Representative Expenditures

Addressing the Neglected Dimension of Fiscal Capacity

ADVISORY COMMISSION ON
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ROBERT W. RAFUSE, JR.

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U.S. Advisory Commission on Intergovernmental Relations
1111 20th Street, NW
Suite 2000
Washington, DC 20575
(202) 653-5640
FAX **(202) 653-5429**

Executive Summary

Formulas by which federal grants to state and local governments are allocated have included a measure of the fiscal capacities of the states for more than half a century. For most of that time, the measure has been a matter of considerable controversy. The first programs taking account of fiscal capacity enacted during the Great Depression relied on per capita personal income for this purpose, and that measure reigned supreme for decades thereafter.

Indeed, no other indicator of fiscal capacity appeared in federal legislation until the Alcohol, Drug Abuse, and Mental Health Block Grant was reauthorized in 1987. That law substituted the per capita value of a new variable called total taxable resources for per capita income in the allocation formula.

Fiscal Capacity and Per Capita Personal Income: The Problem

Fiscal capacity is, in essence, an indicator of the relative fiscal well-being of all the governments in a state, as a group. (Fiscal capacity is also an attribute of the fiscal circumstances of an individual government. To simplify the discussion, references in this summary are limited to all governments in a state.) More specifically, the fiscal capacity of a state is the potential ability of its governments to raise revenue from their own sources relative to the cost of their service responsibilities, allowing for revenues received from the federal government and other states.

For decades, the controversy surrounding per capita personal income as a measure of fiscal capacity focused on the validity of personal income as the indicator of revenue-raising ability. In 1962, the Advisory Commission on Intergovernmental Relations weighed into the debate with a report setting forth the Representative Tax System (RTS) as a more comprehensive and realistic measure of revenue-raising ability.

The RTS is, in essence, the average (or representative) tax system actually in use by the nation's state and local governments. The estimated yield of that system in each state is a state's "tax capacity." That estimate, divided by total population, is referred to as fiscal capacity, following the established practice for personal income.

Few questions were raised about the expression of these measures on a per capita basis until the past few years, when analysts began to challenge the implicit assumption of the convention that the costs of the service responsibilities of a state's governments, or "needs," depend only on the state's total population. This report is about this issue. It presents an approach to the measurement of the relative public service needs of the states that is the expenditure-side analog of the RTS.

Fiscal capacity relates to a state's potential, not to the actual policies of its governments. Those policies determine the extent to which the state's fiscal potential is being exploited, but not the potential itself. (Over time, a state's actual policies may promote or depress its potential, but these interactions are too complex and too little understood to be taken into account empirically.) For this reason, the fundamental prerequisite for any measure of service costs—as of a measure of revenue-raising ability—is that it abstract as completely as possible from the actual tax and expenditure policies of any individual state.

Sources of Variation in the Costs of Public Services

Given that the actual policies of any one state are to be disregarded, variations in the costs of public services among the states depend on three general classes of factors:

- The range and types of services that must, by law, be provided.
- The prices of the inputs used to produce public services, such as wages and salaries, gasoline prices, and the cost of asphalt.
- Factors that determine the scope of the services provided, such as traffic and the miles of highways that must be maintained.

Legal Requirements

The services for which a jurisdiction is responsible are a key consideration in the cost of government at the local level, where obligations prescribed by state law vary among the states and among different types of local governments. At the state level, however, requirements imposed by the federal government apply uniformly throughout the nation, and the states are essentially free to offer whatever arrays of services they may choose. Their choices are, of course, embodied in policies, from which the analysis must abstract. Hence the first of the three types of factors is not germane in considering differences in the costs of public services that are not the result of the policies of the governments in a state.

Prices

The prices of the goods and services purchased by state and local governments vary with climate, with

distance from the point of production, between rural and urban areas, and as a consequence of state-local government policy. For example, state laws relating to the compensation of public employees vary widely, with major consequences for the costs of public services. Cost differences traceable to the policies of state and local governments must be abstracted from, however.

Too little information is available on the prices paid by the states and localities to permit estimation of a comprehensive index of the relative input costs of governments in all of the states. It is possible, however, to estimate the differences among the states in the cost of employee compensation. This cannot be accomplished by looking at actual payments to state and local employees because those payments reflect policy as well as underlying economic realities. Rather, the reference must be to the relative compensation state and local governments must pay to compete effectively in the market. The closest approximation to this magnitude is the statewide average earnings of full-time employees of a given age, sex, and level of educational attainment.

Such estimates are developed for the first time in this report using data from the 1980 census on average earnings in each 'state. The estimates of differences in employee earnings are, in turn, used to compute a quasi-index of relative input costs for each major function. The index assumes that unit costs other than employee compensation are uniform around the nation.

A separate index is developed for each function because employee compensation, which averages about half of all state-local outlays, varies dramatically among functions. That compensation, for example, accounts for 81 percent of outlays for police and corrections but only 13 percent of expenditures for public welfare. Hence all of the estimates of representative expenditures presented in this report are adjusted for differences among the states in the cost of employee compensation.

Scope of Services

This leaves the factors that influence the amount or scope of public services that must provided, and it is accounting for their variability that is the primary purpose of the representative expenditure approach.

Estimating Representative Expenditures

The RTS achieves policy neutrality by estimating the yield in each state of a standard revenue system. Given the representative system, the key issue is the definition of the base of each tax and estimation of its value in each state.

The representative expenditure approach parallels that of the RTS. The crucial step is the identification of the best possible measure of the workload for each of the major categories of state-local expenditures. A state's workload for a service indicates its relative need for outlays on that function, To ensure that the workload measures are independent of the actual policies of the governments in a state, such program-client variables as enrollment in public schools and the number of people receiving welfare benefits are not used.

The workload measures for the categories of expenditures analyzed separately in this report are identified in Exhibit 1. They are derived from review of the literature and consultation with authorities in each functional area.

Given the workload measure for a function, the representative expenditure per unit of workload is calculated by dividing the total of actual state and local outlays for the service by the U.S. total for the workload measure. A state's representative expenditure for the function is then arrived at by multiplying the representative outlay per unit by the state's workload. The result is an estimate of how much it would cost the governments in a state to provide the national-average (representative) level of the service.

Exhibit 1
Workload Measures
for Representative Expenditures

1. Elementary and Secondary Education

The workload measure is the weighted sum of three population groups: (1) children of elementary-school age (5-13) net of enrollment in private elementary schools, (2) youth of secondary-school age (14-17) net of private secondary enrollment, and (3) the population under 18 living in households with incomes below the poverty line. The weights are, respectively, 0.6, 1.0, and 0.25.

2. Higher Education

The measure is the weighted sum of the population in the age groups 14-17, 18-24, 25-34, and 35 and older. Each weight (1.32 percent, 22.44 percent, 4.16 percent, and 0.83 percent, respectively) is the full-time-equivalent number of students in the age group enrolled in institutions of higher education nationwide as a proportion of the total population in the age group.

3. Public Welfare

The workload measure is the population living in households with incomes below the poverty line.

4. Health and Hospitals

The measure is the sum of the equally weighted percentage distributions of (1) persons age 16-64 with work disabilities, (2) the population living in households with incomes below 150 percent of the poverty line, and (3) the total population.

5. Highways

The workload measure is the weighted sum of the percentage distributions of two variables: (1) vehicle-miles traveled, and (2) lane-miles of streets and roads other than those on federally controlled land. The first is weighted 0.825, the second 0.175.

6. Police and Corrections

The measure is the sum of the equally weighted percentage distributions of (1) the population age 18-24, (2) the number of murders committed, and (3) the total population.

7. All Other Direct General Expenditures

The workload measure is total population.

Results of the Analysis

Table ES-1 shows the actual general expenditures of state and local governments in the 50 states and the District of Columbia for the 10 major functions. The information is expressed in per capita terms indexed to U.S. averages to facilitate comparisons among the states. Total actual spending for all functions ranges from 71 percent of the per capita national average in Arkansas to 371 percent in Alaska.

The estimates of representative expenditures, adjusted for differences in input costs, are presented in Table ES-2 for the same 10 functions, also on a per capita basis indexed to the national average. Total population is the workload factor for the functions shown in columns 8-11. The breakout is presented to provide greater insight into the differences among the states than would be possible if the four were combined in a single, "all-other" category.

Although the same workload is used for all four categories, the adjustment for differences in employee compensation is performed separately for each, in recognition of the varying importance of those costs. Interest on general debt is a somewhat peculiar category because it includes no employee compensation. As a consequence, the per capita representative expenditure in every state is identical to the U.S. average (the indexed value is 100.0).

The range in the estimates of representative expenditures is much smaller than that in actual outlays: from a low of 85 in New Hampshire to a high of 121 in Alaska. New Hampshire's unadjusted index of representative expenditures is 91. Unit labor costs in that state are only 86 percent of average, however, so the cost of producing national-average public services is the lowest in the country. (Employee compensation accounts for approximately 46 percent of state-local outlays in New Hampshire. Hence the state's overall unit-cost index is (0.46 x 0.86 = 0.40) + 0.54 = 0.94. That index times the state's unadjusted index of representative expenditures yields its adjusted index: 0.94 x 91 = 85.)

Alaska's position at the high end, on the other hand, is attributable largely to its extremely high unit labor costs, which are 134 percent of the U.S. average. Its index of representative expenditures unadjusted for those costs is only 103. (The calculation is (0.52 x 1.34 = 0.67) + 0.48 = 1.17; and 1.17 x 103 = 121.)

If the adjustment for input-costs were not made, production of the national-average level of public services would be most costly per capita in Mississippi, whose unadjusted index of representative expenditures is 122, and least costly in Connecticut, whose unadjusted index is 88. Allowing for labor costs only 84 percent of the national average in Mississippi but 109 percent in Connecticut moderates their respective indices of representative expenditures to 113 and 92.

Table ES-3 displays the ratios of actual expenditures to the representative estimates for each of the functions. Mississippi's below-average actual spending and above-average needs yield a ratio of only 67 percent, at the bottom of the list of states, when consideration is given to both dimensions. Alaska remains at the top of the list, though with a ratio of 306 percent as a result of its high representative costs.

A variety of general findings can be drawn from the estimates in Tables ES-1 to ES-3 as well as from others discussed in the text.

It is clear that population is an inferior measure of the relative cost to the governments of a state of providing a standard level of public services. Its use in a measure of fiscal capacity systematically overstates the capacities of states below the national average and understates the capacities of states above the national average. Fiscal disparities among the states are significantly larger than most measures available until now have suggested.

The differences among states in the cost of providing a common level of public services are substantial. They are smaller, however, than the differences in own-revenue-raising ability, by all measures currently available.

High public service costs tend to be associated with low revenue-raising ability,

The actual spending of three out of four states with fiscal capacities below the national average is less than their representative expenditures.

The existing federal grant system, taken as a whole, tends to worsen fiscal disparities among the states. Therefore, the failure to allow for federal grants in a measure of state fiscal capacity results in systematic understatement of the magnitudes of fiscal disparities.

Caveats and Advice on Interpreting the Results

Three points deserve special emphasis in interpreting the results of the analysis. First, no implication should be drawn that the representative outlays are in any sense correct or "needed" in any absolute sense. The estimates merely show how much it would cost each state to provide the national-average level of each service.

Second, the estimates assume that every government produces the representative level of each service with the same efficiency. In other words, a given level of spending per capita (adjusted for differences in compensation costs) buys the same level of service in every state. Hence no inferences about operating efficiency can be drawn from the relationship between actual spending for a function and the representative expenditures.

Third, and a closely related point, the estimates are silent on the issue of performance. A dollar of spending (adjusted for differences in unit costs) in one state is assumed to yield the same quantity and quality of a service as it does in every other state. Although we know that public services are not of equal quality per dollar spent everywhere in the nation, it is, regrettably, impossible to take this into account because credible measures of performance are not available.

Representative Expenditures and the Fiscal Capacities of Local Governments

The representative expenditure approach outlined in this report and used to estimate the fiscal capacities of the states is equally applicable, with appropriate adaptation, to analysis of the fiscal capacities of local governments within a particular state. In fact, the approach, in combination with representative revenue methods, has been applied by ACIR staff in a recently completed analysis of Hawaii's state-local fiscal system. The approach also has been adapted for a study of the fiscal capacities of the 23 counties and the City of Baltimore in Maryland, and is currently being applied in developing estimates of the fiscal capacities of a sample of 40 municipalities in the Chicago metropolitan area.

Table ES-I

Indices of the Actual Direct General Expenditures of State and Local Governments Per Capita, by Function, 1986.87

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Standard Deviation	25.8	19.6	25.3	42.2	34.5	37.7	40.3	31.6	67.9	35.2	51.0
Alabama	77.3	65.3	104.5	47.8	138.8	81.2	61.8	67.2	79.4	73.6	78.6
Alaska	370.7	283.8	174.1	168.6	104.5	518.3	226.8	368.2	1,048.7	502.5	665.7
Arizona	104.4	108.3	137.8	65.2	53.8	169.5	134.1	102.0	113.9	119.5	77.4
Arkansas	71.0	82.9	81.1	69.1	74.0	99.7	47.4	59.8	62.9	60.1	48.5
California	113.9	99.8	122.0	124.1	114.9	65.8	149.4	126.5	87.9	124.8	139.1
Colorado	105.6	112.9	117.3	85.1	88.3	116.0	103.9	109.5	121.8	138.2	82.8
Connecticut	108.9	105.7	63.9	112.3	88.2	118.3	91.8	97.3	134.2	125.8	153.1
Delaware	111.3	102.6	161.1	65.6	63.0	127.1	103.5	112.5	211.1	138.9	99.2
District of Columbia	192.3	120.1	55.7	272.7	207.4	87.2	445.1	276.3	183.1	254.3	205.1
Florida	87.6	89.0	54.5	52.0	103.5	81.6	116.6	111.0	100.5	109.3	91.0
Georgia	89.3	96.7	76.7	63.6	184.6	92.6	822	77.4	56.7	85.8	68.7
Hawaii	105.4	73.8	108.9	86.6	79.1	63.7	106.1	154.1	141.1	145.7	163.7
Idaho	77.5	77.8	114.2	51.7	83.3	117.2	61.3	85.1	45.6	79.3	63.8
Illinois	93.8	90.9	92.0	102.5	67.3	102.6	93.6	100.6	93.4	89.9	103.2
Indiana	80.5	89.2	115.6	77.5	90.8	82.2	57.1	68.2	53.3	70.9	69.8
Iowa	93.6	90.9	150.0	91.9	107.0	146.7	62.5	78.8	66.2	82.4	57.6
Kansas	92.8	98.9	122.6	65.0	85.1	146.2	67.3	66.3	108.6	106.6	72.4
Kentucky	77.7	68.7	89.9	82.1	55.5	115.9	58.4	77.1	103.3	75.9	69.9
Louisiana	91.9	80.0	84.1	71.8	125.2	106.2	85.2	99.9	145.9	84.2	81.1
Maine	92.2	96.5	82.5	129.8	49.9	112.4	60.8	102.8	91.0	81.6	83.9
Maryland	102.9	97.9	106.9	94.2	48.4	120.3	124.6	130.5	113.9	100.2	112.0
Massachusetts	111.5	98.6	71.2	155.0	118.8	77.5	97.4	122.4	107.9	110.7	144.3
Michigan	107.9	113.9	130.3	140.3	122.7	82.5	108.1	78.3	72.4	98.0	95.0
Minnesota	122.2	116.5	135.5	145.7	110.4	146.9	77.0	124.3	151.3	109.7	102.8
Mississippi	75.5	73.6	91.2	64.4	138.4	98.1	49.2	59.7	60.9	65.2	53.7
Missouri	77.0	84.6	90.0	66.0	93.7	88.2	75.3	71.6	66.7	68.6	56.8
Montana	107.3	122.2	92.1	92.9	63.2	177.0	62.9	117.3	124.1	114.8	93.2
Nebraska	92.3	100.1	125.7	79.1	113.2	132.5	61.3	70.8	74.5	75.9	69.5
Nevada	104.6	89.8	79.8	49.3	82.2	130.0	150.0	112.1	142.6	153.4	139.7
New Hampshire	83.3	93.7	72.2	77.8	52.4	121.8	67.0	71.5	115.2	84.6	72.4
New Jersey	113.0	117.4	83.7	106.5	74.6	111.0	116.3	114.7	146.2	119.0	140.5
New Mexico	100.3	105.2	120.1	66.7	86.6	148.4	97.1	89.2	129.9	114.3	74.1
New York	145.2	133.6	87.1	194.8	168.7	99.7	163.6	140.5	149.9	132.5	173.6
North Carolina	77.4	88.8	119.2	59.9	86.7	75.3	80.0	59.9	44.8	74.9	63.4
North Dakota	107.9	101.5	157.9	106.8	70.7	156.8	45.2	96.2	96.3	87.0	135.1
Ohio	90.7	97.7	98.5	118.9	87.8	82.2	88.6	83.1	71.4	86.5	67.1
Oklahoma	82.5	90.5	94.6	78.7	89.1	94.0	64.8	87.1	80.3	77.7	57.1
Oregon	104.6	113.6	122.9	64.6	75.2	107.1	87.9	103.0	150.2	120.3	112.2
Pennsylvania	87.5	98.3	52.7	112.7	55.3	100.8	72.2	70.9	106.4	82.1	93.5
Rhode Island	103.8	92.5	82.7	151.6	84.1	77.3	82.6	83.9	155.0	106.1	123.3
South Carolina	79.0	88.1	108.0	55.1	125.8	62.3	75.2	66.6	61.2	63.3	66.2
South Dakota	94.7	87.9	95.0	66.3	51.8	161.8	57.6	76.0	107.8	85.2	155.8
Tennessee	77.4	67.1	84.4	76.1	113.4	89.4	67.7	74.4	64.7	68.7	77.4
Texas	86.5	103.3	103.9	48.2	80.4	112.2	77.6	92.7	107.0	76.4	59.2
Utah	94.8	100.1	153.1	71.0	74.5	100.1	83.8	95.9	93.7	109.1	73.4
Vermont	102.4	110.3	131.6	105.3	41.9	158.1	56.5	78.5	100.0	110.9	106.3
Virginia	89.4	98.4	109.6	57.2	94.3	118.0	90.6	99.5	67.6	102.5	63.1
Washington	103.4	105.7	120.1	95.5	83.7	116.2	92.2	124.3	74.2	102.0	108.0
West Virginia	84.7	96.0	76.0	81.9	61.8	124.6	37.9	67.1	103.7	82.8	89.1
Wisconsin	105.9	107.8	134.1	148.0	73.4	121.4	87.0	110.3	82.2	87.6	77.1
Wyoming	164.7	183.5	162.0	70.5	225.5	306.7	105.7	145.8	195.1	163.3	113.7

Source: Table B-1.

Table ES-2

Indices of the Estimates of Representative State-Local Expenditures Per Capita, Adjusted for Input-Cost Differences, by Function, 1986-87

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Standard Deviation	6.4	11.9	6.0	21.1	8.9	21.6	16.3	2.5	0.0	4.9	2.0
Alabama	108.8	107.9	94.9	145.5	115.5	117.5	97.4	97.0	100.0	94.3	97.7
Alaska	121.3	150.2	130.3	92.8	104.6	113.8	140.9	111.7	100.0	122.6	109.1
Arizona	102.6	103.0	97.2	110.6	104.9	112.3	94.3	99.1	100.0	98.3	99.3
Arkansas	106.0	105.2	88.4	144.8	117.7	111.4	86.2	95.4	100.0	91.0	96.4
California	101.3	101.1	103.6	96.0	102.8	93.7	113.7	102.0	100.0	103.9	101.6
Colorado	98.1	101.1	102.2	84.6	92.1	110.1	90.0	100.1	100.0	100.1	100.1
Connecticut	91.7	89.7	105.1	59.3	83.5	97.0	92.2	103.0	100.0	105.9	102.4
Delaware	96.1	87.1	105.1	91.7	95.5	109.1	89.9	100.3	100.0	100.6	100.2
District of Columbia	102.9	73.0	98.7	140.7	117.4	58.4	204.8	98.7	100.0	97.5	99.0
Florida	92.6	79.1	86.5	103.9	99.3	89.1	101.3	97.0	100.0	94.3	97.7
Georgia	108.6	109.9	99.9	127.9	112.4	119.1	110.9	98.1	100.0	96.3	98.5
Hawaii	89.6	85.5	102.2	81.1	83.5	73.4	85.8	98.9	100.0	97.8	99.1
Idaho	100.1	113.0	86.4	104.3	93.5	119.1	68.7	95.3	100.0	90.9	96.3
Illinois	102.4	105.8	106.4	100.7	101.6	84.4	108.3	103.5	100.0	106.7	102.7
Indiana	99.3	106.6	101.6	86.9	94.3	102.8	90.1	100.2	100.0	100.4	100.2
Iowa	95.8	97.0	94.5	90.1	88.2	120.3	71.0	98.3	100.0	96.7	98.7
Kansas	98.4	96.2	94.4	89.9	89.9	145.7	79.9	98.3	100.0	96.6	98.7
Kentucky	108.3	108.5	101.0	135.7	120.4	105.8	96.5	99.2	100.0	98.5	99.4
Louisiana	110.4	110.1	105.6	145.2	119.1	87.5	115.9	100.9	100.0	101.8	100.7
Maine	89.0	83.4	85.8	91.4	88.7	108.5	63.7	92.6	100.0	85.8	94.3
Maryland	97.0	94.8	108.2	77.0	94.5	93.2	112.5	102.1	100.0	104.0	101.6
Massachusetts	87.3	81.4	101.6	69.3	84.1	81.4	77.6	98.7	100.0	97.5	99.0
Michigan	108.3	115.2	111.0	95.8	109.7	104.6	128.8	104.2	100.0	108.1	103.2
Minnesota	98.0	99.0	101.8	85.2	90.7	122.9	78.6	100.9	100.0	101.7	100.7
Mississippi	113.3	112.9	91.8	181.7	124.2	106.7	96.2	94.7	100.0	89.8	95.9
Missouri	100.2	95.0	95.1	108.8	102.8	114.4	96.0	98.7	100.0	97.5	99.0
Montana	102.0	100.0	86.7	100.9	91.1	186.7	71.9	95.3	100.0	90.9	96.3
Nebraska	96.2	90.6	91.5	94.8	86.3	146.8	73.1	96.5	100.0	93.3	97.3
Nevada	95.9	95.3	97.6	73.5	89.6	122.0	97.3	99.4	100.0	98.8	99.5
New Hampshire	85.4	82.1	93.8	60.4	77.2	102.3	71.3	95.5	100.0	91.3	96.5
New Jersey	93.1	92.3	104.1	71.1	89.2	85.2	90.5	102.9	100.0	105.6	102.2
New Mexico	110.6	112.1	93.1	146.4	108.5	137.7	98.6	96.3	100.0	92.9	97.2
New York	95.3	89.6	100.2	98.5	97.8	65.1	113.3	100.4	100.0	100.8	100.3
North Carolina	98.6	96.6	94.9	111.8	100.6	101.7	90.6	95.7	100.0	91.7	96.7
North Dakota	105.2	96.6	91.6	110.3	88.4	223.9	65.0	95.6	100.0	91.6	96.6
Ohio	99.9	105.0	101.5	93.6	101.8	90.1	92.8	101.5	100.0	102.9	101.1
Oklahoma	103.8	106.2	95.0	102.9	104.7	137.9	92.0	98.2	100.0	96.5	98.6
Oregon	97.9	99.2	94.0	89.2	101.8	111.4	85.1	99.5	100.0	99.0	99.6
Pennsylvania	90.4	85.6	97.8	76.6	92.3	80.2	87.4	100.1	100.0	100.1	100.1
Rhode Island	85.8	77.9	97.7	73.8	88.4	69.4	77.4	97.7	100.0	95.6	98.2
South Carolina	103.3	102.9	97.0	125.5	104.7	109.6	96.1	95.8	100.0	91.8	96.7
South Dakota	104.7	91.4	83.3	146.3	96.8	193.0	60.3	92.5	100.0	85.6	94.2
Tennessee	103.5	100.6	94.8	126.4	110.3	108.1	97.0	97.4	100.0	94.9	98.0
Texas	109.7	120.8	102.6	114.3	101.6	115.6	116.4	100.9	100.0	101.8	100.7
Utah	104.9	140.7	97.4	86.4	87.1	100.3	77.9	98.4	100.0	97.0	98.8
Vermont	89.1	82.5	90.6	84.5	84.2	118.2	66.6	93.2	100.0	86.8	94.7
Virginia	98.6	96.1	105.2	90.8	96.5	109.6	97.9	99.4	100.0	98.9	99.5
Washington	98.6	101.6	100.9	82.5	98.8	108.1	90.4	101.2	100.0	102.3	100.9
West Virginia	102.7	109.1	94.2	116.2	114.5	94.5	81.5	98.0	100.0	96.1	98.4
Wisconsin	94.2	93.7	100.0	77.9	85.3	113.1	80.4	99.7	100.0	99.3	99.7
Wyoming	102.2	113.5	93.3	65.9	78.1	197.4	71.7	98.8	100.0	97.7	99.1

Source: Table B-3.

Table ES-3

Actual Direct General Expenditures of State and Local Governments as Percentages of Representative Expenditures Adjusted for Input-Cost Differences, by Function, 1986-87

state	Total	Education: Primary and Secondary	Education: Higher	Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Standard Deviation	25.6	21.9	24.6	52.9	33.9	33.8	27.9	29.9	67.8	30.7	48.1
Alabama	71.0	60.5	110.1	32.8	120.2	69.1	63.5	69.3	79.4	78.1	80.4
Alaska	305.7	188.9	133.6	181.6	99.9	455.6	160.9	329.6	1,048.7	409.8	610.4
Arizona	101.8	105.2	141.7	59.0	51.3	151.0	142.2	102.9	113.9	121.5	77.9
Arkansas	67.0	78.8	91.8	47.7	62.9	89.5	55.0	62.7	62.9	66.1	50.3
California	112.4	98.7	117.7	129.3	111.8	70.2	131.3	123.9	87.9	120.1	137.0
Colorado	107.6	111.6	114.8	100.6	95.9	105.4	115.4	109.4	121.8	138.0	82.8
Connecticut	118.8	117.9	60.8	189.4	105.6	121.9	99.5	94.4	134.2	118.9	149.6
Delaware	115.8	117.9	153.2	71.5	66.0	116.5	115.1	112.2	211.1	138.1	98.9
District of Columbia	186.9	164.4	56.5	193.8	176.6	149.4	217.3	279.9	183.1	260.7	207.1
Florida	94.6	112.6	63.0	50.1	104.2	91.5	115.1	114.4	100.5	115.9	93.1
Georgia	82.2	87.9	76.8	49.8	164.2	77.8	74.1	78.9	56.7	89.1	69.7
Hawaii	117.6	86.3	106.5	106.8	94.7	86.8	123.7	155.8	141.1	149.0	165.2
Idaho	77.5	68.8	132.2	49.6	89.1	98.3	89.2	89.3	45.6	87.3	66.2
Illinois	91.6	85.9	86.5	101.7	66.2	121.5	86.4	97.3	93.4	84.3	100.6
Indiana	81.1	83.7	113.7	89.2	96.3	80.0	63.3	68.0	53.3	70.5	69.7
Iowa	97.7	93.7	158.6	102.0	121.2	122.0	88.0	80.2	66.2	85.2	58.3
Kansas	94.3	102.7	129.8	72.3	94.7	100.3	84.1	67.4	108.6	110.3	73.4
Kentucky	71.7	63.4	89.0	60.5	46.1	109.6	60.6	77.7	103.3	77.0	70.3
Louisiana	83.3	72.7	79.7	49.4	105.1	121.3	73.5	99.0	145.9	82.8	80.6
Maine	103.5	115.6	96.2	142.0	56.2	103.6	95.4	110.9	91.0	95.1	89.0
Maryland	106.0	103.2	98.8	122.4	51.2	129.0	110.8	127.8	113.9	96.3	110.2
Massachusetts	127.7	121.1	70.0	223.6	141.3	95.2	125.5	123.9	107.9	113.5	145.7
Michigan	99.6	98.9	117.3	146.4	111.8	78.9	83.9	75.2	72.4	90.7	92.0
Minnesota	124.7	117.8	133.2	171.0	121.8	119.6	97.9	123.2	151.3	107.9	102.2
Mississippi	66.6	65.2	99.3	35.4	111.4	91.9	51.1	63.0	60.9	72.6	56.0
Missouri	76.8	89.0	94.6	60.7	91.2	77.0	78.4	72.5	66.7	70.4	57.3
Montana	105.2	122.2	106.3	92.0	69.3	94.8	87.5	123.2	124.1	126.3	96.7
Nebraska	95.9	110.5	137.4	83.5	131.1	90.2	83.8	73.4	74.5	81.3	71.4
Nevada	109.1	94.2	81.7	67.1	91.8	106.5	154.1	112.8	142.6	155.2	140.3
New Hampshire	97.5	114.2	77.0	128.8	67.8	119.0	93.9	74.8	115.2	92.7	75.0
New Jersey	121.4	127.1	80.4	149.9	83.6	130.3	128.5	111.4	146.2	112.7	137.4
New Mexico	90.7	93.8	129.0	45.5	79.8	107.8	98.5	92.6	129.9	123.1	76.3
New York	152.4	149.2	87.0	197.8	172.5	153.1	144.4	139.9	149.9	131.4	173.0
North Carolina	78.5	91.9	125.6	53.6	86.2	74.1	88.3	62.5	44.8	81.6	65.6
North Dakota	102.6	105.0	172.5	96.9	80.0	70.0	69.6	100.6	96.3	95.0	139.8
Ohio	90.8	93.1	97.0	127.0	86.2	91.2	95.5	81.9	71.4	84.1	66.3
Oklahoma	79.5	85.2	99.6	76.5	85.1	68.2	70.5	88.7	80.3	80.5	57.9
Oregon	106.9	114.5	130.8	72.5	73.9	96.1	103.4	103.5	150.2	121.5	112.7
Pennsylvania	96.8	114.9	53.9	147.1	59.9	125.7	82.5	70.8	106.4	82.0	93.5
Rhode Island	121.1	118.8	84.6	205.3	95.1	111.4	106.7	85.8	155.0	111.0	125.5
South Carolina	76.4	85.6	111.4	43.9	120.2	56.9	78.3	69.6	61.2	68.9	68.5
South Dakota	90.5	96.1	114.1	45.3	53.5	83.9	95.6	82.1	107.8	99.5	165.4
Tennessee	74.7	66.7	89.0	60.2	102.8	82.7	69.8	76.4	64.7	72.4	79.0
Texas	78.9	85.6	101.3	42.2	79.1	97.0	66.6	91.8	107.0	75.0	58.8
Utah	90.3	71.1	157.1	82.2	85.5	99.8	107.6	97.4	93.7	112.5	74.3
Vermont	114.9	133.6	145.3	124.6	49.8	133.8	84.7	84.3	100.0	127.7	112.2
Virginia	90.7	102.4	104.2	63.0	97.8	107.7	92.6	100.1	67.6	103.7	63.4
Washington	104.9	104.0	119.0	115.8	84.7	107.4	102.0	122.9	74.2	99.7	107.0
West Virginia	82.4	88.0	80.7	70.5	54.0	131.8	46.5	68.4	103.7	86.1	90.5
Wisconsin	112.4	115.1	134.1	189.9	86.1	107.3	108.2	110.7	82.2	88.2	77.3
Wyoming	161.2	161.7	173.6	107.0	288.5	155.3	147.4	147.6	195.1	167.2	114.8

Sources: Tables ES-1 and ES-2.

Preface and Acknowledgments

This report adds a new dimension to the Advisory Commission on Intergovernmental Relations' contributions to measuring the fiscal capacities of state and local governments. Until now, measures of fiscal capacity have been expressed on a per capita basis. That is, the measures relate their evaluations of the revenue-raising potential of the states and local governments to the total population of a state. This convention effectively assumes that population is the important determinant of the "needs" of that state for public services. This assumption has long been criticized on the ground that, for example, the number of poor people living in a state is a much better indicator of the need for welfare programs than is total population.

This report responds to the criticism by marshaling the best available information on the demographic and other relevant characteristics of the states to identify a set of measures of a state's relative needs. The measures, developed for ten major categories of public services, include allowance for estimated differences among the states in the unit cost of employee compensation.

Special care should be exercised by readers in drawing conclusions from, or making specific use of, the estimates of representative expenditures, especially in comparisons with actual spending. Particular attention should be paid to the observations throughout the text regarding the possible limitations of the measures and the reliability and currency of some of the data. This report is intended to promote discussion and analysis of the important issue of the comparative measurement of government spending, as ACIR's numerous reports on public revenue systems—those on the Representative Tax System, in particular—have promoted constructive discussion of the financing of government.

It is especially important to emphasize that the measures should not be interpreted as implying or necessarily supporting judgments about the performance or quality of government in any state. Performance cannot be judged by a government's level of spending alone—though it can hardly be considered without reference to spending. The quality of a government's performance is a matter of the relationship between the amount of its spending and the results achieved, a relationship commonly referred to as the efficiency (or effectiveness) of a government's operations. We have to be concerned about what the children graduated from our public schools have learned, not just about how much is appropriated for teachers' salaries and classroom construction.

The report is silent on the issue of the results of government—the quality of performance, if you will—and no such implications should be read into the findings. The report offers estimates of the amount it would cost in each state to provide the national average level of public services *if* governments in every state were equally efficient. Outlays for a service that are lower than the estimate of a state's representative level of expenditure for that service do not necessarily imply that the quality of the service actually delivered is below average. The information would be consistent with a situation in which the governments in the state are, on the whole, more efficient than average. In other words, the reality might be that services of average quality, perhaps even better than average, are being delivered in the state at a cost that is below the national average.

The author and principal investigator for this study is Robert W. Rafuse, Jr., Senior Fellow at ACIR. We would like especially to express appreciation to the U.S. Department of the Tkeasury for its support of this research, which builds on work initiated by Dr. Rafuse during the Tkeasury studies of federal-state-local relations when the author was Deputy Assistant Secretary, State and Local Finance.

We would like to thank the participants in a critics session on a draft of the report in March 1989, which yielded an array of constructive advice: Robert H. Aten, Manufacturers' Alliance for Productivity and Innovation; John C. Camevale, U.S. Office of National Drug Control Policy; John R. Coleman, Port Tobacco, Maryland; Philip M. Dearborn, Maryland Commission on State Taxes and Tax Structure; Robert Dinkelmeyer, U.S. General Accounting Office; Jerry C. Fastrup, U.S. General Accounting Office; Jay Ladin, Maryland Commission on State Taxes and Tax Structure; Harry G. Meyers, U.S. Office of Management and Budget; Vic Miller, Federal Funds Information for the States; Vincent Munley, Lehigh University; Will S. Myers, National Education Association; Max B. Sawicky, Economic Policy Institute; and Michael Springer, U.S. Department of the Treasury. Camevale, Fastrup, and Sawicky were particularly generous with their time in follow-up conversations on a variety of issues.

Special thanks are due to Douglas H. Clark (Federal-Provincial Relations Division, Department of Finance, Government of Canada) for enthusiastic encouragement

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A draft of this report was circulated to officials of all the states for review. In addition to acknowledgments on particular points appearing in the report, a number of officials whose contributions were "above and beyond. .." deserve special mention: Dave Clark (Office of Management and Budget, State of North Dakota), Nancy Reuss (Management and Intergovernmental Systems, Budget Division, New York State), Henry Thomassen (Economic Advisor to the Governor of Georgia), Joseph LaFace (Economic Analysis and Tax Research, Department of Finance and Administration, State of Arkansas), Ron Lanoue (Fiscal Affairs Division, Executive Office for Administration and Finance, Commonwealth of Massachusetts), Benjamin W. Mokry (Office of Policy Development, Department of Finance and Administration, State of Mississippi), Brad Pierce (Division of Policy, Office of Management and Budget, State of Alaska), Richard Drennon (Florida Advisory Council on Intergovernmental Relations), and Carol Meyers and Walter Davis (Department of Finance and Revenue, Government of the District of Columbia).

Finally, at ACIR, we wish to thank Carol Cohen, who was always available to chat as the work progressed and who read the entire manuscript at one stage or another of its preparation and offered innumerable constructive comments; Clay Dursthoff, who almost always knows where the numbers are to be found; Joan Casey, who helped in rounding up especially elusive information sources and preparing the manuscript for publication; and Pamela Reynolds, who was there with word processing assistance.

John Kincaid
Executive Director

Robert D. Ebel
Director, Government Finance Research

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Introduction

More than a quarter-century ago, the Advisory Commission on Intergovernmental Relations published an information report setting forth a new approach to the measurement of the fiscal capacities of state and local governments.' That report, prepared by Selma J. Mushkin and Alice M. Rivlin, developed the concept and presented preliminary estimates of the yield in each state in 1960 of a Representative Tax System (RTS). Subsequent Commission reports have refined the approach and updated the estimates; the most recent are for 1988.[2]

Since the introduction of the RTS, estimates of per capita representative tax collections have come to be recognized by the technical community with virtual unanimity as a major improvement on per capita personal income as a measure of the fiscal capacities of state and local governments. The approach has not escaped criticism, however. Two general types have been most important.

The first type of criticism challenges the underlying logic of the RTS as a measure of the potential ability of state and local governments to raise revenues from their own sources, and questions the appropriateness and accuracy of some of the methods used to estimate representative collections. The issues raised by this type of criticism of the RTS deserve serious consideration, but they lie outside the scope of this report.[3]

The second criticism is that the RTS is flawed as a measure of fiscal capacity because it assumes implicitly that the *costs* of the service responsibilities of state and local governments depend solely on population. This report can be viewed as a direct response to the second criticism. In essence, the estimates of representative expenditures yielded by the approach outlined in this report are intended to be an improved measure of the relative public service costs of the states. As such, their use—in lieu of population—in combination with the estimates of revenue-raising ability produced by the RTS (or other measure) would be a significant refinement of the measurement of the fiscal capacities of state and local governments.

What Is Fiscal capacity?

A brief review of the concept of fiscal capacity and the RTS approach to measuring it is in order at this point to establish the context of the present study. "Fiscal capacity" is most usefully defined as the potential ability of a state or local government to raise revenues from its own sources relative to the cost of its service responsibilities, with appropriate allowance for revenues received from other governments!

The concept of the costs of the public service responsibilities of a government is difficult to define in the abstract. It is perhaps best understood as the common meaning of the term "needs," which is used in this report as a synonym for relative public service costs. A rigorous, general definition of "need" or "needs" appears to have eluded the English language, however.[5]

'Advisory Commission on Intergovernmental Relations, *Measures of State and Local Fiscal Capacity and Tax Effort* (Washington, DC, 1962).

[2] Advisory Commission on Intergovernmental Relations, *1988 State Fiscal Capacity and Effort* (Washington, DC, 1990). This report also presents estimates of the yield of a Representative Revenue System (RRS) that includes—in addition to 27 categories of taxes in the RTS—such nontax revenues of state and local governments as user charges and rents and royalties. Total RRS revenues amount to 89 percent of the total general revenues of the states and localities from own sources reported by the Bureau of the Census for 1987-88. The discrepancy exists because the RRS does not include interest earnings ($47 billion), revenues from the sale of property ($1 billion), and miscellaneous revenues totaling approximately $19 billion; see U.S. Department of Commerce, Bureau of the Census, *Government Finances in 1987-1988* (Washington, DC, 1990), Table 6. To simplify the discussion, only the RTS is referred to in the remainder of the present report the argument would not be significantly different if the references were to the RRS.

[3] For a review of these issues, see U.S. Department of the Treasury, Office of State and Local Finance, *Federal-State-Local Fiscal Relations: Report to the President and the Congress* (Washington, DC, 1985), Chapter VIII; and Stephen M. Barro, "Improved Measures of State Fiscal Capacity: Short-Term Changes in the PCI and RTS Indices," in Robert W. Rafuse, Jr. (ed.), *Federal-State-Local Fiscal Relations: Technical Papers*, Vol. I (Washington, D C U.S. Department of the Treasury, Office of State and Local Finance, 1986), pp. 187-261.

[4] Treasury, *Federal-State-Local Relations*, p. 207.

[5] The definition of "need" by the *American Heritage Dictionary of the English Language*, for example, boils down to "something required or wanted" (Boston: American Heritage, Houghton Mifflin Company, 1975), p. 878.

Three general approaches to an operational definition of public service responsibilities suggest themselves:

- What the people "want",
- What the people are willing to pay for, and
- What the experts say we ought to have.

The first approach is better suited to the rhetoric of demagogues than to the demands of empirical analysis. In a democracy, of course, the wishes of the voters are the ultimate considerations on an issue, and the obligation of elected officials is to be responsive to those wishes. In the end, however, this approach yields little more than a rationale for saying that — on the assumption that the system is working effectively — whatever a government is actually spending for public services is what the people want. This conclusion is not very helpful; it certainly does not reflect the common understanding of "needs" as something quite different from actual spending by every individual government.

The second approach draws on the economic notion of effective demand, as opposed to wishes or wants. But this approach, like the first, threatens to reduce to the judgment that, if democratic government is working responsively, the public services actually provided must be the services the voters are willing to pay for. Again, we have no basis for an independent, evaluative definition of "needs." Another problem with this approach derives from the dependence of effective demand on the existing distribution of income and wealth among the voters. One thing the concept of needs certainly comprehends is that they are independent of means.

The third approach is perhaps the most common. It relies on normative definitions of "needs," typically as prescribed by experts as the "correct," "proper," or "optimal" number of teachers per 100 pupils, square miles of parkland per 100,000 population, or traffic lanes per 1,000 vehicles per hour.

The history of the measurement of revenue-raising ability demonstrates the essential problem with a normative approach. For several decades preceding the development of the RTS strategy in the early 1960s, measurement of the revenue-raising potential of state and local governments relied on estimation of the yield in each state of a model, or ideal, tax system.[6] The difficulty with this approach was that there was no shortage of competing ideas about model tax systems. Since each system could weight economic stocks and flows differently, each would produce a different set of estimates of relative revenue-raising abilities.

The same problem arises with the normative approach to the evaluation of needs. In some fields, prevailing standards reflect a strong consensus of experts. In other areas, however, major controversies rage among the technicians. An attempt to define a single set of need standards for the entire range of public services viewed by one or another expert or interest as essential to the agenda of government in the United States would be an invitation to endless debate, with negligible prospects for ultimate agreement.

The answer is a purely positivistic approach, following the general strategy of the RTS. By this approach, public service responsibilities are whatever all state and local governments in the nation, collectively, have demonstrated them to be by their actual fiscal decisions. It follows that the total cost of those responsibilities is equal to the total actual outlays of all states and local governments. This strategy offers an objective basis for quantitative analysis of the *relative* costs of the public service responsibilities of the states. A key attribute of the approach, it must be emphasized, is that the analysis abstracts completely from the actual policies of any individual government and from the actual policies of all the governments, as a group, in any particular state.

The yield of the Representative Tax System, referred to as "tax capacity," is an indicator of the potential ability of all the governments in a state, as a group, to raise revenue from their own sources. When the estimate of tax capacity is divided by the population of the state, the resulting per capita yield of the RTS becomes an estimate of the state's fiscal capacity. These estimates are customarily presented as an index, with the national average set at 100.[7]

Until recently, this practice of expressing tax capacity on a per capita basis was generally viewed as a mathematical convention whose purpose was to facilitate comparisons among the states. Some analysts, however, including Mushkin and Rivlin in their 1962 report, have long recognized that dividing estimates of representative tax yields by population has significant analytical implications. As Mushkin and Rivlin note,

> . . . to express capacity on a per capita basis . . . implies that a State's . . . public expenditure needs vary directly with its population. . . .
>
> The use of population as the sole indicator of needs for public services clearly leaves much to be desired!

[6] An early example of this approach is a study that estimated the yield in each state of a variation on a model tax system developed by the National Tax Association in the 1920s; see Mabel Newcomer, *An Index of the Taxpaying Ability of State and Local Governments* (New York: Columbia University, Teachers College, 1935).

[7] The per capita yield of the RTS in a state is divided by the national average yield, and the result multiplied by 100.

[8] Advisory Commission on Intergovernmental Relations, *Measures of State and Local Fiscal Capacity and Effort*, p. 9. Other analysts explicitly acknowledging the implication of expressing fiscal capacity measures on a per capita basis include George F. Break, who observes in the first version of his study of intergovernmental finance that,

> . . . population, used as a divisor in . . . measures of fiscal capacity, . . . serves as a rough measure of . . . need for public services. *Intergovernmental Fiscal Relations in the United States* (Washington, D C The Brookings Institution, 1967), p. 117.

In a major updating and extension of the RTS approach in the mid-1970s, D. Kent Halstead notes, in explaining his presentation of results in per capita terms, that tax

> . . . capacity . . . is most meaningful if it is related to public needs. The proxy chosen to express public needs is simple population count. (Emphasis in the original.) *Tax Wealth in Fifty States* (Washington, DC: U.S. Department of Health, Education and Welfare, National Institute of Education, 1978), p. 7.

Halstead reports the results of an "introductory effort" to develop "more *exact* comparative measures of relative public service requirements" in an appendix to this report.

The problem is that the costs of the public service responsibilities of state and local governments depend on numerous important factors in addition to population. Although some of these factors cannot be taken into consideration because the data that would be required are not available, others certainly can be brought into the picture. The objectives of this report are to show how this can be done and to present the results of an effort to do so.[9]

Review of the Report by State Officials

A special procedure was followed in the production of this report at the request of ACIR's Commissioners at the time they approved publication. A draft of the executive summary was sent to the governor, speaker of the house, and president of the senate of each state (and to the mayor and council chair of the District of Columbia) with a request for their review and comment.

The letter accompanying the executive summary indicated particular interest in comments relating to special circumstances in a state that might help account for any unusual or especially striking aspects of the representative expenditure estimates or their relationships to actual spending levels. The letter also mentioned the Commissioned intent that comments on the findings relating to individual states be incorporated into the report.

Responses were received from the governors of 24 states, the house speakers of 3, and the senate presidents of 2 states. Responses going beyond acknowledgment of receipt of the materials were received from 13 governors, 1 speaker, and 1 senate president.

If there is a common theme of the comments, it is that the representative approach is a significant improvement on conventional expenditure analysis performed with reference only to total resident population. Though an attempt is not made to summarize or synthesize the entire set of comments here, specific observations, suggestions, and cautionary notes appear in the text or as footnotes wherever in the report they are most germane.

[9] A review of the recent technical literature in the United States appears in Appendix D. An especially interesting collection of papers on the measurement of government expenditure needs, with particular emphasis on experience in Europe, appears in Gordon Cameron and Jurgen Lotz (eds.), *Measuring Local Government Expenditure Needs: The Copenhagen Workshop,* Urban Management Studies (Pans: Organisation for Economic Cooperation and Development, 1981)

Overview of the Report

Chapter 2 of this report reviews the principal considerations that account for the variability of the costs of public services among governments. That discussion is followed in Chapter 3 by a summary of the basic logic of the representative expenditure approach and of the specific methods used to develop estimates of representative expenditures for the ten major categories of state-local outlays.

The estimates themselves are presented in Chapter 4 and compared with actual spending levels in the states. Regional differences in the estimates are also explored in this chapter. The index is used to determine the consequences for estimates of state fiscal capacities of using representative expenditures rather than population alone as the measure of the cost of the public services provided by state and local governments. The analysis considers four different measures of revenue-raising ability: resident personal income, RTS, gross state product (GSP), and total taxable resources (TTR).

Chapter 4 also expresses the results as gaps between the representative expenditures of a state and the revenues that would be raised if the state's governments were to exert a national-average level of fiscal effort. The implications of the existing distribution of federal grants-in-aid for the revenues available to state and local governments in each state are also considered in the context of the gap analysis.

Chapter 5 consists of a set of graphs, one for each state, portraying the estimates of representative expenditures on a per capita basis for the ten major functional categories. The estimates are related to a state's actual per capita spending and to the U.S. average for each function. Some concluding observations and suggestions for potentially productive lines of further research are presented in Chapter 6.

Details on the sources of the data used to derive the estimates of representative expenditures appear in Appendix A. A set of tables showing the data and calculations underlying the estimates is provided in Appendix B. Appendix C discusses differences among governments in input costs and summarizes the method used to derive an index of the variation in such costs among the states.

Appendix D presents a technical description of the representative expenditure and revenue approaches and compares them with other methods of arriving at estimates of the elements of measures of fiscal capacity.

Chapter 2

The Variability of the Costs of Public Services

As noted earlier, the expression of a measure of fiscal capacity in per capita terms assumes that variation in population is the only source of differences in the costs of public services among areas. This assumption is not entirely wrong. Population undoubtedly is the most important factor in the variation in public service costs. The difference, for example, between the $85 billion spent in 1986-87 by the state and local governments in California and the $1.5 billion spent by the state, counties, and towns in Vermont is accounted for largely by the fact that nearly 28 million people live in California and fewer than 600,000 live in Vermont.

Three general classes of factors are responsible for variation in the costs of public services among governments and areas:[1]

- The range and types of services a jurisdiction must, by law, provide. For example, the law in some states requires county governments to deliver medical services to all poor persons who meet certain specified conditions.
- The prices of the inputs used to produce public services, such as wages and salaries, gasoline prices, and the cost of asphalt.
- Factors that determine the scope of the services provided, such as the number of pupils in public schools.

The types of services a jurisdiction is responsible for providing are central considerations in the cost of government at the local level, where obligations prescribed by state law vary substantially among states and among different types of local governments. At the state level, however, requirements imposed by the federal government are relatively insignificant. The states (collectively with their local governments) are essentially free to offer—or not to offer—any service not reserved to the federal government by the Constitution or proscribed by the Congress. Such federal requirements as do exist apply uniformly throughout the nation, so they should not be an important source of variation in costs. Thus, this class of factors is not germane in considering variations in the costs of public services among the states.

The prices of the goods and services used by state and local governments vary with climate, with distance from the point of production, between rural and urban areas, and as a consequence of state and local policy. For example, state laws relating to the compensation of public employees range widely, with major consequences for the costs of producing public services. As discussed in the next section, however, a central premise of the analysis and measurement of fiscal capacity is that differences among jurisdictions and states that are traceable to state or local policies must be abstracted from if the estimates are to be of much use.

In general, unfortunately, information on the prices paid by states and localities is not currently compiled by any agency in sufficient detail to permit estimation of a comprehensive index of the relative input costs paid by governments in all of the states. It is possible, however, to estimate the approximate differences among the states in the basic cost of employee compensation. Such compensation accounts for roughly half of all direct general expenditures by state and local governments, and probably is more variable among the states than the costs of most goods purchased. Employee compensation also varies dramatically among functions as a proportion of total outlays.

Therefore, a fairly good handle on the variation in unit costs can be gained by an index that weights relative costs of employee compensation at their actual proportion of total outlays and assumes that the unit costs of all other inputs are uniform throughout the country. The estimates of representative expenditures presented in Chapter 4 are adjusted for differences in unit input costs using an input-cost index discussed in Chapter 3 and considered in detail in Appendix C.

This leaves the factors that influence the amount or scope of public services provided. Population, as noted earlier, is unquestionably the simplest and most common variable used for this purpose. It is clear, however, that population is not a very good indicator for many types of

[1] It is important to remember that the concern here is only with differences in costs that are not attributable to the policies of the governments serving an area.

public services. An obvious example is education. The costs of elementaly and secondary education are more closely related to the number of school-age children than to the size of the entire population. The heart of the representative expenditure approach is the identification of the measures for specific categories of public services that are better than total population. The approach is discussed in detail in the next chapter.

An additional source of differences in the costs of public services among governments and areas is the efficiency with which labor and materials are managed to produce those services. The cost of producing a given quantity and quality of a service is lower for an efficient government than it is for an inefficient one. Important as efficiency is to good government, few types of data are in shorter supply than information on the overall efficiency of different governments. Fortunately, this is not a problem for the present analysis. Efficiency clearly is a matter of government policy and, as a consequence, is an issue that must be abstracted from here. This means that the estimates of the costs of providing the representative level of services assume that the average efficiency of government is roughly the same in all states.

It follows from this that observations in this report to the effect that the costs of some or all public services are lower in one state than in another should not be understood to refer to the relative efficiency of government operations in the states. In the present analysis, the costs of providing the representative levels of services vary among the states only because of differences in workload or differences in unit input costs that are beyond the control of state and local governments.

Chapter 3

The Representative Expenditure Approach

The concept and the methods used to estimate representative expenditures for the 50 states and the District of Columbia owe a great deal to the Representative Tax System (RTS). Because considerable familiarity with the RTS has been achieved during the quarter century or so since it was first put forward, the basic logic of the representative expenditure approach may be most easily understood by reference to the RTS. Thus the discussion begins with a brief recapitulation of some of the essential elements of the RTS.

The Representative Tax System

The relative tax capacity of a state is defined by the RTS as the revenue the state and its local governments would raise if they were to apply a set of taxes and tax rates "representative" of actual policies prevailing, on average, throughout the nation. The basic rationale for such a prototypical, or hypothetical, tax approach is to ensure that the revenue estimate is independent of the actual tax policies of the governments in any particular state. This "policy neutrality" is an essential attribute of any element of a measure of the fiscal potential—as opposed to the actual behavior—of the governments in a state.

The most recent RTS estimates are derived using a system with 27 categories of taxes accounting for 100 percent of all state-local tax collections reported by the Governments Division of the U.S. Bureau of the Census for 1987-88.[1] Specific taxes account for 26 of the categories, the 27th category—"other taxes"—is the residual portion of the Census total of state-local tax revenues. It accounts for somewhat less than 4 percent of total tax collections in 1987-88.

The "bases" of the 27 categories of taxes for the 50 states and the District of Columbia are the central element of the RTS. The RTS base for a tax is a prototype that may or may not be the actual, statutory base in any state. For example, the total federal income tax liability of a state's residents (adjusted for the deductibility of state and local taxes) is the RTS base for individual income taxes. The federal liability is actually the base for state income taxes only in Rhode Island and Vermont?

Selection of the KI'S base for a tax is a judgment call, but the objective is to match as closely as possible the distribution among the states of the typical statutory base. In the case of the new category of "other taxes," there is by definition no typical statutory base, so the KI'S base is defined as resident personal income. The options are constrained to data published annually and separately for all the states, although older data have to be used in a few cases. This facilitates regular updating of the estimates and minimizes the complexity of the analysis.

The RTS "rate" applied to each of the 27 RTS bases to calculate the estimates of representative tax collections is a national average. It, too, is a prototypical rather than statutory rate. That is, the KI'S rate is the ratio of the actual collections of all state and local governments for the category to the national total of the RTS base.[3] This

[1] Advisory Commission on Intergovernmental Relations, *1988 State Fiscal Capacity and Effort* (Washington, DC, 1990). Until the RTS was revised for the report published this year, it did not include taxes accounting (1986-87) for a little more than 4 percent of all state and local tax revenues. These taxes were not included on the grounds that they are rarely used or are levied on bases for which there are no adequate data or clearly plausible proxies. Among those excluded were license taxes on certain occupations and businesses, documentary and stock-transfer taxes, and severance taxes on forest products, fish, and oysters.

[2] Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism, 1990,* Volume 1 (Washington, DC, 1990), Table 16.

[3] In the case of ad valorem taxes, the RTS "rate" is a flat percentage, even though the statutory rates of the corporation income taxes of many states are graduated. For unit taxes, the "rate" is a dollar amount per unit taxed—per pack, per gallon, per barrel, per license. As noted earlier, the RTS base for the individual income tax is the (adjusted) federal liability of a state's residents. Use of a flat RTS "rate" in this case implies that the representative rate structure mirrors the graduation in the rate structure of the federal tax. This may make more sense today that it once did. The reduction in the graduation of the federal rate structure since 1981 has been so severe as to make it resemble many state structures of a decade ago. The problem is that, in the interim, a number of states have been busy degraduating their own rate structures. This means that the flat RTS rate may still very much overstate the actual degree of graduation in the rate structures of today's state income taxes.

use of national-average rates *can* be viewed as a method of weighting the various tax bases in accordance with actual relative reliance on them by states and localities around the country.

Representative Expenditures: Basic Concepts

The representative expenditure approach closely parallels that of the RTS. The parallel is not perfect because of an important asymmetry between revenues and expenditures that is embodied in the accounts of the Governments Division of the U.S. Bureau of the Census, which are the source of the fiscal data used in the analysis. That is, revenue sources are inherently more discrete conceptually (and legally) than are expenditure functions or categories.

Although there is room for dispute at the margin concerning the Census Bureau's classification of some revenues, on the whole there is no disagreement about whether the governments of a state do or do not levy an individual income tax, or a general sales tax, or a tax on the transfer of stocks (as New York State once did). The cornerstone of the RTS is the judgment, with respect to each tax for which data are reported separately by Census, whether the tax is relied on by the governments of enough states to warrant its inclusion in a "representative" state-local tax system.

On the expenditure side, on the other hand, the issue of "representativeness"—in a sense analogous to whether reliance on a particular tax is or is not "representative" of actual practice throughout the nation—is moot. At the level of aggregation considered in the present report, every function in the Census accounts is representative in this sense because outlays are recorded for every state for every function.[4]

Given the set of functions determined to be representative (all functions, at the level of aggregation considered here), the crucial step in the representative expenditure approach is the identification of the best possible measure of the workload for each function.[5] This is equivalent to the identification of prototypical tax bases in the RTS. The workload measure may be as simple as total population or more complex, comprising multiple variables equally or unequally weighted. The measures are derived from review of the literature and consultation with authorities in particular functional areas. Where possible, as with the RTS, the workload measures are limited to variables for which data for all states are available annually.

A general consideration of overriding importance in the selection of workload measures is that they be independent of the policies of the governments in any particular state. As discussed later, this argues against use of such program-client Variables as enrollment in public schools and the number of persons receiving welfare benefits. It also means that the analysis must abstract from the important issue of how efficiently public services are produced.

Given the workload measure for a function, the representative expenditure per unit of workload can be calculated by dividing the total of actual state-local outlays for the category by the U.S. total for the workload measure. The resulting average cost per workload unit is equivalent to the national-average tax "rate" in the RTS.

As the representative tax yield for a state can be calculated by multiplying the value of the state's base by the RTS tax rate, so the representative expenditure for a state *can* be derived by multiplying the state's workload measure for a function by the national-average expenditure per unit of workload? This preserves the mix of actual expenditures by all state and local governments as a group.

It is important to emphasize that the estimates of representative expenditures—like the tax yields generated by the RTS—are of relative and not absolute interest. They indicate how much it would cost a state to provide the average level of public services that actually prevailed nationwide in the year for which the estimates are calculated. A key assumption here is, as noted earlier, that the representative level of outlays results in roughly the same service level in every state—in other words, that government is of approximately equivalent efficiency in every state.

Reference as the basis for the analysis to service levels actually provided on average by state and local governments throughout the nation is not intended to imply that the representative levels are necessarily correct or "needed" in any absolute sense. Indeed, the approach explicitly abstracts from debates about whether the na-

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[4] The annual Census reports on government finances display estimates for 29 categories of direct general expenditures by states and localities. Of these, no outlays are reported for transit subsidies (0.04 percent of total outlays) in 22 states, water transportation and terminals (0.3 percent of outlays) in 12 states, and veterans' services (0.02 percent) in 3 states. No spending for other education and air transportation is reported for the District of Columbia. U.S. Department of Commerce, Bureau of the Census, *Government Finances in 1987-1988* (Washington, DC, 1990), Table 29.

[5] "Workload" is Robert D. Reischauer's term in his pioneering analysis of state and local expenditures during the years 1962-72, Rich *Governments—Poor Governments: Determining the Fiscal Capacity and Revenue Requirements of State and Local Governments*, Brookings Staff Paper, unpublished, 1974, Chapter 2. The state-local sector as a whole—rather than individual governments or states—is the subject of Reischauer's study. Workload can also be referred to as "needs." See Harold A. Hovey's representative expenditure estimates for the states in "Fiscal Capacity, Tax Effort, and *'Need,'" State Policy Reports* 3 (July 1985): 10-20. The approach outlined in this report draws heavily on Robert W. Rafuse, Jr., "A Representative Expenditure Approach to the Measurement of the Cost of the Service Responsibilities of States," in Rafuse (ed.), *Federal-State-Local Fiscal Relations: Technical Papers*, Volume I (Washington, D C U.S. Department of the Treasury, Office of State and Local Finance, 1986), pp. 133-86. That paper presents estimates of representative expenditures for the states for 1983-84 that are *very* similar, conceptually, to those for 1986-87 in the present report.

[6] A more straightforward way of describing the calculation is that the national total of actual state and local outlays on a function is distributed among the states in proportion to the values of its workload measure. Similarly, the RTS distributes the national total of actual collections of a tax among *the states* in proportion to the RTS base for that tax. Viewed from this perspective, it is clear that the RTS tax "rates" and the costs per workload unit are mathematically superfluous. Nonetheless, reference to them is helpful in explaining the logic of the procedure.

Exhibit 1
Workload Measures
for Representative Expenditures

1. Elementary and Secondary Education

The workload measure is the weighted sum of three population groups: (1) children of elementary-school age (5-13) net of enrollment in private elementary schools, (2) youth of secondary-school age (14-17) net of private secondary enrollment, and (3) the population under 18 living in households with incomes below the poverty line. The weights are, respectively, 0.6, 1.0, and 0.25.

2. Higher Education

The measure is the weighted sum of the population in the age groups 14-17, 18-24, 25-34, and 35 and older. Each weight (L32 percent, 2244 percent, 4.16 percent, and 0.83 percent, respectively) is the full-timeequivalent number of students in the age group enrolled in institutions of higher education nationwide as a proportion of the total population in the age group.

3. Public Welfare

The workload measure is the population living in households with incomes below the poverty line.

4. Health and Hospitals

The measure is the sum of the equally weighted percentage distributions of (1) persons age 16-64 with work disabilities, (2) the population living in households with incomes below 150 percent of the poverty line, and (3) the total population.

5. Highways

The workload measure is the weighted sum of the percentage distributions of two variables: (1) vehicle-miles traveled, and (2) lane-miles of streets and roads other than those on federally controlled land. The first is weighted 0.825, the second 0.175.

6. Police and Corrections

The measure is the sum of the equally weighted percentage distributions of: (1) the population age 18-24, (2) the number of murders committed, and (3) the total population

7. All Other Direct General Expenditures

The workload measure is total population.

tion's governments are spending "enough" for education or infrastructure, and whether what is being spent is being managed efficiently.

It follows that the analysis should not be viewed as providing a comprehensive framework for addressing some of the most important issues of public spending policy. The representative approach is intended to promote understanding of the reasons why relative levels of public-expenditures differ among the states and to improve the quality of the information base on which the debates on issues of efficiency and sufficiency can proceed. The approach is not intended to substitute for careful analysis of governmental performance or efficiency, which requires intensive consideration of results actually achieved in relation to the level of spending for each specific program or function.

The Workload Measures

The functions for which specific workload measures are developed and estimated in this report are: (1) elementary and secondary education, (2) higher education, (3) public welfare, (4) health and hospitals, (5) highways, and (6) police and corrections. The six functions account for nearly 70 percent of the total direct general expenditures of state and local governments.[7] The estimates of representative outlays for all other functions are derived using total resident population as the workload measure.

The specific workload measure for each expenditure category is described briefly in Exhibit 1. The basic considerations underlying the selection of the measures are discussed in the remainder of this section.*

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[7] U.S. Department of Commerce, Bureau of the census, Government *Finances* in *1986-87* (Washington, DC, 1988), Table 29. As defined by the Census Bureau, direct expenditures are payments to suppliers, employees, and all other final recipients of government outlays except other governments General expenditures are all outlays but those by government-owned liquor stores, insurance trust systems, and utilities

[8] In a letter to John Kincaid (Executive Director, ACIR), dated February 7, 1990, commenting on a draft of the executive summary of this report, L. Edward Lashman, Jr. (Secretary, Executive Office for Administration and Finance, Commonwealth of Massachusetts) notes:

> I am aware of the many uncertainties and value judgements inherent in this sort of social science exercise. My worry is that many in policy making positions will not recognize the very tentative nature of the current research results. The . . . cost indices could readily find their way into the substantive arena such as through use in distribution formulas for grants in aid. Given the state of the art as described in your draft, such a use of the results would be significantly premature.
>
> Because of this reality, I strongly suggest that. . . [the report] highlight the chief alternative specifications, rather than displaying only one, supposedly definitive, index for each variable , . . [and] provide suitable cautions about the limits of the research.
>
> The research has undoubtedly explored a variety of formulations of the individual cost indices. Each amalgam may have different theoretical pluses and minuses, and each may have widely different results. . . . providing multiple results, with cautions in the text, are necessary precautions.

Lashman's understanding is correct that a variety of options for the workload measures was explored in the course of work on this report. Many of these are discussed in this section; additional discussion of the options can be found in Rafuse, "A Representative Expenditure Approach. . . ." Practical considerations of publication cost, as well as the logic of encouraging readers to focus on a particular set of workload measures in order to facilitate understanding of the conceptual approach, respectively, preclude and argue against publication of the variety of estimates of representative expenditures that would be yielded by even the "chief' option specifications for each workload measure. In fact, with a few exceptions, workload indices and estimates of representative expenditures were not actually calculated for measures other than those described below in Exhibit 1. It should go without saying that judgments about the appropriateness, from whatever perspective, of the estimates of representative expenditures for any or all states were never a consideration in the selection of a workload measure.

1. Elementary and Secondary Education

In fiscal years ending between July 1,1986, and June 30,1987, elementary and secondary education accounted for 24 percent of the direct general expenditures of state and local governments. The workload measure for this function is a weighted average of the elementary (5-13) and secondary (14-17) school-age populations, in both cases adjusted to exclude enrollment in private schools, with special allowance for the number of children living in households with incomes below the poverty line.

The weights (1) adjust for the lower cost per student of elementary education, which is assumed to be 60 percent of the cost per student of secondary education, and (2) allow for the higher cost of the compensatory and remedial programs that pupils from poverty households tend to require more often than pupils from other households?

Population data are used because enrollment and average-daily-attendance (ADA) data are strongly influenced by the attendance requirements of state law. Variations in dropout rates account for much of the difference between school-age population and enrollment. Use of enrollment data would imply that states with depressed enrollments because of high dropout rates have lower need for expenditures for public education. Moreover, state definitions of enrollment and attendance differ, raising questions about the comparability of the available data. On balance, the influence of state policy on enrollment and ADA makes them both poor candidates for a workload measure.

Adjustment for enrollment in private schools seems advisable because the importance of private institutions varies significantly among the states. In 1987, just under 12 of every 100 kids of elementary-school age were enrolled in private schools. The proportions in individual states ranged from 192 percent of the national average in Delaware to less than 8 percent in Utah.[10] Private schools, in fact (as their proponents often point out), diminish the number of pupils that must be provided for in the public system.

The argument against adjustment for private enrollment is that it is affected by the quality of public programs, a matter of policy from which the workload measure should abstract. Though the quality of public schools is undoubtedly a factor in private enrollment, considerations other than current educational policy (family tradition and the religious, ethnic, and racial mix of the population) are probably much more important in many areas of the country. In view of these considerations, subtraction of private enrollment from school-age population would seem to be desirable in arriving at a workload measure for elementary and secondary education.

2. Higher Education

More than 9 percent of the direct general expenditures of state and local governments in 1986-87 were allocated to higher education. The workload measure for this function is the population in various age groups weighted by the proportion of those in each group who were actually enrolled (full-time equivalent) in an institution of higher education in the fall of 1987.

A simpler measure would be the population of traditional college age, say, 18-24. The problem with this is that it would neglect the remarkable shift in recent decades in the age mix of students attending institutions of higher education. The shift is readily apparent in Table 1. Although the proportion of those in the 18-24 age bracket enrolled in higher education declined somewhat in the 1970s, the slippage was more than recovered by 1987. The frequency of enrollment of those 14-17 declined fairly steadily, while that of individuals older than the traditional college ages rose sharply during the 1970s and has since been sustained at a frequency close to that reached in 1980.

These trends have been accentuated by the evolution of the age profile of the population as the baby-boom generation has matured. Thus, columns 4-6 of Table 1 show the steep decline in the proportion of full-time-equivalent enrollment accounted for by the 18-24 age group—from 78 percent in 1970 to 68 percent in 1987. At the same time, the representation of those over 24 soared from 18 percent of total enrollment at the beginning of the period to 30 percent in 1987. These trends appear likely to continue, with significantly different patterns around the country. Hence it is essential that the workload measure for higher education incorporate the capacity to capture these shifts'.

At first glance, it might seem desirable to account somehow for differential patterns of enrollment of a state's residents in out-of-state institutions and in private institutions in-state, because both tend to reduce needs in some states and raise them in others. However, the out-of-state enrollment propensities of residents are surely influenced by the actual policies of a state regarding the quality and availability of public higher education. They are, therefore, not a suitable candidate

Table 1
Trend in Full-Time-Equivalent Enrollment in Higher Education, by Age, 1970-87

Age	FTE Enrollment as Percentage of Population			Percentage Distribution of FTE Enrollment		
	1970	1980	1987	1970	1980	1987
	(1)	(2)	(3)	(4)	(5)	(6)
Total	4.51%	4.89%	4.62%	100.02	100.0%	100.0%
14-17	1.56	1.39	1.32	3.7	2.6	2.2
18-24	22.22	21.03	22.44	78.2	72.0	67.6
25-34	3.45	4.37	4.16	12.7	18.5	20.1
3s +	0.43	0.63	0.83	5.4	6.9	10.2

Note: Full-time equivalents are estimated by assuming that three part-time students equal one full-time student. Part-time enrollment in 1987 is assumed to be the same proportion of the total enrollees in each age group as in 1983.

Sources: Tables B-13 and B-15.

[9] The school-aid formulas of many of the states apply weights of roughly 1.25 to children in households below the poverty line; the equivalent of that weighting is used here. Richard Salmon, Christina Dawn, Steven Lawton, and Thomas Johns (eds.), *School Finance Programs of the United States and Canada, 1986-87* (Blacksburg: American Education Finance Association and Virginia Polytechnic Institute and State University, 1988).

[10] See Table B-12.

for a policy-neutral workload measure. In any event, the necessary data are not available.

Data on enrollment in private institutions are available by state, and might be used as similar information is in the workload measure for elementary and secondary education.[11] The contribution of private institutions to lessening the workload for public higher education is arguable, however. Table 2 compares actual enrollments in each state with the enrollments in public and private institutions that could be *expected* on the basis of national-average enrollment propensities (Table 1, column 3). The states are sorted by the ratio of actual to *expected* enrollment in private institutions, which ranges from the District of Columbia (891 percent) to Nevada (2 percent).

