

News

United States
Department
of Labor



Bureau of Labor Statistics

Washington, D.C. 20212

Technical Contact:

(202) 691-6199 ocltinfo@bls.gov

Media Contact:

(202) 691-5902

Internet address:

<http://www.bls.gov/ncs/ocs/home.htm>

USDL: 05-2382

FOR RELEASE: 10:00 A.M. (EST)

WEDNESDAY, DECEMBER 28, 2005

(This news release was reissued on Wednesday, May 26, 2010, to remove table asterisks that have incorrectly indicated statistically significant differences between some estimates. News release text references to statistical significance have also been removed. Pay relative estimates have not changed. For more information, see <http://www.bls.gov/ncs>.)

OCCUPATIONAL PAY RELATIVES, 2004

The Bureau of Labor Statistics (BLS) of the U.S. Department of Labor has produced occupational “pay relatives” to facilitate comparisons of occupational pay between metropolitan areas and the United States as a whole. BLS periodically has issued occupational pay relatives using data from the National Compensation Survey (NCS) and its predecessor surveys, and now plans to publish them annually. Using data for 2004 from the NCS, pay relatives have been prepared for each of 9 major occupational groups within 78 Metropolitan Statistical Areas (MSAs), as well as averaged across all occupations for each area.

The pay relative in 2004 for workers in construction and extraction occupations in the San Francisco MSA was 127, meaning the pay in San Francisco in that occupational group averaged 27 percent more than the national average pay for workers in that occupational group (table 1). The pay relative averaged across all occupations for workers in the San Francisco MSA was 117, meaning that pay on average was 17 percent more in that area than for the nation as a whole. By contrast, the pay relative for workers in construction and extraction occupations in the Brownsville, TX MSA, was 70, meaning pay for workers in those occupations averaged 30 percent less than the national average. Pay averaged across all occupations in the Brownsville MSA was 19 percent below the national average. The pay relatives averaged for workers in all occupations in San Francisco and Brownsville were, respectively, the highest and lowest among the 78 areas. In addition to these examples of area-to-national comparisons, area-to-area comparisons can be derived using these pay relatives.

The National Compensation Survey (NCS), introduced in 1997, collects earnings and other data on employee compensation covering over 820 detailed occupations in 152 metropolitan and non-metropolitan areas. Average occupational earnings from the NCS are published annually for more than 80 metropolitan areas and for the United States as a whole.

What is a pay relative?

A pay relative is a calculation of pay—wages, salaries, commissions, and production bonuses—for a given metropolitan area relative to the nation as a whole. The calculation controls for differences among areas in occupational composition, establishment and occupational characteristics, and the fact that data are collected for areas at different times during the year.

Metropolitan areas differ greatly in the types of occupations that are available to the local workforce. For example, the proportion of San Francisco's workers who are employed as computer programmers is approximately 48 percent greater than the national average.ⁱ Similarly, the composition of establishment and occupational characteristics—such as whether an establishment is for profit or not-for-profit or whether an occupation is union or nonunion—varies by area. In addition to these factors, the NCS collects compensation data for metropolitan areas at different times during the year. Payroll reference dates differ between areas which makes direct comparisons between areas difficult.

The pay relative approach controls for these differences to isolate the geographic effect on wage determination. To illustrate the importance of controlling for these effects, consider the following example. The average pay for professional workers in San Francisco is \$38.66 and the average pay for professional workers in the entire US is \$29.40.ⁱⁱ A simple pay comparison can be calculated from the ratio of the two average pay levels, multiplied by 100 to express the comparison as a percentage. The pay comparison in the example is calculated as:

$$(\$38.66 \div \$29.40) \times 100 \cong 131$$

However, this comparison does not control for the interarea difference in occupational composition. Some of the 31 percent pay premium in San Francisco relative to the nation as a whole is due to the higher concentration of highly compensated professional workers—such as computer programmers—in San Francisco. A more accurate estimate of the geographic effect on wage determination in San Francisco can be obtained by taking into account this and other differences. Controlling for the differences in occupation composition, establishment and occupational characteristics, and the payroll reference date in San Francisco relative to the nation as the whole, the pay relative for professional occupations in San Francisco is equal to 118.

