

# THE IMPACT OF ARIZONA STATE UNIVERSITY GRADUATES EMPLOYED IN ARIZONA IN 2017

**A Report from the Office of the University Economist**

**December 2018**

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## SUMMARY

Arizona State University (ASU) graduates are employed throughout the world. This paper examines only those graduates employed in Arizona — those contributing to the productivity and prosperity of the state.

Approximately 238,800 ASU graduates were working in Arizona in 2017. More than one-in-four of the state's working individuals who had earned at least a bachelor's degree had graduated from ASU. The aggregate earnings of the ASU graduates were around \$15 billion. Based on these earnings, these individuals contributed between \$1.065 billion and \$1.271 billion in state and local government taxes, including between \$631 million and \$753 million in state government taxes, depending on the tax rate assumed.

The estimate of the number of ASU graduates working in Arizona in 2017 is based on actual employment and wage data for 156,489 individuals who graduated from ASU between 1990 and 2017 and were covered by the state's unemployment insurance program. Estimates of those who graduated from ASU prior to 1990 and of ASU graduates who were not covered by the unemployment insurance program but were working in Arizona in 2017 were added to the 156,489 figure to reach the total of approximately 238,800.

The impact of ASU graduates working in Arizona increased between 2012 and 2014, was little changed between 2014 and 2016, and rose in 2017. The share of the Arizona workforce who were ASU graduates was 6.17 percent in 2012 and 6.41 percent in 2017. The share of aggregate wages earned by ASU graduates increased more, from 8.28 percent in 2012 to 8.82 percent in 2017. The average wage of ASU graduates climbed from 134.3 percent of the average wage of all workers in 2012 to 137.6 percent in 2017. In 2012, graduates of ASU accounted for 25.6 percent of all Arizona workers who have earned at least a bachelor's degree. This percentage increased to 26.9 percent in 2014 and 2015, then dropped to 25.9 percent in 2016 and 25.6 percent in 2017.

## DESCRIPTION OF DATA

### University Graduates Employed in Arizona

For each year from 2012 through 2017, the Arizona Board of Regents (ABOR) has created a dataset of graduates of Arizona's three public universities who were employed in Arizona during the year. While the ABOR dataset includes the number of "degrees awarded," this number really refers to the number of individuals earning a degree. An individual earning more than one degree is counted only once in this dataset, categorized in the year of the most recent degree. Thus, the dataset's number of "degrees awarded" is less than the official number of degrees awarded.

The ABOR dataset is created by matching Social Security numbers of university graduates to the numbers in the unemployment insurance file maintained by the Arizona Department of Economic Security, which works in conjunction with the U.S. Department of Labor. Reporting from the unemployment insurance file — the Quarterly Census of Employment and Wages (QCEW) — is done quarterly, with annual average figures also produced.

Each quarter, every business that employs workers covered by the state's unemployment insurance program must report (1) employment in each of the three months of the quarter during the pay period that includes the 12th day of the month and (2) total wages paid by the business during the quarter. Federal government civilian workers covered by the comparable federal unemployment insurance program also are included in the reporting.

Various members of the workforce are not included in the QCEW: most agricultural workers on small farms, those self-employed, those in the Armed Forces, and various others. Reporting is by job, not by individual — an individual working more than one covered job will appear in the file more than once.

Since the unemployment insurance records are confidential, ABOR's dataset of graduates employed in Arizona includes only aggregate totals. There are two significant limitations to this dataset. First, the unemployment insurance file does not include a significant number of workers — in 2017, the employment count from the unemployment insurance file was only 74 percent of the total employment in Arizona, as reported by the U.S. Bureau of Economic Analysis (BEA). Second, the dataset of graduates employed in Arizona constructed by the Board of Regents only includes graduates since 1990. Thus, the number of graduates of Arizona's public universities who are working in Arizona is understated significantly. This understatement effectively becomes even larger when the number of *individuals* counted in the Board of Regents dataset is compared to the total number of *jobs* reported in the QCEW.

The dataset constructed by the Board of Regents is subdivided by various characteristics:

- university
- bachelor's degrees versus graduate degrees
- those who attended school as Arizona residents versus nonresidents

The analysis described in this paper uses a dataset specific to Arizona State University (ASU) provided by ASU's Office of Institutional Analysis.

By year of graduation, the following data items are available from the dataset of university graduates employed in Arizona:

- number of graduates
- number employed in Arizona (in any quarter during the year)
- percent of graduates employed in Arizona
- total wages of graduates employed in Arizona
- estimated state taxes paid by graduates employed in Arizona
- number employed in Arizona in all four quarters
- median wage of those employed in Arizona in all four quarters

The number of graduates is reported by academic year — for example, for 2017, the sum of the number graduating in August 2016, December 2016, and May 2017. The employment data are for calendar year 2017.

While the median wage of those employed in all four quarters is a reasonable measure of the typical annual wage of graduates included in the dataset, use of the median wage is arithmetically quite limited. Thus, the average wage of those employed in any quarter during the year also is calculated, as total wages divided by the total number employed.

### **Employment**

The employment figures reported in the QCEW are based on a census of all covered workers and therefore are highly accurate, but as noted above, a large number of workers are not covered by the unemployment insurance program. Thus, focusing only on those covered by the program significantly understates the contribution of university graduates to the Arizona economy.

Employment estimates are available from several sources, but these estimates are not consistent due to definitional differences (certain categories of workers may be excluded by one source but not by another), differences in the way the data are collected (such as a sample of employers versus a census), and timing differences in when the data are collected. In order to provide a more complete picture of the economic activity in Arizona of ASU graduates, more complete employment estimates from the BEA are used in this report.

Most of the employment estimates, including those of the QCEW and BEA, do not differentiate between a person working full time and one working fewer hours. Employment is categorized by the place of work, not by where the worker lives. For example, an Arizona resident of Bullhead City who works across the Colorado River in Laughlin, Nevada is counted in the Nevada employment figures. Further, most of the employment estimates report the number of jobs, not the number of people employed — an individual working two jobs is counted twice in the employment figures. This is an important distinction when comparing the number of ASU graduates (individuals) employed in Arizona to total employment (number of jobs).

Unlike other employment estimates, the employment data reported from the American Community Survey (ACS) reflects the number of individuals working and workers are classified by place of residence. The ACS is an ongoing survey of households conducted by the U.S. Census Bureau that is the source of a wide variety of socioeconomic data. The main shortcoming of the ACS is that it is based on a relatively small number of households. Sampling error can be a

significant concern. The accuracy of self-reporting, particularly for questions related to wages and income, also is an issue. Various ACS tables provide insight on employment in Arizona. The ACS employment figures are based on an individual's employment status at the time the questionnaire is completed.

