ARIZONA JOB QUALITY THROUGH 2003

June 2005

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P3 | PRODUCTIVITY AND PROSPERITY PROJECT

ASU W. P. CAREY SCHOOL of BUSINESS
ARIZONA STATE UNIVERSITY

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SUMMARY

Job quality in Arizona in 2003 ranked 21st among all states (including the District of Columbia) at 1.6 percent below the national average. The industrial mix portion of job quality was 1.5 percent less than the national average, ranking 24th, while the occupational mix portion was only 0.1 percent below average, ranking 22nd.

The state's job quality was seventh highest among 11 competitor (mostly western) states; Arizona also ranked seventh in this group on both industrial mix and occupational mix. Among 11 new economy states, Arizona's job quality was the lowest as its industrial mix ranked last and its occupational mix was second lowest.

The primary causes of Arizona's subpar industrial mix are its heavy concentration of employment in the below-average-paying sectors of administrative support and accommodation and food services and the relatively small size of the high-paying professional, scientific and technical services sector. In the administrative support sector, the low-paying temporary help, employee leasing, and telemarketing industries are relatively large in Arizona. The low-paying tourism industries of lodging and restaurants also are of above-average size in Arizona. In contrast, the high-paying activities of research and development in physical, engineering and life sciences; computer systems design, particularly custom computer programming; and legal services are relatively small in Arizona.

The manufacturing and health services sectors provide the largest positive influences on the state's industrial mix. The high-paying semiconductor manufacturing industry is relatively large in Arizona. Some low-paying health care industries, particularly nursing care facilities, are less common than average in Arizona.

The occupational mix in Arizona is bolstered by a higher-than-average percentage of the workforce in high-paying engineering and architectural occupations and a smaller-than-average share working in low-paying production positions. However, these positive effects are offset by relatively small proportions working in several high-paying occupational groups (most notably health care professionals) and relatively high proportions in several low-paying groups, especially food preparation and serving.

The change in job quality in Arizona between 2000 and 2003 was negative, with job quality falling by 0.3 percent more than the national average, ranking the state 39th. The industrial mix fell 0.4 percent relative to the national average, ranking 38th, while the occupational mix marginally improved relative to the U.S. average, ranking 26th. Arizona was in the middle against each of the comparison groups on change in overall job quality, change in industrial mix, and change in occupational mix.

Considerable job losses in the high-paying semiconductor industry are responsible for Arizona's poor performance on the change in industrial mix between 2000 and 2003. Other than this one industry, the change in industrial mix relative to the national average was positive, though Arizona still ranked only in the middle of the states.

In Arizona, none of the 22 occupational groups had a large change in the occupational mix value between 2000 and 2003. Gains in the business and finance, health practitioners, and legal groups were offset by drops in the management, computer and mathematical, and sales groups.

INTRODUCTION

The best way to evaluate job quality would be to analyze a dataset that presents both occupational and industrial data, but the only dataset of this nature available by state comes from the decennial census. It is severely limited by small sample size, the latest data are for 1999, and the 1999 data are not consistent with the 1989 data. Thus, the initial work by the Seidman Institute on job quality (*Introduction to Job Quality*, March 2005, available online at http://economist.asu.edu/p3/job-quality) presented data on Arizona job quality from several sources of either industrial or occupational data.

Job Quality in Arizona Compared to All States is an extension of the March 2005 report. Arizona's job quality in the latest year and its change over time is compared to the national average and is ranked among the 51 "states" (including the District of Columbia). In addition, Arizona is ranked among two comparison groups:

- Ten "competitor" states as designated by the Greater Phoenix Chamber of Commerce: California, Colorado, Florida, Georgia, Nevada, New Mexico, Oregon, Texas, Utah, and Washington. Eight of the 10 states are in the West, including all five of Arizona's adjacent neighbors.
- Ten "new economy" states identified by the Milken Institute: California, Colorado, Connecticut, Massachusetts, Maryland, Minnesota, New Jersey, Utah, Virginia, and Washington. Only four of these states are in the West, with each of these also being part of the "competitor" grouping.

Data

Two datasets produced by the U.S. Department of Labor's Bureau of Labor Statistics were used for this analysis: industrial data from the Quarterly Census of Employment and Wages (previously called the ES-202 program) and occupational data from the Occupational Employment Statistics (OES) program. The ES-202 data are a census of all workers covered by the unemployment insurance program and provide the most detailed industrial data. The wages of part-time workers are not adjusted to full-time-equivalent status. The OES is the only source of occupational data by state other than the decennial census. OES data are adjusted to full-time-equivalent status, but are based on a sample of employers.

The time period analyzed is constrained by the limited availability of occupational data and the three-year sampling cycle with which the occupational data are obtained. The latest data are for 2003 and are compared to 2000.

The quality of the ES-202 and OES employment and wage data is limited by the federal government's disclosure regulations, which require data to be withheld when too few companies are represented in an industry or occupation or when one company dominates the industry or occupation in any given geographic area. Substantial amounts of detailed data are withheld in both the OES and ES-202 datasets, particularly in less populated areas (including many states). The national ES-202 dataset includes 1,170 industries, but the number available by state in both 2000 and 2003 ranges from 1,053 in California to only 263 in Wyoming and 242 in the District of Columbia. The national OES dataset contains 733 occupations, but the number available by state in both 2000 and 2003 ranges from 681 in California to 364 in Rhode Island and 313 in the District of Columbia

The withholding of data also has the effect of very substantially increasing the time required to do an analysis of job quality. The industrial and occupational categories that are withheld vary by year and by geographic area. Thus, to do an analysis of all states for two years meant individually handling the datasets for 51 states x 2 years x 2 datasets (occupation and industry), or 204 unique datasets. This figure was doubled to 408 by the need to compare each state to a national dataset that matched the specific state dataset in terms of the industries or occupations withheld.

The March 2005 report presented data for Arizona's metropolitan areas as well as for the state. While it would be possible to compare job quality in metropolitan areas across the nation, the time required to prepare the data for such an analysis would be extremely substantial. More importantly, except in the largest metro areas, the withholding of data is very extensive, lessening the quality of the analysis that could be performed. For example, only 90 industries were available for the Yuma metro area in both 2000 and 2003. Even in the Phoenix area, only 246 were available — less than one-fourth of all industries.

Methodology

A method to evaluate job quality at a given point in time was presented in the March 2005 job quality report: The job mix is a comparison of the occupational or industrial structure of employment in a subnational area to the national average at a point in time. To isolate the effect of geographic differences in the employment structure, average wage is held constant in the calculation of job mix by using national wage data. (Since local wages are not used, geographic differences in living costs and other factors that affect local wage levels do not distort the analysis.) The formula is **(difference in share of employment between the subnational area and the nation) * (ratio of average wage to overall average wage – 1) * 100**, summed over all occupations or industries. For example, a job mix value of –0.5 indicates that the job mix in the local area lowers the area's average wage by 0.5 percent relative to the national average; a value of 2.0 indicates that the job mix in the local area raises its average wage by 2 percent relative to the national average.

The change in job quality over time can be computed using any of three formulas. The simplest technique is to calculate the difference in job mix over time. Geographic differences in living costs and other factors that affect local wage levels do not distort this calculation. Thus, it is the preferred method when the focus is to compare states.

The March 2005 report used a different calculation of the change in job quality since the focus of that report was to look at Arizona over time rather than to compare it to other states. The change in job quality (sometimes referred to as "score") was calculated from the following formula, summing over all categories (industries or occupations): **(change over time in categorical share of employment) * (ratio of average wage to overall average wage – 1) * 100**. The average wage used in this formula was that for Arizona for the first year of the comparison period. (Using the average wage in the last year rather than the first year results in only slightly different results when a short time period such as three years is being examined.) When looking at only one geographic area, this method has the advantage of acknowledging the unique wage structure of the area. When comparing states, however, this method has the distinct disadvantage of being affected by factors other than the change in job quality, such as geographic differences in living

costs, geographic variations in worker productivity, and labor force supply and demand factors that reflect geographic differences in the perceived quality of life.