A regional pattern is clearly apparent at the extremes. All seven of the states with the highest ratios of actual to projected private enrollment also have below-average ratios of enrollment in their public institutions, and all are located in the northeastern part of the country. The eight states with the lowest private ratios, by contrast, are all in the West or South, though two (Alaska and Nevada) also have below-average public ratios.

A pattern in the intervening data, however, is difficult to discern, and the reasons come easily to mind.[12] Most private colleges and universities draw their students from national or regional markets. Most limit enrollment of

[11] I am indebted to Barry H. Stern (until recently Director, Office of Liaison Services, U.S. Department of Justice, and former Secretary of Labor and Industry, Commonwealth of Pennsylvania) for discussions that encouraged me to look in some detail at the variation in public and private enrollments among the states.

[12] An overall negative relationship between the ratios for public and private institutions exists and is statistically significant. A simple regression comprehending the 50 states and the District of Columbia, with the public ratio the dependent variable and the private ratio the independent, is:

$$Y = 112.3 - 0.098\ X \quad (-4.6)$$

The t-statistic in parentheses indicates that the X coefficient is significant at the 99 percent level. The R^2 is 0.31, quite high for a regression of this type. If the District of Columbia is dropped from the regression on the reasoning that its major private universities (American, Catholic, Gallaudet, Georgetown, George Washington, and Howard) are clear examples of institutions drawing predominantly on a national—even international—market, the result is:

$$Y = 114.9 - 0.129\ X \quad (-3.2)$$

As expected, the R^2 drops to 0.17, but the X coefficient remains negative and significant at the 99 percent level. When the top seven and bottom eight states are excluded from the regression, however, the reason why a systematic relationship between the two ratios for the remaining 36 states is difficult to see is clear there is no statistically significant (linear) one. The regression results are:

$$Y = 107.4 - 0.058\ X \quad (-0.6)$$

The R^2 plunges to 0.009, and the t-statistic indicates that the coefficient of the X variable, although still negative, is not significantly different from zero.

Table 2
Actual FTE Enrollments in Public and Private Institutions of Higher Education, by State, as Percentages of Enrollments Expected on the Basis of National-Average Propensities, Fall 1987

State	All	Public	Private
	(1)	(2)	(3)
District of Columbia	247%	34%	891%
Massachusetts	140	75	336
Rhode Island	145	88	317
Vermont	124	92	220
New York	113	82	207
New Hampshire	104	74	193
Pennsylvania	100	72	183
Utah	129	115	171
Iowa	125	117	150
Connecticut	92	73	149
Missouri	98	87	129
Illinois	107	103	120
Minnesota	111	110	114
Idaho	101	98	108
United States	100	100	100
Ohio	97	97	97
Tennessee	85	82	95
South Dakota	99	100	94
Maine	79	74	93
Indiana	93	94	92
North Carolina	97	99	91
Nebraska	123	134	89
Delaware	109	120	75
Wisconsin	121	136	74
South Carolina	82	85	74
Georgia	71	71	72
Kentucky	82	85	72
Oregon	111	125	69
Hawaii	88	94	68
Oklahoma	103	115	66
Michigan	102	115	65
Florida	77	81	65
Virginia	95	106	64
California	109	123	64
Washington	106	120	62
New Jersey	77	73	62
Maryland	88	98	58
Colorado	107	124	56
Alabama	95	111	49
Texas	89	102	49
Louisiana	82	94	49
Kansas	117	139	48
Arkansas	74	83	46
West Virginia	85	99	43
Montana	99	118	39
Mississippi	88	104	38
North Dakota	127	156	38
Arizona	114	144	25
Wyoming	108	138	14
Alaska	71	90	14
New Mexico	98	127	9
Nevada	69	91	2

Source: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, *Digest of Education Statistics, 1989* (Washington, DC, 1989), Tables 167 and 168.

students from the same state in the interests of diversity of student backgrounds. It is clear that—in contrast to the situation with elementary and secondary schools, whose enrollments are highly circumscribed geographically—further research is needed on the extent to which enrollments in private institutions in a state can legitimately be viewed as reducing the need for public spending for higher education in that state.[13]

3. Public Welfare

In 1986-87, public welfare accounted for 12 percent of the direct general expenditures of state and local governments.[14] The workload measure for this function is the number of persons living in households with incomes below the poverty line.

The chief conceptual problem with this measure is that it does not take into account differences in the cost of living among the states. This means that a dollar of welfare benefits is assumed to be worth the same to the recipient in every part of the country. Using an approach such as that discussed in Appendix C, it would be possible to adjust for these differences, but time has not permitted an adjustment to be incorporated in the present analysis.

The most important practical shortcoming of the workload measure is the unavailability of data for most states for years other than decennial census years. The sample used in the March Current Population Survey, the source of annual estimates of the number of poor people in the nation as a whole, is too small (roughly 60,000 households) to permit statistically reliable estimates to be calculated for any subnational areas but the four major Census regions."

The approach used in the present study to deal with this problem involves extrapolation (to July 1, 1987, the reference date for all demographic data used here) of the Census estimates of poverty populations in 1979.[16] Many extrapolation methods are available, the most obvious being to apply a state's 1979 poverty ratio to its 1987 population. This would produce an arguably better estimate of the 1987 poverty population than direct use of the 1979 figure because it would take into account the considerable diversity in population growth rates among the states. It would assume, however, that poverty rates remained constant (or changed at the same pace) throughout the nation between 1979 and 1987, which we know not to be true.

A better approach, and the one used for this report, involves use of the limited annual estimates of poverty rates for subnational areas that are available for the four major Census regions. The regions' rates in 1979 and 1987, together with the percentage changes in those rates, appear in Table 3. Specifically, a state's ratio of persons in poverty in 1979 is projected to change at the same rate between 1979 and 1987 as the rate of change in the ratio for the Census region in which the state is situated (the percentage change shown in column 3 of Table 3).[17]

Table 3
The Incidence of Poverty by Major Census Region in 1979 and 1987

Region	1979	1987	Change
	(1)	(2)	(3)
United States	12.1%	13.4%	+10.7%
Northeast	10.9	10.9	-
Midwest	10.2	12.6	+23.5
South	15.0	15.8	+5.3
West	11.0	12.6	+14.6

Source: Table B-7.

"In a letter to the author, dated January 29, 1990, Richard Drennon (Legislative Analyst, Florida Advisory Council on Intergovernmental Relations) suggests that an effort be made to extend the analysis to account for the importation and exportation of public expenditures. To the extent that out-of-state tuition, though generally considerably higher than in-state, does not cover the full costs of the education, a state's taxpayers are subsidizing the out-of-state student. In Drennon's terms, the subsidy portion of the state's outlays for higher education provided to the out-of-state student is being exported. By definition, the subsidy being exported must be imported somewhereelse, although the identity of the importing location is not an unambiguous issue, given the transitional residential status of many students in colleges and universities. Though an attempt is not made to pursue this avenue of inquiry in this report, higher education is an especially intriguing function for such an effort

[14] The category "public welfare" in the Census accounts includes all costs associated with the "support of and assistance to needy persons contingent upon their need." It specifically includes payments of cash assistance, payments made directly to private purveyors for such services as medical care and burials, and outlays by public welfare institutions. The costs of services provided to needy persons by state-local hospitals and health agencies are included in the function "health and hospitals." Census, *Government Finances in 1986-87*, p. 120.

[15] Estimates are also compiled and published for residence by type of area: in metropolitan areas over and under 1 million, inside and outside central cities in such areas, and outside metropolitan areas.

[16] The decennial Census in April 1980 asked respondents about their incomes in the preceding calendar year. Hence the estimates of poverty populations produced by the 1980 Census relate to persons who were living in households with incomes below the poverty line in 1979.

[17] In a letter to John Kincaid (Executive Director, ACIR), dated January 29, 1990, commenting on a draft of this report, Len McComb (Director, Office of Financial Management, State of Washington) takes note of the extrapolation method and observes:

> Because Washington is included in the West census region, the CPS data used to calculate poverty rates for Washington is heavily influenced by the largest western state, California. Since the poverty rates in Washington and California vary, the three workloads in the report that are based upon poverty levels . . . are affected more heavily by poverty trends in California than in Washington.
>
> Washington has recently prepared annual poverty estimates for the state and each of its counties. Yet, because similar estimates are not available for all other states, the poverty level calculation that is used in the report most likely cannot be refined until the results of the 1990 census are published.

It is important to recall, in this connection, that no adjustment for differences in the cost of living among the states or within states is provided for in current federal welfare programs—Food Stamps, Aid to Families with Dependent Children, Medicaid. Nor do the official estimates of the poverty population published by the Bureau of the Census take such differences into account.

4. Health and Hospitals

This function accounted for a little less than 9 percent of the direct general expenditures of the states and local governments in 1986-87. The workload measure for health and hospitals combines three variables: (1) the number of persons in the age range most commonly participating in the labor force (16-64) with a work disability, that is, a condition that limits the kind or amount of work they *can* do; (2) the population in households with incomes below 150 percent of the poverty line; and (3) the total population.[18]

A serious problem in developing a workload measure for health and hospitals is that very few data are available by state on a timely and regular basis. Illness rates, work-loss days, and restricted-activity days are distributed among the states in rough proportion to total population. The only major study of these factors by state was completed in 1976. Its findings generally confirm the proportionality distribution.[19]

Indices of bed-days or hospitalization rates would be influenced by state policies to a degree that would make them unacceptable as variables in a workload measure. In view of these considerations, total population is the first of the three variables in this workload measure.

The work-disability variable is intended as a rough proxy for the relative extent to which a state's economy is associated with injuries or illnesses that may increase the demands on its public health and hospital programs. It is not at all clear how credible the variable is for this purpose, but the information necessary for a better variable does not appear to be available.

The premise underlying the inclusion in the measure of the number of individuals in households with incomes under 150 percent of the poverty level is that such persons are much more likely than those with higher incomes to qualify for and to rely on publicly supported health and hospital services.[20]

[18] In his letter to the author, Richard Drennon of Florida observes that the

> ..., health and hospitals measures do not include age as a factor. This affects the Florida expenditure picture for this category as Florida has a large elderly population. The direction of this bias is a subject of some debate since the elderly who migrate to Florida bring financial and medical insurance resources with them.

[19] U.S. Department of Health, Education, and Welfare, *State Estimates of Disability and Utilization of Medical Services* (Washington, DC, 1976).

[20] Although the Census accounts do not break out state and local expenditures under Medicaid, which finances health services for low-income persons, federal grants for the program in federal fiscal year 1987 amounted to nearly half of total state and local outlays for health and hospitals in 1986-87. The estimate of federal grants to the states for Medicaid is from Office of Management and Budget, *Historical Tabla, Budget of the United States Government, 1990* (Washington, DC, 1989), Table 12.3.

5. Highways

Outlays for the construction and maintenance of the nation's system of roads and streets amounted to slightly less than 8 percent of the total direct general expenditures of state and local governments in 1986-87. The workload measure for this function is the weighted sum of the percentage distributions among the states of: (1) the miles traveled by motor vehicles in 1987, and (2) the number of miles of lanes of streets and roads in the nation, other than those located on federally controlled land, on December 31, 1987. The two variables are weighted in rough proportion to their contributions to highway deterioration over time.

It is commonly observed that the cost of constructing a mile of urban road is very high, primarily because of the expense of right-of-way acquisition. At the same time, however, there tend to be many fewer miles of highways per capita in urban than in rural areas. Moreover, a mile of rural highway is not necessarily cheaper to build than one of urban. In mountainous areas, for example, construction costs can be extremely high (and population per square mile very low). No easy answer to this conundrum is available. Fortunately, none really is needed, for initial construction is no longer a major element of the cost of U.S. highways.

The nation's system of streets and roads is largely in place. This is apparent in the steady decline in the rate of increase in the total mileage of surfaced highways during the past three decades (see Table 4). As a consequence, expenditures for entirely new construction are a relatively minor component of total state-local outlays for highways.

Table 4
Average Annual Rates of Growth in Public Road and Street Mileage, Surfaced or Paved, 1904.87

Period	Surfaced[1]	Paved[2]
	(1)	(2)
1904-25	5.48%	n.a.
1925-40	6.26	n.a.
1940-50	222	n.a
1950-60	2.81	4.66%
1960-70	1.43	3.03
1970-79	.72	1.82
1980-87	-	.89
1981-87	.52	-

n.a.—not available

[1] Surfaced mileage includes all paved roadways as well as graded and drained roads with surfaces of mixed soil, gravel, crushed stone, slag, and similar materials.

[2] Paved mileage includes all roadways with, at a minimum, a bituminous surface course suitable for occasional heavy loads.

Note: Reporting of mileage of "surfaced" roads was discontinued in 1979; reporting of "paved" roads was initiated in 1980. The two series are estimated for later and earlier years, respectively, by adding mileage reported to be surfaced by "gravel or stone" to total paved mileage in 1981 and 1987, and by subtracting reported mileage surfaced with "soil, ravel, or stone" from total surfaced mileage in the years 1980-79.

Sources: 1904-1985—U.S. Department of Transportation, Federal Highway Administration, Highway *Statistics: Summary to 1985* (Washington, DC, 1987), Tables M-203, HM-212, and M-200; 1987—Highway *Statistics*, 1987 (1988), Table HM-12.

From this it follows that the costs incurred by state and local governments for highways are largely a function of the outlays required to maintain the existing system. These costs arise from two basic sources: deterioration resulting from traffic and deterioration that is independent of traffic.

The costs attributable to traffic can be approximated by the vehicle-miles traveled in a state. This assigns equal weight to a mile traveled by every type of vehicle. The problem is that heavy trucks do far more damage than automobiles. Clearly, the traffic variable ought to weight travel by large trucks much more heavily than travel by other vehicles.[21] Regrettably, the available data do not permit this to be done for the entire nation with acceptable reliability.[22]

The costs of deterioration attributable to time and the weather can be approximated by the stock of streets and roads in a state. This stock is measured reasonably well by the lane-miles that state and local governments are responsible for maintaining. This argues for excluding lane-mileage on federally controlled land that is maintained by federal agencies.[23]

As for the weighting of the two variables, it is hard to quarrel with a recent report of the U.S. General Accounting Office, which concludes that

> . . . factors need to be weighted according to the components of highway deterioration to reflect relative preservation requirements. Deterioration is determined by use, which can be measured by VMT or motor fuel sales, and by factors unrelated to use, such as weather and time. The factor reflecting the extent of the system to be preserved should be weighted by the share of road deterioration that is unrelated to use. The factor reflecting the level of highway use should be weighted by the share of deterioration that is use-related.[24]

The GAO report eschews recommendations for specific weights. However, an appendix to the report observes that

> Discussions with DOT officials and their cost allocation study of May 1982 suggest that the vast majority of deterioration is use-related, which implies that the weight on VMT should be . . . [in] the range 0.7 to 0.95.[25]

Accordingly, weights of 0.825 and 0.175, respectively, are assigned to vehicle-miles traveled and lane-miles for the workload measure for highways. These reflect the midpoint of the range cited by GAO.

For some state and local governments, snow removal is a major element of outlays for highways. Maintenance costs are also exceptionally high for pavement and structures whose deterioration is accelerated by the use of salt and the freeze-thaw cycle. These costs amount to 25-40 percent of the road and streets budgets of municipalities located in areas with substantial annual snowfall.[26]

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[21] In fact, the critical variable in damage to roads is the weight of a vehicle per axle, which is measured by engineers in "esals" (equivalent standard axle loads). The damaging power of a vehicle rises extremely rapidly with its weight per axle—roughly as the third power of that weight.

> Thus, for example, the rear axle of a typical [two axle] thirteen ton van causes over 1,000 times as much structural damage as that of a car. . . . For all practical purposes, structural damage to roads is caused by trucks and buses, not by cars.

Kenneth A. Small, Clifford Winston, and Carol A. Evans, *Road* Work: *A New Highway Pricing and Investment Policy* (Washington, D C The Brookings Institution, 1989), p. 11.

[22] The 1982 Cost Allocation Study by the Federal Highway Administration estimates that the heaviest trucks cause 18 times as much road-damage cost per mile traveled as "lighter" vehicles. See the discussion of the available measures of heavy-truck travel in U.S. Department of Transportation, Federal Highway Administration, ***Section 137 Studies: Climate and Apportionment, and Interstate 4R Apportionment*** (Washington, DC, 1983), pp. IV-23-26.

[23] Estimates of lane-mileage by state were published by the Federal Highway Administration for the first time in 1985. Unfortunately, the information is limited to nonlocal highways. The necessary estimates of local lane-mileage are derived for the present study from the published data using two assumptions: (1) all "local" mileage is two lane, and (2) all mileage on federally controlled land is two lane and would be classified in FHA reports as local if it were not reported separately.

[24] U.S. General Accounting Office, *Highway Funding: Federal Distribution Formulas Should Be Changed* (Washington, DC, 1986), p. 31. The current formula for the apportionment of federal funds under the Intentate 4R Program, established in 1981, assigns intentate lane-mileage and vehicle-miles traveled on the interstate system weights of 55 percent and 45 percent, respectively.

[25] Ibid., p. 67. Small, Winston, and Evans argue that the effects of axle weight, age, and weather

> . . . are mainly interactive—it is weathering of the pavement in conjunction with heavy axles that causes the problems. . . . Hence aging and weathering leave a pavement more vulnerable to damage by heavy loads, thereby raising the extra maintenance cost caused by those loads. (p. 20)

[26] Rafuse, "A Representative Expenditure Approach . . . ," p. 158, note 40. Two state officials who submitted comments on a draft of the executive summary of this report urge the inclusion of a variable relating to weather conditions in the workload measure for highways. In a letter to John Kincaid, dated February 14, 1990, Lewis N. Dodak (Speaker of the House, State of Michigan) suggests taking into account "predominant weather conditions" as well as "the major type of vehicle use (i.e., trucks versus cars)."

In his letter to Kincaid, Edward Lashman of Massachusetts comments that

> ACIR should consider the addition of data on weather conditions (particularly freeze thaw cycle related information such as heating degree days). Weather is an important factor in increasing road maintenance, in addition to vehicle miles traveled and lane miles of roads.

Lashman further suggests, in this connection, that

> . . . ACIR should explore Federal Highway Administration's data on the cost to completion of the Interstate system. The state share of such projects will constitute a significant capital expenditure in coming years; ACIR could convert the state share figures into an annualized capital expenditure stream for index [workload measure] purposes.

Unfortunately, the data required to construct a state-by-state index of snowfall are not available. If they were, it is not obvious how such an index would deal with the extreme variability of the climate in some of the larger states. In California, for example, winter conditions are experienced only in relatively unpopulated areas of the state.

A recent report to the Congress by the Federal Highway Administration specifically addresses the need for and feasibility of introducing weather factors into the formulas for federal highway grants. The report acknowledges the importance of weather as a cost factor in construction, but concludes that

> ...no single surrogate can represent all of the combined effects of temperature and moisture, let alone their interactions with traffic and soil. Too many different weather-related mechanisms act upon a highway to capture them all within a single measure (or even a limited number of measures).[27]

Moreover,

> Because of this interdependence among factors affecting highways, the impacts of weather cannot be identified in an absolute sense, e.g., all weather-related effects on highways can not be represented by some percentage of design or repair costs.[28]

In sum, it is clear that—for the present analysis—no good method is currently available for adjusting the workload measure to take into account the unquestionably significant cost implications of the climatic variation across the nation.

6. Police and Corrections

In 1986-87, police and corrections accounted for 6 percent of the direct general expenditures of state and local governments. The workload measure is the sum of the equally weighted percentage distributions among the states of the population 18-24 years old, the number of murders, and the total population.[29]

The overall crime rate (crimes reported to the police) in each state from the FBI's Uniform Crime Report is published annually. Regrettably, the rate is heavily influenced by actual police practices, reporting procedures, and expenditures for protective services. These are all elements of policy from which a workload measure must abstract.

Because they are relatively free of reporting biases and the variability of police practices, victimization rates would be preferable to crime rates. However, the sample of the National Crime Survey conducted by the Bureau of the Census is not large enough to permit estimates for every state. The reporting of murders is minimally subject to the problems that contaminate rates for other crimes. The number of murders (the reported data include nonnegligent manslaughter) can probably be regarded as a good indicator of the relative level of violent behavior in a state.[30]

In 1986, nearly one-third of all those arrested were 18-24 years old, though persons in this age group made up less than 12 percent of the population.[31] This age group is commonly used as an indicator of an area's potential for a wide range of serious crimes.[32]

Many police responsibilities have little to do with crime. They include such tasks as accident investigation, traffic control, and enforcement of municipal safety and parking ordinances. The police effort required for these activities probably depends overwhelmingly on the size of an area's population, so this variable is included in the workload measure for this function.

The number of murders and the size of the 18-24 population can also serve as crude indicators of the relative costs of corrections, on the assumption that these costs are directly related to the incidence of serious crime. This abstracts, as the measure should, from the large differences among the states in policies relating to corrections—including judicial practices, statutory sentencing rules, and parole procedures.

7. All Other Expenditures

The direct general expenditures of state and local governments for all functions other than those discussed in the preceding pages account for roughly 32 percent of total outlays. Table 5 shows the entire detail available in the Census accounts for these expenditures. With the exception of interest on general debt, which is well over 6 percent of state-local general expenditures, none of the remaining functions accounts for more than 2 percent. In the case of interest, resident population is arguably the only reasonable candidate for the workload measure.

For a number of the individual functions displayed in Table 5, workload measures more directly relevant than resident population readily suggest themselves—the

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[27] Federal Highway Administration, *Section 137 Studies*, pp. I-6 and 1-7.

[28] Ibid., p. III-4.

[29] In his letter to the author, Richard Drennon comments that

> ...measures related to Police and Corrections expenditures may need further refinement. The male population age 18-34 may be better than population age 18-24 as a Florida expenditure indicator. Statistics, such as number of armed robberies, from the FBI Uniform Crime Report may represent a more sensitive expenditure demand than number of murders committed. Additionally, the resident population for Florida does not account for the transient or tourist population. The direction and magnitude of the influence upon police and corrections expenditures for Florida using your indicators is unknown.

[30] In his letter, Edward Lashman of Massachusetts notes:

> The murder rate is in some cases a poor proxy for the overall level of crime. For example, many Northeast states have lower murder rates than the rest of the nation, but higher overall rates of violent or nonviolent crime. ACIR should use such a broader measure.

[31] U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1988* (Washington, DC, 1987), pp. 13 and 165.

[32] For example, see Burt Solomon, "Fewer Teenagers Means Fewer Crimes," *National* Journal 18 (March 8, 1986): 553.

Table 5
Direct General Expenditures by State and Local Governments: Functions Included in the "All Other" Category for Which the Workload Measure is Resident Population, 1986-87

Function/Subfunction	Amount (millions)	Percentage of Total Outlays
	(1)	(2)
Total for the "All Other" Category	**$206,004**	**31.5%**
Environment and Housing, Subtotal	**53,805**	**8.2**
Agriculture	3,242	.5
Natural Resources	6,496	1.0
Parks and Recreation	10,978	1.7
Housing and Community Development	11,766	1.8
Sewerage	14,862	2.3
Sanitation Other than Sewerage	6,462	1.0
Interest on General Debt	**41,816**	**6.4**
Governmental Administration, Subtotal	**34,895**	**5.3**
Financial Administration	12,841	2.0
Judicial and Legal	10,106	1.6
General Public Buildings	4,853	.7
Other Governmental Administration	7,096	1.1
All Other, Subtotal	**75,487**	**11.6**
Other Education	9,636	1.5
Libraries	3,274	.5
Employment Security Administration	2,752	.4
Veterans' Services	129	*
Air Transportation	4,876	.8
Parking Facilities	757	.1
Water Transport and Terminals	1,744	.3
Transit Subsidies	244	*
Fire Protection	10,910	1.7
Protective Inspection and Regulation	4,420	.7
Miscellaneous Commercial Activities	297	
General Expenditure, N.E.C.	36,448	5.6

*Less than 0.05 percent.

Note: Detail may not add to totals because of rounding.

Source: U.S. Department of Commerce, Bureau of the Census, *Government Finances in 1986-87* (Washington, DC, 1988), Tables 22 and 29.

number of resident veterans, for example, for veterans' services. On the whole, however, resident population is not an unreasonable measure for virtually all the functions identified in Table 5. Therefore, in lieu of an effort to disaggregate further, the outlays for all of the functions are distributed among the states in proportion to total resident population.

In response to inquiries about the substantial differences among some of the states in drafts of this report that displayed only the total for the entire "all-other" category, a fourfold break of the category is presented. This approach sheds light on the sources of the often large differences in spending for the functions for which specific workload measures are not developed. The break displayed throughout is:

- Environment and housing;
- Interest on general debt;
- Governmental administration; and
- Allother.

Variation in Public input Costs

Differences in the prices governments pay to acquire the resources they use are second in importance only to differences in workloads in explaining the variation among the states in the costs of public service responsibilities. Unfortunately, no measure of the variation in average unit costs among the states is currently available from any source. This section reports the results of an effort to develop and estimate a measure of relative input prices. The measure is used to adjust the estimates of representative expenditures for differences in the unit costs of public inputs among the states.[33]

The approach estimates an index of relative labor costs using detailed information on individual earnings in each state from the 1980 Census of Population. Although the data are earnings in calendar year 1979, the basic economic realities underlying them change very slowly, so the results are interesting despite the age of the data used. Moreover, should the approach pass muster with readers of this report, the findings of the 1990 Census will be available in the next few years, so more timely estimates of relative earnings could be available fairly soon.

The premise of the approach is that differences in the average earnings of full-time employees—controlling for sex, age, and education—are a good indicator of relative unit labor costs for all employers, including governments, in an area or state. Average earnings vary for many reasons, including differences in the cost of living, the power of labor unions, and the capital available per worker.

The prices of some factors of production almost certainly vary more substantially than labor costs—land, for example, in rural and urban areas. The prices of most goods (computers, pencils, police cars) are set in nationwide markets, however, varying only with transportation costs and with the intensity of competition among local suppliers. Indeed, the prices of many goods may be lower in urban than in rural areas, when dealer competition is taken into consideration, thus partially offsetting differences in land prices. Unfortunately, the unavailability of a systematic body of information on the variation in these prices permits no better assumption than that, on balance, they do not vary significantly among the states.

Given these considerations, an overall index of unit input costs can be calculated by weighting the index of

[33] A detailed discussion of these issues appears in Appendix C.

Table 6
Relative Costs of Producing Public Services: Index of Unit Labor Costs and Implicit Index of All Input Costs, 1987

Rank and State	Unit Labor Cost Index	Implicit Index of Input Costs
	(1)	(2)
United States	100.0	100.0
Standard Deviation	7.5	3.6
1. Alaska	134.4	117.5
2. Michigan	111.9	106.2
3. Illinois	109.7	105.0
4. Connecticut	108.5	104.4
5. New Jersey	108.1	104.2
6. Maryland	105.7	103.1
7. California	105.5	103.0
8. Ohio	103.9	102.2
9. Washington	1029	101.8
10. Texas	1023	101.4
11. Louisiana	102.1	101.4
12. Minnesota	102.0	101.3
13. New York	100.7	100.7
14. Delaware	100.3	100.5
15. Indiana	100.1	100.4
16. Colorado	99.6	100.2
17. Pennsylvania	99.6	100.2
18. Wisconsin	98.4	99.6
19. Oregon	97.9	99.4
20. Virginia	97.7	99.2
21. Nevada	97.6	99.2
22 Kentucky	97.2	99.0
23. Arizona	96.8	98.8
24. Hawaii	96.0	98.4
25. Wyoming	95.8	98.3
26. Missouri	95.6	98.3
27. District of Columbia	95.6	98.2
28. Massachusetts	95.6	98.2
29. Utah	94.7	97.7
30. Iowa	94.3	97.7
31. Kansas	94.2	97.6
32 Oklahoma	94.0	97.5
33. Georgia	93.7	97.3
34. West Virginia	93.4	97.2
35. Rhode Island	926	96.8
36. Tennessee	91.6	96.3
37. Florida	90.6	95.9
38. Alabama	90.6	95.9
39. Nebraska	89.1	95.2
40. New Mexico	88.4	94.9
41. South Carolina	86.8	94.0
42 North Carolina	86.6	93.9
43. North Dakota	86.4	94.2
44. New Hampshire	86.0	93.6
45. Arkansas	85.6	93.5
46. Idaho	85.3	93.2
47. Montana	85.3	93.5
48. Mississippi	83.7	92.7
49. Vermont	79.0	90.4
50. Maine	17.4	89.6
51. South Dakota	77.1	90.1

Note: **The implicit index for all costs is a weighted average of the unit-cost index for each function. The weights are the estimates of representative expenditures. In other words, the index for a state is the estimate of its total, price-adjusted, representative expenditures divided by the estimate of its unadjusted representative expenditures (multiplied by 100).**

Sources: Tables A-2A (Scaled), A-2U, and C-3.

labor costs and the implicit index of all other costs (in which every state has a value of 100) by the proportions of the direct general expenditures of state and local governments paid for the two types of factors of production.

Employee compensation accounts for a different share of outlays for each function: the range is from 81 percent for police and corrections to zero for interest on general debt.[34] Therefore, separate weights reflecting the specific ratios are used to calculate an input-cost index for each function.

The index of unit labor costs appears in column 1 of Table 6, and the weighted average of the index for each category of general expenditures is shown in column 2. The range in labor costs is from 77 percent of the U.S. average in South Dakota to 134 percent in Alaska. The range in the index of all input costs is roughly half that—from 90 in South Dakota to 118 in Alaska.[35] The values of the index for 17 states lie above the national average.[36] The states in Table 6 are ranked by the index of unit labor costs.

A general measure of the variability in the cost indices is the standard deviation, which is shown in the second line of Table 6 for both indices.[37] These statistics indicate that the variability in unit labor costs is relatively small among the states. Although only 30 of the 51 lie between 92.5 and 107.5 (the range denoted by the standard deviation), the 30 include most of the most populous states, so the population-weighted standard deviation is somewhat smaller than it would be if each state were weighted equally in the calculation. The standard deviation for the implicit index of all input costs is roughly half that for the labor-cost index, the relationship expected given the way it is calculated (see footnote 36).

[34] See Appendix C.

[35] See Appendix C for a discussion of some reasons why this estimate may understate the amount by which unit input costs in Alaska exceed averages for the nation as a whole.

[36] The values of the overall index for five states in the neighborhood of the national average are statistical anomalies. That is, the implicit index for a state is an average of its labor cost index and an "index" for all other inputs whose value is 100 for every state. This implies that a state's overall index must lie between its labor cost index and 100, yet this result does not quite obtain in the cases of the states ranked 13-17. The discrepancies appear to lie within such small bounds as to be attributable to rounding, however.

[37] The standard deviation of a set of data is the square root of the mean of the squared differences between the individual observations and their mean. It indicates the average variability of the data about the mean. The larger the standard deviation, the larger is the dispersion in the data. If the distribution of the observations resembles a normal curve, roughly two-thirds of the observations (34 states) lie within one standard deviation above and one standard deviation below the mean. Weighting the state values by population in calculating the standard deviation dampens the influence of the extreme values of Alaska and a few other small states.

Chapter 4

Estimates of Representative Expenditures

This chapter presents estimates of representative expenditures for state and local governments in the 50 states and the District of Columbia and compares them with the actual outlays of those governments in fiscal years ending between July 1, 1986, and June 30, 1987.[1]

The estimates of representative expenditures are adjusted to allow for the estimated variation in input costs. The estimates are employed to consider the implications for a set of measures of state fiscal capacity if they, rather than resident population, are used as the indicator of the relative costs of the service responsibilities of the states.

The final section of the chapter expresses the estimates of fiscal capacity as the gaps between the revenues a state's governments would raise if they had a national-average tax system and the costs of providing a national-average level of public services. Two sets of gap estimates are represented: the first abstracts from federal grants; the second considers the total amount of federal grants actually received by the governments in each state.

Actual Expenditures

Table 7 summarizes the actual direct general expenditures of state and local governments in 1986-87, by function. The information is expressed in per capita terms and indexed to the national average to facilitate comparisons among the states. Display of the estimates in this form focuses attention on relative spending for each function; no information is conveyed about relative spending among the functions or about the absolute size of the outlays. (The exhibits in the first two lines of the table provide perspective on these aspects: they display the percentage distribution of total outlays among the 10 functions and the per capita magnitude of the spending on each.) The data underlying Table 7 appear in Appendix B.

The variability of government spending across the nation is well known, but the extent of the variation is brought home by Table 7. The range in total expenditures is very large: from 71 percent of the per capita national average in Arkansas to 371 percent in Alaska, which is in a class by itself. The state with the second highest outlays per capita is Wyoming, at 165 percent of the national average.

It is interesting to note that the range has decreased significantly in the past few years. In 1983-84, barely three years earlier, Arkansas' spending was virtually the same relative to the national average (at 70 percent), but Alaska's was 406 percent, and Wyoming's 183 percent.* The steep declines in relative spending in Alaska and Wyoming are due largely to the plunge in the value of oil and gas production during the period, which sharply curtailed state revenues from that source.

The ranges in expenditures for the individual functions are, as would be expected, wider in every case than the ranges in the total. On the low side, in the case of public welfare, three states (Alabama, Nevada, and Texas) spend less than half the national average per capita. At the same time, the spending of four states (Alaska, Massachusetts, New York, and Rhode Island) and the District of Columbia exceeds 150 percent of the per capita average.

No state's outlays are under half the national average for education. Alabama's spending is the lowest, at 65 percent of the U.S. average, for elementary and secondary education—the actual outlays of Alaska and Wyoming are more than 1.5 times higher than the average.

Pennsylvania, at 53, sets the low end of the range for higher education. Alaska is at the top of the range, followed closely by Wyoming, Delaware, Iowa, North Dakota, and Utah—all with per capita outlays more than 50 percent above the national average.

Maine, Maryland, and Vermont spend less than half the per capita national average for health and hospitals, while the District of Columbia and Wyoming spend more than twice that average.

[1] A number of governments whose fiscal years end on August 31 or September 30 are treated by the Census Bureau as though their years ended on the preceding June 30. The August exceptions are the state government of Texas and that state's school districts. The September exceptions are the state governments of Alabama and Michigan, the District of Columbia, and the school districts of Alabama.

[2] Robert W. Rafuse, Jr., "A Representative Expenditure Approach to the Measurement of the Cost of the Service Responsibilities of the States," in Rafuse (ed.), *Federal-State-Local Fiscal Relations: Technical Papers*, Vol. I (Washington, D C U.S. Department of the Treasury, Office of State and Local Finance, 1986), p. 161.

Table 7

Indices of the Actual Direct General Expenditures of State and Local Governments Per Capita, by Function, 1986.87

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other Expenditures
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Scale Exhibit:											
Percent	100.0%	24.0%	9.2%	12.3%	8.7%	8.0%	6.3%	8.2%	6.4%	5.3%	11.5%
Per Capita	$2,685	$644	$247	$329	$234	$214	$170	$221	$172	$143	$310
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Standard Deviation	25.8	19.6	25.3	42.2	34.5	37.7	40.3	31.6	67.9	35.2	51.0
Alabama	77.3	65.3	104.5	47.8	138.8	81.2	61.8	67.2	79.4	73.6	78.6
Alaska	370.7	283.8	174.1	168.6	104.5	518.3	226.8	368.2	1,048.7	502.5	665.7
Arizona	104.4	108.3	137.8	65.2	53.8	169.5	134.1	102.0	113.9	119.5	77.4
Arkansas	71.0	82.9	81.1	69.1	74.0	99.7	47.4	59.8	62.9	60.1	48.5
California	113.9	99.8	122.0	124.1	114.9	65.8	149.4	126.5	87.9	124.8	139.1
Colorado	105.6	112.9	117.3	85.1	88.3	116.0	103.9	109.5	121.8	138.2	82.8
Connecticut	108.9	105.7	63.9	112.3	88.2	118.3	91.8	97.3	134.2	125.8	153.1
Delaware	111.3	102.6	161.1	65.6	63.0	127.1	103.5	112.5	211.1	138.9	99.2
District of Columbia	192.3	120.1	55.7	272.7	207.4	87.2	445.1	276.3	183.1	254.3	205.1
Florida	87.6	89.0	54.5	52.0	103.5	81.6	116.6	111.0	100.5	109.3	91.0
Georgia	89.3	96.7	76.7	63.6	184.6	92.6	82.2	77.4	56.7	85.8	68.7
Hawaii	105.4	73.8	108.9	86.6	79.1	63.7	106.1	154.1	141.1	145.7	163.7
Idaho	77.5	77.8	114.2	51.7	83.3	117.2	61.3	85.1	45.6	79.3	63.8
Illinois	93.8	90.9	92.0	102.5	67.3	102.6	93.6	100.6	93.4	89.9	103.2
Indiana	80.5	89.2	115.6	77.5	90.8	82.2	57.1	68.2	53.3	70.9	69.8
Iowa	93.6	90.9	150.0	91.9	107.0	146.7	62.5	78.8	66.2	82.4	57.6
Kansas	92.8	98.9	122.6	65.0	85.1	146.2	67.3	66.3	108.6	106.6	72.4
Kentucky	77.7	68.7	89.9	82.1	55.5	115.9	58.4	77.1	103.3	75.9	69.9
Louisiana	91.9	80.0	84.1	71.8	125.2	106.2	85.2	99.9	145.9	84.2	81.1
Maine	92.2	96.5	82.5	129.8	49.9	1124	60.8	102.8	91.0	81.6	83.9
Maryland	102.9	97.9	106.9	94.2	48.4	120.3	124.6	130.5	113.9	100.2	112.0
Massachusetts	111.5	98.6	71.2	155.0	118.8	77.5	97.4	122.4	107.9	110.7	144.3
Michigan	107.9	113.9	130.3	140.3	122.7	82.5	108.1	78.3	72.4	98.0	95.0
Minnesota	122.2	116.5	135.5	145.7	110.4	146.9	77.0	124.3	151.3	109.7	102.8
Mississippi	75.5	73.6	91.2	64.4	138.4	98.1	49.2	59.7	60.9	65.2	53.7
Missouri	77.0	84.6	90.0	66.0	93.7	88.2	75.3	71.6	66.7	68.6	56.8
Montana	107.3	122.2	92.1	92.9	63.2	177.0	62.9	117.3	124.1	114.8	93.2
Nebraska	92.3	100.1	125.7	79.1	113.2	132.5	61.3	70.8	74.5	75.9	69.5
Nevada	104.6	89.8	79.8	49.3	82.2	130.0	150.0	112.1	142.6	153.4	139.7
New Hampshire	83.3	93.7	72.2	77.8	52.4	121.8	67.0	71.5	115.2	84.6	72.4
New Jersey	113.0	117.4	83.7	106.5	74.6	111.0	116.3	114.7	146.2	119.0	140.5
New Mexico	100.3	105.2	120.1	66.7	86.6	148.4	97.1	89.2	129.9	114.3	74.1
New York	145.2	133.6	87.1	194.8	168.7	99.7	163.6	140.5	149.9	132.5	173.6
North Carolina	77.4	88.8	119.2	59.9	86.7	75.3	80.0	59.9	44.8	74.9	63.4
North Dakota	107.9	101.5	157.9	106.8	70.7	156.8	45.2	96.2	96.3	87.0	135.1
Ohio	90.7	97.7	98.5	118.9	87.8	82.2	88.6	83.1	71.4	86.5	67.1
Oklahoma	82.5	90.5	94.6	78.7	89.1	94.0	64.8	87.1	80.3	77.7	57.1
Oregon	104.6	113.6	122.9	64.6	75.2	107.1	87.9	103.0	150.2	120.3	112.2
Pennsylvania	87.5	98.3	52.7	112.7	55.3	100.8	72.2	70.9	106.4	82.1	93.5
Rhode Island	103.8	92.5	82.7	151.6	84.1	77.3	82.6	83.9	155.0	106.1	123.3
South Carolina	79.0	88.1	108.0	55.1	125.8	623	75.2	66.6	61.2	63.3	66.2
South Dakota	94.7	87.9	95.0	66.3	51.8	161.8	57.6	76.0	107.8	85.2	155.8
Tennessee	77.4	67.1	84.4	76.1	113.4	89.4	67.7	74.4	64.7	68.7	77.4
Texas	86.5	103.3	103.9	48.2	80.4	112.2	77.6	92.7	107.0	76.4	59.2
Utah	94.8	100.1	153.1	71.0	74.5	100.1	83.8	95.9	93.7	109.1	73.4
Vermont	102.4	110.3	131.6	105.3	41.9	158.1	56.5	78.5	100.0	110.9	106.3
Virginia	89.4	98.4	109.6	57.2	94.3	118.0	90.6	99.5	67.6	102.5	63.1
Washington	103.4	105.7	120.1	95.5	83.7	116.2	92.2	124.3	74.2	102.0	108.0
West Virginia	84.7	96.0	76.0	81.9	61.8	124.6	37.9	67.1	103.7	82.8	89.1
Wisconsin	105.9	107.8	134.1	148.0	73.4	121.4	87.0	110.3	82.2	87.6	77.1
Wyoming	164.7	183.5	162.0	70.5	225.5	306.7	105.7	145.8	195.1	163.3	113.7

Sources: Tables B-1 and B-7.

South Carolina's outlays are the lowest per capita for highways, but they are 62 percent of the national average.

Alaska's spending for highways tops five times the national average, while Wyoming's index is 307. West Virginia spends only 38 percent of the average for police and corrections, the lowest ratio for any state for any function.' The District of Columbia sets the high end for this function, with outlays exceeding 445 percent of the national average.

Alaska's per capita outlays for interest on general debt are far and away the highest for any state for any function—at more than 10 times the national average. This level of spending is especially interesting in light of the interest earned by Alaska's governments, which amounts to more than 26 times the national per capita average and is nearly twice the amount of the state's payments of interest on general debt.[3] At less than 45 percent of the national per capita average, North Carolina's outlays for this function are lower than those of any other state.

State and local expenditures in the "all-other" categoty range from a spare 49 percent of the national average in Arkansas to 666 percent in Alaska.[4]

A more general measure of the variability in per capita expenditures is the standard deviation? The population-weighted standard deviation of each index is shown in the second line of Table 7 and of each state table in the remainder of this report. This measure indicates that per capita outlays are most disparate among the states for interest on general debt. The second most disparate function is "all other" expenditures, a result that is difficult to interpret given the open-ended nature of that category. The third largest standard deviation—by a tiny margin—is for public welfare, and the fourth largest is for police and corrections. The least variability in per capita spending is for elementary and secondary education—the standard deviation is only 20.

The Estimates of Representatlve Expenditures

The estimates of representative expenditures, adjusted for input-cost differences, are presented in Table 8.[6] As in the case of actual outlays just considered, the estimates are expressed as indices of per capita values, with the national average equal to 100. The range in the index for the total of the estimates is far smaller than that in actual outlays.

The state whose cost of implementing the representative level of total spending per capita would be highest is Mississippi. The per capita outlays of the governments in that state would have to exceed the U.S. average by more than 13 percent in order for it to provide the national-average level of public services. The per capita cost of the average level of services is lowest in New Hampshire (85 percent of the national average), followed closely by Rhode Island (86), Massachusetts (87), Maine and Vermont (89), and Hawaii and Pennsylvania (90).[7] In addition to Mississippi, the indices of only three states (Alaska, Louisiana, and New Mexico) exceed 110.[8]

From a different perspective, the standard deviation of the index of total representative expenditures is significantly less than one-third that in actual outlays. However, the standard deviation of the index for highways is more than 60 percent of that in actual outlays for the function, as is the standard deviation for elementary and secondary education.

Three considerations account for the relatively minor variation in the overall index of representative expenditures. The first is the absence of variation among the states in per capita outlays for the last four categories of expenditures—the analysis assumes that per capita representative outlays (unadjusted for unit-cost differences) are the same in all states for each of these categories. Hence the only variation in the per capita estimates for these functions is that attributable to input-cost differences, which are nonexistent for interest on general debt. The four functions accounted for 32 percent of actual state-local outlays in 1986-87.

The second consideration is that the variation in the workload measures for the other six functions is smaller than that in the indices for actual expenditures. In other words, factors in addition to differences in the "need" for public services enter into the determination of the actual

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[3] U.S. Department of Commerce, Bureau of the Census, *Government Finances in 1986-87* (Washington, DC, 1988), pp. 46 and 48; and Table B-7.

[4] The treatment by the Governments Division in the Census accounts of special institutions in two states is questioned in a letter to the author by Dave Clark, Executive Budget Analyst, Office of Management and Budget, State of North Dakota (January 26, 1990). The Bank of North Dakota and the State Mill and Elevator are both commercial entities owned and operated by the state government. In South Dakota, an apparently large cement plant is owned by the state government In the Census accounts for both states, these publicly owned enterprises are classified as miscellaneous commercial activities, and their total outlays are, as a consequence, treated as general expenditures of the two state governments. The effect is that North and South Dakota rank first and second among the states in total outlays for this function.

A report prepared by the Office of Management and Budget, State of North Dakota, argues that these institutions in both states are "unique...public enterprises whose expenditures should not be counted as general state spending"—A *Comparison of Per Capita State and Local Government Expenditures in North Dakota to Surrounding States for Fiscal Year 1987* (Bismarck, 1989), p. 12. If this treatment were adopted by Census, the effect would be to reduce North Dakota's index for per capita "all other" expenditures in Table 5 from 135 to 82. South Dakota's index would be reduced from 156 to 146.

In a letter to the author, dated January 11, 1990, Brad Pierce (Policy Analyst, Division of Policy, Office of Management and Budget, Office of the Governor, State of Alaska) suggests that

> If the all other expenditures category includes Permanent Fund dividend appropriations from the state's $10 billion public savings account, they should probably be removed since PFDs have nothing to do with provision of public services.

[5] See footnote 36, Chapter 3, for a definition of the standard deviation and a discussion of its interpretation.

[6] The dollar estimates underlying the indices appear in Table B-4, in Appendix B.

[7] Note that this reference to per capita "cost" relates to "needs" rather than to the efficiency with which services are delivered by the governments in a state.

[8] See Appendix C for a discussion of some reasons why the index may understate the cost of the representative level of public services in Alaska.

Table 8

Indices of the Estimates of Representative State-Local Expenditures Per Capita Adjusted for Input-Cost Differences, by Function, 1986-87

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other Expenditures
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Standard Deviation	6.4	11.9	6.0	21.1	8.9	21.6	16.3	2.5	0.0	4.9	2.0
Alabama	108.8	107.9	94.9	145.5	115.5	117.5	97.4	97.0	100.0	94.3	97.7
Alaska	121.3	150.2	130.3	92.8	104.6	113.8	140.9	111.7	100.0	122.6	109.1
Arizona	102.6	103.0	97.2	110.6	104.9	112.3	94.3	99.1	100.0	98.3	99.3
Arkansas	106.0	105.2	88.4	144.8	117.7	111.4	86.2	95.4	100.0	91.0	96.4
California	101.3	101.1	103.6	96.0	102.8	93.7	113.7	102.0	100.0	103.9	101.6
Colorado	98.1	101.1	102.2	84.6	92.1	110.1	90.0	100.1	100.0	100.1	100.1
Connecticut	91.7	89.7	105.1	59.3	83.5	97.0	**92.2**	103.0	100.0	105.9	102.4
Delaware	96.1	87.1	105.1	91.7	95.5	109.1	89.9	100.3	100.0	100.6	100.2
District of Columbia	102.9	73.0	98.7	140.7	117.4	58.4	204.8	98.7	100.0	97.5	99.0
Florida	92.6	79.1	**86.5**	103.9	99.3	89.1	101.3	97.0	100.0	94.3	97.7
Georgia	108.6	109.9	99.9	127.9	112.4	119.1	110.9	98.1	100.0	96.3	98.5
Hawaii	89.6	85.5	102.2	81.1	83.5	73.4	85.8	98.9	100.0	97.8	99.1
Idaho	100.1	113.0	86.4	104.3	93.5	119.1	68.7	95.3	100.0	90.9	96.3
Illinois	102.4	105.8	106.4	100.7	101.6	84.4	108.3	103.5	100.0	106.7	102.7
Indiana	99.3	106.6	101.6	86.9	94.3	102.8	90.1	100.2	100.0	100.4	100.2
Iowa	95.8	97.0	94.5	90.1	88.2	120.3	71.0	98.3	100.0	96.7	98.7
Kansas	98.4	96.2	94.4	89.9	89.9	145.7	79.9	98.3	100.0	96.6	98.7
Kentucky	108.3	108.5	101.0	135.7	120.4	105.8	96.5	99.2	100.0	98.5	99.4
Louisiana	110.4	110.1	105.6	145.2	119.1	87.5	115.9	100.9	100.0	101.8	100.7
Maine	89.0	83.4	85.8	91.4	88.7	108.5	63.7	92.6	100.0	85.8	94.3
Maryland	97.0	94.8	108.2	**77.0**	94.5	93.2	112.5	102.1	100.0	104.0	101.6
Massachusetts	87.3	81.4	101.6	69.3	84.1	81.4	77.6	98.7	100.0	97.5	99.0
Michigan	108.3	115.2	111.0	95.8	109.7	104.6	128.8	104.2	100.0	108.1	103.2
Minnesota	98.0	99.0	101.8	85.2	90.7	122.9	78.6	100.9	100.0	101.7	100.7
Mississippi	113.3	112.9	91.8	181.7	124.2	106.7	96.2	94.7	100.0	89.8	95.9
Missouri	100.2	95.0	95.1	108.8	102.8	114.4	96.0	98.7	100.0	97.5	99.0
Montana	102.0	100.0	86.7	100.9	91.1	186.7	71.9	95.3	100.0	90.9	96.3
Nebraska	96.2	90.6	91.5	94.8	86.3	146.8	73.1	96.5	100.0	93.3	97.3
Nevada	95.9	95.3	97.6	73.5	89.6	122.0	97.3	99.4	100.0	98.8	99.5
New Hampshire	85.4	82.1	93.8	60.4	77.2	102.3	71.3	95.5	100.0	91.3	96.5
New Jersey	93.1	92.3	104.1	71.1	89.2	85.2	**90.5**	102.9	100.0	105.6	102.2
New Mexico	110.6	112.1	93.1	146.4	108.5	137.7	98.6	96.3	100.0	92.9	97.2
New York	95.3	89.6	100.2	98.5	97.8	65.1	113.3	100.4	100.0	100.8	100.3
North Carolina	98.6	96.6	94.9	111.8	100.6	101.7	90.6	95.7	100.0	91.7	96.7
North Dakota	105.2	96.6	91.6	110.3	88.4	223.9	65.0	95.6	100.0	91.6	96.6
Ohio	99.9	105.0	101.5	93.6	101.8	90.1	92.8	101.5	100.0	102.9	101.1
Oklahoma	103.8	106.2	95.0	102.9	104.7	137.9	92.0	98.2	100.0	96.5	98.6
Oregon	97.9	99.2	94.0	89.2	101.8	111.4	85.1	99.5	100.0	99.0	99.6
Pennsylvania	90.4	85.6	97.8	76.6	92.3	80.2	87.4	100.1	100.0	100.1	100.1
Rhode Island	85.8	77.9	97.7	73.8	88.4	69.4	77.4	97.7	100.0	95.6	98.2
South Carolina	103.3	102.9	97.0	125.5	104.7	109.6	96.1	95.8	100.0	91.8	**96.7**
South Dakota	104.7	91.4	83.3	146.3	96.8	193.0	60.3	92.5	100.0	85.6	**94.2**
Tennessee	103.5	100.6	94.8	126.4	110.3	108.1	97.0	97.4	100.0	94.9	98.0
Texas	109.7	120.8	102.6	114.3	101.6	115.6	116.4	100.9	100.0	101.8	100.7
Utah	104.9	140.7	97.4	86.4	87.1	100.3	77.9	98.4	100.0	97.0	98.8
Vermont	89.1	82.5	90.6	84.5	84.2	118.2	66.6	93.2	100.0	86.8	94.7
Virginia	98.6	96.1	105.2	90.8	96.5	109.6	97.9	99.4	100.0	98.9	99.5
Washington	98.6	101.6	100.9	82.5	98.8	108.1	90.4	101.2	100.0	102.3	100.9
West Virginia	102.7	109.1	94.2	116.2	114.5	94.5	81.5	98.0	100.0	96.1	98.4
Wisconsin	94.2	93.7	100.0	77.9	85.3	113.1	80.4	99.7	100.0	99.3	99.7
Wyoming	102.2	113.5	93.3	65.9	78.1	197.4	71.7	98.8	100.0	97.7	99.1

Sources: Table B-3.

levels of spending. These factors include, as discussed earlier, differences in the unfathomable complex of variables commonly referred to as voter tastes for public services.

The third reason for the modest variability in the index of total representative expenditures is that, for many states, the values of the indices for different functions are offsetting. That is, a state's high "needs" for one type of public service are often offset by a below-average workload for another.

Abstracting from the functions displayed in columns 8-11 of Table 8, the indices of only one state exceed 100 for all functions. That state is Texas, whose overall index (at 110) places it fifth in the nation. The relative needs of six states exceed the national average for all but one of the functions. They are Alaska and Michigan (public welfare), Georgia (higher education), Illinois and Louisiana (highways), and Kentucky (police and corrections).

The indices of two states are under 100 for all 10 functions: Pennsylvania and Rhode Island. The needs of Massachusetts and New Jersey are below the national average for all functions but higher education. The needs of seven states (Iowa, Kansas, Maine, Nebraska, Nevada, New Hampshire, and Vermont) would be entirely below the national average were it not for their exceptional highway needs?

Actual Outlays Compared with Representative Expenditures

Table 9 shows the relationship between each state's actual outlays in 1986-87 and the estimates of the levels of spending that would be necessary for the state to deliver the representative level of service. For the nation as a whole, actual and representative expenditures are, by definition, identical—that is, the percentages are 100 for all functions. Overall, the ranges and standard deviations are *similar* to their values for actual expenditures in Table 7.

At the top of the scale is Alaska, with actual outlays nearly 306 percent of the level needed to deliver national-average services. Second highest is Wyoming, at 161, followed closely by New York, at 152. Wyoming is the only state spending more than enough to deliver representative service levels for every function, The ratios for four states exceed 100 for all but one function. They are Alaska (health and hospitals), the District of Columbia and New York (higher education), and Minnesota (police and corrections).

At the bottom is Mississippi, whose actual total expenditures are less than 67 percent of its representative total, although its outlays for health and hospitals significantly exceed those necessary to provide national-average services. It is interesting to note that, although Mississippi has the lowest ratio for total outlays, none of its ratios for individual functions is lowest.

Three states are under 100 percent for all 10 functions: Arkansas, Missouri, and Oklahoma. Georgia would share this distinction if its actual outlays for health and hospitals did not exceed (by more than 64 percent) those necessary to deliver representative services. Six other states also fall short of 100 for all but one function. They are Idaho, Indiana, and North Carolina (higher education); Ohio (public welfare); and Mississippi and Tennessee (health and hospitals).

It is important to note that a state whose actual outlays are lower than the estimate of its representative level is not necessarily delivering a level of public services that is below the national average. As explained earlier, the analysis does not take into account possible differences among the states in the efficiency of government, nor does it recognize special circumstances that may increase or decrease the cost in a particular state of delivering the representative level of services.[10] A state with actual spending below its representative level may be sufficiently more efficient than the national average that the quantity and quality of the public services it actually delivers equal or even exceed the national average."

[9] In a letter to the author, dated January 20, 1990, Richard Drennon (Legislative Analyst, Florida Advisory Council on Intergovernmental Relations) suggests that

> ...when the relative cost of living in rural versus urban settings in Florida is considered, ... [population in households with incomes below the poverty line] probably overstates the public welfare representative expenditure level.

[10] An example of such special circumstances is mentioned in a letter, dated January 29, 1990, to John Kincaid (Executive Director, ACIR) from Len McComb (Director, Office of Financial Management, State of Washington):

> Washington has a relatively extensive feny system. The costs for the feny system are included in the total highway expenditures that the report uses to determine the workload for this category. The inclusion of ferry expenditures in this category results in the actual highway expenditures for Washington to be shown in the report at a level above the representative amount.

[11] In a letter to the author, dated January 22, 1990, Patricia A. Woodworth (Director, Office of Planning and Budget, Office of the Governor, State of Florida) comments that Florida's low ratio of actual to representative expenditures for higher education (63 percent) is attributable to enrollments in public institutions that are much below those implied by national average enrollment propensities, and that the state's actual "support of higher education per FTE student" exceeds the national average by more than 13 percent She cites actual FTE enrollment of 223,747 in 1986-87, 55 percent of the 408,300 yielded by applying national average propensities (see Table B-15). Combined, the two ratios exceed 62 percent (1.13 • 0.55), almost identical to, and hence confirming, the figure reported in Table 7.

> Woodworth also observes that
>
> ...Florida's rating in your report might be better [than the 50 percent ratio shown in Table 7 for public welfare] if more recent data were available for analysis. Participation rates in Florida in Medicaid and AFDC have increased somewhat since fiscal year 1986-87. As a consequence of outreach efforts and expansion of coverage the percent of Florida's population participating in Medicaid increased from 4.5 percent in 1986-87 to 5.7 percent in 1989-90. The analogous figures for AFDC are 2.4 percent and 2.6 percent, respectively. The implication of these improved participation rates is that Florida's public welfare expenditures should now be higher for a given "workload" of population living under the poverty level.

Table 9

Actual Direct General Expenditures of State and Local Governments as Percentages of Representative Expenditures Adjusted for Input-Cost Differences, by Function, 1986.87

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other Expenditures
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Standard Deviation	25.6	21.9	24.6	52.9	33.9	33.8	27.9	29.9	67.8	30.7	48.1
Alabama	71.0	60.5	110.1	32.8	120.2	69.1	63.5	69.3	79.4	78.1	80.4
Alaska	305.7	188.9	133.6	181.6	99.9	455.6	160.9	329.6	1,048.7	409.8	610.4
Arizona	101.8	105.2	141.7	59.0	51.3	151.0	142.2	102.9	113.9	121.5	77.9
Arkansas	67.0	78.8	91.8	47.7	62.9	89.5	55.0	62.7	62.9	66.1	50.3
California	112.4	98.7	117.7	129.3	111.8	70.2	131.3	123.9	87.9	120.1	137.0
Colorado	107.6	111.6	114.8	100.6	95.9	105.4	115.4	109.4	121.8	138.0	82.8
Connecticut	118.8	117.9	60.8	189.4	105.6	121.9	99.5	94.4	134.2	118.9	149.6
Delaware	115.8	117.9	153.2	71.5	66.0	116.5	115.1	112.2	211.1	138.1	98.9
District of Columbia	186.9	164.4	56.5	193.8	176.6	149.4	217.3	279.9	183.1	260.7	207.1
Florida	94.6	112.6	63.0	50.1	104.2	91.5	115.1	114.4	100.5	115.9	93.1
Georgia	82.2	87.9	76.8	49.8	164.2	77.8	74.1	78.9	56.7	89.1	69.7
Hawaii	117.6	86.3	106.5	106.8	94.7	86.8	123.7	155.8	141.1	149.0	165.2
Idaho	77.5	68.8	132.2	49.6	89.1	98.3	89.2	89.3	45.6	87.3	66.2
Illinois	91.6	85.9	86.5	101.7	66.2	121.5	86.4	97.3	93.4	84.3	100.6
Indiana	81.1	83.7	113.7	89.2	96.3	80.0	63.3	68.0	53.3	70.5	69.7
Iowa	97.7	93.7	158.6	102.0	121.2	122.0	88.0	80.2	66.2	85.2	58.3
Kansas	94.3	102.7	129.8	72.3	94.7	100.3	84.1	67.4	108.6	110.3	73.4
Kentucky	71.7	63.4	89.0	60.5	46.1	109.6	60.6	77.7	103.3	77.0	70.3
Louisiana	83.3	72.7	79.7	49.4	105.1	121.3	73.5	99.0	145.9	82.8	80.6
Maine	103.5	115.6	96.2	142.0	56.2	103.6	95.4	110.9	91.0	95.1	89.0
Maryland	106.0	103.2	98.8	122.4	51.2	129.0	110.8	127.8	113.9	96.3	110.2
Massachusetts	127.7	121.1	70.0	223.6	141.3	95.2	125.5	123.9	107.9	113.5	145.7
Michigan	99.6	98.9	117.3	146.4	111.8	78.9	83.9	75.2	72.4	90.7	92.0
Minnesota	124.7	117.8	133.2	171.0	121.8	119.6	97.9	123.2	151.3	107.9	102.2
Mississippi	66.6	65.2	99.3	35.4	111.4	91.9	51.1	63.0	60.9	72.6	56.0
Missouri	76.8	89.0	94.6	60.7	91.2	77.0	78.4	72.5	66.7	70.4	57.3
Montana	105.2	122.2	106.3	92.0	69.3	94.8	87.5	123.2	124.1	126.3	96.7
Nebraska	95.9	110.5	137.4	83.5	131.1	90.2	83.8	73.4	74.5	81.3	71.4
Nevada	109.1	94.2	81.7	67.1	91.8	106.5	154.1	112.8	142.6	155.2	140.3
New Hampshire	97.5	114.2	77.0	128.8	67.8	119.0	93.9	74.8	115.2	92.7	75.0
New Jersey	121.4	127.1	80.4	149.9	83.6	130.3	128.5	111.4	146.2	112.7	137.4
New Mexico	90.7	93.8	129.0	45.5	79.8	107.8	98.5	92.6	129.9	123.1	76.3
New York	152.4	149.2	87.0	197.8	172.5	153.1	144.4	139.9	149.9	131.4	173.0
North Carolina	78.5	91.9	125.6	53.6	86.2	74.1	88.3	62.5	44.8	81.6	65.6
North Dakota	102.6	105.0	172.5	96.9	80.0	70.0	69.6	100.6	96.3	95.0	139.8
Ohio	90.8	93.1	97.0	127.0	86.2	91.2	95.5	81.9	71.4	84.1	66.3
Oklahoma	79.5	85.2	99.6	76.5	85.1	68.2	70.5	88.7	80.3	80.5	57.9
Oregon	106.9	114.5	130.8	72.5	73.9	96.1	103.4	103.5	150.2	121.5	112.7
Pennsylvania	96.8	114.9	53.9	147.1	59.9	125.7	82.5	70.8	106.4	82.0	93.5
Rhode Island	121.1	118.8	84.6	205.3	95.1	111.4	106.7	85.8	155.0	111.0	125.5
South Carolina	76.4	85.6	111.4	43.9	120.2	56.9	78.3	69.6	61.2	68.9	68.5
South Dakota	90.5	96.1	114.1	45.3	53.5	83.9	95.6	82.1	107.8	99.5	165.4
Tennessee	74.7	66.7	89.0	60.2	102.8	82.7	69.8	76.4	64.7	72.4	79.0
Texas	78.9	85.6	101.3	42.2	79.1	97.0	66.6	91.8	107.0	75.0	58.8
Utah	90.3	71.1	157.1	82.2	85.5	99.8	107.6	97.4	93.7	112.5	74.3
Vermont	114.9	133.6	145.3	124.6	49.8	133.8	84.7	84.3	100.0	127.7	112.2
Virginia	90.7	102.4	104.2	63.0	97.8	107.7	92.6	100.1	67.6	103.7	63.4
Washington	104.9	104.0	119.0	115.8	84.7	107.4	102.0	122.9	74.2	99.7	107.0
West Virginia	82.4	88.0	80.7	70.5	54.0	131.8	46.5	68.4	103.7	86.1	90.5
Wisconsin	112.4	115.1	134.1	189.9	86.1	107.3	108.2	110.7	82.2	88.2	77.3
Wyoming	161.2	161.7	173.6	107.0	288.5	155.3	147.4	147.6	195.1	167.2	114.8

Sources: Tables 7 and 8.

Recapitulation: The Regional Dimension

Table 10 provides summary statistics for the eight Census regions for the estimates discussed so far. (See Table 11 for a display of the states in each region.) The regions are arrayed in the table by the index of per capita representative expenditures adjusted for differences in unit input costs in column 3. The ratio of actual to representative expenditures (column 4) underlines the striking pattern that is apparent in the first two columns. There is a very strong inverse relationship between needs and actual expenditures. In other words, the higher the cost of a national-average level of public services, the more likely it is that the level of services actually provided will fall short of that average.

In the New England states, the representative level of services could be provided at a cost of roughly 88 percent of the national average. Actual per capita outlays in New England, however, are 6 percent higher than average. As a result, the public services enjoyed by the typical resident of New England are, on average, 20 percent above the national average. In the Southwest states, on the other hand, the representative level of services costs 108 percent of the national average. *Actual* outlays, however, are more than 10 percent below. As a consequence, the level of public services delivered in the typical state in the Southwest is more than 17 percent below the national average.

Fiscal Capacity Measures Reflecting Representative Expenditures Compared with Population

Measures of the fiscal capacities of the 50 states and the District of Columbia for four measures of own-revenue-raising ability are presented in Table 11. The measures are personal income, RTS, gross state product (GSP), and total taxable resources (TTR).[12] For each measure of revenue-raising ability, a fiscal capacity index is shown with the relative costs of service responsibilities accounted for (1) by population and by representative expenditures (2) unadjusted and (3) adjusted for variation in unit input costs.[13] The information is arrayed by Census region to facilitate comparisons among neighboring states. The population-weighted means of the indices of fiscal capacity and the standard deviations of the indices are shown for each region.

For a given state, the relationship between the index calculated using population and those using representative expenditures is the same for all four measures of revenue-raising ability. For example, Mississippi's index of representative expenditures per capita, unadjusted for unit input costs, is 122. Adjusted, the index is only 113 because the cost per unit of the inputs used to produce public services is more than 7 percent below the national average (see Table 6).

To calculate Mississippi's fiscal capacity indices using representative expenditures rather than population, the four population-based indices of fiscal capacity are divided by the state's two indices of per capita representative expenditures (and the results are multiplied by 100).[14] These calculations reduce the four population-based indices of fiscal capacity for Mississippi shown in Table 11 by 18 and 12 percent, respectively.

The opposite effect is apparent in the case of Connecticut, whose index of per capita representative expenditures unadjusted for input prices is 88. Adjusted, however—because unit input costs are more than 4 percent higher than the national average—the state's representative expenditure index is 92. Here the use of representative expenditures results in fiscal capacity indices for all four measures of revenue-raising ability that are 14 and 9 percent higher, respectively, than the corresponding population-based indices.

Table 10
Indices of Actual and Representative Expenditures and the Ratio of the Two, by Census Region, 1986-87

	Actual Expenditures	Representative Expenditures		Actual as Percentage of Adjusted Representative
		Unadjusted	Adjusted	
	(1)	(2)	(3)	(4)
United States	100.0%	100.0%	100.0%	100.0%
New England	105.8	90.2	88.4	119.7
Mideast	119.3	92.6	93.9	127.1
Plains	96.0	100.8	98.7	97.3
Far West	115.0	98.0	100.5	114.4
Rocky Mountain	103.4	103.0	100.6	1028
Great Lakes	95.7	98.4	101.7	94.1
Southeast	83.1	106.2	102.5	81.1
Southwest	89.3	107.8	108.0	82.7

Note: The regional indices are population-weighted means.
Sources: Tables 7, 8, and 9.

[12] The estimates of personal income and RTS are for 1987; those for GSP and TTR are for 1986. See Table B-5. A useful discussion of these measures appears in Max B. Sawicky, 'Appendix A: Alternative Measures of Fiscal Capacity and Their Uses," in Advisory Commission on Intergovernmental Relations, *Measuring State Fiscal Capacity, 1987 Edition* (Washington, DC, 1987), pp. 107-20.

[13] The indices shown in Table 11 are not really measures of fiscal capacity, as that concept is defined in Chapter 1 of this report, because revenues received from the federal government (and from state and local governments in other states) are not taken into consideration. The indices are more properly referred to as measures of own-revenue-raising ability relative to expenditure needs. An analysis of the fiscal capacities of the states taking into account actual amounts of federal grants received appears later in this chapter.

[14] This is the same, mathematically, as dividing a state's total personal income (or RTS tax capacity, or GSP, or TTR) by its total representative expenditures and indexing the resulting ratio to the ratio of the national totals of the same data. The calculation described in the text divides one index of per capita values by another index of per capita values. Since the same population is used to calculate the two per capita amounts that are indexed, the numerator and denominator of the fiscal capacity fraction are both divided by the same amount, and population therefore cancels.

