The Economic Impacts of Immigrants in Arizona

BY

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Table of Contents

Preface

Arizona's 362-mile border with Mexico is integral to its history. It shapes immigration's impacts in the state and colors 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 immigration in Arizona. To this end, we analyze the role immigrants play as consumers and as workers, and examine their 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, the foreign-born 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 the Arizona.

The likelihood that many of Arizona's non-citizens are illegal 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. And 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.

Executive Summary

This report examines the costs and benefits of immigration in Arizona. It provides estimates of the large categories of fiscal cost associated with immigrants – education, health care, and law enforcement – and measures their contributions to Arizona's economy both as consumers and as workers. The report examines the two categories of immigrants (naturalized citizens and non-citizens) separately in order 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 $2.356 billion ($862.1 million for naturalized citizens plus $1.49 billion for non-citizens). Balanced against estimated fiscal costs of $1.414 billion (for education, health care, and law enforcement), the net 2004 fiscal impact of immigrants in Arizona was positive by about $942 million.

Fiscal Costs of Immigration

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

- 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 $544 million of which $352.2 million (65 percent) was incurred in Maricopa County.

- Health care: Total uncompensated care costs (reported as bad debt) for hospitals in Arizona was $419.6 million, of which an estimated $134.4 million (32 percent) was incurred by immigrants. Of the $134.4 million in uncompensated care costs associated with immigrants, $119.9 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 $641.9 million was incurred by immigrants. Of the $641.9 million in AHCCCS costs associated with immigrants, $477.4 million was incurred by non-citizens.

- Law enforcement: In the area of law enforcement, the cost to the Arizona Department of Corrections of incarcerating immigrants in 2004 was $90.9 million, of which $89.1 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.

- Jobs and income: Consumer spending in 2004 by *naturalized citizen households* in Arizona was an estimated $6.06 billion. Approximately 38,500 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 $4.41 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 $926 million, and other income (defined as rents, royalties, dividends, and corporate profits) of $562.7 million.

- Tax revenues: This consumer spending in 2004 by Arizona's naturalized citizens generated tax revenues of approximately $456.4 million, consisting of personal taxes of $48.7 million, sales taxes of $213.7 million, and business taxes of $194 million.

  Consumer spending in 2004 by Arizona's non-citizens generated tax revenues of approximately $318.6 million, consisting of personal taxes of $36.5 million, sales taxes of $148.3 million, and business taxes of $133.8 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 workers in specific areas of medicine and science.

In *low-skilled occupations* in Arizona:

- Agriculture: Immigrants were 59 percent of the workforce in farming occupations and 22 percent of the workforce in food-preparation-and-serving occupations.

- 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 are 27 percent of the workforce in all construction trades.

- 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.

- 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:

- Medicine: Immigrants were 38 percent of medical scientists and 19 percent of physicians and surgeons.

- 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 electronic engineers. Immigrants were 15 percent of economists.

Economic Contributions of Immigrant Labor

Approximately $14.8 billion, or four percent, of the state's output can be attributed to naturalized citizen workers, resulting in 121,000 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 $862.1 million.

Non-citizens, for their part, contributed $28.9 billion, or eight percent of Arizona's economic output, resulting in 278,000 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 $1.49 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.

- Agriculture: A fifteen percent workforce reduction in the agriculture sector would result in direct losses of 3,300 full-time-equivalent jobs, and losses of $600.9 million in output including lost labor income of $198.6 million, and lost other income of $116.1 million. The lost direct state tax revenue would be approximately $24.8 million.

- Construction: A fifteen percent workforce reduction in the construction sector would result in direct losses of 55,700 full-time-equivalent jobs, and $6.56 billion in output including lost labor income of $2.59 billion and $450.5 million in other lost income. The direct lost state tax revenue would be approximately $269.2 million.

- Manufacturing: A ten percent reduction in the manufacturing workforce would result in direct losses of 12,300 full-time-equivalent jobs, and $3.77 billion in output including lost labor income of $740.8 million, and lost other income of $286.1 million. The lost direct state tax revenue would be approximately $104.4 million.

- Service industries: In the service sectors analyzed, a sixteen percent reduction in the labor force would translate to direct losses of 54,000 full-time equivalent-jobs, and lost output of $2.48 billion including reduced labor income of $901.3 million, and reductions in other income of $273.0 million. The lost direct state tax revenue would be approximately $156.9 million.

Net Fiscal Impacts of Immigrants

Total state tax revenue attributable to immigrant workers was an estimated $2.356 billion ($862.1 million for naturalized citizens plus $1.49 billion for non-citizens). Balanced against estimated fiscal costs of $1.414 billion, the net 2004 fiscal impact of immigrants in Arizona was approximately plus $942 million.

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 dynamic over time, but looking at data for one year provides a snapshot of the extent and magnitude of immigrants' role in Arizona's economy.

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 people, an increase of over 300 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 (percent)	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**(1)
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**

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

(1) 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 (ACS).

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 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.

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 age. Figure 1 illustrates numbers of native-born and foreign-born 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 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: 2000 U.S. Census)