A third calculation of the change in job quality uses national rather than local wages in the score formula presented in the preceding paragraph. The result differs from the change in job mix calculation because it uses the average wage in just one year while the job mix calculation uses the wage data in each year.

INDUSTRIAL DATA

Industrial data are categorized using the North American Industry Classification System (NAICS). This system divides 20 two-digit sectors into three-digit subsectors, four-digit industry groups, and five- or six-digit industries. The goal of this project was to retain as much industrial detail as possible, so six-digit industries are the unit of analysis. However, because of the intensive data collection and manipulation that was necessary, a compromise was made in that all withheld six-digit industries were combined for each two-digit NAICS sector, rather than using the intermediate three-digit and four-digit subsector and industry group data.

In a few states in the ES-202 dataset, even sectoral data were withheld. In these states, the undisclosed sectoral total was combined with the unclassified category (which also was withheld). Otherwise, the unclassified category was excluded from the analysis.

Industrial Mix in 2003

Differences in the industrial mix between Arizona and the nation in 2003 on net resulted in Arizona's wages being 1.5 percent less than the national average. Since the state's average wage was 7 percent below the national average, factors other than industrial mix were responsible for most of Arizona's shortfall in wages.

Though Arizona's industrial mix value was negative, the state ranked marginally above the middle of the 51 "states" (including the District of Columbia) at 24th. Only 15 mostly populous states had an industrial mix that had a positive effect on the state's average wage relative to the national average. On many measures the U.S. average is quite different from the value for the median (26th) state because of the wide differences in size among the states. For example, employment in California in 2003 was greater than the combined employment of the 21 smallest states.

The seven states with the strongest industrial mixes in 2003 all are located along the northern-to-central Atlantic Coast. Three of Arizona's neighboring states (California, Colorado and Utah) as well as Texas are among the 14 states with an industrial mix value of at least 1 (see Table 1). Arizona's 2003 industrial mix ranked seventh among the 11 competitor states and was last among the new economy states.

Of the 20 NAICS sectors, three had significantly negative industrial mix values in Arizona in 2003. Arizona had a larger-than-average share of its jobs in the below-average-paying administrative support (an industrial mix value of –0.83) and accommodation and food services (–0.53) sectors. The state also had a below-average share of jobs in the high-paying professional, scientific and technical services sector (–0.70). The manufacturing sector (0.42) and the health

TABLE 1
INDUSTRIAL MIX* IN 2003 RANKED BY STATE

1.	District of Columbia	20.4	27.	Rhode Island	-2.1
2.	Massachusetts (n)	6.5	28.	North Dakota	-2.2
3.	Delaware	5.2	29.	Indiana	-2.4
4.	New Jersey (n)	5.0	30.	Tennessee	-2.4
5.	New York	4.5	31.	Kentucky	-2.4
6.	Connecticut (n)	4.2	32.	Alaska	-2.5
7.	Virginia (n)	3.1	33.	West Virginia	-2.6
8.	Colorado (c,n)	2.0	34.	North Carolina	-2.6
9.	Illinois	1.7	35.	Arkansas	-2.8
10.	Maryland (n)	1.5	36.	Wisconsin	-2.9
11.	Minnesota (n)	1.4	37.	Nebraska	-2.9
12.	California (c,n)	1.3	38.	Oregon (c)	-3.0
13.	Texas (c)	1.2	39.	Wyoming	-3.3
14.	Utah (c,n)	1.1	40.	New Mexico (c)	-3.7
15.	Georgia (c)	0.4	41.	Idaho	-4.1
16.	Michigan	-0.2	42.	Iowa	-4.5
17.	Pennsylvania	-0.3	43.	South Dakota	-4.7
18.	Kansas	-0.3	44.	Florida (c)	-4.9
19.	Washington (c,n)	-0.9	45.	Maine	-5.0
20.	Missouri	-1.1	46.	South Carolina	-5.2
21.	New Hampshire	-1.2	47.	Vermont	-5.9
22.	Ohio	-1.5	48.	Mississippi	-6.4
23.	Oklahoma	-1.5	49.	Montana	-7.4
24.	**Arizona** (c,n)	-1.5	50.	Hawaii	-8.8
25.	Louisiana	-1.6	51.	Nevada (c)	-9.0
26.	Alabama	-2.0			

* Sum over all industries of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

care and social assistance sector (0.48) were the largest positive influences on Arizona's industrial mix.

Manufacturing was among those sectors causing most of the state-by-state differences in industrial mix, along with professional, scientific and technical services; finance and insurance; and information. Wages in each of these sectors are well above average and employment in each is geographically concentrated.

Arizona's industrial mix value was among the top 10 states in the nation in four sectors: transportation and distribution, real estate and leasing, health services and social assistance, and arts, entertainment and recreation. However, the industrial mix value was not much different from zero except in health services, the only one of the four sectors to exhibit much variation in value by state. Arizona's industrial mix value was among the bottom 10 states in five sectors:

agriculture, construction, educational services, administrative support, and accommodation and food services.

The state's weak industrial mix relative to the new economy states derived particularly from its low sectoral shares in four high-wage, high-knowledge service sectors: information; finance and insurance; professional, scientific and technical services; and management of companies. In addition, a disproportionately high share of Arizona's employment was in two low-paying sectors: administrative support and accommodation and food services.

The state's large negative industrial mix value in the administrative support sector largely resulted from the heavy use of employee leasing and temporary help in Arizona, both low-paying industries. The large size of the low-paying telemarketing and landscaping industries also contributed. In the accommodation and food services sector, the negative value resulted from Arizona's above-average amount of tourism, reflected in both the restaurants and lodging industries. The negative value in the professional, scientific and technical services sector came primarily from the small size of three high-paying activities: research and development in physical, engineering and life sciences; computer systems design, particularly custom computer programming; and legal services. The only industry in this sector with much of a positive value was management consulting.

The large and high-paying semiconductor industry largely was responsible for the positive industrial mix value in Arizona's manufacturing sector, with contributions from the sizable and high-paying navigation instruments and aircraft industries. In the health services sector, the positive value resulted from some low-paying industries being less common than average in Arizona, particularly nursing care facilities. Of all industries, the largest positive impacts on Arizona's industrial mix came from semiconductor manufacturing and nursing care facilities. The industry with the largest negative value was employee leasing.

Change in Industrial Mix between 2000 and 2003

Arizona's industrial mix dropped relative to the national average between 2000 and 2003, causing Arizona's average wage to fall –0.4 percent. This poor performance lowered Arizona's industrial mix rank from 20th in 2000 to 24th in 2003. Though the decrease in value was modest, Arizona's change in industrial mix between 2000 and 2003 ranked only 38th among all states. Thirty-three mostly small states experienced an increase in value between 2000 and 2003. Arizona's change in industrial mix ranked in the middle compared to the competitor states (sixth of 11) and new economy states (fifth of 11).

The change in industrial mix between 2000 and 2003 was inversely related to the 2003 level in most states: States with the strongest industrial mixes in 2003 generally experienced declines between 2000 and 2003 while most of the states with the greatest improvement over the three years still had low values in 2003. As seen in Table 2, many of the states with improvements in industrial mix of at least 1 are located in the Great Plains/northern Rocky Mountain or southern regions. (A positive change in industrial mix means only that a state performed better than the national average, not that job quality improved.)