Table 11

Indices of Fiscal Capacity with Public-Service Costs Accounted for by Population and by Representative Expenditures Unadjusted and Adjusted for Differences in the Unit Costs of Producing Public Services, 1987

Region and State	Personal Income			Representative Tax system			Gross State Product			Total Taxable Resources		
		Representative Expenditures			Representative Expenditures			Representative Expenditures			Representative Expenditures	
	Population	Not Adjusted	Input-cost Adjusted	Population	Not Adjusted	Input-Cost Adjusted	Population	Not Adjusted	Input-Cost Adjusted	Population	Not Adjusted	Input Cost Adjusted
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Standard Deviation	15.2	21.0	19.4	14.9	19.8	18.3	17.8	20.6	18.8	15.0	19.4	17.7
New England	119.3	132.8	134.9	122.8	136.6	139.0	110.4	122.9	124.9	113.4	126.3	128.3
Standard Deviation	15.3	20.9	16.1	14.4	19.7	15.1	13.6	18.5	14.0	14.1	19.3	14.7
Connecticut	137.4	156.5	149.8	139.1	158.5	151.8	127.2	144.9	138.8	130.5	148.6	1423
Maine	90.1	90.7	101.2	96.9	97.5	108.8	85.0	85.6	95.5	86.2	86.8	%.9
Massachusetts	123.7	139.1	141.6	126.8	1427	145.3	113.9	128.2	130.5	117.5	1322	134.5
New Hampshire	113.2	124.0	132.6	123.0	134.7	143.9	103.7	113.6	121.4	106.2	116.3	124.3
Rhode Island	100.5	113.4	117.2	95.8	108.1	111.7	89.7	101.3	104.6	94.6	106.8	110.3
Vermont	92.4	93.7	103.7	1027	104.2	115.3	91.8	93.1	103.0	91.5	928	102.7
Mideast	114.4	123.5	121.6	107.1	115.6	113.9	110.5	118.8	117.1	111.9	120.5	118.8
Standard Deviation	11.5	12.7	10.8	10.6	11.6	9.9	26.4	23.9	24.3	17.2	15.7	15.3
Delaware	107.8	112.7	112.2	123.5	129.1	128.4	106.4	111.2	110.6	104.4	109.2	108.6
District of Columbia	132.1	126.2	128.4	122.1	116.6	118.7	265.0	253.0	257.6	198.8	189.9	193.3
Maryland	117.1	124.4	120.6	108.8	115.6	112.1	98.6	104.8	101.7	106.9	113.6	110.2
New Jersey	131.5	147.3	141.3	122.3	137.0	131.4	116.7	130.8	125.4	121.9	136.6	131.0
New York	116.3	122.9	122.0	108.0	114.1	113.4	117.2	123.9	123.0	117.0	123.6	122.7
Pennsylvania	98.3	108.8	108.6	92.3	1022	102.0	88.8	98.3	98.1	93.0	103.0	102.9
Great Lakes	98.2	99.9	96.7	92.7	94.3	91.3	96.6	98.2	95.1	97.7	99.3	96.1
Standard Deviation	5.7	6.2	5.2	3.9	3.8	2.9	5.4	6.0	5.1	5.6	6.0	5.0
Illinois	106.2	108.9	103.7	97.3	99.8	95.0	104.4	107.1	101.9	105.4	108.1	102.9
Indiana	89.9	90.9	90.5	87.1	88.1	87.7	88.8	89.8	89.4	89.2	90.2	89.9
Michigan	99.4	97.5	91.8	95.3	93.4	87.9	96.4	94.5	89.0	98.7	96.8	91.1
Ohio	94.4	%.6	94.5	91.0	93.1	91.1	94.2	96.4	94.4	94.7	%.9	94.8
Wisconsin	95.2	100.7	101.1	87.9	929	93.3	92.5	97.8	98.2	93.8	99.1	99.5
Plains	94.9	94.1	96.1	92 1	91.3	93.2	95.2	94.3	96.4	95.0	94.3	96.2
Standard Deviation	5.9	9.4	7.3	7.4	10.2	8.2	6.2	9.3	7.3	6.0	9.2	7.2
Iowa	92.0	93.7	95.9	83.5	85.1	87.1	88.5	90.1	923	89.8	915	93.7
Kansas	97.7	97.0	99.3	93.4	92.7	94.9	99.3	98.6	101.0	99.7	99.0	101.4
Minnesota	102.9	106.3	105.0	103.9	1M.4	106.0	103.2	106.7	105.4	1028	106.3	104.9
Missouri	94.9	93.0	94.7	91.0	89.3	90.8	94.9	93.0	94.7	94.6	92.7	94.3
Nebraska	926	91.6	96.2	90.6	89.6	94.1	95.5	94.5	99.2	94.7	93.7	98.4
North Dakota	84.0	75.2	79.9	89.9	80.5	85.5	90.9	81.4	86.5	88.1	78.9	83.7
South Dakota	81.1	69.8	77.5	78.3	67.4	74.8	79.6	68.5	76.1	80.2	69.0	76.6

Table 11 *(cont.)*

Indices of Fiscal Capacity with Public-Service Costs Accounted for by Population and by Representative Expenditures Unadjusted and Adjusted for Differences in the Unit Costs of Producing Public Services, 1987

Region and State	Personal Income			Representative Tax System			Gross State Product			Total Taxable Resources		
		Representative Expenditures			Representative Expenditures			Representative Expenditures			Representative	
	Population	Not Adjusted	Input-Cost Adjusted	Population	Not Adjusted	Input-Cost Adjusted	Population	Not Adjusted	Input-Cost Adjusted	Population	Not Adjusted	Input Cost Adjusted
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Southeast	87.3	83.2	86.1	89.3	85.1	88.1	87.6	83.1	86.0	87.2	82.9	85.9
Standard Deviation	12.3	16.5	16.8	12.1	16.6	16.9	9.3	12.0	11.6	9.7	13.5	13.5
Alabama	77.1	68.0	70.9	75.3	66.4	69.2	78.1	68.9	71.8	77.8	68.6	71.5
Arkansas	74.3	65.6	70.1	73.8	65.1	69.6	76.7	67.7	72.4	76.2	67.3	71.9
Florida	100.7	104.3	108.8	104.6	108.4	113.0	87.4	90.6	94.4	93.6	97.0	101.2
Georgia	92.4	82.8	85.1	94.2	84.4	86.7	97.0	87.0	89.4	94.5	84.7	87.0
Kentucky	77.9	71.2	71.9	79.0	72.2	72.9	82.0	75.0	75.7	79.4	72.6	73.3
Louisiana	74.1	68.0	67.1	86.1	79.1	78.0	95.1	87.4	86.2	85.8	78.8	77.7
Mississippi	66.5	54.4	58.7	65.0	53.2	57.4	69.8	57.1	61.6	68.1	55.7	60.1
North Carolina	86.0	81.9	87.2	89.5	85.3	90.8	91.7	87.4	93.0	88.4	84.2	89.6
South Carolina	77.5	70.6	75.0	78.8	71.7	76.3	76.1	69.2	73.7	76.6	69.7	74.1
Tennessee	83.2	77.4	80.4	83.8	78.0	81.0	86.7	80.7	83.7	84.4	78.5	81.5
Virginia	106.7	107.4	108.2	102.8	103.4	104.2	103.4	104.1	104.9	104.2	104.9	105.8
West Virginia	71.2	67.3	69.3	77.2	73.0	75.1	72.3	68.4	70.4	72.3	68.4	70.4
Southwest	87.9	81.5	81.3	97.4	90.3	90.1	100.1	92.7	92.5	95.1	88.1	87.9
Standard Deviation	4.5	5.6	4.7	3.7	5.1	4.1	6.8	6.6	4.8	5.2	5.7	4.2
Arizona	92.5	89.1	90.2	99.5	95.9	97.0	93.4	90.0	91.1	93.3	89.9	91.0
New Mexico	76.7	65.8	69.3	86.6	74.3	78.3	91.8	78.7	83.0	84.9	72.8	76.8
Oklahoma	81.1	76.1	78.1	93.2	87.5	89.7	86.7	81.4	83.5	85.3	80.1	82.1
Texas	89.6	82.9	81.7	99.1	91.7	90.4	104.6	96.8	95.4	98.3	91.0	89.7
Rocky Mountain	85.9	83.6	85.4	98.9	96.2	98.2	96.5	93.8	95.7	92.5	89.9	91.8
Standard Deviation	11.7	15.2	13.8	20.3	22.5	21.3	17.3	19.1	17.9	13.4	16.4	14.8
Colorado	100.7	102.8	102.6	111.0	113.4	113.2	104.2	106.4	106.2	104.2	106.4	106.2
Idaho	76.7	71.4	76.6	76.9	71.6	76.8	75.6	70.4	75.5	76.1	70.9	76.1
Montana	79.8	73.1	78.2	86.5	79.3	84.9	85.6	78.5	84.0	83.2	76.3	81.6
Utah	73.4	68.4	70.0	79.0	73.5	75.3	83.0	77.3	79.1	79.0	73.6	75.3
Wyoming	82.1	79.0	80.4	136.6	131.4	133.7	132.4	127.4	129.6	109.9	105.7	107.5
Far West	110.9	113.1	110.1	114.6	116.9	113.6	112.3	114.4	111.1	111.8	114.0	110.8
Standard Deviation	7.9	7.5	6.7	12.9	12.3	10.2	17.9	16.6	12.4	11.7	10.7	7.8
Alaska	117.8	114.1	97.2	168.5	163.2	139.0	211.6	205.0	174.5	166.8	161.5	137.5
California	115.1	117.1	113.7	117.1	119.1	115.6	113.7	115.7	112.3	114.5	116.5	113.1
Hawaii	101.2	111.1	112.9	113.2	124.3	126.3	104.3	114.6	116.4	102.9	113.0	114.8
Nevada	105.7	109.4	110.2	140.6	145.4	146.6	115.5	119.5	120.5	110.3	114.1	115.0
Oregon	90.7	92.0	92.6	92.4	93.8	94.4	87.9	89.2	89.8	89.4	90.7	91.3
Washington	100.8	104.0	102.2	98.5	101.7	99.9	100.1	103.3	101.5	101.3	104.6	102.8

Sources: Tables 8 and B-5; and U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, with Age, Sex, and Components of Change, 1981-87,* Current Population Reports, (Washington, DC, 1988), Tables 5 and 6.

Exhibit 2
Comparison of Indices of Fiscal Capacity Calculated Using Resident Population and Input-Cost-Adjusted Representative Expenditures

Population Index Is:	Representative Expenditure Index	
	Above Average	Below Average
Higher than Index Calculated Using Representative Expenditures	District of Columbia Illinois Alaska California	Michigan Missouri North Dakota South Dakota Alabama Arkansas Georgia Kentucky Louisiana Mississippi South Carolina Tennessee West Virginia Arizona New Mexico Oklahoma Texas Idaho Montana Utah Wyoming
Lower than Index Calculated Using Representative Expenditures	Connecticut Maine Massachusetts New Hampshire Rhode Island Vermont Delaware Maryland New Jersey New York Pennsylvania Wisconsin Minnesota Florida Virginia Colorado Hawaii Nevada Washington	Indiana Ohio Iowa Kansas Nebraska North Carolina Oregon

Source: Table 11.

The relationship apparent in the cases of Mississippi and Connecticut is a general one. That is, the use of population (rather than representative expenditures) to calculate a measure of fiscal capacity tends systematically to understate the capacities of states that are above the national average and to overstate the capacities of those below it. This is quite apparent in Exhibit 2, which arrays the states by the relationship between the estimate of fiscal capacity using the unit-cost-adjusted index of representative expenditures and the estimate calculated using resident population.

The population-based measure overstates the fiscal capacities of 21 of the 28 states whose capacities are below the national average by the representative expenditure-based index. At the same time, the population-based measure understates the fiscal capacities of 19 of the 23 states whose capacities are above the national average when representative expenditures are used in calculating the measure.

Statistical confirmation of this relationship can be found in the standard deviations of the indices for the nation as a whole. For every measure of revenue-raising ability, the standard deviations are higher when representative expenditures are substituted for population. This indicates that the effect of the substitution is to widen the spread of estimates of fiscal disparities among the states.

It is interesting to note that the relationship between the standard deviations is not apparent for every region

for every measure of revenue-raising ability. For example, the standard deviations for the Far West are lower in both cases for the indices calculated using representative expenditures. The standard deviation also is lower for both indices using representative expenditures for the Mideast for the GSP and TTR measures of revenue-raising ability.

An Alternative Statement of the Results

An alternative to indices as a vehicle for the results of the analysis is to calculate the gap between a state's total representative expenditures, expressed as a dollar amount, and its revenue-raising ability, similarly expressed. The revenue-raising potential of a state is calculated by distributing the national total of the direct general expenditures of state and local governments among the states in proportion to the distribution of a measure of revenue-raising ability.[15]

This approach has several advantages over index numbers. The most important is that the gap is a dollar estimate of the difference between the fiscal capacity of a state and the national average. With this measure, it is possible to estimate the effectiveness of federal grant programs—existing or proposed—in reducing disparities in fiscal capacities among the states. The analysis can be conducted by ignoring existing federal grants or by taking them into account in calculating the gaps. Both approaches are explored in the next few pages.

Disregarding Federal Grants

Abstracting from federal payments to state and local governments, a state's gap is the difference between (a) its total cost of providing the representative level of public services, adjusted for input costs, and (b) the total revenue that would be raised if the state were to exploit its revenue-raising potential at the national-average rate.

The estimates of "needs" and potential revenues for all the states and the District of Columbia add, by construction, to $653.6 billion.[16] This is the national total of direct general expenditures by state and local governments in FY 1986-87. The gap for a state may be positive or negative; the national sum of the gaps is zero. This underlines the inherently relative nature of the measurement of fiscal capacity.

A state's gap is positive if its cost of the representative level of public services exceeds the revenues it could raise with the national-average level of fiscal effort. Such a state has a fiscal capacity below the national average. A state with a negative gap has an above-average fiscal capacity. It could finance an average level of services with below-average fiscal effort, or better-than-average services with average effort.

The estimates of the state gaps are shown in Table 12. Estimates of the revenues each state could raise with an average fiscal effort appear in columns 2-5 for the four measures. Columns 6-9 show the amounts of the gaps for the four measures, given the estimates of representative expenditures in column 1. For the nation as a whole, the sum of the (positive and negative) gaps is zero, since total revenues equal total outlays by construction.

The sums of the positive gaps are of special interest, however. They are estimates of the outlays that would be required under a perfectly designed federal grant program to raise the fiscal capacity of every state to the national average." The average of these magnitudes suggests that this objective could have been achieved in 1986-87 at a total cost of roughly $46 billion (40 percent of the total of $115 billion of federal grants paid in that year). The same calculation could be done for any fraction or multiple of the national average level of fiscal capacity that might be postulated as a policy objective.

Comparison of the size of a state's gap, positive or negative, with its representative expenditures and revenue-raising ability makes possible a variety of interesting insights into its fiscal situation. For example, by the RTS measure of revenue-raising ability, Connecticut's gap is negative $4,092 million. Relating this to the state's representative expenditures indicates that, with average fiscal effort, Connecticut could finance outlays 52 percent higher than the national average ($4,092/$7,906). It is interesting to note that the state's actual outlays of $9,394 million are only 19 percent above its representative level.[18] It follows that Connecticut's actual fiscal effort is well below the national average—nearly 22 percent below, in fact ($9,394/$11,998). Alternatively, Connecticut could finance the representative level of expenditures with fiscal effort of less than 66 percent of the national average ($7,906/$11,998).

At the other extreme, Mississippi, with a gap (by the RTS measure) of $3,406 million, has the weakest fiscal capacity in the nation. To finance the representative level of expenditures, Mississippi would have to exert a fiscal effort 74 percent higher than the national average ($3,406/$4,581). Conversely, limiting its fiscal effort to the national average would produce revenue sufficient to finance only 57 percent of the representative level of spending ($4,581/$7,987). Mississippi's actual outlays ($5,319 million) are 67 percent of that level. Hence its actual fiscal effort is more than 16 percent higher than the national average ($5,319/$4,581).

Table 13 presents the gaps in terms that facilitate direct comparisons among the states: columns 1-4 display the gaps on a per capita basis, and columns 5-8 show them as percentages of the representative expenditures of each state.

Taking Federal Grants Into Account

To this point, the analysis has abstracted from the federal grant system and its implications for the relative

[15] This procedure ensures that, for the nation as a whole, total revenues equal actual direct general expenditures. For example, the RTS estimates of the "tax capacities" of the states in 1985-86 cannot be used directly because their sum is only 59 percent (and the RRS estimates of "revenue capacities," 76 percent) of the total general expenditures of all state and local governments in that year.

[16] The estimates of representative expenditures appear in Table B-3; those of own revenue-raising ability in Table B-5.

[17] The analysis at this point is assuming that there are no other federal grants.

[18] Actual expenditures appear in Table E1.

Table 12

Calculation of the Gap between "Needs" and Revenue-Raising Ability in 1987, with No Account Taken of Federal Grants

(millions)

state	Total Representative Expenditures	Revenue-Raising Ability: Total General Revenue Distributed by Measure				Gap between "Needs" and Revenue-Raising Ability			
		Personal Income	RTS	GSP	TTR	Personal Income	RTS	GSP	TTR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
United States	$653,608	$653,608	$653,608	$653,608	$653,608	**$0**	$0	$0	**$0**
Sum of Positive Gaps						51,647	48,114	40,411	43,294
Alabama	11,926	8,457	8,253	8,577	8,542	3,470	3,673	3,349	3,384
Alaska	1,710	1,661	2,376	3,052	2,405	49	**(666)**	(1,343)	(6%)
Arizona	9,325	8,407	9,048	8,304	8,292	918	277	1,021	1,032
Arkansas	6,796	4,767	4,730	4,933	4,898	2,029	**2,066**	1,863	1,897
California	75,242	85,513	86,966	83,237	83,850	(10,271)	(11,725)	(7,996)	(8,608)
Colorado	8,682	8,910	9,825	9,227	9,222	(229)	(1,143)	**(546)**	**(540)**
Connecticut	7,906	11,846	11,998	11,015	11,295	(3,940)	(4,092)	(3,109)	(3,389)
Delaware	1,663	1,865	2,135	1,825	1,792	(202)	(472)	(163)	(130)
District of Columbia	1,718	2,207	2,040	4,489	3,369	**(488)**	(322)	(2,771)	(1,651)
Florida	29,883	32,500	33,760	27,713	29,688	(2,617)	(3,877)	2,170	195
Georgia	18,138	15,434	15,732	16,049	15,624	2,704	2,407	**2,090**	2,514
Hawaii	2,607	2,944	3,291	3,013	2,971	(337)	(684)	**(406)**	**(364)**
Idaho	2,682	2,055	2,061	2,054	2,069	627	621	628	613
Illinois	31,856	33,032	30,266	32,693	33,018	(1,176)	1,589	(837)	(1,162)
Indiana	14,747	13,349	12,937	13,242	13,315	1,398	1,811	**1,505**	1,432
Iowa	7,294	6,999	6,356	6,835	6,941	296	938	459	353
Kansas	6,541	6,496		6,623	**6,648**	45	332	(82)	**(108)**
Kentucky	10,841	7,796	7,904	8,285	8,023	3,045	2,937	2,555	2,818
Louisiana	13,224	8,877	10,320	11,605	**10,468**	4,347	2,904	1,619	2,756
Maine	2,838	2,872	3,089	2,702	2,740	(34)	**(251)**	137	98
Maryland	11,817	14,256	13,248	11,929	12,934	**(2,440)**	(1,431)	(113)	(1,118)
Massachusetts	13,726	19,442	19,944	18,014	18,577	(5,716)	(6,218)	(4,288)	(4,851)
Michigan	26,764	24,565	23,536	23,895	24,458	2,200	**3,228**	2,870	2,307
Minnesota	11,174	11,730	11,842	11,792	11,747	(556)	**(668)**	(618)	(573)
Mississippi	7,987	4,686	4,581	4,963	4,843	3,302	**3,406**	3,024	3,144
Missouri	13,733	13,000	12,474	13,025	12,981	734	1,259	708	753
Montana	2,215	1,733	1,880	1,897	1,843	482	335	**318**	**372**
Nebraska	4,118	3,963	3,876	4,135	4,101	156	242	**(17)**	**18**
Nevada	2,593	2,859	3,803	3,029	2,891	**(266)**	**(1,209)**	**(436)**	**(298)**
New Hampshire	2,425	3,214	3,490	2,888	2,957	(789)	**(1,065)**	**(463)**	**(532)**
New Jersey	19,172	27,085	25,202	24,132	25,207	(7,912)	(6,029)	(4,960)	(6,035)
New Mexico	4,455	3,090	3,488	3,680	3,404	1,366	967	775	1,051
New York	45,619	55,668	51,712	56,561	56,437	(10,048)	(6,092)	(10,942)	(10,818)
North Carolina	16,977	14,810	15,414	15,743	15,164	2,167	1,562	1,234	1,813
North Dakota	1,898	1,516	1,622	1,674	1,621	382	276	224	277
Ohio	28,921	27,333	26,346	27,459	27,601	1,587	2,575	1,461	1,320
Oklahoma	9,123	7,124	8,187	7,767	7,643	1,999	936	1,355	1,480
Oregon	7,161	6,634	6,760	6,436	6,547	527	401	725	614
Pennsylvania	28,990	31,494	29,575	28,622	29,995	**(2,504)**	(586)	367	(1,006)
Rhode Island	2,271	2,660	2,536	2,371	2,501	(390)	**(265)**	**(100)**	(231)
South Carolina	9,502	7,131	7,249	6,974	7,020	2,371	2,253	2,527	2,482
South Dakota	1,993	1,544	1,490	1,528	1,539	449	502	**464**	454
Tennessee	13,496	10,847	10,928	11,278	10,976	2,649	2,567	2,218	2,519
Texas	49,436	40,378	44,687	47,326	**44,485**	9,058	4,749	2110	4,951
Utah	4,734	3,312	3,563	3,744	3,565	1,421	1,171	**990**	1,169
Vermont	1,312	1,360	1,512	1,347	1,342	**(48)**	**(200)**	(35)	(30)
Virginia	15,627	16,915	16,291	16,241	16,377	(1,287)	**(664)**	(613)	(749)
Washington	12,015	12,280	12,006	12,113	12,258	**(265)**	9	(98)	(243)
West Virginia	5,234	3,627	3,930	3,751	3,757	1,608	1,304	**1,477**	**1,477**
Wisconsin	12,160	12,292	11,346	11,994	12,159	(131)	815	**166**	**1**
Wyoming	1,345	1,081	1,797	1,820	1,511	**264**	(453)	**(476)**	**(166)**

Note: Columns 2-5 show the total revenue that each state could raise if it were to exploit its own-revenue-raising potential at the national-average rate, abstracting from federal payments to the states and localities, as indicated by each of the four measures of revenue-raising ability.

Sources: 1—Table B-3.
2-5—Table B-5.
6-9—Column 1 less columns 2-5, respectively.

Table 13

Gap between "Needs" and Revenue-Raising Ability in 1987, with No Account Taken of Federal Grants, Per Capita and Relative to Representative Expenditures

(dollar amounts in millions)

state	Per Capita				As Percentage of Representative Expenditures			
	Personal Income	RTS	GSP	TTR	Personal Income	RTS	GSP	TTR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
United States	$0.00	$0.00	$0.00	$0.00	0.0%	0.0%	0.0%	0.0%
Sum of Positive Gaps	212 19	197.68	166.03	177.87	7.9	7.4	6.2	6.6
Alabama	849.82	899.59	820.28	628.86	29.1	30.8	28.1	28.4
Alaska	92.52	(1,268.62)	(2,557.58)	(1,325.20)	2.8	(39.0)	(78.5)	(40.7)
Arizona	271.10	81.88	301.54	304.88	9.8	3.0	11.0	11.1
Arkansas	849.68	865.13	780.29	794.57	29.9	30.4	27.4	27.9
California	(371.28)	(423.84)	(289.04)	(311.17)	(13.7)	(15.6)	(10.6)	(11.4)
Colorado	(69.35)	(346.93)	(165.56)	(163.92)	(2.6)	(13.2)	(6.3)	(6.2)
Connecticut	(1,227.02)	(1,274.48)	(968.28)	(1,055.42)	(49.8)	(51.8)	(39.3)	(42.9)
Delaware	(314.10)	(733.66)	(252.76)	(201.21)	(12.2)	(28.4)	(9.8)	(7.8)
District of Columbia	(785.31)	(517.31)	(4,455.25)	(2,653.80)	(28.4)	(18.7)	(161.3)	(96.1)
Florida	(217.67)	(322.51)	180.46	16.21	(8.8)	(13.0)	7.3	.7
Georgia	434.66	386.80	335.85	404.08	14.9	13.3	11.5	13.9
Hawaii	(311.18)	(631.95)	(374.52)	(335.74)	(12.9)	(26.3)	(15.6)	(13.9)
Idaho	628.13	622.42	629.43	614.50	23.4	23.2	23.4	22.9
Illinois	(101.53)	137.23	(72.30)	(100.34)	(3.7)	5.0	(2.6)	(3.6)
Indiana	252.71	327.36	272.16	258.98	9.5	12.3	10.2	9.7
Iowa	104.32	331.00	161.94	124.61	4.1	12.9	6.3	4.8
Kansas	17.98	134.18	(33.15)	(43.57)	.7	5.1	(1.3)	(1.6)
Kentucky	816.95	787.94	685.66	756.17	28.1	27.1	23.6	26.0
Louisiana	974.53	650.97	362.87	617.86	32.9	22.0	12.2	20.8
Maine	(28.47)	(211.28)	115.17	82.57	(1.2)	(8.8)	4.8	3.5
Maryland	(538.00)	(315.53)	(24.84)	(246.42)	(20.6)	(12.1)	(1.0)	(9.5)
Massachusetts	(976.28)	(1,062.01)	(732.36)	(828.48)	(41.6)	(45.3)	(31.2)	(35.3)
Michigan	239.10	350.90	311.95	250.75	8.2	12.1	10.7	8.6
Minnesota	(130.91)	(157.32)	(145.63)	(134.85)	(5.0)	(6.0)	(5.5)	(5.1)
Mississippi	1,257.85	1,297.58	1,152.10	1,197.85	41.3	42.6	37.9	39.4
Missouri	143.77	246.80	138.73	147.47	5.3	9.2	5.2	5.5
Montana	595.61	414.27	393.63	459.52	21.8	15.1	14.4	16.8
Nebraska	97.73	151.80	(10.68)	11.09	3.8	5.9	(.4)	.4
Nevada	(263.98)	(1,200.82)	(432.60)	(295.86)	(10.3)	(46.6)	(16.8)	(11.5)
New Hampshire	(746.79)	(1,007.71)	(437.89)	(503.27)	(32.6)	(43.9)	(19.1)	(21.9)
New Jersey	(1,031.33)	(785.91)	(646.53)	(786.57)	(41.3)	(31.4)	(25.9)	(31.5)
New Mexico	910.48	644.88	516.61	700.61	30.7	21.7	17.4	23.6
New York	(563.72)	(341.78)	(613.84)	(606.89)	(22.0)	(13.4)	(24.0)	(23.7)
North Carolina	337.85	243.64	19243	282.64	12.8	9.2	7.3	10.7
North Dakota	568.34	410.90	333.37	411.50	20.1	14.6	11.8	14.6
Ohio	147.18	238.75	135.50	122.41	5.5	8.9	5.1	4.6
Oklahoma	611.00	286.15	414.27	452.44	21.9	10.3	14.9	16.2
Oregon	193.60	147.35	266.10	225.36	7.4	5.6	10.1	8.6
Pennsylvania	(209.81)	(49.07)	30.78	(84.26)	(8.6)	(2.0)	1.3	(3.5)
Rhode Island	(395.13)	(268.97)	(101.62)	(233.98)	(17.2)	(11.7)	(4.4)	(10.2)
South Carolina	692.24	657.79	737.93	724.65	25.0	23.7	26.6	26.1
South Dakota	632.99	708.45	654.71	640.18	22.5	25.2	23.3	22.8
Tennessee	545.60	528.81	456.78	518.90	19.6	19.0	16.4	18.7
Texas	539.52	282.89	125.67	294.90	18.3	9.6	4.3	10.0
Utah	846.10	697.05	589.38	695.57	30.0	24.7	20.9	24.7
Vermont	(88.30)	(365.49)	(64.03)	(55.46)	(3.7)	(15.3)	(2.7)	(2.3)
Virginia	(218.03)	(112.41)	(103.89)	(126.90)	(8.2)	(4.2)	(3.9)	(4.8)
Washington	(58.36)	1.97	(21.61)	(53.58)	(2.2)	.1	(.8)	(2.0)
West Virginia	847.45	687.25	778.50	778.50	30.7	24.9	28.2	28.2
Wisconsin	(27.33)	169.44	34.47	.21	(1.1)	6.7	1.4	•
Wyoming	538.56	(923.89)	(970.42)	(338.38)	19.6	(33.7)	(35.4)	(12.3)

*Less than 0.05 percent

Sources: Tables 11 and 12.

fiscal capacities of the states. Federal grants could be introduced into the analysis in a variety of ways. It is convenient—and does no great violence to reality—to assume that federal grants are revenue for state and local governments that is independent of their abilities to raise funds from their own sources. On this assumption, a state's overall revenue-raising ability can be defined as the amount of federal grants its governments receive plus its share (defined by a measure of what has to this point been referred to as revenue-raising ability) of the total cost to all state and local governments of financing the actual level of direct general expenditures net of federal grants.

In other words, a state's overall revenue-raising potential is the sum of the actual federal grants it receives and what can be called its "own-revenue-raising ability." Estimates of the gaps between "needs" and the revenues yielded by national-average fiscal effort, given the actual distribution of federal grants in 1986-87, appear in W l e 14.[19]

It is interesting to compare the results for Connecticut and Mississippi when federal grants are taken into account. The total revenues available to Mississippi if its governments were to exert national-average fiscal effort (again using the RTS measure) are $508 million larger (compare Table 14, column 4, with Thble 12, column 3). Since representative expenditures remain the same, this means that Mississippi's gap drops by the same amount.

A somewhat curious situation now obtains because the national-average level of state-local fiscal effort—and hence the yield of that level of effort in each state—is lower when federal grants are brought into the picture. That is, state and local governments as a group have to raise from their own sources only the portion of their expenditures that is not financed by the federal grants.

The own revenues produced by the national-average level of own-revenue-raising effort in Mississippi total $3,775 million—$806 million less than Mississippi's governments would have collected at national-average effort in the absence of the federal aid. As a result, to raise the additional $2,898 million needed to finance its representative level of spending (that is, the state's gap in Table 14, column 8), an increase in the fiscal effort of Mississippi's governments of 77 percent would be required (rather than, as mentioned earlier, the 74 percent rise in effort needed when the analysis disregards federal grants-in-aid).

Alternatively, Mississippi could finance 64 percent of the national-average level of services with average fiscal effort, compared with only 57 percent of the level in the absence of federal grants. However, since, as noted earlier, the state's actual spending is only 67 percent of its representative level, it is clear that when account is taken of federal grants Mississippi's own-revenue-raising effort exceeds the national average by only 6 percent."

The overall revenue-raising ability of Connecticut is somewhat diminished, relatively speaking, by the federal grant system. Its total revenues (by the RTS) with average fiscal effort are $738 million lower when grants are taken into consideration (but this still is $3,354 million more than needed to finance its representative expenditures). This implies that the state would have to exert an own-revenue-raising effort of roughly 66 percent of the national average to finance its representative expenditures.[21] Another way of expressing this result is that average effort would yield services 42 percent higher than the national average.

Taking these two states alone, the results suggest that the federal grant system in 1986-87 tended to reduce fiscal disparities. When all 50 states and the District of Columbia are taken into account, however, the evidence in Tables 12 and 14 is inconclusive. Two of the four measures of own-revenue-raising ability suggest that federal grants tend to worsen disparities to a very minor degree (the sums of the positive gaps for these measures—GSP and TTR—are, on average, slightly larger when federal grants are taken into account than when they are ignored); the other two measures suggest the opposite conclusion. It is clear that the federal grant system does little to mitigate underlying fiscal disparities among the states.

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[19] The essential difference between Tables 12 and 14 is that the national total distributed among the states by the measures of revenueraising ability in Table 12 is $653.6 billion. The amount distributed by the four measures in Table 14 is $538.6 billion (the total of Table 12 minus $115.0 billion of federal grants). To each state's share of the national total of own-revenue-raising ability is added the actual amount of federal grants received by the state. The result is its overall revenue-raising ability.

"Mississippi's actual expenditures total $5,319 million. Netting federal grants of $1,314 million leaves $4,005 million to be financed by *own* revenues. This level of actual *own* revenues is only 6 percent larger than the yield in Mississippi of the national average level of *own* (RTS) effort—$3,775 million ($5,089 million, from column 4 of Table 14, less federal grants of $1,314 million)

[21] Connecticut's representative expenditures total $7,906 million, its federal grants $1,373 million, leaving $6,533 million to be financed from own sources. This requirement amounts to 66 percent of the state's own-revenue-raising ability, which is $9,887 million ($11,260 million, from column 4 of Table 14, less actual federal grants).

Table 14
Calculation of the Gap Between "Needs" and Revenue-Raising Ability in 1987, with Account Taken of Actual Federal Grants
(millions)

State	Total Federal Grants-in-Aid 1986-87	Total Representative Expenditures	Revenue-Raising Ability: Federal Grants Plus Own General Revenue Distributed by Measure				Gap between "Needs" and Revenue-Raising Abili			
			Personal Income	RTS	GSP	TTR	Personal Income	RTS	GSP	TTR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
United States	$114,996	$653,608	$653,608	$653,608	$653,608	$653,608	$0	$0	$0	$0
Sum of Positive Gaps							49,637	47,155	41,591	44,430
Alabama	1,742	11,926	8,711	8,544	8,810	8,782	3,215	3,383	3,116	3,145
Alaska	560	1,710	1,929	2,518	3,075	2,542	(219)	(808)	(1,366)	(833)
Arizona	1,176	9,325	8,104	8,632	8,019	8,010	1,221	693	1,306	1,315
Arkansas	1,017	6,796	4,945	4,915	5,082	5,053	1,851	1,881	1,714	1,742
California	14,390	75,242	84,858	86,056	82,983	83,487	(9,616)	(10,814)	(7,741)	(8,246)
Colorado	1,429	8,682	8,772	9,526	9,033	9,029	(90)	(844)	(351)	(347)
Connecticut	1,373	7,906	11,134	11,260	10,450	10,680	(3,229)	(3,354)	(2,544)	(2,775)
Delaware	318	1,663	1,854	2,077	1,822	1,794	(192)	(414)	(159)	(132)
District of Columbia	1,393	1,718	3,212	3,074	5,093	4,170	(1,494)	(1,356)	(3,375)	(2,451)
Florida	3,668	29,883	30,450	31,489	26,506	28,133	(567)	(1,606)	3,377	1,750
Georgia	2,756	18,138	15,474	15,720	15,981	15,631	2,664	2,418	2,157	2,507
Hawaii	528	2,607	2,954	3,241	3,011	2,976	(348)	(634)	(404)	(370)
Idaho	423	2,682	2,116	2,121	2,115	2,128	565	561	566	554
Illinois	5,147	31,856	32,367	30,088	32,088	32,356	(511)	1,767	(232)	(500)
Indiana	2,210	14,747	13,211	12,871	13,122	13,182	1,536	1,877	1,625	1,565
Iowa	1,227	7,294	6,994	6,465	6,860	6,947	300	829	434	347
Kansas	900	6,541	6,253	6,016	6,357	6,378	288	525	183	162
Kentucky	1,588	10,841	8,012	8,101	8,415	8,199	2,829	2,740	2,426	2,642
Louisiana	2,735	13,224	10,050	11,239	12,298	11,361	3,174	1,985	926	1,863
Maine	683	2,838	3,050	3,229	2,910	2,941	(212)	(391)	(71)	(103)
Maryland	2,210	11,817	13,958	13,127	12,040	12,868	(2,141)	(1,310)	(224)	(1,052)
Massachusetts	3,118	13,726	19,139	19,553	17,962	18,426	(5,413)	(5,827)	(4,236)	(4,700)
Michigan	4,721	26,764	24,964	24,116	24,412	24,876	1,801	2,648	2,353	1,889
Minnesota	2,274	11,174	11,941	12,033	11,992	11,954	(767)	(859)	(818)	(780)
Mississippi	1,314	7,987	5,175	5,089	5,404	5,305	2,812	2,898	2,584	2,683
Missouri	1,854	13,733	12,567	12,134	12,588	12,551	1,167	1,600	1,145	1,182
Montana	565	2,215	1,993	2,114	2,128	2,084	222	101	87	131
Nebraska	677	4,118	3,942	3,871	4,085	4,056	176	247	34	62
Nevada	396	2,593	2,753	3,530	2,893	2,779	(159)	(937)	(299)	(186)
New Hampshire	388	2,425	3,037	3,264	2,768	2,825	(612)	(840)	(343)	(400)
New Jersey	3,423	19,172	25,742	24,191	23,310	24,195	(6,570)	(5,019)	(4,138)	(5,023)
New Mexico	697	4,455	3,243	3,571	3,730	3,502	1,213	884	726	953
New York	12,472	45,619	58,345	55,085	59,082	58,980	(12,726)	(9,466)	(13,462)	(13,360)
North Carolina	2,382	16,977	14,587	15,085	15,355	14,879	2,390	1,892	1,621	2,098
North Dakota	423	1,898	1,672	1,759	1,802	1,759	226	138	96	139
Ohio	4,541	28,921	27,065	26,251	27,169	27,285	1,856	2,669	1,752	1,635
Oklahoma	1,277	9,123	7,147	8,023	7,678	7,575	1,976	1,100	1,445	1,548
Oregon	1,482	7,161	6,949	7,053	6,786	6,878	212	108	375	283
Pennsylvania	5,648	28,990	31,601	30,020	29,235	30,366	(2,612	(1,031)	(245)	(1,377)
Rhode Island	551	2,271	2,744	2,641	2,505	2,613	(4731	(370)	(234)	(342)
South Carolina	1,352	9,502	7,228	7,326	7,099	7,137	2,273	2,176	2,402	2,365
South Dakota	405	1,993	1,677	1,633	1,665	1,673	315	359	328	320
Tennessee	2,131	13,496	11,070	11,137	11,425	11,177	2,426	2,359	2,070	2,319
Texas	5,600	49,436	38,874	42,425	44,600	42,258	10,562	7,011	4,836	7,178
Utah	894	4,734	3,624	3,830	3,979	3,832	1,110	903	754	901
Vermont	362	1,312	1,483	1,608	1,472	1,468	(171)	(296)	(160)	(156)
Virginia	2,264	15,627	16,203	15,689	15,647	15,759	(575)	(61)	(20)	(132)
Washington	2,444	12,015	12,563	12,338	12,426	12,545	(548)	(323)	(411)	(530)
West Virginia	988	5,234	3,976	4,226	4,084	4,084	1,258	1,008	1,150	1,150
Wisconsin	2,418	12,160	12,547	11,767	12,302	12,438	(387)	393	(142)	(277)
Wyoming	459	1,345	1,350	1,940	1,959	1,704	(5)	(596)	(614)	(359)

Note: The national-average level of own-revenue-raising effort is that required to raise just enough revenue to finance the actual level of direct general expenditures by state and local governments net of the portion assumed to be financed by federal grants actually received, that is, $538,612 million ($653,608 million – $114,996 million). The estimates of total revenue-raising ability in columns 2-5 are the sum of each state's own-revenue-raising ability by the four measures plus actual federal grants received, from column 1.

Sources: 1–U.S. Department of Commerce, Bureau of the Census, *Government Finances in 1986-87* (Washington, DC, 1988), Table 29.
2–Table B-3.
3-6–Table B-5.
7-10–Column 2 less columns 3-6, respectively.

Chapter 5

Graphic Presentation of the Results by State

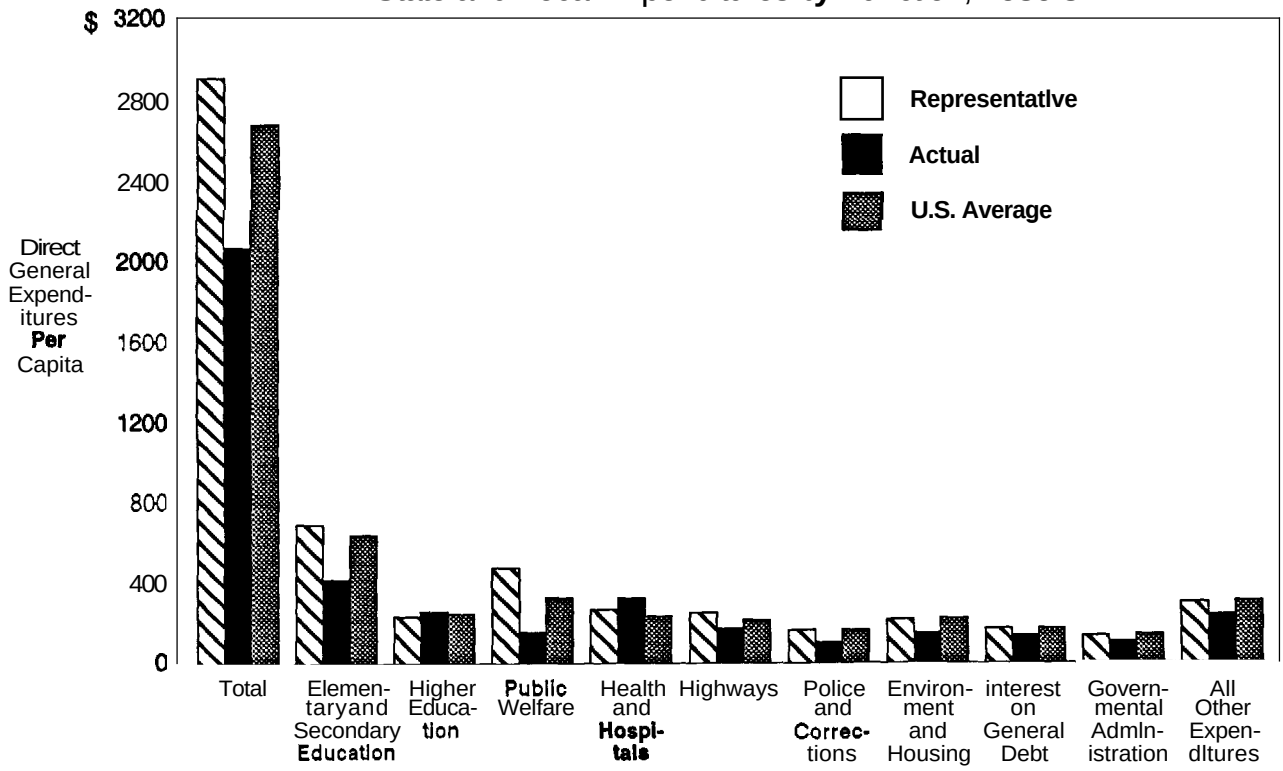
This section includes a bar chart for each state and the District of Columbia illustrating the results of the analysis. For each of the 10 functional categories of direct general expenditures, the first bar shows the state's representative level of outlays, the second its actual expenditures, and the third the national average level of spending.

The exact dollar amount of the per capita expenditures plotted in the graphs in this section can be calculated by dividing the total expenditures (actual and representative) in Tables B-1 and B-3 by the resident population of a state, which appears in Table B-7.

The estimates of representative expenditures displayed in the graphs are the estimates discussed in Chapter 4, that is, they are adjusted for differences among the states in unit input costs.

