

Comparing Wage Changes in Salt Lake City to the Nation: An NCS Test

How changes in earnings in Salt Lake City compare to changes nationally: A test of the feasibility of collecting metropolitan area data for an earnings index.

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In 1996 and 1997, the Bureau of Labor Statistics (BLS) tested the feasibility of collecting data on changes in earnings for specific job duties for sampled employees in a metropolitan area. The test, which took place in the Salt Lake City, Utah, metropolitan area, involved the collection of data on earnings and job duties for sampled occupations in 380 establishments.

Compensation index data

The Salt Lake City test used many of the same statistical procedures as does the Employment Cost Index (ECI), an ongoing BLS survey that measures the rate of change in earnings and benefits.¹ The ECI, a principle economic indicator, is commonly used to adjust pay rates and contracts. Table 1 shows an example of ECI data.

Employment Cost Index data are not available for specific metropolitan areas.² They show the rate of change in compensation for the Nation as a whole and for the major regions, but not whether it occurs at a uniform rate in different metropolitan areas. Metropolitan area ECI data could have numerous applications, from showing changes in local economies to providing insights on the relationship between the labor markets of various cities.

The Salt Lake City test was the first attempt by BLS to construct an earnings index for a metropolitan area. Benefit costs were excluded, so the test did not index total compensation. However, it was a step in that direction.

TABLE 1. **Employment Cost Index for total compensation¹, wages and salaries, and benefit costs by type of worker, selected periods, 1997-98**

(Seasonally adjusted data)

Type of worker and compensation component	Percent changes for 3-months ended ^{3/4}			
	Sep. 1997	Dec. 1997	Mar. 1998	June 1998
Civilian workers				
Total Compensation	0.8	1.0	0.7	0.9
Wages and salaries .....	.9	1.1	.8	.9
Benefit costs .....	.5	.9	.4	.8
Private industry				
Total Compensation .....	.8	1.0	.7	.9
Wages and salaries	1.0	1.1	.8	1.0
Benefit costs .....	.5	.9	.3	.8
State and local government				
Total Compensation .....	.6	.6	.8	.7
Wages and salaries .....	.7	.8	.7	.7
Benefit costs .....	.3	.3	.8	.7

¹ Includes wages, salaries, and employer costs for employee benefits.

Earnings changes

Initial earnings data for the Salt Lake City metropolitan area were collected for July and August of 1996. Updated earnings data were collected in February, May, and August of 1997.

Changes in earnings between February and May of 1997, and May and August of 1997³ are summarized in tables 2 and 3. For comparison, national ECI results are also included.⁴ The Salt Lake City survey months are a month

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TABLE 2. Percent change for wages and salaries for civilian, private industry, and State and local government workers by occupational group, selected workers, selected periods, 1997

(Not seasonally adjusted data)

Occupational group	Civilian		Private industry		State and local government	
	National ¹	Salt Lake City	National ¹	Salt Lake City	National ¹	Salt Lake City
	Percent changes for 3 months ended—					
	June	May	June	May	June	May
All occupations	0.7	1.5	0.9	1.6	0.1	0.2
Excluding sales .....	.8	1.4	1.0	1.6	-	.2
White collar .....	.7	2.3	.8	2.5	.1	.2
Excluding sales .....	.8	2.4	.9	2.8	-	.2
Professional specialty and technical .....	.7	1.5	1.1	2.3	.1	.1
Professional specialty	-	1.3	-	2.7	-	.1
Technical	-	1.9	-	1.9	-	-6
Executive, administrative, and managerial .....	.8	1.6	.8	1.9	.3	.2
Administrative support including clerical	-	1.9	.4	1.9	-	-
Sales .....	.8	3.2	.8	3.3	.2	.9
Blue collar	1.0	.1	1.0	.1	.2	-2
Precision production, craft, and repair	-	-.3	1.3	-.3	-	0
Machine operators, assemblers, and inspectors	-	1.8	1.0	1.8	-	.3
Transportation and material moving	-	.6	.6	.6	-	-1.6
Handlers, equipment cleaners, helpers, and laborers ...	-	-.7	.7	-.7	-	.6
Service .....	.5	.3	.8	.4	0	.1

¹ National figures come from BLS non-seasonally adjusted ECI data. Local and national surveys both used a sample of jobs from within a sample of establishments. One difference in methodology was that weights for the Salt Lake City data were based on the number of workers in each industry and published occupation within the

Salt Lake City Area. These weights were based on Census data provided by the National Occupational Information Coordinating Committee. Weights for national data were based on the number of workers in each industry and occupation nationwide.

NOTE: Dashes indicate data not available.

earlier than the ECI survey months. Therefore, the time periods in comparison are not identical.

