⁾ (million \$)	Labor income (million \$)	Other income (million \$)
Agriculture (15% workforce reduction)	-3,294	-601	-199	-116
Construction (15% workforce reduction)	-55,721	-6,564	-2,600	-451
Manufacturing (10% workforce reduction)	-12,286	-3,771	-741	-268
Services (16% workforce reduction)	-53,960	-2,475	-901	-273

Notes: (1) Full-time-equivalent jobs; (2) *Labor income* and *Other income* are subcategories of Output.
Source: Based on IMPLAN® simulations

The reductions in tax revenues to the state of Arizona that resulted from these workforce reductions are detailed in Table 15.

Table 15. Workforce Reduction Simulations				
Consequences of Workforce Reduction Direct Tax Impacts				
Sector	Corporate taxes	Sales taxes	Personal taxes	Totals by industry
Agriculture	-10	-10	-5	-25
Construction	-99	-109	-61	-269
Manufacturing	-48	-39	-17	-104
Services	-61	-75	-21	-157
Totals	-219	-234	-104	-555

Source: Based on IMPLAN® simulations

To summarize the results of these simulations:

- o **For agriculture**, a 15-percent workforce reduction would result in losses of 3,300 full-time-equivalent jobs, \$601 million in output, labor income of \$199 million, and other income of \$116 million. The lost tax revenue to the state would be approximately \$25 million.
- o **In construction**, a 15-percent workforce reduction would result in losses of 55,700 full-time-equivalent jobs, \$6.6 billion in output, labor income of \$2.6 billion, and \$451 million in other income. The lost tax revenue to the state would be approximately \$269 million.
- o **In the manufacturing sector**, a ten-percent reduction in the workforce would result in losses of 12,300 full-time-equivalent-jobs, \$3.8 billion in output, labor income of \$741 million, and other income of \$268 million. The lost tax revenue to the state would be approximately \$104 million.
- o **In the service sectors analyzed**, a 16-percent reduction in the labor force would translate to losses of 54,000 full-time-equivalent jobs, \$2.5 billion in output, labor income of \$901 million, and other income of \$273 million. The lost tax revenue to the state would be approximately \$157 million.

How were the impact percentages calculated?

Table 16 describes the base levels of output, employment, labor income, and other income in each of the industry sectors analyzed. These base levels were used to calculate the percent changes in each measure of economic activity consequent on the work force reductions. Table A-5 in the Appendix includes a detailed list of the industries included in each sector category.

Table 16. Workforce Reduction Simulations					
Base (Pre-Simulation) Levels in IMPLAN® Model					
	thousands	million dollars			
Simulation Sectors	Employment	Industry output⁽¹⁾	Labor income	Other income	
Agriculture	22	3,775	696	6400	
Construction	290	34,054	13,503	2,347	
Manufacturing	126	38,220	400	2,734	
Services	333	16,147	392	1,853	

Note:
 (1) Labor income and Other income are subcategories of Output.
 Source:
 Based on IMPLAN® simulations

Why is this important?

By looking structurally at immigrants in the economy, we go beyond a simple understanding that immigrant workers are important to sectors, such as construction and agriculture, and begin to quantify the magnitude of that importance. This analysis provides an estimate of the dollar amounts that can be attributed to these workers and, equally importantly, of the tax consequences of their work for the state of Arizona.

Generally, when considering the fiscal impacts of immigrants, attention is given to direct taxes paid, particularly in the form of income taxes relative to services used. The ancillary tax consequences of their role as workers are rarely considered, in part because these are difficult to measure. This analysis provides insight about the magnitude of these fiscal impacts.

What about the indirect impacts of immigrants as workers?

This report has focused on the direct impacts of workforce reductions in the affected industries. For example, a 15-percent reduction in employment in construction resulted in about a 19-percent reduction in output in construction. But we know that there are also indirect consequences that ripple through the economy. We understand, for example, that a reduction in construction output will also cause reductions in sectors such as household appliances, and veneer, plywood, and engineered wood products. The magnitude of these indirect impacts, however, is quite small. The indirect impact of the 15-percent reduction in construction employment was an additional 1.6 percent reduction in output and two percent reduction in employment in Arizona. For this reason, we focus on the direct consequences for the construction industry and on the direct fiscal impacts for Arizona.