### **Educational Attainment**

In order to provide context on the contribution of ASU graduates employed in Arizona, the educational attainment of the Arizona workforce is examined. The ACS is the best source of data on educational attainment at a subnational level. In this report, Arizona's educational attainment is compared to the nation using three ACS tables: attainment for the population age 25 or older, attainment in each of five age groups, and attainment by labor force status among those 25-to-64 years old.

While ACS data for five years often are combined to reduce sampling error, the ACS data from 2017 are used in this analysis in order to be consistent with the Board of Regents dataset. For Arizona, sampling error for a single year of ACS data ranges from insignificant for broad measures to significant for small subsets of the population. Thus, the attainment data for the entire population at least 25 years of age is more reliable than the data for each of five age groups.

### **The Impact of College Graduates on the Workforce**

Educational attainment is strongly correlated to an individual's earnings, with a bachelor's degree in particular causing a boost in earnings. The higher earnings realized over a lifetime of work greatly exceeds the costs of attending college.<sup>1</sup> Society also benefits from an educated populace in various ways, such as the lower crime rates of educated individuals.<sup>2</sup>

One of the benefits of having highly educated individuals in the workforce is to raise the wages of the entire workforce. Enrico Moretti specified this relationship in his 2004 *Journal of Econometrics* paper, "Estimating the Social Return to Higher Education: Evidence From Longitudinal and Repeated Cross-Sectional Data."<sup>3</sup> The spillover of benefits to all workers can be traced to the enhanced worker productivity associated with greater educational attainment. Improved productivity results from the sharing of knowledge and skills across workers and from shifts in the industrial mix to knowledge-based activities. These productivity gains translate into higher output and earnings.<sup>4</sup>

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<sup>1</sup> See "Has the Return to Investing in a College Education Declined?," December 2013, and earlier papers at <http://economist.asu.edu/p3/education>.

<sup>2</sup> See "Benefits From Improving Educational Attainment in Arizona," August 2012, and earlier papers at <http://economist.asu.edu/p3/education>.

<sup>3</sup> Accessible from <http://economist.asu.edu/p3/education>.

<sup>4</sup> See "The Economic Impact of Raising the Educational Attainment of Arizona's Workforce," May 2015, at <https://wpcarey.asu.edu/sites/default/files/impactedattain05-15.pdf>

## **ARIZONA STATE UNIVERSITY GRADUATES EMPLOYED IN ARIZONA IN 2017**

### **Employment**

According to the QCEW, annual average Arizona employment in 2017 totaled 2,747,638. The BEA's wage and salary employment estimate was 2,881,141, meaning that 133,503 wage and salary workers were not covered by unemployment insurance. The BEA estimates that the number of proprietors (self-employed, also not included in the QCEW) was 846,546, for a total employment figure of 3,727,687.

According to the ACS, an estimated 3,125,954 Arizonans were employed in 2017 in civilian jobs; an additional 18,570 were members of the armed forces. The total of 3,144,524 is 84 percent of the BEA's total number of jobs, suggesting that many workers (1) are employed by more than one business and/or (2) hold a wage and salary job as well as report self-employment income. Other data from the ACS indicates that 22 percent of employed Arizonans worked less than 35 hours per week.

### **Educational Attainment**

Most commonly, educational attainment is expressed for those at least 25 years old. Though the age of 25 is arbitrary, a high proportion of individuals have completed their educations by that age. In 2017, Arizona's educational attainment in this large cohort was inferior to the nation. The share without either a high school diploma or a GED (general education development) certificate was higher in Arizona: 12.8 percent versus 12.0 percent nationally. Relative to the nation, lesser shares of Arizonans had earned a graduate degree (11.0-versus-12.3 percent nationally) and a bachelor's degree (18.3-versus-19.7 percent).

An examination of educational attainment by age group reveals that Arizona was particularly far below the nation among those younger than 35 in 2017. Arizona also was below average among those 35-to-64 years old. In contrast, the educational attainment of those 65 or older was higher in Arizona than nationally. Since few of those age 65 or older are working, the standard statistics on the entire 25-or-older population understate Arizona's educational disadvantage as it applies to the workforce.

Data on educational attainment by labor force status indicate that among those in the workforce, the educational attainment in Arizona of those 25-to-64 years old was below the national figure in 2017. The proportion of those working in a civilian job who had earned at least a bachelor's degree was 33.6 percent in Arizona and 37.7 percent nationally.

### **Arizona State University Graduates Employed in Arizona**

Detailed figures from the dataset of 1990-through-2017 graduates of Arizona State University who were employed in Arizona during 2017 are provided in the appendix. Data are shown by undergraduate versus graduate degree and by residency status while a student.

ABOR's data for graduates in the most recent academic year need to be interpreted carefully. A significant proportion of those graduating in academic year 2017 graduated in May 2017. The employment and wage information for these individuals in calendar year 2017 may reflect part-time employment prior to graduation and/or full-time employment after graduation. In the latter

case, the wage data are for less than a year of full-time employment. For those graduating in academic year 2017, the average wage and median wage is very low and the percentage employed in all four quarters is very low compared to those graduating in prior years.

The following are among the basic conclusions that can be reached using the dataset of ASU graduates from academic years 1990 through 2017:

- The number of individuals earning a degree has increased significantly over time, by 232 percent overall between 1990 and 2017.
- The increase in the number of individuals earning a degree has been higher for graduate students than undergrads, and much higher for those who were classified as nonresidents while attending school than among those classified as residents.
- In 2017, the shares of the total number of graduates were 44.9 percent for resident undergraduates, 24.7 percent for nonresident undergraduates, 12.4 percent for resident graduate students, and 17.9 percent for nonresident graduate students.
- The percentage of graduates employed in Arizona is much higher for residents than nonresidents.
- The share of graduates employed in Arizona decreases significantly with the number of years since graduation, regardless of residency status while students.
- The percentage employed in all four quarters was less than 80 percent among recent graduates but generally was greater than 80 percent among older graduates.
- The average wage and the median wage increase significantly with the number of years elapsed since graduation, though this effect weakens with the number of years elapsed.
- The median wage and the average wage are somewhat higher for those who were classified as nonresidents.
- The average wage (of all graduates employed at some point during the year) was less than the median wage (of graduates employed in all four quarters) among recent graduates, likely due to those not employed in all four quarters lowering the calculated average wage. Among older graduates, the average wage exceeds the median wage, presumably because of a small number of graduates earning very high wages that boosts the average but not the median.