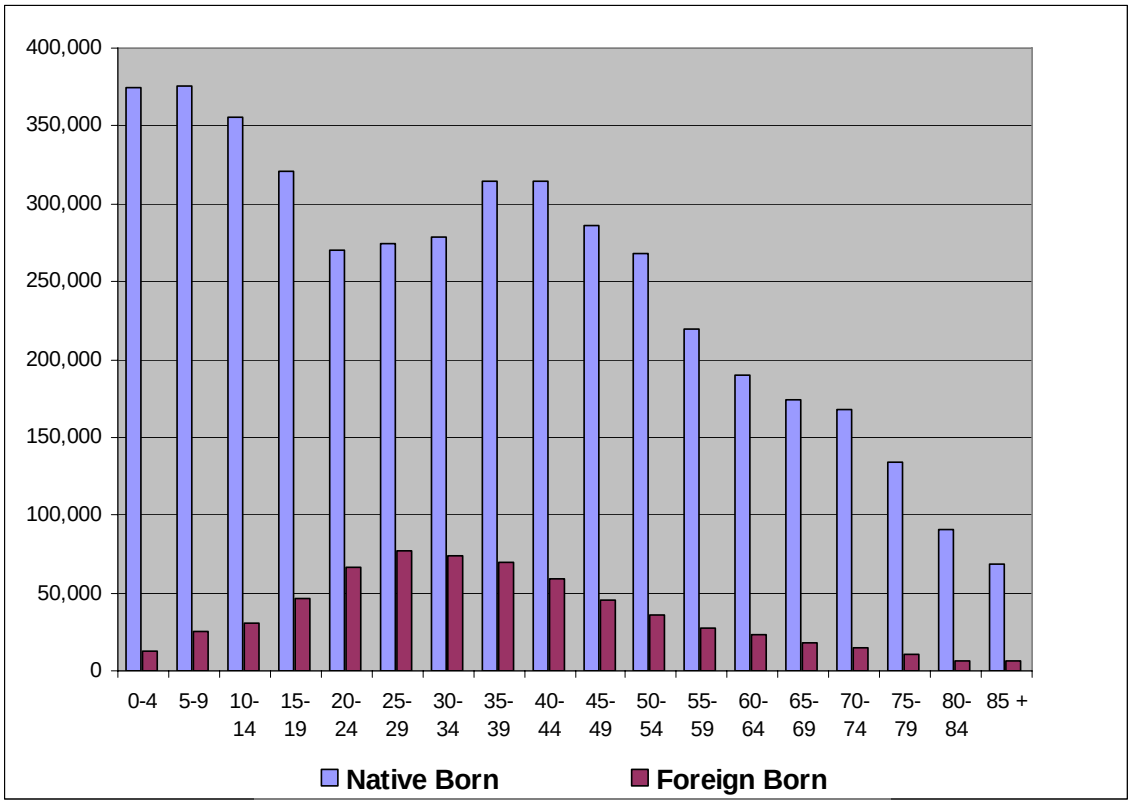
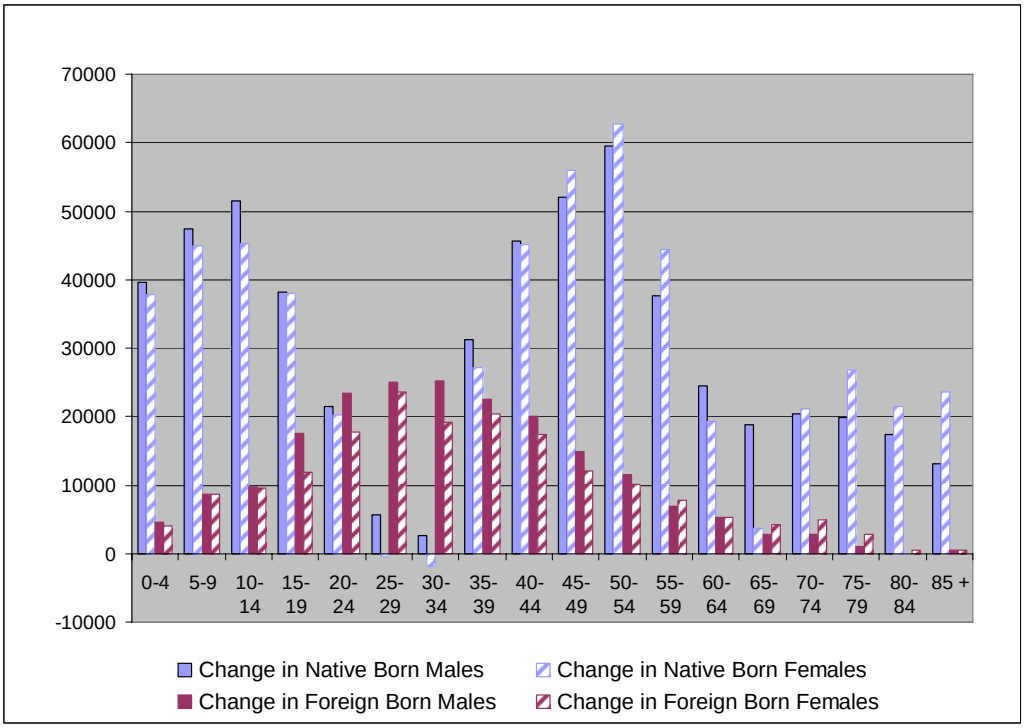


Figure 2 details the changes between 1990 and 2000 in these age groups by gender. The growth in Arizona's immigrant population has been concentrated among people of working age while the native-born population has seen greater growth among people less than 25 and more than 35 years old. The number of 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: 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 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 profit, causing investment in existing industries tends to increase.

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 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 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 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	Percent	Number	Percent	Number	Percent	Number	Percent
Up to 9th grade	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**

Source: 2000 U.S. Census

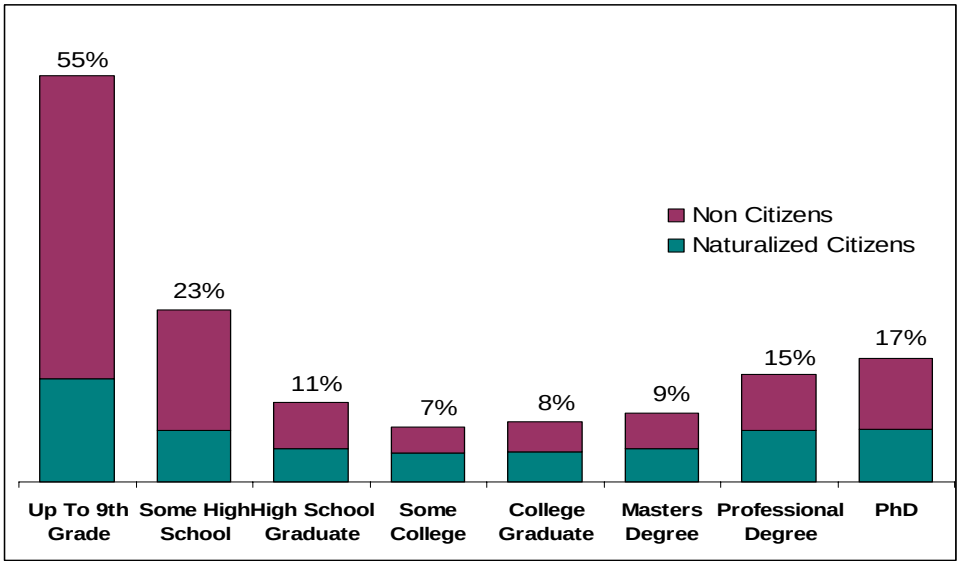
(1) only includes number of persons 25 years of age and older in each category

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. 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.