Standard errors on the Salt Lake City test index data were not calculated. Consequently, tests of statistical significance for comparisons between the metropolitan and national results could not be conducted. Nevertheless, the data can be used as a basis for further study. In both periods, the test data show an overall increase in earnings greater than the national increase. The difference was particularly striking for white-collar workers: Salt Lake City earnings increased 2.3 percent (table 2) between February and May, and 2.2 percent (table 3) between May and August. Nationally, the increases were 0.7 and 1.1 percent, respectively.

The Salt Lake City data also showed differences in results between occupational groups. For example, in May 1997, the overall average increase was 1.5 percent, compared to 0.1 percent for blue-collar occupations, 0.3 percent for service occupations, and 2.3 percent for white-collar occupations. By contrast, the national data were more consistent across occupational groups. In June of 1997, national earnings rose 0.7 percent over the March figures. All occupational groups had increases close to that level: 0.5 percent for service occupations; 1.0 percent for blue-collar occupations; and 0.7 percent for white-collar occupations.

August and September data showed similar results. The overall increase for Salt Lake City was 1.8 percent. Earnings of blue-collar workers increased by 0.6 percent; service occupations, by 1.0 percent; and white-collar occupations, by 2.2 percent. Nationally, the overall increase was 1.2 percent and was relatively consistent across occupational groups: 0.7 percent for blue-collar workers; 1.7 percent for service occupations; and 1.1 percent for white-collar workers.

Level of earnings

The Salt Lake City test tracked changes in earnings, not the actual level of earnings. However, the initial survey in 1996 collected publishable level of earnings data that can be compared to national figures from another BLS survey, Employment Cost for Employee Compensation (ECEC). The data for Salt Lake City were collected in July and August of 1996, whereas the national data were collected in March of 1996.⁵ The results are summarized in table 4.

A possibility for further study would be to determine if metropolitan areas that have lower than average earnings tend to have greater than average growth in earnings over time. Future publication of metropolitan earnings indexes, along with standard error estimates for these indexes, would allow for the exploration of such questions.

TABLE 3. Percent change for wages and salaries for civilian, private industry, and State and local government workers by occupational group, selected workers, selected periods, 1997

(Not seasonally adjusted data)

Occupational group	Civilian		Private industry		State and local government	
	National ¹	Salt Lake City	National ¹	Salt Lake City	National ¹	Salt Lake City
	Percent changes for 3 months ended—					
	September	August	September	August	September	August
All occupations	1.2	1.8	1.0	1.7	1.6	2.4
Excluding sales	1.2	.8	1.0	.6	-	2.4
White collar	1.1	2.2	1.1	2.2	1.7	2.7
Excluding sales	1.1	.9	1.1	.6	-	2.7
Professional specialty and technical	1.3	.4	1.0	-.1	1.8	1.5
Professional specialty	-	.6	-	-.2	-	1.6
Technical	-	-.1	-	-.1	-	-.1
Executive, administrative, and managerial	1.1	.8	1.1	-.4	1.1	4.0
Administrative support including clerical	1.0	1.2	.9	1.1	1.5	2.4
Sales	-	6.8	1.2	6.8	-	-
Blue collar .....	.7	.6	.8	.6	1.1	2.2
Precision production, craft, and repair	-	2.0	.6	1.9	-	4.2
Machine operators, assemblers, and inspectors	-	-1.6	.8	-1.6	-	-
Transportation and material moving	-	.9	.9	.9	-	.5
Handlers, equipment cleaners, helpers, and laborers ...	-	-1.1	.7	-1.2	-	1.6
Service	1.7	1.0	1.8	1.0	1.4	1.3

¹ National figures come from BLS non-seasonally adjusted ECI data. Local and national surveys both used a sample of jobs from within a sample of establishments. One difference in methodology was that weights for the Salt Lake City data were based on the number of workers in each industry and published occupation within the

Salt Lake City Area. These weights were based on Census data provided by the National Occupational Information Coordinating Committee. Weights for national data were based on the number of workers in each industry and occupation nationwide.

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Duties and responsibilities

For each of the selected occupations, BLS collected data on specific “duties and responsibilities.” These duties and responsibilities were divided into 15 levels by evaluating each job based on 10 factors, including knowledge, complexity, and physical demands. A level-1 job is usually an unskilled blue-collar job or a clerical job requiring very little training. A level-15 job might be a top-level scientist or financier.

This job classification leveling method has been used for the National Compensation Survey since its inception in 1996. It is based in part on the Federal Government’s Factor Evaluation System (FES) and represents a major change in BLS methodology. In the past, jobs were classified according to factors for each occupation, rather than for one set of factors for all occupations.⁶

For the Salt Lake City test, part of the purpose of the leveling was to ensure the validity of the index. To have a valid index, the selection of jobs must be kept constant. If the level of the job changed from one quarter to the next, BLS concluded that the duties and responsibilities had changed to the point that the job was no longer the same. Therefore, any job that changed levels in an update period was not used in calculating the index.