TABLE 2
CHANGE IN INDUSTRIAL MIX* BETWEEN 2000 AND 2003 RANKED BY STATE

1.	District of Columbia	4.4	27.	Delaware	0.8
2.	Wyoming	2.5	28.	Connecticut (n)	0.8
3.	Hawaii	2.4	29.	Pennsylvania	0.7
4.	Montana	2.0	30.	New Mexico (c)	0.7
5.	Louisiana	1.9	31.	Missouri	0.5
6.	North Dakota	1.8	32.	Vermont	0.2
7.	Rhode Island	1.8	33.	Virginia (n)	0.1
8.	Iowa	1.6	34.	Illinois	-0.0
9.	Alaska	1.6	35.	Washington (c,n)	-0.2
10.	West Virginia	1.5	36.	Georgia (c)	-0.3
11.	Wisconsin	1.5	37.	Indiana	-0.4
12.	Oklahoma	1.5	38.	**Arizona** (c,n)	-0.4
13.	South Dakota	1.4	39.	Utah (c,n)	-0.4
14.	South Carolina	1.3	40.	Texas (c)	-0.5
15.	Florida (c)	1.3	41.	Arkansas	-0.5
16.	Nevada (c)	1.3	42.	Minnesota (n)	-0.8
17.	Nebraska	1.2	43.	Michigan	-0.9
18.	Tennessee	1.1	44.	Oregon (c)	-1.0
19.	Mississippi	1.1	45.	Idaho	-1.2
20.	Maryland (n)	1.0	46.	New York	-1.6
21.	North Carolina	1.0	47.	New Jersey (n)	-1.6
22.	Kansas	1.0	48.	Colorado (c,n)	-1.7
23.	Maine	1.0	49.	California (c,n)	-1.9
24.	Kentucky	0.9	50.	New Hampshire	-2.1
25.	Alabama	0.9	51.	Massachusetts (n)	-2.7
26.	Ohio	0.9			

* Sum over all industries of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

Since the industrial mix is expressed relative to the national average, the change in industrial mix cannot be calculated at the national level. Thus, the change in the nation's job quality over time is measured by the score formula. Nationally, industrial job quality has been declining since at least 1970, though generally at a slow pace. Between 2000 and 2003, the national industrial job quality score was –1.5: If the nation's industrial mix had not changed between 2000 and 2003, the average wage would have been 1.5 percent higher in 2003 than the actual figure. The only states not to have a negative score (calculated using national wages) for this three-year period were Wyoming (a score of 0.5), Hawaii (0.2) and Rhode Island (0.0).

Arizona's score based on national wages ranked 36th among all states; using state wages the rank was 28th. The latter measure is affected by factors other than change in job quality. The change in industrial mix value by state can be compared to the difference in score between the nation and each state using Table 3.

TABLE 3
INDUSTRIAL JOB QUALITY BY STATE

	Industrial Mix*			Difference in Score**		State Score**	
	2000	2003	Change	State Wage	U.S. Wage	State Wage	U.S. Wage
Alabama	-2.85	-1.97	0.88	0.65	0.67	-0.73	-0.71
Alaska	-4.12	-2.49	1.63	0.61	0.39	-0.63	-0.84
Arizona (c,n)	-1.13	-1.51	-0.38	0.41	-0.11	-1.04	-1.57
Arkansas	-2.23	-2.77	-0.54	0.26	-0.59	-1.13	-1.98
California (c,n)	3.22	1.28	-1.94	-1.34	-1.23	-2.84	-2.73
Colorado (c,n)	3.71	1.97	-1.74	-1.07	-1.02	-2.56	-2.51
Connecticut (n)	3.43	4.18	0.75	1.13	0.69	-0.28	-0.72
Delaware	4.33	5.15	0.82	-2.66	0.47	-4.02	-0.89
District of Columbia	16.00	20.43	4.42	1.17	1.14	-0.28	-0.31
Florida (c)	-6.18	-4.88	1.30	1.30	0.95	-0.21	-0.56
Georgia (c)	0.72	0.44	-0.28	0.27	-0.06	-1.21	-1.53
Hawaii	-11.19	-8.83	2.36	1.46	1.55	0.15	0.24
Idaho	-2.91	-4.09	-1.17	-0.88	-0.49	-2.33	-1.93
Illinois	1.74	1.70	-0.03	-0.04	-0.15	-1.53	-1.64
Indiana	-1.98	-2.35	-0.38	-1.78	-0.89	-3.20	-2.32
Iowa	-6.10	-4.47	1.64	0.79	0.89	-0.58	-0.49
Kansas	-1.34	-0.34	1.01	0.74	0.58	-0.63	-0.79
Kentucky	-3.32	-2.42	0.90	0.39	0.57	-1.08	-0.90
Louisiana	-3.46	-1.60	1.86	1.38	1.34	-0.09	-0.12
Maine	-5.98	-5.02	0.96	0.45	0.46	-0.88	-0.87
Maryland (n)	0.48	1.52	1.04	0.73	0.68	-0.76	-0.81
Massachusetts (n)	9.19	6.54	-2.65	-1.39	-1.70	-2.86	-3.16
Michigan	0.70	-0.17	-0.87	-4.48	-1.19	-5.95	-2.65
Minnesota (n)	2.14	1.38	-0.76	-0.00	-0.36	-1.50	-1.86
Mississippi	-7.48	-6.42	1.06	0.53	0.57	-0.80	-0.76
Missouri	-1.60	-1.12	0.48	0.31	0.10	-1.08	-1.29
Montana	-9.43	-7.39	2.04	0.68	1.26	-0.65	-0.06
Nebraska	-4.10	-2.93	1.17	1.42	0.90	0.03	-0.49
Nevada (c)	-10.24	-8.99	1.25	1.60	1.07	0.20	-0.33
New Hampshire	0.92	-1.18	-2.10	-0.89	-1.27	-2.38	-2.76
New Jersey (n)	6.58	4.96	-1.61	-0.92	-1.26	-2.38	-2.72
New Mexico (c)	-4.41	-3.69	0.72	0.43	0.19	-1.01	-1.26
New York	6.08	4.49	-1.59	-1.42	-1.28	-2.91	-2.78
North Carolina	-3.69	-2.65	1.04	0.90	0.97	-0.56	-0.48
North Dakota	-4.08	-2.23	1.85	1.32	1.13	0.05	-0.14
Ohio	-2.35	-1.48	0.87	0.31	0.51	-1.20	-1.00
Oklahoma	-2.99	-1.49	1.50	0.78	1.08	-0.62	-0.32
Oregon (c)	-2.07	-3.02	-0.95	0.42	-0.12	-1.09	-1.63
Pennsylvania	-1.02	-0.29	0.73	0.66	0.40	-0.82	-1.08
Rhode Island	-3.90	-2.09	1.81	1.92	1.33	0.60	0.01
South Carolina	-6.47	-5.16	1.31	0.74	0.96	-0.61	-0.39
South Dakota	-6.04	-4.68	1.36	0.22	0.43	-1.14	-0.92
Tennessee	-3.51	-2.40	1.12	1.14	0.89	-0.25	-0.50
Texas (c)	1.74	1.24	-0.51	-0.14	-0.08	-1.66	-1.60
Utah (c,n)	1.45	1.07	-0.38	0.24	-0.37	-1.23	-1.84
Vermont	-6.05	-5.88	0.17	-0.04	-0.25	-1.25	-1.46
Virginia (n)	2.98	3.07	0.09	0.34	0.35	-1.15	-1.16
Washington (c,n)	-0.78	-0.94	-0.16	0.77	0.36	-0.72	-1.13
West Virginia	-4.16	-2.62	1.54	0.19	0.79	-1.10	-0.51
Wisconsin	-4.42	-2.89	1.54	0.94	1.02	-0.50	-0.42
Wyoming	-5.74	-3.28	2.46	2.28	1.84	0.96	0.52

(continued on next page)

TABLE 3 (continued)
INDUSTRIAL JOB QUALITY BY STATE

* Sum over all industries of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

** Sum over all industries of (change over time in sectoral share of employment) * (ratio of average wage to overall average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

The decrease in Arizona in the industrial mix value in manufacturing between 2000 and 2003 was greater than the overall Arizona decline. None of the other sectors had much of a change in job quality, but the net change in these 19 sectors was 0.7. The largest gains were in finance and insurance, administrative support, and accommodation and food services.

The manufacturing sector caused the most variation in state-by-state changes in industrial mix. The information; professional, scientific and technical services; finance and insurance; and government sectors also contributed to the geographic differences. Arizona had the third largest negative change in the manufacturing industrial mix value. The state also ranked among the bottom 10 states in five other sectors, but only in wholesale trade did the decrease in the job mix value reach –0.1. Arizona ranked among the top 10 states in five sectors, but the change in value was slight in three of them. The increase in administrative support (0.25) was the largest in the nation and the gain in accommodation and food services ranked eighth at nearly 0.3. Arizona industrial mix values and ranks for each of the 20 sectors is presented in Table 4.

