

P³ | PRODUCTIVITY AND PROSPERITY PROJECT

The Magnitude and Causes of Arizona's Low Per Capita Income

February 2010

W. P. CAREY
SCHOOL of BUSINESS

ASU ARIZONA STATE
UNIVERSITY

DENNIS HOFFMAN, Ph. D.

Professor of Economics,
University Economist and
Director, L. William Seidman
Research Institute

TOM R. REX, MBA

Associate Director, Center for
Competitiveness and Prosperity
Research

THE MAGNITUDE AND CAUSES OF ARIZONA'S LOW PER CAPITA INCOME

**A report from the Productivity and Prosperity Project (P3), an
initiative supported by the Office of the University Economist**

February 2010

Dennis Hoffman, Ph.D.

Professor of Economics, University Economist,
and Director, L. William Seidman Research Institute

Tom R. Rex, MBA

Associate Director, Center for Competitiveness and Prosperity Research

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

(480) 965-5362

FAX: (480) 965-5458

EMAIL: Dennis.Hoffman@asu.edu or Tom.Rex@asu.edu

www.wpcarey.asu.edu/seid



SUMMARY

The average income in Arizona is less than the national average regardless of the source of income data and regardless of whether income is expressed per capita, per household, or per tax return. However, the magnitude of the income shortfall from the national average varies by measure.

The Magnitude of Arizona's Low Income

In this report, income in Arizona is compared to the national average using data from four sources: personal income as estimated by the U.S. Bureau of Economic Analysis, a variant of personal income estimated by the Tax Foundation, adjusted gross income as reported by the Internal Revenue Service, and money income reported by the Census Bureau from decennial censuses and the American Community Survey. In order to be comparable across the four sources, Arizona's income is expressed on a per capita basis as a percentage of the national average.

In 2007, the latest year of data for all four measures, per capita income in Arizona ranged from 7 percent below average based on the Census Bureau's data to 13 percent below average based on the Bureau of Economic Analysis's data. Thus, the latter suggests a problem nearly double in magnitude to that estimated from the Census Bureau's data, indicating a need to determine which of the measures may be more accurate for Arizona.

An evaluation of the four income measures is necessary in order to understand the nature and magnitude of the state's income deficiency. Income is important not only as a key gauge of economic well-being, but also since income frequently is used to normalize other measures. For example, to compare public revenues and expenditures across states or over time in one state, income frequently is used to control for size differences.

Total income consists of income of various types, including wages, self-employment income, retirement income, capital gains, dividends, and interest earned. Per capita income in Arizona relative to the U.S. average varies across the four measures largely for two reasons: (1) differences in the value of aggregate income by type due to definitional and methodological differences; and (2) variations in the per capita difference in income by type between the national average and Arizona.

Each measure has various shortcomings. The Bureau of Economic Analysis's measure is designed to measure payments to factors of production, not the money income of households. It is conceptually inappropriate to use as a measure of cash income received during a particular period due to its inclusion of noncash income and income not received by individuals and its exclusion of capital gains. Its methodology for estimating retirement income is a particular issue for Arizona.

The Tax Foundation adjusts for the most significant shortcomings in the Bureau of Economic Analysis's measure when used as a gauge of cash income. However, since detail by income type is not available, the Tax Foundation's measure cannot be evaluated.

The Census Bureau's measure of income is subject to survey error. In particular, the income of people living in group quarters is extremely high in Arizona relative to the national average. If group quarters income is excluded, the primary concerns with using the Census Bureau's measure are its exclusion of capital gains, its apparent underreporting of most types of income (especially dividends, interest, and rent), and the likelihood of erratic results from year to year due to survey error.

The income measure of the Internal Revenue Service is limited to taxable income and does not reflect the income of those taxpayers with taxable income who do not file a tax return. It measures adjusted income rather than gross income. However, it is not apparent that these limitations are biasing the estimate of Arizona's per capita income as a percentage of the national average.

The income measures from the Tax Foundation and the Internal Revenue Service have the least objections. Arizona's per capita income in 2007 was 10.2 percent less than the national average according to the IRS and 11.6 percent below average according to the Tax Foundation. While this differential is relatively small, the differences were larger in the preceding five years. It is not possible to ascertain whether the IRS or the Tax Foundation provides the more accurate gauge of income in Arizona.

Causes of, and Solutions to, Low Income in Arizona

While numerous factors contribute to Arizona's low income, two are responsible for most of the shortfall: a low workforce participation rate and a low average wage. These are issues throughout the state—even in the major urban areas.

The low average wage results from the state's subpar job quality and the apparent willingness of workers to accept a relatively low wage in exchange for perceived qualitative benefits to living in Arizona, such as climate. The low workforce participation rate results from numerous factors, including the age distribution of its residents and the subpar educational attainment and work skills of some Arizonans.

Some of the causes of the low average wage and the low workforce participation rate are beyond the reach of public policy, at least directly. However, public policy initiatives that improve the quality of the state's workforce and raise job quality would raise the average income.

To improve the quality of Arizona's existing workforce, a new set of job training programs need to be initiated, with a particular emphasis on those individuals who are willing to work but who are not participating regularly due to limited job skills. To improve the quality of Arizona's future workforce, the low educational attainment and achievement of Arizona's children must be addressed. High school graduation rates must be increased, educational achievement must be improved, more Arizonans must attend postsecondary educational institutions, and all children, regardless of the extent of their education, must be provided with basic workforce skills.

Improving the quality of Arizona's workforce is a prerequisite to raising job quality. In addition, the quantity and quality of the state's physical infrastructure must be maintained and improved. A quality workforce and infrastructure are the key requirements of high-paying companies.

TABLE OF CONTENTS

Description of Income Estimates	4
Comparison of Overall Income Across the Four Measures	13
Comparison of Income by Type	17
Conclusions	29
Public Policy Initiatives to Raise the Income of Arizonans	33

LIST OF TABLES AND CHARTS

Tables:

1. Arizona Adjusted Gross Income by Type in 2007	7
2. Alternative Census Bureau Measures of Arizona Income in 2007	8
3. Arizona Household Income by Type in 2007	10
4. Arizona Personal Income by Type in 2007	11
5. Arizona Income as a Ratio to the National Average	16
6. Shortcomings of Income Estimates	30
7. Comparison of Selected Per Capita Income Measures	32
8. Causes of Arizona's Subpar Per Capita Incomes in 2007	33
9. Causes of Arizona's Subpar Per Capita Personal Income	33
10. Employment-To-Population Ratios in Arizona in 2007	35
11. Average Compensation in Arizona in 2007	37

Charts:

1. Arizona Per Capita Personal Income as a Percentage of the U.S. Average	14
2. Arizona Per Capita Income as a Percentage of the U.S. Average	15
3. Arizona Per Capita Income, Rank Among the States	16
4. Arizona Average Wage as a Percentage of the U.S. Average	18
5. Arizona Average Earnings as a Percentage of the U.S. Average	22
6. Employment-to-Population Ratio in Arizona as a Percentage of the U.S. Average	23

The first purpose of this paper is to explain why incomes in Arizona are below the national average and to present ways in which the shortfall may be addressed. The second is to describe the differences between the various income measures that are available. Each measure indicates that incomes in Arizona are below the national average, but the magnitude of the shortfall varies by measure. An evaluation of income measures is important not only in order to understand the nature and magnitude of the state's income deficiencies, but also since income frequently is used to normalize other indicators. Personal income in particular is frequently used to control for size differences over time in one state or across states, such as when comparing public revenues and expenditures.

In this report, income in Arizona is compared to the national average using estimates from four sources: personal income from the U.S. Bureau of Economic Analysis (BEA), a variant of personal income from the Tax Foundation, adjusted gross income (AGI) reported by the Internal Revenue Service (IRS), and money income reported by the Census Bureau from decennial censuses and the American Community Survey (ACS). In order to make comparisons across the four sources, the income estimates for Arizona are expressed on a per capita (per person) basis as a percentage of (or ratio to) the national average.

This analysis is limited to state income estimates since county data are unavailable from the Tax Foundation, incomplete from the IRS, and subject to large sampling error from the ACS. Though historical state data are available from each source, the length of the time series varies. The focus of this paper is 2007, the last year of estimates available from all sources. Another reason for looking at 2007 rather than 2008 is that the economic recession in 2008 makes that year atypical.

DESCRIPTION OF INCOME ESTIMATES

Even when expressed on a per capita basis as a ratio to the national average, the estimates of income by state across the four measures do not agree. The variance is a result not only of differing methodologies and data sources but also due to definitional differences. Total income consists of income of various types, such as wages or interest earnings, but the components of total income are not consistently defined by the four sources of income estimates.

A basic distinction exists in the definition of the BEA's personal income and the income measures of the other three sources, which essentially define income as money income—pretax cash income—received by individuals within a calendar year. In contrast, the BEA's definition of income is much broader, not limited to the money income actually received by individuals in a year, as discussed in more detail in a following section. In addition to these conceptual differences, the BEA's measure was designed for a different purpose: It measures payments to factors of production, as part of the national income and product accounts.

Personal income is not a suitable measure to use to determine individual tax burden and related concepts. However, it historically has been used for this purpose because of its ready availability by state and its time series that extends for several decades. Money income is a better measure of the tax base and the capacity to spend.

Adjusted Gross Income from the Internal Revenue Service

The data reported by the IRS are derived from Form 1040 (and related tax forms) used by individuals to report taxable income for the prior calendar year. Income reported to the IRS for calendar years 1997 through 2007 is available from their website. However, due to changes in the tax code, the data are not necessarily fully consistent from year to year. For example, some individuals who would not have otherwise filed a tax return for 2007 did so in order to be eligible to receive economic stimulus payments. This caused an apparent decrease in average AGI between 2006 and 2007.

The IRS data consist of aggregate income (the sum of income reported by all tax filers) by type in each state and the number of tax returns on which each type of income was nonzero. The IRS also provides the aggregate number of exemptions reported, but this proxy for the number of residents by state is available only since 2002.

The IRS geographically categorizes the data by the address provided on the tax return, which generally is filed between January and April of the year following the calendar year in which the income was earned. Thus, the income figures do not necessarily correspond to the place in which the person was living when the income was received. The IRS data by state include tax returns filed after the April 15 deadline, but only those filed by December 31.

Income of many types is reported on Form 1040, all representing cash income received during the calendar year. However, only the taxable portion of income is tallied. For several types of income—including interest, dividends, social security, other retirement, and unemployment compensation—only a portion of the income is taxable. The gross income figure is not reported by the IRS. Instead, adjusted gross income is reported, the result after a number of adjustments, including alimony and certain expenses, are subtracted from gross income. Therefore, AGI understates total income received by individuals. Aggregate income in 2007 reported by the IRS was only 72 percent of the total reported by the BEA, with the percentage varying widely by type of income.

Not all individuals file a tax return, but nationally the number of exemptions reported to the IRS in 2007 was 98.3 percent of the Census Bureau's population estimate for July 1, 2007. This percentage varied by state, with the number of exemptions greater than the population estimate in five states. (The 2007 percentage was higher than the roughly 92 percent of prior years due to the additional tax returns filed for 2007 in order to qualify for federal stimulus disbursements.)

In contrast, in Arizona the number of exemptions reported to the IRS for 2007 was only 93.9 percent of the population estimate, the third lowest percentage among the 51 'states.' Arizona ranked among the bottom 10 in each of the prior years. As a result, aggregate income reported by the IRS was a lesser share of the BEA's total in Arizona than the national average. Possible reasons for the wide discrepancy in Arizona could include (1) the Census Bureau's population estimate is too high for Arizona; (2) the percentage of Arizonans who have taxable income but do not file a tax return is higher than average; and (3) a higher proportion of Arizona residents have no taxable income to report. An example is an undocumented immigrant who earned income only through day labor.

