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**MEASURES OF GEOGRAPHICAL
DIFFERENCES IN THE COST OF LIVING**

PREPARED BY

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There are significant geographical differences in prices and the cost of living. Prices, particularly for real estate, vary widely by city, city size, and rural and urban areas. According to the American Chamber of Commerce Research Association (ACCRA),¹ it costs five times more for comparable housing in New York City (Manhattan) than it does in Sioux Falls, South Dakota. While housing costs have the greatest geographical variation, the prices of other goods and services also show considerable geographic variation. Based on this same study, the overall cost of living in New York City is 2.4 times the cost of living in Sioux Falls. Table 1 presents on the cost of living in metropolitan areas with a population over 1.5 million and Sioux Falls compiled by ACCRA for the first quarter of 1999. As noted, housing costs show the greatest variation with a high/low ratio of 5.7 times.

TABLE 1: COST OF LIVING COMPILED BY ACCRA, 1999 Q1

Category	High (NYC)	Low	Sioux Falls	High/Low Ratio
Composite	232.1	89.9	94.8	2.6
Grocery Items	150.2	93.7	94.8	1.6
Housing	455.6	80.3	91.0	5.7
Utilities	163.2	77.1	96.0	2.1
Transportation	125.4	93.0	98.0	1.3
Health	187.0	89.0	98.1	2.1
Miscellaneous	137.9	94.5	96.4	1.5

Source: American Chamber of Commerce Association, *ACCRA COST OF LIVING INDEX*, Comparative Data for 309 Urban Areas, First Quarter 1999.

In accordance with the compensating variation model of wage determination, it is expected that wages are affected by differences in the cost of

living. Workers evaluate a host of factors in determining the wages they are willing to accept and the cost of living would be expected to be one of these considerations. The higher the cost of living in a particular location, all other things constant, fewer workers would be willing supply there services at a given wage rate which decreases the supply workers in that location and thereby raises wage rates. Likewise, in low cost of living locations more workers would be willing to work at a given wage rate which increases the supply of workers and lowers wages in that location. Consequently, we would expect a positive association between the cost of living and wage rates.

In order to study the impact of geographical differences in the cost of living we need data on interstate differences in the cost of living. Unfortunately, there is no official government statistics on regional cost of living prepared by such agencies as the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor. The last official estimates of regional cost-of-living were estimated by the Bureau of Labor Statistics of the U.S. Department of Labor in 1981.² The BLS computed indexes of comparative costs for three different family budget levels for 24 Metropolitan Statistical Areas and four regional non-metropolitan areas. Due to the budget cuts of the early 1980s, this data was discontinued in 1981. It should be noted that this data was available only for regions and selected metropolitan areas and not by state.

¹ American Chamber of Commerce Association, *ACCRA COST OF LIVING INDEX*, Comparative Data for 309 Urban Areas, First Quarter 1999.

² Bureau of labor Statistics, *Autumn 1981 Urban Family Budgets and Comparative Indexes for Selected Urban Areas*. U.S. Department of Labor, Washington, D.C. April 1982..

Since 1968, the American Chamber of Commerce Researchers Association (ACCRA) has collected data on cost-of-living differences by urban area. The ACCRA indexes reflect cost-of-living differences for a professional and/or management standard of living for approximately 300 cities throughout the United States. Local chambers of commerce, economic development or other similar groups for the following categories collect the price data: grocery, housing, utilities, transportation, health care, and miscellaneous goods and services. A total of 59 different items is included in the index. Each of these categories is weighted using the Consumer Expenditure Survey weights prepared by the BLS and summed to obtain a composite index. State and local taxes are not included in this index. While the data is available for all 50 states by urban areas state level data is not provided. In South Dakota, Rapid City, Sioux Falls, and Vermillion are the only cities to participate. This data is reported in the *Statistical Abstract of the United States* publication by the U.S. Department of Commerce and ACCRA's own publication entitled ACCRA Cost of Living Index.³

State Estimates of Cost of Living

There are no surveys such as the BLS or ACCRA studies that estimate cost of living data at the state level. However, there are several studies that estimate state level cost of living data based on either the BLS data or ACCRA data. Four different measures of the cost-of-living by state were found in the literature. Three were based on the BLS data which was discontinued in 1981 and one was based on the ACCRA data.

³ The Business Research Bureau of the University of South Dakota subscribes to this publication.

The first study to estimate state-by-state indexes of cost-of-living was by Walter McMahon and C. Melton of the University of Illinois. In their 1978 paper entitled “Measuring Cost of Living Variation”⁴ they estimated state cost of living indexes based on BLS data for metropolitan and nonmetropolitan areas. This paper was updated by McMahon in a 1991 paper entitled “Geographical Cost of Living Differences: An Update.”⁵ The basic approach used in this study was to utilize BLS and ACCRA data from 1981 through 1990 for 24 MSAs and four regional non-metropolitan areas to estimate a regression equation where the dependent variable was the cost-of-living and the independent variables were per capita personal income, median housing prices, and percent change in population. ACCRA data was used to update the BLS data that ended in 1981. The regression coefficients were used with comparable state level data to predict the cost of living index by state. State cost of living indexes are available for the years 1981-1990. The cost of living index by state for 1990 using the McMahon approach is presented as column (1) in Table 1.

The second cost-of-living study reviewed was prepared by Monica E. Friar and Herman B. Leonard of Taubman Center for State and Local Government, John F. Kennedy School of Government, Harvard University.⁶ The approach used in this study involves updating the 1981 BLS Comparative Index study with Consumer Price index data collected for each metropolitan area. The growth

⁴ Walter C. McMahon and C. Melton, “Measuring Cost of Living Variation,” *Industrial Relations*, October 1978, 324-32.