Using multivariate regression analysis

A statistical technique called multivariate regression analysis controls for interarea differences. It controls for the following ten characteristics:

- Occupational type
- Industry type
- Work level
- Full-time / part-time status
- Time / incentive status
- Union / nonunion status
- Ownership type
- Profit / non-profit status
- Establishment employment
- Payroll reference date

Even accounting for these characteristics, there is still wage variation across the areas. The variation is due to differences in wage determinants that were not included in the model. Examples of these determinants include price levels, environmental amenities such as a pleasant climate, and cultural amenities.

For more detailed information on the pay relative methodology, see Maury B. Gittleman, "Pay Relatives for Metropolitan Areas in the U.S.," *Monthly Labor Review*, March 2005, pp. 46-53.

Results

Table 1 presents July 2004 pay relatives averaged across all occupations covered by the NCS survey and nine occupational groups in 78 metropolitan areas. This table represents the first presentation of NCS wage data using the 2000 Standard Occupational Classification System (SOC). For more detailed information on SOC, see the BLS website: <http://www.bls.gov/soc/home.htm>.

The occupational groups are:

- (1) management, business, and financial occupations
- (2) professional and related occupations
- (3) service occupations
- (4) sales and related occupations
- (5) office and administrative support occupations
- (6) construction and extraction occupations
- (7) installation, maintenance, and repair occupations
- (8) production occupations
- (9) transportation and material movement occupations

Comparisons between areas

The pay relatives presented in Table 1 are area-to-national comparisons. However, it is easy to derive area-to-area comparisons from them. To do so, divide the pay relative for the occupational group and area in question by the pay relative for the same occupational group in the area to which the first is being compared. Then multiply the result by 100 so that the comparison is expressed as a percentage.

For example, the pay relative for professional occupations in San Francisco is 118 and the pay relative for professional occupations in Los Angeles is 111. The San Francisco-to-Los Angeles pay relative for professional occupations is calculated as:

$$(118 \div 111) \times 100 \cong 106$$

In the example, there is approximately a 6 percent pay premium for professional occupations in San Francisco relative to the same occupational group in Los Angeles.

Differences between the 2004 pay relatives and historical pay relatives

Historical pay relative data are available for 2002ⁱⁱⁱ, 1998^{iv}, and 1992–1996.^v There are several differences between the 2004 pay relatives and the historical pay relatives, including different industry and occupation classification systems, varying methodology, and different survey designs. These differences limit comparability.

The 2004 pay relatives use the 2002 North American Industry Classification System (NAICS) to define industry type. Occupation type and the occupational groups presented in Table 1 are defined using the Standard Occupational Classification System (SOC). The 2002 and 1992–1996 pay relatives defined industry type using the Standard Industry Classification (SIC) system. Occupation type and occupational groups for the 2002, 1998, and 1992–1996 pay relatives were defined using the Occupational Classification System (OCS).

The 2004 and 2002 pay relatives used a similar multivariate regression technique methodology to calculate pay relatives. The 1998 and 1992–1996 pay relatives were calculated using a weighted cell means methodology. The methodology controlled for fewer characteristics:

- Occupational type
- Work level
- Payroll reference date

The 2004, 2002, and 1998 pay relatives were derived from the National Compensation Survey (NCS). The 1992–1996 pay relatives were derived from the Occupational Compensation Survey (OCS). The NCS and OCS have significantly different sample designs. For example, the OCS collected wage data for sampled establishments with 50 or more employees. The NCS collects data for all sampled establishments. Additionally, the OCS collected wage data for a fixed list of jobs. The NCS collects wage data for randomly selected jobs.

Table 1. Pay relatives for major occupational groups in metropolitan areas, National Compensation Survey, July 2004

(Average pay nationally for all occupations and for each occupational group shown = 100.)