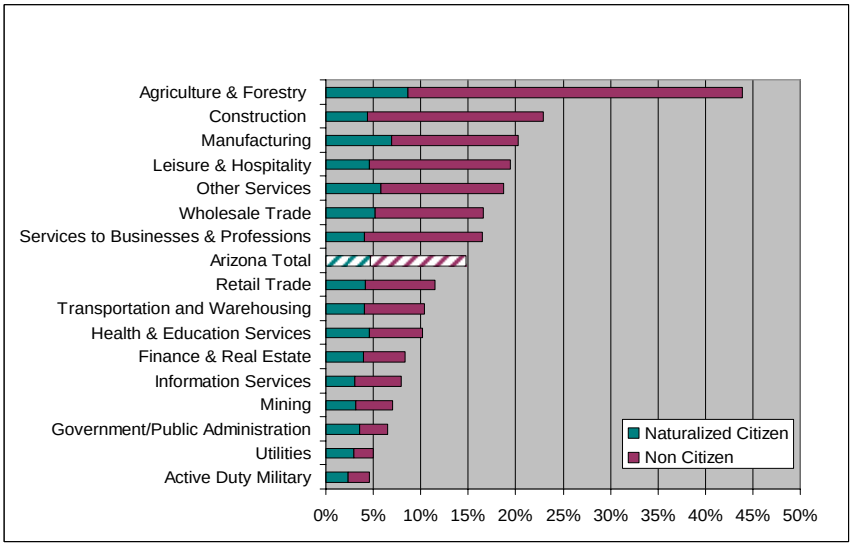
Figure 3. Percent of Immigrants in Arizona within Educational Attainment Categories
(Source: 2000 U.S. Census)



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 particularly reliant on non-citizen labor.

Figure 4. Percent of Immigrant Workforce for Various Industry Groups in Arizona
(Source: 2000 U.S. Census)



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 require 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:			
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:			
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:			
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. 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. 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.

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

	Naturalized Citizens		Non-citizens		Total Foreign-born	
Region of origin	Number	Percent	Number	Percent	Number	Percent
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	0.4	5.2	0.8	8.1	1
Oceania and other	0.9	0.15	1.6	0.24	2.5	0.4
Total foreign-born	**194.9**	**30**	**457.3**	**70**	**652.2**	**100**

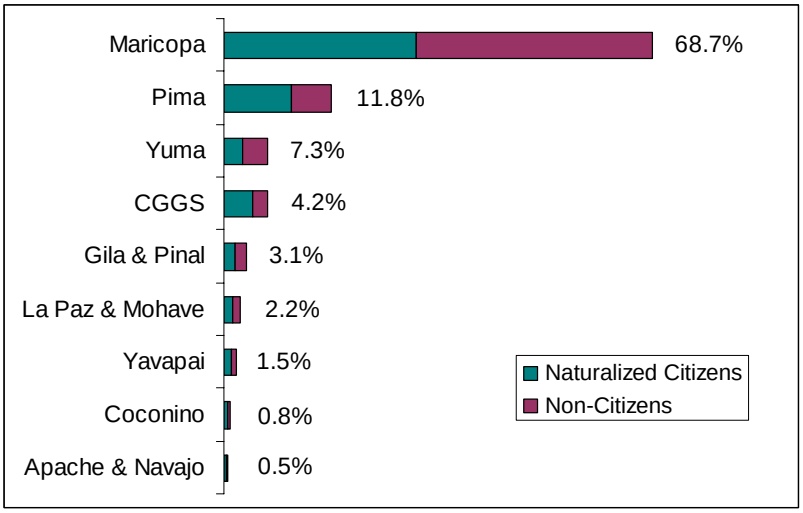
Source: 2000 U.S. Census

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 dispersion of immigrants in Arizona. These data are provided in Table A-3 of the Appendix.

Figure 5. Arizona's Immigrant Population by County of Residence, 2000



Note: "CGGS" refers to Cochise, Graham, Greenlee, and Santa Cruz Counties as combined by the U.S. Census Bureau in its data collection.

How do the family characteristics of immigrants and native-born persons compare?

Immigrants, whether naturalized citizens or non-citizens, are more likely to be married than are native-born citizens. As of the year 2000, 68 percent of naturalized citizens and 54 percent of non-citizens were married, compared to 42 percent of native-born citizens. Immigrants live in larger households as a result of having higher birth rates and being more likely to live in households with extended family. A majority (56 percent) of non-citizen households have four or more members compared to 22 percent of native-born households and 40 percent of naturalized citizen households.

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.

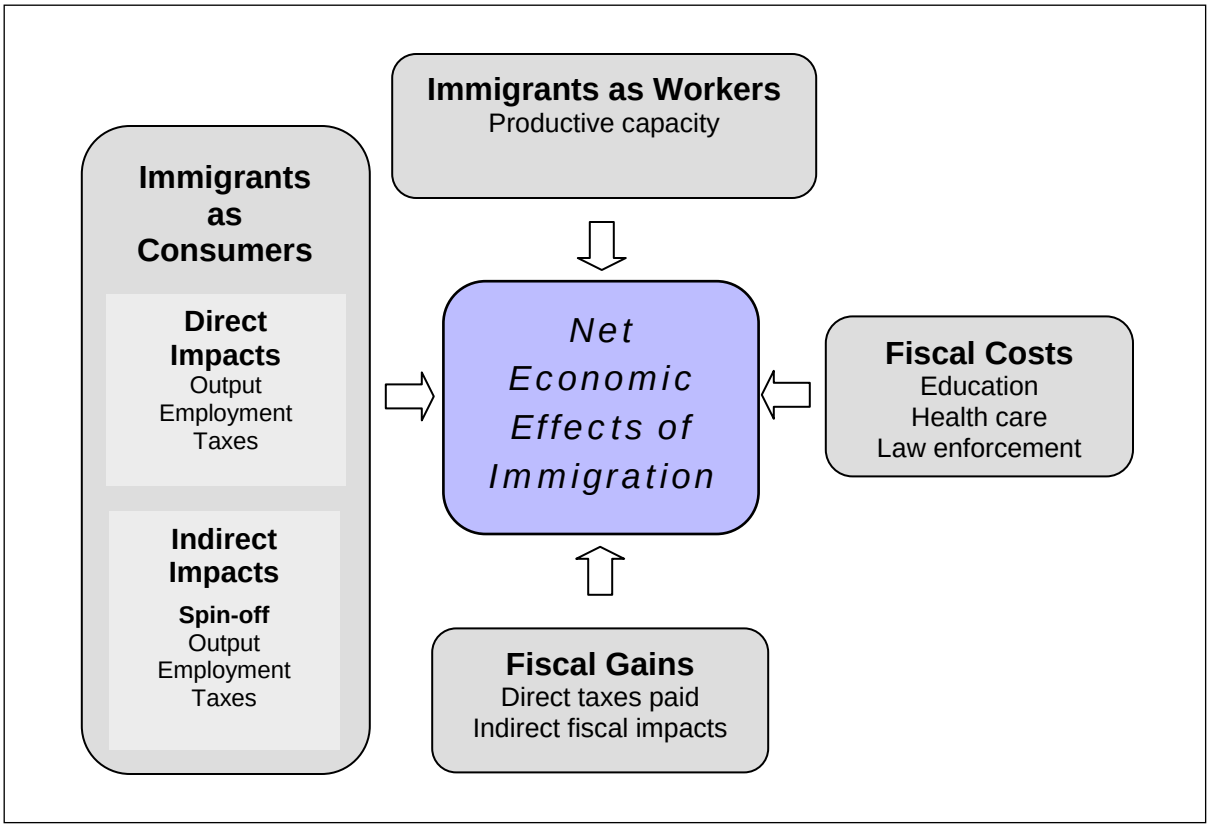
Framework for Analysis

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:

- What are the fiscal costs of immigrants in the areas of education, health care, and law enforcement?
- What are the consequences of immigrants' consumer spending on economic output, job growth, and incomes?
- What role do immigrant workers play as producers in Arizona's economy?
- What are the fiscal gains from immigrant spending and productive contributions to the economy?