The number of individuals who graduated from ASU between academic years 1990 and 2017 who worked at jobs in Arizona that were covered by the unemployment insurance program in calendar year 2017 was 156,489. ASU graduates between 1990 and 2017 accounted for 5.7 percent of the QCEW total number employed, but this share is understated since it compares *individuals* with ASU degrees to the *number of jobs*.

The aggregate wages of individuals who graduated from ASU between academic years 1990 and 2017 (\$10.2 billion) accounted for 7.4 percent of the QCEW total. ABOR estimates that “state tax revenue” (really, state and local government tax revenue in Arizona) in 2017 by those who graduated from ASU between 1990 and 2017 — based only on wages earned as part of the unemployment insurance program — was \$723 million: 7.12 percent of aggregate wages.



A summary of the ASU graduates from 1990 through 2017 is provided in the top portion of Table 1. The bottom portion of Table 1 focuses on academic year 2016 graduates.<sup>5</sup> Table 1 needs to be interpreted carefully. Student characteristics vary by residency status and by undergraduate and graduate programs. For example, the magnitude of the difference in the average wage between undergraduate and graduate degrees in 2016 reflects not only the wage premium of the graduate degree but also the greater number of years of work experience prior to graduation among those with a graduate degree. The differential in the average wage of those with undergraduate and graduate degrees declines with the number of years of work experience. Among graduates from academic year 2016, the average wage in 2017 of those with a graduate degree was 56 percent higher than those with a bachelor's degree, but the differential for graduates over the entire 1990-to-2017 period was 38 percent. According to the 2017 ACS, all Arizona workers with a graduate degree (including those graduating before 1990) earned 28 percent more than those who had earned a bachelor's degree.

### **Alternative Estimates of Taxes Paid**

ABOR estimates state and local government tax payments based on the following income levels and tax rates:

- Less than \$25,001: 12.6 percent
- \$25,001 to \$75,000: 6.8 percent
- \$75,001 to \$100,000: 7.2 percent
- More than \$100,000: 6.9 percent

The average tax rate of ASU graduates between 1990 and 2017 who worked in Arizona in 2017 was 7.12 percent.

ABOR's tax rates come from the 2007 edition of an annual study of tax burdens produced by the government of the District of Columbia.<sup>6</sup> The latest study is for 2016. Since the tax rates from this study fluctuate from year to year with changes in methodology, it is preferable to use the median rates over several years. The last major tax change in Arizona for individuals was fully implemented in 2008. Based on the 2009-through-2016 reports, the median combined state and local government tax rates in Arizona are higher than used by ABOR for those with incomes of \$50,000 or more. The median rate at each of four incomes between \$50,000 and \$150,000 is between 8.1-and-8.25 percent. Since the District of Columbia study does not measure every state and local tax — though it includes income taxes, sales taxes, property taxes, and automobile-related taxes — the overall tax rate would be slightly higher.

A study by the Institute on Taxation and Economic Policy (ITEP), which includes all taxes, reports a similar state and local government tax burden in Arizona.<sup>7</sup> The figure is 8.5 percent for those earning between \$55,000 and \$96,400; the average wage of ASU graduates employed in Arizona reported by the ABOR is within this range. Using the 8.5 percent tax rate and the aggregate wage figures from the ABOR dataset, Arizona state and local government taxes paid

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<sup>5</sup> Graduates from 2016 instead of 2017 are used since the statistics for those graduating in May 2017 are affected by part-time wages earned while a student and less than full-year wages after graduation.

<sup>6</sup> "Tax Rates and Tax Burdens in the District of Columbia — A Nationwide Comparison," Government of the District of Columbia, <http://cfo.dc.gov/node/215912>.

<sup>7</sup> Institute on Taxation & Economic Policy, *Who Pays? A Distributional Analysis of the Tax Systems in All 50 States*, October 2018, <http://www.itep.org/whopays/>.

**TABLE 1**  
**ARIZONA STATE UNIVERSITY GRADUATES**

	<b>Total</b>	<b>Total Under-grad Degrees</b>	<b>Resident Under-grad Degrees</b>	<b>Non-resident Undergrad Degrees</b>	<b>Total Graduate Degrees</b>	<b>Resident Graduate Degrees</b>	<b>Non-resident Graduate Degrees</b>
<b>Graduates From 1990 Through 2017:</b>							
Number Graduating From Arizona State University Employed in Arizona and Covered by the Unemployment Insurance Program in 2017:	333,475	238,209	185,547	52,662	95,266	57,308	37,958
Number	156,489	118,464	108,702	9,762	38,025	31,826	6,199
Share of Graduates (Percent)	47	50	59	19	40	56	16
Aggregate Wages (Dollars, Millions)	10,155	7,043	6,466	577	3,113	2,632	481
Average Wage (Dollars)	64,895	59,449	59,484	59,058	81,861	82,704	77,535
Estimated State and Local Government Tax Payments (Dollars, Millions)	723	504	463	42	219	185	34
<b>Graduates From 2016:</b>							
Number Graduating From Arizona State University Employed in Arizona and Covered by the Unemployment Insurance Program in 2017:	20,514	13,921	9,996	3,925	6,593	2,787	3,806
Number	11,141	8,346	7,791	858	2,792	2,074	718
Share of Graduates (Percent)	54	60	75	22	42	74	19
Aggregate Wages (Dollars, Millions)	456	300	270	29	157	118	38
Average Wage (Dollars)	40,951	35,888	36,109	33,956	56,093	57,095	53,197
Estimated State and Local Government Tax Payments (Dollars, Millions)	33	22	20	2	11	8	3

Source: Arizona Board of Regents from Arizona State University, Office of Institutional Analysis.

on QCEW wages by those who graduated from ASU between 1990 and 2017 was approximately \$863 million in 2017, compared to ABOR's estimate of \$723 million.

In order to estimate the amount of taxes paid just to state government, U.S. Census Bureau data were used. In fiscal year 2016, state tax collections accounted for 59.3 percent of combined state and local government tax collections in Arizona.<sup>8</sup> Applying this percentage to the estimates of state and local government taxes paid on QCEW wages by those who graduated from ASU between 1990 and 2017, the result is \$429 million based on ABOR's estimate of state and local government taxes and \$512 million based on the 8.5 percent state and local government tax rate.