⁵ Walter C. McMahon, “Geographical Cost of Living Differences: An Update,” *AREUEA Journal*, 1991, 426-56.

⁶ Monica E. Friar and Herman B. Leonard, “Variations in Cost of living Across States,” (Taubman Center for State and Local Government, 1998), John F. Kennedy School of Government, Harvard University.

rates in prices for each MSA were applied to the family budget bases and then computed for each state based on a population weighting of MSA and non-metropolitan population by state. Indexes were then calculated for each state. State cost of living indexes are available for the years 1981-1997. The cost of living index by state for 1997 using the Friar and Leonard approach is presented as column (2) in Table 1.

The third cost of living study reviewed in this study was prepared by Kent Halstead in the Research Associates of Washington study entitled *Wages, Amenities, and Cost of Living* published in 1992. The Halstead study computed state cost of living indexes using a combination of data from the BLS, ACCRA, Federal Housing Administration (FHA), and Marshall & Swift data. BLS data was used to determine the weights to be applied to each of expenditure categories. ACCRA data was used expenditures on grocery, transportation, health care, utilities, and miscellaneous goods and services. ACCRA data was not used to estimate housing costs. FHA data was used to estimate geographical differences in housing site prices. Marshall & Swift data was used to determine geographical differences in the cost of building frame and masonry houses. This data was aggregated and population weighted to obtain state cost of living indexes. This data is available for only 1990. The cost of living index by state for 1990 using the Halstead approach is presented as column (3) in Table 1.

The fourth cost of living study was prepared by F. Howard Nelson of the American Federation of Teachers. The study entitled "An Interstate Cost-of-Living Index" was published in 1991 in *Educational Evaluation and Policy*

*Analysis.*⁷ The Nelson study estimated separate regression models for the northeast, northcentral, south, and west regions. The ACCRA intricate cost of living data was used as the dependent variable and personal income per capita, percent change in population, median value of owner-occupied houses, new home values, and population density were used as independent variables. The regression coefficients for each region were used as weights and combined with comparable state data to obtain cost of living estimates for each state. This data is updated and available for the years 1988, 1993, 1994, and 1995. The cost of living index by state for 1995 using the Nelson approach is presented as column (4) in Table 1.

The indexes using each of the cost of living approaches for the most recent year is presented in Table 1. As shown in Table 1, the cost of living indexes estimated using the McMahon, Friar and Leonard, Halstead, and Nelson methodologies do show some significant differences, particularly for the high cost of living states such as Alaska, California, Connecticut, and Hawaii. The cost of living estimates for South Dakota have a fairly narrow range with a low of 89.9 and a high of 92.5. In this study, each of these indexes will be experimented with to determine which provides the most consistent results.

⁷ F. Howard Nelson, "An Interstate Cost-of-Living Index," *Educational Evaluation and Policy Analysis*, Spring, 1991, 103-111.

TABLE 6: COST OF LIVING INDEX ESTIMATES

US=100.0	1990	1997	1990	1995
State	McMahon	Friar&Leonard	Halstead	Nelson
Alabama	89.8	93.0	91.0	89.4
Alaska	131.2	112.8	128.0	125.0
Arizona	89.5	99.8	97.0	99.4
Arkansas	88.7	91.1	90.0	87.8
California	119.0	101.0	109.0	115.4
Colorado	100.0	100.1	98.0	102.2
Connecticut	122.9	112.5	102.0	118.8
Delaware	107.9	103.5	97.0	101.6
Florida	94.9	94.9	93.0	93.7
Georgia	92.6	91.7	89.0	92.8
Hawaii	136.2	125.3	121.0	130.0
Idaho	89.9	95.1	96.0	95.9
Illinois	102.6	100.2	101.0	100.1
Indiana	95.4	96.5	95.0	92.1
Iowa	95.3	93.8	95.0	91.7
Kansas	95.8	93.9	92.0	92.4
Kentucky	91.6	91.7	92.0	88.7
Louisiana	91.1	93.1	91.0	90.7
Maine	101.2	105.1	94.0	97.3
Maryland	106.1	97.7	100.0	106.5
Massachusetts	118.1	113.6	106.0	113.7
Michigan	97.9	94.6	106.0	94.7
Minnesota	99.9	94.6	101.0	96.7
Mississippi	86.5	90.4	88.0	88.1
Missouri	96.2	93.5	93.0	93.9
Montana	91.7	95.4	96.0	95.5
Nebraska	94.2	94.2	91.0	92.1
Nevada	97.7	100.1	101.0	104.4
New Hampshire	103.6	108.4	80.0	105.8
New Jersey	120.7	114.0	106.0	115.7
New Mexico	89.9	97.4	93.0	96.4
New York	111.5	113.4	113.0	109.7
North Carolina	97.0	92.2	90.0	91.5
North Dakota	91.5	93.5	93.0	93.6
Ohio	96.8	98.0	97.0	95.7
Oklahoma	93.0	92.4	93.0	88.0
Oregon	95.4	98.2	106.0	99.4
Pennsylvania	100.2	105.0	105.0	100.0
Rhode Island	106.9	111.0	101.0	107.7
South Carolina	89.8	92.5	91.0	90.8
South Dakota	89.9	92.5	91.0	89.9
Tennessee	91.8	93.0	89.0	89.9
Texas	94.0	91.2	94.0	89.9
Utah	88.2	99.7	97.0	96.4
Vermont	101.3	103.9	96.0	97.9
Virginia	108.6	95.6	93.0	97.2
Washington	99.5	102.7	99.0	103.6
West Virginia	91.8	90.8	95.0	88.6
Wisconsin	97.5	95.4	101.0	94.3
Wyoming	95.1	95.8	95.0	98.1

