

PREPARED FOR
GOVERNOR'S WAGE STUDY TASK FORCE

**A NOTE ON INDUSTRY
AND OCCUPATION MIX**

PREPARED BY

**RALPH J. BROWN
BUSINESS RESEARCH BUREAU
SCHOOL OF BUSINESS
UNIVERSITY OF SOUTH DAKOTA
VERMILLION, SOUTH DAKOTA 57069
Rbrown@usd.edu**

AUGUST 1999

THE IMPORTANCE OF INDUSTRY AND OCCUPATION MIX

Industry Mix

Since wages differ significantly by industry, we would expect that states that have a high proportion of workers employed in high-wage industries, such as mining or finance, insurance, and real estate, would have a high average wage. Likewise, a state that has a high proportion of its workers employed in low-wage industries, such as retail trade, would be expected to have a low average wage.

One simple method of testing the importance of industry mix is to compute the *industry mix wage* for each state. This is computed for each state by multiplying the proportion of persons employed in each industry by the national-average annual wage in that industry. (Note this data was presented in the *Why Do Wages Differ?* essay) This product is summed and the result is the total annual wage that state would have if the annual wage for each industry were paid the national-average wage rate. The industry-mix average wage, percent of U.S. annual wage by state, and rank is presented in Table 1.

Table 1: INDUSTRY MIX AVERAGE ANNUAL WAGE BY STATE, 1997

State	Industry Mix Average Wage	Percent of U.S. Average Wage	Rank
United States	\$30,336	100.0%	
Alabama	\$30,649	101.0%	10
Alaska	\$30,431	100.3%	20
Arizona	\$29,913	98.6%	40
Arkansas	\$30,653	101.0%	7
California	\$30,319	99.9%	28
Colorado	\$29,965	98.8%	39
Connecticut	\$30,717	101.3%	6
Delaware	\$30,829	101.6%	1
Florida	\$29,317	96.6%	48
Georgia	\$30,470	100.4%	15
Hawaii	\$29,276	96.5%	49
Idaho	\$30,026	99.0%	38
Illinois	\$30,749	101.4%	3

Indiana	\$30,651	101.0%	8
Iowa	\$30,456	100.4%	17
Kansas	\$30,446	100.4%	18
Kentucky	\$30,428	100.3%	21
Louisiana	\$30,345	100.0%	27
Maine	\$29,709	97.9%	44
Maryland	\$29,507	97.3%	46
Massachusetts	\$30,169	99.4%	33
Michigan	\$30,435	100.3%	19
Minnesota	\$30,489	100.5%	13
Mississippi	\$30,650	101.0%	9
Missouri	\$30,421	100.3%	22
Montana	\$29,187	96.2%	50
Nebraska	\$30,362	100.1%	26
Nevada	\$29,409	96.9%	47
New Hampshire	\$29,809	98.3%	43
New Jersey	\$30,634	101.0%	11
New Mexico	\$29,532	97.3%	45
New York	\$30,723	101.3%	5
North Carolina	\$30,740	101.3%	4
North Dakota	\$29,887	98.5%	41
Ohio	\$30,380	100.1%	23
Oklahoma	\$30,375	100.1%	24
Oregon	\$30,280	99.8%	30
Pennsylvania	\$30,375	100.1%	25
Rhode Island	\$30,111	99.3%	36
South Carolina	\$30,205	99.6%	32
South Dakota	\$30,144	99.4%	34
Tennessee	\$30,547	100.7%	12
Texas	\$30,468	100.4%	16
Utah	\$30,120	99.3%	35
Vermont	\$29,872	98.5%	42
Virginia	\$30,032	99.0%	37
Washington	\$30,267	99.8%	31
West Virginia	\$30,310	99.9%	29
Wisconsin	\$30,761	101.4%	2
Wyoming	\$30,483	100.5%	14

Source: BLS for employment by industry and national wage by Industry.

As shown in Table 1, South Dakota's industry mix average annual wage is \$30,144 compared with the US average of \$30,336. The South Dakota industry mix wage rate is 99.4 percent of the U.S. wage and South Dakota ranks of 34th. States with a high industry mix average wage were Delaware, Wisconsin, Illinois, and North Carolina. States with a low industry mix average wage were Montana,

Hawaii, Florida, and Nevada. Delaware had the highest industry mix wage with 101.6 percent of the U.S. wage and the lowest state, Montana, had a wage which was 96.2 percent of the U.S. wage. Note the rather narrow range of state industry mix wages. This indicates that industry-mix is a limited explanation of average wage differences between states. The South Dakota wage gap (see below) based on the industry mix wage was only \$192 or 2.2 percent of the overall gap of \$8,691. That leaves approximately \$8,500 of the gap unexplained. So while industry mix may be expected to explain some of the wage differences between states its explanatory power will be quite small.

	Industry Mix Wage	Raw Wage
United States	\$30,336	\$30,336
South Dakota	<u>30,144</u>	<u>21,646</u>
Wage Gap	\$ 192	\$ 8,961
% of Gap	2.2%	