### **Extending the Analysis to Include Those Who Graduated From ASU Before 1990**

In order to provide an estimate of the number of individuals who graduated from ASU before 1990 and who were working in Arizona in 2017, actual data on the number of degrees awarded by ASU before 1990 were collected, with the earliest data from 1971. The official graduation data from ASU count number of degrees — individuals with more than one ASU degree are counted more than once. These data are not consistent with the figures used in the Arizona Board of Regents dataset, which counts individuals, not number of degrees. Thus, in order to estimate the number of individuals who had earned a degree from ASU before 1990, the historical graduation data for the years before 1990 were adjusted, using the ratio from the 1990-through-1999 period of the number of graduates counted in the Board of Regents database to the official count of degrees granted. The ratio was 88.8 percent for those with an undergraduate degree, 91.2 percent for those with a graduate degree, and 89.5 percent for all graduates.

In order to estimate the number of ASU graduates from before 1990 who were working in Arizona in 2017 and counted in the unemployment insurance program, a “backward projection” was made of the percentage of ASU graduates who were employed in Arizona in 2017. The percentage drops with the number of years since graduation; the rate of decline is rapid among recent grads but is lower and relatively stable among earlier graduates. The average annual decrease of 1.21 percentage points between 1990 and 1999 was used for the pre-1990 period. Using the adjusted graduation figures and the estimated percentage of graduates employed in Arizona, the number of employed ASU graduates was calculated by year for the pre-1990 period.

The average wage for graduates in the pre-1990 period was backward projected in the same manner as the percentage employed. The average wage rises significantly by the number of years since graduation for relatively recent graduates. Among earlier graduates, the increase in the average wage by year is lower and more stable. The annual average increase from the 1990-through-1999 period was 0.84 percent; this figure was applied to the pre-1990 period.

Using these backward projections, the number of individuals who graduated from ASU through academic year 2017 who worked at jobs in Arizona that were covered by the unemployment insurance program in 2017 is estimated to be 176,042 — 12.5 percent higher than the number of those who graduated from 1990 through 2017. Due to the high average wage of individuals who graduated prior to 1990, the differential in the aggregate wage of the entire set of ASU graduates relative to the 1990-to-2017 group was greater at 19.6 percent.

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<sup>8</sup> U.S. Department of Commerce, Census Bureau, State and Local Government Finance, <https://www.census.gov/programs-surveys/gov-finances/data/datasets.html>.

This methodology does not directly address the increasing share of retirees among older ASU graduates. While the percentage of ASU graduates working in Arizona declines with the number of years since graduation over the 1990-to-2017 period, this decrease presumably occurs mostly due to out-migration. Few ASU graduates since 1990 — a high percentage of whom were less than 55 years old in 2017 — are likely to have retired. In contrast, retirement becomes increasingly likely among those who graduated during the 1970s. Thus, the estimates of the numbers employed in Arizona of graduates from this time period may be overstated. However, the results of the methodology that was used results in only 8 percent of 1971 undergraduates, and 2 percent of those who earned a graduate degree in 1971, employed in Arizona in 2017. Any overstatement of graduates from the 1970s working in Arizona is partially offset by the exclusion of graduates from before 1971, a few of whom likely were still part of the workforce in 2017. Further, it seems unlikely that the rate of out-migration from Arizona for job-related reasons would be as high among those approaching retirement age as among those who are younger. Thus, the estimated number of older ASU graduates working in Arizona is believed to be reasonable.

Those who have graduated from ASU accounted for 6.4 percent of the QCEW number of jobs in Arizona in 2017, but again this share is understated since it compares *individuals* with ASU degrees to the *number of jobs*. The aggregate wage of individuals who have graduated from ASU accounted for 8.8 percent of the QCEW total. The 2017 average wage of \$69,016 of those who have graduated from ASU was 37.6 percent higher than the average of the rest of the QCEW file (a group that includes those without a bachelor's degree and those who earned a degree from another institution). Based on the 7.12 percent tax rate and estimated QCEW wages, ASU graduates paid \$865 million in state and local government taxes in 2017, of which \$513 million was paid to state government. Using the 8.5 percent tax rate, state and local government taxes paid amounted to \$1.032 billion, of which \$612 million was paid to state government.

Estimates from the ACS for 2017 indicate that 840,714 Arizona residents between the ages of 25 and 64 who had received at least a bachelor's degree were employed in civilian jobs. Based on various data from the ACS, the estimated total number of people working in civilian jobs in Arizona in 2017 who have earned a bachelor's or higher degree is 933,960. The estimated number of ASU graduates employed in the state and covered by the unemployment insurance program accounts for 18.8 percent of the estimated number of civilian workers with at least a bachelor's degree.

### **Extending the Analysis to Include ASU Graduates Employed in Arizona but Not Covered by the Unemployment Insurance Program**

In order to estimate the number of ASU graduates working in Arizona in wage and salary jobs not covered by unemployment insurance or as proprietors (self-employed), the ASU shares of the QCEW total (6.41 percent of employment and 8.82 percent of wages) were applied to the BEA's total employment figure. The result is a total of 238,834 ASU graduates working in Arizona in 2017 (see Table 2). This figure is understated because the 6.41 percent figure is based on individuals with ASU degrees and the number of QCEW jobs.

The estimate of 238,834 ASU graduates working in Arizona accounts for 25.6 percent of the estimated number of employed Arizonans with at least a bachelor's degree in 2017. Thus, more

**TABLE 2**  
**ARIZONA STATE UNIVERSITY GRADUATES EMPLOYED IN ARIZONA IN 2017**  
**COMPARED TO TOTAL EMPLOYMENT IN ARIZONA**

	Employment	Aggregate Earnings*	Average Earnings
Employment in Arizona:			
QCEW Wage and Salary	2,747,638	\$137,783	\$50,146
Other Wage and Salary From BEA	133,503	9,609	71,975
Total Wage and Salary From BEA	2,881,141	147,391	51,157
Proprietors From BEA	846,546	22,138	26,151
Total From BEA	3,727,687	169,529	45,478
ASU Graduates Employed in Arizona:			
QCEW Wage and Salary, 1990 Through 2017	156,489	10,155	64,895
Estimate From Before 1990	19,553	1,994	101,993
Total QCEW Wage and Salary	176,042	12,150	69,015
Other Wage and Salary Plus Proprietors	62,792	2,799	44,583
Total	238,834	14,949	62,592
ASU Share of Total Employment in Arizona	6.41%	8.82%	137.6%

\* In millions. Consists of wages and salaries and proprietors' Income.