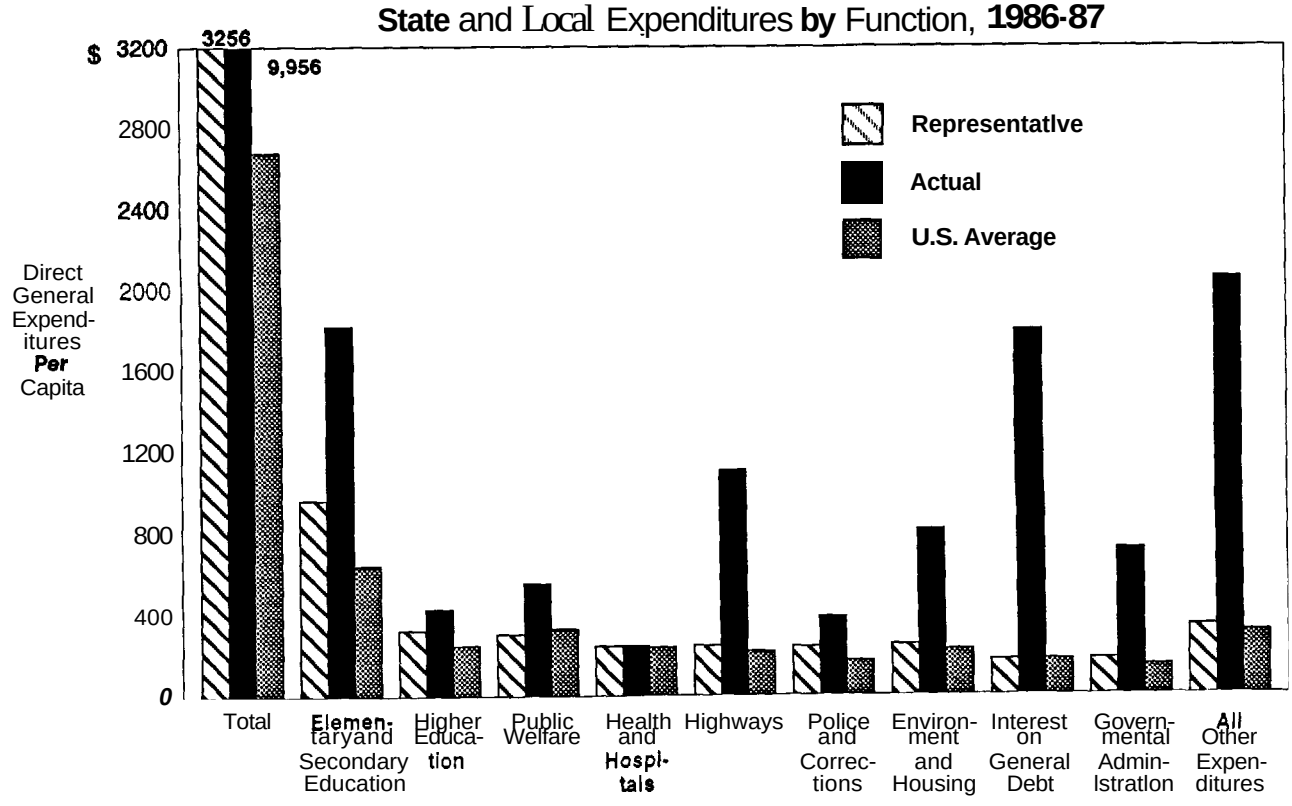
Alabama

State and Local Expenditures by Function, 1986-87



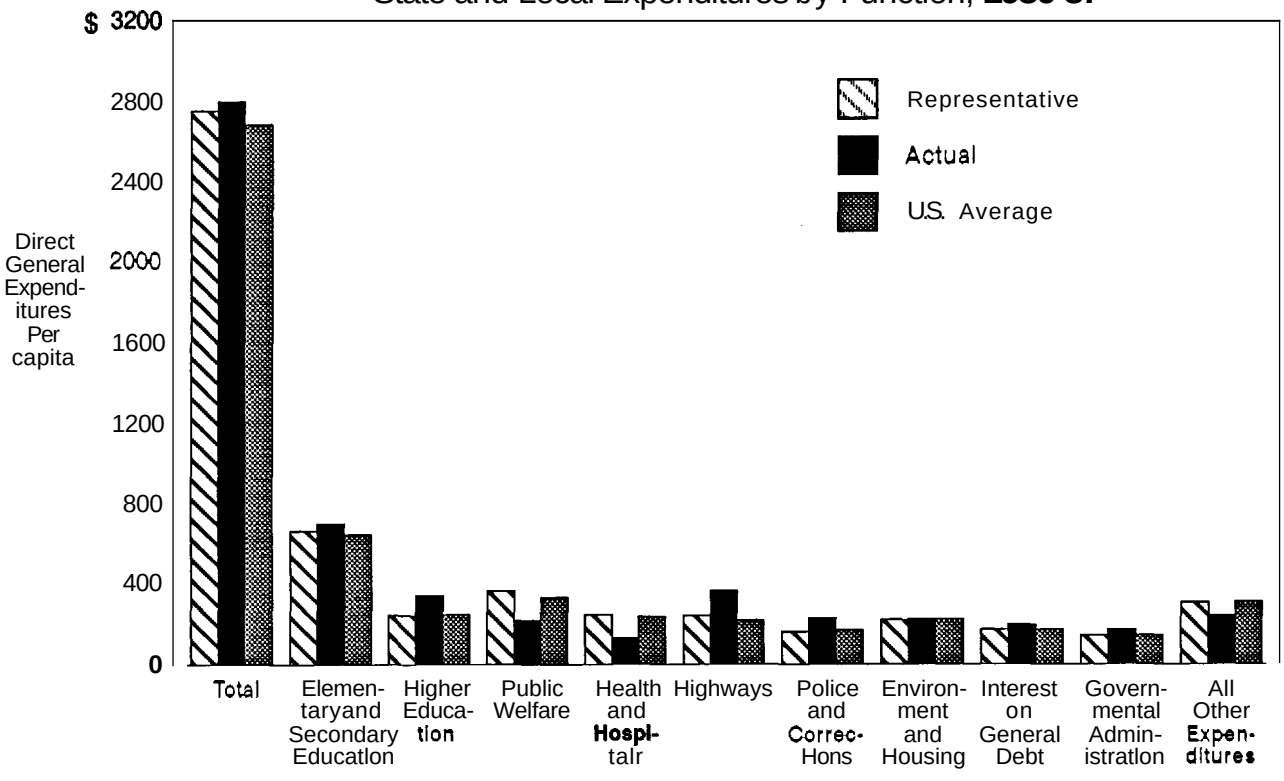
Alaska

State and Local Expenditures by Function, 1986-87



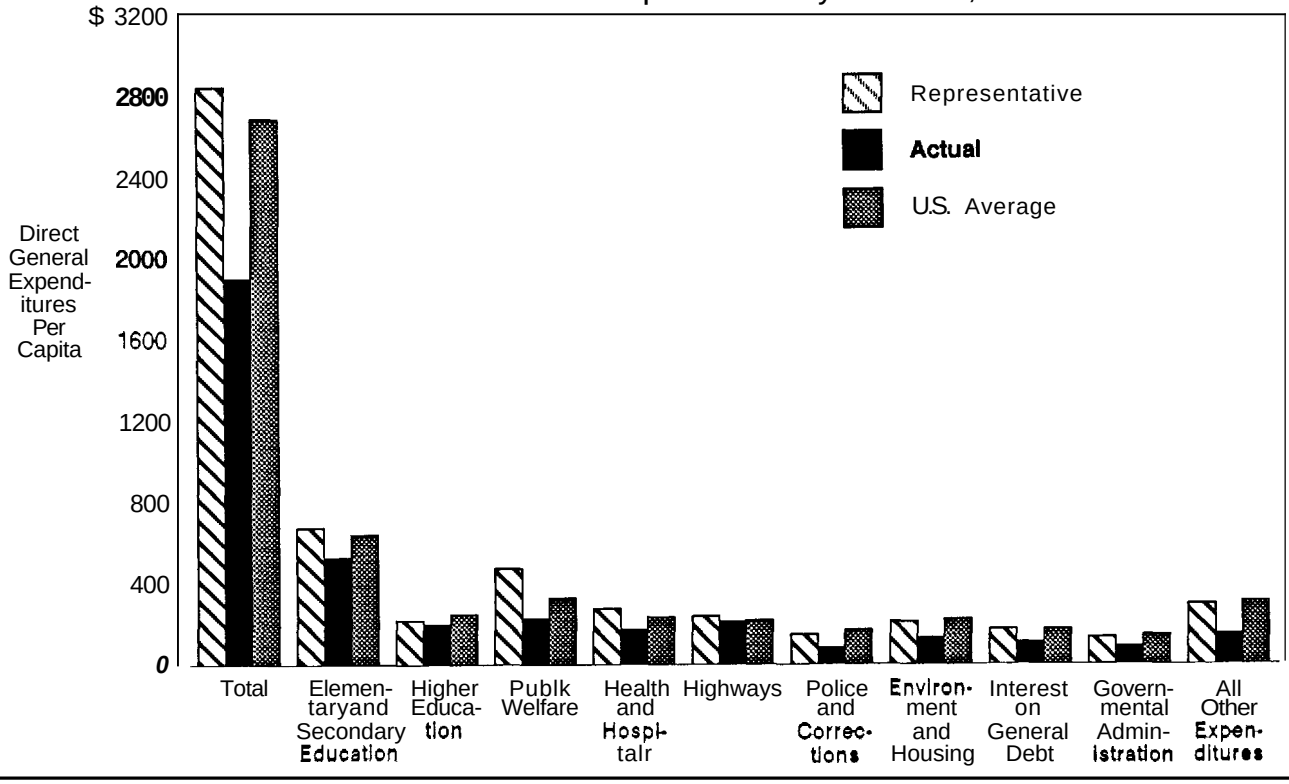
Arizona

State and Local Expenditures by Function, **1986-87**



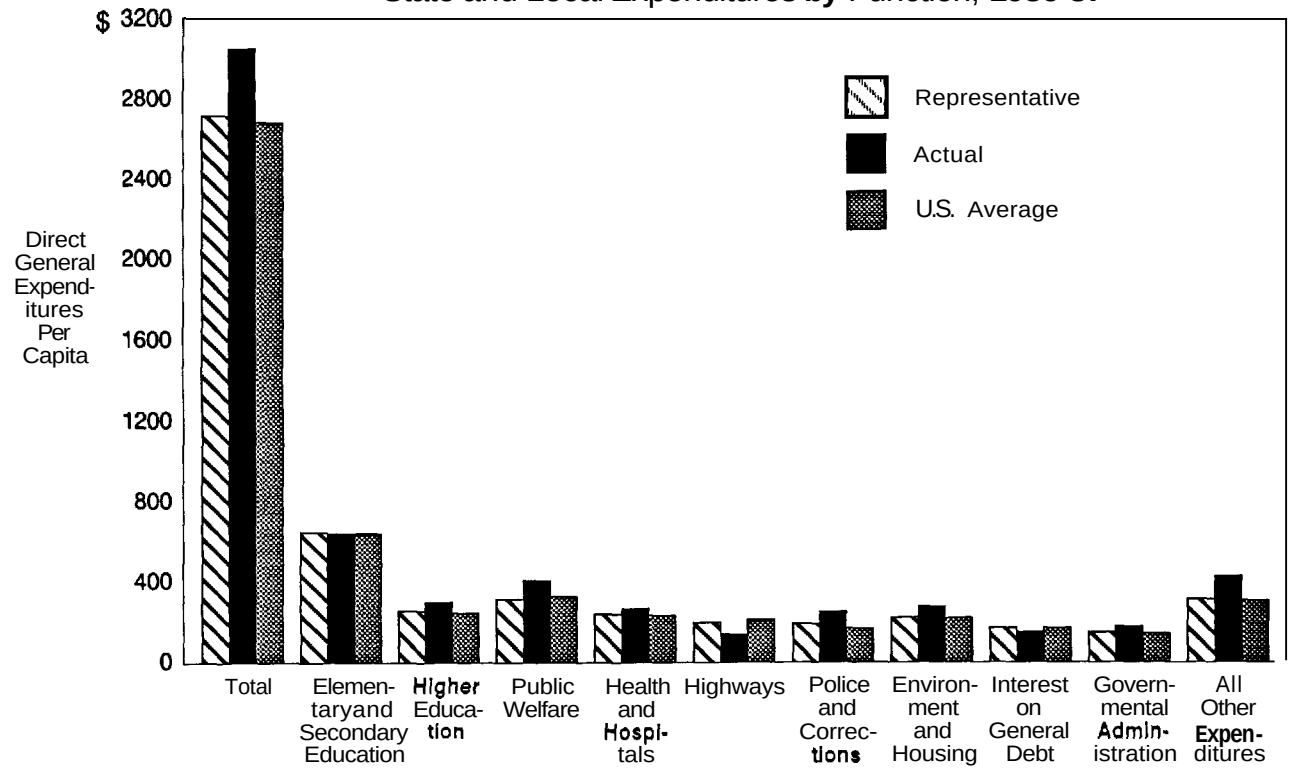
Arkansas

State and Local Expenditures by Function, **1986-87**



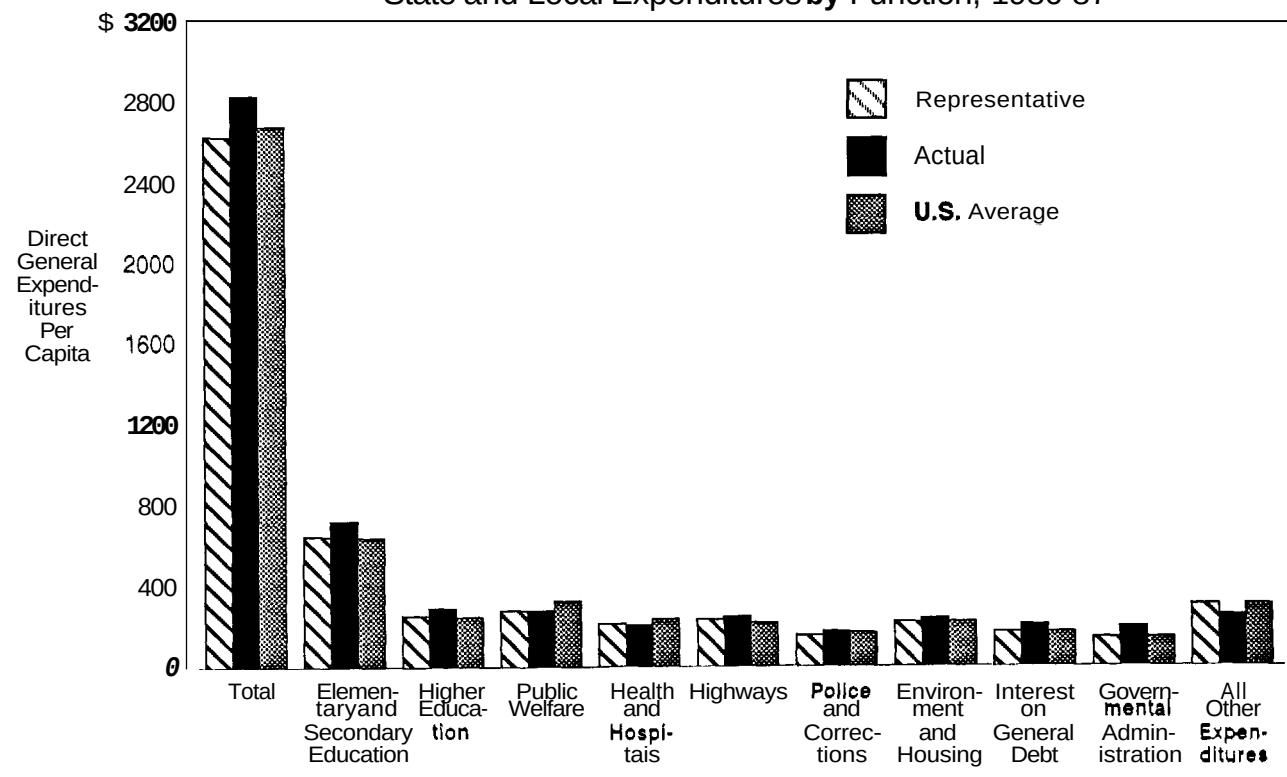
California

State and Local Expenditures by Function, 1986-87



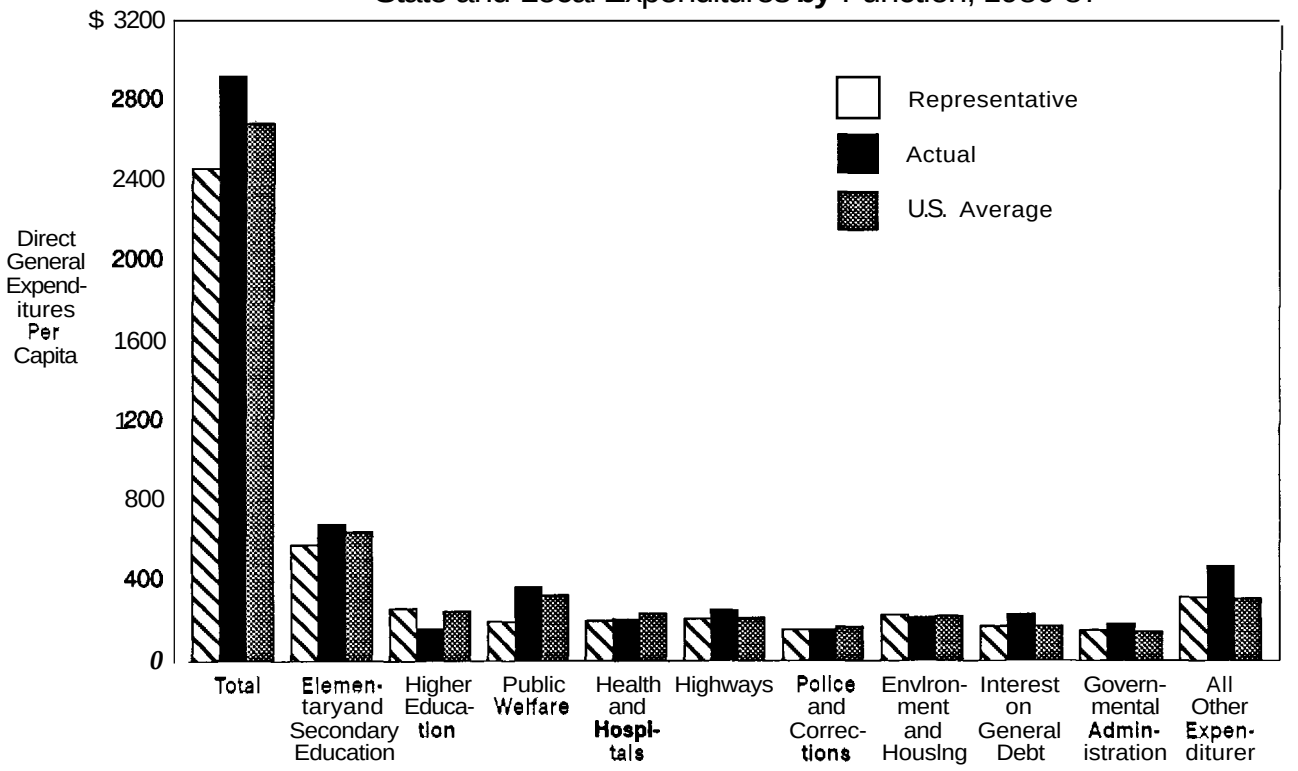
Colorado

State and Local Expenditures by Function, 1986-87



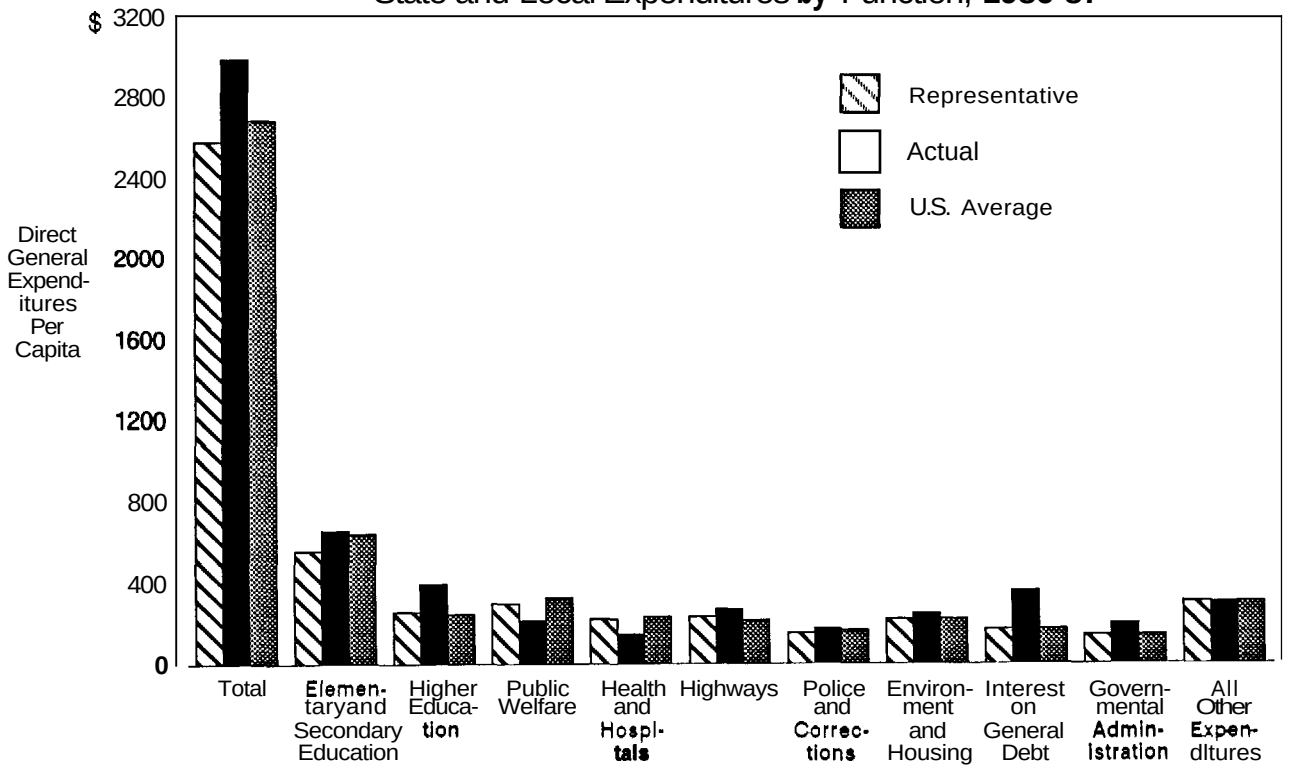
Connecticut

State and Local Expenditures by Function, 1986-87



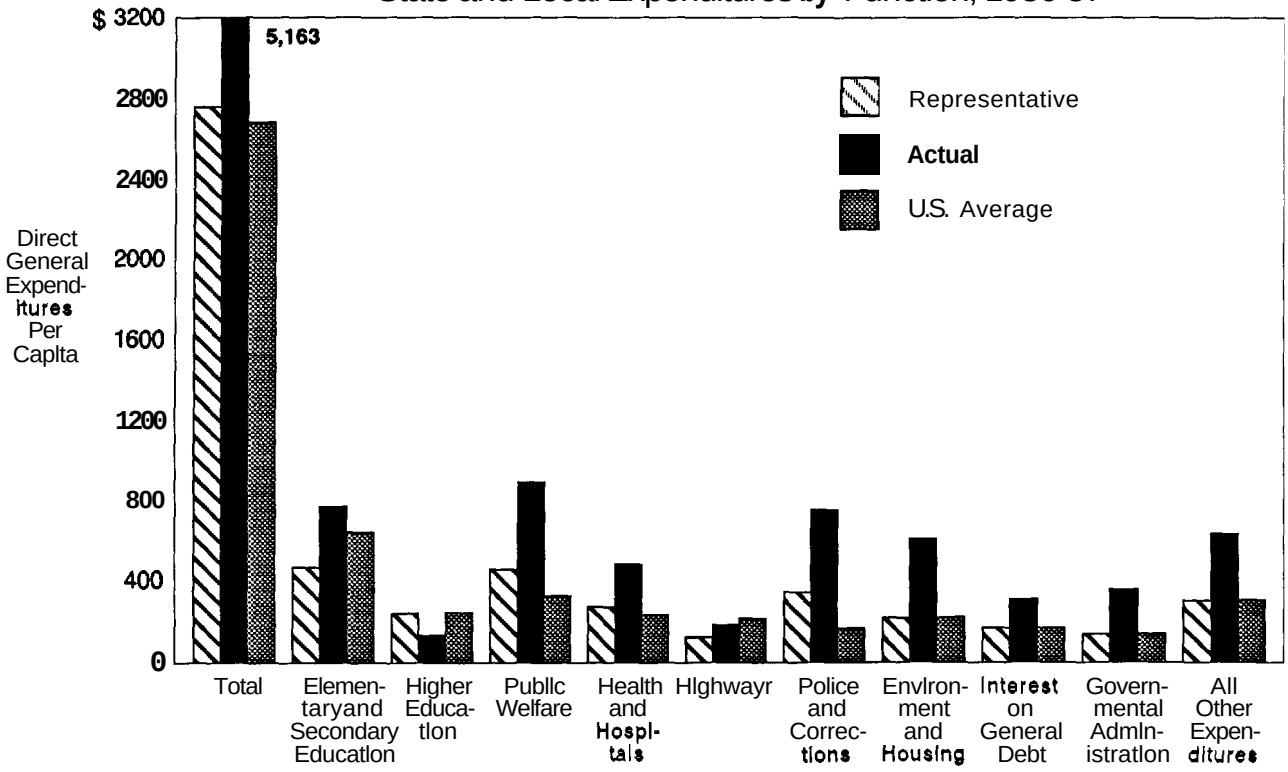
Delaware

State and Local Expenditures by Function, 1986-87



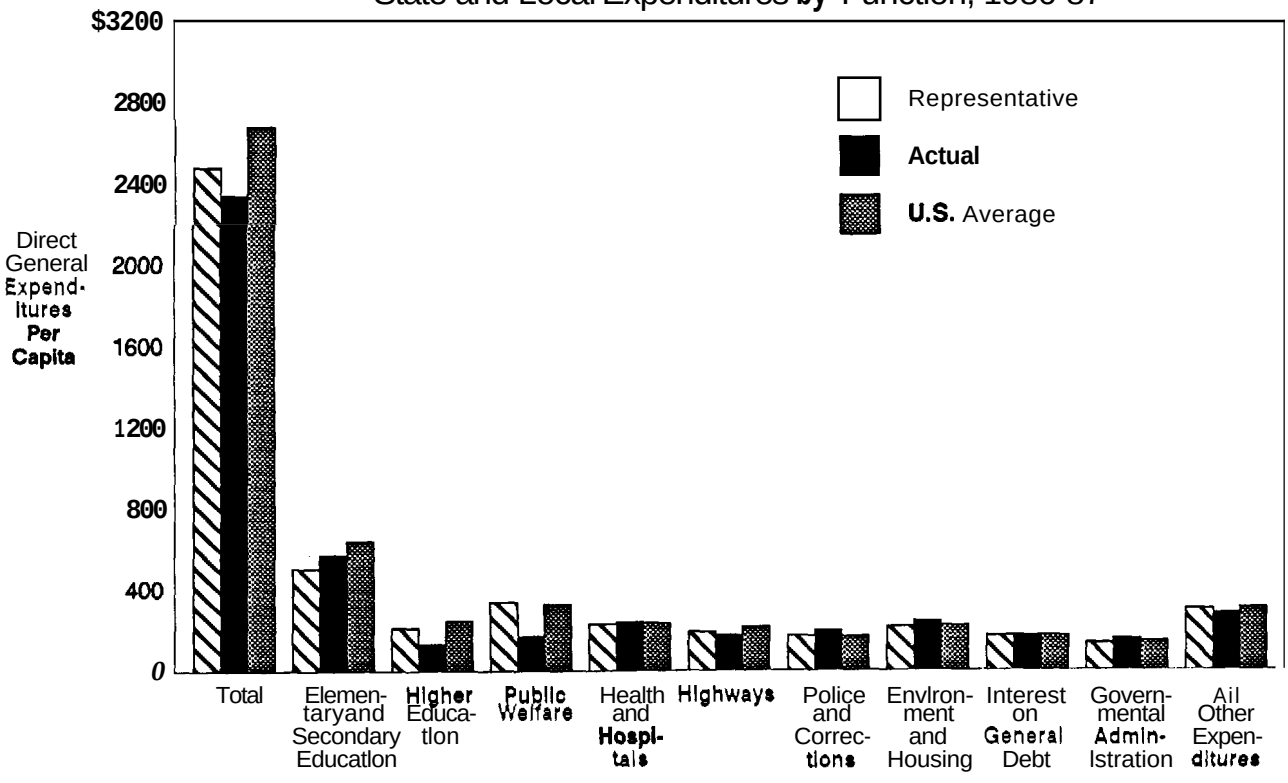
District of Columbia

State and Local Expenditures by Function, 1986-87



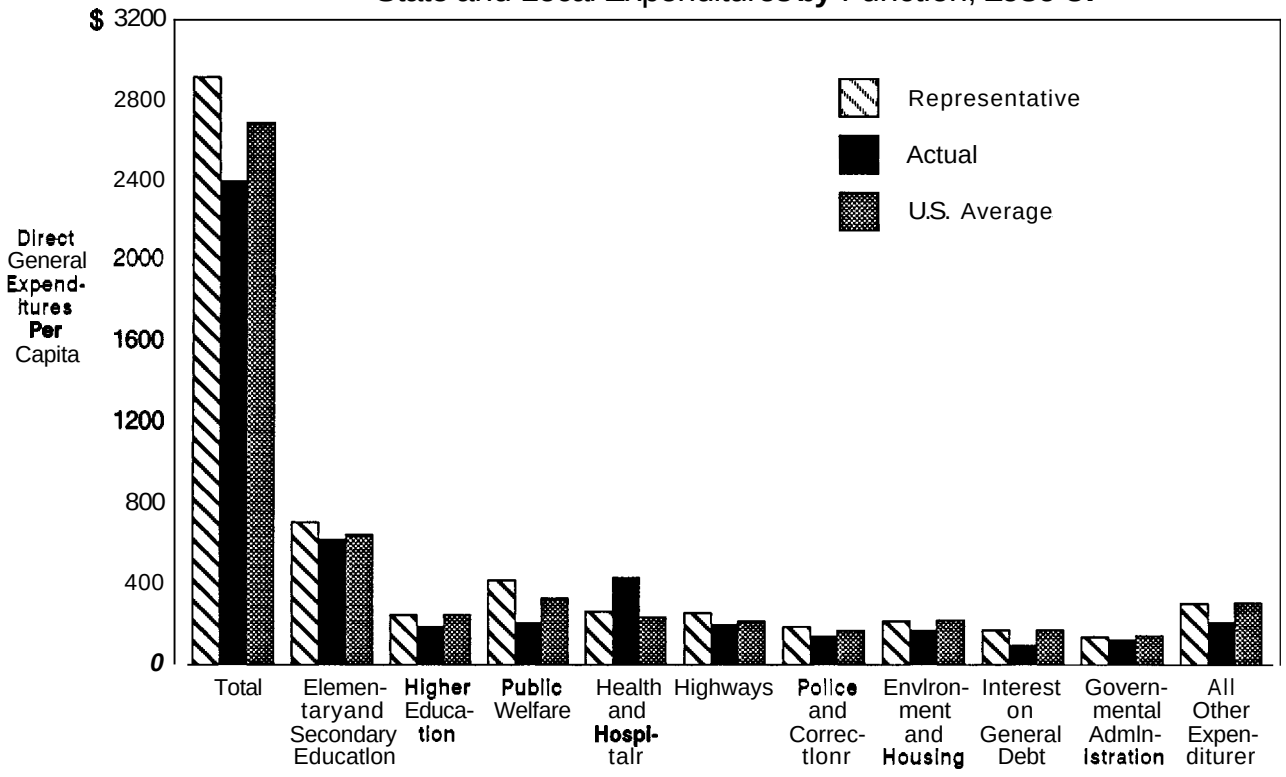
Florida

State and Local Expenditures by Function, 1986-87



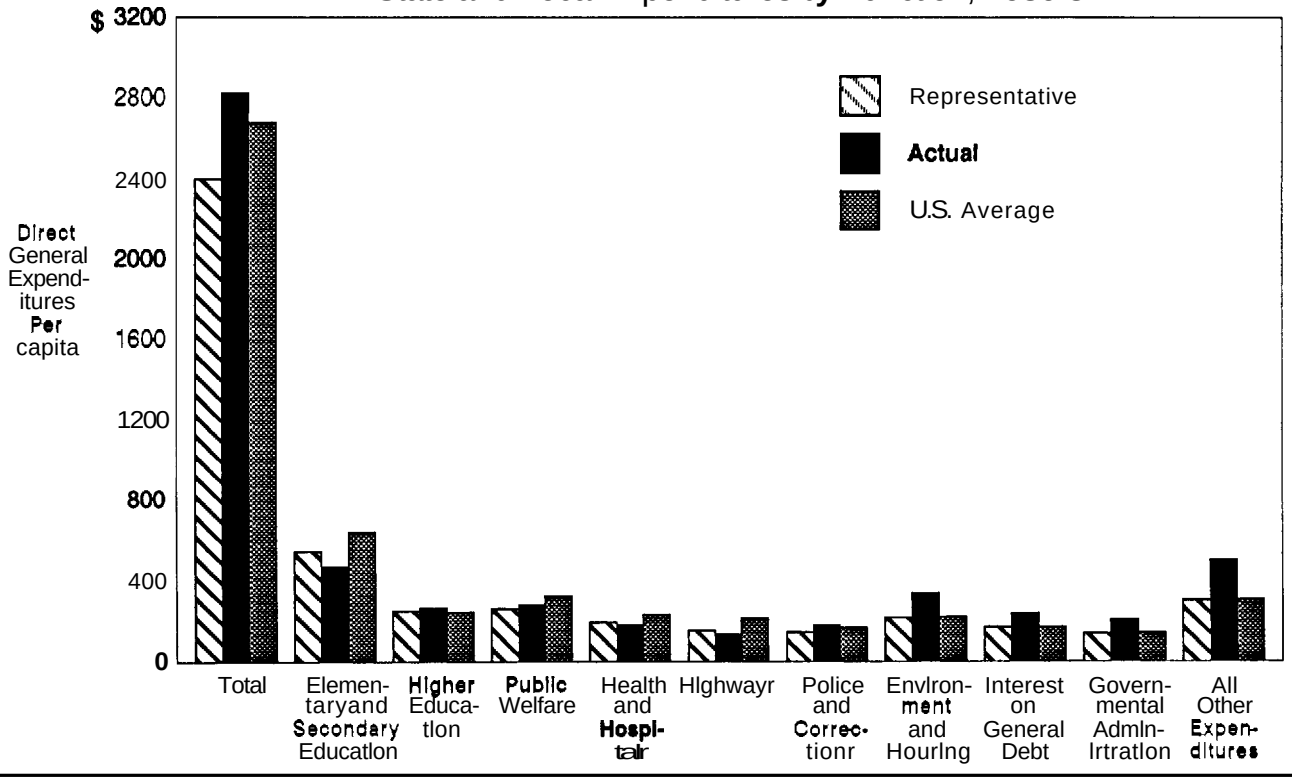
Georgia

State and Local Expenditures by Function, 1986-87



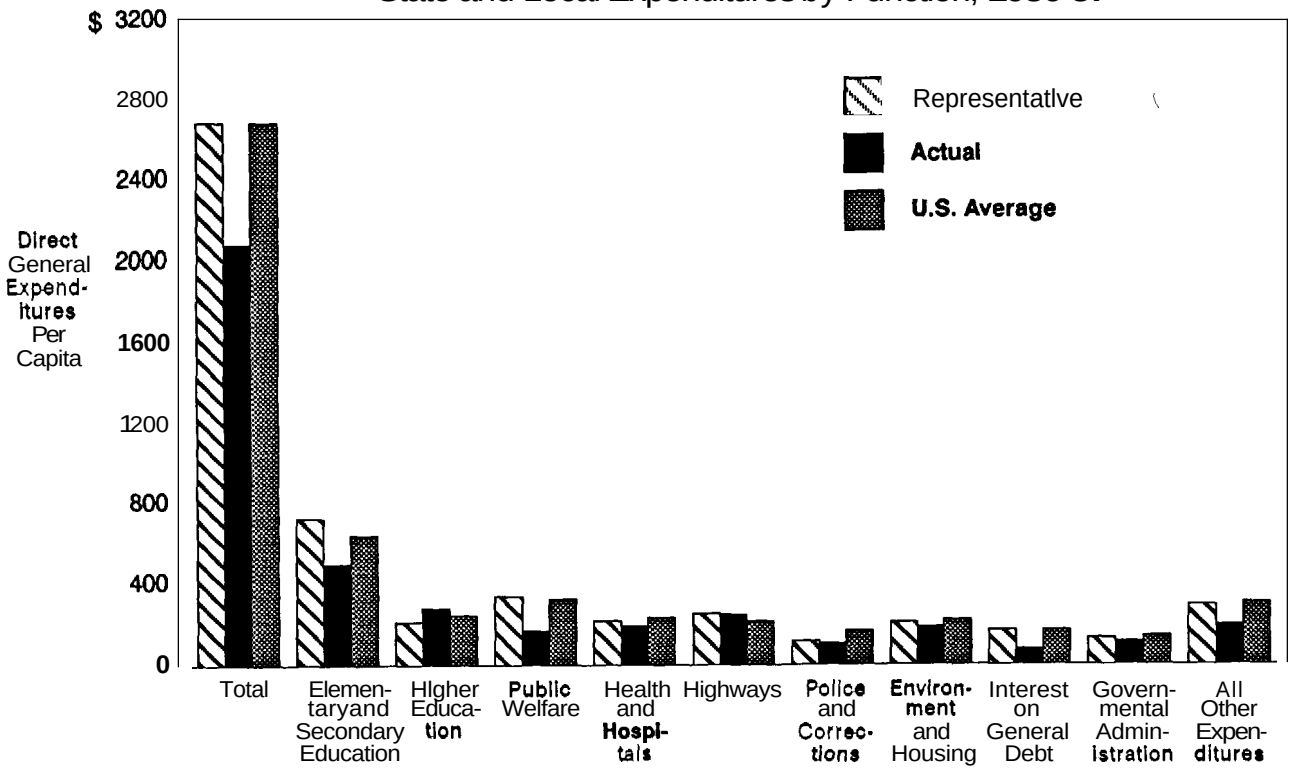
Hawaii

State and Local Expenditures by Function, 1986-87



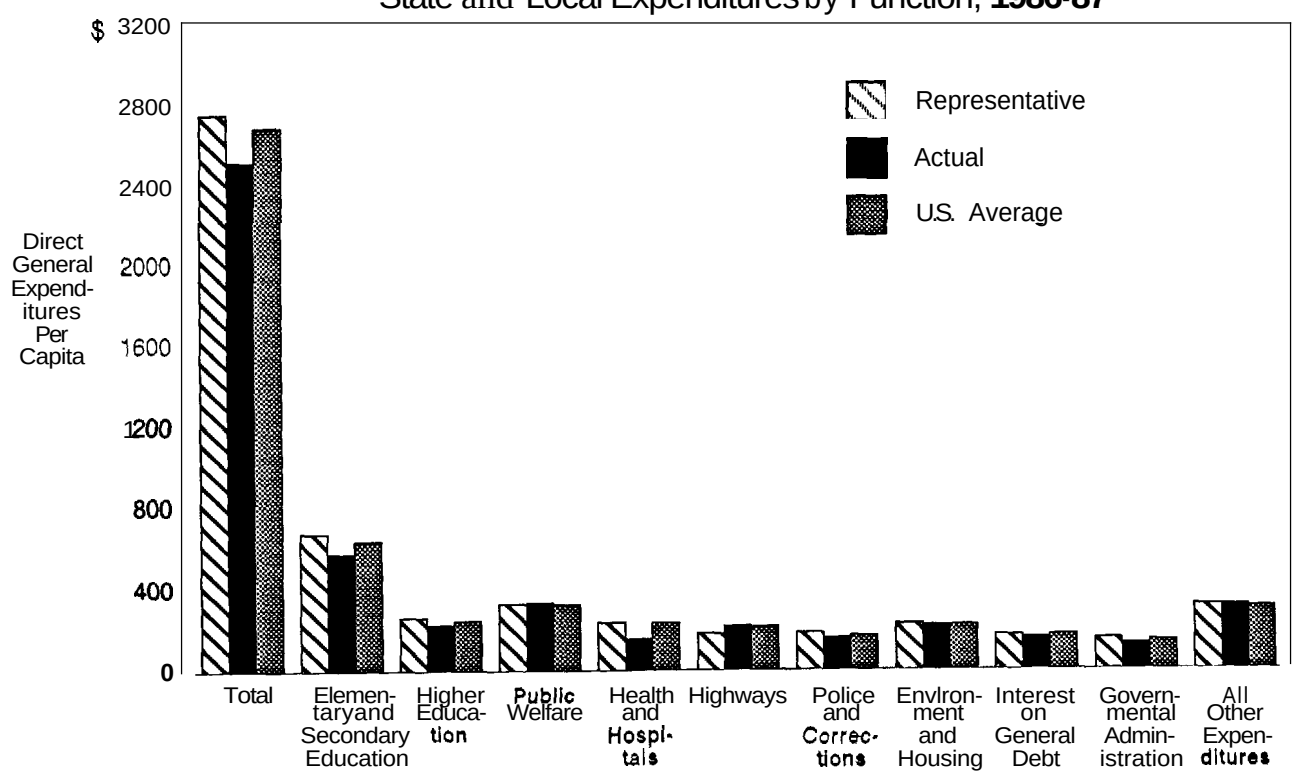
Idaho

State and Local Expenditures by Function, **1986-87**



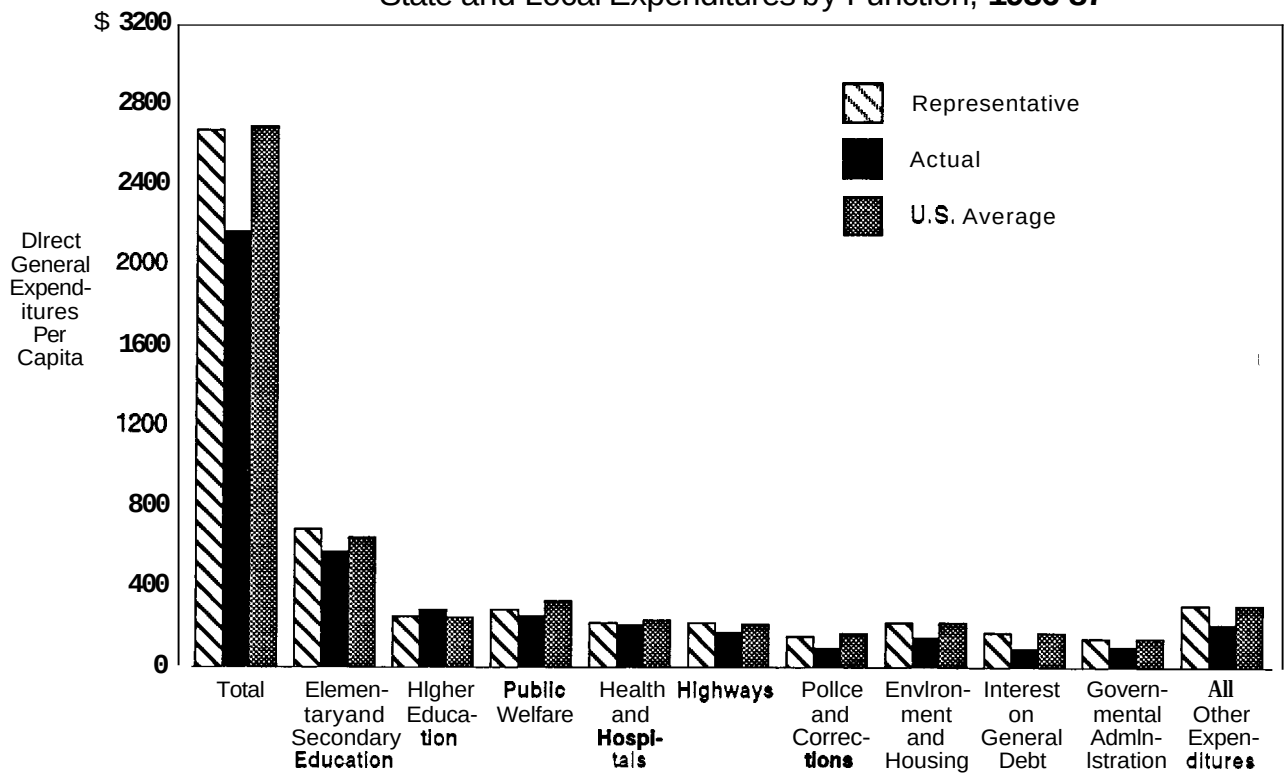
Illinois

State and Local Expenditures by Function, **1986-87**



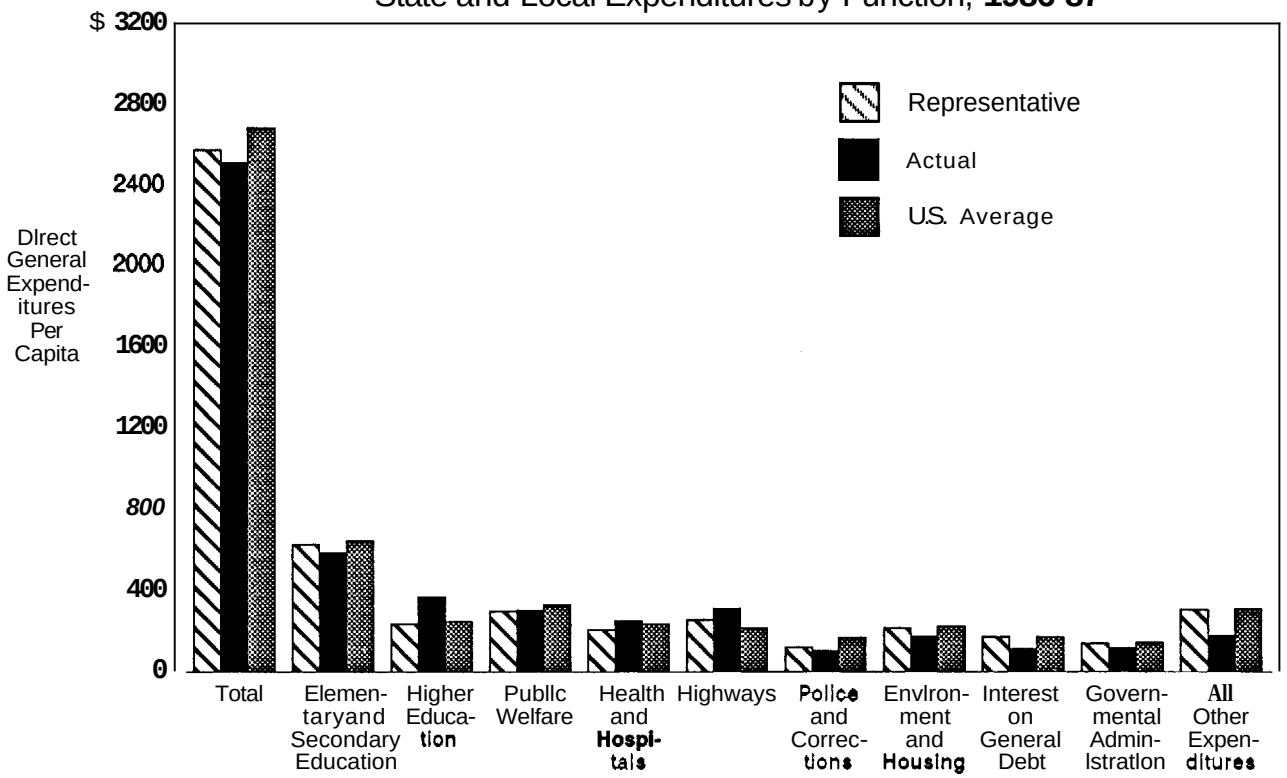
Indiana

State and Local Expenditures by Function, **1986-87**



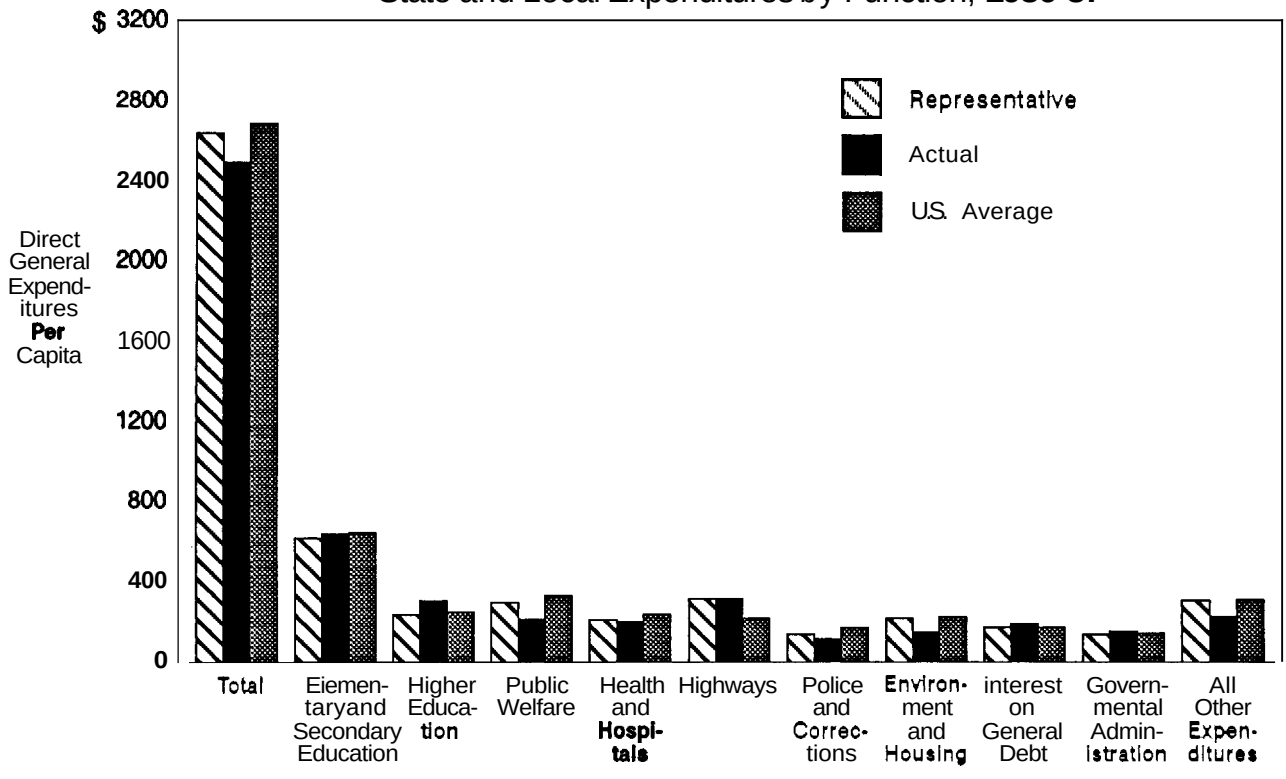
Iowa

State and Local Expenditures by Function, **1986-87**



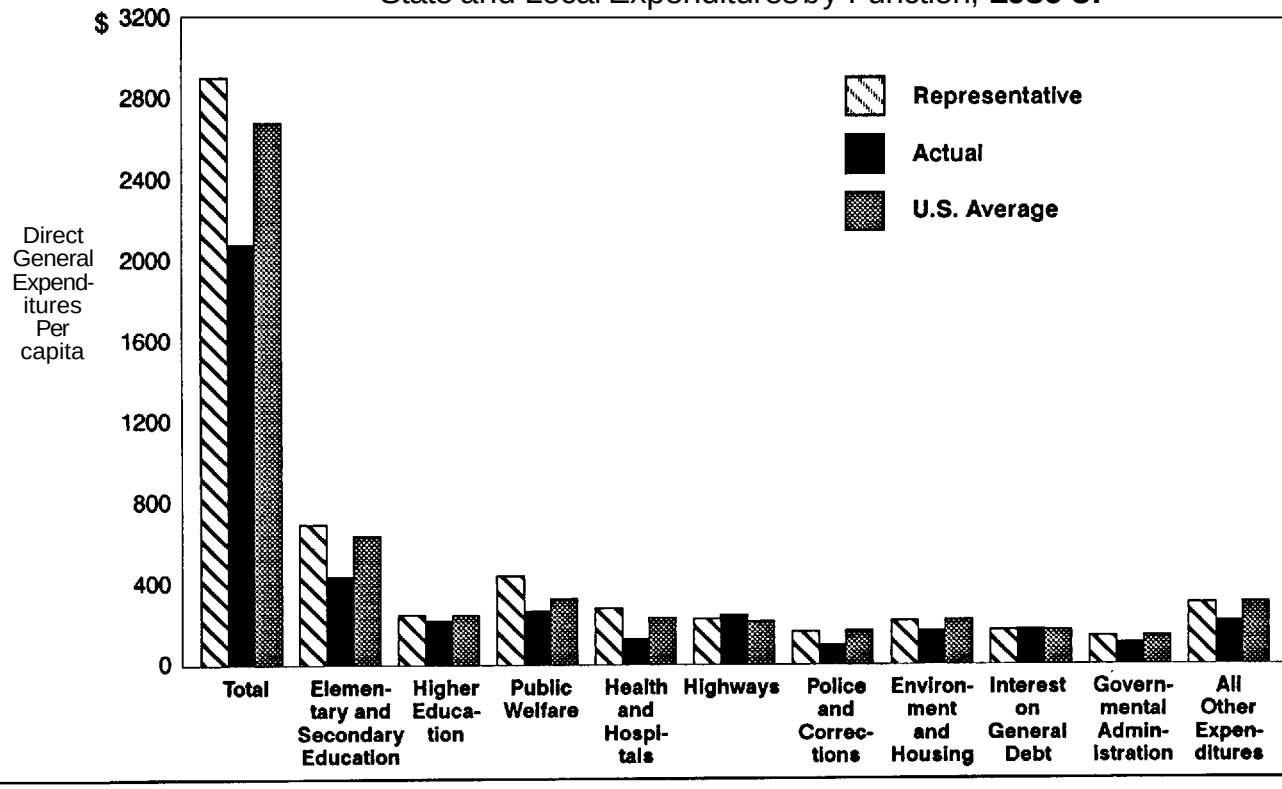
Kansas

State and Local Expenditures by Function, **1986-87**



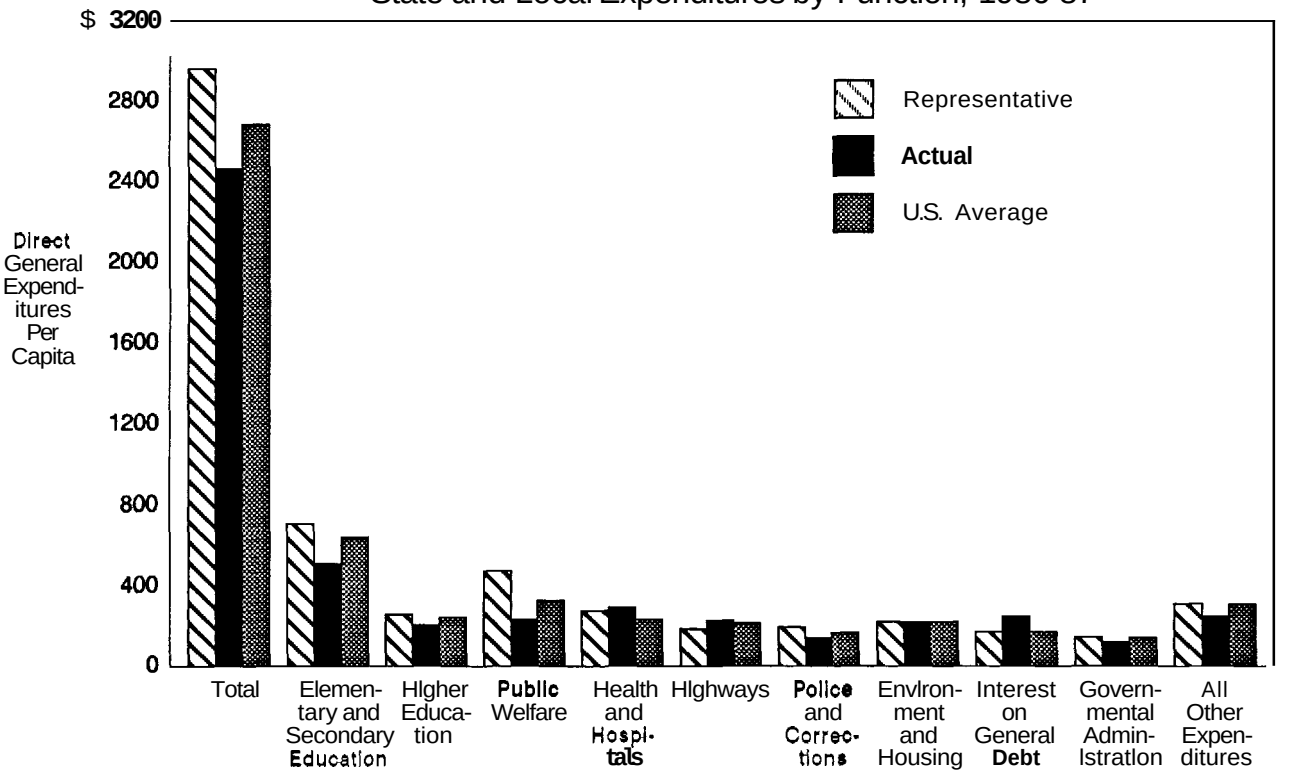
Kentucky

State and Local Expenditures by Function, **1986-87**



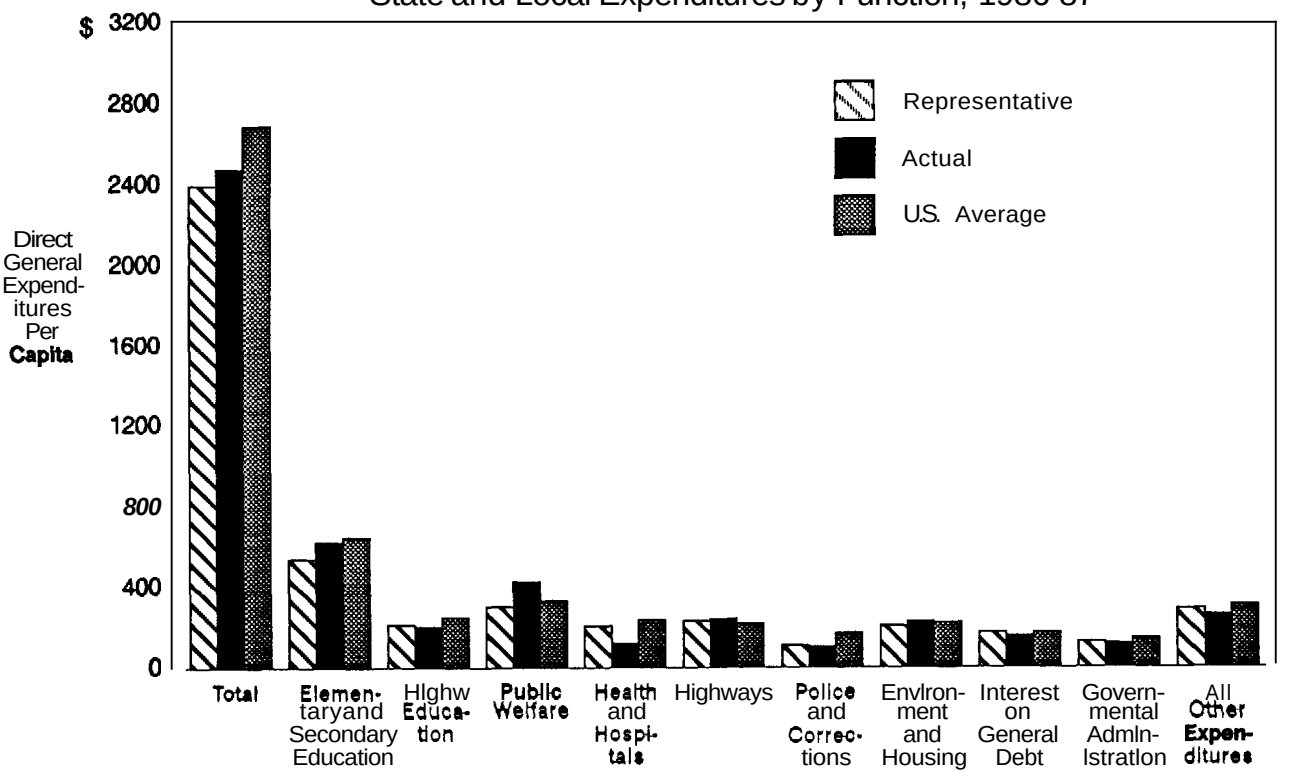
Louisiana

State and Local Expenditures by Function, 1986-87



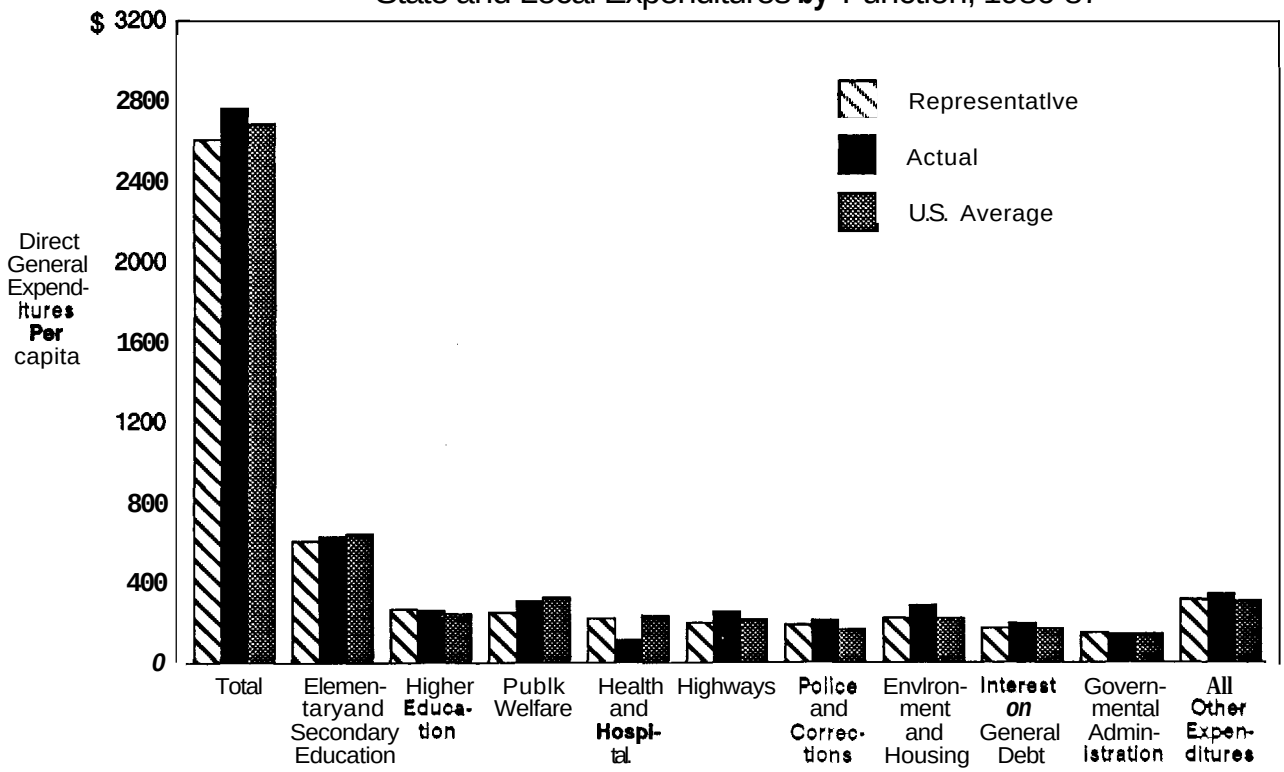
Maine

State and Local Expenditures by Function, 1986-87



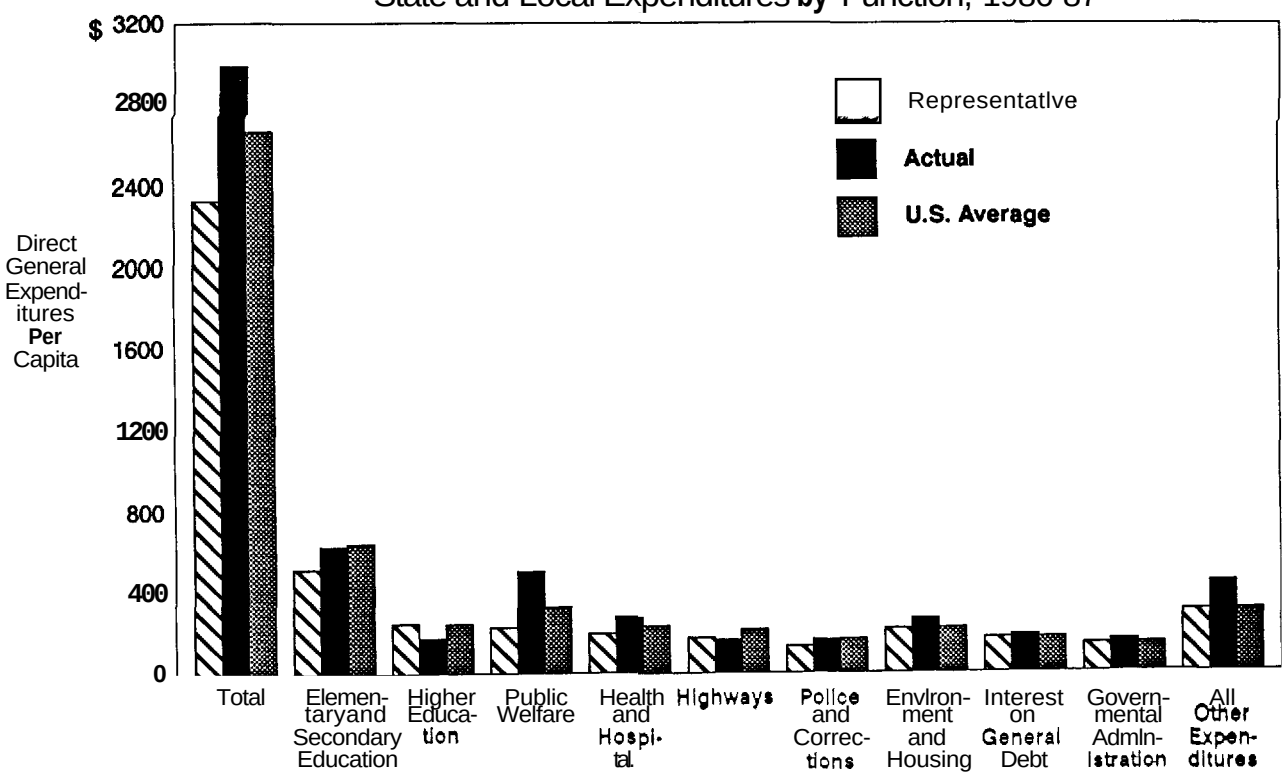
Maryland

State and Local Expenditures by Function, 1986-87



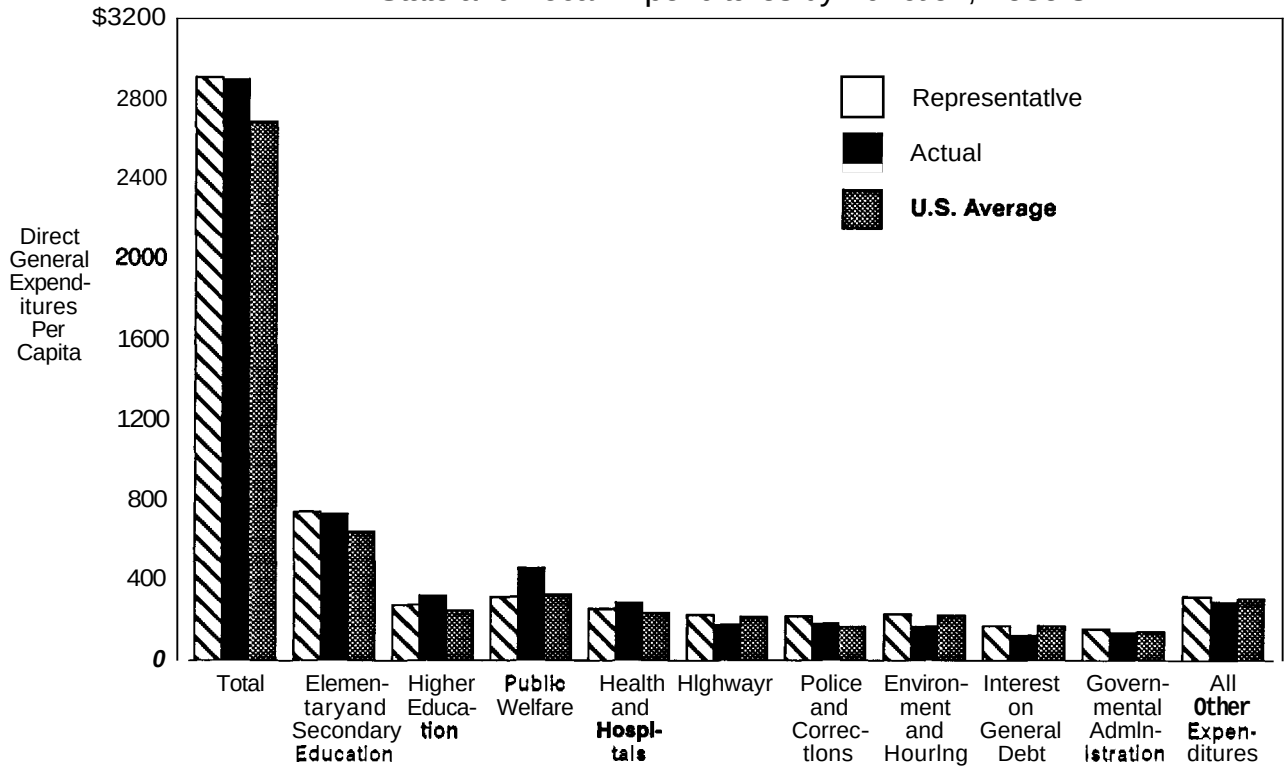
Massachusetts

State and Local Expenditures by Function, 1986-87



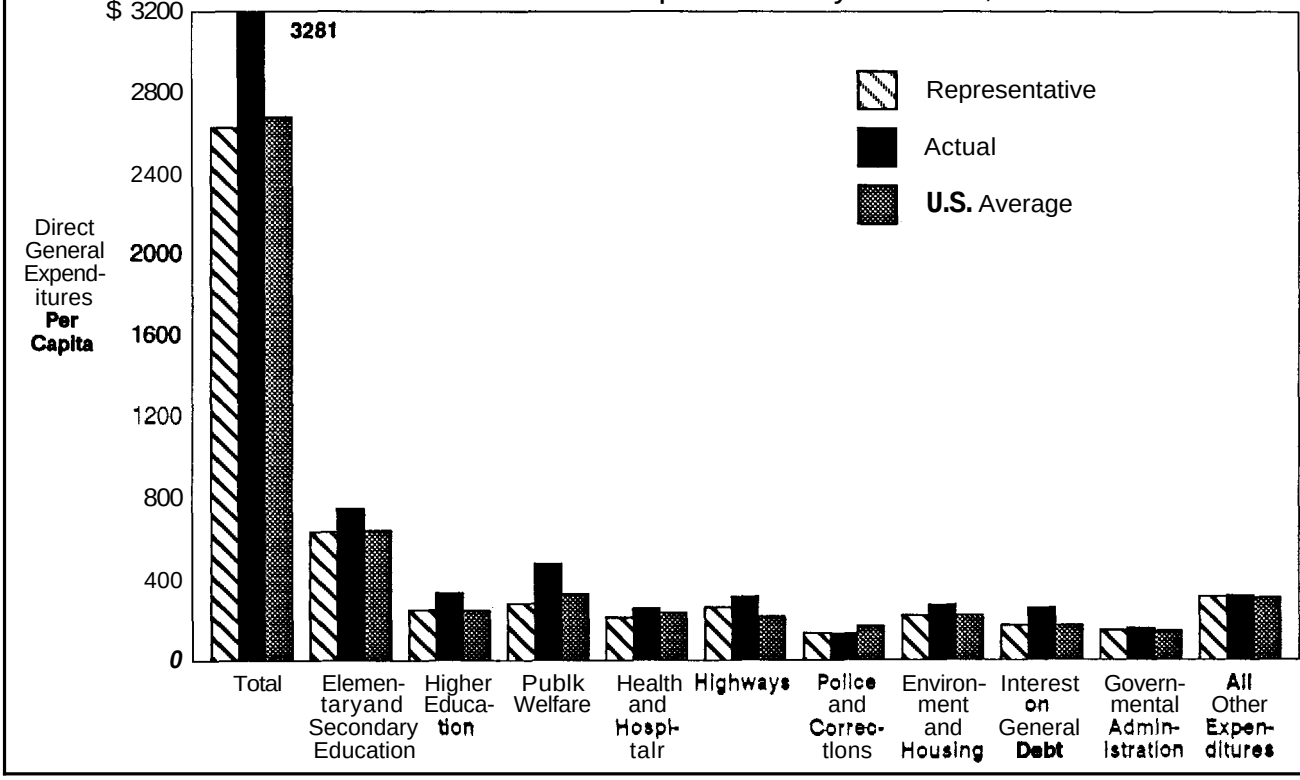
Michigan

State and Local Expenditures by Function, **1986-87**



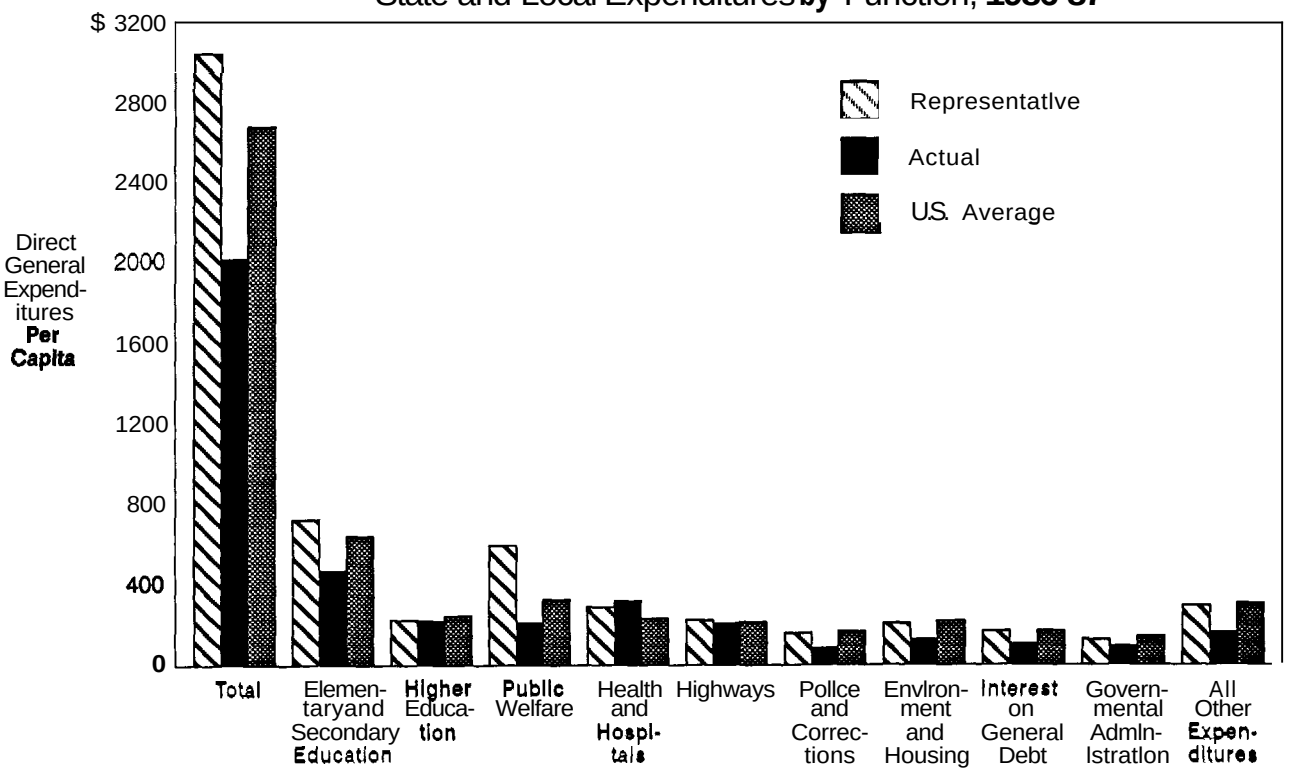
Minnesota

State and Local Expenditures by Function, **1986-87**



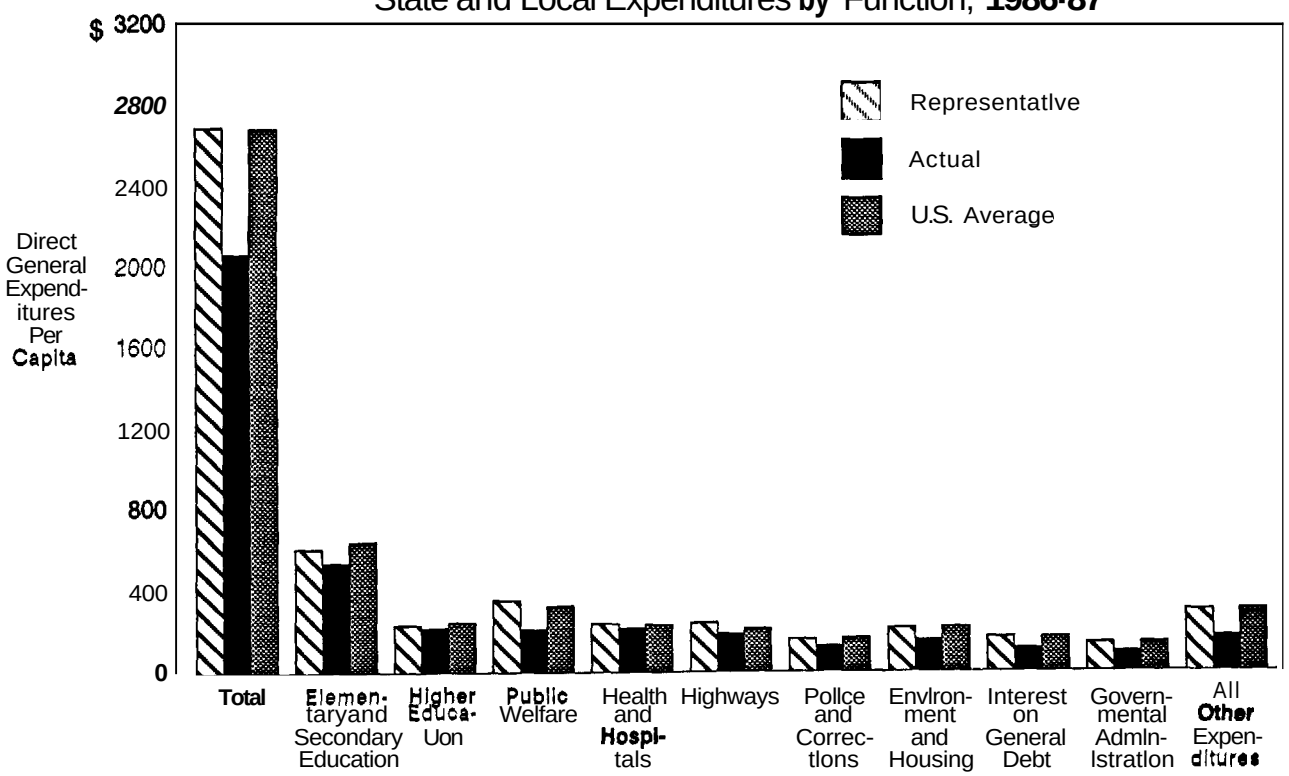
Mississippi

State and Local Expenditures by Function, 1986-87



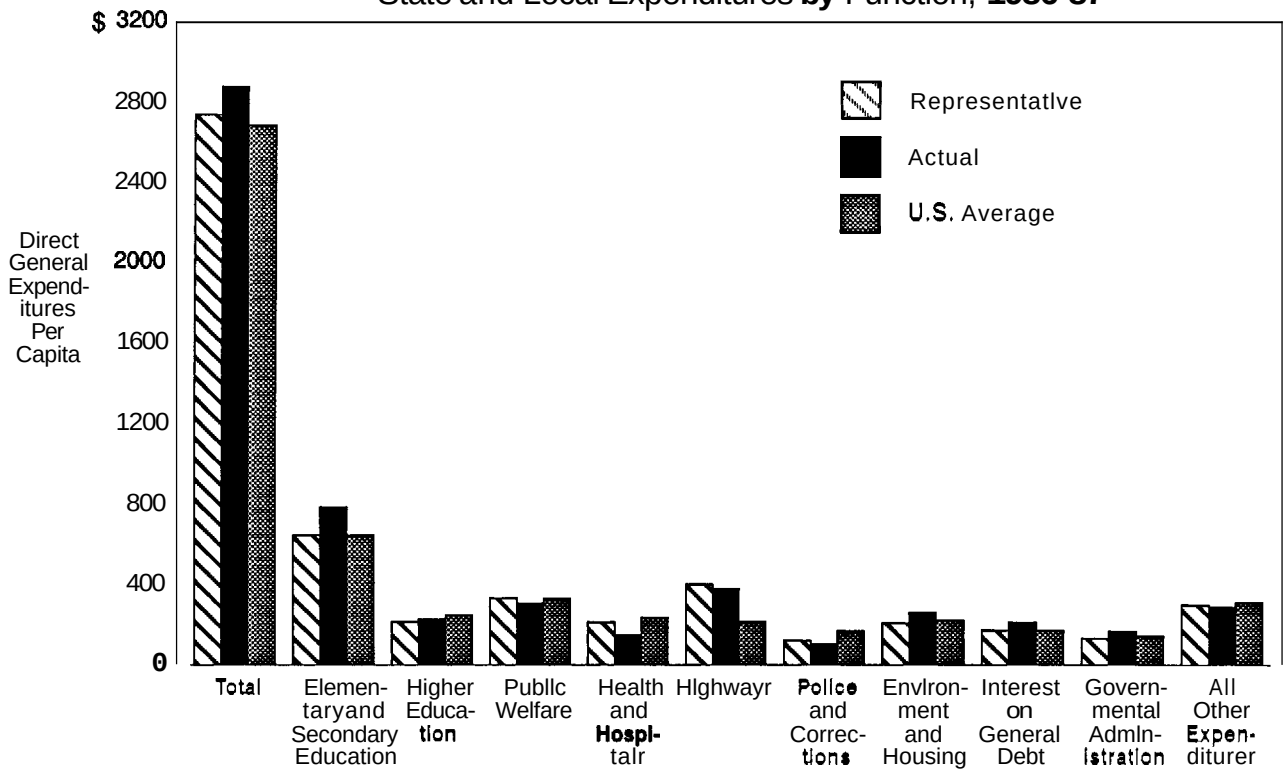
Missouri

State and Local Expenditures by Function, 1986-87



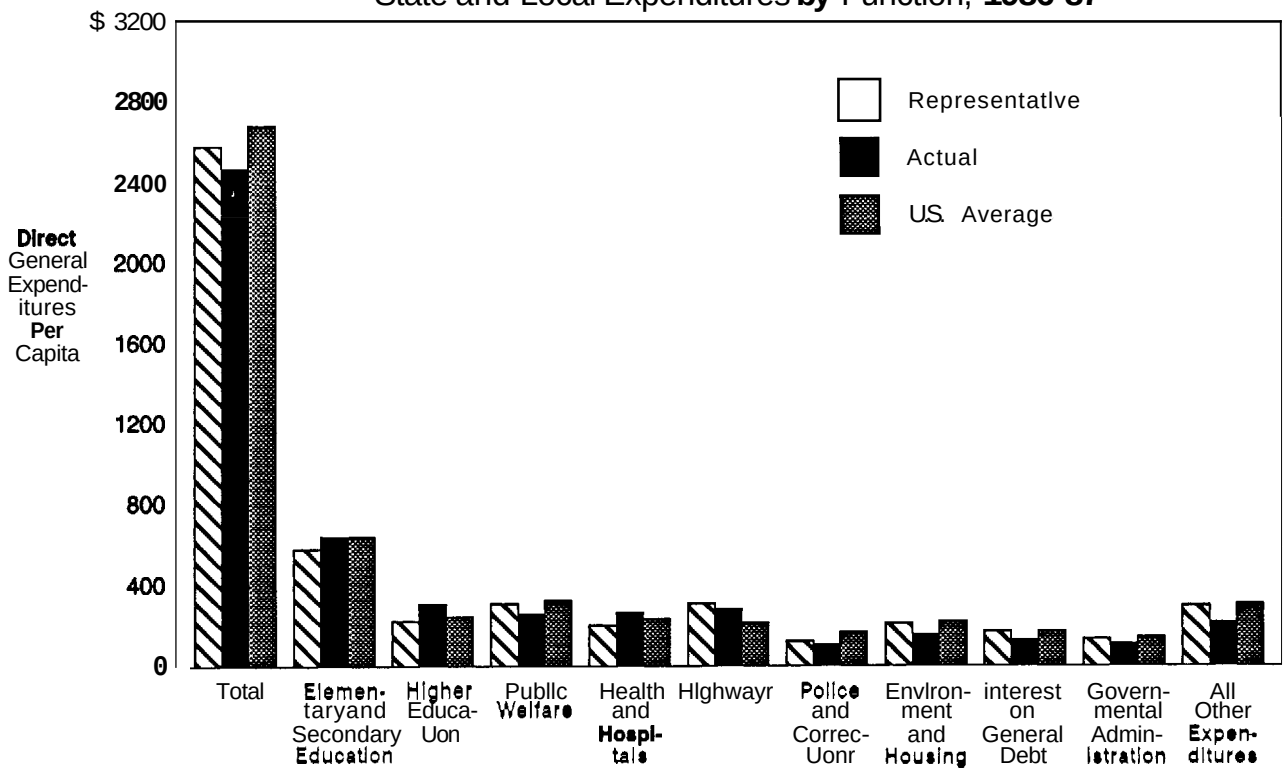
Montana

State and Local Expenditures by Function, 1986-87



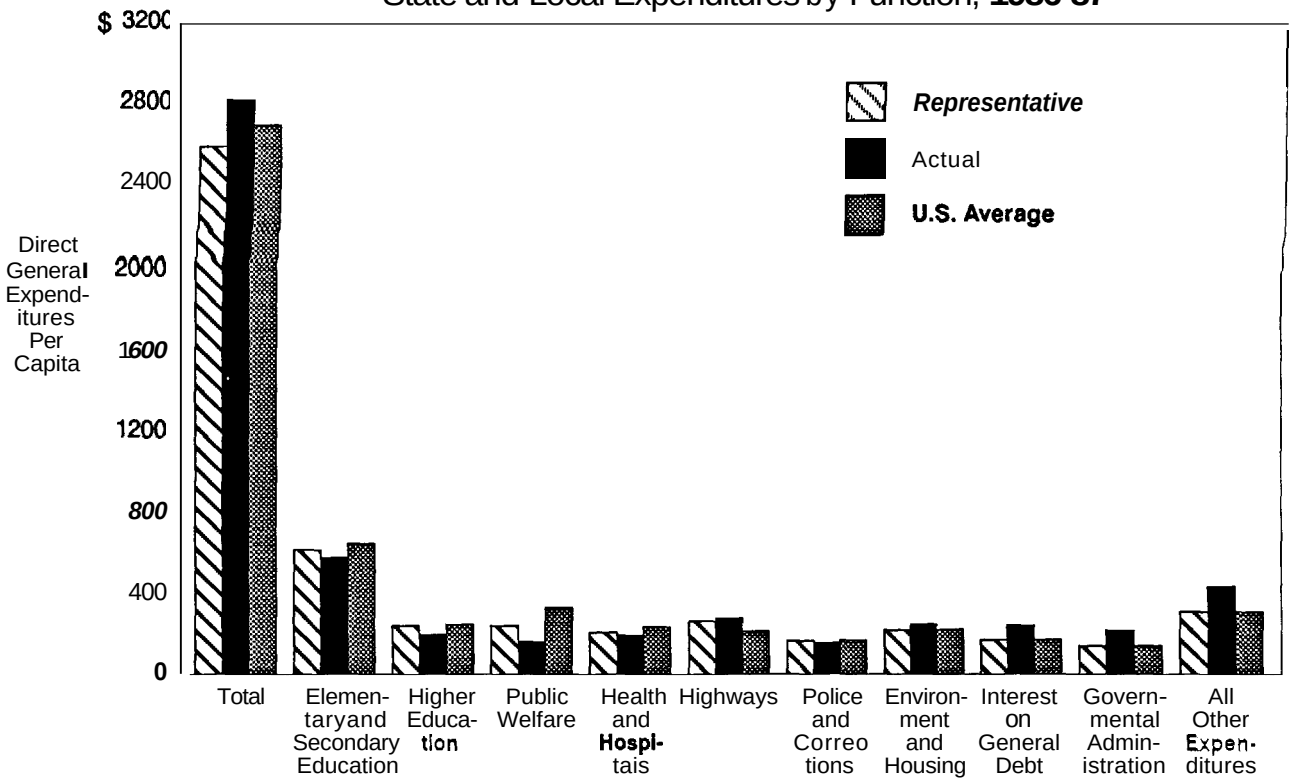
Nebraska

State and Local Expenditures by Function, 1986-87



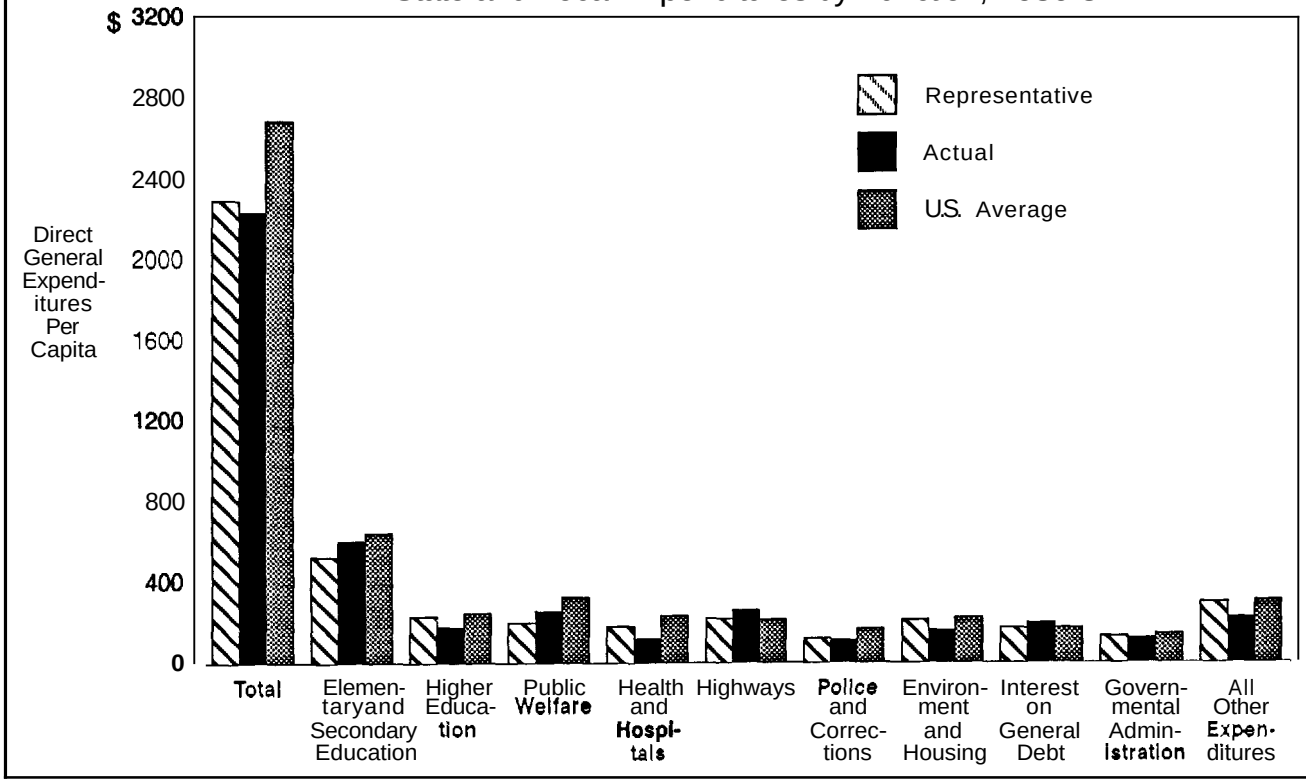
Nevada

State and Local Expenditures by Function, **1986-87**



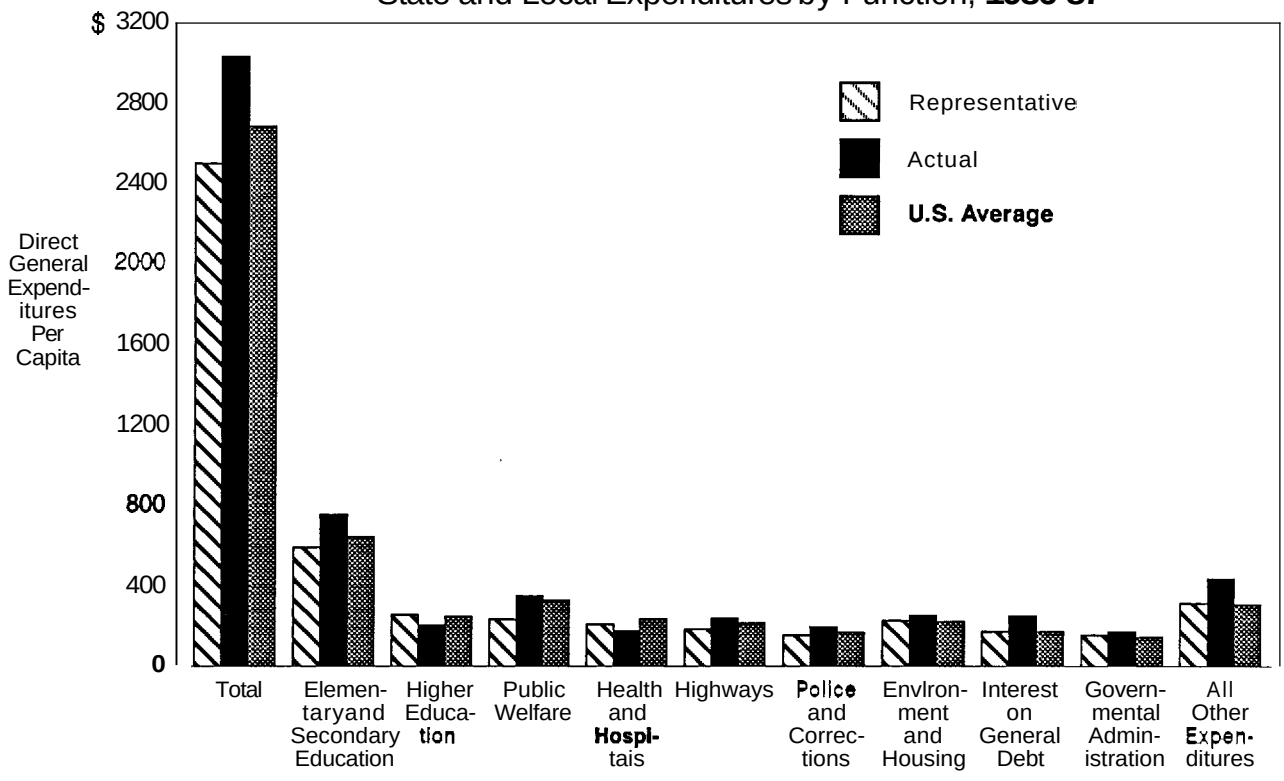
New Hampshire

State and Local Expenditures by Function, **1986-87**



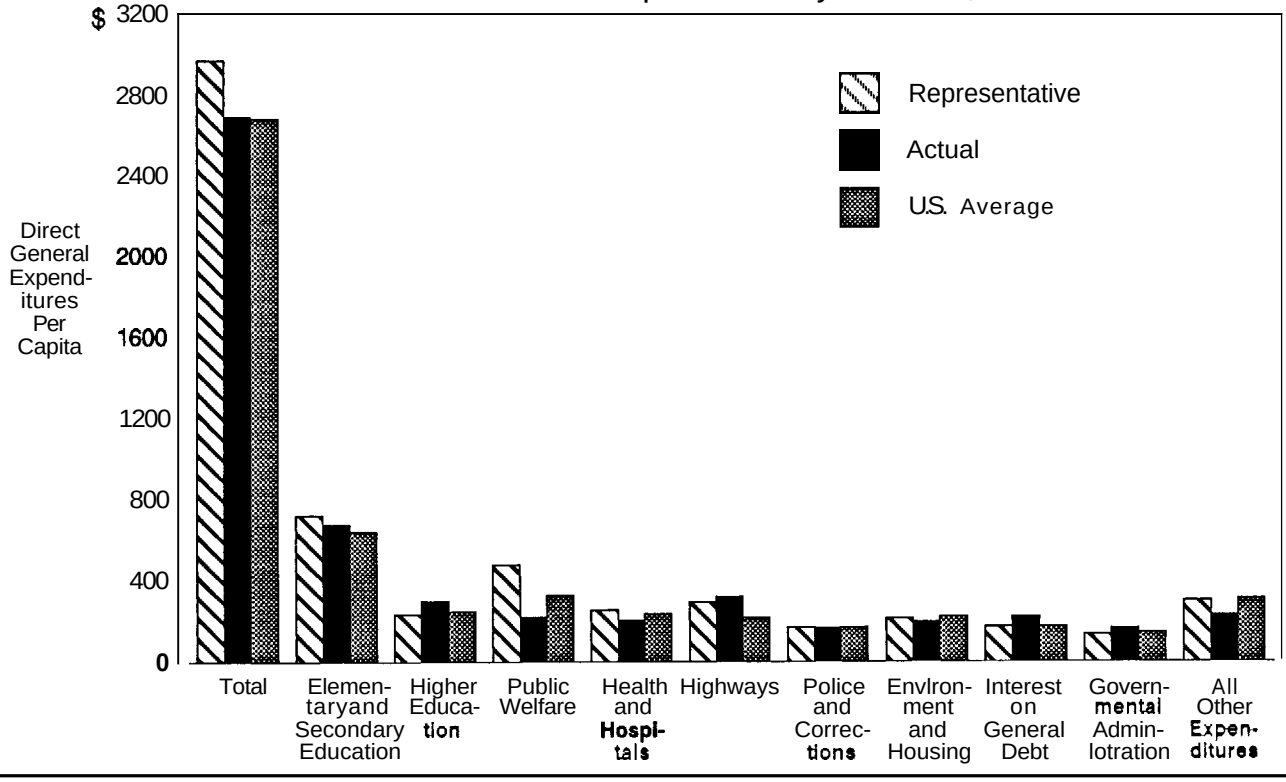
New Jersey

State and Local Expenditures by Function, **1986-87**



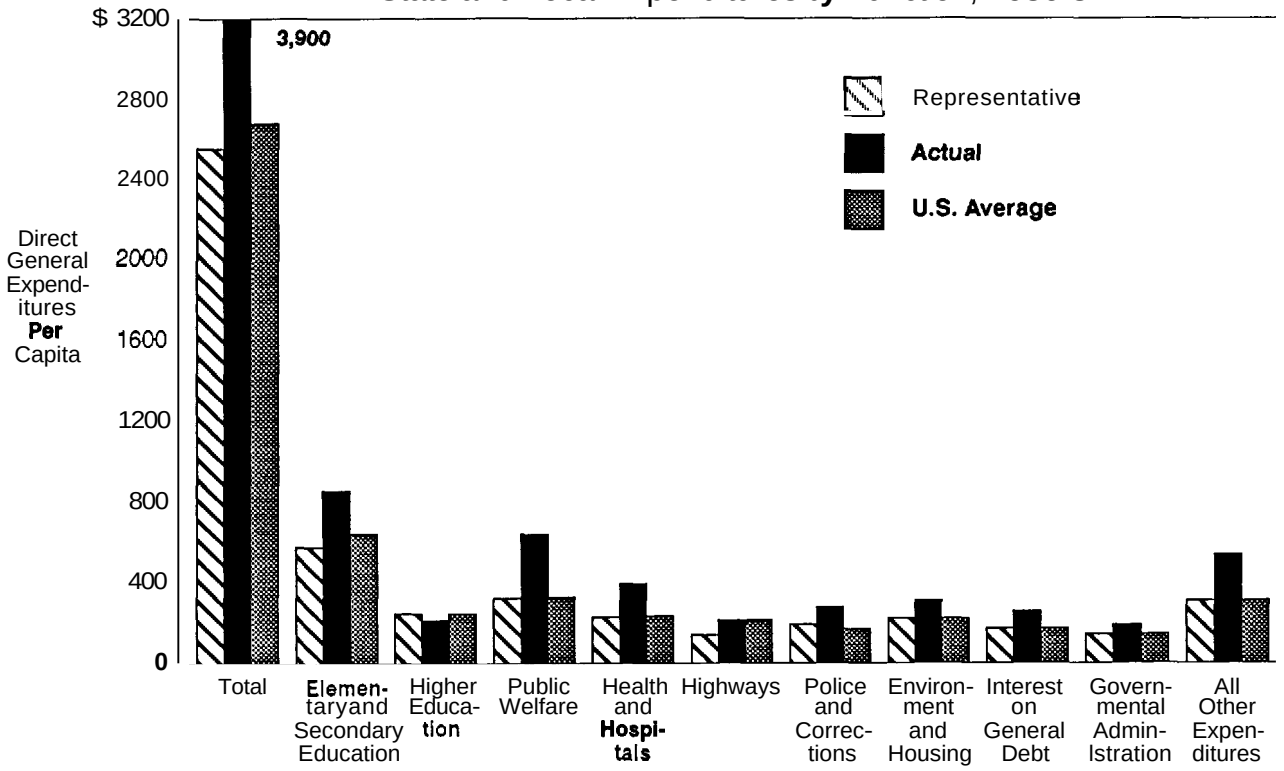
New Mexico

State and Local Expenditures by Function, **1986-87**



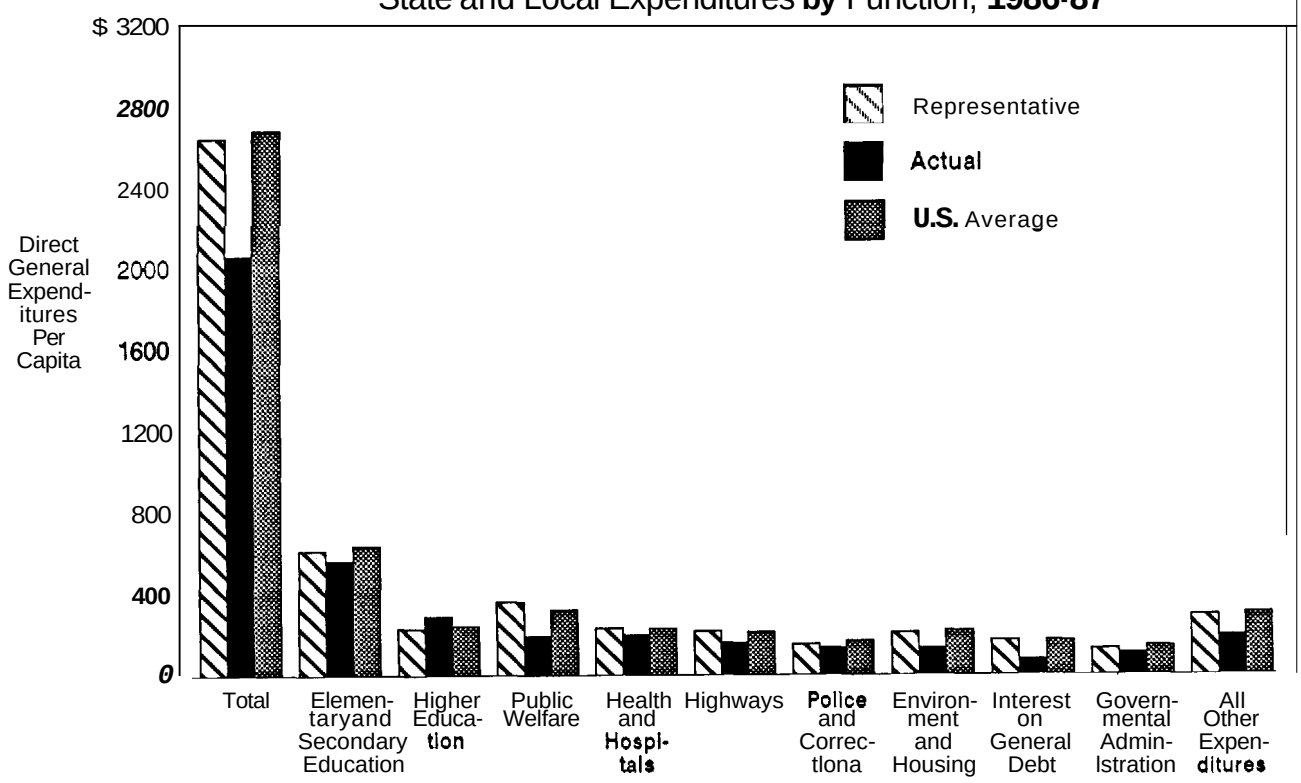
New York

State and Local Expenditures by Function, 1986-87



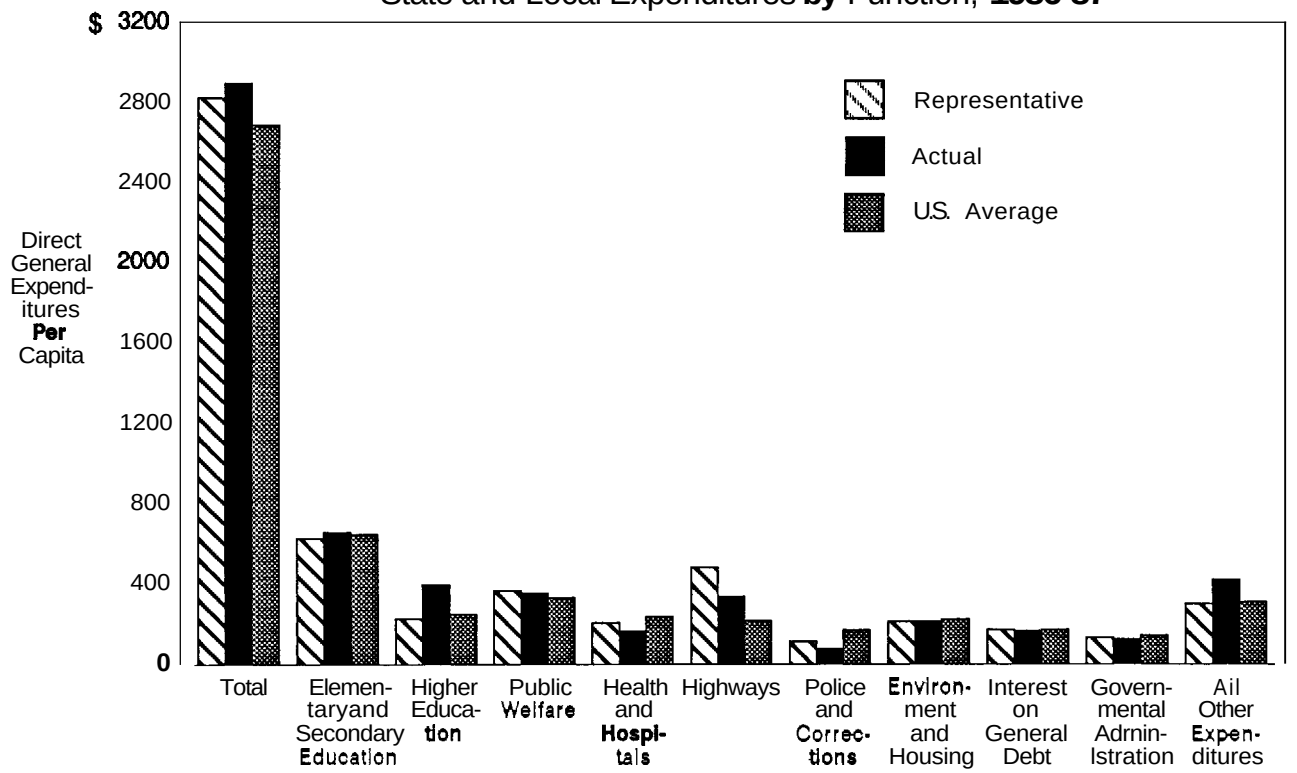
North Carolina

State and Local Expenditures by Function, 1986-87



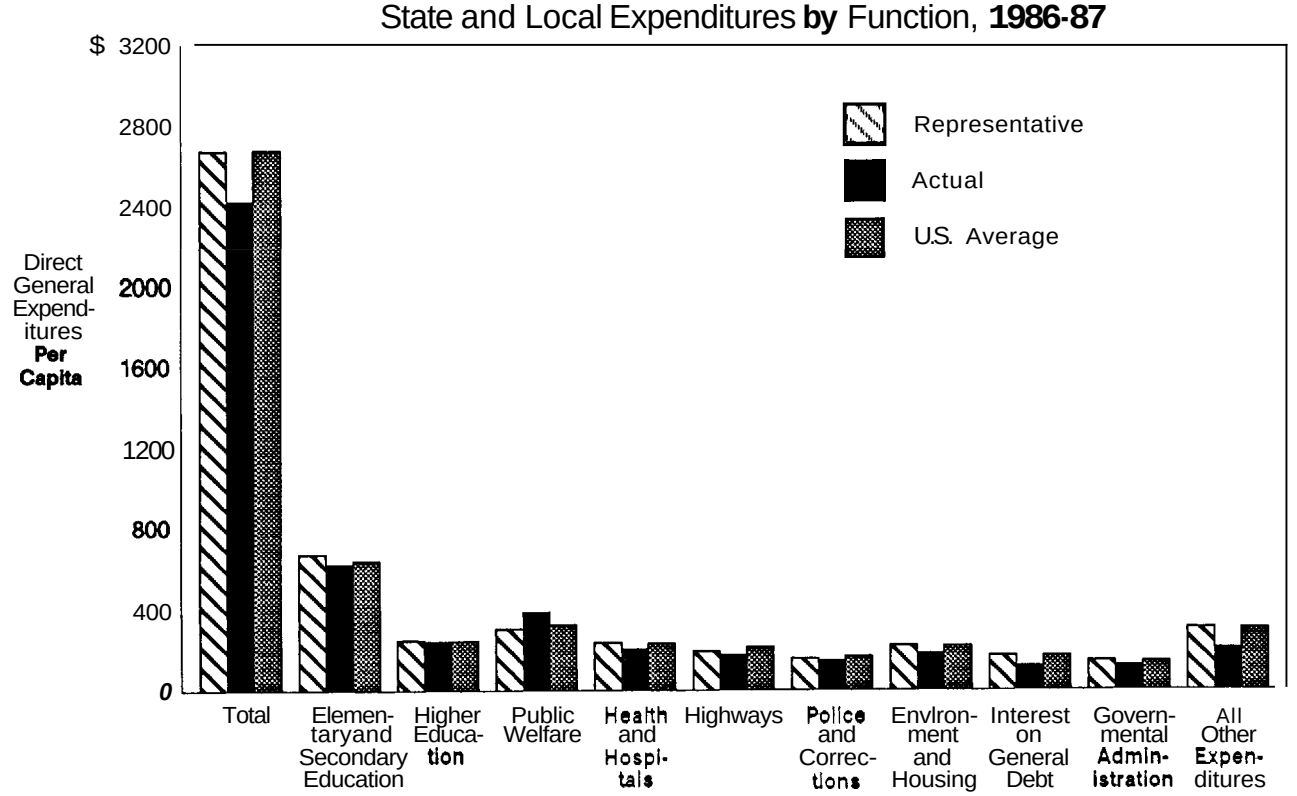
North Dakota

State and Local Expenditures by Function, 1986-87



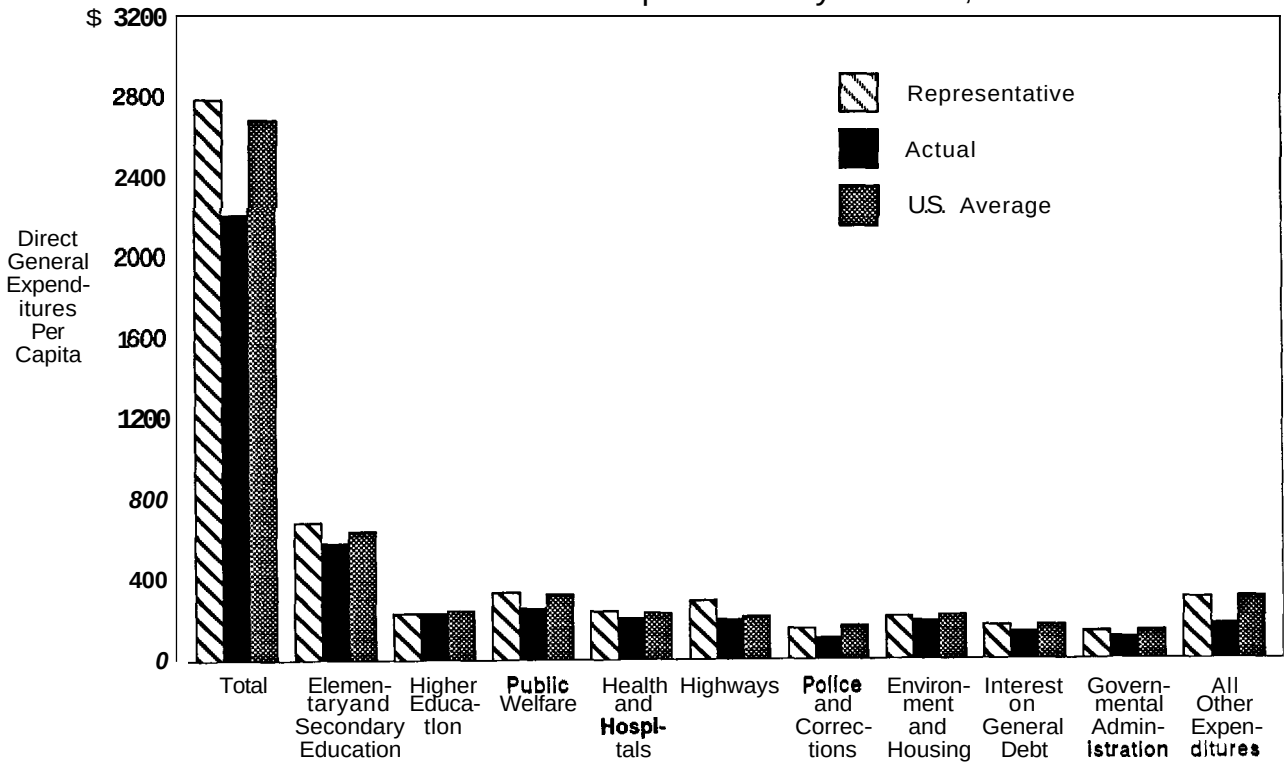
Ohio

State and Local Expenditures by Function, 1986-87



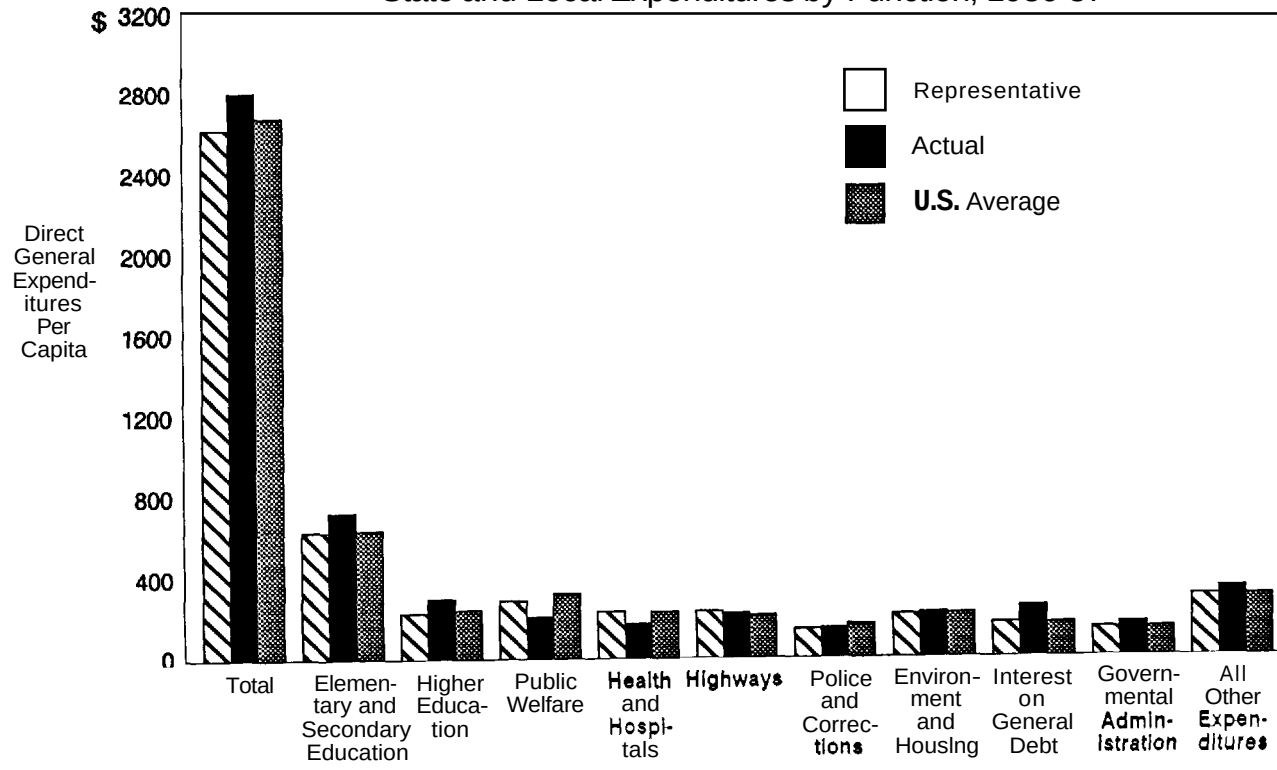
Oklahoma

State and Local Expenditures by Function, 1986-87



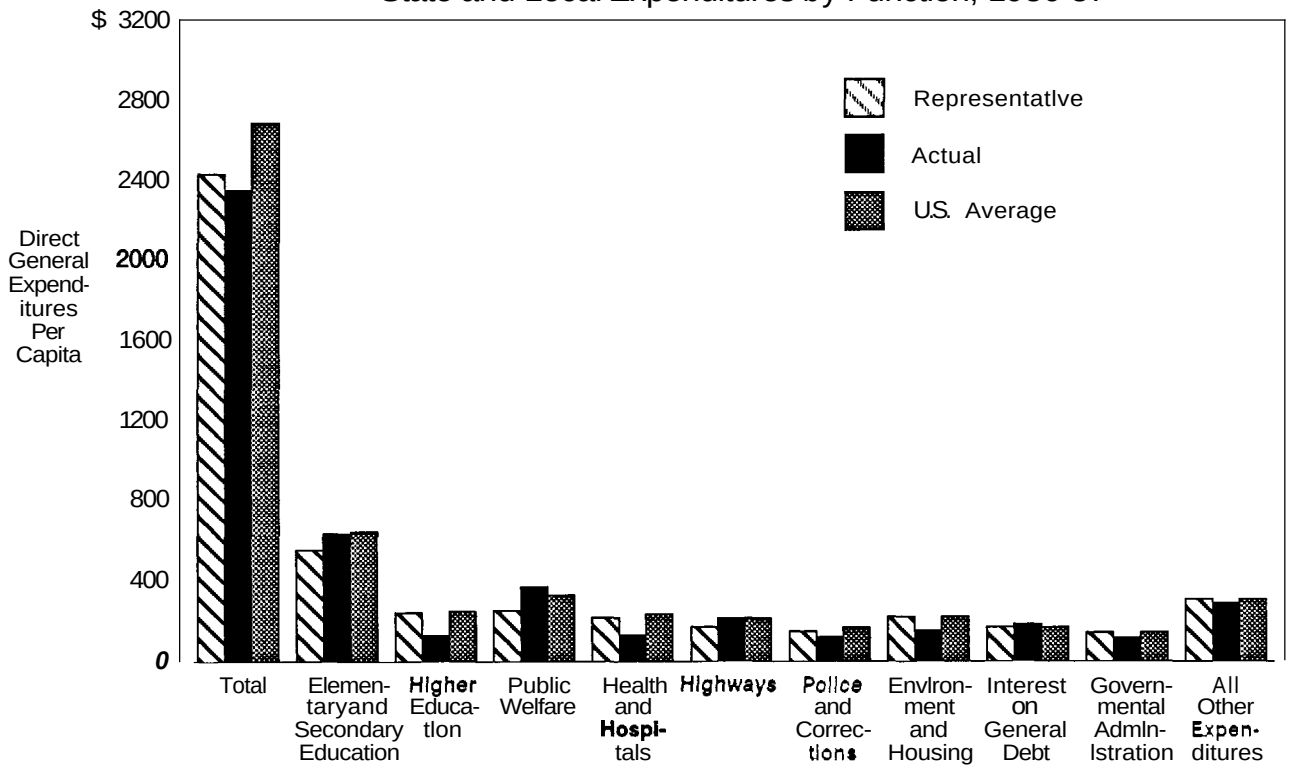
Oregon

State and Local Expenditures by Function, 1986-87



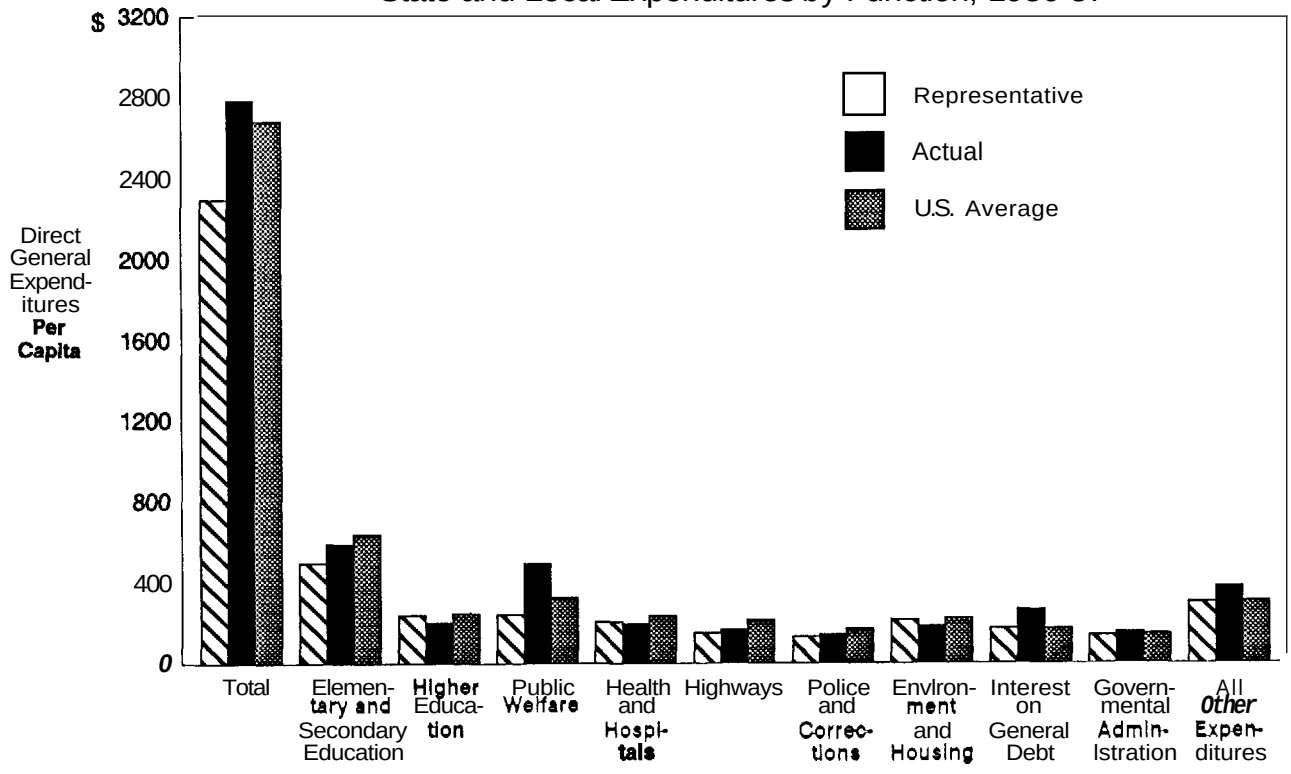
Pennsylvania

State and Local Expenditures by Function, 1986-87



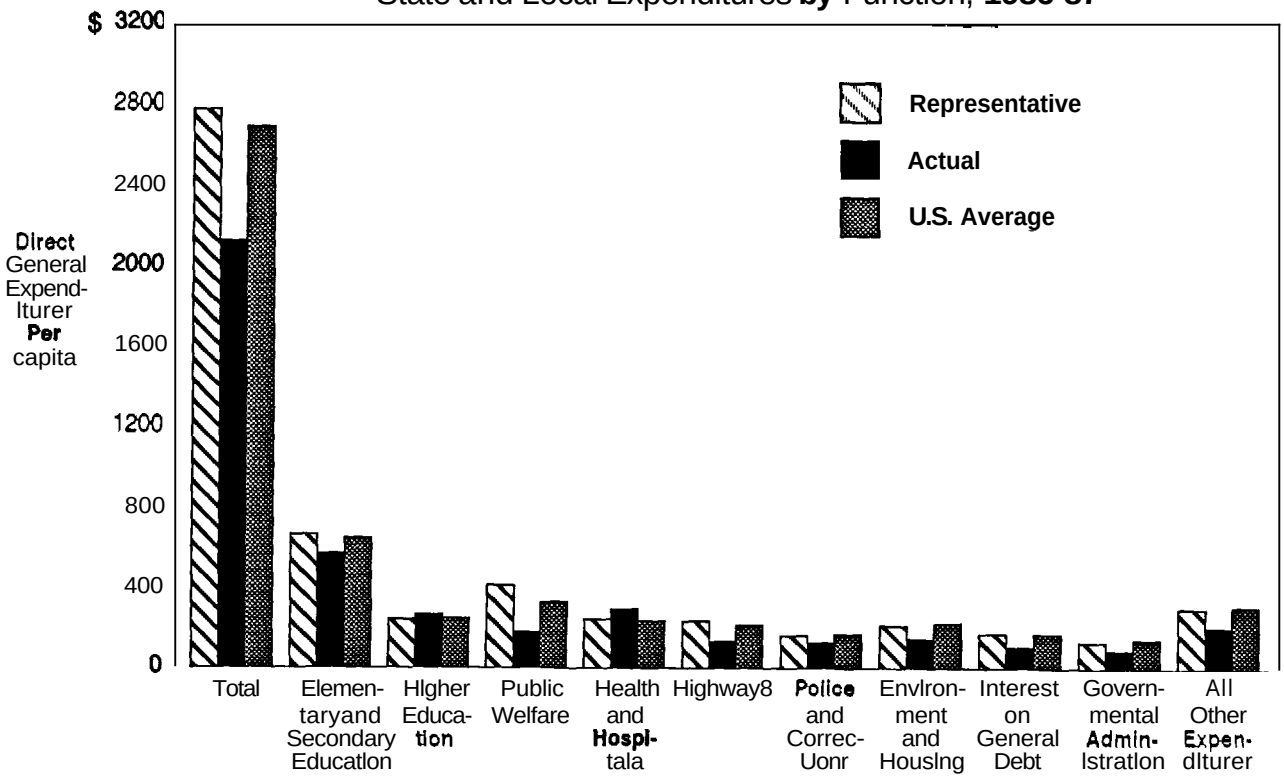
Rhode Island

State and Local Expenditures by Function, 1986-87



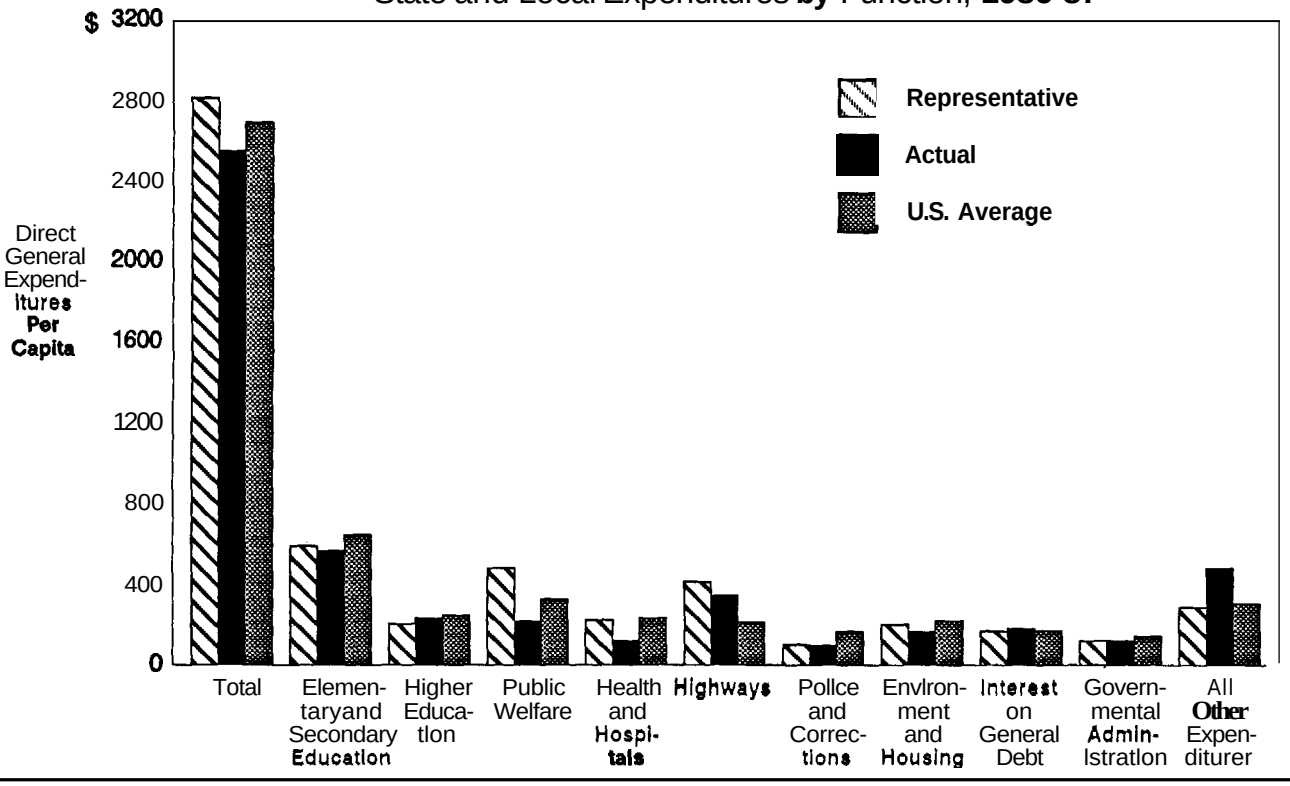
South Carolina

State and Local Expenditures by Function, 1986-87



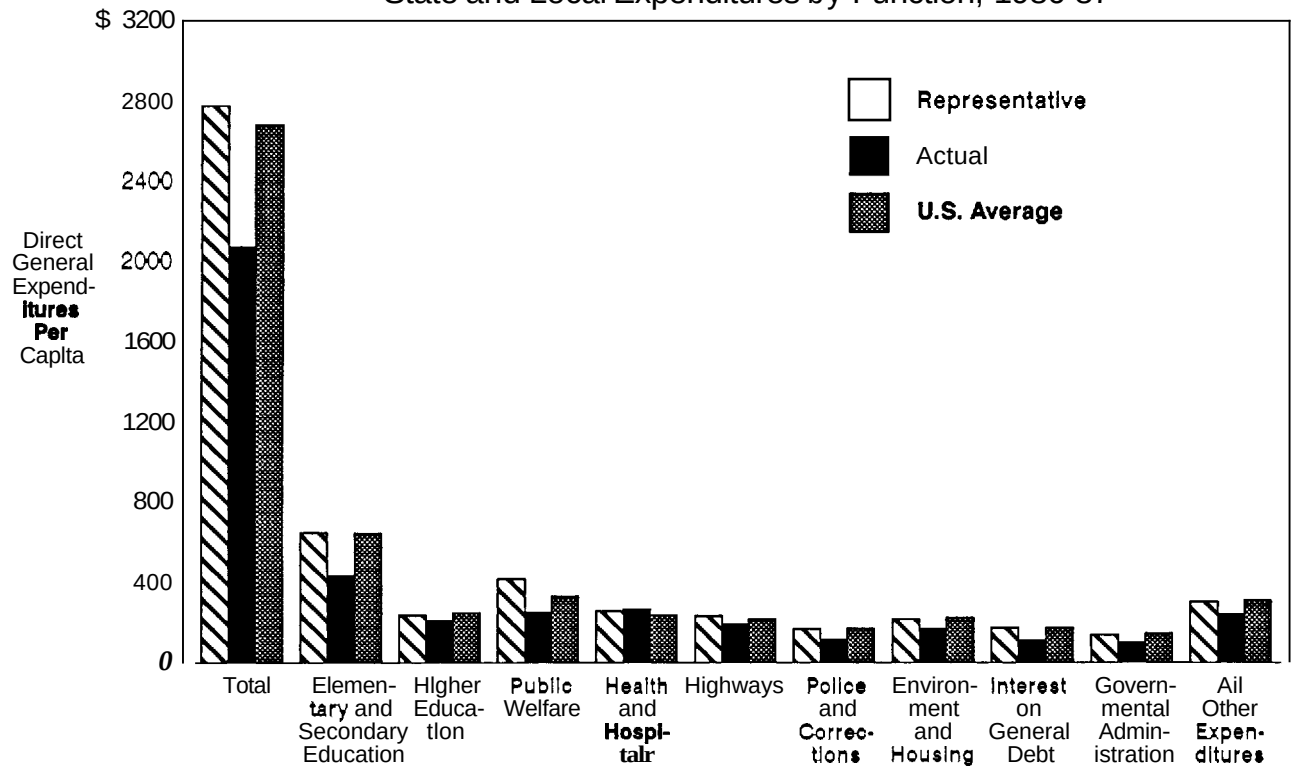
South Dakota

State and Local Expenditures by Function, 1986-87



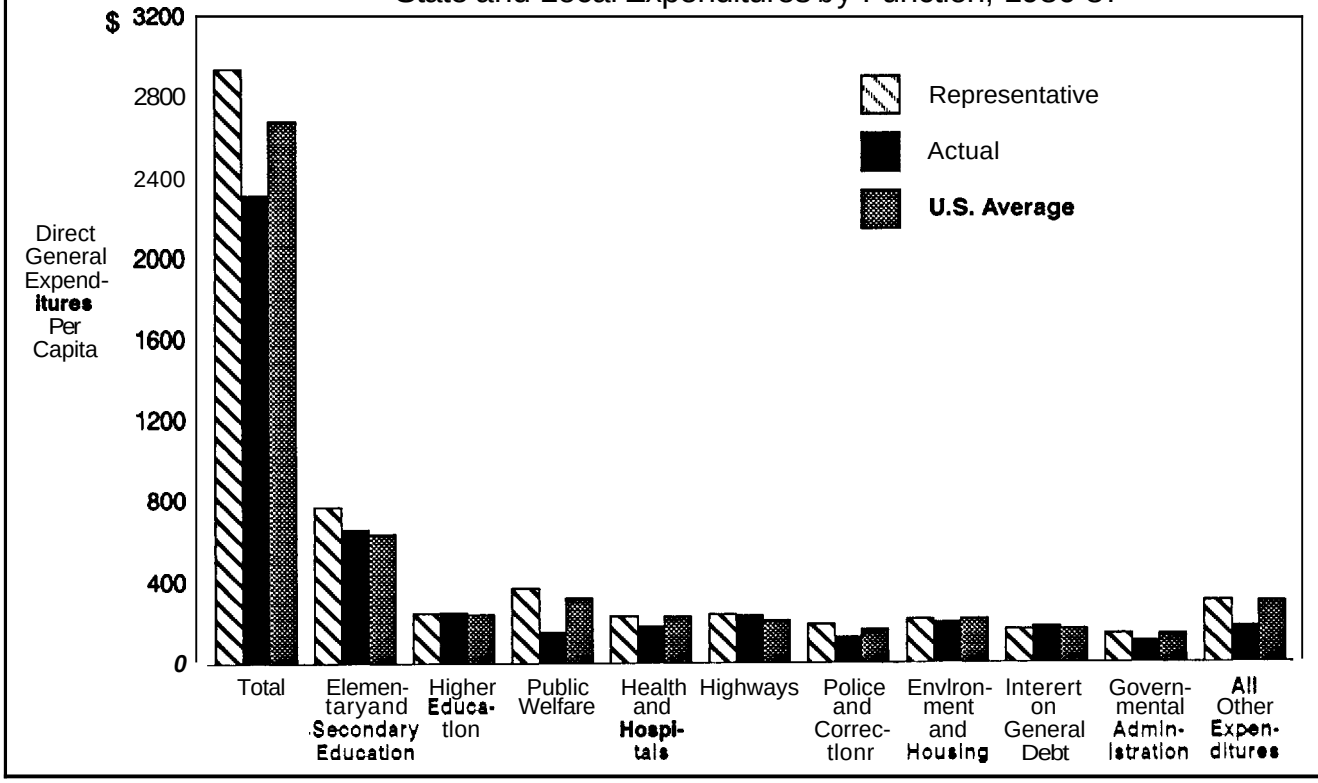
Tennessee

State and Local Expenditures by Function, 1986-87



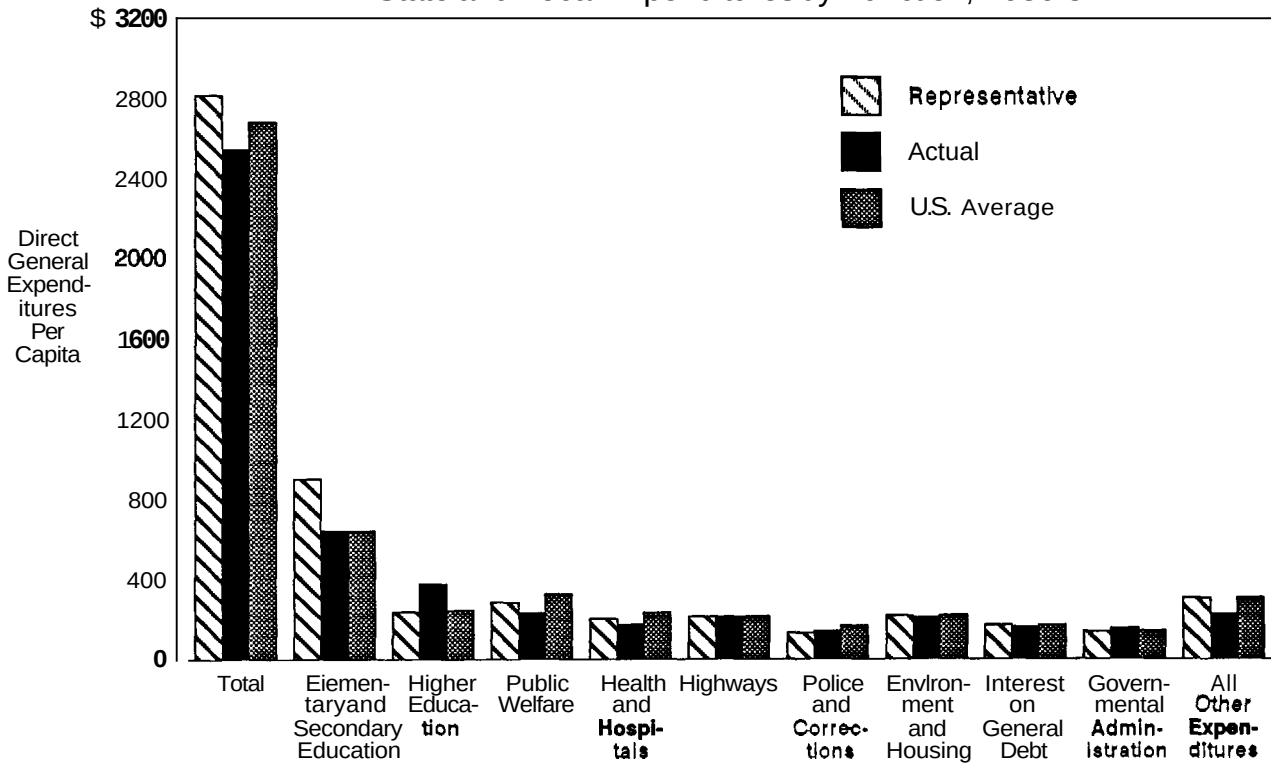
Texas

State and Local Expenditures by Function, 1986-87



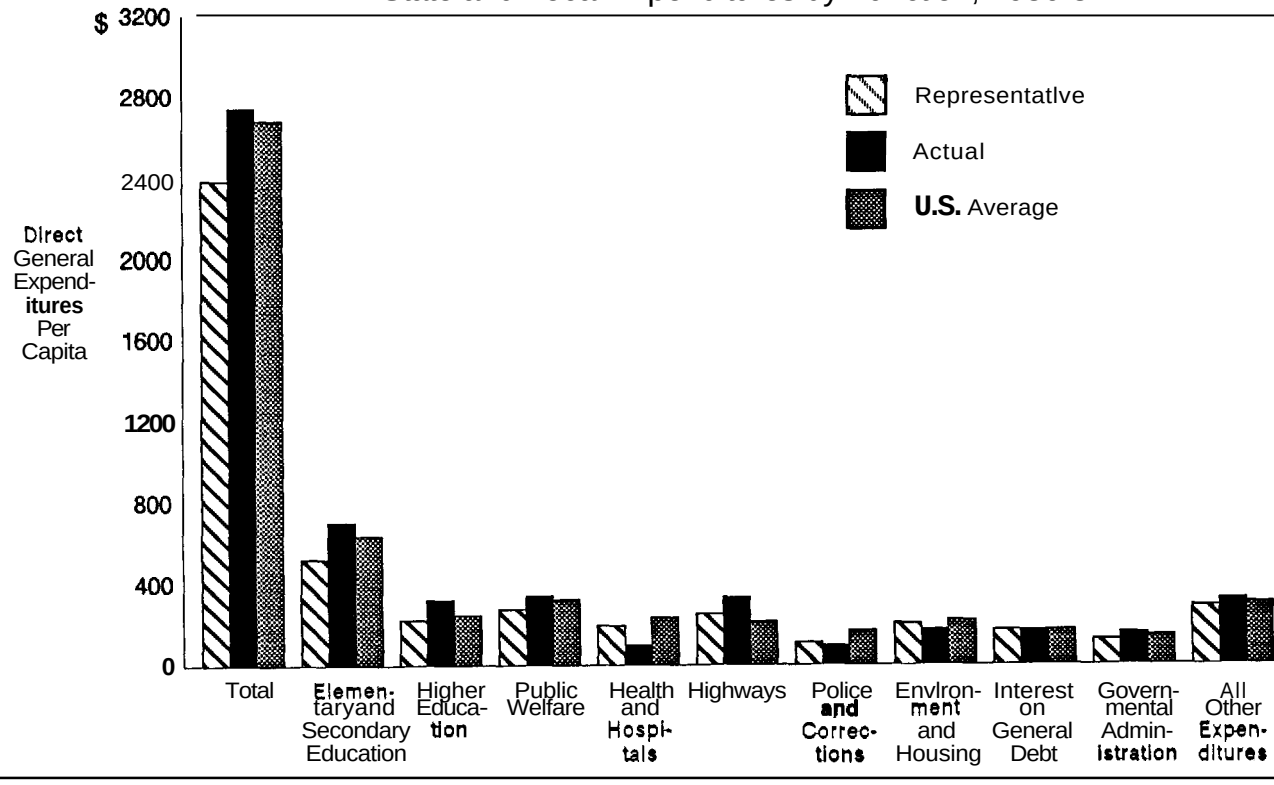
Utah

State and Local Expenditures by Function, 1986-87



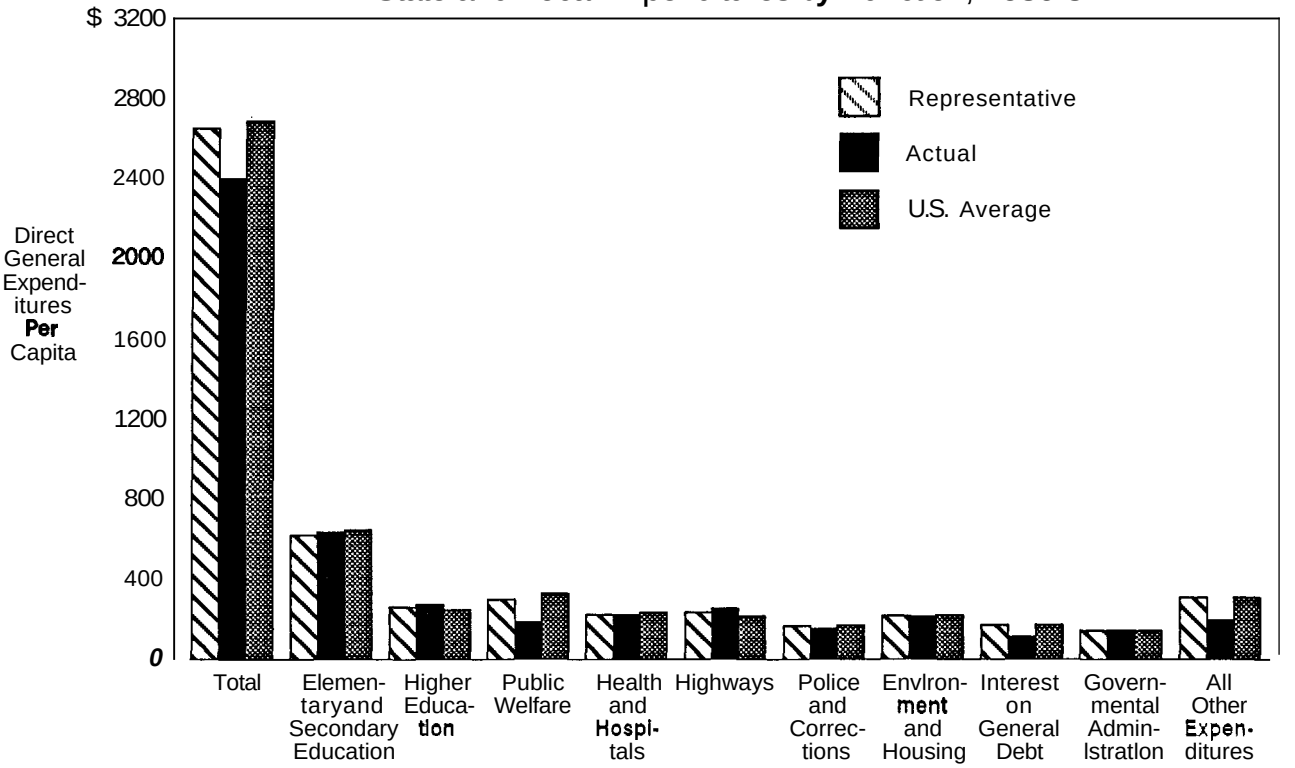
Vermont

State and Local Expenditures by Function, 1986-87



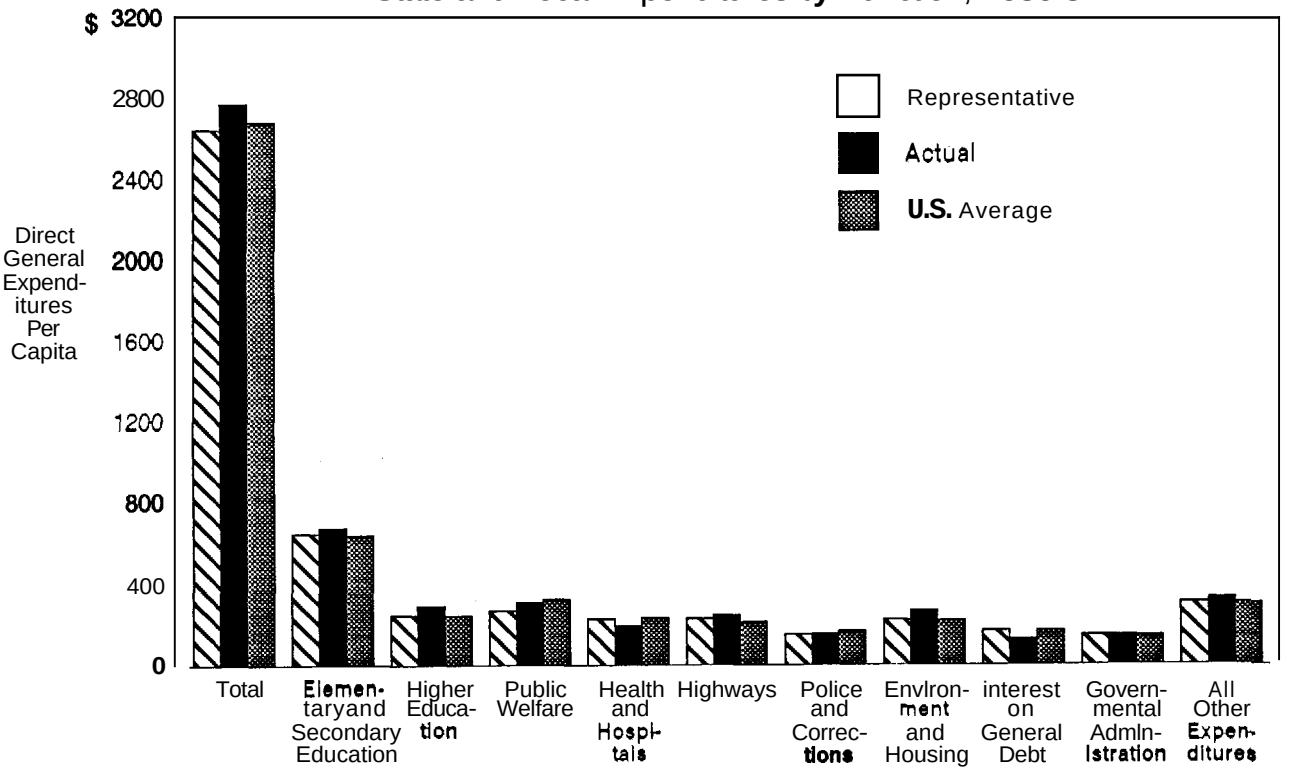
Virginia

State and Local Expenditures by Function, 1986-87



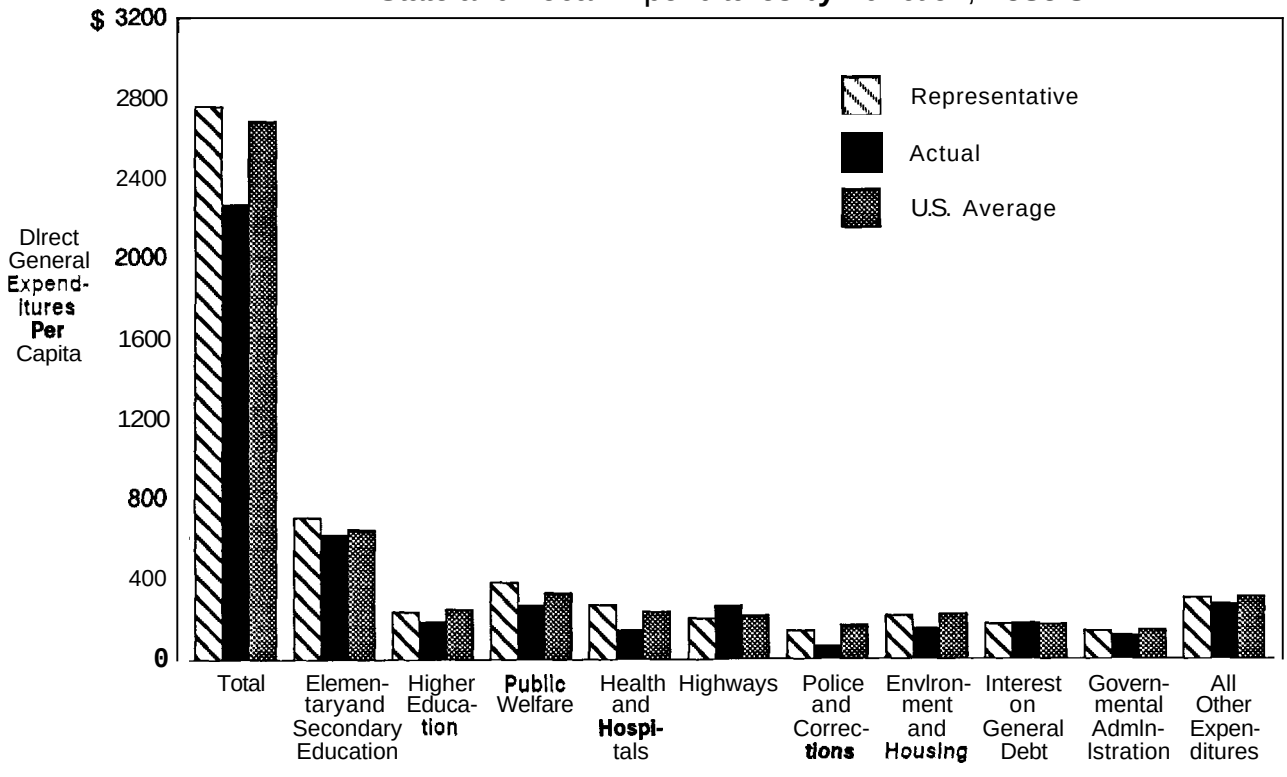
Washington

State and Local Expenditures by Function, 1986-87



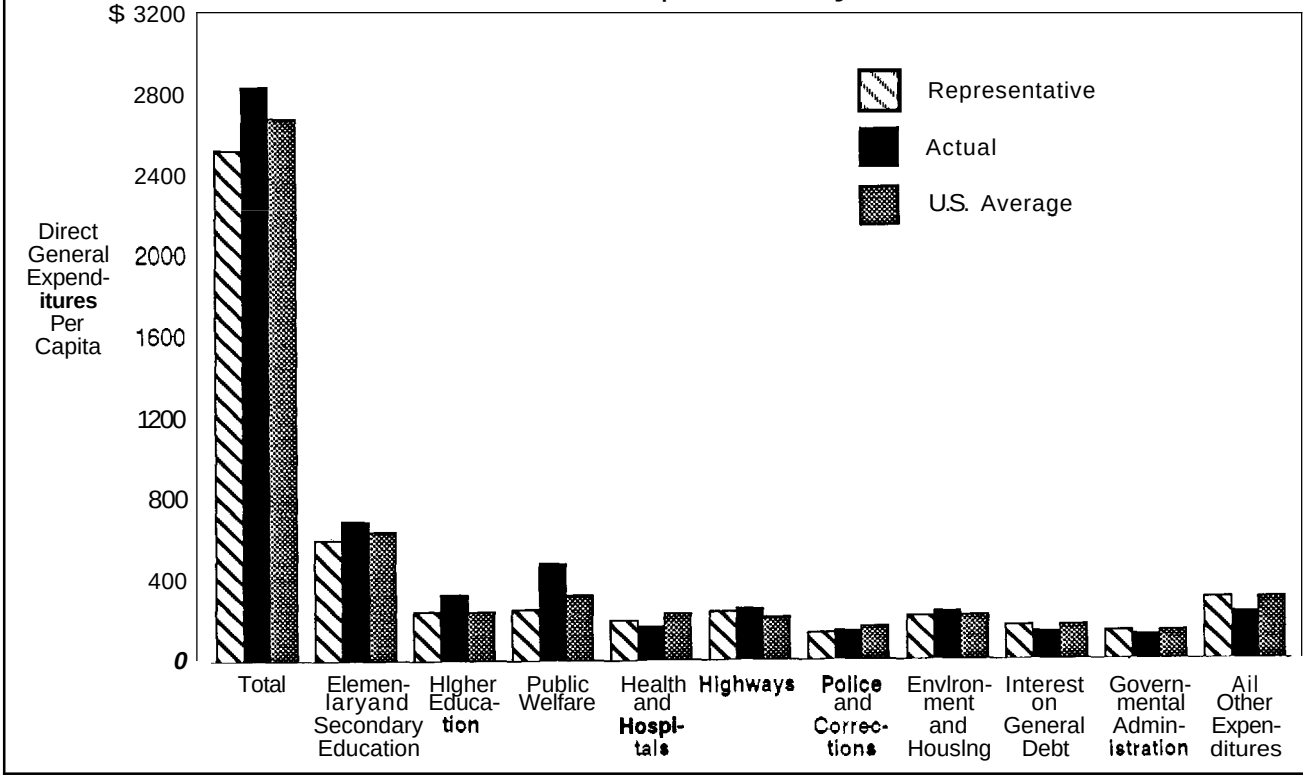
West Virginia

State and Local Expenditures by Function, 1986-87



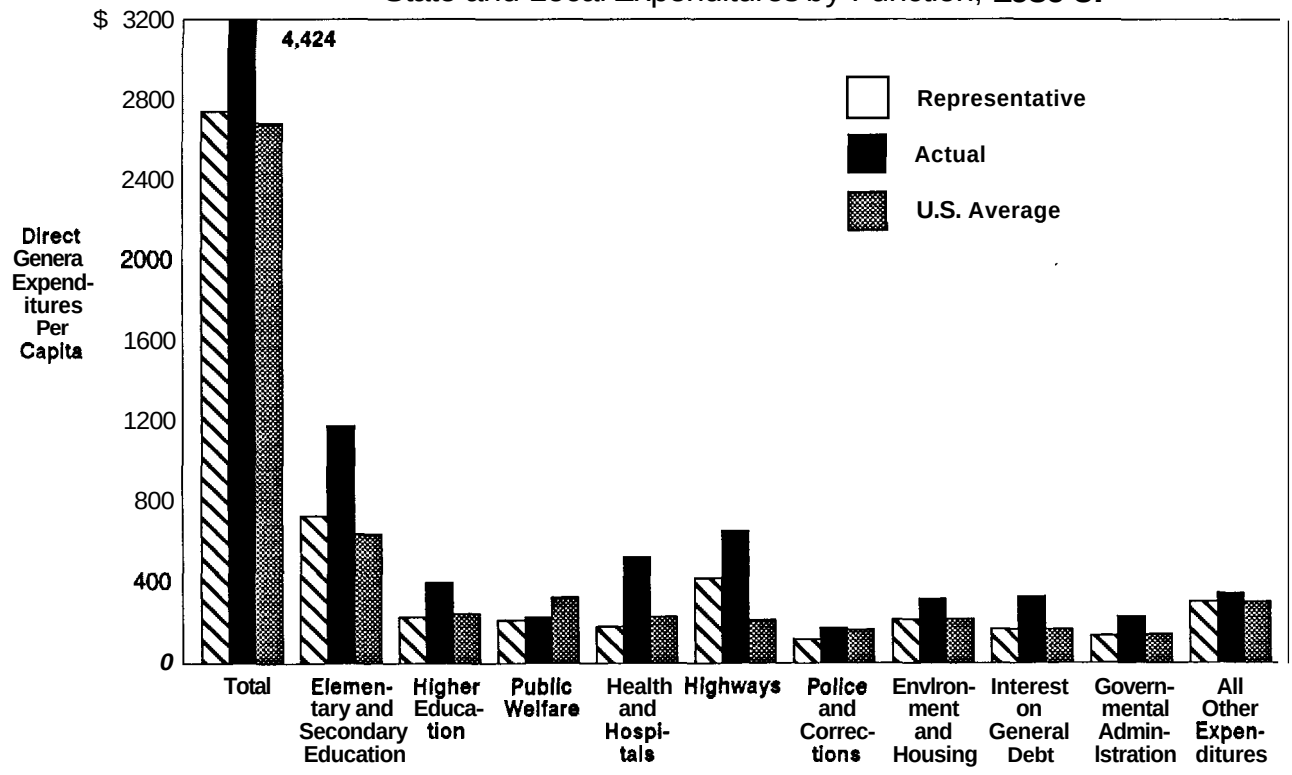
Wisconsin

State and Local Expenditures by Function, 1986-87



Wyoming

State and Local Expenditures by Function, **1986-87**



Chapter 6

Concluding Observations

1. Population is an inferior measure of the relative cost to a state of providing a standard level of public services. Its use in a measure of fiscal capacity systematically overstates the capacities of states below the national average and understates the capacities of states above the national average. Fiscal disparities among the states are significantly larger than most measures available until now have suggested.

2. The differences among the states in the cost of providing a common level of public services are substantial, but they are smaller than the differences in own-revenue-raising ability, by all the measures currently available.

3. High public service costs tend to be associated with low revenue-raising ability.

4. The actual spending of three out of four states with fiscal capacities below the national average is less than their representative expenditures.

5. The existing federal grant system, taken as a whole, tends to worsen fiscal disparities among the states. Therefore, the failure to allow for federal grants in a measure of fiscal capacity results in systematic understatement of the magnitudes of fiscal disparities among the states.

6. A perfectly targeted federal grant program could guarantee every state a fiscal capacity at the national average at a cost equivalent to less than half that of the current system. The payment to a state under such a program would be just sufficient — when combined with the revenues its governments could raise if they, collectively, were to exert national-average fiscal effort — to finance its representative level of expenditures.

Appendix A

Data Used for Estimation of Representative Expenditures

Expenditure Category, Data Element, and Source	Dates for Estimates Prepared in 1986	1989
1. Elementary and Secondary Education		
Population aged 5-13, by state	7/1/84	
Population aged 14-17, by state	7/1/84	
U.S. Department of Commerce, Bureau of the Census, *Statistical Abstmct of the United States, 1986* (Washington, DC, 1985), Table 29.		
Population aged 5-13, by state		7/1/87
Population aged 14-17, by state		7/1/87
Special tabulations prepared by the U.S. Bureau of the Census, Population Division, Population Estimates Branch (November 1988).		