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

Figure 6. Framework for Analysis of Immigrants' Role in Arizona's Economy



How do we measure economic impact?

Input-output models, such as IMPLAN (see p. 27), are designed to analyze the economic and fiscal consequences for a region's economy of specific events. 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 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 illegal immigrants fit into this analysis?

Among non-citizens, the U.S. Census does not distinguish between legal and illegal 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 500,000 of this population were unauthorized. (See the demographics section earlier in this report.) This reality 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. (See publications by Jeffrey Passel, cited earlier.) 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

In order to understand the role of immigrants in Arizona's economy, we analyzed fiscal costs of immigrants in the areas of education, law enforcement and health care; examined the consequences of immigrant consumer spending on economic output, job growth, and incomes; measured immigrant contributions as workers to economic output; and estimated the fiscal gains resulting from that economic activity. This was accomplished using the IMPLAN input-output model (see p. 27), 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 areas in our framework.

Fiscal Costs of Immigrants

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 immigrant 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

What are the costs of educating immigrant children in Arizona's public schools?

Data obtained from the Arizona Department of Education (ADE) provides 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.

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

English Language Learner (ELL) enrollment was used as a measure of the number of immigrant children in Arizona schools. The total number of students classified as ELL in 2004 was 160,666. These children were either foreign born or native-born children of immigrant parent living in non-English speaking households. In light of fact that the total number of foreign-born between the ages of 5 and 19 in Arizona as of the 2000 Census was 103,069, we consider 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 the ELL numbers. Apache and Navajo Counties had a combined enrollment of almost 9 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 assume that 90 percent of the ELL students in these counties were Native American children, not immigrants. Similarly, 2004 ELL enrollment in Coconino County was 3 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.

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

The cost of educating 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.

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 & Navajo [4]	2,858.02	11,341	18,026	51.5[4]
Mohave & La Paz	2,858.02	1,689	2,332	6.7
Gila & Pinal	2,858.02	3,344	4,487	12.8
CGGS[5]	2,858.02	9,552	12,638	36.1
Pima	2,858.02	20,271	26,187	74.8
Maricopa	2,858.02	95,248	123,217	352.2
Coconino [4]	2,858.02	4,032	5,540	15.8[4]
Yavapai	2,858.02	1,690	2,369	6.8
Yuma	2,858.02	13,499	16,516	47.2
Totals		**160,666**	**211,313**	**603.9**
Native American Adjustment				-59.8[4]
Foreign-Born ELL Costs [4]				**544.1**

(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.

(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.

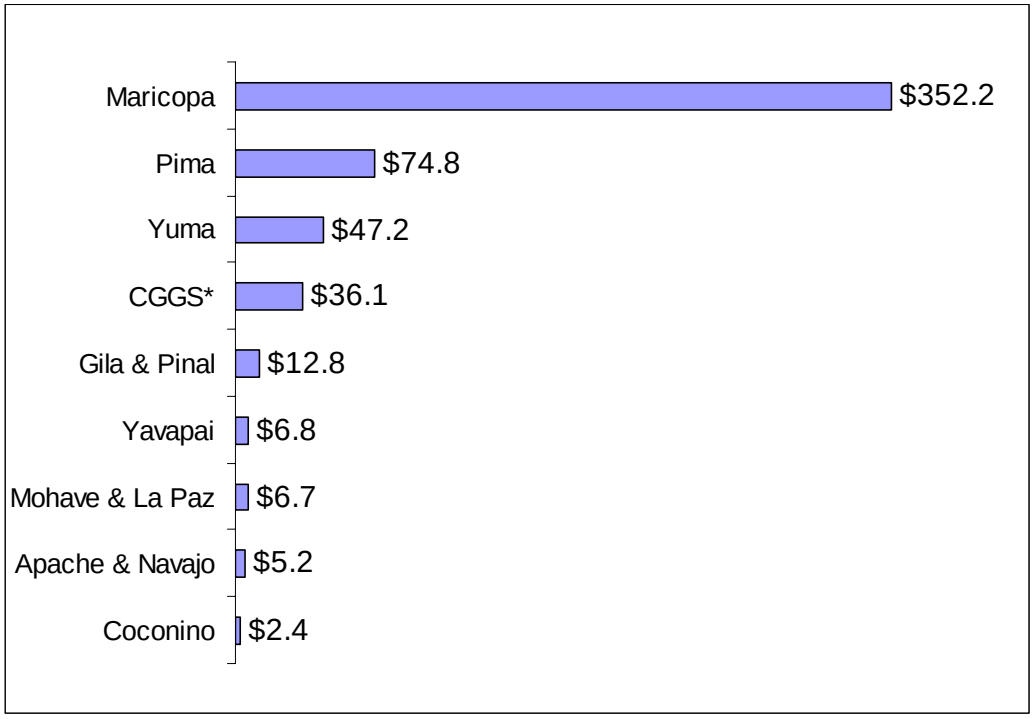
(4) ELL enrollment in these counties is greater than the foreign-born share of the population would indicate. Of Arizona's immigrant population, 0.6 percent lives in Apache & Navajo Counties and 0.9 percent lives in Coconino County. Because of the large numbers of Native American children in these counties, 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 as follows:

$$-\$59{,}826{,}166 = (-.9 \times \$51{,}519{,}036) + (\$15{,}834{,}157 \times -.85).$$

Note: "CGGS" refers to Cochise, Graham, Greenlee, and Santa Cruz Counties as aggregated by the U.S. Census Bureau in its data collection.

Figure 7, below, illustrates the extent to which ELL costs concentrate in Maricopa County, reflecting the fact that most of Arizona's immigrants *live* in Maricopa County.

Figure 7. 2004 ELL Costs by County
(million dollars)



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 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 that do native born people.* To the extent that immigrants use health care **more** than native born people, this approach underestimates their impacts on heath care costs. To the extent that

immigrants use health care **less** than native born people, this approach overstates their impacts on heath care costs.