The large decrease in Arizona in manufacturing's industrial mix value between 2000 and 2003 (–1.1) was due to the semiconductor industry, which had the third largest decline (–1.2) of any industry in any state. The semiconductor industry in 2003 was highly concentrated in just seven states, based on share of total state employment. Arizona ranked third behind Idaho and Oregon. The only other states with a share greater than the national average were Texas, California, Massachusetts, and Colorado (barely). All seven of these states experienced a decrease in semiconductor employment between 2000 and 2003, but Arizona's decrease was the largest on a percentage basis (32 percent). The state lost more than 10,000 jobs in an industry with an average pay of more than $80,000 per year (more than double the overall average). Thus, the state's poor performance on job quality over this period can be traced to this one industry — the change in job mix in the other 692 industries was 0.8. However, even using this value, the state's ranking on change in industrial job quality would be marginally below the middle of the states.

TABLE 4
ARIZONA'S INDUSTRIAL JOB QUALITY BY SECTOR

	2003				2000-to-2003 Change			
Sector	Value*	Rank, All	Rank, Comp	Rank, New	Value*	Rank, All	Rank, Comp	Rank, New
TOTAL	-1.51	24	7	11	-0.38	38	6	5
Agriculture	-0.23	46	7	9	0.03	8	3	2
Mining	-0.00	16	6	3	-0.06	46	9	11
Utilities	0.01	28	5	2	0.01	23	5	4
Construction	-0.09	43	7	8	-0.03	41	7	7
Manufacturing	0.42	13	4	4	-1.09	49	11	11
Wholesale Trade	0.08	12	5	5	-0.14	49	10	10
Retail Trade	0.02	13	5	6	-0.09	48	8	9
Transportation	0.14	5	3	1	-0.01	36	8	8
Information	-0.21	20	9	10	0.01	37	4	4
Finance & Insurance	-0.14	14	3	8	0.24	11	2	2
Real Estate & Leasing	0.06	8	1	4	0.03	6	2	2
Professional Services	-0.70	25	9	11	0.05	32	4	1
Management of Companies	-0.34	29	7	10	0.14	13	4	3
Administrative Support	-0.83	50	10	11	0.25	1	1	1
Educational Services	-0.05	43	10	7	-0.04	49	10	10
Health Services	0.48	4	3	1	-0.04	33	4	6
Arts & Recreation	0.20	2	1	1	0.10	7	2	2
Accommodation & Food	-0.53	42	8	10	0.28	8	2	1
Other Services	0.21	18	5	2	0.07	17	3	2
Government	-0.02	27	6	6	-0.07	34	8	7

* Sum over all industries of (Arizona – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100. The sector totals are calculated as the sum of the industry values within each sector.

Rank, All: rank among the 51 states
Rank, Comp: rank among the 11 competitor states
Rank, New: rank among the 11 new economy states

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

OCCUPATIONAL DATA

Occupational data are categorized using the Standard Occupational Classification (SOC). This system aggregates six-digit occupations into 22 two-digit major occupational groups. Undisclosed data by occupation were combined by major occupational group.

Occupational Mix in 2003

Differences in the occupational mix between Arizona and the nation in 2003 on net resulted in Arizona's wages being just 0.1 percent less than the national average. Thus, the occupational mix barely contributed to Arizona's average wage being 7 percent less than the national average. Though Arizona's occupational mix value was slightly negative, the state ranked a little above the middle of the 51 "states" (including the District of Columbia) at 22nd. Arizona's 2003 occupational mix ranked seventh among the 11 competitor states and 10th among the 11 new economy states.

The states with the strongest occupational mixes in 2003 are disproportionately located along the northern-to-central Atlantic Coast, filling seven of the top 10 positions. Two of Arizona's neighboring states (California and Colorado) as well as three other western states are among the 19 states with a positive occupational mix value (see Table 5).

Much of the state-to-state variation in occupational mix resulted from three high-wage groups that are concentrated geographically: management, business and financial operations, and computer and mathematical. The below-average-paying production group also had a wide range of occupational mix values across the states.

Of the 22 SOC major occupational groups, two had relatively high occupational mix values in Arizona in 2003: the high-paying architecture and engineering group (0.51) had an above-average share of Arizona's workforce (mostly due to aerospace, electronics and electrical engineers) while the lower-than-average-paying production group (0.47) was relatively small in Arizona. The food preparation and serving group had a similarly large negative value (-0.46) due to its low wages and above-average size. In addition, Arizona had a smaller-than-average share of its jobs in several above-average-paying groups, particularly health practitioners and technical and computer and mathematical.

Arizona's occupational mix value was among the top 10 states in the nation only in the architecture and engineering group (fifth). In four groups — health practitioners and technical; food preparation and serving; farming, fishing and forestry; and construction and extraction — the state ranked among the bottom 10.

The state's weak occupational mix relative to the new economy states derived both from its low shares in some high-wage, high-knowledge occupational groups — particularly computer and mathematical and life, physical and social sciences — and its high shares in some low-paying groups, especially tourism-related food preparation and serving and building and grounds cleaning and maintenance.

Among the 543 individual occupations available for Arizona, the small size of the high-paying general managers occupation led to the largest negative value. Eight other states had a more

TABLE 5
OCCUPATIONAL MIX* IN 2003 RANKED BY STATE

1.	District of Columbia	30.7	27.	Kansas	-1.4
2.	Massachusetts (n)	7.4	28.	Missouri	-1.5
3.	Maryland (n)	6.8	29.	Ohio	-1.5
4.	Alaska	4.4	30.	North Carolina	-1.8
5.	Illinois	4.0	31.	Maine	-2.0
6.	Connecticut (n)	3.6	32.	Louisiana	-2.2
7.	Virginia (n)	3.4	33.	Montana	-2.3
8.	Colorado (c,n)	2.8	34.	Tennessee	-2.3
9.	Delaware	2.5	35.	Wyoming	-2.5
10.	New York	1.4	36.	Nebraska	-2.7
11.	Idaho	1.4	37.	West Virginia	-2.8
12.	New Hampshire	1.4	38.	South Carolina	-3.2
13.	Minnesota (n)	1.2	39.	Alabama	-3.3
14.	California (c,n)	0.7	40.	Kentucky	-3.4
15.	New Jersey (n)	0.7	41.	Florida (c)	-3.6
16.	Georgia (c)	0.4	42.	Vermont	-4.0
17.	Texas (c)	0.3	43.	Wisconsin	-4.1
18.	Washington (c,n)	0.3	44.	Indiana	-4.3
19.	Pennsylvania	0.3	45.	Iowa	-4.8
20.	Michigan	-0.0	46.	Hawaii	-4.9
21.	New Mexico (c)	-0.1	47.	North Dakota	-5.0
22.	**Arizona** (c,n)	-0.1	48.	Arkansas	-6.3
23.	Utah (c,n)	-0.2	49.	Mississippi	-6.7
24.	Rhode Island	-0.8	50.	South Dakota	-7.1
25.	Oregon (c)	-0.8	51.	Nevada (c)	-9.9
26.	Oklahoma	-0.9			

* Sum over all occupations of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics.

sizable negative value in this occupation. Arizona's large negative figure resulted from a substantial decrease in value between 2000 and 2003; five states had a larger decline in this occupation. Otherwise, none of the occupations in Arizona had either a large 2003 value or a significant change in value over the three years.

Change in Occupational Mix between 2000 and 2003

Arizona's occupational mix strengthened marginally relative to the national average between 2000 and 2003, causing Arizona's average wage to rise 0.1 percent. (A positive change in job mix means only that a state performed better than the national average, not that job quality improved.) Despite this modest gain, the state's rank on occupational mix slipped from 20th in 2000 to 22nd in 2003. Arizona's change in occupational mix ranked 26th among all states, fourth of 11 competitor states and sixth of 11 new economy states.