Sources: U.S. Department of Labor, Bureau of Labor Statistics (QCEW: Quarterly Census of Employment and Wages); U.S. Department of Commerce, Bureau of Economic Analysis (BEA); and Arizona Board of Regents from Arizona State University, Office of Institutional Analysis.

than one-in-four working individuals in Arizona who had earned at least a bachelor's degree had graduated from ASU. The aggregate earnings of the ASU graduates were around \$15 billion. Based on the 7.12 percent tax rate and \$15 billion in earnings, ASU graduates paid \$1.065 billion in state and local government taxes in 2017, of which \$631 million was paid to state government. Using the 8.5 percent tax rate, state and local government taxes paid amounted to \$1.271 billion, of which \$753 million was paid to state government.

### **The Impacts of ASU Graduates on the Workforce**

The estimates of 238,834 ASU graduates working in Arizona, earning \$15 billion, and paying between \$1.065 billion and \$1.271 billion in state and local government taxes do not provide a complete accounting of the impacts of ASU graduates on the Arizona economy. College graduates in the workforce boost the productivity of all workers, which results in an increase in wages for all workers. This is discussed in the May 2015 University Economist Paper, "The Economic Impact of Raising the Educational Attainment of Arizona's Workforce," <https://wpcarey.asu.edu/sites/default/files/impactedattain05-15.pdf>.

**ARIZONA STATE UNIVERSITY GRADUATES EMPLOYED IN ARIZONA,  
2012 THROUGH 2017**

The estimated number of ASU graduates (including those graduating prior to 1990) working in Arizona and covered by unemployment insurance accounted for 6.17 percent of all workers in the unemployment insurance program in 2012. Except for a dip in 2015, this share has increased, reaching 6.41 percent in 2017 (see Table 3). Similarly, other than a decline in 2015, the share of aggregate wages earned by ASU graduates increased from 8.28 percent in 2012 to 8.82 percent in 2017.

The average wage of ASU graduates climbed from 134.3 percent of the overall average in 2012 to 137.6 percent in 2015. While the 2016 figure dipped to 137.2 percent, the 2017 figure increased back to 137.6. The average wage of ASU graduates working in Arizona rose more in 2017 than in prior years (by 3.1 percent).

The estimated share of Arizona workers holding at least a bachelor's degree who are a graduate of ASU climbed from 25.6 percent in 2012 to 26.9 percent in 2014, held steady in 2015, then fell in 2016 and 2017, back to 25.6 percent in 2017. While the one-year percentage increase in ASU graduates working in Arizona did not vary much across these years, the annual percentage increase in the total number of employed university graduates in Arizona was much higher in 2016 and 2017 than in the three prior years, based on ACS data.

**TABLE 3**  
**SUMMARY OF ARIZONA STATE UNIVERSITY GRADUATES EMPLOYED IN ARIZONA, 2012 THROUGH 2017**

	Employment		Aggregate Earnings		Average Earnings		Tax Payments Estimated Range for State and Local Governments in Millions of 2017 Dollars		Share of Workforce With a University Degree
	Number	Share of Total	Millions of 2017 Dollars	Share of Total	2017 Dollars	Share of Total			
2012	203,372	6.17%	\$11,798	8.28%	\$58,009	134.3%	\$849	\$967	25.6%
2013	211,576	6.27	12,504	8.55	59,098	136.4	897	1,025	26.4
2014	219,106	6.35	13,020	8.71	59,425	137.2	932	1,068	26.9
2015	223,985	6.31	13,524	8.68	60,379	137.6	967	1,109	26.9
2016	231,010	6.34	14,020	8.70	60,691	137.2	1,001	1,150	25.9
2017	238,834	6.41	14,949	8.82	62,592	137.6	1,065	1,271	25.6

Note: The upper range of the tax payment is based on an 8.2 percent tax rate from 2012 through 2016 and an 8.5 percent rate in 2017.

Source: Calculated by authors.

**APPENDIX**  
**ARIZONA STATE UNIVERSITY GRADUATES FROM 1990 THROUGH 2017 EMPLOYED IN ARIZONA IN 2017:**  
**DETAIL BY CATEGORY OF DEGREE**

Source: Arizona Board of Regents, from Arizona State University, Office of Institutional Analysis.



## ALL DEGREES

2017

Academic Year of Graduation	Number Earning a Degree	Number Employed in Arizona	Percent Employed in Arizona	Aggregate Wages in Millions	Average Wage	Estimated State and Local Government Tax Payments in Millions	Number Employed in Arizona During All Four Quarters	Percent Employed in All Four Quarters
1990	6,752	2,029	30.1%	\$194.0	\$95,616	\$13.6	1,599	78.8%
1991	7,125	2,357	33.1	223.2	94,686	15.7	1,885	80.0
1992	7,100	2,427	34.2	227.6	93,789	16.0	1,996	82.2
1993	7,658	2,618	34.2	232.2	88,675	16.3	2,089	79.8
1994	7,750	2,811	36.3	264.1	93,943	18.6	2,284	81.3
1995	8,097	3,112	38.4	287.5	92,392	20.2	2,455	78.9
1996	8,057	3,190	39.6	283.0	88,724	19.9	2,610	81.8
1997	8,568	3,460	40.4	302.5	87,425	21.2	2,769	80.0
1998	9,119	3,698	40.6	327.7	88,619	23.0	3,027	81.9
1999	9,234	3,775	40.9	324.4	85,937	22.8	2,992	79.3
2000	9,658	4,073	42.2	357.8	87,847	25.1	3,357	82.4
2001	9,393	3,900	41.5	338.2	86,720	23.8	3,194	81.9
2002	9,901	4,394	44.4	365.5	83,176	25.7	3,600	81.9
2003	10,494	4,675	44.5	387.7	82,939	27.2	3,822	81.8
2004	11,097	5,069	45.7	400.1	78,923	28.1	4,141	81.7
2005	11,348	5,256	46.3	395.8	75,297	27.9	4,329	82.4
2006	11,678	5,556	47.6	416.3	74,927	29.3	4,500	81.0
2007	12,078	5,753	47.6	411.2	71,474	28.9	4,662	81.0
2008	12,759	6,094	47.8	425.0	69,748	30.0	4,902	80.4
2009	13,782	6,452	46.8	427.8	66,311	30.2	5,219	80.9
2010	14,523	7,289	50.2	451.1	61,892	31.9	5,865	80.5
2011	15,035	7,631	50.8	451.2	59,123	32.0	6,084	79.7
2012	15,756	8,229	52.2	447.8	54,412	31.9	6,567	79.8
2013	16,697	8,924	53.4	466.6	52,291	33.4	6,959	78.0
2014	17,723	9,413	53.1	463.6	49,254	33.3	7,335	77.9
2015	19,173	10,352	54.0	465.2	44,941	33.8	7,953	76.8
2016	20,514	11,141	54.3	456.2	40,951	33.6	8,275	74.3
2017	22,406	12,811	57.2	362.0	28,253	29.5	7,334	57.2
1990-2017	333,475	156,489	46.9	10,155.4	64,895	723.2	121,804	77.8