Enrollment in private elementary schools, by state	"Fall 83"	
Enrollment in private secondary schools, by state	"Fall 83"	
Statistical Abstmct of the United States, 1986, Table 212. *Statistical Abstmct of the United States, 1982-83* (1982), Table 220.		
Enrollment in private elementary schools, by state		"Fall 87"
Enrollment in private secondary schools, by state		"Fall 87"
Statistical Abstmct of the United States, 1982-83, Table 220. U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1988* (Washington, DC, 1988), Tables 32, 44, and 49. U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics to 1997-98* (Washington, DC, 1988), Table 1.		
Population under 18 living in households with incomes below the poverty line, by state.	"1984"	
Statistical Abstmct of the United States, 1986, Tables 29, 765, and 767.		
Population under 18 living in households with incomes below the poverty line, by state.		"1987"
U.S. Department of Commerce, Bureau of the Census, *1980 Census of Population,* Volume 1, *Characteristics of the Population,* Chapter C, *General Social and Economic Characteristics,* Part 1, *United States Summary* (Washington, DC, 1983), Table 245. U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-87* (Washington, DC, 1988), Tables 5 and 6. U.S. Department of Commerce, Bureau of the Census, *Poverty in the United States: 1986* (Washington, DC, 1988), Table 5. Regional totals: all related persons under age 18 living in households below the poverty level in 1986. U.S. Department of Commerce, Bureau of the Census, *Money Income and Poverty Status in the United States: 1987 (Advance Data from the March 1988 Current Population Survey)* (Washington, DC, 1988), Table 18. U.S. total: all related persons under age 18 living in households below the poverty level in 1987.		

Expenditure Category, Data Element, and Source	Dates for Estimates Prepared in 1986	1989
2. Higher Education		
Population aged 14–17, by state	7/1/84	
Population aged 18-24, by state	7/1/84	
Population aged 25-34, by state	7/1/84	
Population aged 35 and older, by state	7/1/84	
Statistical Abstract of the United States, 1986, Table 29.		
Population aged 14-17, by state		7/1/87
Special tabulations prepared by the U.S. Bureau of the Census, Population Division, Population Estimates Branch (November 1988).		
Population aged 18-24, by state		7/1/87
Population aged 25-34, by state		7/1/87
Population aged 35 and older, by state		7/1/87
***State Population and Household Estimates, with Age, Sex, and Components of Change:** 1981-87,* Tables 5 and 6.		
FTE students enrolled in institutions of higher education as percentage of U.S. total population aged:		
14–17		"Fall 84"
18-24		"Fall 84"
25-34		"Fall 84"
35 and older		"Fall 84"
Unpublished estimates of total enrollment in 1984 by the National Center for Education Statistics. ***Statistical Abstract of the United States,** 1986,* Tables 29 and 255.		
FTE students enrolled in institutions of higher education as percentage of U.S. total population aged:		
14-17		Fall 87
18-24		Fall 87
25-34		Fall 87
35 and older		Fall 87
Digest of Education Statistics, 1988, Table 119. Historical data for 1970-85. ***Projections of Education Statistics to 1997-98,*** Table 8.		
3. Public Welfare		
Total population living in households with incomes below the poverty line, by state	"1984"	
Statistical Abstract of the United States, 1986, Tables 765 and 767.		
Total population living in households with incomes below the poverty line, by state		"1987"
1980 Census of Population, Volume 1, Chapter C, Part 1, Table 245. ***State Population and Household Estimates, with Age, Sex, and Components of Change:** 1981-87,* Tables 5 and 6. ***Poverty in the United States:** 1986,* Table 5. ***Money Income*** and ***Poverty Status in the United States:** 1987,* Table 18. Only regional totals are available for 1987.		
4. Health and Hospitals		
Number of persons aged 16-64 with work disabilities, by state	"1984"	
Unpublished tabulation by the U.S. Bureau of the Census from the 1980 Census of the proportion of the noninstitutional population aged 16-64 with a work disability.		
Number of persons aged 16-64 with work disabilities, by state		"1987"
1980 Census of Population, Volume 1, Chapter C, Part 1, Table 245. ***State Population and Household Estimates, with Age, Sex, and Components of Change:** 1981-87,* Tables 5 and 6.		
Population aged 16-64, by state	7/1/84	
Statistical Abstract of the United States, 1986, Table 29.		
Population aged 16-64, by state		7/1/87
***State Population and Household Estimates, with Age, Sex, and Components of Change:** 1981-87,* Tables 5 and 6.		
Total population living in households with incomes below 150 percent of the poverty line, by state	"1984"	
Unpublished tabulation by the U.S. Bureau of the Census from the 1980 Census of the number of persons in households with incomes below 150 percent of the poverty line.		

Expenditure Category, Data Element, and Source	Dates for Estimates Prepared in 1986	1989
4. Health and Hospitals *(cont.)*		
U.S. Department of Commerce, Bureau of the Census, *Characteristics of the Population below the Poverty Level: 1983,* Current Population Reports, Series P-60, No. 147 (February 1985), Table 7. U.S. total: All persons below 150 percent of the poverty level in 1983.		
Total population living in households with incomes below 150 percent of the poverty line, by state		"1987"
1980 Census of Population, Volume 1, Chapter C, Part 1, Table 245. *State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-87,* Tables 5 and 6. *Poverty in the United States: 1986,* Table 4. U.S. totals: all persons below 125 percent and 150 percent of the poverty level in 1986. *Money Income and Poverty Status in the United States: 1987,* Table 17. U.S. totals: all persons below 125 percent of the poverty level in 1986 and 1987.		
Total population, by state	7/1/84	
Statistical Abstract of the United States, 1986, Table 29.		
Total population, by state		7/1/87
State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-87, Tables 5 and 6.		
5. Highways		
Vehicle-miles traveled, by state	1984	
U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics, 1984* (Washington, DC, 1985), Table VM-2.		
Vehicle-miles traveled, by state		1987
Highway Statistics, 1987 (1988), Table VM-2.		
Lane-miles of streets and roads net of lane-mileage on federally controlled land, by state	1984	
Highway Statistics, 1984, Tables *HM-20* and HM-60.		
Lane-miles of streets and roads net of lane-mileage on federally controlled land, by state		1987
Highway Statistics, 1987, Tables *HM-20* and HM-60.		
6. Police and Corrections		
Population aged 18-24, by state	7/1/84	
Statistical Abstmct of the United States, 1986, Table 29.		
Population aged 18-24, by state		7/1/87
State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-87, Tables 5 and 6.		
Number of murders committed, by state	1984	
Statistical Abstract of the United States, 1986, Table 281.		
Number of murders committed, by state		1987
U.S. Department of Justice, Federal Bureau of Investigation, *Crime in the United States—1987* (Washington, DC, 1988), Table 4.		
Total population, by state	7/1/84	
Statistical Abstmct of the United States, 1986, Table 29.		
Total population, by state		7/1/87
State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-87, Tables 5 and 6.		
7. All Other Direct General Expenditures		
Total population, by state	7/1/84	
Statistical Abstmct of the United States, 1986, Table 29.		
Total population, by state		7/1/87
State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-87, Tables 5 and 6.		