Unlike the industrial mix, in which the change between 2000 and 2003 was inversely related to the 2003 level in most states, the change in occupational mix was not related to its level. The states with the greatest improvements in occupational mix are scattered across the country, though several states in New England or along the central Atlantic Coast experienced gains (see Table 6).

Nationally, occupational job quality fell 0.9 percent between 2000 and 2003: If the nation's occupational mix had not changed between 2000 and 2003, the average wage would have been 0.9 percent higher in 2003 than the actual figure. Of the 29 states that performed better than the national average, 11 (including the District of Columbia) experienced an improvement in the occupational mix (calculated using the "score" formula and national wages) for this three-year period.

TABLE 6
CHANGE IN OCCUPATIONAL MIX* BETWEEN 2000 AND 2003 RANKED BY STATE

1.	District of Columbia	7.2	27.	Virginia (n)	0.1
2.	Hawaii	1.7	28.	Wisconsin	0.1
3.	Rhode Island	1.7	29.	California (c,n)	0.0
4.	Idaho	1.6	30.	Delaware	-0.0
5.	Minnesota (n)	1.4	31.	Nevada (c)	-0.0
6.	Alaska	1.3	32.	South Dakota	-0.0
7.	Georgia (c)	1.3	33.	North Carolina	-0.2
8.	Massachusetts (n)	1.2	34.	Pennsylvania	-0.2
9.	Illinois	1.2	35.	Montana	-0.2
10.	Oregon (c)	1.2	36.	West Virginia	-0.3
11.	Maryland (n)	1.2	37.	Colorado (c,n)	-0.4
12.	Vermont	1.1	38.	New Jersey (n)	-0.4
13.	Connecticut (n)	0.9	39.	Ohio	-0.5
14.	Utah (c,n)	0.8	40.	North Dakota	-0.7
15.	Wyoming	0.7	41.	Kansas	-0.7
16.	Tennessee	0.7	42.	Maine	-0.8
17.	New York	0.7	43.	Missouri	-0.9
18.	Michigan	0.5	44.	Nebraska	-0.9
19.	Kentucky	0.5	45.	Louisiana	-1.0
20.	Oklahoma	0.5	46.	New Mexico (c)	-1.0
21.	Indiana	0.5	47.	Washington (c,n)	-1.2
22.	South Carolina	0.4	48.	Florida (c)	-1.2
23.	Arkansas	0.2	49.	Alabama	-1.3
24.	New Hampshire	0.1	50.	Iowa	-1.8
25.	Mississippi	0.1	51.	Texas (c)	-1.9
26.	**Arizona** (c,n)	0.1			

* Sum over all occupations of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics.

Arizona's occupational job quality score based on national wages ranked 26th among all states (the same rank as that based on change in occupational mix); using state wages the rank was 28th. The latter measure is affected by factors other than change in job quality. The change in occupational mix value by state can be compared to the difference in score between the nation and each state using Table 7.

In Arizona, none of the 22 occupational groups had a large change in the occupational mix value between 2000 and 2003. Gains in the business and finance, health practitioners, and legal groups (each among the top 10 nationally) were more than offset by drops in the management, computer and mathematical, and sales groups, with the latter two ranking among the bottom 10 states (see Table 8).

TABLE 7
OCCUPATIONAL JOB QUALITY BY STATE

	Occupational Mix*			Difference in Score**		State Score**	
	2000	2003	Change	State Wage	U.S. Wage	State Wage	U.S. Wage
Alabama	-2.02	-3.32	-1.30	-1.15	-0.97	-2.05	-1.86
Alaska	3.11	4.44	1.32	1.30	0.74	0.34	-0.21
Arizona (c,n)	-0.20	-0.12	0.08	0.32	0.21	-0.64	-0.75
Arkansas	-6.44	-6.26	0.19	0.86	0.84	-0.02	-0.05
California (c,n)	0.72	0.74	0.02	0.38	-0.11	-0.49	-0.98
Colorado (c,n)	3.19	2.83	-0.36	-0.41	-0.36	-1.30	-1.25
Connecticut (n)	2.72	3.57	0.85	0.72	0.70	-0.19	-0.20
Delaware	2.49	2.48	-0.02	-0.84	-0.50	-1.74	-1.40
District of Columbia	23.50	30.74	7.24	2.81	4.03	1.90	3.12
Florida (c)	-2.34	-3.56	-1.22	-1.01	-0.97	-1.90	-1.86
Georgia (c)	-0.91	0.36	1.27	0.95	1.14	0.07	0.26
Hawaii	-6.68	-4.94	1.74	2.43	1.98	1.45	1.00
Idaho	-0.19	1.41	1.60	1.25	1.38	0.25	0.38
Illinois	2.76	3.97	1.21	1.13	0.66	0.24	-0.23
Indiana	-4.76	-4.31	0.45	0.54	0.93	-0.38	0.01
Iowa	-2.98	-4.78	-1.80	-1.27	-1.23	-2.20	-2.16
Kansas	-0.61	-1.36	-0.74	-0.81	-0.43	-1.72	-1.34
Kentucky	-3.97	-3.45	0.53	0.45	0.78	-0.45	-0.11
Louisiana	-1.28	-2.23	-0.95	-0.64	-0.72	-1.59	-1.67
Maine	-1.18	-2.00	-0.82	-0.76	-0.73	-1.67	-1.64
Maryland (n)	5.60	6.76	1.16	0.84	0.47	-0.06	-0.43
Massachusetts (n)	6.17	7.40	1.23	0.41	0.45	-0.48	-0.45
Michigan	-0.55	-0.02	0.53	-0.02	0.61	-0.89	-0.26
Minnesota (n)	-0.16	1.25	1.41	1.10	1.41	0.20	0.52
Mississippi	-6.80	-6.72	0.08	0.48	0.63	-0.39	-0.23
Missouri	-0.64	-1.50	-0.86	-0.97	-0.78	-1.88	-1.68
Montana	-2.05	-2.28	-0.22	-0.23	-0.20	-1.15	-1.12
Nebraska	-1.81	-2.70	-0.88	0.11	-0.37	-0.79	-1.27
Nevada (c)	-9.89	-9.93	-0.04	1.12	0.73	0.18	-0.21
New Hampshire	1.26	1.39	0.13	-0.13	-0.18	-1.07	-1.11
New Jersey (n)	1.10	0.72	-0.38	-0.29	-0.29	-1.18	-1.18
New Mexico (c)	0.84	-0.11	-0.95	-0.43	-1.04	-1.37	-1.98
New York	0.75	1.44	0.70	0.73	0.59	-0.15	-0.29
North Carolina	-1.60	-1.81	-0.21	-0.03	-0.09	-0.90	-0.95
North Dakota	-4.31	-4.96	-0.66	-0.17	-0.21	-1.15	-1.19
Ohio	-1.03	-1.52	-0.49	-0.50	-0.36	-1.39	-1.26
Oklahoma	-1.34	-0.88	0.46	0.52	0.43	-0.39	-0.48
Oregon (c)	-2.05	-0.85	1.20	1.46	1.30	0.51	0.35
Pennsylvania	0.49	0.27	-0.22	-0.37	-0.41	-1.26	-1.30
Rhode Island	-2.51	-0.80	1.71	2.42	1.83	1.54	0.95
South Carolina	-3.62	-3.18	0.44	0.70	0.58	-0.17	-0.28
South Dakota	-7.00	-7.05	-0.05	1.06	0.85	0.10	-0.10
Tennessee	-3.03	-2.30	0.72	0.81	0.75	-0.06	-0.12
Texas (c)	2.27	0.34	-1.94	-1.89	-1.94	-2.78	-2.82
Utah (c,n)	-1.00	-0.21	0.79	1.57	0.97	0.70	0.10
Vermont	-5.05	-3.98	1.07	1.43	1.86	0.49	0.93
Virginia (n)	3.36	3.44	0.08	-0.10	0.10	-0.98	-0.79
Washington (c,n)	1.46	0.30	-1.17	-0.82	-0.72	-1.71	-1.61
West Virginia	-2.50	-2.77	-0.27	-0.01	0.13	-0.90	-0.76
Wisconsin	-4.16	-4.08	0.07	0.47	0.71	-0.40	-0.16
Wyoming	-3.28	-2.54	0.74	1.29	1.14	0.36	0.21

(continued on next page)

TABLE 7 (continued)
OCCUPATIONAL JOB QUALITY BY STATE

* Sum over all occupations of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

** Sum over all occupations of (change over time in sectoral share of employment) * (ratio of average wage to overall average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics.

