

July 2003

MEDICAID FORMULA

Differences in Funding Ability among States Often Are Widened



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Highlights of [GAO-03-620](#), a report to the Honorable Dianne Feinstein, United States Senate

Why GAO Did This Study

A primary goal in establishing Medicaid's statutory formula, whereby states with lower per capita incomes (PCI) receive higher rates of federal reimbursement for program costs, was to narrow differences among states in their ability to fund Medicaid services. States' ability to fund services depends on their financial resources in relation to their number of and costs to serve people in poverty. GAO and others have testified before Congress that the current formula does not address wide differences among states in their ability to fund their Medicaid programs and that the formula's reliance on PCI is the primary cause. GAO was asked to determine the extent to which the formula narrows these differences and to identify factors that impede further narrowing of differences.

To evaluate the extent to which the formula narrows differences in states' funding ability, GAO used an alternative to PCI that more directly measures states' resources, number of people in poverty, and cost of providing services to this population. Using this measure, GAO determined the effect of the current formula by comparing states' funding ability before and after receiving their federal matching aid. If differences in funding ability were eliminated, the formula would have reduced differences by 100 percent.

www.gao.gov/cgi-bin/getrpt?GAO-03-620.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Kathryn G. Allen at (202) 512-7118.

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Differences in Funding Ability among States Often Are Widened

What GAO Found

The Medicaid formula narrows the average difference in states' funding ability by 20 percent but often widens the gap between individual states and the national average. Although the receipt of federal matching aid moves 30 states closer to the national average, making the average difference in funding ability smaller, it also moves 21 states farther away from the average, widening the average difference. These 21 states include 3 that are among the states with the largest populations in poverty—California, Florida, and New York. After federal matching aid is added, states' funding ability ranges from 26 percent below the national average for two states to 179 percent above for another. Because of the formula's current structure, in many instances, two states devoting similar proportions of their own resources to Medicaid can spend very different amounts per person in poverty. For example, in fiscal year 2000, California and Wisconsin each devoted about \$8 for every \$1,000 of their own state resources toward Medicaid. However, under the current formula, Wisconsin receives a relatively high federal matching rate despite its relatively high ability to fund program services, whereas California receives a low federal matching rate despite its relatively low ability to fund program services. With the addition of federal matching aid, Wisconsin is enabled to spend more than twice what California is able to spend per person in poverty (\$7,532 versus \$3,731).

Two factors constrain the formula from further decreasing differences in states' funding ability. First, PCI is not a comprehensive indicator of a state's total available resources and is a poor measure of the size of and cost to serve a state's people in poverty. Second, the statutory provision that guarantees no state will receive less than a 50 percent matching rate benefits many states that already have above-average resources to fund health care for their populations in poverty. For example, 2 of the 11 states that benefit the most from the 50 percent "floor" receive matching rates that are 35 and 20 percentage points higher, respectively, than the rates they would receive based solely on their PCI.

GAO received comments on a draft of this report from two external reviewers who have Medicaid formula expertise. They generally agreed with the analysis and provided technical comments, which were incorporated as appropriate.

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Abbreviations

BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
CMS	Centers for Medicare & Medicaid Services
CPS	Current Population Survey
DSH	disproportionate share hospital
EPSDT	Early and Periodic Screening, Diagnostic, and Treatment
FMAP	Federal Medical Assistance Percentage
FPL	federal poverty level
GSP	Gross State Product
HUD	Department of Housing and Urban Development
PCI	per capita income
PPS	Prospective Payment System
SIC	Standard Industrial Classification
SPI	state personal income
SSA	Social Security Administration
TTR	Total Taxable Resources

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United States General Accounting Office
Washington, DC 20548

July 10, 2003

The Honorable Dianne Feinstein
United States Senate

Dear Senator Feinstein:

Created in 1965, Medicaid is the largest federal program assisting states in financing medical and health-related services for certain categories of the country's low-income population. In fiscal year 2000,¹ Medicaid served about 43 million beneficiaries and had expenditures totaling about \$196 billion, \$111 billion of which was financed by the federal government and the rest financed by the states.² The federal share of total Medicaid program costs is determined using a statutory formula that calculates the portion of each state's Medicaid expenditures that the federal government will pay, known as the Federal Medical Assistance Percentage (FMAP), referred to in this report as the federal matching rate.³ The formula calculates the federal matching rate for each state on the basis of its per capita income (PCI) in relation to national PCI. States with a low PCI receive a higher federal matching rate, and states with a high PCI receive a lower rate. The Medicaid statute also provides for a 50 percent minimum federal matching rate ("50 percent floor") that reflects a federal commitment to fund at least half the cost of each state's program.⁴

One of the goals of the formula has been to narrow differences among states in their ability to fund Medicaid services, which is determined by a state's financial resources in relation to its low-income population. By providing higher matching rates to states with low PCI, it was expected that these states would be in a better position to provide health care

¹Fiscal year 2000 is the latest year for which Medicaid data on spending and the number of beneficiaries served were available.

²Medicaid programs operate in the 50 states, the District of Columbia, and five U.S. territories. In this report, "states" refers to the 50 states and the District of Columbia.

³Three other programs—the State Children's Health Insurance Program, Adoption Assistance, and Foster Care—also use the Medicaid matching formula to establish federal matching rates. These three programs accounted for an additional \$7.49 billion in federal funding in fiscal year 2000.

⁴42 U.S.C. § 1396d(b)(1) (2000).

services to low-income populations. (App. I contains a legislative history of the formula.)

In 1995, we and other witnesses testified before the Senate Committee on Finance that the current Medicaid formula did not adequately address wide differences among states in their ability to fund program services and that the formula's reliance on PCI is the primary cause. Witnesses generally testified that PCI is an unreliable indicator of states' ability to fund Medicaid programs.⁵

Because the formula has not been changed since the program's inception and concerns persist regarding its performance with respect to narrowing differences in states' ability to fund program services, you asked us to address the following questions: (1) To what extent does the Medicaid formula reduce differences in states' ability to fund program services? (2) What factors prevent the formula from further narrowing differences in states' funding ability?

To evaluate the extent to which the formula narrows differences in states' ability to fund program services, we defined a state's ability to fund its Medicaid programs as the financial resources potentially subject to state taxation relative to its number of low-income residents, adjusted for the cost of providing health care to them.⁶ For state resources, we used Total Taxable Resources (TTR), a measure of all income potentially subject to taxation that is either produced within a state or received by state residents from out-of-state sources. TTR is reported annually by the

⁵U.S. General Accounting Office, *Medicaid: Matching Formula's Performance and Potential Modifications*, GAO/T-HEHS-95-226 (Washington, D.C.: July 27, 1995); Jerry Cromwell, testimony before the Senate Committee on Finance, *Improvements in the Federal Medicaid Matching Formula*; and Robert P. Strauss, testimony before the Senate Committee on Finance, *Revising the Medicaid Reimbursement Formula in an Era of Fiscal Austerity*, 104th Congress, 1st sess., July 27, 1995.

⁶We measured states' funding ability on the basis of *potentially* taxable resources and *potentially* eligible participants in Medicaid so that our measure of funding ability, before federal matching aid is taken into account, does not reflect the influence of states' individual policy choices. The matching formula also affects states' decisions about the amount and type of Medicaid services they provide and therefore affects the availability of health care to low-income individuals as well. However, we did not evaluate the formula's performance in terms of equalizing access to care because of the high degree of uncertainty in predicting how individual states' spending decisions are affected by changes in matching rates.

Department of the Treasury.⁷ To determine the number of low-income people in each state (“people in poverty”), we obtained the Bureau of the Census’s counts of people with incomes at or below the federal poverty level (FPL).⁸ We adjusted the counts of people in poverty to reflect (1) the higher cost of serving the elderly, who utilize health care services at higher rates than other age groups, and (2) geographic differences in the cost of medical personnel, facilities, and supplies used to deliver health care services. To adjust for age differences in people in poverty, we used data on Medicaid spending by age group from the Department of Health and Human Services’ (HHS) Centers for Medicare & Medicaid Services (CMS).⁹ We used 5-year averages of people in poverty for each age group for 1995 through 1999 to increase the reliability of the state-level population counts because they are subject to statistical error, especially in smaller states. To measure geographic differences in the cost of medical personnel, facilities, and supplies, we used data from the Department of Labor’s Bureau of Labor Statistics (BLS) and from the Department of Housing and Urban Development (HUD).

We compared states’ funding ability from their own resources with their funding ability after their resources have been augmented to include the value of the federal Medicaid matching aid they receive. Throughout this report, we refer to augmenting a state’s taxable resources this way as state funding ability with the “value” of federal matching aid included. If differences in funding ability were completely eliminated by adding the value of federal matching aid, the formula would have reduced differences in states’ funding ability by 100 percent. We did our work between June 2001 and June 2003 in accordance with generally accepted government auditing standards. (App. II provides a more detailed discussion of our methodology.)

⁷We used 3-year averages of TTR (for 1996 through 1998) to parallel the use of 3-year averages of PCI in the current formula (see app. I for a more detailed description of the current formula).

⁸The federal government bases Medicaid eligibility on a variety of categorical and income-related factors, and states may expand their programs beyond the minimum requirements. As a result of the flexibility given states in administering their Medicaid programs, except for children and pregnant women, there is no federal minimum income level below which individuals must be covered under Medicaid that can be used as a basis for measuring potentially eligible low-income individuals.

⁹We used CMS data on average per capita Medicaid spending for elderly (aged 65 and over) and other beneficiaries to determine how much to weight the numbers of people in poverty who are elderly to reflect the higher cost to provide them services.