Appendix B

Background Data and Detail

This appendix consists of a set of 18 tables providing details on the estimates of representative expenditures and the data used to calculate the workload measure for each function. Where data have been extrapolated or otherwise adjusted from original sources, the calculations involved are displayed and, if necessary, explained in footnotes.

Table B-1

Direct General Expenditures of State and Local Governments, by Function, 1986.87

(millions)

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	$653,608.3	$156,781.7	$60,240.3	$80,089.7	$56,971.4	$52,199.3	$41,321.8	$53,805.2	$41,816.2	$34,895.4	$75,487.2
Alabama	8,472.8	1,718.6	1,056.1	641.8	1,326.4	711.1	428.6	606.9	557.2	430.8	995.3
Alaska	5,226.7	959.8	226.2	291.2	128.4	583.6	202.1	427.3	945.9	378.2	1,083.9
Arizona	9,490.4	2,363.0	1,154.6	726.1	426.7	1,230.8	770.8	763.3	662.7	580.0	812.4
Arkansas	4,553.0	1,275.2	479.5	543.2	413.6	510.6	192.2	315.5	257.9	205.9	359.3
California	84,581.5	17,778.0	8,354.1	11,292.3	7,441.2	3,904.5	7,014.7	7,733.2	4,177.1	4,950.5	11,936.0
Colorado	9,345.3	2,395.9	957.1	923.2	681.3	819.8	581.2	797.5	689.6	653.0	846.7
Connecticut	9,393.6	2,186.6	507.8	1,186.6	663.1	814.5	500.4	690.3	740.4	579.2	1,524.7
Delaware	1,925.3	425.7	256.8	139.1	94.9	175.6	113.1	160.2	233.6	128.3	198.1
District of Columbia	3,211.3	481.2	85.8	558.1	301.9	116.4	470.0	379.9	195.7	226.8	395.6
Florida	28,270.5	6,892.5	1,622.4	2,058.7	2,911.3	2,103.8	2,380.6	2,949.2	2,076.6	1,883.9	3,391.3
Georgia	14,912.2	3,874.2	1,181.3	1,302.9	2,688.9	1,235.5	868.4	1,064.4	606.4	765.3	1,324.8
Hawaii	3,066.3	514.5	291.9	308.8	200.6	147.9	195.1	368.8	262.4	226.3	550.0
Idaho	2,078.0	500.1	282.0	169.9	194.6	250.7	103.8	187.8	78.1	113.5	197.5
Illinois	29,169.9	6,778.7	2,638.4	3,904.5	1,823.6	2,548.7	1,839.5	2,576.4	1,858.0	1,493.4	3,708.5
Indiana	11,956.5	3,178.2	1,582.3	1,410.4	1,175.8	975.0	535.8	833.8	506.3	561.9	1,196.9
Iowa	7,126.2	1,658.8	1,051.8	857.0	709.4	891.6	300.5	493.8	322.5	334.7	506.0
Kansas	6,169.5	1,577.1	751.2	529.5	493.5	776.1	282.7	3626	461.9	378.5	556.3
Kentucky	7,775.6	1,650.3	829.3	1,006.2	484.3	926.5	369.8	634.9	661.2	405.5	807.4
Louisiana	11,013.4	2,299.1	928.9	1,053.4	1,307.0	1,015.9	645.3	984.7	1,117.9	538.6	1,122.6
Maine	2,937.6	737.8	242.4	507.2	138.6	286.2	122.4	269.6	185.6	138.9	308.8
Maryland	12,527.4	2,858.9	1,199.5	1,405.3	513.7	1,169.6	959.4	1,308.0	887.1	651.3	1,574.6
Massachusetts	17,525.5	3,718.1	1,031.7	2,986.9	1,628.6	973.1	968.4	1,583.6	1,085.6	929.3	2,620.2
Michigan	26,662.1	6,749.9	2,965.9	4,247.0	2,641.4	1,628.2	1,689.0	1,592.7	1,144.8	1,292.6	2,710.5
Minnesota	13,930.2	3,187.4	1,424.2	2,035.7	1,097.7	1,337.9	554.8	1,166.5	1,103.9	667.7	1,354.4
Mississippi	5,319.2	1,245.0	592.4	556.3	850.2	552.0	219.1	346.5	274.9	245.5	437.4
Missouri	10,552.8	2,779.2	1,136.8	1,108.2	1,119.0	964.7	652.0	807.8	584.6	5021	898.4
Montana	2,330.9	636.9	184.5	247.3	119.7	307.0	86.4	209.8	172.5	133.1	233.8
Nebraska	3,949.9	1,027.9	495.9	414.9	422.2	452.8	165.8	249.6	204.1	173.4	343.5
Nevada	2,829.4	582.4	198.8	163.4	193.8	280.7	256.4	249.6	246.7	221.4	436.2
New Hampshire	2,365.1	638.0	188.9	270.5	129.6	276.0	120.2	167.0	209.2	128.2	237.4
New Jersey	23,280.6	5,799.6	1,589.6	2,688.6	1,339.4	1,826.0	1,514.3	1,944.5	1,926.8	1,309.2	3,342.6
New Mexico	4,041.1	1,016.3	445.8	329.0	303.9	477.5	247.3	295.9	334.8	245.8	344.9
New York	69,520.5	15,343.4	3,844.1	11,422.5	7,038.1	3,811.6	4,952.0	5,536.2	4,589.9	3,385.1	9,597.6
North Carolina	13,324.9	3,669.0	1,892.1	1,263.2	1,301.7	1,035.6	871.4	848.7	493.8	688.5	1,261.0
North Dakota	1,946.3	439.1	262.6	236.2	111.3	226.0	51.6	142.9	111.2	83.9	281.6
Ohio	26,255.4	6,785.7	2,627.6	4,219.6	2,215.3	1,900.2	1,622.1	1,980.8	1,322.2	1,337.9	2,244.0
Oklahoma	7,249.1	1,907.6	766.2	847.2	682.4	659.7	360.1	630.2	451.4	364.7	579.7
Oregon	7,653.4	1,992.9	828.4	579.3	479.7	625.5	406.5	620.0	702.8	469.9	948.3
Pennsylvania	28,049.8	7,560.3	1,556.4	4,424.7	1,544.7	2,580.7	1,462.7	1,870.6	2,182 1	1,404.7	3,463.0
Rhode Island	2,749.3	587.4	201.7	491.9	194.0	163.5	138.2	182.8	2626	150.0	377.1
South Carolina	7,263.6	1,944.4	915.6	620.8	1,008.8	457.9	437.5	504.6	360.0	310.7	703.4
South Dakota	1,803.5	401.3	166.7	154.6	86.0	246.1	69.3	119.0	131.3	86.6	342.6
Tennessee	10,086.8	2,098.3	1,013.9	1,215.6	1,289.1	930.4	558.2	798.5	540.0	478.1	1,164.7
Texas	39,016.7	11,176.1	4,316.9	2,664.8	3,158.1	4,039.5	2,211.3	3,440.9	3,087.6	1,838.0	3,083.6
Utah	4,276.2	1,083.1	636.4	392.6	292.9	360.5	239.1	356.0	270.4	262.8	3824
Vermont	1,506.6	389.2	178.4	189.8	53.8	185.9	52.5	95.2	94.1	87.1	180.6
Virginia	14,166.9	3,740.7	1,602.2	1,110.9	1,303.2	1,494.4	908.2	1,298.8	685.2	867.8	1,155.3
Washington	12,602.1	3,088.3	1,348.6	1,426.6	889.2	1,130.7	710.6	1,247.0	578.2	663.4	1,519.4
West Virginia	4,313.3	1,173.3	357.0	511.2	274.2	506.8	122.0	281.2	338.0	225.1	524.4
Wisconsin	13,666.5	3,337.6	1,594.9	2,341.5	826.2	1,251.8	710.1	1,172.3	678.8	603.6	1,149.8
Wyoming	2,167.6	579.1	196.5	113.7	258.6	322.2	87.9	157.9	164.2	114.7	172.8

Sources: U.S. Department of Commerce, Bureau of the Census, *Government Finances in 1986-87* (Washington, DC, 1988), Table 29.

Table B-2

Direct General Expenditures of State and Local Governments, by Function, Per Capita, 1986-87

(millions)

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	$2,685.34	$644.14	$247.50	$329.05	$234.07	$214.46	$169.77	$221.06	$171.80	$143.37	$310.14
Alabama	2,075.14	420.92	258.67	157.19	324.85	174.15	104.96	148.65	136.46	105.51	243.77
Alaska	9,955.54	1,828.23	430.84	554.67	244.63	1,111.54	385.01	813.92	1,801.71	720.38	2,064.62
Arizona	2,802.83	697.88	341.00	214.45	126.03	363.51	227.63	225.42	195.70	171.29	239.93
Arkansas	1,906.62	534.01	200.81	227.48	173.19	213.80	80.50	132.12	108.01	86.23	150.48
California	3,057.57	642.66	302.00	408.21	268.99	141.15	253.58	279.55	151.00	178.96	431.48
Colorado	2,835.33	726.92	290.39	280.09	206.71	248.71	176.33	241.95	209.22	198.13	256.89
Connecticut	2,925.44	680.97	158.15	369.54	206.51	253.66	155.83	214.99	230.57	180.38	474.84
Delaware	2,989.62	661.08	398.77	215.99	147.39	27260	175.65	248.72	362.74	199.15	307.54
District of Columbia	5,162.88	773.57	137.88	897.31	485.37	187.07	755.67	610.83	314.62	364.57	635.99
Florida	2,351.37	573.28	134.95	171.23	242.15	174.98	198.01	245.30	172.72	156.69	282.07
Georgia	2,396.69	622.66	189.86	209.41	432.16	198.58	139.57	171.07	97.46	123.00	212.93
Hawaii	2,831.30	475.10	269.49	285.10	185.20	136.57	180.17	340.55	242.34	208.95	507.83
Idaho	2,082.20	501.12	282.54	170.24	195.03	251.24	104.02	188.15	78.27	113.74	197.86
Illinois	2,518.55	585.28	227.80	337.12	157.45	220.06	158.82	222.45	160.42	128.95	320.20
Indiana	2,161.73	574.62	286.08	255.00	212.58	176.28	96.88	150.76	91.54	101.58	216.40
Iowa	2,514.54	585.33	371.15	302.41	250.34	314.59	106.03	174.26	113.80	118.09	178.55
Kansas	2,491.71	636.95	303.40	213.87	199.30	313.46	114.17	146.46	186.56	152.87	224.69
Kentucky	2,086.29	442.79	222.52	269.98	129.96	248.60	99.22	170.36	177.40	108.81	216.64
Louisiana	2,468.83	515.38	208.22	236.14	292.98	227.73	144.66	220.73	250.60	120.74	251.65
Maine	2,474.82	621.58	204.24	427.26	116.78	241.14	103.16	227.14	156.40	117.00	260.13
Maryland	2,762.37	630.41	264.50	309.87	113.28	257.90	211.55	288.42	195.61	143.62	347.22
Massachusetts	2,993.25	635.03	176.21	510.15	278.15	166.19	165.39	270.47	185.42	158.72	447.51
Michigan	2,898.05	733.69	322.38	461.63	287.11	176.97	183.59	173.12	124.44	140.50	294.62
Minnesota	3,280.78	750.67	335.42	479.44	258.52	315.10	130.68	274.72	260.00	157.26	318.97
Mississippi	2,026.37	474.29	225.67	211.92	323.88	210.28	83.48	131.98	104.71	93.51	166.64
Missouri	2,067.97	544.63	22277	217.17	219.27	189.05	127.77	158.31	114.56	98.39	176.05
Montana	2,881.25	787.25	228.06	305.66	147.92	379.54	106.78	259.38	213.17	164.55	288.95
Nebraska	2,477.98	644.83	311.08	260.26	264.88	284.06	104.00	156.59	128.05	108.77	215.47
Nevada	2,809.75	578.31	197.38	162.26	192.43	278.78	254.62	247.89	245.01	219.91	433.15
New Hampshire	2,237.55	603.58	178.75	255.93	122.62	261.15	113.69	158.01	197.96	121.31	224.55
New Jersey	3,034.49	755.94	207.20	350.44	174.58	238.01	197.38	253.46	251.15	170.65	435.68
New Mexico	2,694.09	677.50	297.19	219.36	202.59	318.31	164.88	197.26	223.20	163.89	229.93
New York	3,900.17	860.78	215.66	640.81	394.84	213.84	277.81	310.59	257.50	189.91	538.43
North Carolina	2,077.80	572.12	295.04	196.98	202.98	161.48	135.87	132.34	77.00	107.36	196.63
North Dakota	2,896.27	653.48	390.81	351.48	165.57	336.25	76.81	212.62	165.47	124.79	419.00
Ohio	2,434.67	629.24	243.66	391.28	205.42	176.20	150.42	183.68	122.61	124.07	208.09
Oklahoma	2,215.49	583.02	234.17	258.91	208.55	201.63	110.07	19260	137.95	111.45	111.16
Oregon	2,809.62	731.61	304.12	212.65	176.09	229.64	149.25	227.60	258.02	172.52	348.13
Pennsylvania	2,350.02	633.41	130.40	370.70	129.41	216.21	122.54	156.72	182.82	117.69	290.13
Rhode Island	2,788.35	595.78	204.59	498.91	196.74	165.84	140.15	185.37	266.36	152.17	382.43
South Carolina	2,120.76	567.70	267.32	181.25	294.55	133.68	127.74	147.32	105.12	90.70	205.38
South Dakota	2,543.77	566.02	235.09	218.00	121.24	347.10	97.81	167.90	185.25	122.09	483.27
Tennessee	2,077.62	432.19	208.85	250.38	265.52	191.63	114.97	164.47	111.23	98.48	239.90
Texas	2,323.95	665.68	257.13	158.72	188.11	240.61	131.71	204.95	183.91	109.48	183.67
Utah	2,545.33	644.70	378.83	233.67	174.36	214.59	142.33	211.89	160.94	156.40	227.62
Vermont	2,749.23	710.22	325.62	346.41	98.11	339.16	95.83	173.64	171.72	158.97	329.56
Virginia	2,399.54	633.59	271.37	188.17	220.73	253.13	153.83	219.99	116.06	146.99	195.69
Washington	2,777.01	680.54	297.17	314.37	195.94	249.16	156.60	274.80	127.41	146.20	334.82
West Virginia	2,273.75	618.50	188.20	269.47	144.56	267.14	64.32	148.23	178.19	118.68	276.46
Wisconsin	2,843.03	694.31	331.79	487.10	171.87	260.40	147.72	243.88	141.21	125.57	239.19
Wyoming	4,423.76	1,181.74	400.99	231.98	527.77	657.65	179.42	322.27	335.13	234.11	352.70

Sources: Tables B-1 and B-7.

Table B-3

Representative State-Local Expenditures by Function, 1986-87, Adjusted for Input-Cost Differences

(millions)

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	$653,608.3	$156,781.7	$60,240.3	$80,089.7	$56,971.4	$52,199.3	$41,321.8	$53,805.2	$41,816.2	$34,895.4	$75,487.2
Alabama	11,926.4	2,838.7	959.4	1,954.1	1,103.5	1,029.0	675.3	875.9	701.5	551.9	1,237.2
Alaska	1,709.6	508.0	169.2	160.3	128.6	128.1	125.6	129.6	90.2	92.3	177.6
Arizona	9,324.7	2,245.8	814.7	1,231.7	831.3	815.3	542 1	741.9	581.7	477.2	1,043.0
Arkansas	6,795.8	1,618.4	522.2	1,137.9	657.9	570.7	349.4	503.4	410.3	311.7	714.0
California	75,241.7	18,020.6	7,095.4	8,736.1	6,656.8	5,560.7	5,341.8	6,240.1	4,752.5	4,122.5	8,715.2
Colorado	8,681.7	2,146.4	833.9	917.7	710.8	777.9	503.6	729.1	566.3	473.2	1,022.8
Connecticut	7,905.6	1,855.4	835.5	626.5	627.9	668.1	502.7	731.3	551.6	487.3	1,019.3
Delaware.	1,662.5	361.2	167.6	194.4	143.9	150.7	98.3	1428	110.6	92.9	200.2
District of Columbia	1,718.2	2927	151.9	287.9	171.0	77.9	216.3	135.7	106.9	87.0	191.0
Florida	29,882.8	6,123.9	2,573.9	4,110.3	2,794.4	2,298.6	2,068.6	2,579.1	2,065.6	1,625.1	3,643.2
Georgia	18,138.2	4,405.9	1,538.8	2,618.0	1,637.3	1,589.1	1,171.6	1,348.9	1,068.9	858.8	1,900.9
Hawaii	2,606.9	596.4	274.0	289.1	211.7	170.4	157.8	236.7	186.1	151.8	3329
Idaho	2,681.8	726.4	213.3	342.4	218.4	255.0	116.4	210.2	171.5	130.0	298.2
Illinois	31,855.6	7,889.3	3,050.1	3,839.1	2,753.2	2,097.4	2,128.9	2,648.6	1,989.8	1,771.1	3,688.1
Indiana	14,747.1	3,798.2	1,391.3	1,581.1	1,220.5	1,219.5	846.0	1,225.4	950.2	796.4	1,718.4
Iowa	7,294.2	1,770.5	663.1	840.0	585.2	730.9	341.6	615.8	486.9	392.9	867.3
Kansas	6,540.5	1,535.0	578.7	732.4	520.9	773.6	336.0	537.8	425.4	343.1	757.6
Kentucky	10,840.8	2,604.8	931.4	1,664.5	1,050.4	845.3	610.7	817.7	640.3	526.5	1,149.1
Louisiana	13,223.9	3,163.3	1,165.6	2,131.4	1,243.3	837.4	877.4	995.1	766.4	650.8	1,393.3
Maine	2,838.3	638.0	252.0	357.1	246.5	276.2	128.4	243.1	203.9	146.0	347.1
Maryland	11,816.6	2,769.8	1,214.7	1,148.3	1,003.1	906.5	866.3	1,023.4	779.1	676.3	1,429.2
Massachusetts	13,725.9	3,070.2	1,472.8	1,335.8	1,152.9	1,022.5	771.7	1,277.7	1,005.9	818.6	1,797.8
Michigan	26,764.5	6,827.4	2,528.0	2,900.1	2,361.8	2,064.4	2,0121	2,118.8	1,580.6	1,425.6	2,945.8
Minnesota	11,173.9	2,706.5	1,069.6	1,190.5	901.0	1,119.0	566.7	946.7	729.5	618.9	1,325.6
Mississippi	7,987.5	1,909.2	596.6	1,569.3	763.0	600.7	428.9	549.7	451.0	338.1	780.9
Missouri	13,733.3	3,122.3	1,201.4	1,826.9	1,227.6	1,252.2	831.8	1,113.7	876.7	713.7	1,567.1
Montana	2,215.0	521.2	173.6	268.7	172.6	323.9	98.7	170.4	139.0	105.4	241.7
Nebraska	4,118.4	930.1	360.9	497.0	322.2	501.9	197.9	340.1	273.8	213.2	481.1
Nevada	2,593.5	618.0	243.3	243.5	211.1	263.5	166.4	221.2	173.0	142.7	310.8
New Hampshire	2,424.6	558.7	245.4	210.0	191.1	232.0	128.0	223.2	181.6	138.4	316.4
New Jersey	19,172.1	4,561.7	1,976.5	1,793.9	1,602.1	1,401.6	1,178.9	1,745.1	1,318.1	1,161.5	2,432.8
New Mexico	4,455.3	1,083.3	345.6	722.7	380.9	4429	251.1	319.4	257.7	199.8	451.9
New York	45,619.3	10,284.2	4,419.3	5,775.0	4,078.9	2,488.8	3,429.5	3,957.5	3,062.3	2,577.0	5,546.9
North Carolina	16,976.7	3,991.9	1,507.0	2,358.5	1,509.9	1,398.2	986.4	1,356.9	1,101.8	843.3	1,922.8
North Dakota	1,897.6	418.3	152.3	243.9	139.1	322.7	74.2	142.1	115.5	88.2	201.4
Ohio	28,920.6	7,291.8	2,709.3	3,322.6	2,569.0	2,083.6	1,699.3	2,419.2	1,8527	1,590.3	3,382.9
Oklahoma	9,122.9	2,239.2	769.1	1,107.8	802.2	968.0	510.9	710.3	562.1	4528	1,000.6
Oregon	7,161.3	1,740.2	633.4	799.3	649.1	650.6	393.4	599.1	468.0	386.7	841.5
Pennsylvania	28,989.6	6,582.0	2,888.1	3,007.5	2,579.5	2,052.7	1,771.9	2,640.2	2,050.6	1,713.3	3,703.6
Rhode Island	2,270.7	494.6	238.3	239.6	204.0	146.7	129.5	213.0	169.4	135.2	300.4
South Carolina	9,501.7	2,271.2	822.0	1,414.0	839.4	804.7	558.7	725.1	588.4	450.9	1,027.4
South Dakota	1,992.6	417.5	146.1	341.4	160.6	293.5	72.6	145.0	121.8	87.0	207.2
Tennessee	13,495.7	3,144.4	1,139.6	2,018.7	1,253.5	1,125.5	799.5	1,044.9	834.1	660.6	1,475.0
Texas	49,435.9	13,059.2	4,262.4	6,3126	3,992.9	4,1629	3,319.0	3,746.4	2,884.4	2,450.9	5,245.0
Utah	4,733.7	1,522.5	405.1	477.6	342.5	361.2	2223	365.5	288.6	233.5	514.7
Vermont	1,311.5	291.3	122.8	152.4	107.9	138.9	62.0	1129	94.2	68.2	161.0
Virginia	15,627.5	3,653.6	1,537.4	1,763.5	1,332.9	1,387.5	981.1	1,297.5	1,014.3	836.9	1,822.8
Washington	12,015.0	2,970.8	1,132.9	1,232.3	1,049.8	1,052.5	696.6	1,014.9	779.6	665.4	1,420.2
West Virginia	5,234.1	1,333.5	442.4	725.4	508.2	384.6	262.4	410.9	325.9	261.4	579.2
Wisconsin	12,160.1	2,899.9	1,189.3	1,232.8	959.5	1,166.2	656.2	1,058.9	825.8	684.6	1,486.8
Wyoming	1,344.7	358.2	113.1	106.3	89.6	207.5	59.6	107.0	84.2	68.6	150.5

Sources: See text.

Table B 4

Representative State-Local Expenditures by Function, Per Capita, 1986-87, Adjusted for Input-Cost Differences

(millions)

State	Total	Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	$2,685.34	$644.14	$247.50	$329.05	$234.07	$214.46	$169.77	$221.06	$171.80	$143.37	$310.14
Alabama	2,920.99	695.24	234.99	478.60	270.26	252.03	165.40	214.51	171.80	135.17	303.02
Alaska	3,256.33	967.69	322.37	305.39	244.90	243.97	239.25	246.93	171.81	175.77	338.25
Arizona	2,753.91	663.25	240.60	363.77	245.52	240.79	160.09	219.11	171.80	140.93	308.03
Arkansas	2,845.83	677.74	218.69	476.50	275.52	238.98	146.30	210.80	171.80	130.51	298.98
California	2,719.94	651.43	256.49	315.81	240.64	201.02	193.10	225.57	171.80	149.03	315.05
Colorado	2,634.02	651.23	253.01	278.43	215.65	236.02	152.80	221.22	171.80	143.57	310.31
Connecticut	2,462.02	577.82	260.19	195.10	195.54	208.05	156.57	227.76	171.80	151.76	317.43
Delaware	2,581.56	560.86	260.24	301.88	223.47	233.95	152.58	221.72	171.80	144.20	310.86
District of Columbia	2,762.44	470.52	244.25	462.93	274.89	125.18	347.73	218.24	171.80	139.83	307.08
Florida	2,485.47	509.35	214.09	341.87	232.42	191.19	172.05	214.51	171.80	135.17	303.02
Georgia	2,915.17	708.11	247.32	420.77	263.15	255.40	188.29	216.80	171.80	138.03	305.51
Hawaii	2,407.11	550.73	253.01	266.90	195.51	157.35	145.69	218.53	171.80	140.20	307.39
Idaho	2,687.15	727.88	213.73	343.07	218.84	255.47	116.66	210.62	171.80	130.29	298.79
Illinois	2,750.44	681.17	263.34	331.47	237.71	181.09	183.81	228.68	171.80	152.92	318.43
Indiana	2,666.27	686.72	251.54	285.86	220.67	220.48	152.96	221.56	171.80	143.99	310.68
Iowa	2,573.83	624.75	233.97	296.39	206.51	257.92	120.55	217.28	171.80	138.64	306.03
Kansas	2,641.57	619.95	233.73	295.80	210.39	312.45	135.71	217.22	171.80	138.56	305.96
Kentucky	2,908.71	698.90	249.91	446.60	281.85	226.82	163.85	219.39	171.80	141.28	308.32
Louisiana	2,964.33	709.09	261.28	477.79	278.70	187.72	196.69	223.06	171.80	145.88	312.32
Maine	2,391.16	537.50	212.27	300.88	207.69	232.68	108.13	204.79	171.80	122.98	292.44
Maryland	2,605.64	610.76	267.85	253.20	221.18	199.88	191.02	225.66	171.80	149.14	315.15
Massachusetts	2,344.30	524.37	251.55	228.14	196.91	174.63	131.81	218.22	171.80	139.81	307.05
Michigan	2,909.18	742 11	274.78	315.23	256.71	224.39	218.70	230.31	171.80	154.95	320.20
Minnesota	2,631.64	637.43	251.91	280.38	212.19	263.53	133.47	222.96	171.80	145.76	312.21
Mississippi	3,042.84	727.33	227.29	597.84	290.67	228.83	163.38	209.43	171.80	128.80	297.49
Missouri	2,691.23	611.85	235.43	358.01	240.56	245.39	163.00	218.25	171.80	139.85	307.09
Montana	2,738.01	644.21	214.54	332 14	213.30	400.39	122.00	210.60	171.81	130.26	298.76
Nebraska	2,583.67	583.53	226.42	311.82	202.11	314.90	124.17	213.39	171.80	133.76	301.79
Nevada	2,575.45	613.68	241.60	241.76	209.68	261.65	165.24	219.71	171.80	141.67	308.67
New Hampshire	2,293.89	528.57	232.18	198.66	180.81	219.44	121.06	211.12	171.80	130.92	299.34
New Jersey	2,498.98	594.59	257.62	233.83	208.83	182.69	153.66	227.47	171.80	151.39	317.11
New Mexico	2,970.21	722.21	230.37	481.81	253.93	295.27	167.41	21293	171.80	133.18	301.30
New York	2,559.29	576.95	247.93	323.98	228.83	139.63	192.40	222.02	171.80	144.57	311.18
North Carolina	2,647.24	622.47	235.00	367.77	235.44	218.03	153.81	211.58	171.80	131.50	299.84
North Dakota	2,823.85	622.52	226.60	362.89	207.01	480.27	110.36	211.43	171.80	131.31	299.67
Ohio	2,681.81	676.17	251.23	308.11	238.22	193.21	157.58	224.33	171.80	147.47	313.70
Oklahoma	2,788.17	684.37	235.07	338.56	245.16	295.83	156.13	217.07	171.80	138.38	305.80
Oregon	2,628.95	638.83	232.52	293.43	238.28	238.86	144.41	219.94	171.80	141.96	308.92
Pennsylvania	2,428.75	551.44	241.97	251.97	216.11	171.98	148.45	221.20	171.80	143.55	310.29
Rhode Island	2,302.94	501.63	241.70	242.97	206.91	148.81	131.34	216.03	171.81	137.07	304.68
South Carolina	2,774.23	663.12	240.00	412.84	245.08	234.95	163.13	211.70	171.80	131.65	299.97
South Dakota	2,810.42	588.84	206.07	481.46	226.56	413.90	102.36	204.55	171.81	122.69	292 19
Tennessee	2,779.75	647.67	234.72	415.79	258.18	231.82	164.67	215.23	171.80	136.07	303.80
Texas	2,944.54	777.85	253.88	376.00	237.83	247.96	197.69	223.15	171.80	145.98	312.41
Utah	2,817.65	906.24	241.15	284.31	203.86	215.02	132.31	217.59	171.80	139.02	306.36
Vermont	2,393.27	531.54	224.16	278.05	196.97	253.46	113.10	205.97	171.81	124.47	293.74
Virginia	2,646.93	618.83	260.40	298.69	225.76	235.02	166.18	219.77	171.80	141.75	308.73
Washington	2,647.65	654.66	249.64	271.55	231.34	231.93	153.50	223.65	171.80	146.62	312.96
West Virginia	2,759.15	70297	233.21	382.40	267.92	202.75	138.32	216.63	171.80	137.82	305.32
Wisconsin	2,529.67	603.26	247.40	256.46	199.61	242.61	136.51	220.29	171.80	142.41	309.31
Wyoming	2,744.27	731.05	230.92	216.90	182.91	423.42	121.69	218.38	171.80	140.00	307.22

Sources: Tables B-3 and B-7.

Table B-5
Measures of Revenue-Raising Ability, 1986 or 1987
(dollar amounts in millions)

State	Resident Personal Income, 1987		RTS Tax Capacity, 1987		Gross state Product, 1986		Total Taxable Resources, 1986	
	Amount	Percentage Distribution	Amount	Percentage Distribution	Amount	Percentage Distribution	Amount	Percentage Distribution
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
United States	$3,768,125	100.0000%	$396,673.9	100.0000%	$4,191,705	100.0000%	$4,191,705	100.0000%
Sum of Detail	3,768,124	100.0000	396,673.0	99.9998	4,191,705	100.0000	4,191,705	100.0000
Alabama	48,753	1.2938	5,009.0	1.2627	55,007	1.3123	54,783	1.3069
Alaska	9,576	0.2541	1,441.8	0.3635	19,575	0.4670	15,426	0.3680
Arizona	48,466	1.2862	5,490.9	1.3842	53,253	1.2704	53,181	1.2687
Arkansas	27,481	0.7293	2,870.6	0.7237	31,633	0.7547	31,414	0.7494
California	492,989	13.0831	52,779.7	13.3056	533,816	12.7351	537,742	12.8287
Colorado	51,369	1.3633	5,962.9	1.5032	59,177	1.4118	59,143	1.4109
Connecticut	68,291	1.8123	7,281.5	1.8356	70,639	1.6852	72,434	1.7280
Delaware	10,751	0.2853	1,295.8	0.3267	11,706	0.2793	11,493	0.2742
District of Columbia	12,722	0.3376	1,238.1	0.3121	28,791	0.6869	21,605	0.5154
Florida	187,365	4.9724	20,489.1	5.1652	177,729	4.2400	190,393	4.5422
Georgia	88,977	2.3613	9,547.4	2.4069	102,922	2.4554	100,199	2.3904
Hawaii	16,972	0.4504	1,997.5	0.5036	19,320	0.4609	19,051	0.4545
Idaho	11,847	0.3144	1,250.6	0.3153	13,170	0.3142	13,265	0.3165
Illinois	190,430	5.0537	18,368.5	4.6306	209,666	5.0019	211,749	5.0516
Indiana	76,961	2.0424	7,851.1	1.9792	84,922	2.0260	85,390	2.0371
Iowa	40,348	1.0708	3,857.6	0.9725	43,836	1.0458	44,514	1.0620
Kansas	37,450	0.9939	3,767.8	0.9499	42,472	1.0132	42,638	1.0172
Kentucky	44,945	1.1928	4,797.0	1.2093	53,135	1.2676	51,449	1.2274
Louisiana	51,174	1.3581	6,263.1	1.5789	74,426	1.7756	67,130	1.6015
Maine	16,558	0.4394	1,874.8	0.4726	17,326	0.4133	17,574	0.4193
Maryland	82,190	2.1812	8,039.9	2.0268	76,504	1.8251	82,949	1.9789
Massachusetts	112,085	2.9746	12,103.9	3.0514	115,526	2.7561	119,135	2.8422
Michigan	141,618	3.7583	14,284.1	3.6010	153,240	3.6558	156,851	3.7419
Minnesota	67,624	1.7946	7,186.9	1.8118	75,626	1.8042	75,332	1.7972
Mississippi	27,013	0.7169	2,780.4	0.7009	31,830	0.7594	31,060	0.7410
Missouri	74,945	1.9889	7,570.4	1.9085	83,534	1.9928	83,248	1.9860
Montana	9,992	0.2652	1,140.9	0.2876	12,163	0.2902	11,821	0.2820
Nebraska	22,845	0.6063	2,352.6	0.5931	26,521	0.6327	26,298	0.6274
Nevada	16,484	0.4375	2,307.9	0.5818	19,426	0.4634	18,543	0.4424
New Hampshire	18,529	0.4917	2,118.0	0.5339	18,518	0.4418	18,961	0.4524
New Jersey	156,145	4.1438	15,294.8	3.8558	154,765	3.6922	161,655	3.8565
New Mexico	17,812	0.4727	2,116.9	0.5337	23,603	0.5631	21,833	0.5209
New York	320,930	8.5170	31,383.6	7.9117	362,736	8.6537	361,942	8.6347
North Carolina	85,382	2.2659	9,354.9	2.3583	100,961	2.4086	97,250	2.3201
North Dakota	8,738	0.2319	984.1	0.2481	10,733	0.2561	10,396	0.2480
Ohio	157,580	4.1819	15,989.3	4.0308	176,102	4.2012	177,007	4.2228
Oklahoma	41,069	1.0899	4,968.4	1.2525	49,814	1.1884	49,013	1.1693
Oregon	38,245	1.0150	4,102.6	1.0343	41,278	0.9848	41,989	1.0017
Pennsylvania	181,565	4.8184	17,949.2	4.5249	183,559	4.3791	192,365	4.5892
Rhode Island	15,337	0.4070	1,539.0	0.3880	15,205	0.3627	16,042	0.3827
South Carolina	41,110	1.0910	4,399.3	1.1090	44,727	1.0670	45,019	1.0740
South Dakota	8,900	0.2362	904.5	0.2280	9,802	0.2338	9,868	0.2354
Tennessee	62,533	1.6595	6,632.4	1.6720	72,328	1.7255	70,394	1.6794
Texas	232,783	6.1777	27,120.2	6.8369	303,510	7.2407	285,289	6.8060
Utah	19,095	0.5068	2,162.2	0.5451	24,008	0.5728	22,863	0.5455
Vermont	7,840	0.2081	917.5	0.2313	8,636	0.2060	8,605	0.2053
Virginia	97,515	2.5879	9,887.1	2.4925	104,155	2.4848	105,027	2.5056
Washington	70,795	1.8788	7,286.5	1.8369	77,683	1.8533	78,614	1.8755
West Virginia	20,907	0.5548	2,385.4	0.6013	24,096	0.5749	24,096	0.5749
Wisconsin	70,862	1.8806	6,885.6	1.7358	76,922	1.8351	77,978	1.8603
Wyoming	6,231	0.1654	1,090.8	0.2750	11,673	0.2785	9,687	0.2311

Sources: 1—*Survey* of *Current Business,* August 1988, Table 1, p. *30.*
3—Advisory Commission on Intergovernmental Relations, *1986 State Fiscal Capacity and Effort* (Washington, DC, 1989), p. 12: ACIR, *1988 State Fiscal Capacity and Effort* (1990), p. *32.* The estimates shown in this table are means of the estimates for 1986 and 1988; estimates were not prepared by ACIR for 1987.
5—Survey of Current Business, May 1988, pp. *38-45.*
7—Unpublished estimates prepared by Michael Springer, U.S. Department of the Treasury, Office of Economic Policy.

Table B-6

Derivation of a Workload Measure for Public Welfare, 1987

(populations in thousands)

State	Persons in Poverty, 1979 Total	1979 Under 18	1987 Total	1987 Under 18	Workload Measure
	(1)	(2)	(3)	(4)	(5)
United States	27,393	10,026	32,546	12,830	100.00%
Sum of Detail	27,393	10,026	32,547	12,834	100.00
Alabama	720	271	802	310	2.47
Alaska	42	15	62	29	.19
Arizona	351	129	502	211	1.54
Arkansas	424	154	470	177	1.45
California	2,627	947	3,519	1,535	10.81
Colorado	285	91	373	140	1.14
Connecticut	243	93	251	92	.77
Delaware	68	25	79	30	.24
District of Columbia	113	38	117	43	.36
Florida	1,287	427	1,688	583	5.19
Georgia	884	342	1,071	429	3.29
Hawaii	92	35	118	52	.36
Idaho	117	43	142	61	.43
Illinois	1,231	478	1,538	684	4.73
Indiana	516	189	641	263	1.97
Iowa	286	94	343	127	1.05
Kansas	232	73	299	112	.92
Kentucky	626	230	678	251	2.08
Louisiana	765	307	862	361	2.65
Maine	141	50	149	50	.46
Maryland	405	143	463	164	1.42
Massachusetts	532	193	545	186	1.67
Michigan	946	361	1,159	494	3.56
Minnesota	375	118	482	171	1.48
Mississippi	587	244	650	282	2.00
Missouri	582	196	745	288	2.29
Montana	94	32	111	43	.34
Nebraska	163	53	205	77	.63
Nevada	69	21	99	35	.30
New Hampshire	75	24	87	27	.27
New Jersey	689	278	720	275	2.21
New Mexico	226	91	298	138	.91
New York	2,299	877	2,341	878	7.19
North Carolina	840	299	974	349	2.99
North Dakota	79	27	101	41	.31
Ohio	1,089	401	1,341	563	4.12
Oklahoma	394	132	453	164	1.39
Oregon	274	85	325	114	1.00
Pennsylvania	1,210	426	1,221	418	3.75
Rhode Island	94	33	98	33	.30
South Carolina	500	195	584	232	1.79
South Dakota	113	41	143	59	.44
Tennessee	736	263	828	302	2.54
Texas	2,036	791	2,554	1,089	7.85
Utah	148	57	195	94	.60
Vermont	59	20	64	21	.20
Virginia	611	216	718	254	2.20
Washington	396	128	498	186	1.53
West Virginia	287	102	297	106	.91
Wisconsin	398	139	501	199	1.54
Wyoming	36	11	43	16	.13

Sources: 1 & 2—US. Department of Commerce, Bureau of the Census, *1980 Census of Population,* Volume 1 *Characteristics of the Population,* Chapter *C, General Social and Economic Characteristics,* Part 1, *United States Summary* (Washington, DC, 1983), Table 245.
3—Table B-7, column 6.
4—Table B-9, column 6.
5—Percentage distribution of column 3.

Table B-7

Derivation of Estimates of the Number of Persons in Poverty, 1987

(populations in thousands)

Region and State	1979 Total Population	1979 Persons in Poverty Number	1979 Persons in Poverty Percent	1987 Total Population	1987 Persons in Poverty Number	1987 Persons in Poverty Scaled	1987 Persons in Poverty Percent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
United States	226,549	27,393	12.1%	243,399	32,546	32,546	13.4%
Sum of Detail	32,547	32,547					
Northeast	49,136	5,343	10.9	50,277	5,476	5,476	10.9
Connecticut	3,108	243	7.8	3,211	251	251	7.8
Maine	1,125	141	12.5	1,187	149	149	12.6
Massachusetts	5,737	532	9.3	5,855	544	545	9.3
New Hampshire	921	75	8.2	1,057	87	87	8.2
New Jersey	7,365	689	9.4	7,672	719	720	9.4
New York	17,558	2,299	13.1	17,825	2,338	2,341	13.1
Pennsylvania	11,864	1,210	10.2	11,936	1,219	1,221	10.2
Rhode Island	947	94	9.9	986	98	98	9.9
Vermont	511	59	11.6	548	63	64	11.6
Midwest	58,868	6,010	10.2	59,538	7,499	7,499	12.6
Illinois	11,427	1,231	10.8	11,582	1,539	1,538	13.3
Indiana	5,490	516	9.4	5,531	642	641	11.6
Iowa	2,914	286	9.8	2,834	343	343	12.1
Kansas	2,364	232	9.8	2,476	299	299	12.1
Michigan	9,262	946	10.2	9,200	1,159	1,159	12.6
Minnesota	4,076	375	9.2	4,246	482	482	11.3
Missouri	4,917	582	11.8	5,103	746	745	14.6
Nebraska	1,570	163	10.4	1,594	205	205	12.8
North Dakota	653	79	12.1	672	101	101	15.0
Ohio	10,798	1,089	10.1	10,784	1,342	1,341	12.4
South Dakota	691	113	16.3	709	143	143	20.1
Wisconsin	4,706	398	8.5	4,807	501	501	10.4
South	75,372	11,285	15.0	83,885	13,287	13,287	15.8
Alabama	3,894	720	18.5	4,083	799	802	19.6
Arkansas	2,286	424	18.5	2,388	468	470	19.6
Delaware	594	68	11.5	644	78	79	12.2
District of Columbia	638	113	17.8	622	117	117	18.8
Florida	9,746	1,287	13.2	12,023	1,680	1,688	14.0
Georgia	5,463	884	16.2	6,222	1,066	1,071	17.1
Kentucky	3,661	626	17.1	3,727	675	678	18.1
Louisiana	4,206	765	18.2	4,461	858	862	19.2
Maryland	4,217	405	9.6	4,535	460	463	10.2
Mississippi	2,521	587	23.3	2,625	647	650	24.7
North Carolina	5,882	840	14.3	6,413	969	974	15.1
Oklahoma	3,025	394	13.0	3,272	451	453	13.8
South Carolina	3,122	500	16.0	3,425	581	584	17.0
Tennessee	4,591	736	16.0	4,855	824	828	17.0
Texas	14,229	2,036	14.3	16,789	2,542	2,554	15.1
Virginia	5,347	611	11.4	5,904	714	718	12.1
West Virginia	1,950	287	14.7	1,897	295	297	15.6
West	43,173	4,755	11.0	49,699	6,285	6,285	12.6
Alaska	402	42	10.4	525	62	62	11.9
Arizona	2,718	351	12.9	3,386	503	502	14.8
California	23,668	2,627	11.1	27,663	3,525	3,519	12.7
Colorado	2,890	285	9.9	3,296	373	373	11.3
Hawaii	965	92	9.5	1,083	118	118	10.9
Idaho	944	117	12.4	998	142	142	14.2
Montana	787	94	12.0	809	111	111	13.8
Nevada	800	69	8.6	1,007	99	99	9.9
New Mexico	1,303	226	17.3	1,500	298	298	19.9
Oregon	2,633	274	10.4	2,724	326	325	12.0
Utah	1,461	148	10.1	1,680	195	195	11.6
Washington	4,132	396	9.6	4,538	499	498	11.0
Wyoming	470	36	7.7	490	43	43	8.9

Sources: 1 & 4 — U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, with Age, Sex, and Components of Change, 1981-87*, Current Population Reports (Washington, DC, 1988), Tables 5 and 6.

2 — Table B-6, column 1.

5 — Regional totals from U.S. Department of Commerce, Bureau of the Census, *Money Income and Poverty Status in The United States: 1987 (Advance Data from the March 1988 Current Population Survey)*, Current Population Reports (Washington, DC, 1988), Table 15. For each state in a region, the number is the percentage in column 7 applied to column 4.

6 — The direct estimates for the states in a region are scaled to the actual regional total in column 5.

7 — For regional totals: [column 5/column 4]. For each state in a region, the percentage is that in column 3 (for 1980) multiplied by its region's ratio in 1987 (column 7) divided by its region's ratio in 1980 (column 3).

Table B-8

Derivation of Estimates of the Number of Persons under 150 Percent of the Poverty Level, 1987

(populations in thousands)

Region and State	1979 Total Population	1979 Persons under 150% of Poverty Number	1979 Persons under 150% of Poverty Percent	1987 Total Population	1987 Persons under 150% of Poverty Number	1987 Persons under 150% of Poverty Scaled	1987 Persons under 150% of Poverty Percent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
United States	226,546	49,135	21.7%	243,400	54,573	54,573	22.4%
Sum of *Detail*	226,549	49,135		243,399	58,427	54,573	
Northeast	49,136	9,639	19.6	50,277	9,880	9,228	18.4
Connecticut	3,108	441	14.2	3,211	454	424	13.2
Maine	1,125	291	25.9	1,187	269	251	21.2
Massachusetts	5,737	1,027	17.9	5,855	983	918	15.7
New Hampshire	921	157	17.0	1,057	157	146	13.8
New Jersey	7,365	1,208	16.4	7,672	1,300	1,214	15.8
New York	17,558	3,968	22.6	17,825	4,223	3,945	22.1
Pennsylvania	11,864	2,242	18.9	11,936	2,203	2,057	17.2
Rhode Island	947	184	19.4	986	177	165	16.8
Vermont	511	121	23.7	548	115	107	19.5
Midwest	58,868	10,872	18.5	59,538	13,566	12,672	21.3
Illinois	11,427	2,045	17.9	11,582	2,783	2,600	22.4
Indiana	5,490	983	17.9	5,531	1,160	1,084	19.6
Iowa	2,914	539	18.5	2,834	621	580	20.5
Kansas	2,364	452	19.1	2,476	542	506	20.4
Michigan	9,262	1,667	18.0	9,200	2,097	1,958	21.3
Minnesota	4,076	705	17.3	4,246	872	814	19.2
Missouri	4,917	1,082	22.0	5,103	1,348	1,259	24.7
Nebraska	1,570	316	20.1	1,594	370	346	21.7
North Dakota	653	153	23.5	672	182	170	25.3
Ohio	10,798	1,933	17.9	10,784	2,427	2,267	21.0
South Dakota	691	202	29.3	709	258	241	34.0
Wisconsin	4,706	795	16.9	4,807	907	847	17.6
South	75,372	19,763	26.2	83,885	23,270	21,735	25.9
Alabama	3,894	1,215	31.2	4,083	1,405	1,313	32.2
Arkansas	2,286	752	32.9	2,388	824	769	32.2
Delaware	594	120	20.2	644	138	129	20.0
District of Columbia	638	176	27.6	622	206	192	30.9
Florida	9,746	2,339	24.0	12,023	2,956	2,761	23.0
Georgia	5,463	1,530	28.0	6,222	1,875	1,752	28.2
Kentucky	3,661	1,069	29.2	3,727	1,187	1,109	29.7
Louisiana	4,206	1,228	29.2	4,461	1,510	1,411	31.6
Maryland	4,217	713	16.9	4,535	810	757	16.7
Mississippi	2,521	963	38.2	2,625	1,139	1,064	40.5
North Carolina	5,882	1,570	26.7	6,413	1,705	1,593	24.8
Oklahoma	3,025	738	24.4	3,272	793	741	22.6
South Carolina	3,122	896	28.7	3,425	1,022	955	27.9
Tennessee	4,591	1,285	28.0	4,855	1,450	1,354	27.9
Texas	14,229	3,529	24.8	16,789	4,472	4,177	24.9
Virginia	5,347	1,128	21.1	5,904	1,257	1,174	19.9
West Virginia	1,950	511	26.2	1,897	520	486	25.6
West	43,173	8,861	20.5	49,699	11,711	10,939	22.0
Alaska	402	73	18.2	525	116	108	20.7
Arizona	2,718	631	23.2	3,386	935	873	25.8
California	23,668	4,899	20.7	27,663	6,558	6,126	22.1
Colorado	2,890	532	18.4	3,296	694	648	19.7
Hawaii	965	183	19.0	1,083	220	205	18.9
Idaho	944	229	24.3	998	264	246	24.7
Montana	787	179	22.7	809	207	193	23.9
Nevada	800	134	16.7	1,007	185	172	17.1
New Mexico	1,303	394	30.2	1,500	555	518	34.5
Oregon	2,633	513	19.5	2,724	606	566	20.8
Utah	1,461	295	20.2	1,680	364	340	20.2
Washington	4,132	727	17.6	4,538	928	867	19.1
Wyoming	470	72	15.3	490	81	75	15.4

Sources: 1 & 4—Table B-7, columns 1 and 4, respectively.
2—[Column 3 • column 1].
3—Table B-16, column 5.
5—U.S. total is 1986 increased by the percentage increase in 1987 in the number of persons in households with incomes below 125 percent of the poverty level. The estimates of the number of persons below 125 percent in 1986 and 1987 are from U.S. Department of Commerce, Bureau of the Census, *Money Income and Poverty Status in the United States: 1987 (Advance Data from the March 1988 Current Population Survey)*, Current Population Reports (Washington, DC, 1988), Table 17. The estimate of persons below 150 percent in 1986 is from U.S. Bureau of the Census, *Poverty in the United States: 1986*, Current Population Reports (Washington, DC, 1988), Table 4. The preliminary estimate for each state is the ratio for its region of the number of persons below 150 percent to the number of persons in poverty in 1980 (from Table B-7, column 2) multiplied by the estimated number of persons in poverty in the state in 1987 (from Table B-12, column 6). The regional estimates are the sums of those for the states in each region.
6—The regional totals are scaled to the U.S. total; the estimates for the states in a region are scaled to the total for the region.
7—[Column 6/column 4].

Table B-9

Derivation of Estimates of the Number of Children in Poverty, 1987

(populations in thousands)

Region and State	1980 Total Under 18	1980 Under 18 in Poverty Number	1980 Under 18 in Poverty Percent	1987 Total Under 18	1987 Under 18 in Poverty Number	1987 Under 18 in Poverty Scaled	1987 Under 18 in Poverty Percent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
United States	63,758	10,026	15.7%	63,543	12,830	12,830	20.2%
Sum of Detail	63,758	10,026			12,834	12,834	
Northeast	13,083	1,992	15.2	12,072	1,979	1,979	16.4
Connecticut	823	93	11.3	756	92	92	12.1
Maine	322	50	15.5	303	51	50	16.7
Massachusetts	1,490	193	12.9	1,336	186	186	13.9
New Hampshire	258	24	9.3	266	27	27	10.0
New Jersey	1,991	278	14.0	1,831	275	275	15.0
New York	4,688	877	18.7	4,360	878	878	20.1
Pennsylvania	3,123	426	13.6	2,851	418	418	14.7
Rhode Island	243	33	13.4	229	33	33	14.4
Vermont	145	20	13.7	140	21	21	14.8
Midwest	16,921	2,170	12.8	15,677	3,078	3,078	19.6
Illinois	3,244	478	14.7	3,035	684	684	22.5
Indiana	1,618	189	11.7	1,469	263	263	17.9
Iowa	826	94	11.4	732	128	127	17.4
Kansas	649	73	11.2	650	112	112	17.2
Michigan	2,752	361	13.1	2,459	494	494	20.1
Minnesota	1,172	118	10.1	1,111	171	171	15.4
Missouri	1,363	196	14.4	1,309	288	288	22.0
Nebraska	447	53	11.9	424	77	77	18.2
North Dakota	191	27	14.2	187	41	41	21.7
Ohio	3,095	401	13.0	2,837	563	563	19.8
South Dakota	206	41	19.7	195	59	59	30.1
Wisconsin	1,358	139	10.3	1,269	199	199	15.7
South	21,638	4,180	19.3	22,378	5,125	5,125	22.9
Alabama	1,162	271	23.3	1,116	309	310	27.6
Arkansas	671	154	23.0	648	177	177	27.3
Delaware	166	25	15.3	162	29	30	18.2
District of Columbia	143	38	26.3	136	42	43	31.2
Florida	2,359	427	18.1	2,704	581	583	21.5
Georgia	1,646	342	20.8	1,736	427	429	24.6
Kentucky	1,083	230	21.2	996	251	251	25.2
Louisiana	1,331	307	23.1	1,316	360	361	27.4
Maryland	1,168	143	12.2	1,125	163	164	14.5
Mississippi	815	244	30.0	791	281	282	35.5
North Carolina	1,658	299	18.0	1,628	348	349	21.4
Oklahoma	855	132	15.4	893	163	164	18.3
South Carolina	942	195	20.7	941	231	232	24.5
Tennessee	1,298	263	20.3	1,251	301	302	24.0
Texas	4,306	791	18.4	4,984	1,086	1,089	21.8
Virginia	1,475	216	14.6	1,460	253	254	17.4
West Virginia	560	102	18.2	491	106	106	21.6
West	12,116	1,683	13.9	13,416	2,653	2,653	19.8
Alaska	131	15	11.8	172	29	29	16.8
Arizona	791	128	16.2	919	212	211	23.0
California	6,389	947	14.8	7,302	1,540	1,535	21.1
Colorado	809	91	11.3	874	140	140	16.1
Hawaii	276	35	12.7	286	52	52	18.1
Idaho	307	43	14.0	306	61	61	20.0
Montana	232	32	13.6	225	43	43	19.3
Nevada	215	21	9.7	253	35	35	13.7
New Mexico	418	91	21.7	447	138	138	30.9
Oregon	723	85	11.7	686	114	114	16.7
Utah	540	57	10.6	629	94	94	15.0
Washington	1,139	128	11.2	1,169	187	186	16.0
Wyoming	146	11	7.6	148	16	16	10.8

Sources: 1 & 4—U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, with Age, Sex,* and *Components of Change, 1981-87,* Current Population Reports (Washington, DC, 1988), Tables 5 and 6.

2—Table B-6, column 2.

5—Regional totals are estimates for 1986 [from U.S. Department of Commerce, Bureau of the Census, *Poverty in the United States: 1986,* Current Population Reports (Washington, DC, 1988), Table 5, adjusted to 1987 by the change from 1986 in the overall rate for the entire country. The U.S. total for 1987 is from Bureau of the Census, *Money Income and Poverty Status in the United States: 1987, Advance Data from the March 1988 Current Population Survey* (1988), Table 18. For each state in a region, the number is the percentage in column 7 applied to column 4.

6—The direct estimates for the states in a region are scaled to the actual regional total in column 5.

7—For the regional totals: [column 5/column 4]. For each state in a region, the percentage is that in column 3 (for 1980) multiplied by its region's ratio in 1987 (column 7) divided by its region's ratio in 1980 (column 3).

Table B-10

Derivation of a Workload Measure for Elementary and Secondary Education, 1987

(populations in thousands)

State	School-Age Population July 1, 1987		Enrollment in Private Schools Fall 1987		School-Age Population Net of Private Enrollment, 1987		Children Under 18 Living in Poverty 1987	Weighted Net School-Age Population	
	5-13	14-17	Elementary	Secondary	Elementary	Secondary		Number	Workload Measure
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
United States	30,823	14,467	3,664	1,229	27,159	13,238	12,830	32,741	99.75%
Sum of Detail	30,824	14,467	3,590	1,195	27,234	13,272	12,834	32,822	100.00
Alabama	553	268	50	11	503	257	310	636	1.94
Alaska	80	32	5	0	75	32	29	84	0.26
Arizona	437	195	34	11	403	184	211	479	1.46
Arkansas	323	152	14	4	309	148	177	378	1.15
California	3,486	1,514	439	126	3,047	1,388	1,535	3,601	10.97
Colorado	419	187	28	8	391	179	140	448	1.36
Connecticut	356	186	43	33	313	153	92	363	1.11
Delaware	78	37	18	6	60	31	30	75	0.23
District of Columbia	61	29	12	6	49	23	43	63	0.19
Florida	1,267	625	170	57	1,098	568	583	1,372	4.18
Georgia	847	412	63	26	784	386	429	963	2.93
Hawaii	138	59	28	10	110	49	52	128	0.39
Idaho	158	64	4	2	154	62	61	170	0.52
Illinois	1,484	690	243	76	1,241	614	684	1,530	4.66
Indiana	729	350	72	20	657	330	263	790	2.41
Iowa	371	165	38	12	333	153	127	385	1.17
Kansas	321	137	27	8	294	129	112	334	1.02
Kentucky	500	238	49	18	451	220	251	554	1.69
Louisiana	650	281	128	36	522	245	361	648	1.97
Maine	147	73	7	9	140	64	50	160	0.49
Maryland	527	265	69	28	458	237	164	553	1.68
Massachusetts	621	326	68	43	553	283	186	661	2.01
Michigan	1,198	596	140	51	1,058	546	494	1,304	3.97
Minnesota	544	244	71	16	473	228	171	555	1.69
Mississippi	397	183	34	18	363	165	282	453	1.38
Missouri	641	299	93	28	548	271	288	672	2.05
Montana	113	48	6	1	107	47	43	122	0.37
Nebraska	210	92	26	11	184	81	77	211	0.64
Nevada	122	54	6	1	116	53	35	131	0.40
New Hampshire	127	63	10	10	117	53	27	130	0.40
New Jersey	868	450	150	55	718	395	275	895	2.73
New Mexico	218	95	14	5	204	90	138	247	0.75
New York	2,088	1,024	406	123	1,682	901	878	2,129	6.49
North Carolina	788	402	44	12	744	390	349	924	2.82
North Dakota	94	38	9	2	85	36	41	97	0.30
Ohio	1,392	672	183	63	1,209	609	563	1,475	4.49
Oklahoma	440	195	13	4	427	191	164	488	1.49
Oregon	343	153	19	8	324	145	114	368	1.12
Pennsylvania	1,376	692	251	97	1,125	595	418	1,374	4.19
Rhode Island	109	55	20	8	89	47	33	109	0.33
South Carolina	462	223	42	8	420	215	232	525	1.60
South Dakota	97	40	9	2	88	38	59	105	0.32
Tennessee	618	305	42	27	576	278	302	699	2.13
Texas	2,412	1,070	144	30	2,268	1,040	1,089	2,673	8.14
Utah	332	113	3	4	329	109	94	330	1.01
Vermont	67	33	3	4	64	29	21	72	0.22
Virginia	693	346	54	19	639	327	254	774	236
Washington	570	257	43	14	527	243	186	605	1.84
West Virginia	251	123	8	3	243	120	106	292	0.89
Wisconsin	625	288	133	23	492	265	199	611	1.86
Wyoming	76	29	3	0	73	29	16	77	0.23

Sources: 1 & 2 – Special tabulations prepared by the U.S. Bureau of the Census, Population Division, Population Estimates Branch, November 1988.
3 & 4 – Table B-11, columns 11 and 12.
5 – [Column 1 – column 3].
6 – [Column 2 – column 4].
7 – Table B-9, column 6.
8 – [0.6 • (column 5) + column 6 + 0.25 • (column 7)].
9 – Percentage distribution of column 8.

Table B-11
Enrollment in Elementary and Secondary Schools, Public and Private, 1986 and 1987
(thousands)

state	Percentage of Total Enrollment in Public Institutions in 1980		Enrollment in Fall 1986 Public Institutions			Enrollment in Fall 1987						
						Public Institutions			Public Institutions, Scaled		Private Institutions	
	Elementary	Secondary	Total	Elementary	Secondary	Total	Elementary.	Secondary	Elementary	Secondary	Elementary	Secondary
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
United States	88.42%	90.86%	39,837.5	27,403.7	12,433.8	40,200.1	27,653.2	12,546.9	27,983.0	12,217.0	3,664.5	1,228.8
Sum of detail			39,837.5	27,403.7	12,433.8	40,200.1	27,663.1	12,537.0	27,983.0	12,217.0	3,589.7	1,195.2
Alabama	91.32	94.87	733.7	519.0	214.8	730.5	516.7	213.8	522.7	208.4	49.7	11.3
Alaska	94.04	100.00	108.0	**78.0**	30.0	105.5	76.2	29.3	77.1	28.6	4.9	0.0
Arizona	92 14	94.12	534.5	371.4	163.1	567.2	394.1	173.1	398.7	168.7	34.0	10.5
Arkansas	95.64	96.98	437.4	306.9	130.6	437.0	306.6	130.5	310.1	127.1	14.1	4.0
California	87.76	91.35	4,378.0	3,045.7	1,3323	4,469.9	3,109.6	1,360.3	3,145.6	1,325.6	438.7	125.5
Colorado	93.23	95.50	558.4	386.3	172.1	560.2	387.6	172.7	392.0	168.3	28.5	7.9
Connecticut	88.11	81.04	468.8	321.8	147.0	**464.0**	318.5	145.5	322.2	141.8	43.5	33.2
Delaware	78.87	83.83	94.4	64.8	29.6	95.7	65.7	30.0	66.4	29.2	17.8	5.6
District of Columbia	84.12	78.80	85.6	62.5	23.2	87.7	64.0	23.7	64.7	23.1	12.2	6.2
Florida	87.38	89.57	1,607.3	1,120.9	486.4	1,663.6	1,160.2	503.4	1,173.6	490.6	169.5	57.1
Georgia	9295	92.58	1,096.4	778.0	318.4	1,159.5	822.7	336.7	8322	328.2	63.1	26.3
Hawaii	80.74	83.46	164.6	113.3	51.4	165.9	114.1	51.8	115.5	**50.5**	27.5	10.0
Idaho	97.21	**97.20**	208.4	149.6	58.8	212.4	152.5	59.9	154.2	58.4	4.4	1.7
Illinois	83.67	87.95	1,825.2	1,249.3	575.8	1,798.0	1,230.8	567.3	1,245.0	552.8	243.0	75.7
Indiana	90.13	93.86	966.8	653.6	313.2	965.2	6526	312.7	660.1	304.7	72.3	19.9
Iowa	89.60	92.66	481.3	323.5	157.8	478.9	321.9	157.0	325.6	153.0	37.8	12.1
Kansas	91.80	93.93	416.1	291.6	124.5	421.1	295.1	126.0	298.5	122.8	26.7	7.9
Kentucky	90.14	91.56	642.8	446.9	195.9	642.7	446.8	195.9	452.0	190.9	49.4	17.6
Louisiana	82.07	85.37	795.2	580.8	214.4	795.3	580.9	214.5	587.6	**209.0**	128.4	35.8
Maine	95.13	87.83	211.8	143.7	68.1	210.0	142.5	67.5	144.1	65.8	7.4	9.1
Maryland	87.03	88.66	675.7	456.0	219.7	680.1	459.0	221.1	464.3	215.5	69.2	27.6
Massachusetts	89.14	86.07	833.9	559.4	274.5	823.6	552.5	271.1	558.9	264.2	68.1	42.8
Michigan	88.84	91.67	1,681.9	1,108.8	573.1	1,673.8	1,103.5	570.3	1,116.3	555.8	140.2	50.5
Minnesota	87.32	93.47	711.1	479.1	2320	716.3	**482.6**	233.7	**488.2**	227.7	70.9	15.9
Mississippi	91.43	88.45	498.6	356.1	1426	505.6	361.0	144.6	365.2	140.9	34.2	18.4
Missouri	85.70	89.73	800.6	549.3	251.3	8021	**550.4**	251.7	556.7	245.3	92.9	28.1
Montana	94.42	97.28	153.3	107.6	45.8	153.9	108.0	45.9	109.2	44.8	6.5	1.3
Nebraska	87.88	87.92	267.1	185.3	81.9	268.1	186.0	822	**188.1**	80.1	25.9	11.0
Nevada	95.10	97.22	161.2	112.2	49.1	165.1	114.8	50.2	116.2	49.0	6.0	1.4
New Hampshire	91.56	84.10	163.7	109.9	53.8	164.2	110.3	53.9	111.5	525	10.3	9.9
New Jersey	83.29	86.69	1,107.5	7423	365.1	1,105.6	741.1	364.5	749.6	355.2	150.4	54.5
New Mexico	93.27	94.87	281.9	191.0	90.9	287.2	194.6	926	196.9	90.3	14.2	4.9
New York	80.93	87.56	2,607.7	1,713.5	894.3	2,593.1	1,703.9	889.2	1,723.6	**866.5**	406.1	123.1
North Carolina	94.53	**96.46**	1,085.2	748.5	336.8	1,084.8	748.1	336.7	756.8	328.1	43.8	**12.0**
North Dakota	90.42	94.12	118.7	83.9	34.8	118.5	83.8	34.7	84.7	33.8	9.0	2.1

Table B-11 (cont.)

Enrollment in Elementary and Secondary Schools, Public and Private, 1986 and 1987

(thousands)

State	Percentage of Total Enrollment in Public Institutions in 1980		Enrollment in Fall 1986 Public Institutions			Enrollment in Fall 1987						
						Public Institutions			Public Institutions, Scaled		Private Institutions	
	Elementary	Secondary	Total	Elementary	Secondary	Total	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ohio	86.95	90.03	1,793.5	1,208.1	585.4	1,789.5	1,205.4	584.1	1,219.4	569.2	183.0	63.0
Oklahoma	96.93	97.97	593.2	417.3	175.9	598.7	421.2	177.5	426.0	173.0	13.5	3.6
Oregon	94.34	94.34	449.3	308.5	140.8	455.9	313.1	142.8	316.7	139.2	19.0	8.4
Pennsylvania	80.94	85.80	1,674.2	1,064.6	609.6	1,656.4	1,053.3	603.1	1,065.4	587.7	250.9	97.3
Rhode Island	8241	84.66	134.1	91.4	42.7	134.1	91.4	42.7	92.4	41.6	19.7	7.5
South Carolina	91.26	95.64	611.6	427.8	183.9	614.9	430.1	184.9	435.0	180.2	41.7	8.2
South Dakota	91.40	93.82	125.5	89.4	36.1	126.5	90.1	36.4	91.1	35.4	8.6	2.3
Tennessee	93.36	89.74	818.1	577.0	241.0	819.3	577.9	241.4	584.6	235.2	41.6	24.9
Texas	94.43	96.85	3,209.5	2,317.5	892.1	3,350.7	2,419.4	931.3	2,447.4	907.5	144.4	29.5
Utah	99.03	96.77	416.0	308.4	107.6	418.7	310.4	108.3	314.0	105.5	3.1	3.5
Vermont	95.44	86.83	9 21	63.4	28.7	93.5	64.4	29.2	65.1	28.4	3.1	4.3
Virginia	92.74	93.88	975.1	673.2	301.9	979.3	676.1	303.2	683.9	295.4	53.5	19.3
Washington	92.58	94.27	761.4	521.3	240.1	775.8	531.2	244.6	537.3	238.4	43.1	14.5
West Virginia	96.77	96.91	351.8	243.5	108.3	344.2	238.3	106.0	241.0	103.3	8.1	3.3
Wisconsin	79.59	91.82	767.8	509.6	258.2	772.0	512.4	259.6	518.3	253.0	132.9	22.5
Wyoming	95.84	100.00	101.0	72.2	28.7	98.5	70.5	28.0	71.3	27.3	3.1	-

Sources: 1—Table B-12 [column 7/column 6].
2—Table B-12 [column 11/column 10].
3-6—U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics,* 1988 (Washington, DC, 1988), Table 32. An estimate of total enrollment in Massachusetts is not shown separately; the amount appearing above is implicit in the published national total.
7—[(Column 4/column 3) • column 6].
8—[Column 6 - column 7].
9 & 10—columns 7 and 8, respectively, scaled to national totals from U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics to 1997-98* (Washington, DC, 1988), Table 1.
11—[(Column 9/column 1) - column 9].
12—[(Column 10/column 2) - column 10].

Table B-12
Enrollment in Elementary and Secondary Schools, Public and Private, Fall 1980
(thousands)

state	Total Enrollment					Elementary Schools				Secondary Schools				
			Private					Private				Private		
	Total	Public	Total	(8) + (12)	(3) – (4)	Total	Public	A	B	Total	Public	A	C	D
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
United States	45,940	40,978	4,962	3,925	1,037	31,288	27,665	2,925	698	14,652	13,313	1,000	264	339
Sum of detail	45,944	40,982	4,962	3,923	1,039	31,292	27,666	2,926	700	14,652	13,316	997	255	339
Alabama	822	759	63	24	39	578	528	20	30	244	231	4	6	9
Alaska	90	86	4	2	2	64	60	2	2	26	26	0	0	0
Arizona	554	514	40	31	9	387	357	24	6	167	157	7	2	3
Arkansas	466	448	18	10	8	324	310	8	6	142	138	2	2	2
California	4,632	4,118	514	413	101	3,146	2,761	316	69	1,486	1,357	97	24	32
Colorado	581	546	35	24	11	401	374	19	8	180	172	5	2	3
Connecticut	620	532	88	79	9	413	364	45	4	207	168	34	4	5
Delaware	122	99	23	16	7	72	57	11	4	50	42	5	2	3
District of Columbia	121	100	21	15	6	84	71	10	3	37	29	5	2	3
Florida	1,715	1,510	205	116	89	1,192	1,042	89	61	523	468	27	21	28
Georgia	1,152	1,069	83	27	56	798	742	20	36	353	327	7	14	19
Hawaii	202	165	37	23	14	136	110	17	9	66	55	6	4	5
Idaho	209	203	6	4	2	148	144	3	1	61	59	1	1	1
Illinois	2,333	1,984	349	332	17	1,596	1,335	249	12	738	649	83	4	6
Indiana	1,155	1,055	100	80	20	786	708	63	15	370	347	17	4	6
Iowa	589	534	55	51	4	392	351	38	3	198	183	13	1	2
Kansas	450	416	34	29	5	308	283	22	3	142	133	7	1	2
Kentucky	740	670	70	58	12	515	464	43	8	225	206	15	3	4
Louisiana	937	778	159	120	39	663	544	92	27	274	234	28	9	12
Maine	241	223	18	12	6	161	153	6	2	80	70	6	3	4
Maryland	857	751	106	83	23	566	493	59	14	291	258	24	7	9
Massachusetts	1,160	1,022	138	123	15	758	676	75	7	402	346	48	6	8
Michigan	2,075	1,863	212	171	41	1,379	1,225	127	27	696	638	44	11	14
Minnesota	843	754	89	74	15	552	482	59	11	291	272	15	3	4
Mississippi	527	477	50	16	34	361	330	11	20	166	147	5	11	14
Missouri	970	844	126	115	11	662	567	87	8	309	277	28	3	4
Montana	164	156	8	6	2	112	106	5	1	51	50	1	0	0
Nebraska	319	280	39	35	4	215	189	24	2	104	91	11	1	2
Nevada	157	150	7	5	2	106	101	4	1	50	49	1	0	0
New Hampshire	188	167	21	17	4	122	112	9	1	65	55	8	2	2
New Jersey	1,476	1,246	230	207	23	984	820	150	14	491	426	57	6	8
New Mexico	289	271	18	13	5	199	186	10	3	90	85	3	1	2
New York	3,451	2,871	580	490	90	2,271	1,838	372	61	1,180	1,033	118	2 2 2	9
North Carolina	1,187	1,129	58	17	41	831	786	14	31	356	343	3	7	10
North Dakota	128	117	11	9	2	85	77	7	1	43	40	2	0	1

Table B-12 (cont.)