BLS found that jobs tended not to change levels within the time span of the study. Out of the 2,090 jobs studied, 2 were removed from the index due to job level changes.

Lessons learned

One difficulty in constructing local indexes is that, to ensure statistical validity, data must be collected for a larger percentage of jobs in the local economy than would be necessary for a national index. In the Salt Lake City survey, respondents were asked about a minimum of 8 jobs, and a maximum of 20. In the national survey (ECI), respondents were asked to provide information on up to eight jobs.⁷ Establishments appeared to have difficulty updating the larger number of records. The average “temporary nonresponse” rate was 27 percent, as opposed to a national average of 5.4 percent for ECI surveys.⁸ Temporary nonresponse refers to establishments that are unable to provide data in a given time period, but are willing to provide it later. However, the high nonresponse rate was probably attributable to a range of factors including: The Salt Lake City survey was a test survey without an established product; the data were not updated until 6 months after the initial collection period; and the initial earnings data were

TABLE 4. Hourly wages for civilian, private industry, and State and local government workers by occupational group, selected workers, selected periods, 1996

Occupational group	Civilian		Private industry		State and local government	
	National ¹ March	Salt Lake City July/ August	National ¹ March	Salt Lake City July/ August	National ¹ March	Salt Lake City July/ August
All occupations	\$13.36	\$12.77	\$12.58	\$12.22	\$17.95	\$15.82
Excluding sales	-	12.72	-	12.07	-	15.82
White collar	16.40	14.74	15.44	14.11	20.43	17.19
Excluding sales	-	-	-	-	-	-
Professional specialty and technical	22.55	19.15	21.25	18.86	24.86	19.61
Professional specialty	23.95	21.33	22.49	22.92	25.97	19.91
Technical	17.36	13.61	17.90	13.72	-	11.72
Executive, administrative, and managerial	23.81	20.78	24.07	21.06	22.72	20.07
Administrative support including clerical	10.73	9.64	10.69	9.63	10.93	9.71
Sales	-	13.18	11.09	13.18	-	-
Blue collar	11.73	11.16	11.61	11.17	13.56	10.89
Precision production, craft, and repair	-	13.28	15.10	13.24	-	15.59
Machine operators, assemblers, and inspectors	-	9.44	10.22	9.45	-	-
Transportation and material moving	-	12.06	11.62	12.19	-	11.09
Handlers, equipment cleaners, helpers, and laborers ...	-	8.21	8.48	8.19	-	8.58
Service	7.38	8.18	6.53	6.76	12.09	12.90

¹ National figures come from the BLS Employer Cost for Employee Compensation (ECEC) survey. Salt Lake City figures come from a test survey of establishments within the Salt Lake City metropolitan

area.

NOTE: Dashes indicate data not available.

available from sources other than the respondents who furnished the update data.

Alternative means of collecting data, such as through

the Internet, may have to be looked at in the future if timely and reliable metropolitan compensation index data are to be collected. ■

¹ Additional information on ECI can be found at <http://www.bls.gov/ecthome.htm> or by calling (202) 606-6220.

² ECI data does include four regional breakouts, however: Northeast, South, Midwest, and West.

³ For the purposes of this study, earnings refer to wages, salaries, commissions, piece rates, and bonuses tied directly to production by formula. Discretionary bonuses based on management's perceptions of employees were excluded.

⁴ Data are also available for the western region of the United States, and can be compared to the Salt Lake City results. These data can be found on the Internet at <http://www.bls.gov/ecthome.htm>. BLS does not break out regional ECI data by occupation or industry. Earnings in the West rose 0.9 percent from the first quarter to the second quarter, and 1 percent from the second quarter to the third quarter.

⁵ The national data come from the Employer Cost for Employee Compensation (ECEC) survey. In that survey, the term "earnings" includes overtime and bonuses. To get a figure comparable to the Salt Lake City results, the "wage and salary" numbers were used.

⁶ For additional information on this type of job classification, see John E. Buckley, "BLS Redesigns its Compensation Surveys," *Compensation and Working Conditions*, September 1996, pp. 19-21. The new system determines the level of all occupations according to a common set of factors.

⁷ For further information about the methods used for the Employment Cost Index, see chapter 8 of the 1992 edition of the *BLS Handbook of Methods* (Bulletin 2414).

⁸ The national averages were calculated by averaging the temporary nonresponse rate from the first quarter of 1991 to the second quarter of 1998.