Results in Brief

The current Medicaid formula narrows the average differences in states' funding ability by 20 percent, but it often widens the gap between individual states and the national average. Although the formula moves 30 states closer to the national average funding ability after they receive their federal matching aid, making the average differences in funding ability smaller, it moves 21 states farther away, including 3 states that have 30 percent of the nation's population in poverty—California, Florida, and New York. After the value of federal matching aid is added, states' funding ability ranges from 26 percent below the national average for two states to 179 percent above the national average for another. Because of the formula's current structure, in many instances two states devoting roughly the same proportion of their resources to Medicaid are able to spend very different amounts per person in poverty. For example, in fiscal year 2000, Wisconsin and California devoted the same proportion of their states' own resources to fund their Medicaid programs (about \$8 per \$1,000 of TTR). Yet, after receiving federal matching aid, Wisconsin's funding ability was almost 50 percent above the national average and California's was 26 percent below the national average. Because the current Medicaid matching formula does not reflect the fact that Wisconsin has fewer people in poverty and lower costs to provide health care services to its population in poverty than California, Wisconsin's federal matching aid enables it to spend more than twice what California could spend per person in poverty—\$7,532 compared with \$3,731.

Two factors prevent the Medicaid formula from further narrowing differences in states' funding abilities. First, the formula uses PCI to calculate the federal matching rate, but it is a poor proxy measure for the components of funding ability—states' resources and the size of and costs to serve their populations potentially eligible for Medicaid services. Second, the 50 percent minimum federal matching rate disproportionately benefits states that already have above-average resources to fund health care for their populations in poverty. The 50 percent "floor" thus prevents further narrowing of funding abilities by giving some states federal matching rates significantly higher than they would otherwise receive without the floor.

We received comments on a draft of this report from two external reviewers with Medicaid formula expertise. They generally agreed with our analysis and provided technical comments, which we incorporated as appropriate.

Background

Medicaid eligibility is determined by several factors, including an individual's or a family's income in relation to the FPL, age, and eligibility for certain other federal program benefits. For example, federal law requires state programs to cover pregnant women and children under age 6 if their family income is at or below 133 percent of the FPL, children under age 19 in families with incomes at or below the FPL, and individuals who receive Supplemental Security Income because they have disabling conditions.¹⁰ For most covered populations, state Medicaid programs are required to offer certain benefits, such as physician services, inpatient and outpatient hospital services, and nursing facility and home health services. State Medicaid programs must provide Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) services for most children,¹¹ intended as comprehensive, periodic evaluations of children's health and developmental history, that include vision, hearing, and dental screening.

States' Medicaid programs can differ dramatically because states may expand their programs beyond the minimum requirements to cover, for example, individuals whose incomes exceed federally mandated eligibility thresholds and optional services, such as prosthetic devices and prescription drugs. For example, a state may extend Medicaid eligibility to certain population groups, such as pregnant women who have family incomes above 133 percent of the FPL, or make optional services such as prescription drugs available to its entire covered population.

Since the Medicaid program began, total program costs have been apportioned between states and the federal government using a formula that provides more generous federal matching aid to states with lower PCI.¹² The use of PCI in federal grant formulas dates to 1946, when it was

¹⁰In the majority of states, individuals who receive SSI are automatically eligible for Medicaid. Eleven states have more restrictive Medicaid eligibility standards through section 1902(f) of the Social Security Act. These 11 states are often referred to as "209(b) states" because the origin of this authority was section 209(b) of the Social Security Amendments of 1972. Pub. L. No. 92-603, 86 Stat. 1329, 1381 (codified as amended at 42 U.S.C. § 1396a(f) (2000)).

¹¹EPSDT services are optional for the medically needy population, a category of individuals who generally have too much income to qualify for Medicaid but have "spent down" their income by incurring medical care expenses. See 42 U.S.C. § 1396(a)(10)(C) (2000).

¹²Matching rates are calculated using the following formula:

$$\text{Federal Matching Rate} = 1.00 - 0.45 \left(\frac{\text{State PCI}}{\text{U.S. PCI}} \right)^2$$

chosen as a proxy for a state's ability to fund public services. Consistent with the purpose described in the formula's legislative history, PCI is used as a proxy for both state resources and the low-income population. As a state's PCI increases, relative to the national average, the formula provides for a decreasing federal matching rate, meaning the federal government shares a smaller portion of a state's costs. By statute, the federal matching rate may range from 50 percent to 83 percent.¹³ The formula's multiplier, currently 0.45, represents the state's share of its total Medicaid costs for a state with PCI equal to the national average, and the federal government thus pays a 55 percent share of total costs.

Medicaid Formula Narrows Differences in Some States' Funding Ability and Widens Differences in Others

The Medicaid formula reduces by 20 percent the differences among states in their ability to fund program services, compared with the national average funding ability. While the formula narrows differences for 30 states, making the average difference in funding ability smaller, it moves 21 states farther away from the national average, making the average difference wider. These 21 states include 3 that are among those with the largest populations in poverty—California, Florida, and New York. Because of the formula's current structure, in many instances, two states devoting the same proportion of their own resources toward funding Medicaid services are unable, after receiving federal matching aid, to spend the same amounts per person in poverty, adjusted for cost differences related to age and geographic location.

Formula Reduces Overall Differences in States' Funding Ability by 20 Percent

Because state resources, numbers of people in poverty, and the cost of serving this population vary widely across the states, there also are wide differences in states' ability to fund health care services. Considering these indicators of state funding ability, Alaska has the highest funding ability—exceeding the national average by 119 percent—and Mississippi has the lowest funding ability—46 percent below the national average, as measured using states' TTR and the number of people in poverty, adjusting the poverty count for age and geographic cost differences (see fig. 1). Nationwide, the average difference between a state's funding ability and

¹³In fiscal year 2003, Mississippi had the highest federal matching rate of any state—76.6 percent.

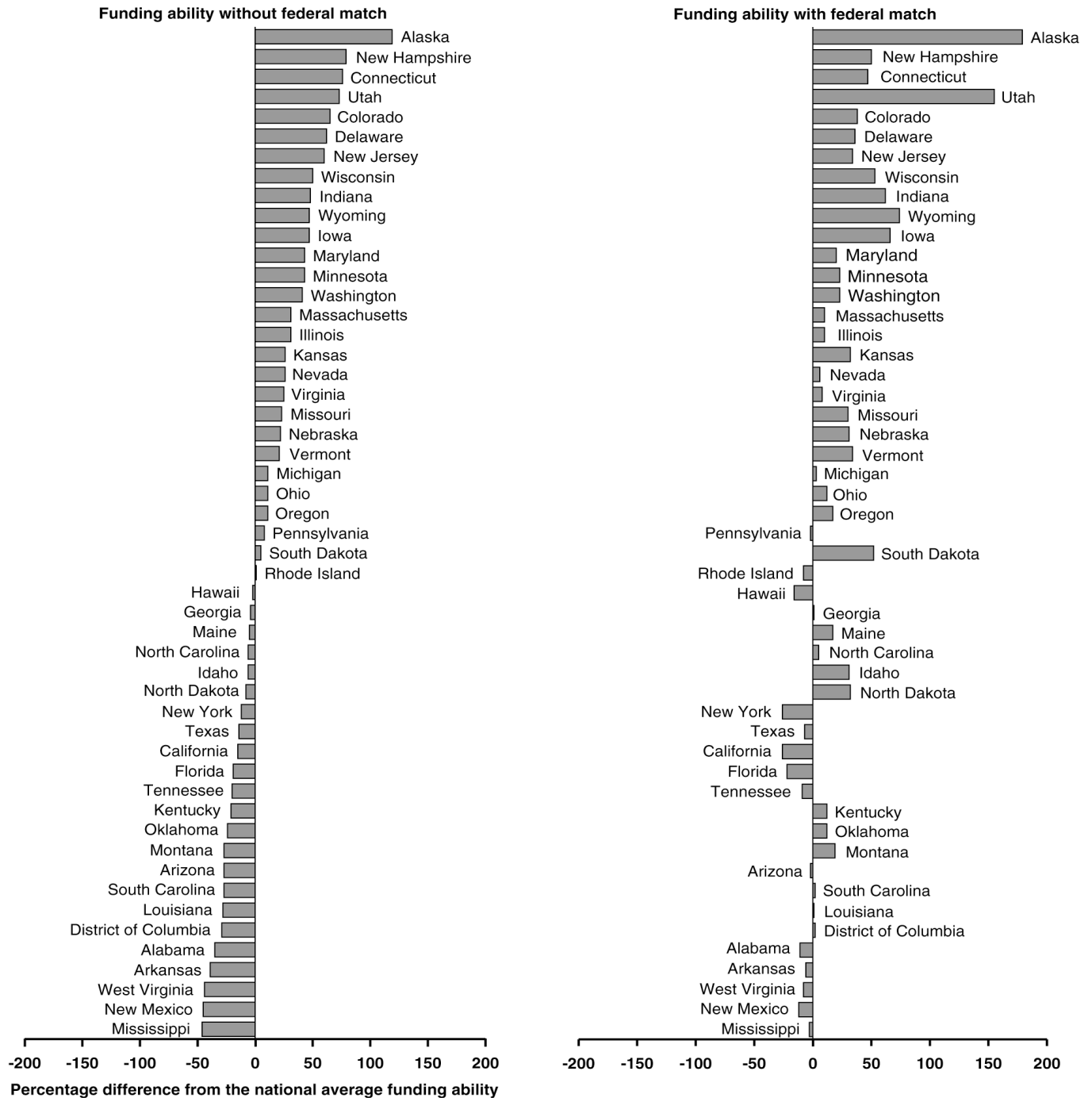
that of the average state is 22.7 percent.¹⁴ Nineteen states have funding ability 25 percent or more above the national average, and 10 states have funding ability 25 percent or more below the national average.