Enrollment in Elementary and Secondary Schools, Public and Private, Fall 1980

(thousands)

State	Total Enrollment					Elementary Schools				Secondary Schools				
			Private					Private				Private		
	Total	Public	Total	(8) + (12)	(3)–(4)	Total	Public	A	B	Total	Public	A	C	D
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Ohio	2,225	1,957	268	244	24	1,509	1,312	181	16	716	645	63	6	8
Oklahoma	594	578	16	10	6	412	399	8	5	183	179	2	1	2
Oregon	492	464	28	21	7	338	319	15	4	154	145	6	2	3
Pennsylvania	2,311	1,909	402	348	54	1,521	1,231	255	35	790	678	93	14	19
Rhode Island	178	148	30	26	4	115	95	18	2	63	53	8	1	2
South Carolina	669	619	50	14	36	467	426	12	29	202	193	2	5	7
South Dakota	140	129	11	8	3	93	85	6	2	47	44	2	1	1
Tennessee	926	854	72	35	37	645	602	23	20	281	252	12	13	17
Texas	3,049	2,900	149	115	34	2,170	2,049	95	26.	879	851	20	6	8
Utah	349	343	6	4	2	252	250	2	0	96	93	2	1	1
Vermont	103	95	8	7	1	69	66	3	0	33	29	4	0	0
Virginia	1,085	1,010	75	43	32	758	703	33	22	327	307	10	8	10
Washington	813	757	56	38	18	556	515	29	12	257	242	9	4	6
West Virginia	396	383	13	8	5	279	270	6	3	117	113	2	1	2
Wisconsin	993	831	162	153	9	663	528	128	7	330	303	25	2	2
Wyoming	101	98	3	2	1	73	70	2	1	28	28	0	0	0

A: Enrollment in private elementary and secondary schools as reported by U.S. Department of Education, National Center for Educational Statistics, that is, excluding enrollment in "combined elementary and secondary schools and other schools."

B Enrollment in private "combined elementary and secondary schools and other schools" apportioned to primary schools as the residual amount remaining of the total after the apportionment to secondary schools (column 5 – column 14).

C: Enrollment in private "combined elementary and secondary schools and other schools" apportioned to secondary schools by secondary schools' actual share of total enrollment in exclusively elementary or secondary (private) schools in each state [(column 12/column 4) • column 5].

D: Enrollment reported in column 13 scaled to 339, the enrollment implicit in the estimate reported for Fall 1980 for private secondary schools in *Digest of Education Statistics,* 1988, Table 44 [in other words, the total enrollment in private secondary schools reported for Fall 1980 in Table 44 (1,339) less the enrollment other than in "combined" schools shown in column 12 (1,000)].

Sources: 3—U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1988* (Washington, DC, 1988), Table 49.
7, 8, 11, and 12—U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1982-83* (Washington, DC, 1982), Table 220. The U.S. total for public secondary schools is the amount reported in *Digest of Education Statistics, 1988,* Table 44.

Table 8-13
Trend in Population and Higher Education Enrollment, by Age, Fall 1970-87
(thousands)

Age	Resident Population Aee 14 and Older					Enrollment in Institutions of Higher Education: Total					Enrollment in Institutions of Higher Education: Full-Time Equivalent				
	4/1/70	7/1/75	4/1/80	7/1/85	7/1/87	1970	1975	1980	1985	1987	1970	1975	1980	1985	1987
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Total	149,399	165,424	179,038	190,622	194,654	8,580	11,185	12,096	12,250	12,545	6,739	8,289	8,763	8,801	8,995
14-17	15,851	17,125	16,247	14,865	14,797	259	278	247	**235**	210	248	254	226	214	195
18-24	23,714	27,735	30,022	**28,500**	27,107	5,937	6,783	7,313	6,916	7,036	5,268	5,843	6,314	5,988	6,082
25-34	24,923	31,314	37,082	42,027	43,315	1,561	2,741	3,114	3,214	3,276	859	1,561	1,621	1,741	1,804
35+	84,911	89,250	95,687	105,230	109,435	823	1,383	1,422	1,885	2,023	364	632	603	858	914

Age	Total Enrollment as Percentage of Population, by Age Group					Percentage Distribution of Total Enrollment by Aee				
	1970	1975	1980	1985	1987	1970	1975	1980	1985	1987
		(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Total	5.74%	6.76%	6.76%	6.43%	6.44%	100.0%	100.0%	100.0%	100.0%	100.0%
14-17	1.63	1.62	1.52	1.58	1.42	3.0	2.5	**2 0**	1.9	1.7
18-24	25.04	24.46	24.36	24.27	**25.96**	69.2	60.6	**60.5**	56.5	56.1
25-34	6.26	8.75	8.4	7.65	7.56	18.2	24.5	25.7	26.2	26.1
35+	0.97	1.55	1.49	1.79	1.85	9.6	12.4	11.8	15.4	16.1

Age	FTE Enrollment as Percentage of Population, by Age Group					Percentage Distribution of FTE Enrollment by Aee				
	1970	1975	1980	1985	1987	1970	1975	*1980*	1985	1987
		(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
Total	4.51%	5.01%	4.89%	4.62%	4.62%	100.0%	100.0%	100.0%	100.0%	100.0%
14-17	1.56	1.48	1.39	1.44	1.32	**3.7**	3.1	2 6	2 4	2.2
18-24	**22.22**	21.07	21.03	21.01	**22.44**	78.2	70.5	**72.0**	68.0	67.6
25-34	3.45	4.98	4.37	4.14	4.16	1 2 7	18.8	18.5	19.8	20.1
35+	0.43	0.71	0.63	0.82	0.83	5.4	7.6	6.9	9.8	10.2

Sources: 1—U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1988* (Washington, DC, 1987), Table 20.
2—*Statistical Abstract of the United States, 1986* (1985), Table 29.
3-5—U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-87* (Washington, DC, 1988), Table 5; and unpublished tabulation for the 14-17 age group supplied by the U.S. Department of Commerce, Bureau of the Census, Population Division, Population Estimates Branch, November 1988.
6-10—Table B-14, columns 1-5.
1-15—Table B-14, columns 16-20.

Table B-14

Trend in Higher Education Enrollment, by Age, Fall 1970-87

(thousands)

Age	Total Enrollment					Full-Time Enrollment					Part-Time Enrollment				
	1970	1975	1980	1985	1987	1970	1975	1980	1985	1987	1970	1975	1980	1985	1987
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Total	8,581	11,185	12,097	12,247	12,544	5,815	6,841	7,098	7,075	7,219	2,766	4,344	4,999	5,172	5,325
Sum of Detail	8,580	11,185	12,096	12,250	12,545	5,817	6,841	7,097	7,077	7,220	2,765	4,344	4,999	5,172	5,325
14-17	259	278	247	235	210	242	242	216	203	188	17	36	31	32	22
18-19	2,600	2,786	2,901	2,600	2,764	2,406	2510	2580	2,322	2,450	194	276	320	278	314
20-21	1,880	2,243	2,423	2,383	2,224	1,647	1,854	2,060	1,975	1,847	233	390	364	408	377
22-24	1,457	1,754	1,989	1,933	2,048	881	1,008	1,174	1,227	1,308	576	746	815	705	740
25-29	1,074	1,774	1,871	1,953	1,947	407	692	610	695	724	668	1,082	1,261	1,258	1,223
30-34	487	967	1,243	1,261	1,329	100	279	264	310	344	388	687	979	951	985
35+	823	1383	1,422	1,885	2,023	134	256	193	345	359	689	1,127	1,229	1,540	1,664
Total	8,580	11,185	12,096	12,250	12,545	5,817	6,841	7,097	7,077	7,220	2,765	4,344	4,999	5,172	5,325
14-17	259	278	247	235	210	242	242	216	203	188	17	36	31	32	22
18-24	5,937	6,783	7,313	6,916	7,036	4,934	5,372	5,814	5,524	5,605	1,003	1,412	1,499	1,391	1,431
25-34	1,561	2,741	3,114	3,214	3,276	507	971	874	1,005	1,068	1,056	1,769	2,240	2,209	2,208
35+	823	1,383	1,422	1,885	2,023	134	256	193	345	359	689	1,127	1,229	1,540	1,664

Age	Total FTE Enrollment					Full-Time Enrollment					Part-Time FTE Enrollment				
	1970	1975	1980	1985	1987	1970	1975	1980	1985	1987	1970	1975	1980	1985	1987
	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
Total	6,739	8,289	8,763	8,801	8,995	5,817	6,841	7,097	7,077	7,220	922	1,448	1,666	1,724	1,775
14-17	248	254	226	214	195	242	242	216	203	188	6	12	10	11	7
18-19	2,471	2,602	2,687	2,415	2,555	2,406	2510	2,580	2,322	2,450	65	92	107	93	105
20-21	1,725	1,984	2,181	2,111	1,973	1,647	1,854	2,060	1,975	1,847	78	130	121	136	126
22-24	1,073	1,257	1,446	1,462	1,555	881	1,008	1,174	1,227	1,308	192	249	272	235	247
25-29	630	1,053	1,030	1,114	1,132	407	692	610	695	724	223	361	420	419	408
30-34	229	508	590	627	672	100	279	264	310	344	129	229	326	317	328
35+	364	632	603	858	914	134	256	193	345	359	230	376	410	513	555
Total	6,739	8,289	8,763	8,801	8,995	5,817	6,841	7,097	7,077	7,220	922	1,448	1,666	1,724	1,775
14-17	248	254	226	214	195	242	242	216	m3	188	6	12	10	11	7
18-24	5,268	5,843	6,314	5,988	6,082	4,934	5,372	5,814	5,524	5,605	334	471	500	464	477
25-34	859	1,561	1,621	1,741	1,804	507	971	874	1,005	1,068	352	590	747	736	736
35+	364	632	603	858	914	134	256	193	345	359	230	376	410	513	555

Sources: 1-4, 6-9, and 11-14 – U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1988 (Washington, DC, 1988), Table 119.
5, 10, and 15 – U.S. Department of Education, National Center for Education statistics, *Projections of Education Statistics to 1997-98* (Washington, DC, 1988), Table 8.
26-30 – Columns 11-15 divided by 3.

Table B-15

Derivation of a Workload Measure for Higher Education, 1987

(populations in thousands)

State	College-Age Population, July 1, 1987				Weighted Sum of Populations	
	14-17	18-24	25-34	35+	Number	Workload Measure
	(1)	(2)	(3)	(4)	(5)	(6)
United States	14,467	27,107	43,315	109,435	8,984.0	100.01%
Sum of Detail	14,467	27,107	43,318	109,327	8,983.2	100.00
Alabama	268	466	701	1,800	152.2	1.69
Alaska	32	63	103	188	20.4	.23
Arizona	195	373	602	1,491	123.7	1.38
Arkansas	152	264	374	1,103	86.0	.%
California	1,514	3,006	5,331	12,024	1,016.1	11.31
Colorado	187	366	676	1,381	124.2	1.38
Connecticut	186	355	536	1,563	117.4	1.31
Delaware	37	76	118	288	24.8	.28
District of Columbia	29	67	131	288	23.3	.26
Florida	625	1,202	1,891	6,227	408.3	4.55
Georgia	412	737	1,107	2,642	238.8	2.66
Hawaii	59	129	197	471	41.8	.47
Idaho	64	106	170	418	35.2	.39
Illinois	690	1,278	2,070	5,199	425.2	4.73
Indiana	350	628	976	2,457	206.5	2.30
Iowa	165	307	494	1,302	102.4	1.14
Kansas	137	267	444	1,115	89.4	1.00
Kentucky	238	433	651	1,647	141.1	1.57
Louisiana	281	526	817	1,802	170.7	1.90
Maine	73	135	201	547	44.2	.49
Maryland	265	532	812	2,067	173.8	1.93
Massachusetts	326	684	1,078	2,755	225.5	2.51
Michigan	596	1,060	1,642	4,038	347.6	3.87
Minnesota	244	470	780	1,884	156.8	1.75
Mississippi	183	313	430	1,090	99.6	1.11
Missouri	299	552	876	2,366	183.9	2.05
Montana	48	85	143	358	28.6	.32
Nebraska	92	174	281	716	57.9	.64
Nevada	54	106	206	442	36.7	.41
New Hampshire	63	122	195	475	40.3	.45
New Jersey	450	843	1,256	3,741	278.4	3.10
New Mexico	95	171	262	621	55.7	.62
New York	1,024	1,983	2,988	8,494	653.3	7.27
North Carolina	402	754	1,145	2,887	246.1	2.74
North Dakota	38	75	125	286	24.9	.28
Ohio	672	1,182	1,862	4,904	392.3	4.37
Oklahoma	195	359	575	1,445	119.0	1.33
Oregon	153	275	513	1,249	95.4	1.06
Pennsylvania	692	1,291	2,001	5,792	430.2	4.79
Rhode Island	55	113	175	469	37.3	.41
South Carolina	223	416	619	1,449	134.1	1.49
South Dakota	40	78	121	314	25.7	.29
Tennessee	305	543	848	2,214	179.5	2.00
Texas	1,070	1,882	3,151	6,771	623.7	6.94
Utah	113	194	308	550	62.4	.69
Vermont	33	65	102	240	21.3	.24
Virginia	346	714	1,089	2,642	232.0	2.58
Washington	257	484	873	2,012	165.0	1.84
West Virginia	123	208	316	882	68.8	.77
Wisconsin	288	542	850	2,147	178.6	1.99
Wyoming	29	53	106	74	17.3	.19

Sources: 1—Special tabulations prepared by the U.S. Department of Commerce, Bureau of the Census, Population Estimates Branch, Population Division, November 1988.

2-4—U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, wirh Age, Sex, and Components of Change, 1981-87* (Washington, DC, 1988), Tables 5 and 6.

5—Sum of (1.32 percent of column 1), (22.44 percent of column 2), (4.16 percent of column 3), and (0.83 percent of column 4); each weight is the estimated FTE number of persons in the age group enrolled in institutions of higher education as a percentage of the total population on July 1, 1987, from Table B-13, column 30.

6—Percentage distribution of column 5.

Table B-16

Derivation of a Workload Measure for Health and Hospitals, 1987

(populations in thousands)

State	Work-Disabled Population Population Aged 16-64, 1987				Population Under 150% Poverty Rate		Population Under 150% Poverty 1987		Total Population July 1, 1987		
	Rate 1980	Number	Disabled	Percentage Distribution	1980	1987	Number	Percentage Distribution	Number	Percentage Distribution	Workload Measure
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	8.5%	157,628	13,398	99.70%	21.7%	22.4%	54,573	100.00%	243,400	100.00%	100.00%
Sum of Detail		157,626	13,441	100.00			54,573	100.0	243,399	100.00	100.00
Alabama	10.6	2,599	275	2.05	31.2	32.2	1,313	2.41	4,083	1.68	2.04
Alaska	5.4	35.1	19	.14	18.2	20.7	108	.a	525	.22	.19
Arizona	9.1	2,139	195	1.45	23.2	25.8	873	1.60	3,386	1.39	1.48
Arkansas	12.7	1,471	187	1.39	32.9	32.2	769	1.41	2,388	.98	1.26
California	8.2	18,212	1,493	11.11	20.7	22.1	6,126	11.22	27,663	11.37	11.23
Colorado	7.2	2,216	160	1.19	18.4	19.7	648	1.19	3,296	1.35	1.24
Connecticut	6.5	2,126	138	1.03	14.2	13.2	424	.78	3,211	1.32	1.04
Delaware	7.9	427	34	.25	20.2	20.0	129	.24	644	.26	.25
District of Columbia	9.9	424	42	.31	27.6	30.9	192	.35	622	.26	.31
Florida	9.9	7,509	743	5.53	24.0	23.0	2,761	5.06	12,023	4.94	5.18
Georgia	10.4	4,075	424	3.15	28.0	28.2	1,752	3.21	6,222	2.56	2.97
Hawaii	5.9	719	42	.32	19.0	18.9	205	.38	1,083	.44	.38
Idaho	8.7	611	53	.40	24.3	24.7	246	.45	998	.41	.42
Illinois	7.3	7,504	548	4.08	17.9	22.4	2,600	4.76	11,582	4.76	4.53
Indiana	8.0	3,574	286	2.13	17.9	19.6	1,084	1.99	5,531	2.27	2.13
Iowa	7.2	1,769	127	.95	18.5	20.5	580	1.06	2,834	1.16	1.06
Kansas	7.6	1,562	119	.88	19.1	20.4	506	.93	2,476	1.02	.94
Kentucky	11.4	2,398	273	2.03	29.2	29.7	1,109	2.03	3,727	1.53	1.87
Louisiana	9.6	2,809	270	2.01	29.2	31.6	1,411	2.58	4,461	1.83	2.14
Maine	9.7	763	74	.55	25.9	21.2	251	.46	1,187	.49	.50
Maryland	8.0	3,066	245	1.82	16.9	16.7	757	1.39	4,535	1.86	1.69
Massachusetts	7.3	3,895	284	2.12	17.9	15.7	918	1.68	5,855	2.41	2.07
Michigan	9.3	5,997	558	4.15	18.0	21.3	1,958	3.59	9,200	3.78	3.84
Minnesota	7.0	2,732	191	1.42	17.3	19.2	814	1.49	4,246	1.74	1.55
Mississippi	11.8	1,609	190	1.41	38.2	40.5	1,064	1.95	2,625	1.08	1.48
Missouri	9.1	3,249	296	2.20	22.0	24.7	1,259	2.31	5,103	2.10	2.20
Montana	8.1	509	41	.31	22.7	23.9	193	.35	809	.33	.33
Nebraska	7.0	999	70	.52	20.1	21.7	346	.63	1,594	.65	.60
Nevada	7.8	676	53	.39	16.7	17.1	172	.32	1,007	.41	.37
New Hampshire	7.5	704	53	.39	17.0	13.8	146	.27	1,057	.43	.36
New Jersey	6.9	5,089	351	2.61	16.4	15.8	1,214	2.22	7,672	3.15	2.66
New Mexico	8.2	953	78	.58	30.2	34.5	518	.95	1,500	.62	.72
New York	7.7	11,706	901	6.71	22.6	22.1	3,945	7.23	17,825	7.32	7.09
North Carolina	9.7	4,242	411	3.06	26.7	24.8	1,593	2.92	6,413	2.63	2.87
North Dakota	6.7	415	28	.21	23.5	25.3	170	.31	672	.28	.26
Ohio	8.8	6,954	612	4.55	17.9	21.0	2,267	4.15	10,784	4.43	4.38
Oklahoma	10.8	2,063	223	1.66	24.4	22.6	741	1.36	3,272	1.34	1.45
Oregon	9.9	1,746	173	1.29	19.5	20.8	566	1.04	2,724	1.12	1.15
Pennsylvania	8.5	7,688	653	4.86	18.9	17.2	2,057	3.77	11,936	4.90	4.51
Rhode Island	8.6	642	55	.41	19.4	16.8	165	.30	986	.41	.37
South Carolina	9.8	2,232	219	1.63	28.7	27.9	955	1.75	3,425	1.41	1.59
South Dakota	7.6	435	33	.25	29.3	34.0	241	.44	709	.29	.33
Tennessee	10.4	3,161	329	2.45	28.0	27.9	1,354	2.48	4,855	1.99	2.31
Texas	7.6	10,726	815	6.06	24.8	24.9	4,177	7.65	16,789	6.90	6.87
Utah	7.5	969	73	.54	20.2	20.2	340	.62	1,680	.69	.62
Vermont	8.5	360	31	.23	23.7	19.5	107	.20	548	.23	.22
Virginia	8.4	4,004	336	2.50	21.1	19.9	1,174	2.15	5,904	2.43	2.36
Washington	8.8	2,971	261	1.95	17.6	19.1	867	1.59	4,538	1.86	1.80
West Virginia	12.3	1,206	148	1.10	26.2	25.6	486	.89	1,897	.78	.92
Wisconsin	6.8	3,057	208	1.55	16.9	17.6	847	1.55	4,807	1.97	1.69
Wyoming	6.1	313	19	.14	15.3	15.4	75	.14	490	.20	.16

Sources: 1—Unpublished tabulation by U.S. Bureau of the Census from the 1980 Census. Percentage of the noninstitutional population 16-64 years of age with a "work disability."

2—U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, with Age, Sex, and Components of Change, 1981-87,* Current Population Reports, Series P-25, No. 1024 (Washington, DC, 1988), Tables 5 and 6.

3—[Column 1 • column 2]. 5—U.S. Department of Commerce, Bureau of the Census, *1980 Census of Population*, Volume 1, *Characteristics of the Population*, Chapter C, *General Social and Economic Characteristics*, Part 1, *United States Summary* (Washington, DC, 1983), Table 245.

6—Table B-8, column 7.

7—Table B-8, column 6.

9—Table B-7, column 4.

11—[(Column 4 + column 8 + column 10)/3].

Table B-17
Derivation of a Workload Measure for Highways, 1987

State	Lane Miles, 1987		Vehicle Miles, 1987 (millions)		Workload Measure
	Miles	Percentage Distribution	Miles	Percentage Distribution	
	(1)	(2)	(3)	(4)	(5)
United States	7,624,454	100.0000%	1,924,327	100.0000%	100.00%
Sum of Detail	7,624,454	100.0000	1,924,327	100.0000	100.00
Alabama	180,493	2.3673	37,426	1.9449	2.02
Alaska	24,108	.3162	3,900	.2027	.22
Arizona	91,682	1.2025	31,729	1.6488	1.57
Arkansas	153,212	2.0095	18,306	.9513	1.14
California	325,195	4.2652	226,301	11.7600	10.45
Colorado	143,877	1.8871	26,968	1.4014	1.49
Connecticut	42,249	.5541	26,775	1.3914	1.24
Delaware	11,505	.1509	6,086	.3163	.29
District of Columbia	2,668	.0350	3,368	.1750	.15
Florida	215,701	2.8291	93,639	4.8661	4.51
Georgia	219,815	2.8830	60,293	3.1332	3.09
Hawaii	8,542	.1120	7,218	.3751	.33
Idaho	69,708	.9143	8,119	.4219	.51
Illinois	281,870	3.6969	75,756	3.9368	3.89
Indiana	189,729	2.4884	44,122	22929	2.33
Iowa	229,287	3.0073	20,808	1.0813	1.42
Kansas	270,135	3.5430	20,561	1.0685	1.50
Kentucky	142,445	1.8683	30,320	1.5756	1.63
Louisiana	120,620	1.5820	30,599	1.5901	1.59
Maine	44,514	.5838	10,766	.5595	.56
Maryland	60,172	.7892	36,493	1.8964	1.70
Massachusetts	71,008	.9313	42,305	2.1984	1.98
Michigan	245,916	3.2254	75,706	3.9342	3.81
Minnesota	268,374	3.5199	35,167	1.8275	2.12
Mississippi	147,249	1.9313	20,173	1.0483	1.20
Missouri	244,369	3.2051	43,379	2.2542	2.42
Montana	130,450	1.7109	8,074	.4196	.65
Nebraska	186,454	2.4455	13,091	.6803	.99
Nevada	63,814	.8370	8,396	.4363	.51
New Hampshire	29,749	.3902	9,167	.4764	.46
New Jersey	73,174	.9597	57,071	2.9658	2.61
New Mexico	98,642	1.2938	15,116	.7855	.87
New York	234,961	3.0817	98,002	5.0928	4.74
North Carolina	189,416	2.4843	54,600	2.8374	2.78
North Dakota	173,174	2.2713	5,681	.2952	.64
Ohio	235,297	3.0861	79,157	4.1135	3.93
Oklahoma	228,639	2.9988	31,606	1.6424	1.88
Oregon	108,553	1.4238	23,332	1.2125	1.25
Pennsylvania	240,359	3.1525	78,626	4.0859	3.92
Rhode Island	12,528	.1643	6,003	.3120	.29
South Carolina	131,066	1.7190	30,224	1.5706	1.60
South Dakota	145,238	1.9049	6,209	,3227	.60
Tennessee	172,384	2.2609	42,126	2.1891	2.20
Texas	615,908	8.0781	151,186	7.8566	7.90
Utah	68,194	.8944	12,679	.6589	.70
Vermont	28,786	.3776	5,039	.2619	.28
Virginia	137,439	1.8026	54,834	2.8495	2.67
Washington	148,485	1.9475	38,520	2.0017	1.99
West Virginia	69,317	.9091	13,742	.7141	.75
Wisconsin	223,581	2.9324	40,196	2.0888	2.24
Wyoming	74,403	.9759	5,367	.2789	.40

Sources: 1 – Table **B-18,** column 8.
3 – U.S. Department of Transportation, Federal Highway Administration, Highway *Statistics, 1987* (Washington, DC, 1988) Table **VM-2.**
5 – [0.175 • (column 2) + 0.825 • (column 4)].

Table B-18

Data Relating to Highways, 1987

State	Private Motor Vehicle Registration. 1987	Licensed Drivers 1987	Total Mileage, 12/31/87 Local Roads and Streets Total	Rural	Urban	Federally Controlled Mileage	Net Local Mileage (3)–(6)	Estimated Lane Mileage, 1987 Total	Nonlocal	Local
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
United States	176,046,592	161,818,461	2,661,796	2,172,542	489,254	212,556	2,449,240	7,624,454	2,725,974	4,898,480
Sum of Detail	175,338,792	161,818,445	2,661,796	2,172,542	489,254	212,556	2,449,240	7,624,454	2,725,974	4,898,480
Alabama	3,504,551	2,773,636	58,659	48,564	10,095	935	57,724	180,493	65,045	115,448
Alaska	346,719	300,000	6,926	5,579	1,347	–	6,926	**24,108**	10,256	13,852
Arizona	2,385,893	2,272,863	62,582	55,062	7,520	34,941	27,641	91,682	36,400	55,282
Arkansas	1,424,737	1,657,795	49,754	44,969	4,785	1,494	48,260	153,212	56,692	96,520
California	19,937,942	18,562,926	101,301	58,891	44,410	13,837	87,464	325,195	150,267	174,928
Colorado	2,999,191	2,310,349	49,209	41,652	7,557	7,144	42,065	143,877	59,747	84,130
Connecticut	2,581,522	2,346,660	12,823	6,049	6,774	–	12,823	42,249	16,603	25,646
Delaware	582,908	462,514	3,775	2,698	1,077	3	3,772	11,505	3,961	7,544
District of Columbia	258,967	388,835	667	–	667	–	667	**2,668**	1,334	1,334
Florida	10,464,480	8,593,062	73,811	51,374	22,437	–	**73,811**	215,701	68,079	147,622
Georgia	4,961,180	4,215,283	70,148	55,804	14,344	984	69,164	219,815	81,487	138,328
Hawaii	679,116	628,027	2,586	1,672	914	100	2,486	8,542	3,570	4,972
Idaho	920,446	690,893	58,652	57,266	1,386	37,633	21,019	69,708	27,670	42,038
Illinois	7,570,397	7,186,070	98,934	76,825	22,109	318	98,616	281,870	84,638	197,232
Indiana	3,651,300	3,590,173	60,638	48,838	11,800	–	60,638	189,729	68,453	121,276
Iowa	2,660,011	1,842,538	70,466	65,178	5,288	118	70,348	229,287	88,591	140,696
Kansas	2,161,790	1,678,418	89,905	83,627	6,278	–	89,905	270,135	90,325	179,810
Kentucky	2,650,045	2,338,005	46,523	41,609	4,914	483	**46,040**	142,445	50,365	92,080
Louisiana	2,847,474	2,614,425	39,972	31,205	8,767	587	39,385	120,620	41,850	78,770
Maine	909,884	870,716	13,317	11,882	1,435	178	13,139	44,514	18,236	26,278
Maryland	3,275,580	3,009,476	18,939	10,513	8,426	430	18,509	60,172	23,154	37,018
Massachusetts	3,845,758	3,944,206	21,008	8,060	12,948	116	20,892	71,008	29,224	41,784
Michigan	6,025,474	6,378,723	76,567	59,050	17,517	–	76,567	245,916	92,782	153,134
Minnesota	3,132,579	2,471,180	90,691	80,887	9,804	1,672	89,019	268,374	90,336	178,038
Mississippi	1,734,097	1,775,864	49,012	44,069	4,943	338	48,674	147,249	49,901	97,348
Missouri	3,685,020	3,471,458	84,267	73,583	10,684	709	83,558	244,369	77,253	167,116
Montana	632,026	604,051	48,636	**46,906**	1,730	7,877	40,759	130,450	48,932	81,518
Nebraska	1,281,605	1,069,140	62,984	59,382	3,602	133	62,851	186,454	60,752	125,702
Nevada	790,554	719,058	36,658	34,438	**2,220**	13,994	**22,664**	63,814	18,486	45328
New Hampshire	861,245	785,591	10,019	8,591	1,428	141	9,878	29,749	9,993	19,756
New Jersey	5,393,976	6,022,080	23,349	7,564	15,785	39	23,310	73,174	26,554	46,620
New Mexico	1,255,911	1,037,634	41,908	38,393	3,515	6,429	35,479	98,642	27,684	70,958
New York	9,469,062	10,029,037	74,092	**48,590**	25,502	–	74,092	234,961	**86,777**	148,184
North Carolina	***4,775,762***	***4,318,723***	63,313	50,610	12,703	1,973	61,340	189,416	**66,736**	122,680
North Dakota	637,091	434,046	61,041	59,976	1,065	684	60,357	**173,174**	***52,460***	***120,714***
Ohio	8,424,705	7,402,416	77,286	56,299	**20,987**	29	77,257	235,297	80,783	154,514
Oklahoma	2,833,866	2,163,148	76,535	68,437	8,098	20	76,515	228,639	75,609	153,030
Oregon	2,198,594	2,027,554	68,866	63,119	5,747	41,312	27,554	108,553	53,445	55,108
Pennsylvania	7,550,032	**7,684,136**	81,030	63,088	17,942	992	80,038	240,359	80,283	160,076
Rhode Island	646,185	647,887	4,098	947	3,151	–	4,098	12,528	4,332	8,196
South Carolina	2,329,854	2,195,348	42,376	35,937	6,439	598	**41,778**	131,066	47,510	83,556
South Dakota	659,090	485,367	48,216	47,082	1,134	1,956	**46,260**	145,238	52,718	92,520
Tennessee	3,967,031	3,156,826	57,175	46,300	10,875	559	56,616	172,384	59,152	113,232
Texas	11,934,041	11,153,472	202,770	142,018	60,752	**964**	201,806	615,908	212,296	403,612
Utah	1,094,000	1,005,942	37,985	33,911	4,074	17,353	20,632	68,194	**26,930**	41,264
Vermont	435,701	402,088	9,386	8,790	596	**80**	9,306	28,786	10,174	18,612
Virginia	4,550,014	4,053,303	43,292	33,199	10,093	1,725	41,567	137,439	54,305	83,134
Washington	3,772,918	3,156,743	55,682	44,693	10,989	8,006	47,676	148,485	53,133	95,352
West Virginia	1,136,812	1,303,404	22,925	21,024	1,901	1,414	21,511	69,317	26,295	43,022
Wisconsin	3,046,842	3,248,206	75,647	66,098	9,549	337	75,310	223,581	**72,961**	150,620
Wyoming	464,814	339,150	25,395	**24,244**	1,151	3,921	21,474	74,403	31,455	42,948

Sources: **1–U.S.** Department of Transportation, Federal Highway Administration, *Highway Statistics, 1987* (Washington, DC, 1988) Table MV-1.
2 – Ibid., Table DL-1.
4 & 5 – Ibid., Table HM-20.
6 – Ibid., Bble HM-50.
9 – Ibid., Bble HM-60.
10 – [Column 7 • 2].

Table B-19

Derivation of a Workload Measure for Police and Corrections, 1987

(populations in thousands)

State	Murder and Non-Negligent Manslaughter 1986 Number	1986 Per 100K	1987 Number	1987 Per 100K	1987 Percentage Distribution	Population Aged 18-24 Number	Population Aged 18-24 Percentage Distribution	Total Population Number	Total Population Percentage Distribution	Workload Measure
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
United States	20,613	8.55	20,096	8.26	100.00%	27,107	100.00%	243,400	100.00%	100.00%
Sum of Detail	20,613		20,096		100.00	27,107	100.00	243,399	100.00	100.00
Alabama	409	10.10	380	9.31	1.89	466	1.72	4,083	1.68	1.76
Alaska	46	8.65	53	10.10	.26	63	.23	525	.22	.24
Arizona	307	9.36	253	7.47	1.26	373	1.38	3,386	1.39	1.34
Arkansas	191	8.06	182	7.62	.91	264	.97	2,388	.98	.95
California	3,038	11.25	2,924	10.57	14.55	3,006	11.09	27,663	11.37	12.33
Colorado	230	7.04	191	5.80	.95	366	1.35	3,296	1.35	1.22
Connecticut	148	4.64	156	4.86	.78	355	1.31	3,211	1.32	1.14
Delaware	31	4.90	33	5.12	.16	76	.28	644	.26	.24
District of Columbia	194	31.04	225	36.17	1.12	67	.25	622	.26	.54
Florida	1,371	11.72	1,371	11.40	6.82	1,202	4.43	12,023	4.94	5.40
Georgia	686	11.25	735	11.81	3.66	737	2.72	6,222	2.56	2.98
Hawaii	51	4.79	52	4.80	.26	129	.48	1,083	.44	.39
Idaho	32	3.19	31	3.11	.15	106	.39	998	.41	.32
Illinois	1,023	8.86	967	8.35	4.81	1,278	4.71	11,582	4.76	4.76
Indiana	329	5.98	307	5.55	1.53	628	2.32	5,531	2.27	2.04
Iowa	51	1.79	59	2.08	.29	307	1.13	2,834	1.16	.86
Kansas	108	4.39	110	4.44	.55	267	.98	2,476	1.02	.85
Kentucky	248	6.66	280	7.51	1.39	433	1.60	3,727	1.53	1.51
Louisiana	575	12.78	496	11.12	2.47	526	1.94	4,461	1.83	208
Maine	23	1.96	30	2.53	.15	135	.50	1,187	.49	.38
Maryland	401	8.99	436	9.61	2.17	532	1.96	4,535	1.86	200
Massachusetts	208	3.57	173	296	.86	684	2.52	5,855	2.41	1.93
Michigan	1,032	11.29	1,124	12.22	5.59	1,060	3.91	9,200	3.78	4.43
Minnesota	105	2.49	112	2.64	.56	470	1.73	4,246	1.74	1.35
Mississippi	295	11.24	269	10.25	1.34	313	1.15	2,625	1.08	1.19
Missouri	464	9.16	423	8.29	2.10	552	2.04	5,103	2.10	2.08
Montana	24	2.94	33	4.08	.16	85	.31	809	.33	.27
Nebraska	50	3.13	55	3.45	.27	174	.64	1,594	.65	.52
Nevada	121	12.51	85	8.44	.42	106	.39	1,007	.41	.41
New Hampshire	23	2.24	32	3.03	.16	122	.45	1,057	.43	.35
New Jersey	399	5.23	351	4.58	1.75	843	3.11	7,672	3.15	2.67
New Mexico	170	11.49	152	10.13	.76	171	.63	1,500	.62	.67
New York	1,907	10.72	2,016	11.31	10.03	1,983	7.32	17,825	7.32	8.22
North Carolina	515	8.14	519	8.09	2.58	754	2.78	6,413	2.63	2.67
North Dakota	7	1.03	10	1.49	.05	75	.28	672	.28	.20
Ohio	595	5.54	630	5.84	3.13	1,182	4.36	10,784	4.43	3.98
Oklahoma	269	8.14	244	7.46	1.21	359	1.32	3,272	1.34	1.29
Oregon	178	6.59	153	5.62	.76	275	1.01	2,724	1.12	.96
Pennsylvania	659	5.54	642	5.38	3.19	1,291	4.76	11,936	4.90	4.29
Rhode Island	34	3.49	35	3.55	.17	113	.42	986	.41	.33
South Carolina	291	8.61	318	9.29	1.58	416	1.53	3,425	1.41	1.51
South Dakota	28	3.96	13	1.83	.06	78	.29	709	.29	.21
Tennessee	501	10.44	444	9.15	2.21	543	2.00	4,855	1.99	2.07
Texas	2,258	13.53	1,959	11.67	9.75	1,882	6.94	16,789	6.90	7.86
Utah	53	3.19	55	3.27	.27	194	.72	1,680	.69	.56
Vermont	11	2.03	15	2.74	.07	65	.24	548	.23	.18
Virginia	411	7.09	437	7.40	2.17	714	2.63	5,904	2.43	2.41
Washington	223	5.00	256	5.64	1.27	484	1.79	4,538	1.86	1.64
West Virginia	114	5.95	92	4.85	.46	208	.77	1,897	.78	.67
Wisconsin	149	3.12	168	3.50	.84	542	2.00	4,807	1.97	1.60
Wyoming	27	5.33	10	2.04	.05	53	.20	490	.20	.15

Sources: 1 & 3 – US. Department of Justice, Federal Bureau of Investigation, *Crime in the United States, 1987* (Washington, DC, 1988, Table 4.
2 – [Column 1/(POP86/100)]. Population on July 1, 1986, from U.S. Department of Commerce, Bureau of the Census, *State Population and Household Estimates, with Age, Sex, and Components of Change, 1981-87*, Current Population Reports (Washington, DC, 1988, Tables 5 and 6.
4 – [Column 3/(POP87/100)]. Population on July 1, 1987, from column 8.
6 – Table B-15, column 2.
8 – Table B-7, column 4.
10 – [(Column 5 + column 7 + column 9)/3].

Appendix C

Variation in the Cost of the Goods and Services Used by State and Local Governments to Produce Public Services

The cost of the goods and services governments buy in order to produce public services is one of the most controversial issues in public finance. In the media, attention usually focuses on the honesty and efficiency of the procurement process—the $435 Pentagon hammer,[1] for example, or whether procedures prescribed by state law were used in the award of a contract by a county highway department. Though the efficiency of government procurement is an undeniably important object of public attention, it is not the dimension of the cost of government that is relevant here.[2]

In essence, the issue for present purposes *can* be stated as follows: if all governments managed their procurement with roughly comparable honesty and efficiency, how much variation would remain in the average unit costs paid by jurisdictions in the different states of the union?

In a 1986 paper on the costs of the public service responsibilities of state and local governments published in conjunction with the Treasury studies of federal-state-local fiscal relations, the author argued that the unavailability of necessary data offered no alternative to assuming uniformity across the nation in the cost of the goods and services purchased by the states and localities to produce public services.

Commentators on that paper did not take issue with the assumption. Perhaps the novelty of the estimates had something to do with the absence of such a challenge. Moreover, the Treasury technical papers included a review of the literature on the variation in input costs among states and regions.[3] It concluded that the cause was hopeless even if the Reagan Administration had not abandoned the preparation of estimates of the relative cost of living in metropolitan areas.[4]

This time around, however, critics of an early draft of this report urged that an attempt be made to deal with the input-cost issue. They argued that the credibility of the effort would be undermined by the patent unrealism of an assumption that input costs are the same, say, in Alaska as in Mississippi. Hence the analysis reported this appendix was launched.

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[1] Herbert Block, *Herblock through the Looking Glass* (New York: W.W. Norton & Co., 1984), p. 67.

[2] Efficiency is a consequence or attribute of the actual policies of a government. The central logic of the measurement of representative expenditures and fiscal capacity requires that the analysis abstract from a government's actual policies. Hence efficiency is not a relevant consideration in the present context.

[3] Ray D. Whitman, "Cost as a Factor in Federal Grant Allocations," in Robert W. Rafuse, Jr. (ed.), *Federal-State-Local Fiscal Relations, Technical Papers*, Vol. II (Washington, DC: U.S. Department of the Treasury, Office of State and Local Finance, September 1986), pp. 941-86.

[4] At the time the series was discontinued in 1982, the Bureau of Labor Statistics (BLS) was publishing estimates of the relative cost of living in 25 metropolitan areas in the continental United States, Alaska, and Hawaii and for a small sample of nonmetropolitan urban areas in each of the four major Census regions. (Until 1978, the estimates were available for 40 metropolitan areas and a sample of non-metro urban areas in the four Census regions.) These estimates, known as the "family" or "standard" budget series, were published for market baskets of consumer goods and services representing, for each area/region, three different standards of living.

Since 1982, the BLS has published estimates of two consumer price indices—one for all urban consumers and one for all urban wage earners—for the four Census regions and for 15 metropolitan areas; see, for example, *Monthly Labor* Review, January 1989, Table 31. Unfortunately, these estimates only track the rate of change in the cost of the two market baskets of consumer goods and services in each area. That is, the indices reveal whether consumer prices are rising more rapidly in the Boston area or the San Francisco-Oakland area, but not in which the absolute cost of living is higher. The reason is that the base (100) for the indices is the average cost of the applicable market basket in each area during the years 1982-84.

Even if the family budget series had not been discontinued, the information, even prior to 1978, constituted an inadequate base for credible estimates of relative living costs in all of the states. No estimates whatsoever were available for 22 states, for example, or for rural areas in any states. Despite these obstacles, Stephen M. Barro developed a method of extrapolating the available BLS estimates to generate a cost-of-living index for each of the 50 states and the District of Columbia (*Equalization* and *Equity in General Revenue Sharing: An Analysis of Alternative Distribution Formulas; Part I: Alternative Interstate Distribution Formulas*, prepared for the National Science Foundation, 1975). Barro's method subsequently was adapted and extended by Frederich J. Grasberger in *Formula Evaluation Pmject, Final Report, Developing and Applying Analytical Tools to Evaluate the Distributional and Equalization Effects of Federal Grant-in-Aid Formulas and to Impmve Formula Performance* (Rochester, New York: Center for Governmental Research, 1980).

The estimates of relative input costs are derived using data from the 1980 Census of Population, the most recent information available in adequate detail for each state. The underlying economic reality is probably sufficiently stable that the results shed considerable light on the likely implications of taking account of differences in input costs in the measurement of fiscal capacity. The data are too old for use in the implementation of federal programs, however (though equally ancient data continue to be used in a number of federal grant formulas). Should the general approach be deemed reasonable in concept, the impending availability—within, perhaps, two years—of the results of the 1990 Census of Population may make serious consideration of the approach for program purposes an appealing proposition.

Measuring input Costs: Conceptual issues

The outlays by state and local governments to purchase the goods and services they use to produce a given quantity and quality of a public service differ for at least five reasons:

1. The prices paid per unit of the inputs purchased are different—per gallon of number 2 fuel oil, for example, or per hour for a newly credentialed CPA for a government's accounting department. Land is much more expensive in urban than in rural areas.
2. The quantities and mixes of the inputs used vary, for reasons of climate and other factors beyond the control of the officials of a jurisdiction. For example, fuel oil (or other source of energy) for heating is a major factor in the production of elementary education in Maine. It is of negligible interest to the school administrator in Florida, however, to whom electricity for air conditioning is a matter of serious importance.
3. Goods and services are not employed with the same efficiency by all governments. Installation of a mile of curb and gutter may require 20 laborer-hours in one city and only 18 in another where supervision is more rigorous and effective, or where work rules incorporated in collective bargaining agreements are less constraining.
4. The productivity of labor varies because of differences in the amount of capital available per worker. Construction of a mile of curb and gutter requires many fewer laborer hours where appropriate machinery and equipment are available than where the work is done largely by hand.
5. The optimum scale of production—the level at which the average cost of a unit of output is at a minimum—varies considerably from service to service. All governments are not large enough to produce all services at their most efficient scale. At the same time, some governments are so large that their production of certain services is at a scale that exceeds the optimum?

The third, fourth, and fifth sources of differences in the cost of the goods and services purchased by state and local governments have their roots in the policies of individual jurisdictions. For this reason, differences traceable to these sources are disregarded in the present analysis for reasons discussed in the second chapter of this report.

Ideally, a measure of the relative cost of the inputs used by the states and localities would take into consideration differences of the second type: input mix. In Alaska, for example, the absence of roads between many population centers means that such services as education and governmental administration require air travel to an extent unparalleled in any other state.[6]

Unfortunately, the information base necessary for a systematic attempt to take account of differences in the production functions of state and local governments in different areas of the country does not exist. Given the complexity of the issues involved, it seems unlikely that the necessary information will be available in the foreseeable future.

This leaves the first reason for differences in input costs—variation in the unit prices of the goods and services purchased. The measurement of unit input costs is discussed in the next section.

An Index of the Prices Paid by State and Local Governments

The standard approach to the estimation of differences in the prices faced by purchasers in different areas—as of changes in the general price level over time—begins by defining a standard "market basket" of the goods and services customarily purchased by the class of buyers in which one is interested.

In the immediate instance, the buyers are state and local governments. The reference must be to the mix of goods and services purchased by state and local governments as a group because the purchases of any particular government reflect an array of policy decisions from which the analysis must abstract.' For the same reason, reference cannot be to the prices actually paid by a particular government, or even by all governments in a state,

[5] The scale at which a public service is produced and delivered is a matter on which the decisionmakers of a government often have a significant range of options—the scale need not be dictated by the size of the jurisdiction. Techniques are available for achieving optimum production scale whatever the size of a government. For example, the amount of a service to be delivered may be too small to enable a government to achieve all possible economies of scale. In some such cases, the government may be able to realize the scale economies by arranging with a neighboring jurisdiction for joint production of the service. In other cases, a government may be able to capture scale economies by contracting for performance of the service by another government (perhaps a special district) or by a private firm. Large governments can usually manage to avoid diseconomies of scale by decentralizing production. A useful survey of research on these issues appears in William F. Fox, *Size Economies in Local Government Services: A Review*, Rural Development Research Report No. 22 (Washington, DC U.S. Department of Agriculture, Economics, Statistics, and Cooperatives Service, 1980).

[6] Example mentioned in a letter to the author from Brad Pierce, Policy Analyst, Division of Policy, Office of Management and Budget, Office of the Governor, State of Alaska (January 11, 1990).

' For an analysis similar to that undertaken here but performed for local governments in a particular state, the appropriate class of buyers would be all localities, or all local governments of a given type, in the state.

because some of the most important of these prices—teachers' salaries, for example—are affected by the policy decisions of the governments involved.

With rare exceptions, as when the courts become involved in eminent domain takings, the states and localities buy goods and services in the competitive market. Nonetheless, many governments, especially larger ones, have the power to influence some of the prices they actually pay. Often, the effect is the payment of prices higher than those prevailing in the market. This may be the result of collective bargaining agreements or of a belief that higher-than-market prices will buy better-than-average teachers, or support services, or dealer responsiveness. These consequences of state and local policy decisions must be abstracted from.

This can be accomplished in concept by referring to the actual behavior of governments as a group only for the purpose of defining the market basket. The actual price of each component of the market basket is ascertained for each area or tracked over time. Then the cost of the market basket as a whole is derived by calculating a weighted total of the prices of the individual components of the basket for each area or time period. The weights are the relative quantities of the goods and services that are regularly bought by the typical purchaser! Finally, the cost of the market basket is converted to an index, with a value of 100 assigned to the average for all areas, or to the cost of the basket for a given area in a base period.

The analogy to the underlying logic of the Representative Tax System and the estimates of representative expenditures should be apparent. The obvious way to arrive at a market basket for an index of the prices paid by state and local governments would be to look at the quantities of the specific goods and services actually purchased by all states and localities. The resulting "representative" market basket would identify both the data to be collected and the weights to be used to compute the value of the index for each jurisdiction or state.

Actually, a full-blown accounting for differences in input costs among the states would entail the calculation of multiple price indices—perhaps as many as there are separate functions for which representative-expenditure estimates are prepared. The reason why a separate index might be required for each function is that the mix of inputs actually used to produce some types of services (even if the same mix is assumed to be used by all governments around the country) is drastically different from the mix characteristic of other services.

Consider, for example, the diversity of payroll costs as a proportion of the total direct general expenditures of state and local governments for four functions:[9]

- public welfare—10 percent;
- highways—22 percent;
- elementary and secondary education—53-66 percent;[10] and
- police protection—70 percent.

[8] An alternative to the fixed-weight market basket is the variable-weight approach familiar to those acquainted with the national income and product accounts. In this approach, actual expenditures by state and local governments for goods and services during a period are revalued in as fine detail as possible using appropriate price indices. This yields an estimate of the value of the purchases at the prices that prevailed during a base period. Division of the current-dollar expenditures by the estimates of their value at the prices of the base period yields an "implicit price deflator."

In addition to being available in the income accounts only for state and local governments as a group, an implicit price deflator is not available for state-local expenditures other than direct purchases of goods and services. (After a year or so delay, annual estimates of current-dollar expenditures are published for state governments as a group and all localities, but separate constant-dollar estimates—and the corresponding implicit price deflators—are not published.)

For example, transfer payments by state and local governments to individuals (that is, cash payments made other than in exchange for currently rendered services) cannot be valued in the manner described above. The goods and services for which the payments are spent by their recipients (except for amounts that may be saved) are recorded in the national income accounts as personal consumption, which—in the aggregate—is analyzed separately. Hence an overall implicit price deflator for all direct expenditures by state and local governments is not available in the income accounts.

The approach relied on by many analysts is to use the implicit price deflator for personal consumption expenditures to deflate the total of all state-local outlays other than purchases. This is a convenient expedient because transfer payments account for the remainder of state-local expenditures. Actually, transfers currently account for more than the remainder because of a curious feature of the income accounts. Of the major categories of state-local expenditures, only purchases and transfers currently appear as positive amounts; the entries for the other categories happen to be negative (see the tabulation below of data for 1989). The practical consequence of this is that the deflator for total state and local expenditures calculated by this method somewhat overweights the deflator for purchases relative to that for personal consumption expenditures.

	Amount	Percent
Total Expenditures	$702.5	100.0%
Purchases of goods and services	625.6	88.9
Transfer payments to persons	145.9	20.7
Net interest paid less dividends received	(49.3)	(7.0)
Subsidies less current surplus of government enterprises	(18.8)	(2.7)

Note: Detail does not add to totals because of rounding.

Source: *Survey of Current Business*, July 1990, Table 3.3.

[9] U.S. Department of Commerce, Bureau of the Census, Public *Employment in 1986-87* (Washington, DC, 1988), Table 4; and *Government Finances in 1986-87* (1988), Table 29. The Census Bureau publishes estimates of the gross payrolls of state and local governments by state, by function, and by type of government for the month of October each year. Gross payrolls include all salaries, wages, fees, and commissions actually paid to employees during the month. They do not include deferred compensation or the value of housing, meals, and other in-kind compensation. Hence the Census data are roughly equivalent to the current money earnings of state and local employees

To compare the payroll data with fiscal-year expenditures, the October estimates must be annualized. For most functions, the annual equivalents can be approximated by multiplying the monthly payroll estimates by 12. However, most instructional employees in education (and a few in other functions) are paid on a nine- or ten- month basis, presumably including the month of October. A smaller monthly multiplier must be used to approximate annual payroll in these cases.

[10] The ratio depends on whether October payrolls for instructional employees are assumed to be one-ninth or one-twelfth of total, annualized payrolls.

In the case of public welfare, the bulk of the outlays fund cash payments for income support of program beneficiaries. Only 10 percent of expenditures for this function is for the purchase of the services of the government employees who administer the programs. Because most public welfare involves the direct payment of money to eligible persons and families, it is different from all other functions, which involve the production of services whose value to society can only be measured by the cost of the inputs used to produce them.[11]

The cost to state and local governments of a dollar paid to a beneficiary is $1 (abstracting from the effect of federal matching grants, which is to reduce the price from $1 to the level of the share of the cost not financed by federal funds). The value of a dollar of cash assistance to the program beneficiary, on the other hand, is not the same everywhere in the country. That value depends on the cost of living in one area compared with that in another. A complicating factor is the likelihood that the cost of living for low-income program beneficiaries does not vary around the country in precise proportion to the cost of living for the middle-income government employees administering the program.

In elementary and secondary education, the bulk of expenditures by state and local governments are for the salaries of teachers and support staff. The other outlays are for such purposes as the construction and maintenance of school buildings, instructional materials, and libraries. The mix clearly is entirely different from that for public welfare.

In the case of highways, payroll is only 22 percent of total outlays. The other major objects of expenditure are machinery and equipment, paving materials, and the purchase of the services of construction contractors—again, an entirely different mix of inputs. Payroll accounts for an even-larger share of expenditures for police than for elementary and secondary education, and other outlays for the police function are for purposes that bear little resemblance to textbooks or paving materials.

Technical niceties aside, however, deference must be paid to two harsh realities; together, they preclude implementation of a representative market basket approach. First, information is not available in sufficient detail on the specific goods and services actually purchased by the states and local governments—in the aggregate, to say nothing of specific functions—to permit the specification of anything more than the most rudimentary market basket. The discussion of the input mix for various functions in the past few paragraphs tests the outer limits of the detail of information currently available. More importantly, even if a crude market basket were defined, data on the actual prices paid by governments around the country for the items in the basket are not currently collected, and an effort to do so would be extremely expensive.[12]

In fact, the only currently feasible strategy for identifying the differences among the states in the input costs of public services is an effort to estimate the variation in the labor-cost component of expenditures. A method of accomplishing this is outlined in the next section. The results of this analysis are used in the final section to calculate a set of overall indices of unit input costs on the assumption that costs other than employee compensation do not vary among the states.

An Approach to Identifying Differences in Unit Labor Costs[13]

The total cost of employee compensation amounts to roughly half of the total direct general expenditures of state and local governments.[14] This section summarizes a method of estimating the differences in the unit cost of that compensation among the states using data on individual earnings from the 1980 Census of Population. The data are, regrettably, the most recent available in the detail necessary for the approach.[15]

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[11] An exception is the rare case when a service produced by government is sold at a market price in a competitive market. In such cases, of course, the value of a unit of the output is its market price. For a discussion of these issues of the valuation of government output, see W. Irwin Gillespie, "Effect of Public Expenditures on the Distribution of Income," in Richard A. Musgrave (ed.), *Essays* in *Fiscal Federalism* (Washington, DC: The Brookings Institution, 1965), pp. 122-86.

[12] Whitman speculates that such an effort would cost more than the compilation of the consumer price index, a central element of the nation's economic data base ("Cost as a Factor. . .," p. 977).

[13] I am indebted to Robert D. Reischauer for insisting that the input-cost issue be addressed and for suggesting the general approach outlined in this section. He, of course, bears none of the responsibility for the specific details of my execution of his advice.

[14] The derivation of this estimate is explained below.

[15] In a letter to John Kincaid (Executive Director, ACIR), dated February 7, 1990, commenting on a draft of this report, L. Edward Lashman, Jr. (Secretary, Executive Office for Administration and Finance, Commonwealth of Massachusetts) argues that

> The use of average employee earnings from the 1980 Census is problematic for two reasons. These data are 10 years old; relative wage rates have shifted dramatically in the last 10 years because of disparate growth trends in regional economies. Second, statewide average wages also differ because of differing industry mix; however, these varying mixes may be irrelevant for state and local government hiring needs.
>
> Both problems could possibly be solved by use of Labor Department data on payrolls and employment, which are far more current than the Census data. ACIR could choose an appropriate skill mix or industry mix to proxy the state and local labor force (e.g., government looks more like service industries than like manufacturing or retail trade; government employs a higher proportion of professional and technical workers). At a minimum, the 1980 Census data could be "aged" through use of Bureau of Economic Analysis state personal income data

In a telephone conversation with the author on February 1, 1990, Ron Lanoue (Capital Planning Manager, Budget Bureau, Commonwealth of Massachusetts) suggested that the estimates of the relative costs of employee compensation derived from earnings in 1979 be aged using the regional and metropolitan area cost of living/consumer price indices published by BLS. The problems with these BLS data and the work undertaken by Barro in 1975 and Grasberger in 1980 to develop methods for overcoming them are discussed in footnote 4 above. An attempt to adapt their methods to implement Lanoue's suggestion, especially given the changes in its statistical program implemented by BLS in 1982, would have required far more resources than were available for the present study. Moreover, the likely improvement in the reliability of the estimates of the variation in employee compensation costs among the states would probably not have been sufficient to warrant the effort, particularly in light of the impending availability of information on 1989 earnings from the 1990 Census.

The basic idea underlying the approach is fairly straightforward. It is that—controlling for sex, age, and educational attainment—differences among the states in the average earnings of all full-time employees are a reasonably good indicator of relative unit labor costs.[16] An index of these differences is an appropriate device for adjusting the labor-cost component of the estimates of representative expenditures for the variation in these costs among the states.

Variation in the cost of living is the most important source of differences in average earnings among the states, and hence in the unit labor costs of state and local governments. Other factors include the power of labor unions in a state and the amount of capital available per worker.

It is important to remember that cost of living is more than a matter of the prices of consumer goods and services. Cost of living comprehends the mix of consumption as well as prices paid per unit. For example, transportation costs boost the prices of many consumer goods in Hawaii to levels significantly higher than those on the Mainland. However, the supremely temperate climate of the Islands, coupled with a lifestyle arguably more felicitous even than that of California, combine for a cost of living that may actually be lower than the U.S. average. Moreover, the climate and lifestyle of the Islands may be worth enough to many individuals that they are willing to accept lower real cash incomes in exchange for the nonmonetary benefits.

The unavailability of data relating to the other factor costs of state and local governments means that those costs must be assumed, for purposes of this analysis, to be uniform among the states. This is not an unreasonable assumption for a significant portion of the purchases of those governments—particularly for such goods as motor vehicles, computers, and related equipment and supplies that are traded in competitive national markets. Uniformity is a questionable assumption, however, for energy and land costs, among others.[17]

Table C-1 shows for each state the mean annual earnings of male residents, 45-54 years of age, who worked 40 or more weeks in 1979, at each of seven levels of educational attainment. No weighty analytical considerations dictate the choice of this particular set of data. The distinguishing characteristic of the earnings of males 45-54 years of age is that they are higher, on average, than those of any other demographic group. The information in columns 1-8 of Table C-1, indexed to the U.S. average, is displayed in Table C-2 to facilitate comparisons among the states.

To calculate an index of unit labor costs from these data, a set of weights is needed. In order to abstract from the actual mix of employment in each state, a single set of national weights is used to calculate the index.[18] Two options are available: (1) the national totals of the numbers of comparable individuals at each level of educational attainment in 1979, from the Census; and (2) the number of such persons at each level of educational attainment in 1986, as determined by the Current Population Survey. The two sets of weights are shown in the first few rows of Table C-3. The percentage distribution of the 1986 data is used as the weights for the earnings data for each state. The weighted average of the earnings for each state appears in column 1 of Table C-3. The index of the state averages in column 1 to the national average is shown in column 9, which is the desired index of unit labor

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[16] The reference is to the earnings of all employees rather than the employees of state and local governments because the earnings of public employees are strongly influenced by the policies of the governments for which they work, and abstraction from policy is a key consideration in this analysis. In any event, earnings data from the 1980 Census are not available separately for government employees, nor are the published data on the earning of government employees available broken down by the demographic characteristics of the employees.

It is not likely that state and local governments employ a large enough proportion of the labor force in any state that their compensation policies are a serious influence on overall levels of earnings. For example, of the five states with the highest numbers of full-time equivalent state-local government employees per 10,000 population, FTE government workers were 18 percent of total employment in October 1986 in Alaska and Wyoming. The ratios are 14 percent in Nebraska and New York, and 8 percent in the District of Columbia. The U.S. average is a little less than 12 percent. Public *Employment* in 1986, Tables 7 and 12; and Employment and *Earnings*, December 1986, Tables B-4 and B-8.

[17] An intensive search of possible sources of information on some of these factors of production might well establish the availability of sufficient reliable data to permit development of additional cost indices. These would make it possible to increase the proportion of the outlays of state and local governments for which input-cost adjustments could be made. Such an effort, however, would require resources and time far beyond those available for the present study.

Examples of three areas where research on input costs could have a substantial payoff in improved reliability of the estimates of representative expenditures are cited in the letter from Edward Lashman of Massachusetts commenting on a draft of this report:

> It is unreasonable to expect (as does this analysis) that AFDC and EA recipients are receiving equivalent services by equal dollar welfare grants if rent levels are vastly different.
>
> .*.
>
> ACIR should include interstate health care cost data. The literature on comparative hospital and physician costs is extensive, and it demonstrates that significant differences do exist.
>
> * * *
>
> In any capital construction program (e.g., highways, environment and housing), interstate variations in construction costs are significant. These data are available from such private services as EW. Dodge/McGraw Hill.

[18] Note that the first column of Table C-1 is the equivalent of a weighted average of the mean earnings at each level of educational attainment, where the weights are the actual number of employed men at each level in each state. Therefore, the first column of Table C-2 is, effectively, an index of unit labor costs constructed using each state's own rather than national-average weights.

Table C-I

Mean Annual Earnings of Males 45-54 Years Old Who Worked 40 or More Weeks in 1979, by Years of Educational Attainment

state	Mean Annual Earnings in 1979								Exhibit: College Attainment			
		Elementary		High School		College			Mean Earnings, 1979		Number of Men, 1980	
	Total	0-7 Years	8 Years	1-3 Years	4 Years	1-3 Years	4 Years	5 + Years	5/6 Years	7 + Years	5-6 Years	7 + Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
United States	$23,084	$14,045	$16,399	$17,978	**$20,551**	$23,903	$33,342	$37,432	$33,348	$41,864	514,276	473,809
Alabama	19,835	12,737	14,329	15,487	18,870	21,282	30,253	34,320	28,853	**40,500**	5,959	5,271
Alaska	33,366	26,562	29,504	**29,088**	31,564	33,628	36,096	41,207	37,777	44,979	**902**	**820**
Arizona	23,118	13,855	18,859	17,851	20,754	22,774	30,433	35,048	**30,644**	39,573	6,129	**5,965**
Arkansas	18,255	12,351	12,753	14,458	17,604	20,049	28,945	33,007	27,651	39,297	**2,803**	2,387
California	25,932	14,918	18,828	20,076	22,479	25,190	33,521	37,893	33,791	42,543	73,806	65,106
Colorado	24,657	15,459	17,903	18,972	21,080	23,501	32,934	**35,260**	33,569	37,169	8,729	7,735
Connecticut	26,527	16,440	15,840	17,911	**20,386**	25,631	40,071	43.83 1	42,296	45,717	11,488	9,353
Delaware	23,375	13,680	14,529	**17,288**	19,734	23,233	35,225	40,029	35,013	44,401	1,515	1,738
District of Columbia	24,384	13,415	14,584	15,564	17,653	21,772	31,668	43,578	37306	48,052	1,880	2,636
Florida	20,883	12,847	14,098	15,690	18,651	21,296	29,395	35,544	29,952	41,758	19,299	17,367
Georgia	**20,488**	12,095	14,250	16,232	18,911	**22,484**	32,475	35,401	30,243	41,541	9,372	7,872
Hawaii	22,957	14,161	16,398	18,223	20,661	22,023	30,492	35,171	29,936	41,048	**2,299**	**2,048**
Idaho	20,305	14,086	15,036	17,803	18,433	20,957	27,642	27,813	25,985	**30,790**	**2,030**	1,246
Illinois	25,293	16,028	18,337	19,760	22,562	26,012	37,115	40,706	37,3 14	44,524	25,140	22,334
Indiana	22,423	16,536	17,424	18,735	**20,960**	**24,340**	33,204	35,419	29,642	41,963	9,473	8,364
Iowa	21,306	15,574	16,243	17,952	19,554	22,824	31,848	33,327	28,580	38,657	5,192	4,624
Kansas	22,102	**15,244**	15,253	17,343	19,5 19	23,427	32,479	32,725	29,018	**36,526**	5,252	5,122
Kentucky	20,506	13,836	15,653	17,236	19,979	23,144	32,278	36,772	29,805	44,164	4,663	4,395
Louisiana	22,63 1	15,256	16,524	18,744	21,356	24,679	35,165	35,820	31,162	41,023	6,480	5,801
Maine	17,305	12,761	**13,408**	14,342	16,132	19,360	**25,300**	27,463	22,3 18	32,927	1,660	1,563
Maryland	25,367	15,293	17,15 1	18,214	21,614	25,761	34,975	40,021	36,780	42,832	13,967	16,101
Massachusetts	22,923	13,738	15,091	16,709	19,229	23,005	32,491	36,572	33,996	39333	16,895	15,765
Michigan	**25,796**	19,003	19,725	20,953	23,209	27,532	36,682	40,148	35334	45,660	19,849	17,334
Minnesota	23,757	15,188	16,388	18,739	20,728	25,641	34,675	36,583	31,356	43,167	10,427	8,277
Mississippi	17,989	10,869	**12,465**	14,590	17,339	19,810	28,739	31,112	25,671	36,170	2,975	3,200
Missouri	21,654	14,218	16,381	17,570	19,758	22,830	32,085	34,948	30,685	39,464	8,908	8,410
Montana	**20,280**	16,219	16,782	18,117	19,098	19,757	26,538	27,75 1	24,859	31,130	1,563	1,338
Nebraska	**20,368**	13,646	14,859	16,616	18,502	21,946	29,375	31,912	**28,068**	35,717	2,848	2,877
Nevada	**23,012**	16,120	18,686	19,953	20,475	24,053	**29,16 1**	3 5 w	28,712	42,321	1,590	1,513
New Hampshire	20,103	14,050	14,305	15,157	18,306	21,411	27,802	30,591	27,915	33,611	2,042	1,810
New Jersey	25,658	15,104	17,105	18,670	21,614	26,341	37,014	41,203	37,995	44,572	21,873	20,828
New Mexico	20,722	12,300	15,756	17,169	18,800	21,021	28,614	31,262	**28,230**	**34,124**	**2,890**	3,061
New York	23,611	13,557	15,156	17,049	20,022	24,067	34,437	39,729	35,502	43,620	46,235	50,232
North Carolina	18,280	11,229	13,146	**14,890**	17,212	20,983	29,103	**34,136**	28,842	39,275	8,289	**8,540**
North Dakota	19,182	13,955	14,346	16,491	18,670	20,244	27,788	30,744	28,436	33338	1,155	1,028
Ohio	**23,550**	16,837	18,093	19,029	21,509	24,560	34,010	38,769	33,642	44,5 10	21,545	19,238
Oklahoma	21,942	14,261	**15,897**	16,583	19,865	21,864	31,501	34,507	31,725	37,622	6,366	**5,684**
Oregon	23,591	17,002	18,420	20,180	21,564	23,029	31,402	32,190	29,726	35,013	**6,046**	5,277
Pennsylvania	22,245	15,161	16,505	17,572	19,855	**23,584**	33,523	39,000	34,133	43325	20,497	23,066
Rhode Island	20,470	13,225	14,255	15,906	18,308	21,592	32,386	**36,530**	33,63 1	39,172	1,668	**1,830**

Table C-1 (cont.)

Mean Annual Earnings of Males 45-54 Years Old Who Worked 40 or More Weeks in 1979, by Years of Educational Attainment

State	Mean Annual Earnings in 1979								Exhibit: College Attainment			
		Elementary		High School		College			Mean Earnings, 1979		Number of Men, 1980	
	Total	0-7 Years	8 Years	1-3 Years	4 Years	1-3 Years	4 Years	5+ Years	5/6 Years	7+ Years	5-6 Years	7+ Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
South Carolina	18,313	11,516	13,004	15,533	17,466	19,820	29,491	34,310	29,678	38,912	3,753	3,778
South Dakota	17,143	11,859	12,823	14,689	16,337	17,903	25,383	27,907	24,956	30,483	1,036	1,187
Tennessee	19,572	12,051	14,170	15,800	18,917	22,925	30,124	33,884	29,413	38,686	7,298	6,794
Texas	23,521	13,348	16,228	18,467	20,833	23,837	35,043	38,638	34,894	43,666	34,452	25,649
Utah	23,573	15,659	16,656	19,465	21,546	22,496	29,550	30,301	28,018	33,200	4,170	3,284
Vermont	18,213	12,621	14,472	14,580	17,006	19,397	26,843	26,001	24,029	28,636	1,138	852
Virginia	22,740	13,612	15,047	16,794	19,981	23,270	32,826	37,438	34,341	41,054	17,303	14,821
Washington	25,270	18,723	20,604	21,391	22,814	23,822	31,482	34,838	31,904	38,524	11,577	9,217
West Virginia	20,612	14,983	16,378	18,854	20,313	21,751	28,216	33,798	27,163	40,427	2,222	2,224
Wisconsin	22,386	16,903	17,554	18,488	20,359	23,495	32,194	36,143	32,422	40,041	8,381	8,001
Wyoming	23,077	16,720	19,015	19,651	21,343	24,253	29,955	29,442	26,151	34,294	1,247	846

Sources: 1-7, 9-12, U.S. totals—U.S. Department of Commerce, Bureau of the Census, *1980 Census of Population*, Vol. 1, *Characteristics of the Population*, Chapter D, *Detailed Population Characteristics*, Part 1, *United States Summary*, Section A: United *States*, Tables 253-310 (Washington, DC, 1984), Table 296.
1-7, 9-12, States—2980 *Census of Population*, Vol. 1, *Characteristics of the Population*, Chapter D, *Detailed Population Characteristics*, Part 6, [State] (1983), Table 237.
8—Mean of columns 9 and 10, weighted by columns 11 and 12, respectively.