## ALL UNDERGRADUATE DEGREES

2017

Academic Year of Graduation	Number Earning a Degree	Number Employed in Arizona	Percent Employed in Arizona	Aggregate Wages in Millions	Average Wage	Estimated		Percent Employed in All Four Quarters
						State and Local Government Tax Payments in Millions	Number Employed in Arizona During All Four Quarters	
1990	5,027	1,609	32.0%	\$147.8	\$91,830	\$10.4	1,280	79.6%
1991	5,270	1,876	35.6	174.4	92,975	12.3	1,515	80.8
1992	5,343	1,935	36.2	170.2	87,971	12.0	1,619	83.7
1993	5,650	2,041	36.1	175.4	85,942	12.3	1,629	79.8
1994	5,620	2,189	39.0	199.4	91,071	14.0	1,804	82.4
1995	5,739	2,372	41.3	208.8	88,022	14.7	1,894	79.8
1996	5,789	2,431	42.0	201.4	82,829	14.2	1,991	81.9
1997	6,098	2,635	43.2	220.1	83,523	15.5	2,113	80.2
1998	6,584	2,821	42.8	233.7	82,842	16.4	2,311	81.9
1999	6,598	2,828	42.9	225.9	79,878	15.9	2,255	79.7
2000	7,026	3,123	44.4	253.6	81,204	17.8	2,560	82.0
2001	6,833	3,017	44.2	240.6	79,750	16.9	2,467	81.8
2002	7,114	3,302	46.4	253.3	76,700	17.8	2,708	82.0
2003	7,521	3,487	46.4	264.5	75,850	18.6	2,844	81.6
2004	7,966	3,839	48.2	279.4	72,788	19.7	3,113	81.1
2005	8,489	4,079	48.1	283.9	69,598	20.0	3,371	82.6
2006	8,700	4,347	50.0	296.6	68,221	20.9	3,499	80.5
2007	8,873	4,442	50.1	290.9	65,488	20.5	3,593	80.9
2008	9,286	4,587	49.4	282.5	61,580	20.0	3,665	79.9
2009	9,646	4,715	48.9	280.5	59,493	19.9	3,789	80.4
2010	10,234	5,333	52.1	300.1	56,274	21.4	4,291	80.5
2011	10,529	5,607	53.3	298.2	53,192	21.3	4,455	79.5
2012	11,214	6,199	55.3	300.5	48,468	21.5	4,890	78.9
2013	11,894	6,721	56.5	308.4	45,880	22.3	5,208	77.5
2014	12,511	7,123	56.9	308.8	43,358	22.4	5,502	77.2
2015	13,133	7,771	59.2	308.6	39,708	22.7	5,922	76.2
2016	13,921	8,349	60.0	299.6	35,888	22.5	6,143	73.6
2017	15,601	9,686	62.1	235.7	24,333	20.0	5,568	57.5
1990-2017	238,209	118,464	49.7	7,042.6	59,449	504.2	91,999	77.7

## RESIDENT UNDERGRADUATE DEGREES

Academic Year of Graduation	Number Earning a Degree	Number Employed in Arizona	Percent Employed in Arizona	Aggregate Wages in Millions	Average Wage	2017				
						Estimated State and Local Government Tax Payments in Millions	Number Employed in Arizona During All Four Quarters	Percent Employed in All Four Quarters	Median Wage of Those Employed in All Four Quarters	Average Wage as a Proportion of the Median Wage
1990	4,113	1,512	36.8%	\$139.0	\$91,922	\$9.8	1,204	79.6%	\$78,518	117.1%
1991	4,278	1,761	41.2	163.1	92,593	11.5	1,423	80.8	79,908	115.9
1992	4,343	1,824	42.0	158.2	86,716	11.1	1,529	83.8	77,240	112.3
1993	4,499	1,897	42.2	161.1	84,903	11.3	1,509	79.5	75,813	112.0
1994	4,536	2,037	44.9	183.1	89,892	12.9	1,686	82.8	78,292	114.8
1995	4,736	2,240	47.3	194.5	86,818	13.7	1,787	79.8	77,001	112.7
1996	4,848	2,298	47.4	190.6	82,928	13.4	1,888	82.2	74,260	111.7
1997	4,971	2,456	49.4	202.2	82,317	14.2	1,970	80.2	75,385	109.2
1998	5,142	2,619	50.9	215.9	82,441	15.2	2,144	81.9	71,846	114.7
1999	5,126	2,589	50.5	204.4	78,959	14.4	2,066	79.8	72,237	109.3
2000	5,408	2,842	52.6	228.1	80,246	16.1	2,333	82.1	73,934	108.5
2001	5,291	2,776	52.5	217.6	78,379	15.3	2,261	81.4	69,356	113.0
2002	5,675	3,056	53.9	231.2	75,641	16.3	2,519	82.4	67,193	112.6
2003	6,005	3,218	53.6	240.7	74,813	17.0	2,625	81.6	67,035	111.6
2004	6,396	3,559	55.6	255.2	71,698	18.0	2,892	81.3	64,764	110.7
2005	6,762	3,790	56.0	261.0	68,856	18.4	3,127	82.5	63,876	107.8
2006	7,011	4,055	57.8	274.7	67,750	19.4	3,270	80.6	63,803	106.2
2007	7,133	4,130	57.9	267.2	64,698	18.9	3,327	80.6	60,020	107.8
2008	7,390	4,279	57.9	262.6	61,358	18.6	3,424	80.0	59,011	104.0
2009	7,600	4,382	57.7	259.5	59,215	18.4	3,537	80.7	56,857	104.1
2010	8,182	4,968	60.7	279.1	56,180	19.9	4,014	80.8	55,840	100.6
2011	8,428	5,221	61.9	276.3	52,911	19.7	4,151	79.5	52,791	100.2
2012	8,981	5,764	64.2	277.8	48,198	19.9	4,565	79.2	49,500	97.4
2013	9,411	6,227	66.2	285.4	45,830	20.6	4,848	77.9	47,850	95.8
2014	9,495	6,523	68.7	282.4	43,298	20.5	5,067	77.7	45,034	96.1
2015	9,726	6,962	71.6	276.0	39,646	20.3	5,340	76.7	42,782	92.7
2016	9,996	7,491	74.9	270.5	36,109	20.3	5,583	74.5	39,989	90.3
2017	10,065	8,226	81.7	209.0	25,405	17.6	4,968	60.4	29,919	84.9
1990-2017	185,547	108,702	58.6	6,466.1	59,484	462.6	85,057	78.2	54,889	108.4