After the value of federal matching aid is added to states' own resources, the average difference in states' funding ability drops from 22.7 percent to 18.1 percent. This represents a 20 percent reduction of aggregate differences in states' funding ability.¹⁵ After the receipt of federal matching aid, differences in states' funding abilities ranged from 26 percent below the national average for California and New York to 179 percent above for Alaska.

¹⁴The average difference in states' funding ability is calculated by comparing each state's funding ability with the average funding ability of all states and calculating the average difference (both positive and negative), weighting each state by its number of people in poverty.

¹⁵In an absolute sense, the federal matching rate enhances the funding ability of all states. By comparing each state's funding ability with the average funding ability for all states, our measure of funding ability is a relative, rather than an absolute, measure of differences in funding ability. As a consequence, while states with low funding ability receiving a relatively low federal match are helped in an absolute sense, in a relative sense they move farther below a new, higher national average funding ability, resulting in relatively larger differences in states' funding ability.

Figure 1: States' Funding Ability Compared with the National Average, without and with the Value of Federal Matching Aid Added



Sources: HHS, HUD, and the Departments of Commerce, Labor, and the Treasury.

Note: GAO analysis of data from HHS, HUD, and the Departments of Commerce, Labor, and the Treasury.

Funding Ability of 21 States Moves Farther from Average State's Funding Ability after Federal Match Is Added

The aggregate 20 percent reduction of differences in states' funding ability under the formula masks the effect of the formula on individual states. For example, as shown in figure 1, consistent with the formula's goals, the one-quarter of states with the lowest funding ability before the match move closer to the average state's funding ability after the value of the federal match is added.¹⁶ In total, 30 states move closer to the national average after adding the federal match. However, as the right panel of figure 1 shows, adding the value of federal matching aid often has inconsistent effects. For example, including the value of federal matching aid moves Alaska's and Utah's funding ability farther above, rather than closer to, the national average funding ability. This happens because PCI does not adequately reflect that these two states have fewer people in poverty than the national average. In addition, Utah has lower-than-average costs to provide health care services. The current formula actually moves 21 states farther above or below the average:

- Four of the 21 states—California, Florida, Hawaii, and New York—have below-average funding ability before federal matching aid is added and move farther below the average after federal matching aid is added. These 4 states have approximately 31 percent of the nation's people in poverty. For example, California's funding ability drops from 15 percent below the average to 26 percent below the average and New York's funding ability drops from 12 percent below the average to 26 percent below the average. These two states thus rank last in terms of state funding ability after the value of federal matching aid is added.
- Thirteen states that have above-average funding ability before adding the value of federal matching aid move farther above the average after it is added.¹⁷ For example, Utah's funding ability is 73 percent above the national average before the federal match is added but increases to 155 percent above the national average after the match.
- Of the 4 remaining states, 3—Idaho, Maine, and North Dakota—have below-average funding ability before the match is added and above-

¹⁶In decreasing order of funding ability before adding the value of the federal match, these states are Tennessee, Kentucky, Oklahoma, Montana, Arizona, South Carolina, Louisiana, District of Columbia, Alabama, Arkansas, West Virginia, New Mexico, and Mississippi.

¹⁷The states, listed from highest to lowest funding ability, are Alaska, Utah, Wisconsin, Indiana, Wyoming, Iowa, Kansas, Missouri, Nebraska, Vermont, Ohio, Oregon, and South Dakota.

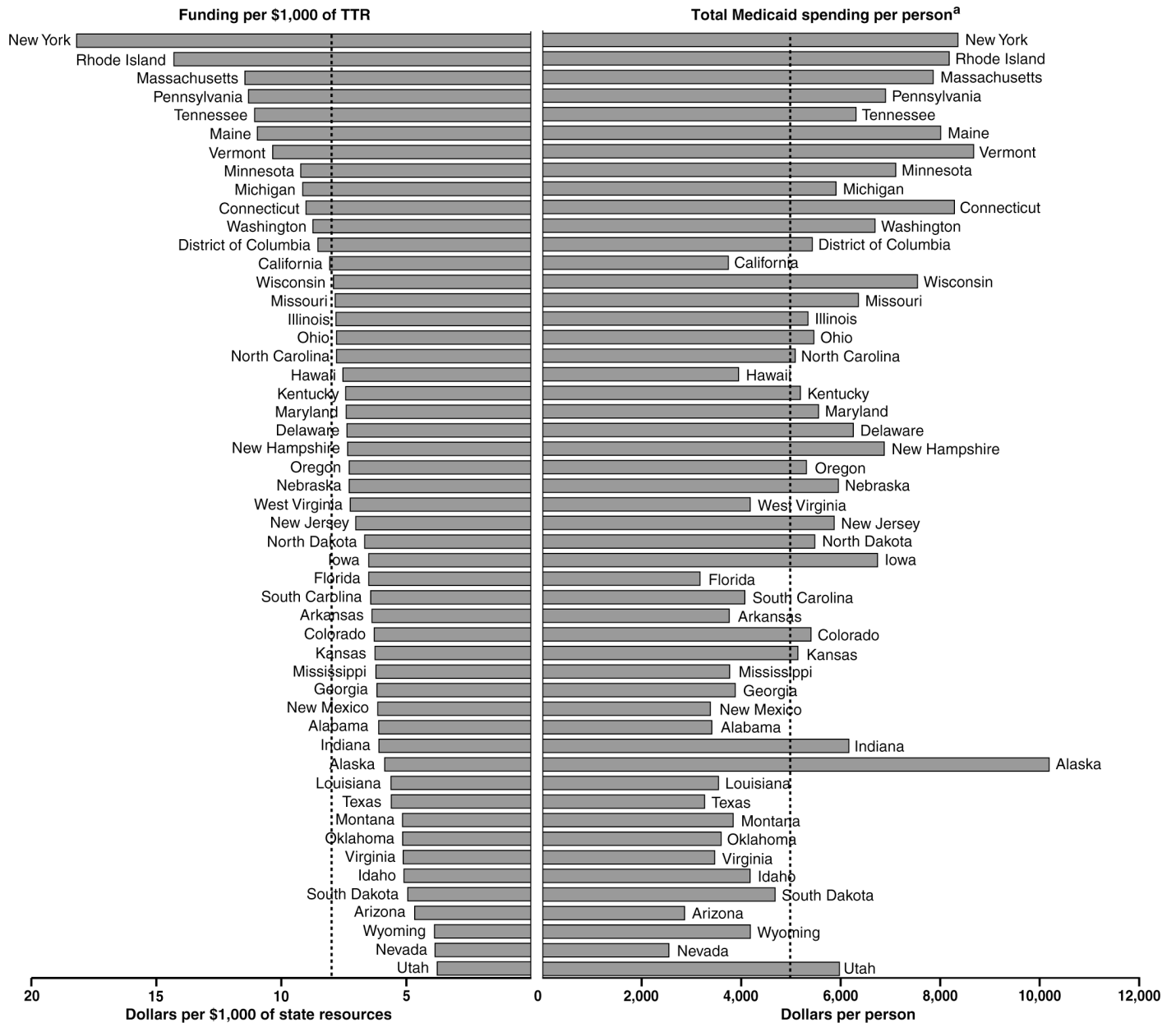
average funding ability after the match is added. For the fourth state—Rhode Island—the reverse is true: Rhode Island has above-average funding ability before the match and below-average funding ability after the match is added.

Many States Devoting the Same Proportion of Their Own Resources to Medicaid Cannot Spend Comparable Amounts per Person

States commit widely varying proportions of their own financial resources to fund Medicaid benefits. For example, in fiscal year 2000, New York devoted \$18.16 per \$1,000 of its TTR toward its Medicaid program,¹⁸ roughly 5 times the proportion of resources that Utah devoted (\$3.74 per \$1,000) (see left panel of fig. 2). States' Medicaid cost-adjusted spending per person in poverty varies as well. For example, Alaska's combined federal and state spending was over \$10,000 per person in poverty, while Nevada's spending was approximately \$2,500 per person in poverty (see right panel of fig. 2).

¹⁸The TTR amount used in these calculations is a 3-year average, 1996-98.

Figure 2: Proportion of State Resources Devoted to Medicaid, Compared with Total (State plus Federal) Medicaid Spending, Fiscal Year 2000

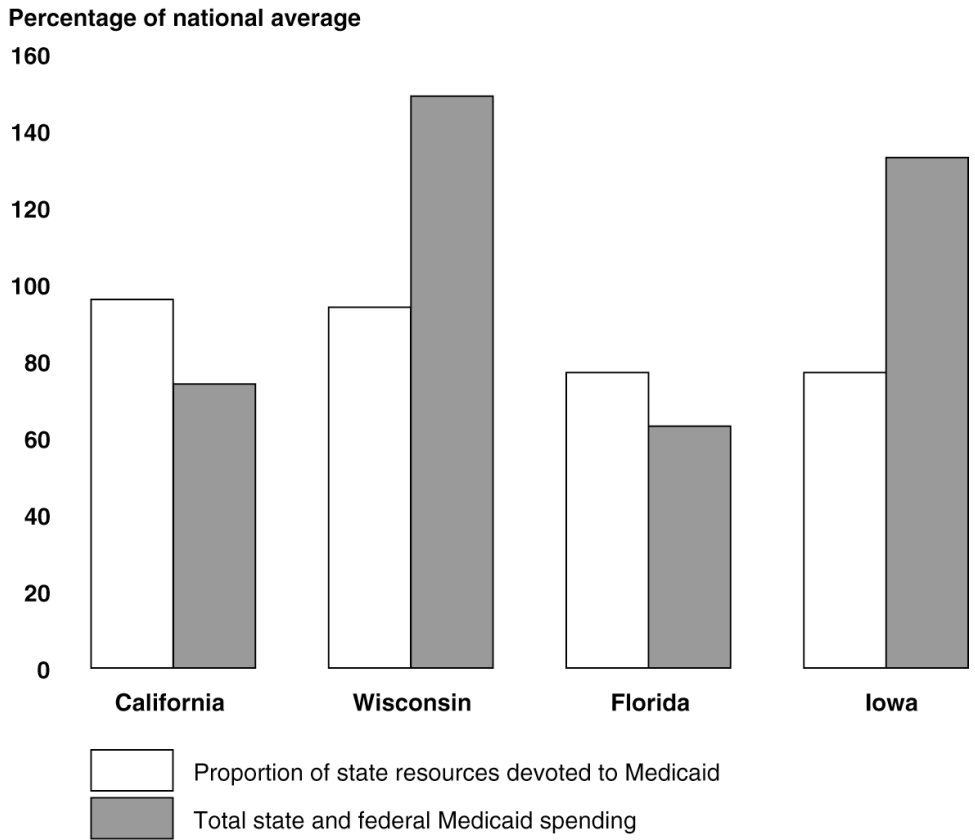


Note: GAO analysis of data from HHS, HUD, and the Departments of Commerce, Labor, and the Treasury.