Income from of all types reported to the IRS is included in the aggregate AGI computed by the IRS, but income is separately reported only for certain types. For those types separately reported, the number of tax returns in which each type of income was nonzero also is reported by the IRS. Thus, income per tax return can be calculated for these types. The other measure used in this paper is income by type divided by the overall number of exemptions.

While average income per return in Arizona in 2007 was only 3.4 percent less than the national average and ranked 21st among the 51 'states' (including the District of Columbia), average income per exemption was 10.2 percent below average and ranked 27th. Arizona's larger-than-average household size accounts for the difference between the two measures.

Adjusted gross income per return in Arizona in most years between 1997 and 2007 was 3 percent to 5 percent below the national average, with Arizona generally ranking between 19th and 23rd among the 50 states and the District of Columbia. However, incomes in Arizona were relatively higher in 2005 and 2006, during the real estate boom, with AGI per return exceeding the national average in 2005. Between 2002 and 2007, AGI per exemption in Arizona ranged from 5 percent to 10 percent less than the national average, ranking between 22nd and 29th: 4-to-7 percentage points, and four-to-seven ranks, lower than AGI per return.

Income per return and per exemption in 2007 in Arizona is presented for each income type in Table 1. Wages and salaries accounted for close to 70 percent of the total AGI. Average wage and salary income per return in Arizona was 5.6 percent less than the national average. Relative to the nation, a somewhat higher percentage of Arizona tax returns reported income of this type. Among the other types of income, the average per return in Arizona ranged from 9 percent above average to 33 percent below average. Other than three components related to retirement income, a lesser share of Arizona tax returns reported income of each type.

Income from the Census Bureau

On the long form of the decennial census questionnaire, respondents were asked to report, by person, income in the preceding calendar year for each of several types. These questions have been continued in the American Community Survey, which has been produced annually nationwide since 2005, though the 2005 data are for households only (people living in group quarters were not surveyed in 2005).

Survey error is a major factor to consider when analyzing the Census Bureau's data. Nationally, sampling error is insignificant. For Arizona, the sampling error was small from the decennial censuses, but is moderately large from the single-year data of the ACS. (Using combined data of five years from the ACS reduces sampling error considerably, but it remains greater than from the decennial census.)

In addition to sampling error, the Census Bureau's data are subject to the other types of survey error, including nonresponse bias. Nonresponse is a particular problem with the income data, and there is evidence that a greater proportion of respondents who answer the income questions misreport the data, either deliberately or due to misunderstanding. (The ACS is administered as a mail survey, with only modest instructions provided.)

TABLE 1
ARIZONA ADJUSTED GROSS INCOME BY TYPE IN 2007

	Aggregate Income	Number of Returns*	Ratio of Returns**	Income Per Return			Income Per Exemption		
				Average	Percent- age of U.S.	Rank (51 'States')	Average	Percent- age of U.S.	Rank (51 'States')
TOTAL	\$154,964,429	2,898,544		\$53,463	96.6%	21	\$25,987	89.8%	27
Salaries and Wages	105,415,616	2,317,287	101.7%	45,491	94.4	20	17,678	89.4	30
Taxable Interest	4,875,420	1,187,473	94.9	4,106	104.0	12	818	91.8	21
Ordinary Dividends	3,953,419	575,685	94.4	6,867	95.6	15	663	84.0	28
Business or Profession Net Income	3,276,373	401,593	93.6	8,158	66.9	48	549	58.3	49
Net Capital Gain	14,853,744	506,179	98.1	29,345	98.6	15	2,491	90.0	19
Taxable IRA Distributions	3,239,459	219,686	106.1	14,746	109.0	7	543	107.6	16
Taxable Pensions and Annuities	10,143,157	520,903	106.0	19,472	104.2	16	1,701	102.7	23
Unemployment Compensation	261,210	84,718	59.0	3,083	80.8	38	44	44.3	47
Taxable Social Security Benefits	3,511,350	313,630	111.9	11,196	100.5	13	589	104.6	23
Self-employment Retirement Plans	296,022	15,927	74.4	18,586	99.2	15	50	68.7	34
Other	5,138,659	na							

* Claiming each type of income

** The percentage of returns having each type of income relative to the U.S. average; for example, the 2,317,287 returns reporting salaries and wages is 79.9 percent of all returns in Arizona. Nationally, 78.6 percent of the returns included wages and salaries. 79.9 divided by 78.6 = 101.7 percent.

na: not available

Source: Calculated from Internal Revenue Service, Statistics of Income (<http://www.irs.gov/taxstats/article/0,,id=171535,00.html>).

The ACS is conducted throughout the year, with respondents instructed to report income over the prior 12 months, regardless of whether they lived in Arizona for the entire 12 months. In addition, some seasonal residents are captured in the ACS, so the data do not exclusively report income earned while living in Arizona. While the results are inflation-adjusted for consistency and reported by calendar year, the income data do not really represent income received during the 12 calendar months.

The Census Bureau reports a variety of measures of income and earnings from the American Community Survey and the earlier decennial censuses. As seen in Table 2, Arizona was below the national average in 2007 in all of the measures, but generally ranked in the middle of the states. The per capita income measure is further from the national average than the household or family income measures, again due to Arizona’s larger-than-average household size.

With survey error an issue, the 2007 results were compared to those available from 1989, 1999, and 2005 through 2008. Relative to other recent years, the 2007 ratio to the national average was high for median household income and median family income. Per capita income in Arizona is somewhat cyclical relative to the national average, with the ratio lower during recessions and higher during strong economic expansions.

The Census Bureau reports total income as the sum of aggregate household income and aggregate income of persons living in group quarters. However, aggregate income by type is reported only by household. The number of households that reported each type of income also is available.

In the three years in which the ACS has surveyed people living in group quarters, the aggregate income of those living in group quarters divided by the number of group quarters residents has been very high in Arizona—more than double the national average in 2007 and 2008. In contrast, per capita income of people living in households was 9.8 percent less than the U.S. average in 2007. The per capita income of all individuals living in Arizona was 7.0 percent less than the national average in 2007.

**TABLE 2
ALTERNATIVE CENSUS BUREAU MEASURES OF ARIZONA INCOME IN 2007**

	Income	Percentage of U.S.	Rank Among the 51 ‘States’
Mean Household	\$66,132	95.6%	24
Median Household	49,889	98.3	23
Median Family	58,627	95.8	29
Mean Per Capita	24,811	93.0	29
Median Earnings, Male*	41,308	93.3	33
Median Earnings, Female*	33,723	98.4	21

* The earnings figures are adjusted for the number of hours worked during the year.

Source: Calculated from U.S. Department of Commerce, Census Bureau, American Community Survey (http://factfinder.census.gov/home/saff/main.html?_lang=en&_ts=).

The Census Bureau currently requests information in eight categories of money income, as seen in Table 3. Lump-sum payments, such as the capital gain from the sale of a home, are excluded. Because of this exclusion, aggregate income reported by the Census Bureau is lower than the IRS aggregate (even though the IRS excludes nontaxable income). Nationally, the Census Bureau's total was 32 percent less than the BEA's total.

Wages and salaries accounted for close to three-fourths of the total income in Arizona reported by the Census Bureau in 2007. Among households reporting this type of income, the mean figure in Arizona was 4.4 percent less than the national average. In addition, a somewhat lower percentage of Arizona households reported income from wages and salaries. Among the other types of income, the mean in Arizona ranged from 4 percent below average to 10 percent above average. Other than the two components related to retirement income, a lesser share of Arizona households reported income of each type.

Relative to the other years for which the Census Bureau's data are available, the income per household ratio to the national average in 2007 was relatively high in the public assistance category, but relatively low in the other income and dividends, interest and rent components. The year-to-year volatility is higher in the components in which relatively few households reported earnings.

Personal Income from the U.S. Bureau of Economic Analysis

Personal income is the most broadly defined of the four income measures and is computed differently. Unlike the estimates from the Census Bureau and the IRS, personal income is limited to that income received while residing in the state. In addition, estimates of the income of all individuals are obtained from government sources and are included in personal income, while the estimates of the IRS and Census Bureau are based on the data reported by subsets of the entire universe (taxpayers and those responding to the Census survey, respectively).

More importantly, the BEA's definition of income goes beyond the money income of individuals to include certain types of imputed incomes (such as the rental value of owner-occupied housing) and the income of some nonprofit organizations and trust funds (those that receive income on behalf of individuals). In addition, employer contributions to employee pension and insurance funds are counted instead of the distributions actually received by individuals during the period reported. However, realized capital gains are among the types of income not included in personal income.

While personal income is a useful indicator of overall economic activity, the inclusion of some types of income not received by individuals and the exclusion of some types of money income received during the period reported make personal income a less-than-ideal indicator to use to standardize other measures, such as the tax burden of individuals.

Personal income consists of a number of types of income, as seen in Table 4. More detail is available than shown, especially for the transfer payments category. Data for some categories of personal income are available by state, but the BEA must estimate or impute state figures for other categories. More information on how each type of income is estimated by the BEA is included in the "Comparison of Income By Type" section later in this document.

TABLE 3
ARIZONA HOUSEHOLD INCOME BY TYPE IN 2007

	Aggregate Income (Millions)	Number of Households	Ratio of Returns*	Income Per Household Average	Percentage of National Average	Income Per Person Average	Percentage of National Average
Total Income	\$148,900	2,251,546		\$66,132	95.6%	\$23,903	90.2%
Earnings	117,763	1,776,756	98.3%	66,280	94.7	18,904	87.9
Wages and Salaries	109,391	1,703,449	98.1	64,217	95.4	17,560	88.3
Self-Employment Income	8,372	242,650	89.9	34,502	96.7	1,344	82.1
Dividends, Interest and Rent	8,640	528,216	94.2	16,358	104.7	1,387	93.1
Social Security	9,535	632,850	104.5	15,066	104.0	1,531	102.6
Supplemental Security	562	68,669	75.1	8,183	105.5	90	74.8
Public Assistance	127	40,826	84.5	3,122	96.1	20	76.7
Retirement	9,490	422,585	107.1	22,456	110.3	1,523	111.5
Other Income	2,783	262,816	91.4	10,590	107.7	447	92.9

* The percentage of households having each type of income relative to the U.S. average

Source: Calculated from U.S. Department of Commerce, Census Bureau, American Community Survey
(http://factfinder.census.gov/home/saff/main.html?_lang=en&_ts=).

TABLE 4
ARIZONA PERSONAL INCOME BY TYPE IN 2007

	Aggregate Income in Thousands	Per Capita or Per Employee Income*	Percentage of National Average
Personal Income	\$218,639,267	\$34,413	87.3%
By Place of Residence:			
Net Earnings	143,308,506	22,556	85.1
Dividends, Interest, and Rent	41,990,684	6,609	91.5
Personal Dividend Income	14,421,636	2,270	89.4
Personal Interest Income	24,812,264	3,905	93.0
Rental Income of Persons	2,756,784	434	90.2
Personal Current Transfer Receipts	33,340,077	5,248	92.1
Retirement and Disability Insurance Benefits	12,198,509	1,920	94.9
Medical Benefits	15,020,773	2,364	92.3
Income Maintenance Benefits	2,698,556	425	74.5
Unemployment Insurance Compensation	312,151	49	44.3
Other Receipts by Individuals From Governments	2,096,147	330	119.8
Current Transfer Receipts of Nonprofit Institutions	671,938	106	100.1
Current Transfer Receipts of Individuals From Businesses	342,003	54	100.1
By Place of Work:			
Earnings by place of work	160,047,450	46,325	93.2
Compensation of employees	142,238,599	51,172	93.6
Wage and salary disbursements	117,339,369	42,214	94.6
Supplements to wages and salaries	24,899,230	8,958	89.0
Employer Contributions for Employee Pension and Insurance Funds	16,506,827	5,939	86.5
Employer Contributions for Government Social Insurance	8,392,403	3,019	94.2
Proprietors' Income	17,808,851	26,372	87.3

* The categories by place of work are divided by employment rather than population.

Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis, (<http://www.bea.gov/regional/index.htm#state>).

Per capita personal income in Arizona was 12.7 percent less than the national average in Arizona in 2007—typical of the differential over the last 20 years. Per capita income as a percentage of the national average was below the national average in nearly all categories. For those categories specific to employment, the per employee figure in Arizona was less than the national average in all cases.

Income from the Tax Foundation

The Tax Foundation's estimate is based on the BEA's personal income estimate, but adds and subtracts certain components to arrive at a measure that is close to cash, or money, income. Many of these additions and subtractions must be estimated at the state level.

The primary additions are

- Capital gains realized
- Pension and life insurance distributions

- Corporate income taxes paid
- Taxes on production and imports less subsidies

The primary items subtracted are

- The nonfungible portion of Medicare and Medicaid
- Estimated Medicare benefits provided from supplementary contributions
- Initial contributions to pension income and life insurance from employers
- Annual investment income of life insurance carriers and pensions

The net effect of these additions and subtractions is to increase the aggregate income reported by the BEA, with capital gains being the single category adding the most income. In 2007, aggregate income reported by the Tax Foundation was 9 percent higher than reported by the BEA. Arizona's total per capita income in 2007 as estimated by the Tax Foundation was 11.6 percent less than the national average, representative of the differentials present over the last 20 years. The Tax Foundation has not released its estimates of income by type.

Reconciliation of Personal Income to Money Income Estimated by the Census Bureau

In a November 2004 paper, "Alternative Measures of Household Income" (<http://www.bea.gov/about/pdf/AlternativemeasuresHHincomeFESAC121404.pdf>), John Ruser and Adrienne Pilot of the BEA and Charles Nelson of the Census Bureau reconciled personal income and the Census Bureau's estimate of money income for the nation for 2001. (The Census Bureau's data came from the Current Population Survey.)

By type of income, the authors subtracted from personal income the amounts not conceptually included in money income, added estimates of the types of income included in money income but not in personal income, and reallocated certain types of personal income across categories to be consistent with the Census Bureau. The major subtractions from personal income were transfer payments not included in money income, employer contributions to pensions and insurance funds, imputed interest, and property income received by pension plans. The major additions were personal contributions to social insurance and pension benefits received.

The result was to greatly reduce the apparent difference in the aggregate income estimates—money income was 26 percent less than the official estimate of personal income but only 11 percent less than the restated personal income. More than one-third of the remaining differential was in the proprietors' income category, in which the BEA's estimate was nearly twice that of the Census Bureau. The BEA adjusts the amount reported on tax returns (and presumably to the Census Bureau) for underreporting and nonreporting. Unlike most types of income that can be verified by the IRS—for example, the IRS compares the wages reported by the tax filer to those reported by the employer—proprietors' income cannot be verified. An audit in 1988 found substantial underreporting, due to some filers understating the amount and others who earned income from this source not reporting it to the IRS.

Though the percentage difference in the aggregate wages and salaries estimated by the BEA and the Census Bureau was small, due to the large size of this category it accounted for 20 percent of the overall differential between the Census Bureau's aggregate money income and the restated personal income. The BEA includes an estimate of wage and salary income earned in the "underground" economy. It is assumed that little of this is reported to the IRS or to the Census

Bureau. Those responding to Census Bureau surveys also have been found to understate the wages earned from part-year, part-time work.

Underreporting by survey respondents also was assumed to be the cause of the Census Bureau's lesser income estimates in the other categories, including retirement income, interest earned, dividends received, and Social Security benefits.

Reconciliation of Personal Income to Money Income From the IRS

Personal income also has been adjusted to match the definitions used by the IRS: see Mark A. Ledbetter, "Comparison of BEA Estimates of Personal Income and IRS Estimates of Adjusted Gross Income: New Estimates for 2005 and Revised Estimates for 2004" in the November 2007 issue of the *Survey of Current Business* (<http://www.bea.gov/scb/toc/1107cont.htm>). As with the Census Bureau comparison, adding, subtracting, and reallocating income by type for personal income (and reallocating some IRS data) narrows the apparent shortfall in aggregate AGI from total personal income. For 2005, the differential of 28 percent was lowered to 15 percent.

The major subtractions from personal income were for nontaxable transfer payments, employer contributions to pensions and insurance funds, investment income retained by life insurance and pension plans, and imputed income. Major additions included capital gains, taxable pensions, contributions for government social insurance, and small business income.

As with the Census Bureau data, proprietors' income accounted for the largest share of the remaining shortfall in aggregate AGI, with wage and salary disbursements the second-largest source. Underreporting of these two types of income to the IRS in conjunction with the BEA's corrections for this underreporting accounted for three-fourths of the total shortfall in the aggregate AGI from the restated personal income.

Population

The annual population estimate, as of July 1, produced by the Census Bureau was used to calculate per capita personal income from the BEA and per capita income from the Tax Foundation. These population estimates are revised each time a decennial census count is released. Thus, the estimates since the 2000 census are subject to revision in 2011. Some believe the population in Arizona has been overestimated since the 2000 census; the ratio of the number of exemptions reported to the IRS to the population estimate supports this contention. If the state's population estimates are revised down, per capita income estimates in the state for the last several years would be raised.

Though the annual population estimates are benchmarked to the decennial census count, even the decennial censuses do not represent a true count of the population. The likely accuracy of the census count has varied over time.

COMPARISON OF OVERALL INCOME ACROSS THE FOUR MEASURES

Per capita personal income estimates from the BEA extend back to 1929. As a ratio to the national average, per capita personal income in Arizona is cyclical, rising during expansions and falling during recessions (see Chart 1). During most of the 80-year time series, the ratios at the

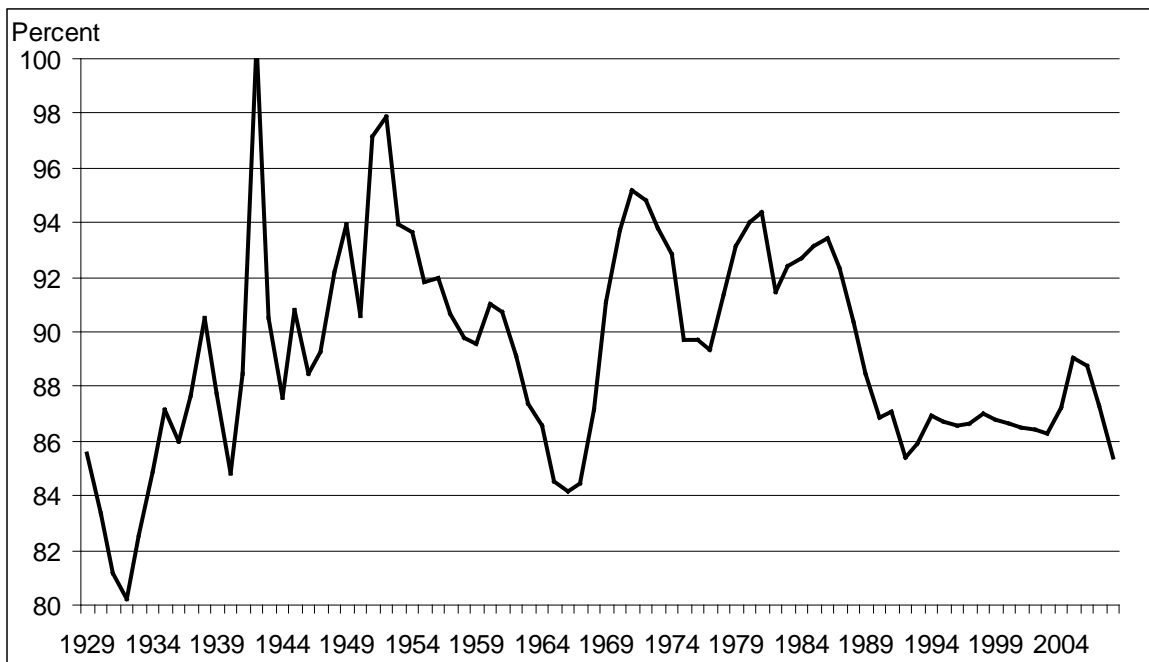
troughs have been around 84 percent to 86 percent, while the ratios at the peaks have been around 91 percent to 93 percent.

The ratio on average was higher than its long-term norm from 1950 through 1961 and from 1970 through 1982, with the trough values barely below 90 percent and the peaks reaching as high as 98 percent. During the 1983-through-1991 cycle, the ratio decreased, returning to its long-term norm. Since then, the cyclical troughs have been similar to the historical norm for troughs, but the peak values have been lower than the norm for peaks. Since 1989, the ratio has held in a narrow 85.4 percent-to-89.0 percent range, though the 2009 ratio likely will be lower.

The Tax Foundation's per capita income measure extends back to 1977. As a ratio to the U.S. average, it has been higher than the BEA's measure in every year. It generally follows the cyclical pattern of the BEA's measure, though the differentials in the ratios between the two measures were larger prior to 1993 than since then, as seen in Chart 2. Since 1990, the Tax Foundation's measure per capita has ranged from 86.3 percent to 90.0 percent of the national average.

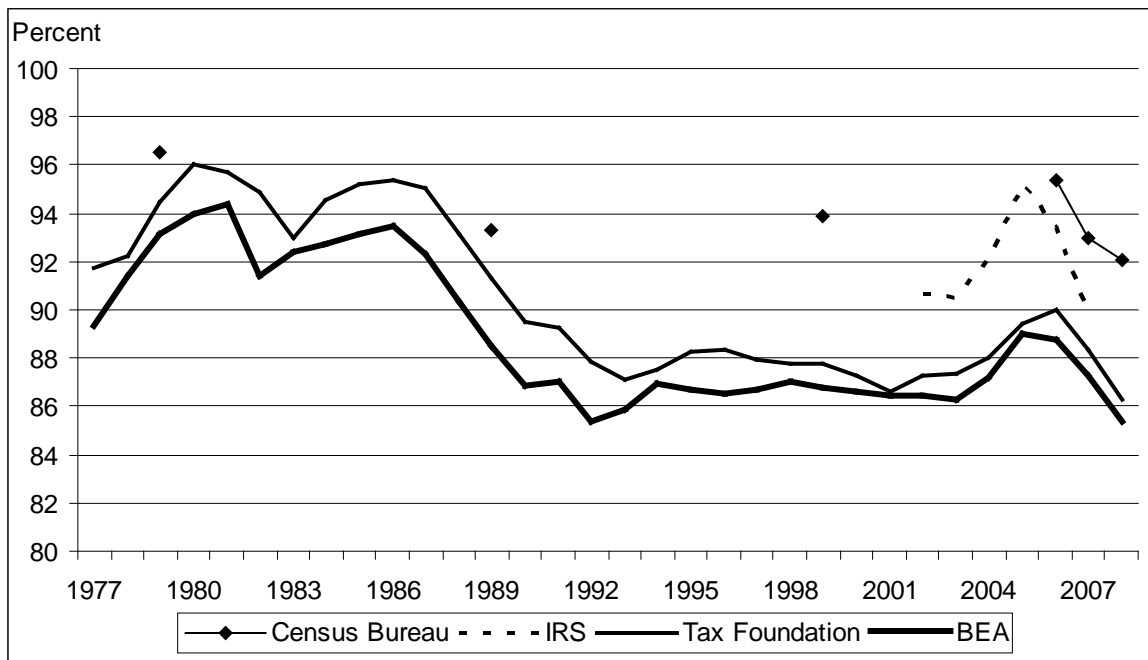
The IRS time series extends from 1997 through 2007, but the number of exemptions is available only back to 2002. AGI per exemption as a ratio to the national average has consistently been higher than the ratios based on the data of the BEA and Tax Foundation, with a differential of 2.5-to-6.2 percentage points relative to the BEA's measure.

**CHART 1
ARIZONA PER CAPITA PERSONAL INCOME
AS A PERCENTAGE OF THE U.S. AVERAGE**



Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis.