TABLE 8
ARIZONA'S OCCUPATIONAL JOB QUALITY BY MAJOR OCCUPATIONAL GROUP

	2003				2000-to-2003 Change			
Major Occupational Group	Value*	Rank, All	Rank, Comp	Rank, New	Value*	Rank, All	Rank, Comp	Rank, New
TOTAL	-0.12	22	7	10	0.08	26	4	6
Management	0.09	22	6	5	-0.22	37	7	8
Business & Financial Operations	0.15	14	4	10	0.24	6	1	4
Computer & Mathematical	-0.25	25	8	11	-0.23	46	6	8
Architecture & Engineering	0.51	5	4	3	0.02	27	7	9
Life, Physical & Social Sciences	-0.13	40	8	11	-0.05	39	10	11
Community & Social Services	0.03	14	6	2	0.02	15	5	3
Legal	-0.06	19	4	8	0.13	3	1	2
Education, Training & Library	-0.14	39	7	7	-0.00	21	6	5
Design, Entertainment & Media	-0.09	31	10	11	-0.02	29	8	7
Health Practitioners & Technical	-0.28	42	7	9	0.24	7	2	1
Healthcare Support	0.07	18	7	6	-0.02	36	10	11
Protective Service	-0.01	36	8	6	0.01	23	9	7
Food Preparation & Serving	-0.46	42	9	11	0.09	16	6	3
Building & Grounds Cleaning	-0.12	38	8	11	0.05	11	2	3
Personal Care & Service	0.09	20	5	4	0.06	17	3	2
Sales & Related	0.01	17	5	8	-0.29	47	11	11
Office & Administrative Support	0.07	29	5	4	0.07	17	4	1
Farming, Fishing & Forestry	-0.11	47	8	10	0.00	29	7	9
Construction & Extraction	-0.12	48	9	11	-0.03	39	4	8
Installation, Maintenance & Repair	-0.02	34	7	9	0.01	20	3	3
Production	0.47	16	6	5	-0.10	37	8	11
Transportation & Material Moving	0.15	23	5	8	0.11	13	2	3

* Sum over all occupations of (Arizona – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100. The major occupational group totals are calculated as the sum of the occupation values within each group.

Rank, All: rank among the 51 states
Rank, Comp: rank among the 11 competitor states
Rank, New: rank among the 11 new economy states
t: tie for rank

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics.

OVERALL JOB QUALITY

Overall job quality is approximated as the sum of the industrial mix and occupational mix values. Thus, Arizona's job quality was 1.6 percent less than the national average in 2003 (an industrial mix value of –1.5 and an occupational mix value of –0.1). Among all states, Arizona ranked slightly above the median at 21st, but Arizona's job quality was seventh among the competitor states and the lowest of the new economy states. The latter finding supports other studies that have shown Arizona to be a second-tier state in the knowledge economy.

In most states, the 2003 industrial mix and occupational mix values were correlated: both the industrial mix and the occupational mix either were stronger or weaker than the national average. Alaska was the biggest exception, with a weak industrial mix but the fourth strongest occupational mix in the country. In some states, the combined effect of the industrial and occupational mixes had a substantial impact on the average wage (relative to the national average). As seen in Table 9, job quality in Massachusetts had a positive effect of 14 percent on its average wage while the job mix in four states had a depressing effect on the average wage of at least 10 percent.

The strongest job quality in 2003 was in seven states and the District of Columbia that border the Atlantic Ocean, stretching from Massachusetts to Virginia. Job quality was weakest in most of the mid-section of the country, stretching from the northern Rocky Mountains through the Great Plains and the South. In the rest of the country, including most of the West and the Great Lakes region, job quality varied by state from below to a little above the national average. Outside of the northern-to-middle Atlantic Coast region, the strongest job quality was in Illinois and Colorado.

Three of Arizona's five bordering states, along with Texas, had a job quality figure above the national average. New Mexico's figure was somewhat worse than in Arizona and Nevada had the weakest job quality in the nation.

With few exceptions, the change in job quality between 2000 and 2003 did not vary substantially by state (see Table 10). Arizona's change in job quality ranked 39th among all states even though its value was only slightly negative at –0.3 percent. Arizona compared a little more favorably relative to the competitor states (seventh) and the new economy states (sixth).

TABLE 9
OVERALL JOB QUALITY IN 2003 RANKED BY STATE

		Total	Ind Mix*	Occ Mix^			Total	Ind Mix*	Occ Mix^
1.	District of Columbia	51.2	20.4	30.7	27.	Ohio	-3.0	-1.5	-1.5
2.	Massachusetts (n)	13.9	6.5	7.4	28.	New Mexico (c)	-3.8	-3.7	-0.1
3.	Maryland (n)	8.3	1.5	6.8	29.	Louisiana	-3.8	-1.6	-2.2
4.	Connecticut (n)	7.8	4.2	3.6	30.	Oregon (c)	-3.9	-3.0	-0.8
5.	Delaware	7.6	5.2	2.5	31.	North Carolina	-4.5	-2.6	-1.8
6.	Virginia (n)	6.5	3.1	3.4	32.	Tennessee	-4.7	-2.4	-2.3
7.	New York	5.9	4.5	1.4	33.	Alabama	-5.3	-2.0	-3.3
8.	New Jersey (n)	5.7	5.0	0.7	34.	West Virginia	-5.4	-2.6	-2.8
9.	Illinois	5.7	1.7	4.0	35.	Nebraska	-5.6	-2.9	-2.7
10.	Colorado (c,n)	4.8	2.0	2.8	36.	Wyoming	-5.8	-3.3	-2.5
11.	Minnesota (n)	2.6	1.4	1.2	37.	Kentucky	-5.9	-2.4	-3.4
12.	California (c,n)	2.0	1.3	0.7	38.	Indiana	-6.7	-2.4	-4.3
13.	Alaska	1.9	-2.5	4.4	39.	Wisconsin	-7.0	-2.9	-4.1
14.	Texas (c)	1.6	1.2	0.3	40.	Maine	-7.0	-5.0	-2.0
15.	Utah (c,n)	0.9	1.1	-0.2	41.	North Dakota	-7.2	-2.2	-5.0
16.	Georgia (c)	0.8	0.4	0.4	42.	South Carolina	-8.3	-5.2	-3.2
17.	New Hampshire	0.2	-1.2	1.4	43.	Florida (c)	-8.4	-4.9	-3.6
18.	Pennsylvania	-0.0	-0.3	0.3	44.	Arkansas	-9.0	-2.8	-6.3
19.	Michigan	-0.2	-0.2	-0.0	45.	Iowa	-9.2	-4.5	-4.8
20.	Washington (c,n)	-0.6	-0.9	0.3	46.	Montana	-9.7	-7.4	-2.3
21.	**Arizona** (c,n)	-1.6	-1.5	-0.1	47.	Vermont	-9.9	-5.9	-4.0
22.	Kansas	-1.7	-0.3	-1.4	48.	South Dakota	-11.7	-4.7	-7.1
23.	Oklahoma	-2.4	-1.5	-0.9	49.	Mississippi	-13.1	-6.4	-6.7
24.	Missouri	-2.6	-1.1	-1.5	50.	Hawaii	-13.8	-8.8	-4.9
25.	Idaho	-2.7	-4.1	1.4	51.	Nevada (c)	-18.9	-9.0	-9.9
26.	Rhode Island	-2.9	-2.1	-0.8					

* Industrial mix: Sum over all industries of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

^ Occupational Mix: Sum over all occupations of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages and Occupational Employment Statistics.