^aMedicaid spending per person is total spending (state and federal) per person in poverty after adjusting for cost differences related to age and geographic location.

Because the federal matching formula does not fully eliminate differences in states' funding ability, states devoting similar proportions of their own resources to Medicaid cannot spend the same amounts per person in poverty, cost adjusted, with federal matching aid factored in. In addition, because the formula further increases the already high funding ability of some states and decreases the low funding ability of others, these spending differences can be quite large. For example, in fiscal year 2000, both California and Wisconsin devoted roughly the same proportion of their own resources to fund program benefits—about \$8 per \$1,000 of taxable resources—which was close to the national average (\$8.37) proportion of resources states devoted to Medicaid that year. However, the current formula moved California's below-average funding ability farther below the national average and increased Wisconsin's above-average funding ability farther above. This occurred because Wisconsin receives a high federal match despite its relatively high funding ability, whereas California receives a low federal match despite its relatively low funding ability. Once federal matching aid was factored in, with their nearly identical funding effort, Wisconsin is enabled to spend more than twice what California could spend per person in poverty—\$7,532 compared with \$3,731. Similarly, Florida and Iowa each devoted \$6.48 per \$1,000 in state resources toward their Medicaid programs. After adding the federal match, Iowa could spend \$6,729 per person in poverty, cost adjusted, while Florida could spend just \$3,160 per person. (See fig. 3.)

Figure 3: Proportion of State Resources Devoted to Medicaid Compared with Program Spending per Person in Poverty, as a Percentage of the National Average, Selected States, Fiscal Year 2000



Sources: HHS, HUD, and the Departments of Commerce, Labor, and the Treasury.

Notes: Spending per person in poverty includes cost adjustments for differences in age and geographic location. GAO analysis of data from HHS, HUD, and the Departments of Commerce, Labor, and the Treasury.

Use of PCI and 50 Percent Floor Inhibits Formula's Ability to Further Narrow Differences in States' Funding Ability

Two factors prevent the Medicaid formula from further reducing differences in states' funding ability. First, PCI—the single measure used to establish federal matching rates—is not a comprehensive measure of state resources and is a poor proxy for the size of and cost to serve a state's population in poverty. Second, special statutory provisions, including the minimum 50 percent federal matching rate, give several states with already high funding ability a higher federal matching rate than they would receive without these provisions.

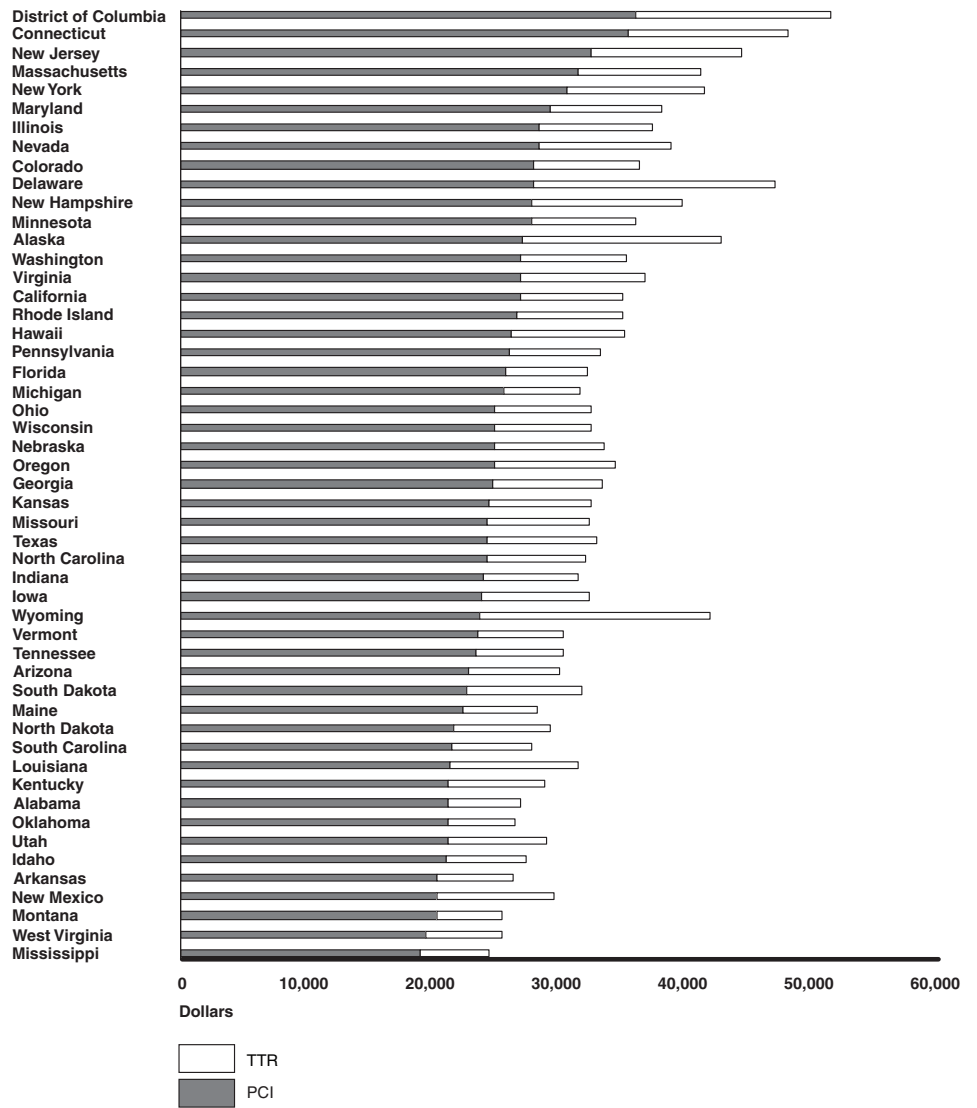
PCI Is Not a Comprehensive Measure of States' Resources and Is a Poor Proxy for the Size of and Cost to Provide Services to Their People in Poverty

PCI is an inadequate measure of states' funding ability because it is an incomplete measure of states' resources, it is a poor proxy for the size of a state's population in poverty, and it does not take into account differences in the cost of providing health care services to people in poverty. As an indicator of state resources, PCI measures income received by state residents, such as wages, rents, and interest income, but it does not include other sources of income potentially subject to state taxation, such as corporate income produced within the state but not received by state residents. For example, PCI especially understates the taxable resources in energy-exporting states, such as Alaska and Wyoming, and in states that house numerous corporate headquarters, such as Delaware.

By comparison, because TTR comprises the income included in PCI as well as income from other sources, such as corporate income and capital gains, states' TTR exceeds PCI by about 32 percent nationwide.¹⁹ As shown in figure 4, which compares states' TTR with PCI, states whose resources are particularly poorly represented by PCI include the District of Columbia, Delaware, Alaska, and Wyoming.

¹⁹For a discussion of TTR, see Department of the Treasury, Office of Economic Policy, *Treasury Methodology for Estimating Total Taxable Resources, TTR* (Washington, D.C.: Oct. 1, 1998; revised November 2002). <http://www.treas.gov/offices/economic-policy/resources/index.html?IMAGE.X=28&IMAGE.Y=9> (See "Summary of Current Methodology for Estimating TTR") (downloaded June 4, 2003).