Numerous national studies have indicated that, across the board, immigrants use health care at *lower* rates than do native born people.[1] This suggests that the estimated health care costs in this report may be over-stated. However, in light of the sensitivities that exist about the fiscal costs of immigrants, we have taken a conservative approach by basing our calculations on assumed 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 *under*estimated.

How were uncompensated care costs of hospitals estimated?

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

The analysis included the following steps:

- With 2004 ACS insurance data for Arizona, we calculated the number of native-born, naturalized citizen and non-citizens who were uninsured in 2004.

- These numbers were then used to calculate the percent of uninsured Arizonans who were native born, the percent who were naturalized citizens, and the percent who were non-citizens.

- These percentages were then applied to 2004 hospital bad debt data as reported by the Arizona Department of Heath Services. The Arizona Department of Health Services 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.

[1] See Fact Sheet on Immigrants and Health Care available at <http://udallcenter.arizona.edu/programs/immigration/publications/fact_sheet_no_2_health_care_costs.pdf>.

Figure 8. Estimated 2004 Hospital Uncompensated Care Costs
(Millions of Dollars)

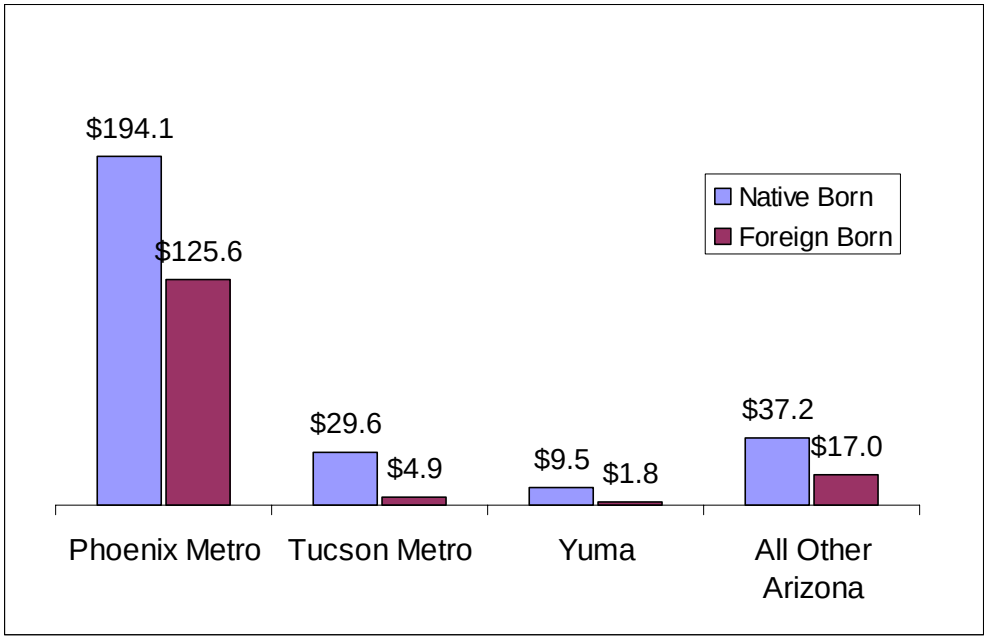


Table 6. 2004 Hospital Uncompensated Care Costs[1]
(million dollars)

	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	13.5	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**

[1]Hospital bad debt as reported by the Arizona Department of Health Services

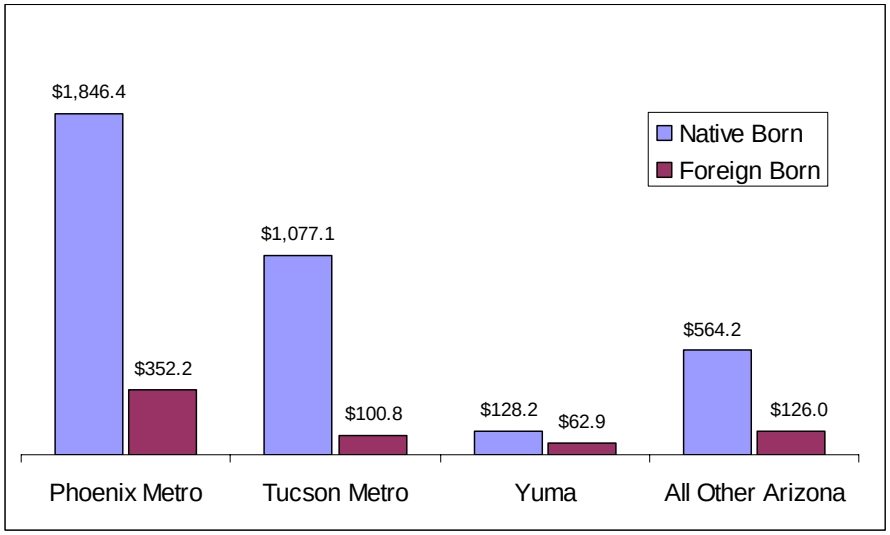
Several observations can be made from this information. First, the majority of uncompensated care costs are incurred in the Phoenix metropolitan area (Maricopa County). Second, native born people have a larger impact on uncompensated care costs ($270.3 million) than do immigrants ($149.3 million). Third, 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
(millions dollars)



As with uncompensated care costs, the majority of AHCCCS costs are attributable to native born living in Maricopa County. The next largest share is incurred by native born living in Pima County. Immigrant use of AHCCCS is approximately $642 million out of $4.26 *billion* in total expenditures. Again, the majority ($477.4 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
Foreign Born	**641.9**	**352.2**	**100.8**	**62.9**	**126.0**
Native Born	**3,615.9**	**1,846.4**	**1,077.1**	**128.2**	**564.2**
Arizona Total	**4,257.9[1]**	**2,198.7**	**1,177.9**	**191.1**	**690.2**

(1) Calendar year expenditures calculated from fiscal year data reported in 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 and are shown in Table 8. The vast majority of incarceration costs are for non-citizens. The total cost to Arizona 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.