Table C-2
Indices of the Mean Annual Earnings of Males 45-55 Years Old Who Worked 40 or More Weeks in 1979, by Years of Educational Attainment

State	Total	Elementary		High School		College		
		0-7 Years	8 Years	1-3 Years	4 Years	1-3 Years	4 Years	5+ Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Alabama	85.9	90.7	87.4	86.1	91.8	89.0	90.7	91.7
Alaska	144.5	189.1	179.9	161.8	153.6	140.7	108.3	110.1
Arizona	100.1	98.6	115.0	99.3	101.0	95.3	91.3	93.6
Arkansas	79.1	87.9	77.8	80.4	85.7	83.9	86.8	88.2
California	112.3	106.2	114.8	111.7	109.4	105.4	100.5	101.2
Colorado	106.8	110.1	109.2	105.5	102.6	98.3	98.8	94.2
Connecticut	114.9	117.1	96.6	99.6	99.2	107.2	120.2	117.1
Delaware	101.3	97.4	88.6	96.2	96.0	97.2	105.6	106.9
District of Columbia	105.6	95.5	88.9	86.6	85.9	91.1	95.0	116.4
Florida	90.5	91.5	86.0	87.3	90.8	89.1	88.2	95.0
Georgia	88.8	86.1	86.9	90.3	***92.0***	94.1	97.4	94.6
Hawaii	99.5	100.8	100.0	101.4	100.5	92.1	91.5	94.0
Idaho	88.0	100.3	91.7	99.0	89.7	87.7	82.9	74.3
Illinois	109.6	114.1	111.8	109.9	109.8	108.8	111.3	108.7
Indiana	97.1	117.7	106.3	104.2	102.0	101.8	99.6	94.6
Iowa	92.3	110.9	99.0	99.9	95.1	**95.5**	95.5	89.0
Kansas	95.7	108.5	93.0	96.5	95.0	98.0	97.4	87.4
Kentucky	88.8	98.5	95.5	95.9	97.2	96.8	96.8	98.2
Louisiana	98.0	108.6	100.8	104.3	103.9	103.2	105.5	95.7
Maine	75.0	90.9	81.8	79.8	78.5	81.0	75.9	73.4
Maryland	109.9	108.9	104.6	101.3	105.2	107.8	104.9	106.9
Massachusetts	99.3	97.8	92.0	92.9	93.6	96.2	97.4	97.7
Michigan	111.7	135.3	120.3	116.5	112.9	115.2	110.0	107.3
Minnesota	102.9	108.1	99.9	104.2	100.9	107.3	104.0	97.7
Mississippi	77.9	77.4	76.0	81.2	84.4	82.9	86.2	83.1
Missouri	93.8	101.2	99.9	97.7	96.1	95.5	96.2	93.4
Montana	87.9	115.5	102.3	100.8	92.9	82.7	79.6	74.1
Nebraska	88.2	97.2	90.6	92.4	90.0	91.8	88.1	85.3
Nevada	99.7	114.8	113.9	111.0	99.6	100.6	87.5	94.4
New Hampshire	87.1	100.0	87.2	84.3	89.1	89.6	83.4	81.7
New Jersey	111.2	107.5	104.3	103.8	105.2	110.2	111.0	110.1
New Mexico	89.8	87.6	96.1	95.5	91.5	87.9	85.8	83.5
New York	102.3	96.5	92.4	94.8	97.4	100.7	103.3	106.1
North Carolina	79.2	80.0	80.2	82.8	83.8	87.8	87.3	91.2
North Dakota	83.1	99.4	87.5	91.7	90.8	84.7	83.3	82.1
Ohio	102.0	119.9	110.3	105.8	104.7	102.7	102.0	103.6
Oklahoma	95.1	101.5	96.9	92.2	96.7	91.5	94.5	92.2
Oregon	102.2	121.1	112.3	112.2	104.9	96.3	94.2	86.0
Pennsylvania	96.4	107.9	100.6	97.7	96.6	98.7	100.5	104.2
Rhode Island	88.7	94.2	86.9	88.5	89.1	90.3	97.1	97.6
South Carolina	79.3	82.0	79.3	86.4	85.0	82.9	***88.5***	91.7
South Dakota	74.3	84.4	78.2	81.7	79.5	74.9	76.1	74.6
Tennessee	84.8	85.8	86.4	87.9	92.0	95.9	90.3	90.5
Texas	101.9	95.0	99.0	102.7	101.4	99.7	105.1	103.2
Utah	102.1	111.5	101.6	108.3	104.8	94.1	88.6	81.0
Vermont	78.9	89.9	88.2	81.1	82.8	81.1	80.5	69.5
Virginia	98.5	96.9	91.8	93.4	97.2	97.4	98.5	100.0
Washington	109.5	133.3	125.6	119.0	111.0	99.7	94.4	93.1
West Virginia	89.3	106.7	99.9	104.9	98.8	91.0	84.6	90.3
Wisconsin	97.0	120.3	107.0	102.8	99.1	98.3	96.6	96.6
Wyoming	100.0	119.0	116.0	109.3	103.9	101.5	89.8	78.7

Source: Table C-1.

Table C-3

Labor-Input-Cost Index Derived from Mean Annual Earnings of Males 45-54 Years Old Who Worked 40 or More Weeks in 1979, by Years of Educational Attainment, 1986 Weights

(populations in thousands)

State	Total	Elementary		High School		College			Index of Unit Labor Costs
		0-7 Years	8 Years	1-3 Years	4 Years	1-3 Years	4 Years	5 + Years	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
United States	$24,166	$508	$653	$1,834	$7,657	$3,981	$4,452	$5,589	100.0
Weights, 1979	8,726	685	594	1,343	2,957	1,250	908	988	
Percentage Distribution	99.9973%	7.8512%	6.8089%	15.3945%	33.8863%	14.3240%	10.4089%	11.3235%	
Weights, 1986	8,291	300	330	846	3,089	1,381	1,107	1,238	
Percentage Distribution	100.0000%	3.6184%	3.9802%	10.2038%	37.2573%	16.6566%	13.3518%	14.9319%	
Alabama	21,889	461	570	1,580	7,030	3,545	4,039	5,125	90.6
Alaska	32,475	961	1,174	2,968	11,760	5,601	4,819	6,153	134.4
Arizona	23,393	501	751	1,821	7,732	3,793	4,063	5,233	96.8
Arkansas	20,675	447	508	1,475	6,559	3,339	3,865	4,929	85.6
California	25,503	540	749	2,049	8,375	4,196	4,476	5,658	105.5
Colorado	24,079	559	713	1,936	7,854	3,914	4,397	5,265	99.6
Connecticut	26,217	595	630	1,828	7,595	4,269	5,350	6,545	108.5
Delaware	24,244	495	578	1,764	7,352	3,870	4,703	5,977	100.3
District of Columbia	23,106	485	580	1,588	6,577	3,626	4,228	6,507	95.6
Florida	21,890	465	561	1,601	6,949	3,547	3,925	5,307	90.6
Georgia	22,636	438	567	1,656	7,046	3,745	4,336	5,286	93.7
Hawaii	23,201	512	653	1,859	7,698	3,668	4,071	5,252	96.0
Idaho	20,618	510	598	1,817	6,868	3,491	3,691	4,153	85.3
Illinois	26,519	580	730	2,016	8,406	4,333	4,956	6,078	109.7
Indiana	24,191	598	694	1,912	7,809	4,054	4,433	5,289	100.1
Iowa	22,794	564	647	1,832	7,285	3,802	4,252	4,976	94.3
Kansas	22,774	552	607	1,770	7,272	3,902	4,337	4,886	94.2
Kentucky	23,482	501	623	1,759	7,444	3,855	4,310	5,491	97.2
Louisiana	24,683	552	658	1,913	7,957	4,111	4,695	5,349	102.1
Maine	18,711	462	534	1,463	6,010	3,225	3,378	4,101	77.4
Maryland	25,532	553	683	1,859	8,053	4,291	4,670	5,976	105.7
Massachusetts	23,101	497	601	1,705	7,164	3,832	4,338	5,461	95.6
Michigan	27,049	688	785	2,138	8,647	4,586	4,898	5,995	111.9
Minnesota	24,650	550	652	1,912	7,723	4,271	4,630	5,462	102.0
Mississippi	20,228	393	496	1,489	6,460	3,300	3,837	4,646	83.7
Missouri	23,111	514	652	1,793	7,361	3,803	4,284	5,218	95.6
Montana	20,610	587	668	1,849	7,115	3,291	3,543	4,144	85.3
Nebraska	21,521	494	591	1,695	6,893	3,655	3,922	4,765	89.1
Nevada	23,586	583	744	2,036	7,628	4,006	3,894	5,278	97.6
New Hampshire	20,782	508	569	1,547	6,820	3,566	3,712	4,568	86.0
New Jersey	26,121	547	681	1,905	8,053	4,388	4,942	6,152	108.1
New Mexico	21,372	445	627	1,752	7,004	3,501	3,820	4,668	88.4
New York	24,342	491	603	1,740	7,460	4,009	4,598	5,932	100.7
North Carolina	20,933	406	523	1,519	6,413	3,495	3,886	5,097	86.6
North Dakota	20,883	505	571	1,683	6,956	3,372	3,710	4,591	86.4
Ohio	25,097	609	720	1,942	8,014	4,091	4,541	5,789	103.9
Oklahoma	22,726	516	633	1,692	7,401	3,642	4,206	5,152	94.0
Oregon	23,662	615	733	2,059	8,034	3,836	4,193	4,807	97.9
Pennsylvania	24,074	549	657	1,793	7,397	3,928	4,476	5,823	99.6
Rhode Island	22,386	479	567	1,623	6,821	3,596	4,324	5,455	926
South Carolina	20,972	417	518	1,585	6,507	3,301	3,938	5,123	86.8
South Dakota	18,634	429	510	1,499	6,087	2,982	3,389	4,167	77.1
Tennessee	22,124	436	564	1,612	7,048	3,819	4,022	5,059	91.6
Texas	24,710	483	646	1,884	7,762	3,970	4,679	5,769	102.3
Utah	22,893	567	663	1,986	8,027	3,747	3,945	4,525	94.7
Vermont	19,098	457	576	1,488	6,336	3,231	3,584	3,883	79.0
Virginia	23,606	493	599	1,714	7,444	3,876	4,383	5,590	97.7
Washington	24,876	677	820	2,183	8,500	3,968	4,203	5,202	1029
West Virginia	22,581	542	652	1,924	7,568	3,623	3,767	5,047	93.4
Wisconsin	23,778	612	699	1,886	7,585	3,913	4,298	5,397	98.4
Wyoming	23,150	605	757	2,005	7,952	4,040	4,000	4,396	95.8

Sources: 1-6—The weights are the U.S. total number of full-time male workers with earnings, age 45-54, with the indicated level of educational achievement. The 1986 weights are from U.S. Department of Commerce, Bureau of the Census, *Money Income of Households, Families, and Persons in the United States: 1986*, Current Population Reports (Washington, DC, 1988), Table 36. The 1979 weights are from Bureau of the Census, *1980 Census of Population*, Vol. 1, *Characteristics of the Population*, Chapter D, *Detailed Population Characteristics*, Part 1, *United States Summary*, Section A: *United States*, Tables 253-310 (Washington, DC, 1984) Table 296.

1-8—The entries are columns 2-8, Table C-2, multiplied by the 1986 percentage weights; column 1 is the sum of the entries in columns 2-8.

9—Column 1 indexed to the U.S. average.

costs for each state. The values of the index range from a low of 77 in South Dakota and Maine to 134 in Alaska.[19]

Alaska's value is no surprise, but Michigan's position as the state with the second highest value (112) may be. This result is probably more attributable to the strength of the union movement in the state than to the cost of living. Whether earnings are high in Michigan because of the influence of unions or the cost of living is not important for purposes of the present analysis, however. The index of unit labor costs indicates that the costs of compensation for the public employees of state and local governments in the state are likely to be well above the national average.

Another surprise maybe Hawaii, with an index value of %. Conventional wisdom (confirmed by BLS estimates and a number of studies in the 1970s) has long identified Hawaii as the state with a cost of living second only to that of Alaska.[20] Two observations are in order. First, it maybe that the cost of living Hawaii is not as high as earlier estimates indicated because the market basket of goods and services used by the BLS in preparing the estimates for the family budget series for Honolulu failed to account adequately for the special characteristics of the life style in the state. The more important reason for the plausibility of the estimate that average earnings in Hawaii are only 96 percent of the U.S. average, however, is that, as noted earlier, the nonmonetary benefits of living and working in the state make people willing to accept lower real cash incomes than they would demand for comparable work elsewhere.

Estimating a Unit-Input Cost Index

As mentioned above, the information necessary to estimate the variability of unit costs among the states for inputs other than labor is not available. Nonetheless, the index of unit labor costs can be used to calculate an overall input-cost index on the assumption that all nonlabor costs are uniform throughout the nation. The key issue in computing this index is the proportion of direct general expenditures accounted for by employee compensation.[21]

The foundation for the effort to determine this proportion is the estimates of state and local government payrolls published annually by the Bureau of the Census. The estimates for October 1986 by function appear in the first column of Table C-4. As noted earlier, the October numbers must be annualized to put them on a basis comparable with the Census estimates of direct general expenditures. This is accomplished by multiplying the monthly payrolls for instructional employees in education and all employees in natural resources by 10. The assumption underlying this procedure is that, on average, these employees are paid on a ten-month basis and that October is one of the ten months. The payrolls for all other functions are multiplied by 12.

A minor problem is that the timing of the payroll information is not as well aligned as it might be with state-local fiscal years. In particular, the annualized payrolls in column 2 of Table C-4 understate fiscal year outlays in a period of rising spending because October is an early month of the typical fiscal year. To bring the two sets of data into better alignment, the annualized October payrolls are projected to January 1987, which is the approximate midpoint of the 1986-87 fiscal year for state and local governments. The rate of growth used for the projection is the increase in total direct general expenditures from 1985-86 to 1986-87: slightly more than 8.3 percent. The quarterly compounding rate implicit in that rise (2.015 percent) is used for the projections, which appear in column 3.

The resulting ratios of payroll costs to direct general expenditures are shown in column 6 of Table C-4. The overall ratio is slightly under 39 percent. The range is from zero percent for interest on general debt to 84 percent for social insurance administration.

The expenditures of state and local governments for employee compensation include more than the outlays classified in the Bureau of the Census accounts as payrolls. As noted above, payroll outlays are roughly equivalent to the current money earnings of state-local employees. As such, they do not include the current expenditures by state and local governments for such labor costs as:

- workers compensation or disability insurance;
- life insurance;
- health and hospital insurance;
- unemployment insurance;
- employee retirement plans;
- federal Social Security taxes;
- uniform allowances;
- bonuses; and
- severance pay.

The most recent available report by the Bureau of the Census on the costs incurred by the states and localities for these purposes estimates that they amount to roughly 22 percent of total costs for employee compensation.[22] This translates to roughly 28 percent of payrolls (0.22/0.78 = 0.28). Table C-4 indicates that payrolls account for 39

[19] In his letter to the author, Brad Pierce observes that this estimate overstates the relative level of earnings in Alaska because 1979 ... was just after the Trans-Alaska pipeline was completed and earnings in the entire economy were grossly inflated. The 1990 census will undoubtedly yield more representative data.

[20] See the review of studies by Barro and Grasberger, in Whitman. This view impelled the Congress in 1976 to authorize a special supplement to the federal Revenue Sharing payments for which Alaska and Hawaii qualified under the general formulas. The supplement was repealed in 1980.

[21] It is, of course, the variability in this proportion from function to function that makes this effort necessary. If the proportion were the same for all functions, the index of unit labor costs would be identical to the overall index calculated in this section.

[22] U.S. Department of Commerce, Bureau of the Census, *1982 Census of Governments*, Volume 3, *Public Employment*, No. 2S, *Compendium of Public Employment (Supplement)* (Washington, DC, 1985), p. viii. This estimate includes only a portion of the costs of employees' paid vacation and sick leave. The cost of leave used by employees during the October payroll period on which the Census estimates is based is included in gross payroll. Leave accrued but not paid is a liability of a government from a balance-sheet perspective, but not a current expenditure. Hence the liability is not a currently paid labor cost and is not recorded as a direct general expenditure.

Table C-4

Payrolls of State and Local Governments, by Function, October 1986 Related to Direct General Expenditures, by Function, 1986.87

(dollar amounts in millions)

Function	Payrolls October 1986	Payrolls Annualized October	Payrolls Annualized January 1987	Direct General Expenditures	Annual Payroll as Percentage of Direct General Expenditures October	Annual Payroll as Percentage of Direct General Expenditures January 1987
	(1)	(2)	(3)	(4)	(5)	(6)
General Functions, Total	$22,095	$248,015	$253,012	$653,608	37.9%	38.7%
Education						
Higher Education		31,120	31,747	60,240	51.7	527
Instructional Employees	1,426	14,260				
Other Employees	1,405	16,860				
Elementary and Secondary Schools		90,316	92,136	156,782	57.6	58.8
Instructional Employees	6,814	68,140				
Other Employees	1,848	22,176				
Local Libraries	119	1,428	1,457	3,274	43.6	44.5
Other Education	187	2,244	2,289	9,636	23.3	23.8
Social Services and Income Maintenance						
Public Welfare	677	8,124	8,288	80,090	10.1	10.3
Hospitals	1,737	20,844	21,264	40,108	52.0	53.0
Health	499	5,988	6,109	16,864	35.5	36.2
Social Insurance Administration	197	2,364	2,412	2,881	821	83.7
Transportation						
Highways	956	11,472	11,703	52,199	22.0	22.4
Air Transportation	56	672	686	4,876	13.8	14.1
Water Transportation	29	348	355	1,744	20.0	20.4
Parking Facilities	n.a.	–	–	757	–	–
Transit Subsidies	n.a.	–	–	244	–	–
Public Safety						
Police Protection	1,410	16,920	17,261	24,684	68.5	69.9
Fire Protection	603	7,236	7,382	10,910	66.3	67.7
Correction	713	8,556	8,728	16,637	51.4	525
Protective Inspection and Regulation	n.a.	–	–	4,420	–	–
Environment and Housing						
Natural Resources	322	3,220	3,285	9,738	33.1	33.7
Parks and Recreation	306	3,672	3,746	10,978	33.4	34.1
Housing and Community Development	177	2,124	2,167	11,766	18.1	18.4
Sewerage	205	2,460	2,510	14,862	16.6	16.9
Sanitation Other than Sewerage	189	2,268	2,314	6,462	35.1	35.8
Governmental Administration	1,434	17,208	17,555	34,896	49.3	50.3
Interest on General Debt	n.a.	–	–	41,816	–	–
General Expenditure, N.E.C.	n.a.	–	–	36,746	–	–
All Other and Unallocable*	786	9,431	9,621	–	–	–
Exhibit:						
Local Utilities	959	11,508	11,740	65,509	17.6	17.9
State Liquor Stores	20	240	245	2,931	8.2	8.4
Insurance Trust	n.a.	–	–	50,815	–	–
Total All Other and Unallocable	822	–	–	–	–	

n.a. – not available.

* A portion of "total all other and unallocable" payrolls ($822 million) proportionate to published payroll amounts shown in column 1 is allocated to general functions. For total direct general expenditures, this category includes amounts for the five functions for which payroll estimates are shown as not available in column 1.

Sources: 1 – U.S. Department of Commerce, Bureau of the Census, Public Employment *in 1986* (Washington, DC, 1988), Table 4.
2 – Column 1 multiplied by 12 except for instructional employees in education and employees in natural resources, in which cases column 1 is multiplied by 10.
3 – Assumes one quarter's growth at the annual rate of increase in the total direct general expenditures of state and local governments from 1985-86 to 1986-87.
4 – U.S. Department of Commerce, Bureau of the Census, *Government Finances in 1986-87* (Washington, DC, 1988), Table 29.
5 – Column 2/column 4.
6 – Column 3/column 4.

Table C-5
Payroll and Total Employee Compensation Costs as Percentage of All Direct General Expenditures by State and Local Governments, by Function, 1987

Function	Payrolls	Employee Compensation
	(1)	(2)
Education		
Primary and secondary	58.8%	75.3%
Higher	52.7	67.5
Public welfare	10.0	12.8
Health and hospitals	48.1	61.6
Highways	22.4	28.7
Police and corrections	62.9	80.5
Environment and housing	26.1	33.4
Interest on general debt	–	–
General administration	50.3	64.4
All other	20.2	25.9

Sources: Table C-4 and see text.

percent of the direct general expenditures of the states and localities. It follows that the total costs of employee compensation amount to approximately half of all direct expenditures (0.39 • 1.28 = 0.50). Bble C-5 shows the ratios of payroll and employee compensation to total direct general expenditures for each of the 10 functional categories considered in this report.

The ratio, r, in column 2 of Bble C-5 for each function can be viewed as the weight to be assigned to the value of a state's index of labor costs, with the ratio (1-r) the weight to be assigned to the uniform index (100 for all states) in the calculation of an overall index of the unit-input costs of state and local governments.

The resulting indices are shown in Table C-6.

Table C-6
Input-Cost Indices for Major Functions, 1986-87

State	Unit Labor Cost Index	Inout-Cost Index: Education		Public Welfare	Health and Hospitals	Highways	Police and Corrections	Environment and Housing	Interest on General Debt	Governmental Administration	All Other Expenditures
		Primary and Secondary	Higher								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Alabama	90.6	92.9	93.6	98.8	94.2	97.3	92.4	96.9	100.0	93.9	97.6
Alaska	134.4	125.9	123.2	104.4	121.2	109.9	127.7	111.5	100.0	122.1	108.9
Arizona	96.8	97.6	97.8	99.6	98.0	99.1	97.4	98.9	100.0	97.9	99.2
Arkansas	85.6	89.1	90.2	98.2	91.1	95.9	88.4	95.2	100.0	90.7	96.3
California	105.5	104.2	103.7	100.7	103.4	101.6	104.5	101.8	100.0	103.6	101.4
Colorado	99.6	99.7	99.8	100.0	99.8	99.9	99.7	99.9	100.0	99.8	99.9
Connecticut	108.5	106.4	105.7	101.1	105.2	102.4	106.8	1028	100.0	105.5	102.2
Delaware	100.3	100.2	100.2	100.0	100.2	100.1	100.3	100.1	100.0	100.2	100.1
District of Columbia	95.6	96.7	97.0	99.4	97.3	98.7	96.5	98.5	100.0	97.2	98.9
Florida	90.6	92.9	93.6	98.8	94.2	97.3	924	96.9	100.0	93.9	97.6
Georgia	93.7	95.2	95.7	99.2	96.1	98.2	94.9	97.9	100.0	95.9	98.4
Hawaii	96.0	97.0	97.3	99.5	97.5	98.9	96.8	98.7	100.0	97.4	99.0
Idaho	85.3	88.9	90.1	98.1	91.0	95.8	88.2	95.1	100.0	90.5	96.2
Illinois	109.7	107.3	106.6	101.2	106.0	102.8	107.8	103.3	100.0	106.3	102.5
Indiana	100.1	100.1	100.1	100.0	100.1	100.0	100.1	100.0	100.0	100.1	100.0
Iowa	94.3	95.7	96.2	99.3	96.5	98.4	95.4	98.1	100.0	96.3	98.5
Kansas	94.2	95.7	96.1	99.3	96.5	98.3	95.4	98.1	100.0	96.3	98.5
Kentucky	97.2	97.9	98.1	99.6	98.3	99.2	97.7	99.1	100.0	98.2	99.3
Louisiana	1021	101.6	101.4	100.3	101.3	100.6	101.7	100.7	100.0	101.4	100.6
Maine	77.4	83.0	84.8	97.1	86.1	93.5	81.8	925	100.0	85.5	94.2
Maryland	105.7	104.3	103.8	100.7	103.5	101.6	104.6	101.9	100.0	103.6	101.5
Massachusetts	95.6	96.7	97.0	99.4	97.3	98.7	96.5	98.5	100.0	97.2	98.9
Michigan	111.9	109.0	108.1	101.5	107.3	103.4	109.6	104.0	100.0	107.7	103.1
Minnesota	102.0	101.5	101.4	100.3	101.2	100.6	101.6	100.7	100.0	101.3	100.5
Mississippi	83.7	87.7	89.0	97.9	90.0	95.3	86.9	94.6	100.0	89.5	95.8
Missouri	95.6	96.7	97.1	99.4	97.3	98.7	96.5	98.5	100.0	97.2	98.9
Montana	85.3	88.9	90.1	98.1	90.9	95.8	88.2	95.1	100.0	90.5	96.2
Nebraska	89.1	91.8	92.6	98.6	93.3	96.9	91.2	96.3	100.0	93.0	97.2
Nevada	97.6	98.2	98.4	99.7	98.5	99.3	98.1	99.2	100.0	98.5	99.4
New Hampshire	86.0	89.5	90.5	98.2	91.4	96.0	88.7	95.3	100.0	91.0	96.4
New Jersey	108.1	106.1	105.5	101.0	105.0	102.3	106.5	1027	100.0	105.2	102.1
New Mexico	88.4	91.3	92.2	98.5	92.9	96.7	90.7	96.1	100.0	92.6	97.0
New York	100.7	100.5	100.5	100.1	100.4	100.2	100.6	100.2	100.0	100.5	100.2
North Carolina	86.6	89.9	91.0	98.3	91.8	96.2	89.2	95.5	100.0	91.4	96.5
North Dakota	86.4	89.8	90.8	98.3	91.6	96.1	89.1	95.5	100.0	91.3	96.5
Ohio	103.9	102.9	102.6	100.5	102.4	101.1	103.1	101.3	100.0	102.5	101.0
Oklahoma	94.0	95.5	96.0	99.2	96.3	98.3	95.2	98.0	100.0	96.2	98.5
Oregon	97.9	98.4	98.6	99.7	98.7	99.4	98.3	99.3	100.0	98.7	99.5
Pennsylvania	99.6	99.7	99.7	100.0	99.8	99.9	99.7	99.9	100.0	99.8	99.9
Rhode Island	92.6	94.5	95.0	99.1	95.5	97.9	94.1	97.5	100.0	95.3	98.1
South Carolina	86.8	90.0	91.1	98.3	91.9	96.2	89.4	95.6	100.0	91.5	96.6
South Dakota	77.1	82.8	84.5	97.1	85.9	93.4	81.6	924	100.0	85.3	94.1
Tennessee	91.6	93.6	94.3	98.9	94.8	97.6	93.2	97.2	100.0	94.6	97.8
Texas	102.3	101.7	101.5	100.3	101.4	100.6	101.8	100.8	100.0	101.4	100.6
Utah	94.7	96.0	96.4	99.3	96.8	98.5	95.8	98.2	100.0	96.6	98.6
Vermont	79.0	84.2	85.8	97.3	87.1	94.0	83.1	93.0	100.0	86.5	94.6
Virginia	97.7	98.3	98.4	99.7	98.6	99.3	98.1	99.2	100.0	98.5	99.4
Washington	1029	102.2	102.0	100.4	101.8	100.8	1024	101.0	100.0	101.9	100.8
West Virginia	93.4	95.1	95.6	99.2	96.0	98.1	94.7	97.8	100.0	95.8	98.3
Wisconsin	98.4	98.8	98.9	99.8	99.0	99.5	98.7	99.5	100.0	99.0	99.6
Wyoming	95.8	96.8	97.2	99.5	97.4	98.8	96.6	98.6	100.0	97.3	98.9

Note: The value of a state's input cost index for a given function is the value of the state's unit-labor cost index multiplied by the U.S. average ratio of employment costs to total direct general expenditures for the function (r) plus the quantity (1 − r) multiplied by 100. The ratio r for each function appears in column 2 of Table C-5.

Sources: Tables C-3 and C-5.

Appendix D

Technical Discussion of the Representative Approaches to the Measurement of Fiscal Capacity and Comparison with Export-Adjusted Income and Regression Approaches

The fiscal system of a state is horizontally balanced when the fiscal capacity of each local government is adequate to enable it to provide some specified levels of the services for which it is responsible without excessive tax rates.[1] Another way of saying the same thing is that horizontal balance exists when disparities in the fiscal capacities of local governments do not exceed some reasonably acceptable levels. For purposes of this discussion, fiscal capacity is defined as the potential ability of a local government to raise revenue from its own sources relative to the costs of its service responsibilities (fiscal needs), with appropriate allowance for revenue the locality receives from other governments.

The levels of services that are the reference standard, or the criterion of fiscal need, are a matter of value judgment within a state. In one state, they may be minimally acceptable levels. In another, the specified levels may be the average for all localities in the state, or some fraction or multiple (say, 1.25) of the average.

The definition of "excessive" tax rates is also a matter that policymakers in a state must decide. As with service levels, the criteria for tax rates can be expressed in relative or absolute terms—for example, in relation to the average of rates for all localities in the state, or by reference to the tax rates prevailing in neighboring states.

The constitutions or statutes of two of the great federal nations of the world include definitions of standards that bear a strong resemblance to the concept of horizontal balance outlined here. The constitution of Canada provides that horizontal balance (as the condition is referred above) exists when

> . . . provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation.[2]

In the case of Australia, Section 13(3) of the States (Personal Income Tax Sharing) Amendment Act, 1978, defines horizontal balance as a situation in which each state in the Commonwealth would be able

> . . . to provide, without imposing taxes and charges at levels appreciably different from the levels of taxes and charges imposed by the other States, government services at standards not appreciably different from the standards of the government services provided by the other States.[3]

The finances of a particular local government can be said to be in balance when:

$$EN_i = ORRA_i + FA_i + SA_i \qquad (1)$$

where

- EN_i (expenditure need) is the total cost to the ith local government of providing a specified level of public services,
- $ORRA_i$ (own revenue-raising ability) is the total revenue local government i could raise from its own sources if it implemented a specified revenue system,
- FA_i is the total amount of federal aid actually received by the ith local government, and
- SA_i is the total amount of fiscal assistance actually received by the ith locality from its state government.

This concept of balance can be distinguished from the actual status of a local government's budget, which is balanced when

$$AE_i = AOR_i + FA_i + SA_i \qquad (2)$$

where

- AE_i is the total of the actual expenditures by local government i, and
- AOR_i is the total revenue the local government actually raises from its own sources.

[1] For convenience of exposition, the discussion in this appendix relates to the finances of local governments in a state. With a few exceptions, the points made apply with equal validity in analytical comparisons of state-local fiscal systems among the states.

[2] Subsection (2), Section 36 of Part III of the Constitution Act, 1982, quoted by Thomas J. Courchene, ***Equalization Payments: Past, Present and Future,*** Federal Provincial Relations Series, Special Research Report (Ottawa: Ontario Economic Council, 1984), p. 3.

[3] Commonwealth Grants Commission, *Report on State Tax Sharing Entitlements, 1981: Main Report* (Canberra: Australian Government Publishing Services, 1981), p. 18.

For all local governments in the state as a group,

$$\Sigma EN_i = \Sigma AE_i \quad (3)$$

and

$$\Sigma ORRA_i = \Sigma AE_i - \Sigma FA_i - \Sigma SA_i \quad (4)$$

To focus attention on the issue of horizontal balance, local governments collectively are assumed to be operating with balanced budgets, that is:

$$\Sigma AE_i = \Sigma AOR_i + \Sigma FA_i + \Sigma SA_i \quad (5)$$

It follows that, for all local governments as a group,

$$\Sigma EN_i = \Sigma ORRA_i + \Sigma FA_i + \Sigma SA_i \quad (6)$$

This appendix compares the representative approaches to the measurement of own revenue-raising ability and public service costs with the export-adjusted income approach to revenue-raising ability and with various methods that rely on regression analysis to arrive at estimates of relative expenditure needs.

The Representative Approaches

The "representative" approaches to expenditure need and own revenue-raising ability offer operational definitions of "specified" levels of need and own revenue.[4]

The representative expenditure approach yields estimates of what it would cost each local government to provide the statewide average (representative) level of each public service for which local authorities in the state are responsible. That is, the total expenditure need of the ith local government is defined as

$$EN_i = \bar{w}_a WL_{ai} + \bar{w}_b WL_{bi} + \ldots + \bar{w}_n WL_{ni} \quad (7)$$

where $\bar{w}_a$ is the statewide average (representative) cost per unit of workload of providing service a and WL_{ai} is the workload of local government i for service a.

In an analogous manner, the representative revenue approach defines the total own-revenue-raising ability of the ith local government as

$$ORRA_i = \bar{t}_a B_{ai} + \bar{t}_b B_{bi} + \ldots + \bar{t}_n B_{ni} \quad (8)$$

where $\bar{t}_a$ is the statewide average (representative) rate for tax (or other revenue source) a and B_{ai} is the base of tax a that is accessible to taxation by local government i.

The Export-Adjusted Income Approach to the Measurement of Own-Revenue-Raising Ability

The representative approach is not the only method available for estimating revenue-raising potential.[5] The chief alternative to the representative method, the export-adjusted income approach, defines the specified level of own revenue as the yield of a revenue system with two basic characteristics: (1) it imposes a standard burden on the residents of each local government, defined as a uniform percentage of their total income; and (2) it maximizes the taxes collected from nonresidents, that is, the tax yields that are "exported."

Under this approach, the own-revenue-raising ability of the ith local government can be written as

$$ORRA_i = K^* Y_i (1 + e_i) \quad (9)$$

where

- K^* is a standard tax burden on the income of the residents of each local government,
- Y_i is the total income of the residents of local government i, and
- e_i is amount of taxes collected by the ith local government from nonresidents per dollar of taxes paid by the government's residents.

Equation 9 can be shown to be equivalent to the representative definition of own-revenue-raising capacity in the simple case in which local governments have only one revenue source (a) at their disposal. In this case, the definition of representative revenue-raising capacity can be written as a special case of equation 8:

$$ORRA_i = \bar{t}_a B_{ai} \quad (10)$$

The base of tax a accessible to local government i, B_{ai}, can be segmented between the base attributable to residents (R) and the base attributable to nonresidents (E):

$$B_{ai} = B_{ai}^R + B_{ai}^E$$

Substituting for B_{ai} in equation 10,

$$ORRA_i = \bar{t}_a B_{ai}^R + \bar{t}_a B_{ai}^E \quad (11)$$

The total own-revenue-raising capacity of local government i is the sum of the yield of its tax at the representative rate, $\bar{t}_a$, that would be paid by residents and the yield that would be exported to nonresidents.

In the export-adjusted income approach, K^* is defined as the amount of tax paid by residents as a proportion of their total income, that is,

$$K^* = \frac{\bar{t}_a B_{ai}^R}{Y_i} \quad (12)$$

This expression can be rewritten as

$$\bar{t}_a B_{ai}^R = K^* Y_i \quad (13)$$

and as

$$\bar{t}_a = \frac{K^* Y_i}{B_{ai}^R} \quad (14)$$

Substituting for $\bar{t}_a B_{ai}^R$ in equation 11 from equation 13,

$$ORRA_i = K^* Yi_1 + \bar{t}_a B_{ai}^E \quad (15)$$

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[4] In addition to the present report, see Advisory Commission on Intergovernmental Relations, 1988 *State Fiscal Capacity and Effort* (Washington, DC, 1989).

[5] For a general discussion of the options for measurement of revenue-raising ability, see U.S. Department of the Treasury, Office of State and Local Finance, *Federal-State-Local Fiscal Relations: Report to the President and the Congress* (Washington, DC, 1985), Chapter VIII. The most useful recent discussion of an export-adjusted income approach appears in Helen F. Ladd and John Yinger, *America's Ailing Cities: Fiscal Health and the Design of Urban Policy* (Baltimore: Johns Hopkins University Press, 1989), pp. 45-77.

Substituting for $\bar{t}_a$ in equation 15 from equation 14 yields

$$ORRA_i = K^*Y_i + \left(\frac{K^*Y_i}{B^R_{ai}}\right)B^E_{ai} \quad (16)$$

Rewriting:

$$ORRA_i = K^*Y_i + K^*Y_i\left(\frac{B^E_{ai}}{B^R_{ai}}\right) \quad (17)$$

Factoring,

$$ORRA_i = K^*Y_i\left(1 + \frac{B^E_{ai}}{B^R_{ai}}\right) \quad (18)$$

In the export-adjusted income approach, $B^E_{ai}/B^R_{ai} = e_{ai}$. Therefore,

$$ORRA_i = K^*Y_i(1 + e_{ai}) \quad (19)$$

which is equivalent to equation 9.

When local governments are allowed to raise revenues from more than one source, however, the representative and the export-adjusted-income approaches are no longer equivalent. This can be seen by considering a system in which localities have access to two revenue sources, a and b. From equation 8, the representative approach defines the own revenue-raising potential of the ith local government as

$$ORRA_i = \bar{t}_a B_{ai} + \bar{t}_b B_{bi} \quad (20)$$

In the export-adjusted-income approach, the expression for the own revenue-raising potential of government i is considerably more complicated:

$$ORRA_i = t_{ai}B^R_{ai}\left(1 + \frac{B^E_{ai}}{B^R_{ai}}\right) + t_{bi}B^R_{bi}\left(1 + \frac{B^E_{bi}}{B^R_{bi}}\right) \quad (21)$$

Subject to the constraint that

$$t^R_{ai}B_{ai} + t^R_{bi}B_{bi} = K^*Y_i$$

that is, that the total taxes paid by residents of the locality equal the standard burden (K^*Y_i).

Unfortunately, the tax rates of the local government cannot be identified by observation—as in the representative approach, where the statewide average effective rate is used. Rather, the rate for each tax must be identified that maximizes the revenue collected from nonresidents, subject to the burden-on-residents constraint. The rates that satisfy this requirement are likely to differ from government to government because the export ratios for the taxes depend on the nature and mix of activity in a local economy. Export ratios will not be the same, for example, for a community with a regional shopping mall, a community with a major factory, and a bedroom suburb.

An important consideration in identifying the revenue-maximizing rates is that the sizes of the bases themselves can be expected to be influenced by the tax rates selected. This is, of course, a problem with the representative approach as well.

Theoretically, with enough reliable information, the identification of the revenue-maximizing rates and the yields they would generate would be a straightforward maximization exercise. In fact, the necessary estimates of the responsiveness of bases to tax rates are not available, so the approach cannot be implemented without major simplifying assumptions.[6] These assumptions may, in fact, make the export-adjusted-income approach essentially equivalent to the representative approach.

The method actually used by Ladd and Yinger focuses on the estimation of an overall export ratio for each city. Given that ratio, the own-revenue-raising ability of a government *can* be calculated directly from the total income of the jurisdiction's residents, using equation 9.

The overall export ratio for a city is calculated as the weighted average of separate estimates for three "standard" taxes: a real property tax, a general sales tax, and an earnings tax. The respective weights are 50 percent, 25 percent, and 25 percent.

The authors offer no explanation for their choice of these weights. As Table D-1 shows, the weights are substantially at variance with the actual reliance of local governments on the major sources of own revenue. The magnitude of the variance raises serious questions about the results. Of course, Ladd and Yinger do not purport to be using a "representative" approach, so the discrepancy between actual practice and their weights cannot be faulted on the ground that the weights are not representative. The alternative, however, is a normative perspective, and the authors do not indicate that this is their approach. Hence, why those weights?

Setting aside the issue of the rationale for the weights, the methods used to derive the individual export ratios deserve brief consideration.

Property Tax. From the literature, Ladd and Yinger postulate assumptions about the incidence among economic groups of a tax on each of eight classes of property.

- *Owner-occupied housing:* 100 percent on owners.

Table D-1
Sources of the Own General Revenues of Local Governments, Fiscal Year 1981-82

Revenue Source	Weights Used by Ladd and Yinger	All Local Governments	Cities Over 200,000
	(1)	(2)	(3)
Total Own General Revenue	100.0%	100.0%	100.0%
Property Tax	50.0	48.3	30.1
Individual Income Tax	25.0	3.1	14.0
General Sales Tax	25.0	6.3	11.7
All Other		42.3	44.2

Sources: U.S. Department of Commerce, Bureau of the Census, *Governmental Finances in 1981-82* (Washington, DC, 1983), Table 4, and *City Government Finances in 1981-82* (1983). Table 2; and Ladd and Yinger, *America's Ailing Cities*, p. 48.

[6] See Ladd and Yinger, *America's Ailing Cities*, pp. 70 and 71.

- ***Rental housing, single family:*** not identified.
- ***Rental housing, 2-4 Unit structures:*** not identified.
- ***Rental housing, 5 or more unit structures:*** 80 percent on renters, 20 percent on landowners.
- ***Commercial, real and personal:*** 42 percent to consumers, 38 percent to workers, and 20 percent to landowners.
- ***Industrial, real and personal:*** 14 percent to consumers, 75 percent to workers, and 11 percent to landowners.
- ***Vacant, acreage, and other:*** not identified.
- ***State-assessed:*** not identified.

Given these assumptions, the authors develop estimates separately for each city of the proportion of the individuals in each group that lives outside of the city. Owner-occupiers and renters obviously live in the city, for example. Consumers and workers are apportioned on the basis of such factors as the size of a city relative to its metropolitan area and the share of wages and salaries paid to commuters.

The incidence assumptions and location estimates are then combined to calculate the proportion exported of each city's actual property tax base in each of the eight classes. The ratio of the sum of the bases exported for all eight classes to the aggregate "resident" base is the city's export ratio for the standard property tax. Ladd and Yinger estimate that the average export ratio for 78 major cities in 1982 was 0.52. In other words, a standard property tax would collect 52 cents from nonresidents for every $1.00 paid by city residents.

Sales Tax. Ladd and Yinger assume that local sales taxes are shifted entirely to consumers in higher prices. Therefore, all that is necessary to calculate the export ratio is an estimate of the proportion of total retail sales in a city made to purchasers other than residents.

The proportion is derived by estimating total retail spending by residents as the sum of three, separately derived components. The components are goods bought in food and drug stores, food and drink consumed in restaurants, and all other taxable items. The estimates are calculated by multiplying the total money income of a city's residents by estimates of their average propensities to consume each of the three categories of goods and services. The propensities are ratios of total retail sales in each SMSA to total income in the SMSA, adjusted in undisclosed ways

> . . . (using coefficients estimated from a multivariate regression equation) for differences between city and SMSA income and purchases by tourists.'

The undisclosed adjustments are the key to the analysis because observed retail sales in the numerator of the propensity ratio presumably include purchases by nonresidents. This being the case, the undisclosed adjustments are the key to the estimating process. It seems a bit strange to suggest that the propensities are used to estimate the split between resident and nonresident retail sales, when the process of estimating the propensities themselves apparently embodies the method used to partition resident from nonresident purchases.

In view of this, Ladd's and Yinger's concern that the estimates of export ratios for the standard sales tax may be too low because the "approach ignores the possibility that city residents might shop outside the city" seems genuinely curious. If the approach in fact assumes that city residents shop only in the city, the export ratio would indeed be underestimated, seriously. Unfortunately, in the absence of information on the procedures actually used by the authors to estimate resident propensities to consume, it is impossible to evaluate the problem.

Ladd and Yinger estimate an average export ratio for the standard sales tax in their 78 cities in 1982 of 0.21, less than half that for the property tax.

Earnings Tax. The base of the standard earnings tax is all employee earnings in a city—by nonresidents as well as residents—and the full burden of the tax is assumed to be borne by the worker. As estimates of earnings in central cities by nonresidents are available from the decennial census, the ratio of these estimates to total earnings in a city is the desired export ratio for the earnings tax.

The average export ratio for the standard earnings tax in the 78 cities studied by Ladd and Yinger is 1.27—well over $1.00 would be collected from nonresidents for each $1.00 of this tax collected from residents.

Regression-Based Approaches to the Estimation of Public Service Costs

State and local government spending varies from state to state and among localities for a wide range of reasons extending from differences in voter preferences to differences in the incidence of poverty. A substantial technical literature has developed since World War II applying regression analysis in an attempt to identify the relative importance of the many "determinants" of the variation in state-local spending.

The early studies tended to be naive, correlation-hunting exercises motivated by little more than a desire to identify the variables that "explain" relative levels of state and local expenditures. By the 1970s, the focus had narrowed to an effort to estimate the "stimulative" effects of grants-in-aid on the spending of recipient governments. The usual method of analysis was a multiple regression with one of the independent variables the level of funding for the grant program whose impact was to be estimated. As for the quality of this work, it is interesting to note that, as recently as 1977, Gramlich was constrained to point up the

> . . . various conceptual and technical problems with the studies—lack of an underlying theory of the behavior of state and local governments, lack of any attempt to distinguish the different effects of different types of grants, lack of any attempt to deal with the possible simultaneous causation of grants and expenditures.*

[7] Ibid., p. 74.

[8] Edward M. Gramlich, "Intergovernmental Grants: A Review of the Empirical Literature," in Wallace E. Oates (ed.). *The Political Economy of Fiscal Federalism* (Lexington, Massachusetts: D.C. Heath Co., Lexington Books, 1977), p. 219.

Auten's Estimates of Local Expenditure Needs In New York

In an article published in 1974 but not included in Gramlich's review, however, Auten ushered in a generation of more sophisticated analysis that has responded to many of the problems pointed up by Gramlich. Drawing on consumer utility maximization theory, Auten postulates a model in which local public expenditures are a function of three classes of factors: (1) revenue-raising ability (including individual income, wealth, ability to export taxes, and intergovernmental payments); (2) cost factors (the concentration of poverty, population density, and other socio-demographic variables); and (3) community preferences for public services. The resulting expenditure function has this general form:

$$e = f(a, c, d) \qquad (22)$$

where:

- e is per capita local expenditures,
- **a** is a vector of variables relating to revenue-raising ability,
- ***c*** is a vector of socioeconomic (need) factors, and
- d is tastes and preferences for public services.

Auten estimates this expenditure function separately for nine major functional categories of local government spending using multiple regression.[10] The coefficients of the a variables indicate the average response of expenditures to differences in revenue-raising ability.[11] The a variables are the equivalent of an individual's income in the standard theory of consumer demand—that is, the quantity of a good or service demanded is hypothesized to increase, other things equal, as income rises.

The coefficients of the **c** variables show the way per capita spending by the sample governments responds, on average, to differences in socioeconomic and demographic conditions. The d variable is assumed to be subsumed in the standard error-term of the regression. That is, Auten's model assumes that differences in expenditures not directly associated with the a and cvariables are attributable to voter tastes and preferences. Hence the model does not include explicit variables reflecting public preferences.

The coefficient of each independent variable in a regression of this type is an estimate of the response of the dependent variable (local expenditures per capita) to a unit change in the independent variable if there were no change in any of the other variables. This means that estimates of the expenditure "needs" of each community can be calculated by using the regression equation to predict per capita expenditures with the actual values of the **c** variables and the mean values of the **a** variables. Use of the mean values of the a variables controls for differences in revenue-raising ability (as a factor influencing the quantity of public services demanded, not as a factor affecting need).

Auten retains in his regressions all ***c*** variables that are significantly different from zero at the 10 percent level. Unfortunately, he does not display the t-values, so a more rigorous criterion cannot be applied in the following listing of the c variables in each of his regressions:

- General government: population growth rate, proportion of the total market value of real property accounted for by seasonal and resort property.
- Public safety: population per square mile in the county in which the district is located, population per square mile in the district, proportion of the total market value of real property accounted for by commercial property, crime rate, old housing as proportion of the total, population growth rate.
- Highways: square miles of district area, area of the county in which the district is located, population per square mile in the district, population density of the district squared, proportions of the total market value of real property accounted for by (a) commercial and (b) seasonal and resort property.
- Sanitation: proportion of the total market value of real property accounted for by industrial and commercial property, population per square mile in the district, population density of the district squared, proportion of the total market value of real property accounted for by residential property.
- Health: AFDC children as percentage of total population, square miles of district area, proportion of the population of the county in which the district is located that lives in urban areas.
- Recreation: population per square mile in the county in which the district is located, population growth rate, proportion of the total market value of real property accounted for by seasonal and resort property.
- Welfare: proportion of the population of the county in which the district is located that lives in urban areas, low-income families as percentage of total, proportion of adult residents not having completed high school.
- Schools: number of low-achievement pupils as percentage of total, public school enrollment as proportion of total population.

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[9] Gerald E. Auten, "The Distribution of Revenue Sharing Funds and Local Public Expenditure Needs," Public *Finance Quarterly* 2 (July 1974): 352-75.

[10] The dependent variables in the regressions are the total outlays by all local governments providing services to a representative sample of 104 school district areas in New York State. The independent variables are fiscal/economic/demographic attributes of the geographic areas of the districts.

[11] Auten actually uses what might be characterized as a prepackaged vector of variables measuring revenue-raising ability, that is, he uses a measure developed for another study. The measure is a weighted average of median family income and the market values of five classes of real property—residential, commercial, industrial, seasonal, and other. The weights are derived from regression analysis in which the income and property values are the independent variables and the dependent variable is the total per capita revenues from own sources of all local governments serving each school district area.

- Other: population growth rate, population per square mile in the district, population density of the district squared.

The incompleteness of Auten's conceptual framework is exemplified by his failure even to mention differences in the unit prices of inputs as factors in the variation in spending needs among localities. Another problem is his treatment of tastes and preferences. As Fastrup observes:

> By modelling [these considerations] . . . as part of the error term, this approach biases the coefficients of the socio-demographic variables to the extent they are correlated with the excluded taste variables.[12]

Bradbury, Ladd, Perrault, Reschovsky, and Yinger on Local Government Needs in Massachusetts

These problems with Auten's approach are significantly clarified in a 1984 article by Bradbury and associates.[13] They begin by observing that the literature on the determinants of state and local expenditures assumes that voters are concerned about budgetary outlays. In fact, they remind us that—as Bradford, Malt, and Oates had pointed out a decade and a half earlier[14]—voters' primary concerns relate to levels of services, or "final" outputs: the safety of the streets, for example, and the quality of the air.

The levels of public services actually delivered depend, in part, on what public employees actually do—that is, on the number of police patrols and the number of smokestack emission inspections. These activities *can* be characterized as "intermediate" outputs.[15] The *cost* of these intermediate outputs depends, in turn, on the amounts spent for the inputs used, the sophistication of the available technology, and the efficiency with which the outputs are produced. The inputs include police officers and air-quality inspectors, communications systems, squad cars, and equipment for monitoring smokestack emissions. For a given standard of technology and operating efficiency, the relationship between amounts spent and the intermediate outputs depends on the prices paid per unit for the inputs.[16]

The final output resulting from a given number of police patrols or emissions inspections depends on the environment in which the intermediate outputs are produced—in which the public employees are working. In the cases of public safety and air quality, the important aspects of the environment include the proportion of a community's population in age groups with high propensities to commit crimes, the nature of the community's economy, and climatic conditions.

A given level of public safety requires more-frequent-than-average police patrols, for example, in a community with an unusually high proportion of 18-25 year-old residents. Achievement of a given standard of air quality requires more emissions inspections than average in a community with a lot of heavy industry, or that frequently experiences such climatological phenomena as temperature inversions.

These two types of variables—the prices of inputs, which can be designated as **P**, and environmental factors (C)—can be thought of as the major influences on the supply of public services. The next question is what variables determine demand.

The demand for a public service, like that for a private good, depends on the price of the service to the voter as well as his or her income and preferences. The tax price of a public service depends, unlike the situation in the market for a private good, on the overall revenue-raising ability of the community. The reason is that it is the total amount of revenue raised by a given tax rate (not just the amount of tax paid by the individual voter-purchaser) that determines how much of a service the community can purchase at that tax rate. If the service is a pure public good (safe streets and air quality, for example), the amount produced is by definition the amount available to be consumed by every resident of (or visitor to) the community.[17]

Overall revenue-raising ability can be characterized as the sum of potential revenue from own sources

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[12] Jerry C. Fastrup, "Estimating the Cost of Local Public Services," February 25, 1990, processed, p. 5.

[13] Katherine L. Bradbury, Helen E Ladd, Mark Perrault, Andrew Reschovsky, and John Yinger, "State Aid to Offset Fiscal Disparities Across Communities," *National Tax Journal* 37 (June 1984): 151-70.

[14] David E Bradford, R. A. Malt, and Wallace E. Oates, "The Rising Cost of Local Public Services: Some Evidence and Reflections," *National Tar Journal 22* (June 1969): 185-202.

"Bradford et al. refer to these as "direct produced" outputs (p. 186).

[16] The relevant prices in this context are the opportunity costs of the inputs, that is, their value in the best alternative employment (see Appendix C). The relevant prices are not necessarily those actually paid by local officials, for they may pay more than the minimum necessary to purchase inputs of given quality, perhaps as a result of collective bargaining agreements with public employee unions. For studies finding significant effects of unionization on the wages of local public employees, see Roger W. Schmenner, "The Determination of Municipal Employee Wages," *Review of Economics and Statistics 55* (February 1973): 83-90; Ronald G. Ehrenberg and Gerald S. Goldstein, "A Model of Public Sector Wage Determination," *Journal of Urban Economics* 2 (July 1975): 222-45; and Orley C. Ashenfelter, "The Effects of Unionization on Wages in the Public Sector: The Case of Firefighters," *Industrial and* Labor *Relations Review 24* (January 1971): 191-202; all discussed by Robert P. Inman, "The Fiscal Performance of Local Governments: An Interpretative Review," in Peter Mieszkowski and Mahlon Straszheim (eds.), *Current Issues in Urban Economics* (Baltimore: Johns Hopkins University Press, 1979), pp. 302-4.

[17] If the service is not a pure public good, an additional resident or visitor reduces the quantity (or quality) of the final service available to each consumer. Streets and roads, for example, are not pure public goods because as the number of persons using them increases they become congested, travel times increase, and the quality of the final service they provide diminishes. The analyses of public services discussed in this appendix essentially assume that all the services under consideration are pure public goods. Some efforts have been made to deal explicitly with the congestion problem; see Fastrup, "Estimating the Cost of Local Public Services," pp. 8-14.

(V) and actual state and federal aid (A). The income and preferences of the voter can be designated as D, for demand.

Taken together, the five categories of variables identified in the preceding paragraphs constitute the simple model estimated for Massachusetts cities and towns by Bradbury and her associates:

$$e = f(V, A, P, C, D) \quad (23)$$

The dependent variable (e) is total operating expenditures per capita, including spending for schools.[18]

The model is estimated as a simple linear relationship between e and each of 19 independent variables.[19] (Because of the unavailability of the necessary data, no variable representing P is included.) For purposes of discussion, the nine environmental-cost variables are especially interesting:

- Population density: resident population divided by square miles of area;
- Full-time-equivalent pupils (weighted by values specified in the major state aid program) per capita;
- Number of crimes reported per 1,000 inhabitants;
- Fraction of year-round housing units built before 1940;
- Number of state and federal government employees per capita by place of work;
- Number of employees in trade and services per capita;
- Number of employees in manufacturing per capita;
- Percentage of resident population with income below the poverty line; and
- Local road mileage per registered vehicle.

Of the nine variables, only the first five turn out to be significantly different from zero at the 5 percent level or better.

Ladd and Yinger on Measurement of the Fiscal Health of the Nation's Cities

At the time the article by Bradbury and associates was published, three of the authors—Bradbury, Ladd, and Yinger—were engaged in a project funded by a grant from the U.S. Department of Housing and Urban Development that involved considerable refinement of the analytical methods used in the Massachusetts analysis. Ladd and Yinger continued this work and eventually published the results in an important volume discussed earlier.[20] The Ladd-Yinger study develops estimates of "standardized expenditure need" for a sample of 86 central cities located throughout the nation. These estimates are then used in conjunction with estimates of revenue-raising ability, discussed earlier in this appendix, to arrive at a measure of the "standardized fiscal health" of each of the cities. The estimates are also used, dong with data on actual flows of intergovernmental aid, to calculate a measure of the "actual" fiscal health of each city.

In Ladd's and Yinger's analysis,

> A city's standardized fiscal health is the difference between its [own] revenue-raising capacity and its standardized expenditure need, expressed as a percentage of its capacity.[21]

For purposes of the calculation, standardized need is set "so that, on average, cities exactly use up their revenue-raising capacity."[22] The gaps between own revenue-raising ability and need calculated by Ladd and Yinger are very similar to those displayed in Table 9 of the present report—that is, the estimates of gaps between representative expenditures and revenue-raising ability abstracting from federal grants-in-aid. Expressed as a percentage of revenue-raising ability (with no account taken of federal grants), the gap indicator of fiscal capacity presented in Chapter 4 would be roughly equivalent to Ladd's and Yinger's measure of standardized fiscal health.

The authors' measure of actual fiscal health extends the analysis to allow for (1) actual amounts of intergovernmental aid received, (2) differences in city service responsibilities and revenue-raising authority, and (3) differences in the tax burdens imposed by overlying local governments and the states. The estimates are scaled and calibrated in complex ways that need no discussion here: their effect is to ensure that the difference between total receipts and expenditure need is zero for the average city.

For purposes of comparisons among the states—the object of the present report—differences in service re-

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[18] Note that the dependent variable is outlays per capita, not some composite measure of service levels. The authors concede that their approach

> ...is a practical compromise not an ideal solution. In particular, it provides better estimates of the impact of environmental cost factors on spending than on local public services. (Bradbury et al., *State Aid...*, p. 155)

The approach can hardly be faulted for this compromise. Respectable measures of final outputs are available for very few government services. There is, therefore, no practicable alternative to the authors' assumption that expenditures are a reasonable proxy for service levels.

[19] In addition to 9 C (environmental) variables, the model includes 2 variables designed to measure V (own-revenue-raising ability): total equalized property tax valuation per capita and total actual collections of nonproperty tax revenues per capita. (*Actual* collections are a questionable measure of revenue raising potential.) Both these variables are significantly different from zero at the 1 percent level. The model includes two variables each for federal and state aid. The coefficients for both state aid variables and for federal Revenue Sharing are significant at the 1 percent level; that for all other federal aid is not significant at the 5 percent level.

The model includes two variables intended to reflect voted resources and *preferences*: the proportion of the resident population age 65 and older and resident personal income per capita The income variable is significant at the 1 percent level; the elderly variable has the expected sign (negative) but is not statistically significant. The last two variables in the model are included to reflect the influence of the rate of *change* in resident population; neither variable is significant at the 5 percent level.

[20] *America's Airing Cities.*

[21] Ibid., p. 103.

[22] Ibid., p. 104.

responsibilities and revenue-raising authority are immaterial, as discussed in Chapter 2. Moreover, the taxes imposed by the only government that overlies the states are necessarily uniform throughout the nation. Hence Ladd's and Yinger's measure of actual fiscal health is quite similar to the concept of fiscal capacity used in the present report, and the calculation parallels that reported in Table 14.

Reversing the sign of the gap as it is calculated in Chapter 4 and expressing the result as a percentage of revenue-raising capacity (measured by the RTS) produces an index of the actual health of state-local fiscal systems that ranges from -57 for Mississippi to +44 for the District of Columbia. The range of values for the index of actual fiscal health estimated by Ladd and Yinger for 1982 is from -80 for Los Angeles to +56 for Hollywood, Florida.[23] The significantly wider range of the estimates for cities than for the states is consistent with expectations, given the more diversified nature of the economies and homogeneity of the socioeconomic characteristics of the states as compared with central cities.

The results of the present report are restated as indices of fiscal health in Table D-2 on page 114. The comparisons of the indices without and with federal grants in columns 7-9 provide some interesting insights into the distributive impacts of the federal grant system. The health indices of the dozen least healthy state-local fiscal systems is improved by federal grants, but there is very little apparent pattern in the effect of federal grants on the fiscal health of the other states.

The estimates of standardized expenditure need are derived by Ladd and Yinger by estimating by multiple regression a model of the determinants of per capita city expenditures using data for 1967, 1972, 1977, and 1982 for the 86 cities.[24] The analysis produces cost indices for three categories of services: fire, police, and general (all other). Each index measures a city's relative cost of providing the indicated category of service given its input prices and environmental factors, and controlling for differences in service responsibilities, institutional characteristics, and variables of the types V, A, and D, discussed above.[25]

The value of a city's cost index for each of the categories, weighted by national-average per capita spending for the category in 1972 (net of average user fees collected for the services in the category), is the estimate of the city's standardized expenditure need, that is

> . . . the amount it must spend to obtain a *standardized* service quality for a standardized package of service responsibilities.[26]

A city's cost index is derived from a cost function of this general form:

$$C_j = (I_j)^c \cdot (X_{1j})^{a_1} \cdot (X_{2j})^{a_2} \ldots (X_{Nj})^{a_N} \qquad (24)$$

where:

- C_j is the cost per unit of service quality in city j,
- I_j is an input cost index for city j,
- X_j is the value of the ith environmental cost factor in city j, and
- c and the a_i's are estimated parameters.

The input cost measure for general and police services is the average wage in manufacturing in the state in which city j is located. For fire services, I_j is a consumer price index excluding taxes and housing. The coefficients of the input-cost variable in the general and police regressions are not significantly different from zero, but the coefficient of the price-index variable in the fire regression is significant at the 1 percent level.

The statistically significant environmental variables and the values of their coefficients are different for the three categories of services, as the following summary indicates.

General Services[27]

- Resident population;
- Population density;
- Percentage of housing units over 20 years old:
- City's population as percentage of its SMSA's; and
- Private employment in the city as percentage of its resident population.

Police[28]

- Resident population;

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[23] Ibid., pp. 210-11.

[24] Again, as in the analysis by Bradbury et al., the dependent variable is per capita spending rather than a measure of final output or service levels. As the authors observe:

> The final outputs of city services, such as learning and protection from crime and fire, are difficult if not impossible to measure. Therefore we cannot directly measure the impact of environmental factors on the level of final outputs. Nevertheless, we can indirectly measure these impacts by analyzing city expenditure. (Ibid., p. 82.)

[25] The authors refer to this aspect of the analysis as "carefully controlling for service responsibilities and service quality" (ibid.). Service responsibilities are handled explicitly in the analysis. It is difficult to see, however, how the other variables in the model *can* be characterized as controlling for "service quality."

[26] Ibid., p. 79.

[27] The environmental cost variables not significantly different from zero in the regression for general services are: poverty population; government employment as a proportion of private employment; and the ratios to the assessed value of owner-occupied housing of the assessed values of the following classes of property: rental housing, property used in retail and wholesale trade, property used in the production of services, industrial property, and vacant land and state-assessed property.

[28] The environmental cost variables not significantly different from zero in the regression for police services are: population density, percentage of housing units over 20 years old, percentage of housing units in single-unit buildings, the unemployment rate, government employment as a proportion of private employment; and the ratios to the assessed value of owner-occupied housing of the assessed values of the following classes of property: rental housing, property used in retail and wholesale trade, property used in the production of services, industrial property, and vacant land and state-assessed property.

- Percentage of population below the poverty line;
- City's population as percentage of its SMSA's; and
- Private employment in the city as percentage of its resident population.

Fire[29]

- Percentage of housing units over 20 years old;
- Private employment in the city as percentage of its resident population;
- Assessed value of property used in production of services as proportion of assessed value of owner-occupied housing; and
- Assessed value of industrial property as proportion of assessed value of owner-occupied housing.

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[29] The environmental cost variables **not** significantly different from zero in the regression for fire **services** are: the log of resident population, population density, percentage of housing units in single-unit buildings, the poverty population, the city's population **as** percentage of its SMSA's, government employment **as** a proportion of private employment; and the ratios to the assessed value of owner-occupied housing of the assessed values of the following classes of property: rental housing, property used in retail and wholesale trade, and vacant land and state-assessed property.

Table D-2

Calculation of Ladd-Yinger-Equivalent Overall Indices of Standardized and Actual Fiscal Health, 1987

(dollar amounts in millions)

State	Standardized Fiscal Health Abstracting from Federal Grants			Actual Fiscal Health Considering Federal Grants			Ranked by Index of Fiscal Health				
							Standardized		Actual		
	RTS RRA	RTSGap	Health	RTSRRA	RTSGap	Health	state	Health	State	Health	Change
	(1)	(2)	(3)	(4)	(5)	(6)		(7)		(8)	(9)
United States	$653,608	$0	-	$653,608	$0	-	United States	-	United States	-	-
Alabama	8,253	3,673	(44.5)	8,544	3,383	(39.6)	Connecticut	34.1	District of Columbia	44.1	28.3
Alaska	2,376	(666)	28.0	2,518	(808)	32.1	Nevada	31.8	Alaska	32.1	4.1
Arizona	9,048	277	(3.1)	8,632	693	(8.0)	Massachusetts	31.2	Wyoming	30.7	5.5
Arkansas	4,730	2,066	(43.7)	4,915	1,881	(38.3)	New Hampshire	30.5	Massachusetts	29.8	(1.4)
California	86,966	(11,725)	13.5	86,056	(10,814)	12.6	Alaska	28.0	Connecticut	29.8	(4.3)
Colorado	9,825	(1,143)	11.6	9,526	(844)	8.9	Wyoming	25.2	Nevada	26.5	(5.3)
Connecticut	11,998	(4,092)	34.1	11,260	(3,354)	29.8	New Jersey	23.9	New Hampshire	25.7	(4.8)
Delaware	2,135	(472)	22.1	2,077	(414)	20.0	Delaware	22.1	New Jersey	20.7	(3.2)
District of Columbia	2,040	(322)	15.8	3,074	(1,356)	44.1	Hawaii	20.8	Delaware	20.0	(2.2)
Florida	33,760	(3,877)	11.5	31,489	(1,606)	5.1	District of Columbia	15.8	Hawaii	19.6	(1.2)
Georgia	15,732	2,407	(15.3)	15,720	2,418	(15.4)	California	13.5	Vermont	18.4	5.2
Hawaii	3,291	(684)	20.8	3,241	(634)	19.6	Vermont	13.2	New York	17.2	5.4
Idaho	2,061	621	(30.1)	2,121	561	(26.4)	New York	11.8	Rhode Island	14.0	3.6
Illinois	30,266	1,589	(5.3)	30,088	1,767	(5.9)	Colorado	11.6	California	12.6	(.9)
Indiana	12,937	1,811	(14.0)	12,871	1,877	(14.6)	Florida	11.5	Maine	12.1	4.0
Iowa	6,356	938	(14.8)	6,465	829	(12.8)	Maryland	10.8	Maryland	10.0	(.8)
Kansas	6,208	332	(5.4)	6,016	525	(8.7)	Rhode Island	10.5	Colorado	8.9	(2.8)
Kentucky	7,904	2,937	(37.2)	8,101	2,740	(33.8)	Maine	8.1	Minnesota	7.1	1.5
Louisiana	10,320	2,904	(28.1)	11,239	1,985	(17.7)	Minnesota	5.6	Florida	5.1	(6.4)
Maine	3,089	(251)	8.1	3,229	(391)	12.1	Virginia	4.1	Pennsylvania	3.4	1.5
Maryland	13,248	(1,431)	10.8	13,127	(1,310)	10.0	Pennsylvania	2.0	Washington	2.6	2.7
Massachusetts	19,944	(6,218)	31.2	19,553	(5,827)	29.8	Washington	(.1)	Virginia	.4	(3.7)
Michigan	23,536	3,228	(13.7)	24,116	2,648	(11.0)	Arizona	(3.1)	Oregon	(1.5)	4.4
Minnesota	11,842	(668)	5.6	12,033	(859)	7.1	Illinois	(5.3)	Wisconsin	(3.3)	3.8
Mississippi	4,581	3,406	(74.3)	5,089	2,898	(57.0)	Kansas	(5.4)	Montana	(4.8)	13.0
Missouri	12,474	1,259	(10.1)	12,134	1,600	(13.2)	Oregon	(5.9)	Illinois	(5.9)	(.6)
Montana	1,880	335	(17.8)	2,114	101	(4.8)	Nebraska	(6.2)	Nebraska	(6.4)	(.1)
Nebraska	3,876	242	(6.2)	3,871	247	(6.4)	Wisconsin	(7.2)	North Dakota	(7.9)	9.2
Nevada	3,803	(1,209)	31.8	3,530	(937)	26.5	Ohio	(9.8)	Arizona	(8.0)	(5.0)
New Hampshire	3,490	(1,065)	30.5	3,264	(840)	25.7	Missouri	(10.1)	Kansas	(8.7)	(3.4)
New Jersey	25,202	(6,029)	23.9	24,191	(5,019)	20.7	North Carolina	(10.1)	Ohio	(10.2)	(.4)
New Mexico	3,488	967	(27.7)	3,571	884	(24.8)	Texas	(10.6)	Michigan	(11.0)	2.7
New York	51,712	(6,092)	11.8	55,085	(9,466)	17.2	Oklahoma	(11.4)	North Carolina	(12.5)	(2.4)
North Carolina	15,414	1,562	(10.1)	15,085	1,892	(12.5)	Michigan	(13.7)	Iowa	(12.8)	1.9
North Dakota	1,622	276	(17.0)	1,759	138	(7.9)	Indiana	(14.0)	Missouri	(13.2)	(3.1)
Ohio	26,346	2,575	(9.8)	26.251	2,669	(10.2)	Iowa	(14.8)	Oklahoma	(13.7)	(2.3)
Oklahoma	8,187	936	(11.4)	8,023	1,100	(13.7)	Georgia	(15.3)	Indiana	(14.6)	(.6)
Oregon	6,760	401	(5.9)	7,053	108	(1.5)	North Dakota	(17.0)	Georgia	(15.4)	(.1)
Pennsylvania	29,575	(586)	2.0	30,020	(1,031)	3.4	Montana	(17.8)	Texas	(16.5)	(5.9)
Rhode Island	2,536	(265)	10.5	2,641	(370)	14.0	Tennessee	(23.5)	Louisiana	(17.7)	10.5

Table D-2 (cont.)

Calculation of Ladd-Yinger-Equivalent Overall Indices of Standardized and Actual Fiscal Health, 1987

(dollar amounts in millions)

State	Standardized Fiscal Health Abstractine from Fedrral Grants			Actual Fiscal Health Considering Federal Grants			Ranked by Index of Fiscal Health				
							Standardized		Actual		
	RTSRRA	RTSGap	Health	RTS RRA	RTS Gap	Health	State	Health	State	Health	Change
	(1)	(2)	(3)	(4)	(5)	(6)		(7)		(8)	(9)
South Carolina	7,249	2,253	(31.1)	7,326	2,176	(29.7)	New Mexico	(27.7)	Tennessee	(21.2)	2.3
South Dakota	1,490	502	(33.7)	1,633	359	(22.0)	Louisiana	(28.1)	South Dakota	(22.0)	11.7
Tennessee	10,928	2,567	(23.5)	11,137	2,359	(21.2)	Idaho	(30.1)	Utah	(23.6)	9.3
Texas	44,687	4,749	(10.6)	42,425	7,011	(16.5)	South Carolina	(31.1)	West Virginia	(23.8)	9.3
Utah	3,563	1,171	(32.9)	3,830	903	(23.6)	Utah	(32.9)	New Mexico	(24.8)	3.0
Vermont	1,512	(200)	13.2	1,608	(296)	18.4	West Virginia	(33.2)	Idaho	(26.4)	3.7
Virginia	16,291	(664)	4.1	15,689	(61)	.4	South Dakota	(33.7)	South Carolina	(29.7)	1.4
Washington	12,006	9	(.1)	12,338	(323)	2.6	Kentucky	(37.2)	Kentucky	(33.8)	3.3
West Virginia	3,930	1,304	(33.2)	4,226	1,008	(23.8)	Arkansas	(43.7)	Arkansas	(38.3)	5.4
Wisconsin	11,346	815	(7.2)	11,767	393	(3.3)	Alabama	(44.5)	Alabama	(39.6)	4.9
Wyoming	1,797	(453)	25.2	1,940	(596)	30.7	Mississippi	(74.3)	Mississippi	(57.0)	17.4

Note: The index of fiscal health is the RTS gap, with the sign reversed, divided by RTS revenue-raising ability (RRA), multiplied by 100.

Sources: 1 & 2—Thble 12.
4 & 5—Thble 14.

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