Figure 4: States' per Capita TTR and PCI, 1996-98

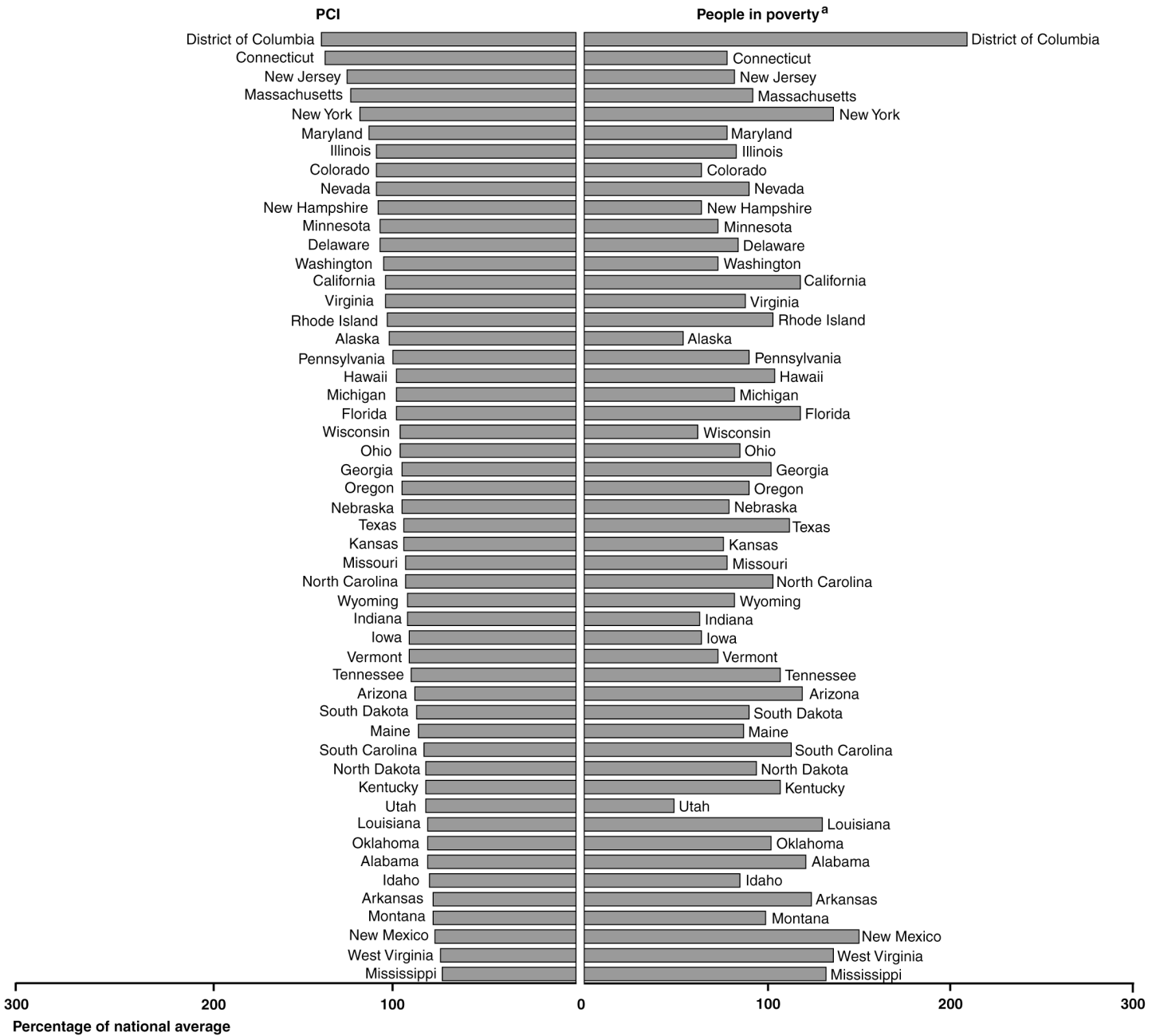


Sources: Departments of Commerce and the Treasury.

Notes: TTR comprises the income included in PCI as well as income from other sources, such as corporate income and capital gains. GAO analysis of data from the Departments of Commerce and the Treasury.

Using PCI to measure the size of a state's low-income population assumes that the lower a state's PCI, the greater its population in poverty. However, two states with similar PCIs may differ widely in their percentages of people in poverty. In addition, PCI is not a good proxy for the differences in the cost of providing health care services that are related to the ages of the population served and the geographic area in which services are provided. Persons who are elderly typically use health care services at higher rates than adults and children and therefore cost more to serve. Two states with low PCIs may have very different proportions of elderly persons potentially eligible for Medicaid. In addition, costs to provide health care services vary widely depending on geographic location because wages and other costs of office space vary regionally. For example, the District of Columbia and Connecticut have similar PCIs, but the share of the District's population in poverty is more than twice Connecticut's. Health care costs also are 10 percent higher in the District than in Connecticut. (Fig. 5 compares state rankings by PCI and by people in poverty, adjusted for cost differences related to age and geographic location.)

Figure 5: Comparison of States' PCIs with Their People in Poverty, Cost Adjusted



Sources: HHS, HUD, and the Departments of Commerce, Labor, and the Treasury.

Note: GAO analysis of data from HHS, HUD, and the Departments of Commerce, Labor, and the Treasury.

^aPeople in poverty refers to people with incomes at or below the FPL, adjusted for cost differences related to age and geographic location.

Minimum Federal Match Generally Helps States That Already Have High Funding Ability

Because of the 50 percent floor, 11 states received higher federal matching rates in fiscal year 2002 than they would have if their rates had been based only on their PCI. Two others—Alaska and the District of Columbia—received special federal matching rates set in statutes that gave them higher matching rates than they would have received solely on the basis of PCI.²⁰ (See table 1.)

²⁰Alaska's current higher matching rate was authorized by the Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 to address inadequacies in the national calculation and establish more equitable matching rates for the state. Pub. L. No. 106-554, App. F, § 706, 114 Stat. 2763, 2763A-577. The District of Columbia's higher matching rate was authorized by the Balanced Budget Act of 1997 at the time comprehensive policy changes realigning the financial relationship between the District and federal government also were enacted. Pub. L. No. 105-33, § 4725 and tit. XI, 111 Stat. 251, 518 and 712.

Table 1: States Benefiting from Minimum Matching Rate Provisions, Fiscal Year 2002, and Their Matching Rates without the Minimums

State	Numbers in percent			
	Funding ability without federal match (as a percentage of national average)	Minimum federal matching rate	Federal matching rate without minimum match	Percentage point difference
Alaska	219	57.38	53.01	-4.37
New Hampshire	179	50.00	47.36	-2.64
Connecticut	176	50.00	14.99	-35.01
Colorado	165	50.00	46.22	-3.78
Delaware	162	50.00	48.13	-1.87
New Jersey	160	50.00	29.60	-20.40
Maryland	143	50.00	42.32	-7.68
Minnesota	143	50.00	48.03	-1.97
Illinois	131	50.00	46.09	-3.91
Massachusetts	131	50.00	32.27	-17.73
Nevada	126	50.00	46.62	-3.38
New York	88	50.00	37.14	-12.86
District of Columbia	71	70.00	12.99	-57.01

Source: HHS.

Notes: States are listed in decreasing order of funding ability. GAO analysis of data from HHS.

Eleven of these 13 states (all except the District of Columbia and New York) had above-average funding ability in fiscal year 2002. Their receipt of a higher federal matching rate than they would have received without statutory minimums increases the overall differences in funding ability among the states. Connecticut and New Jersey benefit the most from the statutory minimums, receiving—as a result of the 50 percent floor—matching rates that are 35 and 20 percentage points higher, respectively, than the rates they would have received based solely on their PCI. Receiving a higher matching rate than what the formula provides on the basis of PCI enables these states to spend more on program benefits per person in poverty than states with less funding ability that devote a higher percentage of their resources to funding program benefits.

The statutory minimums benefit the District of Columbia and New York by providing them a higher matching rate than they would otherwise have. Because these two states have below-average funding ability, the minimum matching provisions have the effect of moving them closer to the funding ability of the average state and thus help to reduce overall differences in

funding ability among the states. For example, New York’s funding ability without the value of federal matching aid added is 12 percent below the average funding ability; with the value of federal matching aid added, its funding ability is farther from the average funding ability—26 percent below the average. Without the floor, New York’s matching rate would be 37 percent, rather than 50 percent. Therefore, the 50 percent minimum brings New York’s funding ability closer to the average funding ability than it would be with the matching rate it would receive without the minimum.

Comments from External Reviewers

We received comments on our draft report from two external reviewers who have Medicaid formula expertise. The reviewers generally agreed with our analysis and provided technical comments, which we incorporated as appropriate.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its issue date. At that time, we will send copies of this report to appropriate congressional committees and will make copies available to others on request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report, please call me at (202) 512-7118 or Jerry Fastrup at (202) 512-7211. Major contributors to this report include Richard Horte, Robert Dinkelmeyer, Michael Williams, Elizabeth T. Morrison, and Michael Rose.

Sincerely yours,



Kathryn G. Allen
Director, Health Care—Medicaid
and Private Health Insurance Issues

Appendix I: Legislative History and Description of the Matching Formula

This appendix summarizes the legislative history that led to the use of per capita income (PCI) in the Medicaid matching formula and describes how matching rates are calculated.

Legislative History of the Medicaid Formula

The current formula is an outgrowth of variable rate matching formulas first discussed by Congress in the late 1940s. Senate reports accompanying the Social Security Act Amendments of 1946 first articulated, in the case of public assistance, the rationale for a variable rate matching formula based on state PCI:

Federal grants-in-aid for public assistance are intended to help in aiding the aged and blind persons and dependent children in all parts of the country and to some extent to equalize the financial burden throughout the Nation. . . . The present 50 percent basis of Federal participation does not recognize differences in the ability of States to finance public assistance, nor does it recognize the greater incidence of poverty in States with low economic resources. To assist their needy people, the low income States must make greater tax effort than States with larger resources where relatively fewer persons are in need.¹

The Social Security Amendments of 1958 established a PCI-based variable rate matching formula, with certain maximums, for public assistance and reimbursement of medical providers. Under this formula, federal matching rates ranged from a minimum of 50 percent for high-income states to a maximum of 65 percent for low-income states.² The Social Security Amendments of 1960 increased the maximum matching rate from 65 percent to 80 percent.³

¹S. Rep. No. 79-1862, at 15 (1946), *reprinted in* 1946 U.S.C.C.A.N. 1510, 1525. In conference, a variable rate was adopted, but not one based on state PCI. S. Conf. Rep. No. 79-2724, at 8 (1946), *reprinted in* 1946 U.S.C.A.N.N. 1552, 1555.

²Pub. L. No. 85-840, § 505, 72 Stat. 1013, 1050. Before this, payments to medical providers were reimbursed up to a certain maximum dollar amount at a uniform rate of 50 percent for all states. S. Rep. No. 85-2388, at 39 (1958), *reprinted in* 1958 U.S.C.C.A.N. 4212, 4259.

³Pub. L. No. 86-778, sec. 601(f), § 6(c), 74 Stat. 924, 991.