CHART 2
ARIZONA PER CAPITA INCOME AS A PERCENTAGE OF THE U.S. AVERAGE



Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis and Census Bureau; Internal Revenue Service, and Tax Foundation.

The Census Bureau’s data for total income are available only for decennial census years through 2000 (the income data are for the prior calendar year) and for 2006 through 2008. Total per capita income in Arizona as a ratio to the national average has fluctuated between 92.1 percent and 95.4 percent except for a higher value in 1979. In each year, the ratio to the national average was higher than that of the other income measures.

The ratios to the national average are shown in Table 5 for the years since 1997; these are the same values as displayed in Chart 2. The ratio from the Tax Foundation has been about 1 percentage point higher than that of the BEA. The Census Bureau’s ratio has been between 6 and 7 percentage points higher than the BEA’s measure. The per exemption measure from the IRS has been between that of the Tax Foundation and the Census Bureau.

Also shown in Table 5 are the Census Bureau’s per household measure and the per return measure of the IRS. In each year, the AGI per return ratio to the U.S. average is the highest, and the Census Bureau’s per household figure is second highest, of all six measures—since Arizona’s higher household size are not reflected in these measures.

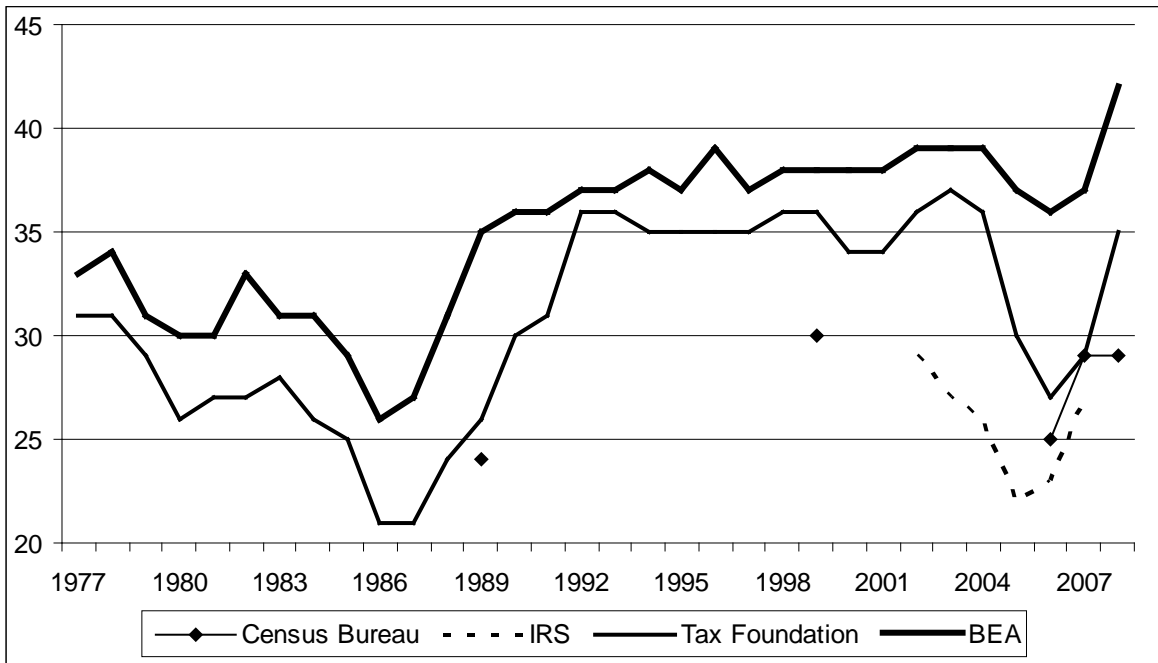
Chart 3 presents the differences across the four per capita measures on the basis of Arizona’s per capita income rank among the 50 states and the District of Columbia. As with the per capita ratio, Arizona compares more favorably on the measures of the IRS and Census Bureau. The state’s ranks are lowest based on the BEA’s data.

**TABLE 5
ARIZONA INCOME AS A RATIO TO THE NATIONAL AVERAGE**

	Per Capita				Per Household CB	Per Return IRS
	BEA	TF	CB	IRS		
1997	86.7%	87.9%				95.3%
1998	87.0	87.8				96.2
1999	86.8	87.8	93.9%		95.2%	95.8
2000	86.6	87.3				94.7
2001	86.5	86.6				94.8
2002	86.4	87.3		90.7%		95.1
2003	86.3	87.4		90.5		95.3
2004	87.2	88.0		92.1		97.3
2005	89.0	89.4		95.2	94.7	100.6
2006	88.8	90.0	95.4	93.4	97.7	99.9
2007	87.3	88.4	93.0	89.8	95.6	96.6
2008	85.4	86.3	92.1		95.2	

Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis, per capita personal income (BEA); Tax Foundation, per capita income (TF); U.S. Department of Commerce, Census Bureau, per capita income and income per household (CB); Internal Revenue Service, adjusted gross income per exemption and AGI per tax return (IRS).

**CHART 3
ARIZONA PER CAPITA INCOME, RANK AMONG THE STATES**



Note: a rank of 1 indicates the highest income.

Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis and Census Bureau; Internal Revenue Service, and Tax Foundation.

COMPARISON OF INCOME BY TYPE

This section looks at the various types of income included in personal income, starting initially with components of earnings by place of work (measured per employee), then examining the other types of income (measured per capita). Comparisons are made to similar components of the income reported by the IRS and Census Bureau where possible. For each type of income, both aggregate income and per capita income are analyzed.

Wage and Salary Disbursements Per Worker

Aggregate wages and salaries in 2007 accounted for nearly 54 percent of the BEA's personal income, nationally and in Arizona. This category includes tips, commissions, bonuses, and similar types of payment for work performed. As estimated by the BEA, this component is based on largely complete data: 94 percent of all wage and salary disbursements are reported by employers through the unemployment insurance program (the Quarterly Census of Employment and Wages: QCEW). The BEA makes certain adjustments to the QCEW data and adds estimates of wages and salaries for the 6 percent not covered by the QCEW. The methodology used to make these estimates varies by the type of worker. The estimate of wages and salaries should be the most accurate of any of the aggregate estimates by income type.

Wages and salaries made up a much larger proportion of aggregate income based on the Census Bureau's data: 75 percent nationally and 73 percent in Arizona in 2007. The higher proportion in the Census Bureau data is a result of the Census Bureau's total income figure not including the noncash income included in the BEA's total and of the Census Bureau's reporting of wages and salaries being closer to the BEA's total than in the other income categories.

The main distinction between the BEA's data and the wages and salaries reported by the Census Bureau is that the BEA relies on administrative data supplied by employers, while the Census Bureau is dependent on reporting by individuals. Nationally, the aggregate figure from the Census Bureau was 8.8 percent less than the BEA estimate in 2007. The lower aggregate figure from the Census Bureau could result from sampling error, misreporting by individuals, or respondents to the ACS being biased toward lower-income individuals. In Arizona, the Census Bureau's aggregate was only 6.8 percent less than the BEA's estimate.

Wages and salaries made up just more than 68 percent of the aggregate income reported by the IRS, nationally and in Arizona in 2007—a share between that of the Census Bureau and BEA. The IRS relies on data reported by individuals, but the amounts can be verified against W-2 forms supplied by employers. Nationally, aggregate wages and salaries reported to the IRS were 8.5 percent less than the BEA's aggregate in 2007. Aggregate wages and salaries from the IRS are lower because of those not filing an income tax return and those who died or moved abroad being included in BEA's income but not in the data of the IRS. The aggregate from the IRS in Arizona was 10.2 percent less than the BEA's estimate.

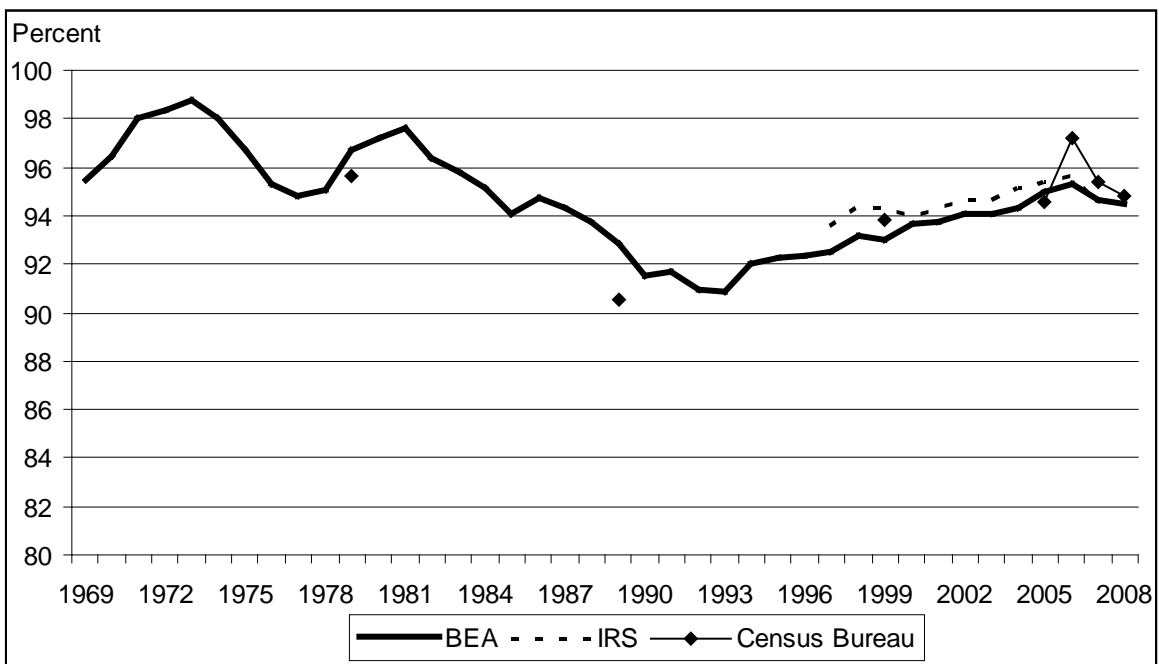
Nationally, the aggregate wage figure from the IRS in 2007 was 8.5 percent less than that reported by the BEA and nearly identical to the figure from the Census Bureau. As discussed earlier, the BEA adjusts reported wages and salaries up to reflect income earned in the underground economy.

In Arizona, however, the IRS’s aggregate was nearly 4 percent lower than the Census Bureau total. This suggests that a greater proportion of Arizonans may fail to file an income tax return, that Arizonans responding to the ACS overstate their incomes relative to those responding to the ACS nationally, that higher-income individuals disproportionately participate in the ACS in Arizona, or that the Census Bureau’s figure could include income not reported to the IRS, such as that earned by day laborers.

The average wage—aggregate wages and salaries divided by the number of wage and salary workers—in Arizona was 5.4 percent less than the U.S. average in 2007 according to the BEA. As seen in Chart 4, the differential varies to some extent with the economic cycle, with the lowest ratio to the national average occurring after a recession and the highest ratio in the latter stages of an expansion. A sizable decline in the average wage in Arizona relative to the national average from the early 1980s through early 1990s has been partially reversed since then.

According to the IRS, aggregate salaries and wages divided by the number of tax returns that included wages and salaries as a source of income was 5.6 percent less in Arizona than the U.S. average in 2007—about the same shortfall as calculated using the BEA’s data. However, in each year from 1997 through 2006, the average wage in Arizona was closer to the national average based on the IRS’s data than the BEA’s data.

CHART 4
ARIZONA AVERAGE WAGE AS A PERCENTAGE OF THE U.S. AVERAGE



Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis and Census Bureau, and Internal Revenue Service.

Based on the Census Bureau's data, aggregate wages and salaries divided by the number of households reporting this as a source of income was 4.6 percent less in Arizona than the U.S. average in 2007. As a ratio to the U.S. average, Arizona's average wage based on the Census Bureau's data has been about 5 percent less than the U.S. average except in 2006; sampling error may account for the smaller differential that year.