In Brief

A hypothetical 15-percent workforce reduction in agriculture resulted in a reduction in output in Arizona of \$601 million and lost tax revenues of approximately \$25 million. A simulated 15-percent workforce reduction in construction resulted in a lost output to the Arizona economy of \$6.6 billion and lost tax revenues of approximately \$269 million. A simulated ten-percent manufacturing-workforce reduction resulted in reduced output of \$3.8 billion and lost tax revenues of approximately \$104 million. A simulated 16-percent workforce reduction in the service sectors analyzed resulted in lost output of \$2.5 billion and reduced tax revenues of \$157 million.

NET FISCAL AND ECONOMIC IMPACTS

Having examined the fiscal costs of immigrants and measured their aggregate contributions to Arizona's economy, we now look at what the consequences have been, on net, for Arizona's fiscal health.

Discussions of the fiscal impacts of immigrants generally focus on the costs of services used by immigrants compared to the direct personal taxes paid by immigrants. However, there are also indirect tax consequences of immigrants' roles as workers and as consumers. Because immigrants are filling gaps in and expanding the size of labor markets, they are making possible economic activity that would not otherwise occur. This economic activity also generates tax revenues in the form of business, sales, and personal taxes, which should also be considered when evaluating the net fiscal impacts of immigrants.

What were the net fiscal costs and benefits of immigrants in Arizona in 2004?

Discussions of the fiscal impacts of immigrants generally focus narrowly on the difference between taxes paid relative to the cost of public services consumed by immigrants. While these direct fiscal impacts are part of the story, they are not the whole story. There are very real additional fiscal consequences resulting from the economic activity that immigrants make possible as consumers and as workers.

Table 17 recaps the fiscal costs of immigrants in each of the major public service categories for Arizona and by major metropolitan region. We see that the total fiscal cost of all immigrants (naturalized citizens plus non-citizens) was approximately \$1.4 billion in 2004.

Table 17. Summary of 2004 Fiscal Costs of Immigrants					
million dollars					
	Total	Phoenix metro	Tucson metro	Yuma	All other Arizona
Foreign-born ELL costs	544.1	352.2	74.8	47.2	69.9
Uncompensated care costs	149.3	125.6	4.9	1.8	17.0
AHCCCS Costs	641.9	352.2	100.8	62.9	126.0
Law enforcement	91.0	64.3	11.9	3.0	10.7
Subtotal	1,425.2	894.3	192.4	114.9	223.6
Less federal SCAAP ⁽¹⁾ reimbursement	-12.1				
Total	1,414.1	894.3	192.4	114.9	223.6
<small>Note: (1) State Criminal Alien Assistance Program Source: Based on IMPLAN® simulations</small>					

Table 18 summarizes the Arizona tax revenues that accrue as a result of immigrants in Arizona’s workforce. The economic output that these workers generate also generates tax revenues which would not accrue absent that output. We see that approximately \$2.4 billion in tax revenues can be attributable to immigrants as workers.

Balanced against the \$1.4 billion in estimated fiscal costs, there is a positive fiscal impact of approximately \$940 million, most of which is in the form of sales and business taxes.

Table 18. 2004 Net Fiscal Impacts of Immigrants in Arizona				
Estimated Contributions of Immigrants in the Workforce To Arizona Tax Revenues ⁽¹⁾				
million dollars				
	Personal taxes⁽²⁾	Business taxes⁽³⁾	Sales taxes	Total
Naturalized citizens	132.7	376	352.7	862.0
Non citizens	234	590.1	669.3	1,493.5
Total estimated tax revenues	366.8	966.8	1,022.1	2,355.6
Total estimated fiscal costs (see Table 17)				1414.1
Net fiscal impacts				941.5

Notes:

(1) The IMPLAN® model calculates total tax impacts by category of taxes. The direct share of business tax impacts was estimated to be in proportion to direct-to-total output impacts. The direct share of sales and personal taxes were estimated to be in proportion to direct-to-total labor income impacts.

(2) *Personal taxes* includes income taxes, personal motor vehicle taxes, property taxes, fines and fees

(3) *Business taxes* includes taxes on corporate profits and dividends, business motor vehicle taxes, business property taxes, severance taxes, and other state/local business non-tax fees.

Source:
Based on IMPLAN® simulations

In Brief

Fiscal costs of immigrants in 2004 were an estimated \$1.4 billion. Tax revenues attributable to immigrants as workers were approximately \$2.4 billion, resulting in a net fiscal gain of approximately \$940 million.