Current Medicaid Matching Formula

When Medicaid was created in 1965, it (1) was structured as an open-ended entitlement for eligible low-income individuals without limits on the maximum dollar amount subject to reimbursement, as in predecessor programs;⁴ (2) increased the federal government's total nationwide share financed from 50 to 55 percent; and (3) raised the maximum federal matching rate from 80 to 83 percent.⁵ The statutory matching formula, known as the Federal Medical Assistance Percentage (FMAP), used for calculating matching rates is

$$\text{FMAP} = 1.00 - 0.45 \left(\frac{\text{State PCI}}{\text{U.S. PCI}} \right)^2$$

The current matching formula is calibrated with a 0.45 “multiplier.” The value of the multiplier determines the percentage of a state's Medicaid spending for which the state is responsible. For example, using the 0.45 multiplier, a state with a PCI equal to the U.S. average would receive a federal matching rate of 55 percent ($1 - 0.45 = 0.55$). A smaller multiplier of 0.40 would raise the federal matching rate for all states and would raise the matching rate for a state with the national average PCI from 55 percent to 60 percent, whereas a higher multiplier of 50 percent would reduce the federal matching rate for a state with average PCI from 55 percent to 50 percent.

Relative PCI is intended to represent states' funding ability, which is a combination of states' resources and states' people in poverty.⁶ Consistent with this intent, squaring PCI has the effect of making PCI appear in the formula twice, thus reflecting both state resources and people in poverty. Squaring PCI magnifies the difference between the state's and the national average PCI. For example, if a state's PCI is 90 percent of the national average, the squared value of its relative PCI would be 81 percent ($0.9 \times 0.9 = 0.81$), resulting in a federal matching rate of 64 percent (that is, $1.00 - 0.45 \times 0.81 = 0.64$), rather than the 60 percent rate the state would receive if relative income was not squared (that is, $1.00 - 0.45 \times 0.9 = 0.60$). If PCI

⁴Social Security Amendments of 1965, Pub. L. No. 89-97, sec. 121, § 1905(b), 79 Stat. 286, 344.

⁵See U.S. General Accounting Office, *Changing Medicaid Formula Can Improve Distribution of Funds to States*, GAO/GGD-83-27 (Washington, D.C.: Mar. 9, 1983) for a more complete description of the legislative history of the Medicaid formula.

⁶A state's *relative* PCI is its PCI when expressed as a percentage of the U.S. average PCI.

were a good proxy for people in poverty, squaring would be appropriate since squaring would reflect the effect on states' funding ability of both resources and people in poverty. However, to the extent that PCI does not accurately reflect state resources and people in poverty, squaring magnifies this inaccuracy.

The Department of Health and Human Services (HHS) is responsible for calculating matching rates under the formula. HHS is required to calculate matching rates 1 year before the fiscal year in which they are effective, using a 3-year average of the most recently available PCI data reported by the Department of Commerce. Thus, fiscal year 2003 matching rates were calculated at the beginning of fiscal year 2002 using a 3-year average of PCI for 1998 through 2000. Publicly announcing matching rates a year in advance of their use allows states time to make program changes in response to changes in the rate at which the federal government will reimburse eligible program costs. However, the combination of a 1-year lag between the computation of state matching rates and their implementation, coupled with the fact that a 3-year average of PCI is used, also means that the distribution of states' matching rates reflects economic conditions that existed several years earlier. Federal matching rates for fiscal years 2002 through 2004 are shown in table 2.

Table 2: Medicaid Matching Rates for Fiscal Years 2002-2004

State	Fiscal year		
	2002	2003	2004
Alabama	70.45	70.60	70.75
Alaska	57.38	58.27	58.39
Arizona	64.98	67.25	67.26
Arkansas	72.64	74.28	74.67
California	51.40	50.00	50.00
Colorado	50.00	50.00	50.00
Connecticut	50.00	50.00	50.00
Delaware	50.00	50.00	50.00
District of Columbia	70.00	70.00	70.00
Florida	56.43	58.83	58.93
Georgia	59.00	59.60	59.58
Hawaii	56.34	58.77	58.90
Idaho	71.02	70.96	70.46
Illinois	50.00	50.00	50.00
Indiana	62.04	61.97	62.32
Iowa	62.86	63.50	63.93
Kansas	60.20	60.15	60.82
Kentucky	69.94	69.89	70.09

**Appendix I: Legislative History and
Description of the Matching Formula**

State	Fiscal year		
	2002	2003	2004
Louisiana	70.30	71.28	71.63
Maine	66.58	66.22	66.01
Maryland	50.00	50.00	50.00
Massachusetts	50.00	50.00	50.00
Michigan	56.36	55.42	55.89
Minnesota	50.00	50.00	50.00
Mississippi	76.09	76.62	77.08
Missouri	61.06	61.23	61.47
Montana	72.83	72.96	72.85
Nebraska	59.55	59.52	59.89
Nevada	50.00	52.39	54.93
New Hampshire	50.00	50.00	50.00
New Jersey	50.00	50.00	50.00
New Mexico	73.04	74.56	74.85
New York	50.00	50.00	50.00
North Carolina	61.46	62.56	62.85
North Dakota	69.87	68.36	68.31
Ohio	58.78	58.83	59.23
Oklahoma	70.43	70.56	70.24
Oregon	59.20	60.16	60.81
Pennsylvania	54.65	54.69	54.76
Rhode Island	52.45	55.40	56.03
South Carolina	69.34	69.81	69.86
South Dakota	65.93	65.29	65.67
Tennessee	63.64	64.59	64.40
Texas	60.17	59.99	60.22
Utah	70.00	71.24	71.72
Vermont	63.06	62.41	61.34
Virginia	51.45	50.53	50.00
Washington	50.37	50.00	50.00
West Virginia	75.27	75.04	75.19
Wisconsin	58.57	58.43	58.41
Wyoming	61.97	61.32	59.77

Source: HHS.

Note: GAO compiled data from HHS.

Appendix II: Methodology

This appendix describes our methodology for measuring the extent to which the current Medicaid matching formula reduces differences in states' funding abilities and the data, and their sources, we used to measure the elements of states' funding ability. While we considered alternative indicators of state resources, people in poverty, and the cost of health care, and we chose those indicators we believed were most appropriate, we did not perform an exhaustive comparative analysis of other potential indicators, nor did we attempt to develop new indicators.

Measuring States' Funding Ability

Funding Ability from State Resources

We defined a state's ability to fund Medicaid services as the economic resources a state is potentially able to tax to fund its Medicaid program relative to the number of persons with incomes below the federal poverty level (FPL), adjusted for the cost of providing health care to them. Specifically, we took into account differences in the utilization of health care services by children, adults, and the elderly, and we developed an index for the differences in the cost of health care personnel and the cost of medical facilities and supplies used to provide the services.

We calculated state funding ability according to the following formula:

$$\left(\begin{array}{l} \text{State Funding} \\ \text{Ability From} \\ \text{Own Resources} \end{array} \right)_{state} = \left(\frac{Y_{state}}{P_{state} * c_{state}} \right)$$

where

Y = State resources potentially subject to state taxation

P = People with incomes below the FPL, adjusted for differences in service utilization by children, adults, and the elderly

c = Index of the cost of factors in the provision of health care services (e.g., health care personnel, medical facilities, and supplies).

We explain later in this appendix how we adjusted the counts of people in poverty for differences in service utilization and in the cost of personnel, facilities, and supplies.

State Funding Ability with the Value of Federal Matching Aid Added

Federal matching aid, in effect, adds to a state’s ability to fund program costs from its own resources. For example, when federal matching aid pays for half the cost of a state’s program, it effectively doubles that state’s ability to fund program services. The higher the federal matching rate, the more federal matching aid contributes to a state’s ability to fund Medicaid services. In general, a state’s funding ability after the value of its federal matching aid is added can be determined using the following formula:

$$\left(\frac{\text{Medicaid Funding Ability}}{\text{with Federal Matching Aid}} \right)_{\text{state}} = \left(\frac{1}{1 - \text{FMAP}_{\text{state}}} \right) \left(\frac{Y_{\text{state}}}{P_{\text{state}} * C_{\text{state}}} \right)$$

where

FMAP = State’s federal matching rate

Y = State resources potentially subject to state taxation

P = People with incomes below the FPL, adjusted for differences in service utilization by children, adults, and the elderly

c = Index of the cost of factors in the provision of health care services (e.g., health care personnel, medical facilities, and supplies).

The first term after the equals sign represents the multiple by which a state’s matching rate increases the state’s funding ability. For example, if a state receives a federal match of 75 percent, its funding ability is increased by a factor of 4 [(1/(1 - 0.75) = 4)].

Calculating the Reduction of Differences in States’ Funding Ability

To measure the effect of the current formula in reducing differences in states’ funding ability, we compared differences between each state’s funding ability before and after the value of federal matching aid is added and calculated the percentage reduction in these differences. In performing these calculations, we measured each state’s funding ability relative to the average funding ability of all states. The resulting indexes of states’ funding abilities provide a means of comparing relative differences

in states' ability to fund their Medicaid programs. We used the weighted absolute mean deviation as a quantitative measure of differences in states' funding ability. This statistic is a measure of average differences in states' funding ability. It is calculated by taking the absolute value of each state's index of relative funding ability and computing the arithmetic average of these differences, using the following formula:

$$\text{Mean Absolute Deviation} = \frac{\sum_{s=1}^{51} w_s \cdot |X_s - X_{\text{AVG}}|}{\sum_{s=1}^{51} w_s}$$

where

X_s = A state's funding ability index

X_{AVG} = Weighted average of all states' funding ability indexes

w_s = A state's weighting factor (people in poverty).

In calculating the mean absolute deviation, we took into account differences in the potential size of state programs by using the number of people living in poverty in each state.