TABLE 10
OVERALL CHANGE IN JOB QUALITY BETWEEN 2000 AND 2003
RANKED BY STATE

		Total	Ind Mix*	Occ Mix^			Total	Ind Mix*	Occ Mix^
1.	District of Columbia	11.7	4.4	7.2	27.	Idaho	0.4	-1.2	1.6
2.	Hawaii	4.1	2.4	1.7	28.	Utah (c,n)	0.4	-0.4	0.8
3.	Rhode Island	3.5	1.8	1.7	29.	Ohio	0.4	0.9	-0.5
4.	Wyoming	3.2	2.5	0.7	30.	Nebraska	0.3	1.2	-0.9
5.	Alaska	3.0	1.6	1.3	31.	Kansas	0.3	1.0	-0.7
6.	Maryland (n)	2.2	1.0	1.2	32.	Oregon (c)	0.2	-1.0	1.2
7.	Oklahoma	2.0	1.5	0.5	33.	Virginia (n)	0.2	0.1	0.1
8.	Tennessee	1.8	1.1	0.7	34.	Maine	0.1	1.0	-0.8
9.	Montana	1.8	2.0	-0.2	35.	Florida	0.1	1.3	-1.2
10.	South Carolina	1.8	1.3	0.4	36.	Indiana	0.1	-0.4	0.5
11.	Wisconsin	1.6	1.5	0.1	37.	Iowa	-0.2	1.6	-1.8
12.	Connecticut	1.6	0.8	0.9	38.	New Mexico (c)	-0.2	0.7	-1.0
13.	Kentucky	1.4	0.9	0.5	39.	**Arizona** (c,n)	-0.3	-0.4	0.1
14.	South Dakota	1.3	1.4	-0.0	40.	Michigan	-0.3	-0.9	0.5
15.	West Virginia	1.3	1.5	-0.3	41.	Arkansas	-0.3	-0.5	0.2
16.	Vermont	1.2	0.2	1.0	42.	Missouri	-0.4	0.5	-0.9
17.	Nevada (c)	1.2	1.3	-0.0	43.	Alabama	-0.4	0.9	-1.3
18.	North Dakota	1.2	1.8	-0.7	44.	New York	-0.9	-1.6	0.7
19.	Illinois	1.2	-0.0	1.2	45.	Washington (c,n)	-1.3	-0.2	1.2
20.	Mississippi	1.1	1.1	0.1	46.	Massachusetts (n)	-1.4	-2.7	1.2
21.	Georgia	1.0	-0.3	1.3	47.	California (c,n)	-1.9	-1.9	0.0
22.	Louisiana	0.9	1.9	-1.0	48.	New Hampshire	-2.0	-2.1	0.1
23.	North Carolina	0.8	1.0	-0.2	49.	New Jersey (n)	-2.0	-1.6	-0.4
24.	Delaware	0.8	0.8	-0.0	50.	Colorado (c,n)	-2.1	-1.7	-0.4
25.	Minnesota (n)	0.6	-0.8	1.4	51.	Texas (c)	-2.4	-0.5	-1.9
26.	Pennsylvania	0.5	0.7	-0.2					

* Industrial mix: Sum over all industries of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

^ Occupational Mix: Sum over all occupations of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages and Occupational Employment Statistics.

FACTORS AFFECTING WAGES

Job quality is just one of several factors that affect wage levels. Thus, substantial differences in the average wage exist across states even after controlling for the effects of job quality (see the "other" column in Table 11).

Major factors other than job quality that affect the average wage include

- Productivity: the greater the productivity of a state's workforce, the higher the wages.
- Cost of living: the higher the cost of living, the higher the wages.
- The desirability of the area: the more desirable the area, the lower the wages.

Given the lack of state-level data for each of these three factors and the interrelated nature of each of these factors, it is not possible to provide much insight into the geographic variations in the average wage after adjustment for job quality (the "other" column of Table 11).

In Arizona, the value of the average wage after adjustment for job quality was –5.4 in 2003 (factors other than job quality caused the state's average wage to be 5.4 percent less than the national average). Most likely, the state's low figure in part reflects the perceived desirability of the area (mostly due to climate and strong employment growth) among workers elsewhere in the country (and in other nations). However, the state's productivity (after adjusting for job quality) could be below average and the limited data available on living costs suggests that the state's cost of living was marginally below the national average in 2003.

Though considerably below the national average at –5.4, the state's adjusted average wage was 29th highest in the nation in 2003. It ranked eighth among the competitor states and 10th among the new economy states. Only 14 states had a positive value, but this includes large positive values in some of the most populous states, including New York, New Jersey, and California. Most of the states with positive values are located along the Pacific or Atlantic coasts. The largest negative values were in the northern Rocky Mountains/Great Plains region, followed by the South. Arizona's value was typical of southwestern states, but was much lower than in California and Nevada. After adjusting for the change in job quality, the change in Arizona's average wage between 2000 and 2003 was a modest 0.2, ranking 21st in the nation and seventh among both the competitor and new economy states.

While both the average wage and the average wage adjusted for job quality are affected by the cost of living, geographic variations in living costs are not the only factor causing the average wage figures to vary by state. Thus, even if reliable cost-of-living indexes were available by state, it would be misleading to fully adjust the average wage figures by the cost-of-living indexes. Academic research has suggested that 40 percent of the variation in average wage can be attributed to the cost of living.