## NONRESIDENT UNDERGRADUATE DEGREES

Academic Year of Graduation	Number Earning a Degree	Number Employed in Arizona	Percent Employed in Arizona	Aggregate Wages in Millions	Average Wage	2017				
						Estimated State and Local Government Tax Payments in Millions	Number Employed in Arizona During All Four Quarters	Percent Employed in All Four Quarters	Median Wage of Those Employed in All Four Quarters	Average Wage as a Proportion of the Median Wage
1990	914	97	10.6%	\$8.8	\$90,394	\$0.6	76	78.4%	\$73,702	122.6%
1991	992	115	11.6	11.4	98,830	0.8	92	80.0	92,117	107.3
1992	1,000	111	11.1	12.1	108,602	0.8	90	81.1	89,268	121.7
1993	1,151	144	12.5	14.3	99,626	1.0	120	83.3	86,517	115.2
1994	1,084	152	14.0	16.2	106,868	1.1	118	77.6	88,454	120.8
1995	1,003	132	13.2	14.3	108,457	1.0	107	81.1	83,772	129.5
1996	941	133	14.1	10.8	81,109	0.8	103	77.4	83,074	97.6
1997	1,127	179	15.9	17.9	100,061	1.3	143	79.9	83,447	119.9
1998	1,442	202	14.0	17.8	88,042	1.2	167	82.7	86,106	102.2
1999	1,472	239	16.2	21.5	89,825	1.5	189	79.1	78,078	115.0
2000	1,618	281	17.4	25.5	90,890	1.8	227	80.8	85,154	106.7
2001	1,542	241	15.6	23.0	95,539	1.6	206	85.5	76,825	124.4
2002	1,439	246	17.1	22.1	89,848	1.6	189	76.8	80,530	111.6
2003	1,516	269	17.7	23.7	88,256	1.7	219	81.4	82,297	107.2
2004	1,570	280	17.8	24.3	86,643	1.7	221	78.9	79,910	108.4
2005	1,727	289	16.7	22.9	79,324	1.6	244	84.4	73,047	108.6
2006	1,689	292	17.3	21.8	74,749	1.5	229	78.4	69,716	107.2
2007	1,740	312	17.9	23.7	75,947	1.7	266	85.3	65,554	115.9
2008	1,896	308	16.2	19.9	64,672	1.4	241	78.2	62,148	104.1
2009	2,046	333	16.3	21.0	63,153	1.5	252	75.7	65,233	96.8
2010	2,052	365	17.8	21.0	57,544	1.5	277	75.9	60,375	95.3
2011	2,101	386	18.4	22.0	56,989	1.6	304	78.8	57,514	99.1
2012	2,233	435	19.5	22.6	52,034	1.6	325	74.7	55,440	93.9
2013	2,483	494	19.9	23.0	46,510	1.7	360	72.9	49,603	93.8
2014	3,016	600	19.9	26.4	44,004	1.9	435	72.5	48,754	90.3
2015	3,407	809	23.7	32.6	40,240	2.4	582	71.9	46,050	87.4
2016	3,925	858	21.9	29.1	33,956	2.2	560	65.3	42,060	80.7
2017	5,536	1,460	26.4	26.7	18,296	2.4	600	41.1	28,102	65.1
1990-2017	52,662	9,762	18.5	576.5	59,058	41.5	6,942	71.1	57,268	103.1

## ALL GRADUATE DEGREES

2017

Academic Year of Graduation	Number Earning a Degree	Number Employed in Arizona	Percent Employed in Arizona	Aggregate Wages in Millions	Average Wage	Estimated State and Local Government Tax Payments in Millions	Number Employed in Arizona During All Four Quarters	Percent Employed in All Four Quarters
1990	1,725	420	24.3%	\$46.3	\$110,122	\$3.3	319	76.0%
1991	1,855	481	25.9	48.8	101,357	3.4	370	76.9
1992	1,757	492	28.0	57.4	116,670	4.0	377	76.6
1993	2,008	577	28.7	56.7	98,342	4.0	460	79.7
1994	2,130	622	29.2	64.7	104,049	4.5	480	77.2
1995	2,358	740	31.4	78.7	106,399	5.5	561	75.8
1996	2,268	759	33.5	81.7	107,604	5.7	619	81.6
1997	2,470	825	33.4	82.4	99,890	5.8	656	79.5
1998	2,535	877	34.6	94.0	107,204	6.6	716	81.6
1999	2,636	947	35.9	98.5	104,030	6.9	737	77.8
2000	2,632	950	36.1	104.2	109,683	7.3	797	83.9
2001	2,560	883	34.5	97.6	110,535	6.8	727	82.3
2002	2,787	1,092	39.2	112.2	102,759	7.9	892	81.7
2003	2,973	1,188	40.0	123.3	103,746	8.6	978	82.3
2004	3,131	1,230	39.3	120.6	98,070	8.4	1,028	83.6
2005	2,859	1,177	41.2	111.9	95,047	7.8	958	81.4
2006	2,978	1,209	40.6	119.7	99,040	8.4	1,001	82.8
2007	3,205	1,311	40.9	120.3	91,756	8.4	1,069	81.5
2008	3,473	1,507	43.4	142.6	94,610	10.0	1,237	82.1
2009	4,136	1,737	42.0	147.3	84,819	10.3	1,430	82.3
2010	4,289	1,956	45.6	151.0	77,211	10.6	1,574	80.5
2011	4,506	2,024	44.9	152.9	75,553	10.7	1,629	80.5
2012	4,542	2,030	44.7	147.3	72,563	10.4	1,677	82.6
2013	4,803	2,203	45.9	158.3	71,848	11.2	1,751	79.5
2014	5,212	2,290	43.9	154.8	67,593	10.9	1,833	80.0
2015	6,040	2,581	42.7	156.7	60,699	11.1	2,031	78.7
2016	6,593	2,792	42.3	156.6	56,093	11.1	2,132	76.4
2017	6,805	3,125	45.9	126.3	40,403	9.5	1,766	56.5
1990-2017	95,266	38,025	39.9	3,112.8	81,861	219.1	29,805	78.4