Thus, as a ratio to the national average, the average wage from these three measures is quite close, with each showing that Arizona's average wage was between 4.6 percent and 5.6 percent less than the U.S. average in 2007. Therefore, this largest source of income does not account for much of the difference across the measures in total per capita income expressed as a ratio to the national average.

Of the roughly 4.5-to-5.5 percent shortfall in Arizona's average wage from the national average in recent years, about 2 percentage points can be traced to the state's inferior job quality. The industrial mix in Arizona is tilted toward jobs in lower-paying industries. Various studies of the cost of living have placed Arizona a little below the national average; wage levels are partially dependent on living costs. The remaining differential is unexplained but logically results from other conditions that affect the local wage structure. The conclusion has been that the state's lower average wage after adjustment for the job mix and living costs results from the willingness of workers to work for somewhat lower wages in Arizona because of perceived noneconomic advantages to living in the state—what has been termed the “sunshine factor.” Wages in most western states are below average after adjusting for job quality and the cost of living.

The below-average wages and salaries are a significant—but not the largest—cause of the lower incomes in Arizona. The following demonstrates how the relative importance of this factor was calculated:

Using the BEA's data for 2007, wages and salaries accounted for nearly 54 percent of personal income, nationally and in Arizona. So, 54 percent of the average wage shortfall in Arizona from the U.S. average of 5.4 percentage points equals 2.9 percentage points, or 23 percent of the state's overall shortfall of 12.7 percentage points in per capita personal income.

Wages and salaries account for larger shares of the overall differential based on the data of the IRS (37 percent) and Census Bureau (40 percent).

Other Compensation Per Worker

The BEA reports two other components of compensation received by wage and salary workers. It calls them supplements to wages and salaries but more commonly would be considered benefits:

- Employer contributions to government social insurance (primarily Social Security and Medicare). Since Social Security and Medicare contributions are a percentage of wages and salaries (up to a limit for Social Security), Arizona's per worker difference from the U.S. average of 5.8 percent is nearly the same as the per worker shortfall in wage and salary disbursements. While included in categories such as total compensation and earnings by place of work, employer contributions to government social insurance are deducted in the process of calculating net earnings by place of residence and are not included in personal income.

- Employer contributions to employee pensions and insurance. These employer contributions are not money income received during the year reported and do not have counterparts in the estimates of the IRS or Census Bureau; pension income received by individuals is not included in personal income, but is counted by the IRS and Census Bureau; this is discussed later under “Transfer Payments Per Capita.”

Employer contributions to employee pensions and insurance in the private sector includes pension and profit sharing, group health insurance, life insurance, payments for supplemental unemployment benefits, and privately administered workers compensation. In the public sector, it consists of health insurance, life insurance, and retirement plans for government employees. Even at the national level, all of these components are estimated. In most of the components, the national estimate is allocated to the states based on wage and salary disbursements by industry.

Ideally, the measurement of job quality would include benefits as well as wages and salaries. The BEA’s estimates on pensions and insurance suggest that a broader gauge of Arizona’s job quality would be further below the national average than the 2 percent calculated by the existing job quality measure, which is based solely on wages and salaries.

As a ratio to the national average, employer contributions to pensions and insurance per employee are cyclical in Arizona. In addition, there has been a slight downward trend over time.

Aggregate employee benefits account for about 8 percent of personal income, nationally and in Arizona. With Arizona 13.5 percent below the national per employee average, this category accounts for 9 percent of Arizona’s shortfall in per capita personal income.

Proprietors’ Income Per Proprietor

The income of proprietors (sole proprietorships, partnerships, and tax-exempt cooperatives) accounted for 8 percent of personal income in Arizona and 9 percent nationally in 2007. The starting point for the BEA’s estimate of the nonfarm portion of proprietors’ income is tax information filed with the IRS, but the tax return data are incomplete and do not necessarily reflect income earned in the current period. Thus, the BEA makes various adjustments. Its adjustment for misreporting (underreporting and nonreporting of proprietors’ income to the IRS) accounts for more than half of the total proprietors’ income. This national adjustment is allocated to states, currently by profit and income data by industry. Farm proprietors’ income is based on information from the U.S. Department of Agriculture.

Due to the nonreporting and underreporting, business or profession net income accounted for only 2 percent (Arizona) to 3 percent (nationally) of total AGI in 2007. The aggregate amount in this category was only one-fourth of the BEA’s estimate nationally and less than 20 percent in Arizona.

Self-employment income reported by the Census Bureau falls between that of the IRS and the BEA as a share of aggregate income (between 5 percent and 6 percent of the Census Bureau total nationally and in Arizona). The Census Bureau’s aggregate was less than half of the BEA’s total for this category nationally and in Arizona.

With the differing definitions in self-employment income across the three sources, reflected by the very wide differences in the aggregate amount reported, it is not surprising that average self-employment income in Arizona varies widely as a ratio to the national average. In 2007, proprietors' income per proprietor was 12.7 percent less in Arizona than the national average according to the BEA. Average business net income (aggregate net business income divided by the number of returns that included net business income as a source of income) in Arizona plunged in 2007 relative to the U.S. average according to the IRS, falling to 33 percent lower. In contrast, average self-employment income (aggregate self-employment income divided by the number of households reporting such income) was only 2 percent less than the national average in Arizona, as reported by the Census Bureau.

As a ratio to the national average, the BEA's proprietors' income per proprietor in Arizona has been erratic from year to year, with much of the volatility in the farm sector. In addition to these annual fluctuations, Arizona's proprietors' income per proprietor fell considerably from 14 percent above the national average in 1969 (and still above the U.S. average as late as 1980) to 37 percent below average in 1990. From 1991 through 2002, the ratio recovered much of its earlier losses, but Arizona's figure remained below the U.S. average. The ratio has fallen since 2002 to only 83 percent in 2008. The variations over time in the ratio have little correlation to the variations in the ratios calculated from the data of the Census Bureau and IRS, which in turn have not been correlated with each other.

The lower-than-average proprietors' income per proprietor contributes to Arizona's below-average per capita income in each measure. However, given the small percentage of people reporting this type of income, it is a relatively minor cause of the state's per capita income shortfall in 2007, accounting for 1 percent based on Census Bureau's data, 11 percent based on the data from the IRS, and 9 percent according to the BEA's data.

Earnings Per Employee

Earnings by place of work is defined by the BEA as the sum of wages and salaries, other compensation, and proprietors' income. To calculate earnings per employee, earnings by place of work is divided by total employment—the sum of wage and salary workers and the number of proprietors. Arizona's earnings per employee figure was 6.8 percent less than the U.S. average in 2007.

Like its components, the ratio of average earnings per employee in Arizona to the national average is cyclical. The ratio dropped considerably in the 1970s and 1980s, from near the national average at the peak to 12 percent lower, but has partially recovered since 1990.

The Census Bureau reports an earnings figure that is the sum of wages and salaries and self-employment income. According to the Census Bureau's data, mean earnings of those reporting earnings income in Arizona was 5.3 percent below the national average.

Earnings Per Capita

Earnings by place of residence differs from earnings by place of work primarily in two ways: (1) employer contributions for government social insurance are subtracted from earnings by place of work; and (2) contributions by employees and the self-employed for government social insurance

are not included in earnings by place of residence. Benefits received from government social insurance are included in the transfer payments category. In addition, a small residence adjustment is made for those who work in one state but live in another. Nationally, two-thirds of personal income comes from earnings by place of residence; the share is slightly lower in Arizona.

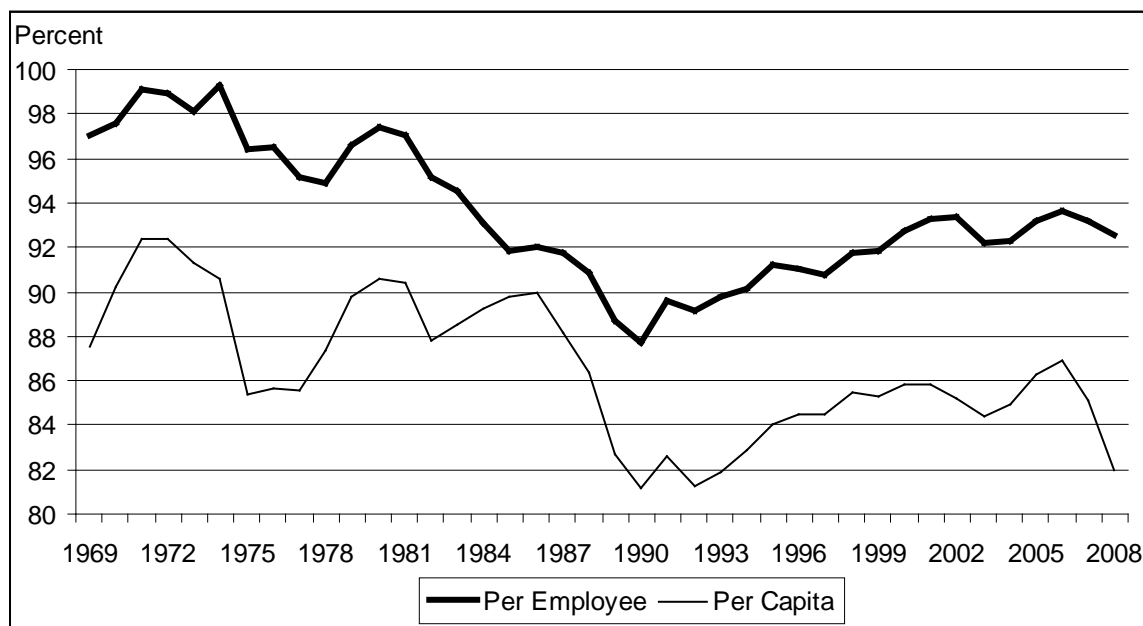
Earnings per capita is even further below average in Arizona than earnings per employee. Since the late 1980s, Arizona's earnings per capita has ranged from 13-to-19 percent below average. The ratio of Arizona's earnings per capita to the national average is cyclical. The ratio trended down in the 1970s and 1980s and has modestly recovered since 1990 (see Chart 5).

With per capita earnings 14.9 percent less than the national average in 2007, and with its large share of aggregate personal income, earnings by place of residence accounted for 79 percent of the difference between the state's per capita personal income and the national average in 2007. The share of the income deficiency was even greater based on the data from the IRS (94 percent) and the Census Bureau (102 percent).