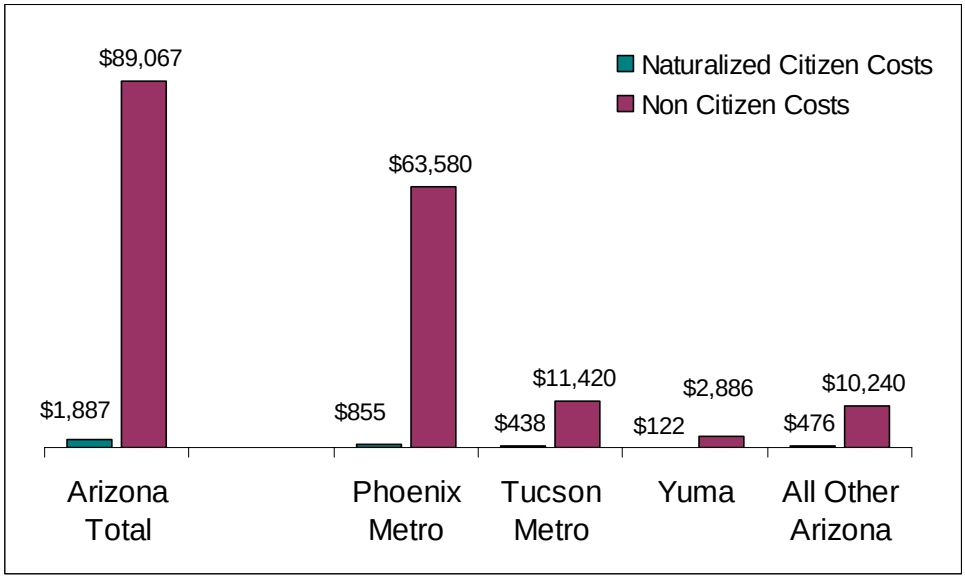
Table 8. 2004 Costs of Immigrant Inmates State Total and by County of Residence

	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	260	277	269	271	229
Average Cost Per Day	$56.19	$56.19	$56.19	$56.19	$56.19
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	249	253	265	219	204
Average Cost Per Day	$56.19	$56.19	$56.19	$56.19	$56.19
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**
FY2004 Actual Operating Budget	**$644,000,000**				

Note: Fully allocated costs. Data provided by the Arizona Department of Corrections

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

Figure 10. 2004 Costs of Incarcerating Foreign-Born in Arizona
(thousand dollars)



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 large categories of fiscal costs associated with immigrants, we recognize that not all of the costs associated with immigration (especially illegal 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 legal or illegal) residing in Arizona.

Certainly communities along the U.S.-Mexico border bear additional costs associated with illegal entry to the United States from Mexico. One such cost is for cleaning up the trash left behind by illegal migrants. Authorities estimate that each illegal crosser leaves behind about 8 pounds of trash. In 2002, the U.S. estimated that the cost of removing all of the trash left by illegal 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.[2] 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.

[2] Davis, Tony, *Crossers Burying Border in Garbage,* Arizona Daily Star, July 30, 2006 available at: <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 $472.4 million for non-citizens) Arizona's cost of incarcerating immigrants in 2004 was $91 million out of a total Department of Corrections budget of $643.4 billion. Arizona received $12.1 million from the federal government through the State Criminal Alien Assistance Program in 2004.

Economic Contributions of Immigrants

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 do 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: 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 is 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 $6.06 billion for Arizona naturalized citizen households and $4.41 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

The IMPLAN input-output model is a regional accounting system 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 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 regions 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 66,400 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			
	Output[1]	Employment[2]	Labor Income	Other Income[3]
Naturalized Citizens	5,937,000,000	38,500	1,230,000,000	903,000,000
Non-Citizens	4,310,000,000	27,960	926,000,000	563,000,000
Total Impacts	**10,247,000,000**	**66,460**	**2,156,110,000**	**1,466,000,000**

	Estimated Contribution to Taxes[4]			
	Personal Taxes[5]	Business Taxes[6]	Sales Taxes	Total
Naturalized Citizens	49,000,000	194,000,000	214,000,000	**457,000,000**
Non-Citizens	36,000,000	134,000,000	148,000,000	**319,000,000**
Total Fiscal Impacts	**85,000,000**	**328,000,000**	**362,000,000**	**776,000,000**

Notes:
(1) Labor income and other income are subcategories of *Output*.
(2) *Employment* in IMPLAN is measured in full-time equivalent jobs and thus appears lower than estimates from other sources.
(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.

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 illegal immigrants? Do they pay taxes?

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

- the proportion of unauthorized immigrants working with forged documents, and

- 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 over-stated. 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), we do know that *some* of them *do* represent net growth in Arizona's 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			
	Output[1]	Employment	Labor Income	Other Income
Naturalized Citizens	2,436,000,000	22,789.1	811,000,000	458,000,000
Non-Citizens	1,796,000,000	16,818.3	597,000,000	349,000,000
Total Impacts	**4,232,000,000**	**39,607.4**	**1,408,000,000**	**799,000,000**

(1) Labor income and other income are subcategories of *Output*.

Table 11. Immigrant Consumer Spending
2004 Spin-Off Contributions

	Maximum Possible Additional Taxes[1]			
	Personal Taxes	Business Taxes	Sales Taxes	Total
Naturalized Citizens	80,000,000	85,000,000	20,000,000	**185,000,000**
Non-Citizens	54,000,000	58,000,000	14,000,000	**127,000,000**
Total Fiscal Impacts	**134,000,000**	**143,000,000**	**34,000,000**	**312,000,000**

Notes:
(1) The spin-off share of taxes was estimated to be the total tax impacts minus the direct tax impacts calculated above.

In brief
As consumers, immigrants command significant spending power. The 2004 spending power of naturalized citizens was approximately $6.06 *billion* and of non-citizens was approximately $4.41 *billion*. The economic activity that can be attributed to this spending power includes 66,400 full-time equivalent jobs and $10.2 *billion* in output. The state tax revenues attributable to this spending power were approximately $776 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 in order to measure the portion of output, employment, labor and other income, and state tax revenues 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 workforce reduction for output, employment, 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 foreign-born share of each sector's workforce was calculated using data from the U.S. census, which indicates the number and share of native born, naturalized citizen and non-citizen workers in each industry sector in Arizona.[3] 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 output, employment, labor and other income, and tax revenues that can be attributed to these workers.

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 12.

What were the tax consequences of this economic activity?

As we see in Table 13, the IMPLAN model estimates that the economic activity generated by naturalized citizens resulted in approximately $862.1 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 $2.36 billion of which 41 percent were business-related taxes and 43 percent were sales taxes.

[3] Refer to *Employment by Industry and Occupation* for data on the share of foreign-born workers by industry sector and occupation at ‹http://udallcenter.arizona.edu/programs/immigration/immigrants_in_arizona.html›.

Table 12. Immigrants in the Workforce - 2004 Direct Impacts

	Output[1]	Employment[2]	Labor Income	Other Income[3]
AZ Baseline Totals in IMPLAN	351,625,000,000	3,058,002	127,196,000,000	57,084,000,000
	Direct Contribution by Immigrants			
	Output	**Employment[1]**	**Labor Income**	**Other Income[2]**
Naturalized Citizens	14,804,000,000	121,378	4,941,000,000	1,876,000,000
Percent of AZ Baseline	**4.2**	**4.0**	**3.9**	**3.3**
Non Citizens	28,965,234,345	278,085	10,034,000,000	3,314,000,000
Percent of AZ Baseline	**8.2**	**9.1**	**7.9**	**5.8**
Total Economic Impacts	43,768,740,885	399,463	14,975,000,000	5,192,000,000
Percent of AZ Baseline	**12.4**	**13.1**	**11.8**	**9.1**

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.