TABLE 11
AVERAGE WAGE AND JOB QUALITY BY STATE

	2003				2000-to-2003 Change			
	Wage@	Ind Mix*	Occ Mix^	Other#	Wage@	Ind Mix*	Occ Mix^	Other#
Alabama	-14.4	-2.0	-3.3	-9.1	0.9	0.9	-1.3	1.3
Alaska	6.1	-2.5	4.4	4.1	-1.7	1.6	1.3	-4.6
ARIZONA (c,n)	-7.0	-1.5	-0.1	-5.4	-0.1	-0.4	0.1	0.2
Arkansas	-22.4	-2.8	-6.3	-13.4	1.4	-0.5	0.2	1.7
California (c,n)	12.5	1.3	0.7	10.5	-1.1	-1.9	0.0	0.8
Colorado (c,n)	4.5	2.0	2.8	-0.3	-0.9	-1.7	-0.4	1.3
Connecticut (n)	23.4	4.2	3.6	15.6	0.8	0.8	0.9	-0.8
Delaware	6.9	5.2	2.5	-0.7	2.2	0.8	0.0	1.4
District of Columbia	55.8	20.4	30.7	4.6	9.8	4.4	7.2	-1.8
Florida (c)	-10.5	-4.9	-3.6	-2.0	0.8	1.3	-1.2	0.7
Georgia (c)	-3.3	0.4	0.4	-4.1	0.4	-0.3	1.3	-0.6
Hawaii	-6.4	-8.8	-4.9	7.4	1.6	2.4	1.7	-2.5
Idaho	-18.2	-4.1	1.4	-15.6	-2.2	-1.2	1.6	-2.6
Illinois	5.4	1.7	4.0	-0.3	0.3	-0.0	1.2	-0.9
Indiana	-10.4	-2.4	-4.3	-3.7	0.1	-0.4	0.5	0.0
Iowa	-16.8	-4.5	-4.8	-7.5	0.2	1.6	-1.8	0.4
Kansas	-13.0	-0.3	-1.4	-11.4	-0.0	1.0	-0.7	-0.3
Kentucky	-14.4	-2.4	-3.4	-8.6	0.8	0.9	0.5	-0.6
Louisiana	-17.2	-1.6	-2.2	-13.4	1.0	1.9	-1.0	0.1
Maine	-14.9	-5.0	-2.0	-7.9	1.3	1.0	-0.8	1.1
Maryland (n)	8.5	1.5	6.8	0.3	3.4	1.0	1.2	1.2
Massachusetts (n)	21.3	6.5	7.4	7.3	0.3	-2.7	1.2	1.7
Michigan	5.1	-0.2	-0.0	5.3	-0.9	-0.9	0.5	-0.5
Minnesota (n)	3.7	1.4	1.2	1.1	1.7	-0.8	1.4	1.1
Mississippi	-25.5	-6.4	-6.7	-12.3	0.1	1.1	0.1	-1.0
Missouri	-8.9	-1.1	-1.5	-6.3	-0.1	0.5	-0.9	0.3
Montana	-24.3	-7.4	-2.3	-14.6	1.1	2.0	-0.2	-0.7
Nebraska	-15.7	-2.9	-2.7	-10.1	1.8	1.2	-0.9	1.6
Nevada (c)	-6.8	-9.0	-9.9	12.1	1.7	1.3	-0.0	0.5
New Hampshire	-1.2	-1.2	1.4	-1.4	1.3	-2.1	0.1	3.3
New Jersey (n)	18.2	5.0	0.7	12.6	-1.8	-1.6	-0.4	0.2
New Mexico (c)	-15.7	-3.7	-0.1	-11.9	0.9	0.7	-1.0	1.2
New York	20.6	4.5	1.4	14.7	-1.0	-1.6	0.7	-0.1
North Carolina	-9.6	-2.6	-1.8	-5.1	0.5	1.0	-0.2	-0.3
North Dakota	-22.9	-2.2	-5.0	-15.7	1.8	1.8	-0.7	0.6
Ohio	-5.4	-1.5	-1.5	-2.4	0.3	0.9	-0.5	-0.1
Oklahoma	-18.8	-1.5	-0.9	-16.5	0.8	1.5	0.5	-1.2
Oregon (c)	-5.1	-3.0	-0.8	-1.2	-1.1	-1.0	1.2	-1.3
Pennsylvania	-2.8	-0.3	0.3	-2.7	0.2	0.7	-0.2	-0.3
Rhode Island	-0.6	-2.1	-0.8	2.3	3.5	1.8	1.7	-0.0
South Carolina	-16.4	-5.2	-3.2	-8.0	0.6	1.3	0.4	-1.2
South Dakota	-24.9	-4.7	-7.1	-13.2	0.7	1.4	-0.0	-0.6
Tennessee	-11.5	-2.4	-2.3	-6.8	0.9	1.1	0.7	-0.9
Texas (c)	-4.0	1.2	0.3	-5.5	-1.2	-0.5	-1.9	1.2
Utah (c,n)	-12.8	1.1	-0.2	-13.7	0.5	-0.4	0.8	0.1
Vermont	-11.4	-5.9	-4.0	-1.6	2.4	0.2	1.1	1.1
Virginia (n)	2.2	3.1	3.4	-4.3	1.9	0.1	0.1	1.8
Washington (c,n)	6.3	-0.9	0.3	6.9	-1.7	-0.2	-1.2	-0.4
West Virginia	-20.4	-2.6	-2.8	-15.0	0.7	1.5	-0.3	-0.6
Wisconsin	-8.6	-2.9	-4.1	-1.6	0.8	1.5	0.1	-0.8
Wyoming	-17.2	-3.3	-2.5	-11.4	2.4	2.5	0.7	-0.8

(continued on next page)

TABLE 11 (continued)
AVERAGE WAGE AND JOB QUALITY BY STATE

@ The percentage difference in the average wage from the national average, calculated as the mean of the differences from the industrial and occupational databases.

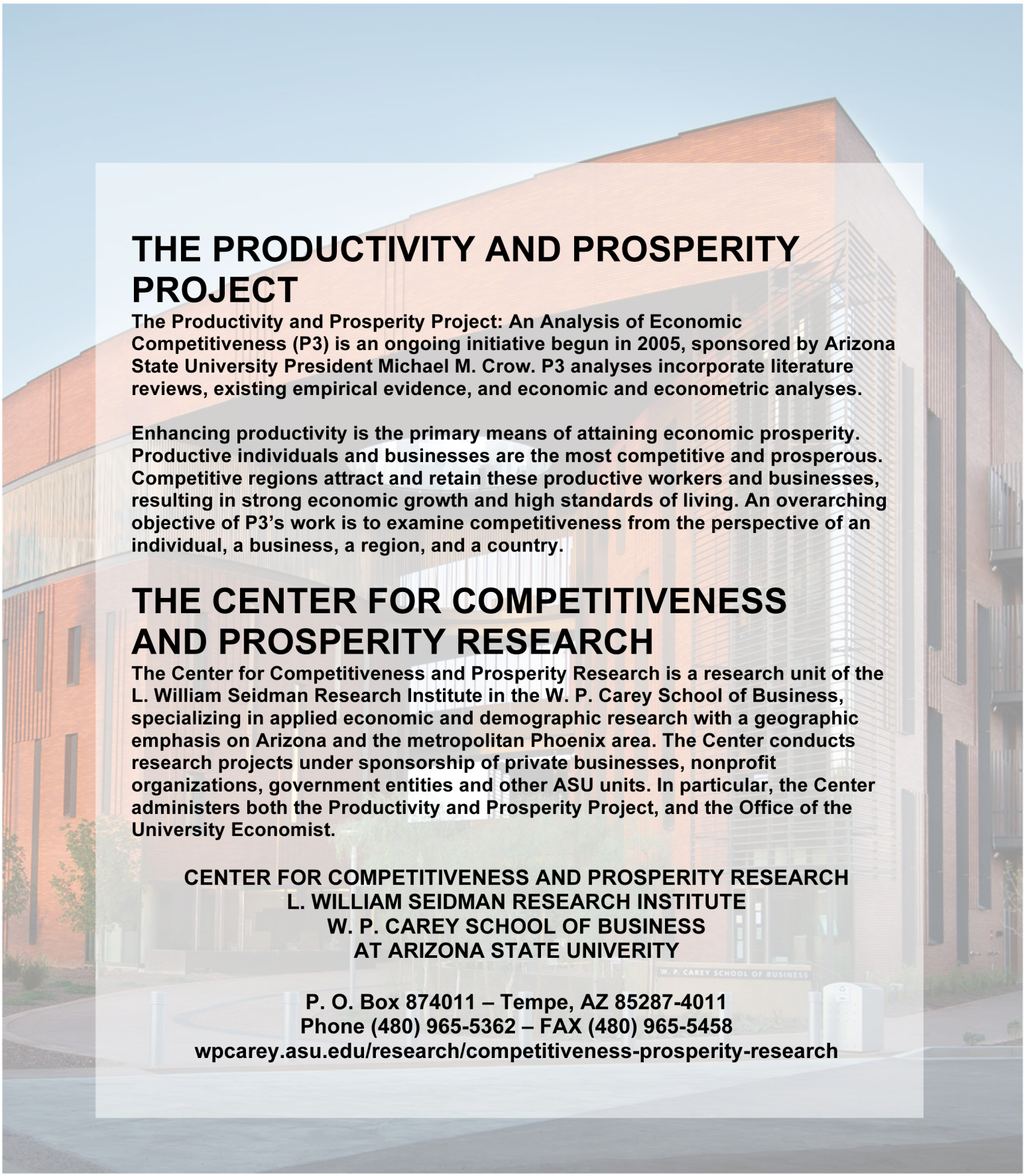
* Industrial mix: Sum over all industries of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

^ Occupational Mix: Sum over all occupations of (state – U.S. employment share) * (ratio of average wage to overall U.S. average wage – 1) * 100.

Average wage minus the industrial mix minus the occupational mix. Reflects factors such as productivity, quality of life, and cost of living.

c = competitor state, n = new economy state

Source: Calculated from U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages and Occupational Employment Statistics.



THE PRODUCTIVITY AND PROSPERITY PROJECT

The Productivity and Prosperity Project: An Analysis of Economic Competitiveness (P3) is an ongoing initiative begun in 2005, sponsored by Arizona State University President Michael M. Crow. P3 analyses incorporate literature reviews, existing empirical evidence, and economic and econometric analyses.

Enhancing productivity is the primary means of attaining economic prosperity. Productive individuals and businesses are the most competitive and prosperous. Competitive regions attract and retain these productive workers and businesses, resulting in strong economic growth and high standards of living. An overarching objective of P3's work is to examine competitiveness from the perspective of an individual, a business, a region, and a country.

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