We chose the mean absolute deviation rather than the more commonly used weighted standard deviation because the latter, by squaring differences between each state's funding ability and the national average funding ability, gives much greater weight to states at the extreme ends of the distribution of states' funding abilities, resulting in a measure that is more sensitive to extreme values and thus less likely to reflect the norm.

We calculated the mean absolute deviation in states' funding ability both without and with the value of federal matching aid added. Calculating the percentage change in the two mean absolute deviations measures the extent to which the current formula reduces differences in states' funding ability. For example, if the current formula completely eliminated differences in states' funding ability, total funding ability of all states would equal the average of all states, and the mean absolute deviation would be zero, representing a 100 percent reduction in differences in states' funding ability (the maximum possible). Alternatively, if the formula had no effect in reducing differences in states' funding ability, the

mean absolute deviation in states' funding ability with the value of federal matching aid taken into account would be the same as the mean absolute deviation in states' funding ability from their own resources. In this case, there would be no change in the mean absolute deviation, meaning that the matching formula had no effect in reducing relative differences in states' funding ability.

Table 3 shows each state's index of Medicaid funding ability without and with the value of its federal matching aid.

Table 3: States' Ability to Fund Program Services without and with the Value of Fiscal Year 2000 Federal Matching Aid Added

State	State Medicaid funding ability (percentage of national average)	
	(1)	(2)
	Without federal matching aid ^a	With FY 2000 federal matching aid
Alabama	65	89
Alaska	219	279
Arizona	73	98
Arkansas	61	94
California	85	74
Colorado	165	138
Connecticut	176	147
Delaware	162	136
District of Columbia	71	102
Florida	81	78
Georgia	96	101
Hawaii	98	84
Idaho	94	131
Illinois	131	110
Indiana	148	162
Iowa	147	166
Kansas	126	132
Kentucky	79	112
Louisiana	72	101
Maine	95	117
Maryland	143	120
Massachusetts	131	110
Michigan	111	103
Minnesota	143	123
Mississippi	54	97
Missouri	123	130
Montana	73	119

State	State Medicaid funding ability (percentage of national average)	
	(1)	(2)
	Without federal matching aid ^a	With FY 2000 federal matching aid
Nebraska	122	131
Nevada	126	106
New Hampshire	179	150
New Jersey	160	134
New Mexico	55	88
New York	88	74
North Carolina	94	105
North Dakota	92	132
Ohio	111	112
Oklahoma	76	112
Oregon	111	117
Pennsylvania	108	98
Rhode Island	101	92
South Carolina	73	102
South Dakota	105	152
Tennessee	80	91
Texas	86	93
Utah	173	255
Vermont	121	134
Virginia	125	108
Washington	141	123
West Virginia	56	92
Wisconsin	150	153
Wyoming	147	174

Sources: HHS and the Departments of Commerce, Labor, and the Treasury.

Note: GAO calculations are based on data from HHS and the Departments of Commerce, Labor, and the Treasury.

^aFunding ability without federal matching aid was calculated using an average of state taxable resources for 1996 through 1998.

The mean absolute deviation of states' funding ability before taking into account the value of federal matching aid (column 1 of table 3) yielded an average difference in states' relative funding ability of 22.7 percent. The mean absolute deviation in states' funding ability after taking into account the value of federal matching aid (column 2 of table 3) yielded an average difference of 18.1 percent. This difference represents a 20 percent overall reduction in differences in states' funding ability as a result of adding federal matching aid.

Measuring State Resources

As the indicator of state resources in the formula, PCI includes income received by state residents (“personal income”), such as wages, rents, and interest income, but excludes other important taxable income. For example, PCI excludes corporate income not received as income by state residents, such as undistributed corporate profits and dividends received by people who reside out-of-state. An ideal resources measure would count all income that states are able to tax. Even certain types of income that states exempt from taxation or tax at preferential rates should be counted as potentially taxable income because these enhance taxpayers’ ability to pay all taxes levied in the state.

We used Total Taxable Resources (TTR), as reported by the Department of the Treasury, to measure state resources because it comprises the income included in PCI as well as income from other sources, such as corporate income and capital gains, and thus it is a more comprehensive indicator of income than PCI alone.¹ TTR includes personal income received by state residents as well as income produced within a state but received by individuals who reside out-of-state (which is considered a portion of the Gross State Product (GSP)). As indicated in table 4, nationwide, the TTR measure of income is 32 percent larger than PCI.

Table 4: Comparison of PCI with TTR, 3-Year Averages, 1996-98

State	PCI	TTR per capita	Percentage difference
Alabama	\$21,194	\$26,884	27
Alaska	27,001	42,755	58
Arizona	22,842	29,947	31
Arkansas	20,310	26,324	30
California	26,867	35,057	30
Colorado	28,014	36,340	30
Connecticut	35,507	48,047	35
Delaware	27,872	47,020	69
District of Columbia	36,067	51,503	43
Florida	25,756	32,267	25
Georgia	24,756	33,364	35
Hawaii	26,209	35,220	34
Idaho	21,035	27,399	30

¹Another possible measure of a state’s resources is the Representative Tax System developed by the Advisory Commission on Intergovernmental Relations. We did not use this measure in our analysis because data on this measure are not available on an annual basis.

Appendix II: Methodology

State	PCI	TTR per capita	Percentage difference
Illinois	28,442	37,421	32
Indiana	23,902	31,493	32
Iowa	23,785	32,282	36
Kansas	24,388	32,456	33
Kentucky	21,241	28,774	35
Louisiana	21,272	31,520	48
Maine	22,376	28,205	26
Maryland	29,305	38,019	30
Massachusetts	31,448	41,141	31
Michigan	25,608	31,558	23
Minnesota	27,773	35,996	30
Mississippi	18,981	24,480	29
Missouri	24,251	32,314	33
Montana	20,291	25,436	25
Nebraska	24,832	33,481	35
Nevada	28,383	38,887	37
New Hampshire	27,776	39,760	43
New Jersey	32,492	44,438	37
New Mexico	20,296	29,533	46
New York	30,661	41,470	35
North Carolina	24,194	32,076	33
North Dakota	21,577	29,298	36
Ohio	24,897	32,450	30
Oklahoma	21,152	26,412	25
Oregon	24,817	34,477	39
Pennsylvania	26,096	33,239	27
Rhode Island	26,589	35,002	32
South Carolina	21,444	27,809	30
South Dakota	22,603	31,700	40
Tennessee	23,450	30,323	29
Texas	24,201	32,931	36
Utah	21,135	29,010	37
Vermont	23,487	30,344	29
Virginia	26,869	36,788	37
Washington	26,912	35,271	31
West Virginia	19,400	25,379	31
Wisconsin	24,863	32,456	31
Wyoming	23,615	41,920	78
United States	\$25,949	\$34,299	32

Source: Departments of Commerce and the Treasury.

Notes: Data reflect 3-year averages of TTR and PCI. GAO analysis of data from the Departments of Commerce and the Treasury.

While TTR is a more comprehensive measure of state resources than PCI, recent definitional changes to GSP and state personal income (SPI) data made by the Bureau of Economic Analysis (BEA) may have implications for the methodology used by the Department of the Treasury to calculate TTR. For example, BEA has changed its treatment of the value of services provided by government-owned fixed assets that are now included in GSP and benefit payments of government employee pension plans, which are now excluded from SPI. Since the Treasury initially developed the TTR methodology, it has not reported why definitional changes made by BEA should or should not be reflected in TTR. In the case of the changes to government pension plans, the Treasury has reported it is currently studying whether they necessitate any modifications to the TTR methodology.

Measuring People in Poverty and the Costs to Provide Them Program Services

To measure people in poverty, we adjusted the Bureau of the Census's estimates of people in households with incomes at or below the FPL for (1) differences in the cost of providing health care services to children, adults, and the elderly (to account for the higher health care costs for the elderly) and (2) geographic differences in the cost of providing health care services (such as wages and salaries of health care professionals and the rental cost of medical facilities).²

Measuring the Number of People in Poverty

We obtained estimated counts of people living in poverty from the Bureau of the Census's Current Population Survey (CPS). Because the CPS sample sizes for individual states are especially small when disaggregated by age cohorts, they are subject to greater statistical error than a sample representing all age groups. To improve the accuracy of these estimates, we averaged poverty counts over the 5-year period 1995 through 1999. We used the FPL as a basis for making cross-state comparisons of the number of people in poverty. (See table 5.)

²We have excluded disproportionate share hospital (DSH) payments from this analysis. These hospitals receive additional Medicaid reimbursement because they serve a disproportionate number of Medicaid and other low-income patients. We have excluded these payments from our analysis because the federal government uses a different distribution formula from the regular Medicaid program.