Table 13. Immigrants in the Workforce – 2004 Direct Impacts

	Estimated Direct Contributions to Taxes[1]			
	Personal Taxes[2]	**Business Taxes[3]**	**Sales Taxes**	**Total**
Naturalized Citizens	132,650,000	376,720,000	352,720,000	862,090,000
Non Citizens	234,100,000	590,070,000	669,340,000	1,493,510,000
Total Tax Revenue	366,750,000	966,790,000	1,022,060,000	2,355,600,000

(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.

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 work force because the sectors themselves are large. Table 14 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 14. Direct Output Generated by Naturalized Citizens
(Dollar Amount and Rank by Industry Sector)

Rank	Sector	Share of Workforce (Percent)	Direct Contribution	Cumulative Contribution $ and %	
1	Real estate	4	1,131,000,000	1,131,000,000	7.6
2	New residential 1-unit structures- non-farm	5	909,000,000	2,041,000,000	13.8
3	Wholesale trade	5	884,000,000	2,925,000,000	19.8
4	Semiconductors and related device manufacturing	8	783,000,000	3,707,000,000	25.0
5	Offices of physicians- dentists- and other health	5	344,000,000	4,051,000,000	27.4
6	Hospitals	5	321,000,000	4,372,000,000	29.5
7	Food services and drinking places	3	307,000,000	4,679,000,000	31.6
8	Management of companies and enterprises	7	287,000,000	4,966,000,000	33.5
9	Non-depository credit intermediation and related	4	279,000,000	5,245,000,000	35.4
10	Commercial and institutional buildings	5	274,000,000	5,518,000,000	37.3
11	Search- detection- and navigation instruments	9	237,000,000	5,755,000,000	38.9
12	Telecommunications	3	215,000,000	5,970,000,000	40.3
13	Guided missile and space vehicle manufacturing	2	204,000,000	6,174,000,000	41.7
14	Other ambulatory health care services	5	179,000,000	6,353,000,000	42.9
15	Automotive repair and maintenance- except car washes	5	178,000,000	6,531,000,000	44.1
16	Motor vehicle and parts dealers	4	173,000,000	6,704,000,000	45.3
17	Insurance carriers	3	165,000,000	6,869,000,000	46.4
18	Architectural and engineering services	4	156,000,000	7,025,000,000	47.5
19	Miscellaneous store retailers	11	151,000,000	7,176,000,000	48.5
20	Hotels and motels- including casino hotels	7	149,000,000	7,324,000,000	49.5

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

Table 15 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 15. Direct Output Generated by Non-Citizens Dollar Amount and Rank by Industry Sector

Rank	Sector	Share of Workforce (Percent)	Direct Impact	Cumulative Impact $ and %	
1	New residential 1-unit structures-non-farm	20	3,637,000,000	3,637,000,000	12.6
2	Wholesale trade	11	1,938,000,000	5,575,000,000	19.2
3	Food services and drinking places	18	1,715,000,000	7,290,000,000	25.2
4	Real estate	5	1,337,000,000	8,627,000,000	29.8
5	Commercial and institutional buildings	20	1,095,000,000	9,722,000,000	33.6
6	Semiconductors and related device manufacturing	9	862,000,000	10,584,000,000	36.5
7	Services to buildings and dwellings	28	633,000,000	11,217,000,000	38.7
8	Vegetable and melon farming	45	547,000,000	11,764,000,000	40.6
9	Automotive repair and maintenance-except car washes	15	524,000,000	12,288,000,000	42.4
10	New residential additions and alterations	20	481,000,000	12,769,000,000	44.1
11	Hotels and motels- including casino hotels	19	419,000,000	13,187,000,000	45.5
12	Motor vehicle and parts dealers	8	410,000,000	13,597,000,000	46.9
13	Employment services	10	384,000,000	13,981,000,000	48.3
14	Cattle ranching and farming	25	351,000,000	14,332,000,000	49.5
15	Telecommunications	5	334,000,000	14,666,000,000	50.6
16	All other miscellaneous professional services	9	322,000,000	14,988,000,000	51.7
17	Hospitals	5	321,000,000	15,308,000,000	52.9
18	Offices of physicians- dentists- and other health	4	313,000,000	15,622,000,000	53.9
19	Other new construction	15	277,000,000	15,899,000,000	54.9
20	Non-depository credit intermediation and related	4	246,000,000	16,145,000,000	55.7

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 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, indicates 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 $2.36 *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 in order 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 detained in Table 16, below.

Table 16. Workforce Reduction Simulations

	Consequences of Workforce Reductions Direct Industry Impacts			
Sector	**Industry Output[1]**	**Employment[2]**	**Labor Income**	**Other Income**
Agriculture (15 percent workforce reduction)	-601,000,000	-3,294.80	-199,000,000	-116,000,000
Resulting Percent Reduction	**-15.9**	**-15.0**	**-18.9**	**-18.1**
Construction (15 percent workforce reduction)	-6,564,000,000	-55,721	-2,589,000,000	-451,000,000
Resulting Percent Reduction	**-19.3**	**-19.2**	**-19.2**	**-19.2**
Manufacturing (10 percent workforce reduction)	-3,771,000,000	-12,286	-741,000,000	-268,000,000
Resulting Percent Reduction	**-9.9**	**-9.8**	**-9.8**	**-9.8**
Service Sectors (16 percent workforce reduction)	-2,475,000,000	-53,960	-901,000,000	-273,000,000
Resulting Percent Reduction	**-15.3**	**-16.2**	**-15.7**	**-14.7**

Notes:
(1) Labor Income and Other Income are subcategories of *Output*.
(2) Full-time equivalent jobs

The reductions in tax revenues to the state of Arizona that resulted from these workforce reductions are detailed in Table 17.

Table 17. Workforce Reduction Simulations

	Consequences of Workforce Reduction Direct Tax Impacts			
Sector	**Corporate Taxes**	**Sales Taxes**	**Personal Taxes**	**Totals by Industry**
Agriculture	-11,000,000	-11,000,000	-5,000,000	**-25,000,000**
Construction	-99,000,000	-109,000,000	-61,000,000	**-269,000,000**
Manufacturing	-48,000,000	-39,000,000	-17,000,000	**-104,000,000**
Services	-61,000,000	-75,000,000	-21,000,000	**-157,000,000**
Totals by Type of Tax	**-219,000,000**	**-234,000,000**	**-104,000,000**	**-555,000,000**

To summarize the results of these simulations:

- For agriculture, a 15 percent workforce reduction would result in losses of $600.9 million in output, 3,300 full-time equivalent lost jobs, labor income of $198.6 million, and other income of $116.1 million. The lost tax revenue to the state would be approximately $24.8 million.