The purpose of this study is to bring consistent data and careful analysis to an examination of the role of immigrants in Arizona's economy and their effects on economic output, incomes, employment, and the state's fiscal condition. Arizona's porous border with Mexico, the recent rapid growth of its immigrant population, and the number of immigrants in the United States illegally has made immigration a contentious issue in Arizona as elsewhere. Certainly illegal immigration is a serious problem, but, stepping back from narrow debates over illegal immigration, this study is intended to deepen our understanding of the costs and contributions of immigrants in Arizona regardless of legal status.

Arizona's foreign-born population grew by more than 200 percent between 1990 and 2004, to a total of 830,900 persons. Most of this growth occurred among non-citizens and an estimated 450,000 to 500,000 of non-citizens are unauthorized. Immigrants in Arizona are primarily of working age. Between 1990 and 2000, immigrants accounted for 52 percent of the increase in the number of 20-to-45-year-old persons in Arizona. Immigrants fill specific gaps in the labor force. They comprise over half of those lacking a high-school education, and thus are an important source of low-skilled workers. These workers are employed primarily in construction, agriculture, manufacturing, leisure, and service industries. Among high-skilled workers in Arizona, immigrants are 15 percent of those with professional degrees and 17 percent of those with Ph.D.s. Sixty-eight percent of Arizona's foreign-born residents are from Mexico and more than two-thirds live in Maricopa County.

The IMPLAN[®] input-output model, used for this study, is a final-demand-driven regional accounting system that quantifies the structural relationships among sectors of the economy. For calendar year 2004 we used IMPLAN[®] to examine the economic contributions of immigrants as consumers and as workers, and to estimate the fiscal gains resulting from these economic contributions. The fiscal costs of immigrants in the areas of education, health care, and law enforcement were also estimated. Foreign-born naturalized citizens and non-citizens were analyzed separately because of their differing demographic characteristics.

The incremental fiscal costs of immigrants largely fall into three categories: education, health care, and law enforcement, and these totaled about \$1.4 billion in 2004. Discussions of the fiscal impacts of immigrants generally focus on the costs of services used by immigrants compared to the direct personal and sales taxes paid by immigrants. However, there are also indirect tax consequences of immigrants as workers. Because immigrants are filling gaps in and expanding the size of the workforce, they are making possible economic activity that would not otherwise occur. This economic activity generates tax revenues in the form of business, sales, and personal taxes that should also be considered when evaluating the net fiscal impacts of immigrants. The 2004 state tax revenues attributable to immigrants as workers were approximately \$2.4 billion. Thus there was a net fiscal contribution of about \$940 million toward costs of services such as law enforcement, fire protection, road maintenance, and so forth.

Immigrants are 14 percent of the workforce in Arizona. The portion of Arizona's economic activity that can be attributed to naturalized citizens includes 121,400 full-time-equivalent

jobs and \$14.8 billion in output, which includes \$4.9 billion in labor income and \$1.9 billion in other income. For non-citizens, the share of Arizona's economic activity that can be attributed to them includes about 280,000 full-time-equivalent jobs and \$29 billion in output, which includes \$10 billion in labor income and \$3.3 billion in other income.

As consumers, immigrants command significant spending power. The 2004 spending power of naturalized citizens was approximately \$6.1 billion and that of non-citizens was approximately \$4.4 billion. The economic activity that can be attributed to this spending power includes 66,400 full-time-equivalent jobs and \$10 billion in output. The state tax revenues attributable to this spending power were approximately \$780 million.

Our simulations of the consequences of eliminating a significant share of Arizona's low-skilled workers quantified the implications for the industry sectors that employ them. In agriculture, a 15-percent workforce reduction resulted in lost output of \$600 million and lost tax revenues of approximately \$25 million. In construction, a 15-percent workforce reduction resulted in a lost output of \$6.6 billion and lost tax revenues of approximately \$270 million. A ten-percent workforce reduction in manufacturing resulted in reduced output of \$3.8 billion and lost tax revenues of approximately \$100 million. A 16-percent workforce reduction in the service sectors analyzed resulted in lost output of \$2.5 billion and reduced tax revenues of about \$160 million.