Employment-to-Population Ratio

The difference in the two lines in Chart 5—the difference between earnings per employee and earnings per capita expressed as a ratio to the national average—is a result of Arizona's below-average workforce participation rate, expressed as the employment-to-population (E-P) ratio. The E-P is calculated using BEA's estimate of total employment, including proprietors as well as wage and salary employees. In 2007, the E-P was 59.7 percent nationally and 54.4 percent in

**CHART 5
ARIZONA AVERAGE EARNINGS AS A PERCENTAGE OF THE U.S. AVERAGE**



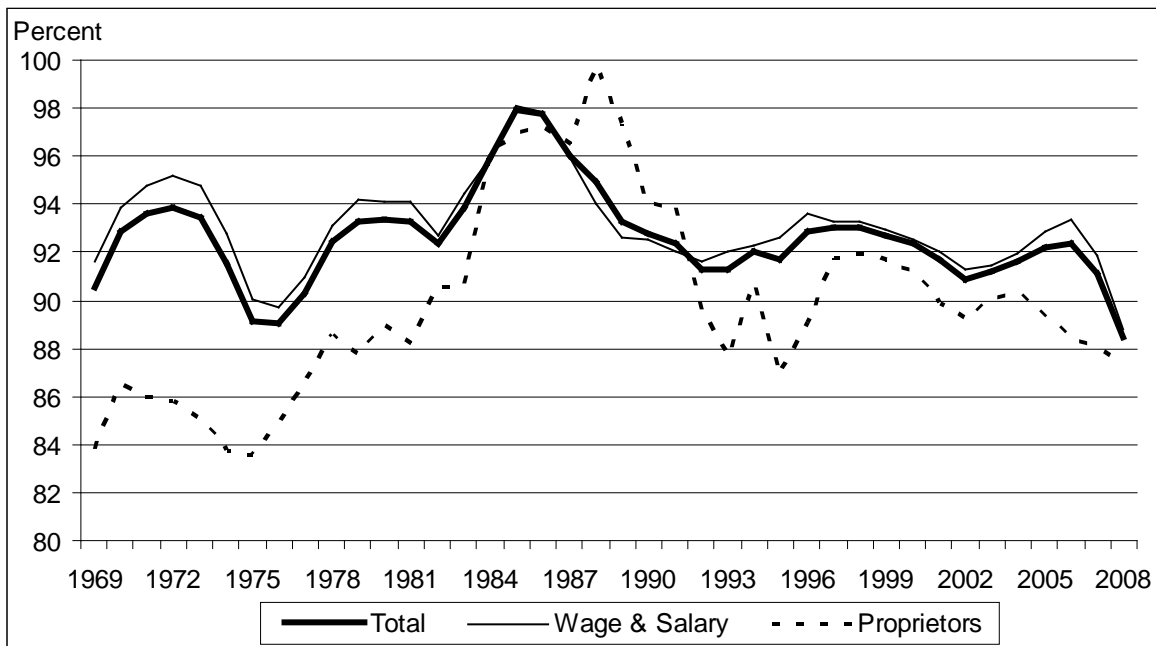
Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis.

Arizona, a difference of 8.9 percent. (Employment is counted as the number of jobs, not the number of individuals employed, so people working more than one job cause this measure of E-P to be slightly overstated.)

The employment-to-population ratio in Arizona has not shown any appreciable trend over time relative to the national average (see Chart 6). The ratio to the U.S. average was at its highest during the early and mid-1980s, reaching 98 percent of the national average. It has been lower than average during the last few years, but this could be due to an overestimate of the state's population. As a ratio to the national average, the employment-to-population ratio in Arizona follows the economic cycle. At cyclical peaks the E-P typically is about 93 percent of the U.S. average; at troughs it usually is around 91 percent. It dropped lower than this in the deep recession in the mid-1970s and again in 2008.

The low employment-to-population ratio is a significant cause of the state's subpar per capita personal income. Its relative impact is estimated as the difference between the effects of earnings by place of residence and earnings by place of work. Its 38 percent share of the deficiency in per capita personal income is the largest of any category. Similarly, the E-P is the largest cause of the below-average income reported by the Census Bureau. Based on the data reported by the IRS, the E-P has an almost equal effect as the average wage on the AGI per exemption shortfall.

**CHART 6
EMPLOYMENT-TO-POPULATION RATIO IN ARIZONA
AS A PERCENTAGE OF THE U.S. AVERAGE**



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

A variety of factors contribute to the state's low employment-to-population ratio; the data are based on three years (2006 through 2008) from the ACS:

- A higher percentage of the Arizona population consists of children, which contributes to a higher average household size in Arizona. Arizona's percentage less than 18 years old (26.3 percent) was 7.5 percent higher than the national average (24.5 percent) in 2007 according to the ACS.
- A slightly higher share of Arizonans are age 65 or older (13.0 percent in Arizona versus 12.6 percent nationally, a differential of 3.2 percent).
- A lesser proportion of older Arizonans are active in the labor force. The participation rate in Arizona was 6 percent below average among those 55-to-64 years old and 13 percent below average among those 65 or older. Arizona's strong in-migration of people after they retire likely is the cause its lower participation rates in this age group.
- Even among the prime workforce participation ages of 25 and 54, a lower percentage of Arizonans are in the labor force, with the workforce participation rate 2.5 percentage points less than the U.S. average. The differential was only 1 percent among males, but was nearly 5 percent among females.

Several disparate factors may contribute to the state's low workforce participation rate in the prime age groups. The lower rate likely is related to the poor educational attainment and achievement of those who grew up in Arizona. Those educated in Arizona have lesser educational attainment compared to the national average and to in-migrants to Arizona. Test scores and similar measures have been below average in Arizona for many years. Those with less educational attainment and achievement typically have limited workforce skills; such individuals may be outcompeted for jobs by in-migrants to the state.

A shortage of jobs in parts of rural Arizona, including Indian reservations, also may contribute to the lower workforce participation. The differentially lower workforce participation rates among females relative to the national average probably is related to cultural factors that limit workforce participation among females in certain ethnic and religious groups in Arizona.

The BEA measures the number of jobs, not the number of people employed. Because of people who work more than one job, employment is greater as measured by the BEA than the number reported from the ACS. However, the difference between the BEA and ACS estimates is greater nationally than in Arizona, causing the workforce participation rate in Arizona calculated from BEA data to be lower relative to the national average than calculated from ACS data for the same time period. A number of factors could account for the relatively less employment in Arizona estimated by the BEA: (1) a lesser share of Arizonans hold more than one job; (2) the state's high percentage of undocumented workers may result in an above-average share of adults working in the "underground" economy, not counted as employed by the BEA but counted as employed in the ACS; (3) survey error may be affecting the accuracy of the ACS data; and (4) the BEA's estimate of employment of those not counted in the QCEW may be too low in Arizona.

Dividends, Interest, and Rent Per Capita

Based on the BEA's data, dividends, interest, and rent (DIR) accounted for just over 19 percent of personal income in Arizona in 2007; the share nationally was a little lower. As a share of

personal income, the DIR category rose in importance during the 1970s and 1980s, but has fallen back somewhat since then.

The Census Bureau reports a DIR category as a whole. Its share of total income in 2007 was a little more than 6 percent in Arizona and a little less than 6 percent nationally—much lesser shares than in the BEA’s data. The aggregate amount reported by the Census Bureau in 2007 was only 20 percent of the BEA’s total nationally and in Arizona. Ruser, Pilot and Nelson found that the Census Bureau’s total was lower largely due to definitional differences. However, after adjusting for the definitional differences, it appears that survey respondents very substantially underreport dividends and also underreport interest earnings.

A total for DIR is not available from the IRS. Taxable interest and ordinary dividends are reported as separate categories but rental income is not separately shown. The sum of dividends and interest accounted for a little less than 6 percent of aggregate AGI in 2007, nationally and in Arizona. The aggregate amount was only a little more than 20 percent of the BEA’s aggregate. Most of the difference is definitional, but even after adjusting the personal income data, DIR reported by the IRS is less than that estimated by the BEA.

Per capita, DIR as reported by the BEA has been less than the national average in Arizona since 1991. It had been as much as 16 percent higher than the U.S. average in the early 1970s and still was 14 percent higher around 1980. The ratio fell considerably during the 1980s and 1990s. The ratio goes up and down with the economic cycle. In recent years, it has been about 3 percent below the national average at cyclical peaks; at troughs, it has fallen as much as 11 percent below average. In 2007, it was 8.5 percent below average. All three components in Arizona were below the national per capita average in 2007.

Per capita comparisons between the BEA data and the data from the IRS and Census Bureau must be made cautiously since the aggregate totals from the IRS and Census Bureau are only about one fifth that of the BEA. According to the IRS, the per capita figures for both interest earnings and dividends in Arizona were well below the U.S. average in 2007. In contrast, DIR per capita according to the Census Bureau was only 1 percent below average in Arizona. Based on the BEA’s data, dividends, interest and rent accounted for 12 percent of the state’s shortfall in per capita personal income in 2007. The category’s share of the deficiency was 7 percent based on the data of the IRS but less than 1 percent using the Census Bureau’s data.

Dividends

Dividends accounted for about 6.5 percent of the BEA’s personal income in 2007 nationally and in Arizona, with the share gradually rising over time from 3 percent. According to the IRS, dividends made up less than 3 percent of total AGI; the aggregate was only 30 percent of the BEA’s aggregate for dividends nationally; the share was less in Arizona. The figures from the IRS are so much lower because they are limited to ordinary dividends; other dividends are not taxable.

Per capita dividends in Arizona were below the national average in 2007 by 11 percent based on the BEA’s data. Based on the data from the IRS, per capita dividends were 16 percent below average in Arizona.

Interest

More than half of the BEA's DIR comes from interest earnings. As a share of personal income, interest earnings rose substantially through the 1970s and early 1980s, but now is back down to the historical norm of around 11 percent. Its share in Arizona has been consistently higher than in the nation, but the differential has shrunk over time. Interest consists mostly of monetary interest, but the BEA includes imputed measures as well. The imputed subcomponent's share has increased over time while the monetary component's share rose but then fell back to the historical norm.

Interest income was responsible for only 3 percent of total AGI in 2007, nationally and in Arizona. The aggregate figure from the IRS was only 20 percent of the BEA's total interest, nationally and in Arizona, reflecting both the limitation to the taxable interest by the IRS and the imputation of interest by the BEA.

The per capita interest earnings figure in Arizona was below the national average in 2007 by 7 percent, according to the BEA. The shortfall was 8 percent according to the IRS.

Rent

Rental income accounted for only 1.25 percent of the BEA's personal income in 2007, nationally and in Arizona. The share was greater in the 1970s and 1990s. The rental component also consists of monetary and imputed portions, with the imputed portion about as large as the monetary part. Per capita, the Arizona figure was below the national average in 2007 by 10 percent.

Transfer Payments Per Capita

Transfer payments, as reported by the BEA, accounted for 15 percent of personal income in Arizona in 2007, slightly higher than the share nationally. Transfer payments have become an increasingly large portion of personal income over time. This category consists of disparate sources of income not received from services performed during the period. The BEA divides transfer payments into several components including retirement and disability, medical, income maintenance, unemployment insurance, and various others.

The IRS separately reports four types of retirement income plus unemployment insurance. Other transfer payments, such as veterans' benefits, are not separately reported. Thus, the sum of the four retirement components and unemployment insurance is not as comprehensive as the BEA's transfer payments category.

The Census Bureau reports two retirement income components and two components of public assistance. However, since its "other income" category consists of both transfer payments and other types of income, a transfer payments total comparable to the BEA does not exist.

According to the BEA, overall transfer payments per capita in Arizona have been considerably below the U.S. average. The differential has ranged from 5-to-15 percent, with the smallest differentials occurring during recessionary periods. In 2007, transfer payments per capita were 8 percent below average and accounted for about 9 percent of the state's shortfall in per capita personal income. Each of the major components of transfer payments contributed to Arizona's

income shortfall based on the BEA's data. In contrast, the sum of the identifiable transfer payments categories from the IRS and the Census Bureau each had a per capita figure above the U.S. average.

Retirement and Disability Income

Retirement income consists of contributions made by individuals and by employers, typically over a long span of years. For many Arizonans, at least some of the retirement income was earned before they moved to the state. Social Security, company and government pensions, IRAs, and other instruments all are considered as sources of retirement income. As the savings from these accounts are distributed after a person retires, the income received is recorded by the IRS and the Census Bureau.

The BEA's retirement and disability component is similar, consisting of benefits received from Social Security, railroad retirement, workers compensation, and other government retirement income. However, the BEA treats private retirement income differently. It is not included in transfer payments since the BEA records it as compensation at the time the money is placed into the pension account: a very different concept than cash income.

Looking only at Social Security income, the BEA's aggregate figure in 2007 was greater than the Census Bureau's figure and much greater than the total from the IRS. The latter includes only the taxable portion of Social Security income. After adjusting for definitional differences, aggregate Social Security income reported by the IRS and the Census Bureau still are less than the BEA's total. Survey respondents appear to understate income from this source while the IRS shortfall likely results from those not filing a tax return.

Per capita, Arizona's Social Security figure was higher than the national average based on the Census Bureau's data, but lower based on the BEA's data. The IRS also shows that the per capita amount in Arizona is greater than the U.S. average.