Metropolitan Area ¹	All occupations	Management, business, and financial	Professional and related	Service	Sales and related	Office and administrative support	Construction and extraction	Installation, maintenance, and repair	Production	Transportation and material moving
United States	100	100	100	100	100	100	100	100	100	100
Amarillo, TX	91	89	87	89	88	90	89	90	110	97
Anchorage, AK	111	110	109	119	101	107	130	108	122	114
Atlanta, GA	103	101	99	102	107	105	103	108	100	103
Augusta-Aiken, GA-SC	95	94	97	89	88	93	88	98	99	96
Austin-San Marcos, TX	97	95	95	102	100	102	93	103	90	87
Birmingham, AL	94	104	97	97	92	92	76	100	93	94
Bloomington, IN	93	102	87	93	96	88	98	92	98	101
Boston-Worcester-Lawrence, MA-NH-ME-CT	112	110	109	114	106	117	117	111	109	119
Brownsville-Harlingen-San Benito, TX	81	78	95	81	80	81	70	80	73	77
Buffalo-Niagara Falls, NY	102	92	97	108	100	102	101	101	105	101
Charleston-North Charleston, SC	96	105	98	86	93	99	81	89	93	102
Charlotte-Gastonia-Rock Hill, NC-SC	98	97	91	94	102	101	89	98	104	103
Chicago-Gary-Kenosha, IL-IN-WI	106	103	103	105	108	108	123	105	103	109
Cincinnati-Hamilton, OH-KY-IN	101	95	98	104	104	100	102	98	108	100
Cleveland-Akron, OH	101	101	101	99	97	99	96	105	106	105
Columbus, OH	97	90	96	96	100	99	112	98	92	98
Corpus Christi, TX	88	95	93	84	90	86	80	84	90	85
Dallas-Fort Worth, TX	99	103	100	95	101	100	96	98	94	99
Dayton-Springfield, OH	99	93	96	94	102	96	99	99	112	104
Denver-Boulder-Greeley, CO	102	101	99	101	97	101	96	106	104	104
Detroit-Ann Arbor-Flint, MI	106	102	107	101	98	108	110	104	115	109
Elkhart-Goshen, IN	94	92	99	92	95	92	99	87	95	94
Fort Collins-Loveland, CO	97	88	95	97	96	99	99	100	96	100
Grand Rapids-Muskegon-Holland, MI	104	101	100	101	106	100	106	101	107	107
Great Falls, MT	87	85	83	92	82	81	122	100	101	88
Greensboro-Winston Salem-High Point, NC	99	95	98	97	88	100	93	102	104	104
Greenville-Spartanburg-Anderson, SC	96	93	94	93	91	99	90	88	103	97
Hartford, CT	113	107	109	124	114	111	138	111	112	110
Hickory-Morganton-Lenoir, NC	99	88	93	98	90	100	81	97	103	111
Honolulu, HI	104	104	106	107	105	102	102	107	94	106
Houston-Galveston-Brazoria, TX	97	107	102	88	98	97	94	95	96	93
Huntsville, AL	97	98	99	95	96	97	89	95	98	94
Indianapolis, IN	98	94	98	96	82	104	95	99	106	104
Iowa City, IA	100	99	98	104	91	103	104	92	99	105
Johnstown, PA	87	95	84	90	90	83	84	107	85	80
Kansas City, MO-KS	98	87	93	98	105	101	103	94	109	100
Knoxville, TN	95	105	91	89	92	99	86	92	93	94
Lincoln, NE	92	93	87	95	91	90	82	96	94	95
Los Angeles-Riverside-Orange County, CA	107	108	111	111	109	107	110	109	97	101
Louisville, KY-IN	100	103	102	105	98	100	104	91	92	99
Melbourne-Titusville-Palm Bay, FL	92	89	86	95	96	92	90	101	89	100
Memphis, TN-AR-MS	96	94	89	93	94	92	111	103	94	101

See footnotes at end of table.

Table 1. Pay relatives for major occupational groups in metropolitan areas, National Compensation Survey, July 2004 — Continued

(Average pay nationally for all occupations and for each occupational group shown = 100.)