In summary, immigrants make significant contributions to Arizona's economy. While just 14 percent of the workforce in the aggregate, they are a much larger share of the workforce in specific sectors and a much larger share of specific categories of workers—i.e. low-skilled as well as specific types of high-skilled workers. Any industry is a dynamic whole and depends on the availability of the full complement of skills needed to generate its output. A state's economic and fiscal health is directly intertwined and this study brackets the range of costs and contributions that result from the presence of immigrants in Arizona.

APPENDIX: DATA TABLES

Table A-1. Arizona Native Born and Foreign Born by Age Cohort

Age group	Native born				Foreign born			
	1990		2000		1990		2000	
	Number	% of total	Number	% of total	Number	% of total	Number	% of total
0-4	297,206	9	374,681	8	4,555	2	13,178	2
5-19	786,536	23	1,051,814	23	36,954	14	103,069	16
20-24	228,793	7	270,387	6	25,331	9	66,540	10
25-64	1,635,377	48	2,146,558	48	165,160	61	412,436	63
65+	448,699	13	634,972	14	36,729	14	56,997	9
Totals	3,396,610	100	4,478,413	100	268,729	100	652,220	100

Note:

In 2000, of the 1,365,000 Arizonans under 18 years of age, 263,000 have at least one foreign-born parent.

Sources:

1990-2000 U.S. Census

Table A-2. Immigrants and the Age Structure of Arizona's Population

Age group	1990 to 2000 Change			Share of Change (Percent)		
	Number of native born	Number of foreign born	Total	Native born	Foreign born	Total
0-4	77,475	8,622	86,098	90	10	100
5-19	265,278	66,115	331,393	80	20	100
20-24	41,594	41,209	82,803	50	50	100
25-64	511,182	247,276	758,458	67	33	100
65+	186,273	20,268	206,541	90	10	100
Totals	1,081,803	383,491	1,465,293	74	26	100

Sources:

1990-2000 U.S. Census

Table A-3. Arizona's 2000 Foreign Born Population By County of Residence

	Maricopa	Pima	Apache & Navajo	Coconino	Yavapai
Naturalized citizen	109,589	38,011	1,541	2,114	4,425
Non-citizens	314,147	53,915	2,094	3,853	6,658
Foreign born	423,736	91,927	3,635	5,966	11,083
Native born	2,479,593	701,631	201,180	124,960	175,892
Total population	2,903,329	793,557	204,815	130,926	186,975

	La Paz & Mohave	Yuma	Gila & Pinal	CGGS⁽¹⁾	Arizona total
Naturalized citizen	5,196	10,886	6,697	16,418	194,878
Non-citizens	9,878	33,388	14,264	19,144	457,342
Foreign born	15,074	44,274	20,962	35,562	652,220
Native born	200,291	120,692	244,881	229,293	4,478,412
Total population	215,365	164,966	265,843	264,855	5,130,632

Table A-4. Calculations of Immigrant Buying Power

	Average household income⁽¹⁾	Disposable share of income⁽²⁾	Household disposable income⁽³⁾	Number of households⁽⁴⁾	Total buying power⁽⁵⁾
Naturalized citizens	\$71,703	70%	\$50,192	120,720	\$6,059,190,312
Non citizens	\$42,344	70%	\$29,641	148,744	\$4,408,891,155

Notes:

(1) The 2004 American Community Survey estimates average wage and salary income for naturalized citizen households as \$56,282. IMPLAN[®] increases household income by a factor of 27.4 percent to include non-wage income such as interest and dividend income. This is reasonable for naturalized citizen households and results in average household income for naturalized citizens of \$71,703. The 2004 American Community Survey estimates average wage and salary income for non-citizen households as \$42,344. Because non-citizen households include many recent and illegal immigrants, we determined that it is not realistic to assume these households would have significant non-wage income. Consequently, we did *not* increase household incomes beyond wage and salary incomes.

(2) We assume disposable income to be 70 percent of total household income to adjust for taxes, savings, and remittances. While we presume that non-citizens are the primary senders of remittances, this ratio was used to calculate disposable income for *both* naturalized citizen and non-citizen households because remittances are treated as a form of savings. Research by the Inter-American Development Bank indicates that 42 percent of Arizona's Hispanic immigrants send average remittances \$240 per year.