The balance of the BEA's retirement component is small, accounting for only 0.3 percent of personal income. Since they include private retirement income, the other retirement components of the IRS and Census Bureau had a substantially higher aggregate amount, with the total from the IRS greater than that of the Census Bureau. As a share of total AGI, these other retirement components accounted for nearly 9 percent in Arizona; the national share was a percentage point lower. The share of total income from the Census Bureau was not as high, but the Arizona share again was a full percentage point higher than the national share. Per capita, the Arizona figure was nearly equal to the national average based on the BEA's data, but was higher on the other measures, with the figure based on the Census Bureau's data 11.5 percent above the national average.

Combining Social Security and other retirement income, the aggregate amounts reported by the IRS and Census Bureau were substantially greater than the BEA's total—the only category of income in which the BEA's aggregate was not higher. The differential was especially wide in Arizona. Similarly, the per capita figure was greater than the national average in Arizona based on the data of the IRS and Census Bureau, but less than average based on the BEA's data.

Arizona's share of retirees is not much more than the national average, but a much higher portion of its retirees earned their retirement incomes out of state, and the median income in households with a householder of age 65 or older in Arizona was greater than the national average in 2007 (based on data from the ACS), unlike the lower income in Arizona in other age groups. The BEA's accounting substantially understates the retirement income realized in Arizona, contributing to the state's per capita personal income being further below the U.S. average than the per capita incomes calculated from the data of the Tax Foundation, IRS, and Census Bureau.

Public Assistance

The BEA's income maintenance component includes supplemental security, family assistance, nutrition assistance (food stamps), and a miscellaneous subcomponent. It accounts for a little less than 1.5 percent of personal income nationally and in Arizona. This type of income is not reported by the IRS. The Census Bureau's aggregate public assistance income amounts to only 5 percent of the BEA's total.

According to the BEA, income maintenance per capita in Arizona in 2007 was only 75 percent of the national average. The ratio is cyclical, rising during recessions. According to the Census Bureau, per capita public assistance in Arizona was similarly far below average.

Unemployment Compensation

According to the BEA, unemployment compensation accounted for only 0.3 percent of personal income in 2007; the share was half as large in Arizona. The IRS's aggregate figure was 86 percent that of the BEA; income from this source is not shown separately by the Census Bureau.

Arizona's per capita unemployment compensation in 2007 was less than half the national average based on the BEA's data. It also was far below average based on the data of the IRS.

Other Transfers

Medical benefits have grown over time to become the largest component of BEA's transfer payments, with the share of personal income nearing 7 percent nationally and in Arizona. As a ratio to the national average, Arizona's per capita figure has increased over time; it was 92 percent in 2007 and 96 percent in 2008. Since this is not cash income, it is not included in the totals from the IRS or Census Bureau.

The BEA also includes several small categories within its transfer payments, such as veterans' benefits. Combined, these other components account for less than 1.5 percent of personal income nationally and in Arizona. These sources of income are included in the totals of the IRS and Census Bureau, but are not separately reported.

Other Income

The Census Bureau has a miscellaneous category for income regularly received. Examples provided to respondents are veterans' benefits, unemployment insurance, child support, and alimony. The first two examples are transfer payments. The last two examples are not included as income by the BEA since they represent the transfer of income, likely earned in the current period, from one person to another. Survey respondents are told to exclude lump-sum payments, such as inheritance or profit from the sale of their home. Thus, the Census Bureau, like the BEA,

does not include capital gains in its total income. This other income accounted for less than 2 percent of the Census Bureau's total income in 2007, nationally and in Arizona. The per capita figure in Arizona was 6 percent less than the national average.

The IRS separately reports capital gains. In 2007, capital gains accounted for 9.6 percent of AGI nationally and in Arizona. Per capita, the figure in Arizona was 10 percent less than the U.S. average. Thus, it accounted for nearly 10 percent of Arizona's deficiency in per capita AGI.

Several income categories, including rental income, are not separately reported by the IRS, nor are the numerous adjustments to income that are considered in calculating adjusted gross income. The aggregate amount of these other income categories less the adjustments can be calculated; the share of AGI in 2007 was 3.0 percent nationally and slightly higher in Arizona. Per capita, the Arizona figure was 0.3 percent higher than the U.S. average.

CONCLUSIONS

Evaluation of the Four Income Measures

Each income measure has various conceptual and practical shortcomings, as summarized in Table 6. If the purpose of the income measure is to provide a broad indicator of economic performance, the BEA's per capita personal income measure has the advantage because of its breadth. However, this breadth—the inclusion of noncash income and income received by other than individuals—makes the BEA's measure the least well suited if the purpose is to quantify the usable (cash) income of individuals or households. Ruser, Pilot and Nelson recognize this shortcoming in their paper and suggest that other measures of income be used to track spending capacity and to measure the tax base.

The Tax Foundation measure starts with the BEA's data but adds and subtracts various categories so that the result is closer to a measure of cash income. In doing so, many of the shortcomings of the BEA's measure for the purpose of measuring cash income are corrected in the Tax Foundation's measure. In particular, the Tax Foundation adds realized capital gains and adds an estimate of the distribution of private pensions, subtracting the BEA's amount that employers contributed to pension accounts. Unfortunately, the Tax Foundation is forced to use approximations for most of the additions and subtractions since data are unavailable. It also has to retain the BEA's approximations for various components that also are due to a lack of data.

A serious shortcoming of the Census Bureau's income measure is that it is based on a relatively small sample, with the income data being self reported. Respondents appear to understate most types of income. The accuracy of the income of people living in group quarters is especially in question. If individuals living in group quarters are excluded, the ratio to the national average of the per capita income of individuals living in households in Arizona is more in line with the other measures; the ratio in both 2006 and 2007 was nearly identical to that from the IRS.

The data from the IRS have a significant shortcoming in that only taxable income is reported. Further, those with taxable income who do not file a tax return cause aggregate income to be understated and may bias the estimate of per capita income. Self-employment income is significantly understated.

TABLE 6
SHORTCOMINGS OF INCOME ESTIMATES

BEA Per Capita Personal Income	IRS AGI Per Exemption	Census Bureau Per Capita Income	Tax Foundation Per Capita Income
Not defined as money income of individuals	Does not include incomes of those who do not file tax returns	Data are self reported and unverified: most income types appear to be understated	Largely based on BEA measure: various components are estimated
Various components are estimated	Only includes taxable income	Based on a sample: subject to survey error	All adjustments to the BEA data are estimated
Excludes capital gains	Self-employment income is underreported	Income geographically misreported for those who move	The population used to calculate per capita figures is estimated
The population used to calculate per capita figures is estimated	Income geographically misreported for those who move	Detail by income type is available only for households	
	Data on exemptions available only since 2002	The population used to calculate per capita figures is estimated	
		Excludes capital gains	
		Data are available only for certain years	

In 2007, per capita income in Arizona ranged from 7 percent below average based on the Census Bureau's data to 13 percent below average based on BEA's data. This differential is representative of all years; in 2008, the Census Bureau's measure was 8 percent below average and the BEA's measure was 15 percent below average. Thus, the BEA's data suggests a problem nearly double in magnitude to that estimated from the Census Bureau's data. The measures of the Tax Foundation and IRS indicate that Arizona's ratio to the U.S. average is between those of the BEA and Census Bureau, with the former closer to the estimate from the BEA and the latter closer to the Census Bureau's estimate.

Per capita income in Arizona relative to the U.S. average varies across the four measures largely for two reasons: (1) the differing relative importance of each type of income due to definitional and methodological differences that cause the value of aggregate income to vary across the measures; and (2) variation across the measures in the per capita difference between the national average and Arizona.

Limiting the Census Bureau's income to that received by individuals living in households, a comparison was made of the measures of the BEA, IRS, and Census Bureau by type of income. By income type, the multiplication of the share of aggregate income by the percentage point difference from the national average in Arizona's per capita income serves as an indicator of the causes of the differing magnitudes of Arizona's overall per capita income deficiency relative to the national average.

The largest single cause of the differing estimates of Arizona's overall per capita income relative to the national average is the very different way the BEA has of handling private retirement income. The BEA indicates that per capita retirement income in Arizona is less than the national average while the IRS and Census Bureau show that it is greater than average. If the goal is to

measure cash income received during a year by residents, the BEA's methodology is inappropriate.

The second largest cause of the differences across the measures is in the dividends, interest, and rent category. While all three measures indicate that Arizona's per capita DIR income is less than the U.S. average, DIR's share of total income is much higher according to the BEA. From the perspective of cash income, the BEA overstates DIR, but the IRS understates it due to only including the taxable portions. It appears that respondents to the Census Bureau surveys underreport DIR (nationally and in Arizona).

Transfer payments other than retirement also are a significant cause of the differing estimates of per capita income in Arizona relative to the national average. This is mostly due to the BEA including medical benefits that the IRS and Census Bureau do not include since these benefits (primarily Medicare and Medicaid) do not represent cash income.

The IRS also differs from the BEA in that the negative effect of low per capita earnings (self employment and wages and salaries) is not as great according to the IRS. However, this is offset by the IRS including capital gains, which are below the per capita average in Arizona.

Overall per capita income in Arizona relative to the national average is quite similar in the measures of the IRS and the Census Bureau if the income of people living in group quarters is excluded from the Census Bureau's data. Earnings per capita is a lesser cause of the state's deficiency in per capita income based on the data of the IRS, but this is offset by the inclusion of capital gains by the IRS.

Based on this analysis, the BEA's measure is conceptually inappropriate to use as a measure of cash income received during a particular period due to its inclusion of some forms of noncash income and its exclusion of capital gains. Given its treatment of retirement income, the BEA's methodology is a particular issue in Arizona.

The accuracy of the Census Bureau's overall measure of income is in doubt given the unlikely results for individuals living in group quarters. If group quarters income is excluded, the primary concerns with using the Census Bureau's measure are its exclusion of capital gains, its apparent underreporting, especially of DIR, and the likelihood of erratic results from year to year due to survey error.

The primary limitations of the adjusted gross income measure of the IRS are the focus on taxable income, adjustments to gross income, and that some taxpayers with taxable income do not file a tax return. However, it is not apparent that these limitations are biasing the estimate of Arizona's per capita income as a percentage of the national average.

The Tax Foundation adjusts for the most significant shortcomings in the BEA's measure when used as a gauge of cash income. However, since detail is not available by income type, the Tax Foundation's measure cannot be evaluated. In particular, the differences between it and the IRS cannot be identified. While the overall difference in Arizona's per capita income in 2007 as a ratio to the national average between these two measures was relatively small in 2007, it was

larger in the preceding five years, as summarized in Table 7. Thus, it is not possible to ascertain whether the IRS or the Tax Foundation provides the more accurate gauge of income in Arizona.

Causes of Arizona's Low Incomes

The low workforce participation rate in Arizona is the largest cause of the state's per capita income being below the national average (see Table 8). The other major cause is the low average wage. Combined, these two factors account for the majority of the state's shortfall in per capita income: 61 percent based on the BEA's data, 74 percent using the data of the IRS, and 100 percent based on the Census Bureau's data.

Self-employment income and dividends, interest, and rent also contribute to the low income reported by each of the three sources, but the impact of these income types is insignificant in the Census Bureau's data. Nonwage compensation is another cause of the BEA's per capita personal income being below average, but this factor is not measured in the data of the IRS or Census Bureau. Similarly, low capital gains contributes to the low income based on the data of the IRS but is not included in the other sources. The major difference across the three sources is that per capita transfer payments are a cause of the BEA's subpar per capita personal income but are not among the reasons for the IRS's low AGI per exemption or the Census Bureau's low per capita income from the ACS.

These findings are similar to those from a 1996 study (that examined 1994 data) of the BEA's per capita personal income (see Table 9). The 1996 study did not look at the other measures of income, but used a somewhat different methodology and examined some of the BEA's components in more detail by using microdata from the 1990 decennial census. A key finding from that study is that Arizona was not above the national average on any component of personal income, even with wages and salaries divided into five subparts and with the employment-to-population ratio divided into three components.