Metropolitan Area ¹	All occupations	Management, business, and financial	Professional and related	Service	Sales and related	Office and administrative support	Construction and extraction	Installation, maintenance, and repair	Production	Transportation and material moving
Miami-Fort Lauderdale, FL	93	98	97	91	94	93	84	93	89	92
Milwaukee-Racine, WI	105	100	95	100	120	102	105	111	117	107
Minneapolis-St. Paul, MN-WI	109	103	104	119	105	105	91	108	111	119
Mobile, AL	90	90	93	85	88	92	91	90	91	98
New Orleans, LA	90	87	93	83	109	84	85	89	86	94
New York-Northern New Jersey- Long Island, NY-NJ-CT-PA	110	111	115	110	107	114	127	100	102	113
Norfolk-VA Beach-Newport News, VA-NC	93	94	93	91	98	96	87	92	86	93
Ocala, FL	92	98	88	91	91	97	81	94	86	104
Oklahoma City, OK	91	86	88	88	91	89	86	93	97	93
Orlando, FL	91	91	89	86	100	92	87	104	90	92
Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD	107	107	108	106	112	108	106	107	101	108
Phoenix-Mesa, AZ	102	98	101	94	130	106	90	106	102	100
Pittsburgh, PA	97	96	96	99	94	99	91	95	94	101
Portland-Salem, OR-WA	100	97	93	109	102	102	108	105	99	103
Providence-Fall River-Warwick, RI-MA	108	103	110	117	113	109	98	88	100	115
Reading, PA	104	108	101	103	103	102	100	98	104	108
Reno, NV	99	93	95	102	111	91	101	114	93	100
Richland-Kennewick-Pasco, WA	100	98	99	105	105	92	99	104	100	100
Richmond-Petersburg, VA	99	95	97	99	99	98	88	97	101	104
Rochester, NY	99	101	97	107	96	95	95	89	102	100
Rockford, IL	101	84	102	98	93	93	111	115	107	103
Sacramento-Yolo, CA	108	106	112	113	108	106	105	112	106	110
Salinas, CA	110	108	117	111	119	110	118	109	100	96
San Antonio, TX	92	91	93	87	97	95	79	83	100	95
San Diego, CA	108	109	117	111	111	103	108	108	100	102
San Francisco-Oakland-San Jose, CA	117	117	118	121	113	120	127	116	110	113
Seattle-Tacoma-Bremerton, WA	105	95	98	116	103	105	115	102	108	105
Springfield, MA	94	103	107	106	110	110	107	109	110	65
Springfield, MO	89	91	88	89	88	86	83	90	95	94
St. Louis, MO-IL	98	95	95	95	105	98	112	95	97	109
Tallahassee, FL	86	83	86	84	99	88	91	79	83	108
Tampa-St. Petersburg-Clearwater, FL	94	99	90	92	106	93	88	101	93	100
Visalia-Tulare-Porterville, CA	98	95	105	98	101	96	87	99	93	91
Washington-Baltimore, DC-MD-VA-WV	105	101	108	105	101	110	103	101	102	98
York, PA	98	106	101	97	102	93	91	100	94	101
Youngstown-Warren, OH	98	89	94	88	101	87	99	96	111	111

¹ A metropolitan area can be a Metropolitan Statistical Area (MSA) or Combined Statistical Area (CSA) as defined by the Office of Management and Budget, 1994.

Technical Note

The pay relatives in this release, as with estimates from any sample survey, are subject to sampling and non-sampling errors. Sampling errors are differences that occur between the pay relatives estimated from the sample and the true pay relatives derived from the population. Pay relatives are also subject to a variety of non-sampling errors that can influence the estimates. The NCS may be unable to obtain information for some establishments; there may be difficulties with survey definitions; respondents may be unable to provide correct information, or mistakes in recording or coding the data may occur. Non-sampling errors of these kinds were not specifically measured. However, they are expected to be minimal due to the extensive training of the field economists who gathered the survey data, computer edits of the data, and detailed data review.

For more details, see Maury B. Gittleman, "Pay Relatives for Metropolitan Areas in the NCS" *Monthly Labor Review*, March 2005, pp. 46-53, and Parastou Karen Shahpoori, "Pay Relatives for Major Metropolitan Areas," *Compensation and Working Conditions Online*, April 28, 2003.

ⁱ The proportion of computer programmers in San Francisco relative to the nation as a whole was calculated using total employment estimates found in the November 2004 Metropolitan Area Occupational Employment and Wage Estimates publication, <http://www.bls.gov/oes/current/oessrcma.htm>.

ⁱⁱ Average pay for professional workers in San Francisco and for the United States are based on wage estimates published in the San Francisco–Oakland–San Jose, CA National Compensation Survey, April 2004 and the National Compensation Survey: Occupational Wages in the United States, July 2004, <http://www.bls.gov/ncs/ocs/compub.htm>.

ⁱⁱⁱ For more information, see Maury B. Gittleman, "Pay Relatives for Metropolitan Areas in the U.S.," *Monthly Labor Review*, March 2005, pp. 46-53.

^{iv} For more information, see Parastou Karen Shahpoori, "Pay Relatives for Major Metropolitan Areas," *Compensation and Working Conditions*, Spring 2003.

^v For more information, see the Occupational Compensation Survey Publications List (1992-1996), <http://www.bls.gov/ncs/ocspubs.htm>.