- In construction, a 15 percent workforce reduction would result in losses of $6.6 billion in output, 55,700 full-time equivalent jobs, labor income of $2.6 billion and $450.5 million in other income. The lost tax revenue to the state would be approximately $269.2 million.

- A ten percent reduction in the manufacturing workforce would result in losses of $3.8 billion in output, 12,300 full-time equivalent jobs, labor income of $740.8 million, and other income of $286.1 million. The lost tax revenue to the state would be approximately $104.4 million.

- In the service sectors analyzed, a 16 percent reduction in the labor force would translate to losses in output of $2.5 billion, the loss of 54,000 full-time equivalent jobs, reduced labor income of $901.3 million, and reductions in other income of $273.0 million. The lost tax revenue to the state would be approximately $156.9 million.

How were the percentage impacts calculated?

Table 18 describes the base levels of output, employment, labor 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 18. Workforce Reduction Simulations

	Base (Pre-Simulation) Levels in IMPLAN Model			
Simulation Sectors	**Industry Output[1]**	**Employment**	**Labor Income**	**Other Income**
Agriculture	3,775,000,000	22,033	696,000,000	640,000,000
Construction	34,054,000,000	290,363	13,503,000,000	2,347,000,000
Manufacturing	38,220,000,000	125,999	400,000,000	2,734,000,000
Service Sectors	16,147,000,000	332,582	392,000,000	1,853,000,000

Notes:
1. Labor Income and Other Income are Subcategories of *Output*.

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 paid 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 to 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. A 15 percent reduction in employment in construction resulted in about a 19 percent reduction in output in construction. 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 15 percent workforce reduction in agriculture resulted in a reduction in output in Arizona of $600 million and lost tax revenues of approximately $25 million. A 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 ten percent manufacturing workforce reduction resulted in reduced output of $3.8 *billion* and lost tax revenues of approximately $104 million. A 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' role 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 and 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 *indirect* fiscal consequences resulting from the economic activity that immigrants make possible as consumers and as workers.

Table 19 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 $1.414 billion in 2004.

Table 19. Summary of 2004 Fiscal Costs of Immigrants

	Total	Phoenix Metro	Tucson Metro	Yuma	All Other Arizona
Foreign-Born ELL Costs	544,109,802	352,156,920	74,842,453	47,204,446	69,905,983
Uncompensated Care Costs	149,250,003	125,624,692	4,852,227	1,754,828	17,018,256
AHCCCS Costs	641,935,906	352,228,165	100,788,989	62,908,275	126,010,477
Law Enforcement	90,953,798	64,434,422	11,857,326	3,008,019	10,715,770
Subtotal	**1,426,249,509**	**894,444,199**	**192,340,995**	**114,875,568**	**223,650,486**
Less Federal SCAAP[1] Reimbursement	-12,139,971				
Total	**1,414,109,538**	**894,444,199**	**192,340,995**	**114,875,568**	**223,650,486**

Note:
(1) SCAAP = State Criminal Alien Assistance Program.

Table 20 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 $2.356 billion in tax revenues can be attributable to immigrants as workers.

Balanced against the $1.414 billion in estimated fiscal costs, there is a positive fiscal impact of approximately $942 million, most of which is in the form of sales and business taxes.

Table 20. 2004 Net Fiscal Impacts of Immigrants in Arizona

	Estimated Contributions of Immigrants in the Workforce To Arizona Tax Revenues [1]			
	Personal Taxes[2]	**Business Taxes[3]**	**Sales Taxes**	**Total**
Naturalized Citizens	132,650,000	376,720,000	352,720,000	862,090,000
Non Citizens	234,100,000	590,070,000	669,340,000	1,493,510,000
Total Estimated Tax Revenues	366,750,000	966,790,000	1,022,060,000	2,355,600,000
Total Estimated Fiscal Costs				(1,414,110,000)
Net Fiscal Impacts				941,490,000

(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.

In brief

Fiscal costs of immigrants in 2004 were an estimated $1.414 billion. Tax revenues attributable to immigrants as workers were approximately $2.356 billion, resulting in a net fiscal gain of approximately $942 million.

Conclusions

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 them 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-olds 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 are from Mexico and most 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 fiscal costs of immigrants largely fall into three categories: education, health care, and law enforcement, and these totaled $1.414 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 work force, 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 $2.356 billion. Thus there was a net fiscal gain of $942 million.

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

278,000 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 $6.06 billion and of non-citizens was approximately $4.41 billion. The economic activity that can be attributed to this spending power includes 66,400 full-time equivalent jobs and $10.2 billion in output. The state tax revenues attributable to this spending power were approximately $776 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 $269 million. A 10 percent workforce reduction in manufacturing resulted in reduced output of $38 billion and lost tax revenues of approximately $104 million. A 16 percent workforce reduction in the service sectors analyzed resulted in lost output of $2.5 billion and reduced tax revenues of $157 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

	Native Born				Foreign Born			
	1990		2000		1990		2000	
Age Group	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.

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

	1990 to 2000 Change			Share of Change (Percent)		
Age Group	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

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[(f)]	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 [(a)]	Disposable Share of Income[(b)]	Household Disposable Income[(c)]	Number of Households[(d)]	Total Buying Power [(e)]
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

(a) 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.

(b) 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.

(c) Disposable Income = Household Income x Share of Income That is Disposable

(d) As estimated by the 2004 American Community Survey

(e) Total Buying Power = Disposable Income x Number of Households

Table A-5. Workforce Reduction Calculations for Industries Simulated

	Non-Citizen Percent of Workforce[a]	IMPLAN Base Employment[b]	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

(a) Source: Detailed employment by nativity data from the 2000 US Census
(b) 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.

Table A-6. Insurance Cohorts: Numbers by Type of Insurance and Nativity

	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

**Calculated from 2004 Current Population Survey insurance Data

Table A-7. 2004 Number and % Uninsured by Nativity*

	Total Arizona (Number)	Phoenix Metro (Number)	Tucson Metro (Number)	Yuma (Number)	All Other Arizona (Number)
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 (Percent)	**Phoenix Metro (Percent)**	**Tucson Metro (Percent)**	**Yuma (Percent)**	**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

*Calculated using Census Bureau population data and Current Population Survey insurance data.