## RESIDENT GRADUATE DEGREES

Academic Year of Graduation	Number Earning a Degree	Number Employed in Arizona	Percent Employed in Arizona	Aggregate Wages in Millions	Average Wage	2017				
						Estimated State and Local Government Tax Payments in Millions	Number Employed in Arizona During All Four Quarters	Percent Employed in All Four Quarters	Median Wage of Those Employed in All Four Quarters	Average Wage as a Proportion of the Median Wage
1990	1,111	347	31.2%	\$38.3	\$110,505	\$2.7	265	76.4%	\$85,479	129.3%
1991	1,327	425	32.0	44.3	104,153	3.1	319	75.1	99,303	104.9
1992	1,248	446	35.7	53.7	120,416	3.8	341	76.5	81,590	147.6
1993	1,416	531	37.5	52.2	98,240	3.7	428	80.6	85,276	115.2
1994	1,537	584	38.0	60.8	104,084	4.3	454	77.7	89,496	116.3
1995	1,710	689	40.3	73.2	106,206	5.1	524	76.1	96,541	110.0
1996	1,627	696	42.8	74.8	107,409	5.2	568	81.6	89,321	120.3
1997	1,718	721	42.0	71.6	99,267	5.0	568	78.8	85,520	116.1
1998	1,769	768	43.4	81.2	105,766	5.7	626	81.5	87,775	120.5
1999	1,843	856	46.4	88.6	103,506	6.2	664	77.6	90,126	114.8
2000	1,778	822	46.2	90.4	109,998	6.3	691	84.1	95,272	115.5
2001	1,705	779	45.7	86.2	110,628	6.0	634	81.4	92,333	119.8
2002	1,973	989	50.1	102.0	103,166	7.1	810	81.9	86,764	118.9
2003	2,045	1,056	51.6	109.3	103,504	7.6	872	82.6	84,000	123.2
2004	2,005	1,049	52.3	103.0	98,215	7.2	875	83.4	82,473	119.1
2005	1,980	1,053	53.2	98.0	93,093	6.9	850	80.7	82,979	112.2
2006	1,889	1,050	55.6	103.3	98,397	7.2	867	82.6	86,438	113.8
2007	2,052	1,148	55.9	101.9	88,730	7.1	935	81.4	77,853	114.0
2008	2,324	1,339	57.6	125.9	94,013	8.8	1,096	81.9	77,176	121.8
2009	2,453	1,474	60.1	122.6	83,173	8.6	1,221	82.8	76,115	109.3
2010	2,693	1,674	62.2	125.9	75,181	8.8	1,349	80.6	69,848	107.6
2011	2,766	1,717	62.1	126.0	73,397	8.8	1,383	80.5	68,874	106.6
2012	2,645	1,677	63.4	117.5	70,075	8.3	1,384	82.5	67,133	104.4
2013	2,708	1,810	66.8	122.9	67,894	8.7	1,443	79.7	66,971	101.4
2014	2,672	1,812	67.8	121.9	67,285	8.6	1,464	80.8	64,151	104.9
2015	2,743	1,969	71.8	117.2	59,515	8.3	1,570	79.7	58,189	102.3
2016	2,787	2,074	74.4	118.4	57,095	8.4	1,652	79.7	54,395	105.0
2017	2,784	2,271	81.6	101.1	44,513	7.5	1,477	65.0	47,197	94.3
1990-2017	57,308	31,826	55.5	2,632.1	82,704	185.0	25,330	79.6	71,286	116.0

## NONRESIDENT GRADUATE DEGREES

Academic Year of Graduation	Number Earning a Degree	Number Employed in Arizona	Percent Employed in Arizona	Aggregate Wages in Millions	Average Wage	2017				
						Estimated State and Local Government Tax Payments in Millions	Number Employed in Arizona During All Four Quarters	Percent Employed in All Four Quarters	Median Wage of Those Employed in All Four Quarters	Average Wage as a Proportion of the Median Wage
1990	614	73	11.9%	\$7.9	\$108,306	\$0.6	54	74.0%	\$68,135	159.0%
1991	528	56	10.6	4.5	80,136	0.3	51	91.1	69,833	114.8
1992	509	46	9.0	3.7	80,353	0.3	36	78.3	73,032	110.0
1993	592	46	7.8	4.6	99,525	0.3	32	69.6	99,281	100.2
1994	593	38	6.4	3.9	103,518	0.3	26	68.4	104,220	99.3
1995	648	51	7.9	5.6	109,002	0.4	37	72.5	113,269	96.2
1996	641	63	9.8	6.9	109,768	0.5	51	81.0	110,861	99.0
1997	752	104	13.8	10.8	104,208	0.8	88	84.6	96,350	108.2
1998	766	109	14.2	12.8	117,334	0.9	90	82.6	110,538	106.1
1999	793	91	11.5	9.9	108,959	0.7	73	80.2	116,263	93.7
2000	854	128	15.0	13.8	107,664	1.0	106	82.8	104,664	102.9
2001	855	104	12.2	11.4	109,839	0.8	93	89.4	108,596	101.1
2002	814	103	12.7	10.2	98,847	0.7	82	79.6	98,269	100.6
2003	928	132	14.2	14.0	105,683	1.0	106	80.3	98,125	107.7
2004	1,126	181	16.1	17.6	97,230	1.2	153	84.5	94,920	102.4
2005	879	124	14.1	13.8	111,640	1.0	108	87.1	105,656	105.7
2006	1,089	159	14.6	16.4	103,284	1.1	134	84.3	104,802	98.6
2007	1,153	163	14.1	18.4	113,070	1.3	134	82.2	98,937	114.3
2008	1,149	168	14.6	16.7	99,372	1.2	141	83.9	98,739	100.6
2009	1,683	263	15.6	24.7	94,044	1.7	209	79.5	98,712	95.3
2010	1,596	282	17.7	25.2	89,266	1.8	225	79.8	85,021	105.0
2011	1,740	307	17.6	26.9	87,610	1.9	246	80.1	83,346	105.1
2012	1,897	353	18.6	29.8	84,383	2.1	293	83.0	75,853	111.2
2013	2,095	393	18.8	35.4	90,060	2.5	308	78.4	76,320	118.0
2014	2,540	478	18.8	32.9	68,763	2.3	369	77.2	67,960	101.2
2015	3,297	612	18.6	39.5	64,507	2.8	461	75.3	65,632	98.3
2016	3,806	718	18.9	38.2	53,197	2.8	480	66.9	59,603	89.3
2017	4,021	854	21.2	25.2	29,473	2.0	289	33.8	43,332	68.0
1990-2017	37,958	6,199	16.3	480.6	77,535	34.1	4,475	72.2	76,944	100.8