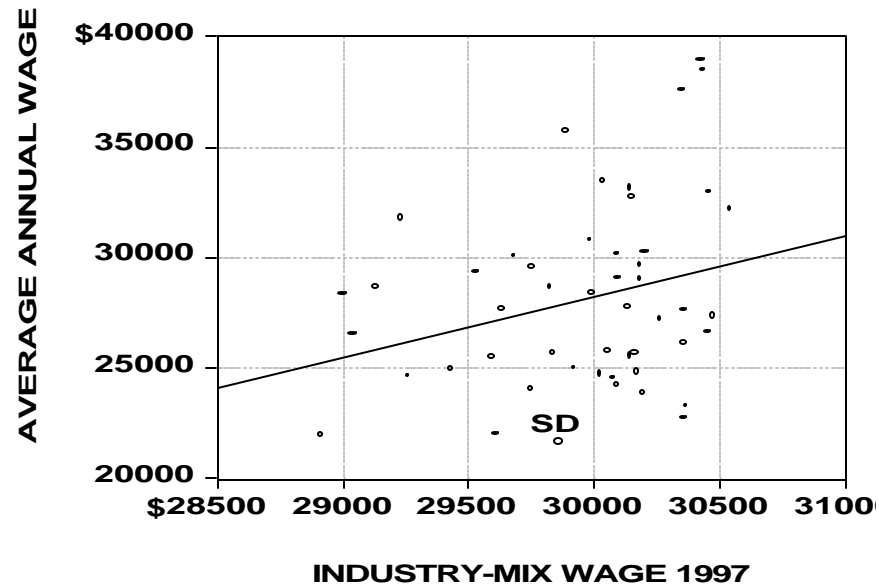
Further evidence of the rather weak relationship between average wages and the industry mix wage is shown in the scattergram in Figure 1. The correlation coefficient between average wage and the industry-mix wage is only 0.27.

Occupation Mix

Differences in state occupation mix are also expected to be a factor in explaining part of the average annual wage differences between states. As in the case of industry mix, we constructed a measure of the *occupation mix wage*. This is computed for each state by multiplying the proportion of persons employed in each occupation by the national-average annual wage in that occupation. . (Note this data was presented in the *Why Do Wages Differ?* essay) This product is summed and the result is the total annual wage that state would

have if the annual wage for each occupation were paid the national-average wage rate.

FIGURE 1: INDUSTRY MIX WAGE VS. AVERAGE WAGE, 1997



The occupation mix wage, percent of U.S. annual wage by state, and rank is presented in Table 2. The states with the highest occupation mix wage were Massachusetts, Maryland, and Connecticut. States with the lowest occupation mix wage were Nevada, Hawaii, Missouri, and North and South Dakota. South Dakota's 1997 occupation wage was \$27,316 or 96.1 percent of the U.S. wage. This is a gap of \$1,123 or 19.3 percent of the overall occupation mix wage gap of \$5,816. The states with the highest occupation mix wage were Massachusetts, Maryland, and Connecticut. States with the lowest occupation-mix wage were Nevada, Hawaii, Missouri, and North and South Dakota. The relationship between the average wage and occupation wage is presented in Figure 2.

	Occupation Mix Wage	Raw Wage*
United States	\$28,439	\$28,439
South Dakota	<u>27,316</u>	<u>22,623</u>
Wage Gap	\$ 1,123	\$ 5,816
% of Gap	19.3%	

* The data on occupational wages by state is based on the on the *Occupational Employment and Wage, 1997* Study by the U.S. Department of Labor. Since this data is based on a different survey than the industry wage survey this data is not comparable to the industry data presented above.

The analysis of industry mix and occupation mix wage analysis indicates that these two factors are rather limited in their ability to explain the interstate wage differentials. Therefore, our next step is to investigate the importance of other factors in explaining the wage gap.

Table 2: OCCUPATION MIX AVERAGE ANNUAL WAGE BY STATE, 1997

State	Occupation Mix Average Wage	Percent of U.S. Average Wage	Rank
United States	\$28,439	100.0%	-
Alabama	\$28,326	99.6%	29
Alaska	\$28,820	101.3%	9
Arizona	\$28,242	99.3%	35
Arkansas	\$27,848	97.9%	43
California	\$28,760	101.1%	13
Colorado	\$28,786	101.2%	12
Connecticut	\$29,304	103.0%	3
Delaware	\$29,017	102.0%	6
Florida	\$28,297	99.5%	32
Georgia	\$28,307	99.5%	30
Hawaii	\$27,300	96.0%	48
Idaho	\$28,263	99.4%	34
Illinois	\$28,912	101.7%	8
Indiana	\$27,993	98.4%	42
Iowa	\$28,169	99.1%	38
Kansas	\$28,797	101.3%	10
Kentucky	\$28,174	99.1%	37
Louisiana	\$28,358	99.7%	26
Maine	\$28,616	100.6%	17
Maryland	\$29,544	103.9%	2
Massachusetts	\$29,892	105.1%	1
Michigan	\$28,498	100.2%	20

Minnesota	\$28,755	101.1%	15
Mississippi	\$27,799	97.8%	44
Missouri	\$26,832	94.4%	49
Montana	\$27,706	97.4%	45
Nebraska	\$28,758	101.1%	14
Nevada	\$25,657	90.2%	50
New Hampshire	\$28,913	101.7%	7
New Jersey	\$28,442	100.0%	22
New Mexico	\$28,792	101.2%	11
New York	\$28,606	100.6%	18
North Carolina	\$28,388	99.8%	23
North Dakota	\$27,315	96.1%	47
Ohio	\$28,301	99.5%	31
Oklahoma	\$28,592	100.5%	19
Oregon	\$27,999	98.5%	41
Pennsylvania	\$28,673	100.8%	16
Rhode Island	\$28,494	100.2%	21
South Carolina	\$28,112	98.9%	40
South Dakota	\$27,316	96.1%	46
Tennessee	\$28,276	99.4%	33
Texas	\$28,201	99.2%	36
Utah	\$28,345	99.7%	28
Vermont	\$28,349	99.7%	27
Virginia	\$29,217	102.7%	4
Washington	\$29,201	102.7%	5
West Virginia	\$28,363	99.7%	25
Wisconsin	\$28,374	99.8%	24
Wyoming	\$28,129	98.9%	39

Source: BLS for employment and wages by occupation.

FIGURE 2: OCCUPATION MIX VS AVERAGE WAGE, 1997