**TABLE 7
COMPARISON OF SELECTED PER CAPITA INCOME MEASURES**

	Percentage Difference From the National Average			Difference From Tax Foundation	
	Tax Foundation	Census Bureau*	IRS	Census Bureau*	IRS
2002	-12.7%		-9.3%		3.4
2003	-12.6		-9.5		3.1
2004	-12.0		-7.9		4.1
2005	-10.6	-7.0%	-4.8	3.6	5.8
2006	-10.0	-6.3	-6.6	3.7	3.4
2007	-11.6	-9.8	-10.2	1.8	1.4
2008	-13.7	-11.3		2.4	

* Aggregate household income divided by the number of people living in households

Source: Calculated from the Tax Foundation; U.S. Department of Commerce, Census Bureau; and Internal Revenue Service.

**TABLE 8
CAUSES OF ARIZONA'S SUBPAR PER CAPITA INCOMES IN 2007**

	Per Capita Personal Income*	Adjusted Gross Income**	Per Capita Income***
Earnings	79%	85%	101%
Employment-to-Population Ratio	38	37	60
Earnings by Place of Work	41	48	41
Wages and Salaries	23	37	40
Other Compensation	9	x	x
Proprietors' Income	9	11	1
Capital Gains	x	9	x
Dividends, Interest, and Rent	12	7	1
Transfer Payments	9	p1	p2

* U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System

** Internal Revenue Service, Statistics of Income

*** U.S. Department of Commerce, Census Bureau, American Community Survey

x: not applicable

p: a positive factor; does not contribute to below-average income

**TABLE 9
CAUSES OF ARIZONA'S SUBPAR PER CAPITA PERSONAL INCOME**

	1994	2007
Earnings	82%	79%
Employment-to-Population Ratio	33	38
Earnings by Place of Work	49	41
Wages and Salaries	32	23
Other Compensation	6	9
Proprietors' Income	11	9
Dividends, Interest, and Rent	8	12
Transfer Payments	10	9

Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System. The 1994 data are from the March 1996 study from the Seidman Research Institute, *Arizona Per Capita Personal Income and Components*.

PUBLIC POLICY INITIATIVES TO RAISE THE INCOME OF ARIZONANS

Some of the factors contributing to the low incomes in Arizona are not easily influenced by public policy. While low workforce participation rates and low wages are responsible for most of the low incomes, portions of each of these factors are outside the control of policymakers.

Employment-to-Population Ratio

As discussed earlier, a variety of factors contribute to the state's low employment-to-population ratio relative to the national average; most of these factors are not under the control of policymakers:

- A higher percentage of the Arizona population consists of children.
- A slightly higher share of Arizonans are age 65 or older.

- Arizona has a higher proportion of early retirees. Thus, the workforce participation rate of those 55-to-64 years old is considerably below the national norm, as is the participation of those 65 or older.
- Even among the prime workforce participation ages of 25 and 54, a lower percentage of Arizonans are in the labor force.
 - The below-average educational attainment and achievement of those who grew up in Arizona contributes to poor workforce skills, causing some Arizonans to have difficulty competing for jobs with more highly skilled newcomers.
 - In parts of rural Arizona, including Indian reservations, there is a shortage of jobs.
 - Cultural factors may limit workforce participation among females in certain ethnic and religious groups.
 - The state's high percentage of undocumented workers may result in an above-average share of adults working in the "underground" economy and not counted as employed.

The 1996 study divided the E-P ratio into three parts: the share of the population 16 or older, the demographics of the population 16 or older, and the E-P of the population 16 or older after controlling for demographic differences. It found that the three components were equally responsible for the state's low E-P.

The primary factor that can be influenced by public policy is the educational attainment and achievement of children receiving their educations in Arizona. In addition, the creation of more jobs in those rural areas with a shortage of jobs should be a goal of public policy, but improving conditions in such areas will be very difficult.

As can be seen in Table 10, low workforce participation rates are present throughout most of Arizona. Low workforce participation rates occur both among wage and salary employees and self employed.

Employment in Table 10 is counted at the place of work, but the population is counted at the place of residence. If a labor market includes more than one county, then the county with the core employment center may appear to have a high E-P. However, this is misleading: the entire labor market should be examined. Thus, Graham and Greenlee counties are combined, as are Maricopa and Pinal counties.

Nationally, workforce participation rates of wage and salary workers are considerably higher in metropolitan areas than in nonmetro areas, but self employment is a little more common in nonmetro areas. Thus, for those Arizona counties classified as metropolitan, the most meaningful comparison is to the national metropolitan average.

The Flagstaff area (Coconino County) has the highest workforce participation rates in the state; its E-P is even above the national metropolitan average. All of the state's other labor markets have below-average workforce participation rates, though the proportion self employed is above average in a few counties. Other than Coconino County, the Phoenix metro area has the highest participation rate, but it is 4 percent less than the national metro average. In all of the other labor markets, the participation rate is at least 10 percent less than the appropriate metro or nonmetro average.

TABLE 10
EMPLOYMENT-TO-POPULATION RATIOS IN ARIZONA IN 2007
AS A PERCENTAGE OF THE NATIONAL AVERAGE

	Total Employment	Wage & Salary Employment	Proprietors' Employment
Relative to the Overall Average:			
Arizona	92%	92%	94%
Apache	66	63	79
Cochise	80	75	99
Coconino	112	104	143
Gila	75	62	128
Graham	56	55	58
Greenlee	121	132	75
La Paz	69	67	79
Maricopa	102	104	98
Mohave	65	60	85
Navajo	62	58	77
Pima	88	85	103
Pinal	39	39	40
Santa Cruz	75	74	78
Yavapai	75	67	110
Yuma	76	82	53
Graham and Greenlee	68	69	62
Maricopa and Pinal	98	99	93
Relative to the Metro Average:			
Coconino	110	101	147
Maricopa	100	100	100
Pima	87	82	105
Pinal	38	38	41
Yavapai	74	65	113
Yuma	75	80	54
Phoenix Metro (Maricopa & Pinal)	96	96	96
Relative to the Nonmetro Average:			
Apache	74	76	69
Cochise	89	90	87
Gila	84	74	112
Graham	62	66	51
Greenlee	135	158	66
La Paz	77	80	69
Mohave	72	71	75
Navajo	69	70	67
Santa Cruz	84	89	69
Graham and Greenlee	76	83	54

Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis, (<http://www.bea.gov/regional/index.htm#state>).

Thus, the E-P ratio is an issue through nearly all of the state. Any policies designed to combat low workforce participation must be applied to the entire state. While educational attainment and achievement is a particular issue through much of rural Arizona, it also is a problem in the metro areas. In contrast, job creation is an issue only in some rural communities. In most communities, the number of new jobs is adequate to meet the needs of those living in the community, but because of poor workforce skills, some existing residents are outcompeted by in-migrants for the available jobs.

Average Wage and Other Compensation

Wages and other compensation in Arizona are below average, even after considering the cost of living. Two factors are primarily responsible for the low figures:

- Job quality in Arizona is below-average.
- Individuals are willing to work for lower wages in Arizona in exchange for perceived noneconomic advantages of living in the state, such as the climate.

The 1996 study looked at the average wage in more detail. It found that the number of hours worked and the demographics of those employed were essentially equal to the national average. The low average wage was a result primarily of low wages even after controlling for numerous factors. Job quality—the industrial mix—also contributed.

The apparent willingness of workers to accept lower wages in Arizona in exchange for climate, lifestyle, and other qualitative factors is out of the control of public policy. Thus, only so much can be done to raise the state's average wage.

Job quality is the key factor that can be influenced by public policy that affects both the low average wage and the subpar other compensation. Information on job quality is limited to state and national data relating only to wages. Arizona's job mix by occupation has only a small negative effect on the average wage, but the job mix by industry has a larger negative effect. That is, Arizona has a disproportionately high percentage of jobs in low-paying industries and relatively few jobs in high-paying industries.

Relative to the national average, the average wage is at least 10 percent lower in each Arizona county except Greenlee and Maricopa (see Table 11). Average pensions and insurance per employee is above average in three counties, but substantially below average in most of the others. Proprietors' income per proprietor is especially low in Arizona, well below the national average in all counties.

Wages and salaries, other compensation, and proprietors' income per worker all are much lower nationally in nonmetro areas than in metro areas. Compared to the metro average, the average wage is below average even in Maricopa County. The averages in the other two categories are far below the metro average in each of Arizona's metro counties. Thus, the low average wage, low average other compensation, and very low average proprietors' income are issues through most of the state.

TABLE 11
AVERAGE COMPENSATION IN ARIZONA IN 2007
AS A PERCENTAGE OF THE NATIONAL AVERAGE

	Wages & Salaries	Pensions & Insurance	Proprietors' Income
Relative to the Overall Average:			
Arizona	94%	85%	70%
Apache	75	126	20
Cochise	88	153	37
Coconino	78	83	44
Gila	76	86	30
Graham	70	76	58
Greenlee	108	111	18
La Paz	62	78	77
Maricopa	100	84	85
Mohave	71	63	45
Navajo	76	89	29
Pima	87	89	45
Pinal	82	85	75
Santa Cruz	78	95	65
Yavapai	72	66	33
Yuma	72	86	82
Relative to the Metro Average:			
Coconino	74	80	40
Maricopa	95	81	78
Pima	83	87	41
Pinal	78	83	68
Yavapai	69	64	30
Yuma	69	83	74
Relative to the Nonmetro Average:			
Apache	104	154	35
Cochise	123	187	64
Gila	106	105	51
Graham	97	93	100
Greenlee	151	136	31
La Paz	87	96	133
Mohave	99	77	78
Navajo	106	109	50
Santa Cruz	109	116	112

Source: Calculated from U.S. Department of Commerce, Bureau of Economic Analysis (<http://www.bea.gov/regional/index.htm#state>).

Other Factors

Based on the BEA's data, transfer payments per capita are below average in Arizona, overall and in most components. Demographics are responsible for some of the state's low figures. However, state government has chosen not to participate in certain federal programs. In other programs, the benefits paid by the state are substantially below the national norm. Thus, expanded public assistance programs would raise the incomes of those state residents with the lowest incomes, but would only slightly increase the overall average income.

Dividends, interest, and rent per capita also are a cause of the state's low per capita personal income. All three components are below average but none are under the direct influence of public policy. Instead, raising wages and workforce participation will increase incomes, which in turn will cause increases in per capita dividends, interest, and rent.

A Plan to Raise Income in Arizona

The two major public policy initiatives that could be launched to raise incomes are to improve the work skills of those who were educated in Arizona and to raise the job quality. These two initiatives are highly interrelated. One set of policy changes can address both issues.

More research needs to be done to identify the specific actions that could best accomplish these goals. However, the broad course of action that is necessary is clear.

In the case of improving the quality of Arizona's workforce, one focus needs to be on the state's children—the state's workforce in the not-too-distant future. High school graduation rates must be increased, educational achievement must be improved, and more Arizonans must attend postsecondary educational institutions. The other focus needs to be on the existing workforce. A new set of job training programs need to be initiated.

Job quality is the key to increasing wages and other compensation. Two primary steps are needed to improve the state's job quality: improve the quality of the state's workforce, and improve the quantity and quality of the state's physical infrastructure.

Economic development per se is not a particular issue in Arizona, but the economic development community must be provided with more tools to do their job. Certain business taxes should be lowered and carefully designed business incentives need to be implemented. Particular attention needs to be placed on the geographic areas and demographic groups most in need of help, which requires a strong statewide economic development authority.

More details are available in *Roadmap to Arizona's Economic Recovery: A Package to Create Jobs, Improve the State's Economic Competitiveness, and Balance the Budget* (<http://wpcarey.asu.edu/seid/ccpr/UEreports.cfm>).