(3) *Household disposable income* equals *Average household income* times *Disposable share of income*

(4) As estimated by the 2004 American Community Survey

(5) *Total buying power* equals *Household disposable income* times *Number of households*

Source:

2000 US Census

Table A-5. Workforce Reduction Calculations for Industries Simulated

	Non-citizen percent of workforce	IMPLAN® base employment ⁽¹⁾	Amount of reduction	Percent reduction
Agriculture:				
Vegetable, grain, fruit, greenhouse & other crop production	45	10914	-2182.8	20
Cattle, poultry, egg & other animal production	25	11,114	-1,111	10
Sector Totals		22,028	-3,294	15
Construction sectors				
Residential, commercial, industrial, and institutional construction, maintenance, additions and alterations	21 to 56	266,906	-53,381	20
Highway, bridge, street, tunnel, water, and sewer pipeline construction and maintenance	12 to 15	23,397	-2,340	10
Sector Totals		290,303	-55,721	19
Service sector & description				
Services to buildings & dwellings	28	45,308	-9,062	20
Waste management & remediation services	12	4,279	-428	10
Hotels & motels including casino hotels	44	29,140	-4,371	15
Other accommodations	15	3,510	-351	10
Food service and drinking places	18	202,426	-30,364	15
Car washes	36	8,692	-2,173	25
Private households	25	36,054	-7,211	20
Sector totals		329,409	-53,959	16
Manufacturing sectors				
Sectors with immigrant share of workforce greater than 15% (252 sectors)	12 to 33	182,907	-18,291	10

Note:

The employment numbers in the IMPLAN® model are full-time-equivalents and are, therefore, lower than those reported in official statistics. For purposes of consistency, the reductions made in these simulations were calculated as a percent of the numbers in the model.

Source:

Detailed employment by nativity data from the 2000 US Census

**Table A-6. Insurance Cohorts:
Numbers by Type of Insurance and Nativity ⁽¹⁾**

	Total Arizona	Phoenix metro	Tucson metro	Yuma	All other Arizona
Native-born	4,912,979	3,047,771	1,037,759	155,147	672,302
Private insurance	3,258,081	2,199,635	582,662	62,059	413,725
Public insurance	486,126	248,235	144,804	17,239	75,849
Others	393,038	168,938	93,088	48,268	82,745
Uninsured	775,733	430,963	217,205	27,582	99,983
Naturalized citizens	211,037	95,307	39,144	27,231	49,355
Private insurance	141,259	62,971	23,827	23,827	30,634
Public insurance	22,125	8,510	5,106	1,702	6,808
Others**	6,808	3,404	0	0	3,404
Uninsured	40,846	20,423	10,211	1,702	8,510
Non-citizens	619,818	459,375	64,177	21,955	74,311
Private insurance	222,932	158,754	27,022	10,133	27,022
Public insurance	64,177	38,844	8,444	6,756	10,133
Others	6,756	3,378	3,378	0	0
Uninsured	325,953	258,398	25,333	5,067	37,155

Note:
(1) Calculated from 2004 Current Population Survey insurance data
Sources:
American Community Survey of the U.S. Census Bureau and the Arizona Department of Health Services

Table A-7. 2004 Number and Percent Uninsured by Nativity⁽¹⁾

	Total Arizona	Phoenix metro	Tucson metro	Yuma	All other Arizona
number of persons					
Naturalized citizens	39,462	20,589	10,294	26	8,579
Non citizens	325,953	258,398	25,333	5,067	37,155
Total foreign born	365,416	278,987	35,628	5,092	45,734
Native born	775,733	430,963	217,205	27,582	99,983
Total Arizona	1,141,149	709,950	252,833	32,674	145,717
	Total Arizona	Phoenix metro	Tucson metro	Yuma	All other Arizona
percent					
Naturalized citizens	3.5	2.9	4.1	0.1	5.9
Non-citizens	28.6	36.4	10.0	15.5	25.5
Total foreign born	32.0	39.3	14.1	15.6	31.4
Native born	68.0	60.7	85.9	84.4	68.6
Arizona total	100.0	100.0	100.0	100.0	100.0

Note: (1) Calculated using Census Bureau population data and Current Population Survey insurance data
Sources: American Community Survey of the U.S. Census Bureau and the Arizona Department of Health Services

APPENDIX: ACRONYMS

ACS	American Community Survey (U.S. Census Bureau)
ADE	Arizona Department of Education
ADHS	Arizona Department of Health Services
AHCCCS	Arizona Health Care Cost Containment System
CGGS	Cochise, Graham, Greenlee, and Santa Cruz Counties (Arizona)
SCAAP	State Criminal Alien Assistance Program
TEI	Teacher Experience Index



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