Table 5: Distribution of Population in Poverty, by Age Group, 5-Year Averages, 1995-99

State	Official poverty count	Percentage who are		
		Children ^a	Adults ^b	Elderly ^c
Alabama	684,401	44	44	11
Alaska	52,434	47	50	3
Arizona	773,651	49	44	7
Arkansas	418,593	43	44	14
California	5,213,675	48	46	6
Colorado	356,379	42	52	6
Connecticut	307,435	46	44	10
Delaware	73,643	47	43	11
District of Columbia	111,071	43	46	12
Florida	2,040,854	41	47	12
Georgia	1,024,452	47	44	9
Hawaii	138,433	42	49	9
Idaho	166,135	49	44	7
Illinois	1,335,576	49	42	9
Indiana	485,926	39	50	10
Iowa	273,851	44	47	9
Kansas	275,646	45	44	12
Kentucky	568,739	41	48	10
Louisiana	811,417	47	44	10
Maine	132,323	39	47	14
Maryland	437,917	42	44	14
Massachusetts	653,754	43	46	11
Michigan	1,064,367	47	43	10
Minnesota	437,201	46	43	11
Mississippi	518,149	45	44	11
Missouri	554,936	42	46	11
Montana	143,838	46	47	7
Nebraska	176,270	42	44	13
Nevada	181,524	46	45	9
New Hampshire	91,519	42	45	12
New Jersey	680,727	39	47	13
New Mexico	411,507	51	42	8
New York	2,945,784	45	45	10
North Carolina	931,440	42	46	12
North Dakota	81,831	44	44	12
Ohio	1,308,010	46	45	9
Oklahoma	486,474	42	47	11
Oregon	410,697	45	49	7

State	Official poverty count	Percentage who are		
		Children ^a	Adults ^b	Elderly ^c
Pennsylvania	1,322,801	42	47	12
Rhode Island	107,019	40	43	17
South Carolina	539,744	46	42	12
South Dakota	86,713	45	42	13
Tennessee	784,910	43	47	10
Texas	3,149,475	48	44	9
Utah	163,467	51	44	5
Vermont	61,026	42	49	9
Virginia	686,279	39	48	13
Washington	584,612	43	50	7
West Virginia	299,257	36	50	14
Wisconsin	448,444	46	45	10
Wyoming	57,957	45	45	9
United States	35,052,282	45	45	10

Source: Department of Commerce.

Note: Percentages may not add to 100 across age groups because of rounding.

^aPopulation under age 21 with income at or below the FPL.

^bPopulation aged 21 to 64 with income at or below the FPL.

^cPopulation aged 65 and over with income at or below the FPL.

Adjusting Poverty Counts for Differences in Costs to Serve Children, Adults, and the Elderly

Official poverty counts are not a good proxy for the low-income population because they do not take into account the higher cost of serving elderly individuals. For example, elderly individuals represented 27 percent of Medicaid beneficiaries in fiscal year 2000, the latest year for which data are available. However, because they are more intensive users of the health care system and utilize more expensive long-term care services, elderly persons accounted for 66 percent of all Medicaid spending that year.

To account for differences in costs to serve each group, we weighted the numbers of children, adults, and the elderly. We calculated Medicaid spending per beneficiary for each age group nationwide, then compared spending per beneficiary for each age group with average spending per beneficiary for all age groups. We used a 5-year average of Medicaid spending per beneficiary derived from data reported by the Centers for Medicare & Medicaid Services (CMS) for fiscal years 1995 through 1999. The results suggest that, nationwide, elderly beneficiaries utilize health

care services at about two-and-one-half times the rate of the average Medicaid beneficiary, and children utilize services at less than half the rate of the average beneficiary. (See the cost weight index column in table 6.)

Table 6: Weights for Age Groups to Reflect Cost Differences and Medicaid Program Participation

Age group	Average annual spending per beneficiary	Cost weight (index) ^a	Average participation rate (index) ^b	Adjusted cost weight ^c
Elderly (aged 65 or older)	\$9,005	2.5	1.4	3.5
Adults (aged 21-64)	\$4,729	1.3	0.7	1.0
Children (under age 21)	\$1,483	0.4	1.2	0.5
All groups	\$3,532	1.0	1.0	1.0

Sources: Department of Commerce and HHS.

Note: GAO analysis of data from the Department of Commerce for 1995 through 1999 and data from HHS for 1994 through 1998.

^aIndex is spending per recipient for each age group divided by average spending per recipient for all age groups.

^bIndex is the percentage of people in each age group receiving Medicaid benefits, expressed as a ratio to the average of all groups.

^cCalculated by multiplying the cost weight index by the participation rate index.

To adjust for differences in program participation across age groups, we compared the number of Medicaid beneficiaries by age group with the number of people in poverty. We compared these counts with the national average participation rates for all Medicaid beneficiaries. We calculated the adjusted cost weight by multiplying the cost weight index by the average participation rate index. We calculated a weighted count of people in poverty for each state by applying the adjusted cost weights in the last column of table 6 to poverty counts by age group, according to the following formula:

$$\left(\begin{array}{c} \text{Weighted} \\ \text{Poverty} \\ \text{Count} \end{array} \right) = 3.5 \left(\begin{array}{c} \text{Number in} \\ \text{Poverty} \\ \text{Over} \\ \text{Age 65} \end{array} \right) + 1.0 \left(\begin{array}{c} \text{Number in} \\ \text{Poverty} \\ \text{Aged 21 to 64} \end{array} \right) + 0.5 \left(\begin{array}{c} \text{Number in} \\ \text{Poverty Under} \\ \text{Age 21} \end{array} \right)$$

In table 7, the columns representing official poverty rates report the percentage of people in poverty based on the official government poverty

statistics reported by the Bureau of the Census. The age-weighted columns are the percentages of people in poverty after weighting children, adults, and the elderly. Comparing the percentages in the official poverty rate columns with the percentages after age-weighting illustrates the effect of differences in utilization rates by age cohort. For example, Florida's official poverty rate is revised upward from 14.0 percent to 15.3 percent when weighted for age differences. Similarly, the District of Columbia's poverty rate increases from about 21.1 percent to about 22.7 percent after weighting.³

³The age and health care use cost-adjusted poverty rates in table 7 will be discussed in the next section, in which we describe the cost adjustments made for differences in medical care costs.

Table 7: Comparison of Official and Cost-Adjusted Poverty Rates, 5-Year Averages, 1995-99

State	Official poverty rate		Age-weighted poverty rate		Age and health care use cost-adjusted poverty rate	
	Percentage of people in poverty	Percentage of U.S. poverty rate	Percentage in poverty	Percentage of U.S. poverty rate	Percentage in poverty	Percentage of U.S. poverty rate
Alabama	15.9	122	16.9	128	16.0	121
Alaska	8.2	63	6.9	52	7.2	54
Arizona	16.5	126	15.2	115	15.7	119
Arkansas	16.3	125	18.3	138	16.4	124
California	15.9	122	14.2	108	15.7	118
Colorado	9.0	69	8.4	63	8.5	64
Connecticut	9.3	71	9.4	71	10.4	78
Delaware	9.9	75	10.2	77	11.1	84
District of Columbia	21.1	162	22.7	172	27.7	209
Florida	14.0	108	15.3	116	15.6	118
Georgia	13.6	104	13.6	103	13.4	102
Hawaii	11.6	89	11.9	90	13.7	104
Idaho	13.6	104	12.6	95	11.3	85
Illinois	11.1	85	11.0	83	11.0	83
Indiana	8.4	64	8.9	68	8.3	63
Iowa	9.6	74	9.7	73	8.5	64
Kansas	10.7	82	11.4	86	10.1	76
Kentucky	14.7	112	15.4	117	14.2	107
Louisiana	19.0	145	19.2	145	17.1	130
Maine	10.7	82	12.5	94	11.6	87
Maryland	8.6	66	9.9	75	10.3	78
Massachusetts	10.7	82	11.3	86	12.1	92
Michigan	10.8	83	10.9	83	10.9	82
Minnesota	9.2	71	9.8	74	9.7	73
Mississippi	18.9	145	19.6	149	17.5	132
Missouri	10.4	80	11.2	85	10.3	78
Montana	16.0	123	15.0	114	13.1	99
Nebraska	10.6	81	11.8	90	10.4	79
Nevada	10.5	80	10.4	79	11.9	90
New Hampshire	7.7	59	8.5	64	8.5	64
New Jersey	8.5	65	9.6	73	10.8	82
New Mexico	22.6	173	21.2	161	19.8	150
New York	16.1	123	16.5	125	17.9	136
North Carolina	12.8	98	13.9	105	13.6	103
North Dakota	13.0	99	14.1	106	12.4	94
Ohio	11.6	89	11.7	88	11.2	85
Oklahoma	14.8	114	15.7	119	13.5	102
Oregon	12.5	95	11.8	89	11.9	90
Pennsylvania	11.1	85	12.0	91	11.9	90

State	Official poverty rate		Age-weighted poverty rate		Age and health care use cost-adjusted poverty rate	
	Percentage of people in poverty	Percentage of U.S. poverty rate	Percentage in poverty	Percentage of U.S. poverty rate	Percentage in poverty	Percentage of U.S. poverty rate
Rhode Island	11.2	86	13.6	103	13.6	103
South Carolina	14.3	109	15.1	114	14.9	113
South Dakota	12.3	94	13.5	102	12.0	90
Tennessee	14.2	109	14.5	110	14.2	107
Texas	16.1	124	15.8	119	14.8	112
Utah	7.9	61	7.0	53	6.5	49
Vermont	10.3	79	10.6	80	9.6	73
Virginia	10.4	79	11.8	89	11.6	88
Washington	10.4	79	10.0	75	9.7	73
West Virginia	17.0	131	20.1	152	18.0	136
Wisconsin	8.6	66	8.7	66	8.3	62
Wyoming	12.0	92	12.1	91	10.8	82
United States	13.1	100	13.2	100	13.2	100

Sources: HHS, and the Departments of Commerce, Housing and Urban Development (HUD), and Labor.

Note: GAO analysis of data from HHS, HUD, and the Departments of Commerce and Labor.

Adjusting Poverty Counts for Differences in the Cost of Providing Health Care Services

The cost of providing health care services is affected by three factors: (1) the cost of the personnel who provide the services (wages, for example), (2) the rental cost of facilities in which the services are provided, and (3) the cost of medical equipment and supplies.

We used the average wage per worker in the health industry (Standard Industrial Classification (SIC) code 8000), produced by the Bureau of Labor Statistics (BLS), to measure the cost of personnel for 1996 through 1998. The BLS cost data cover personnel in a wide variety of settings, including offices, clinics, hospitals, and medical and dental laboratories, as well as health care providers who work for home health agencies.

To measure the cost of facilities through which services are delivered, we used apartment rents as reported by the Department of Housing and Urban Development (HUD) because data on commercial office space rental rates in the health sector of the economy were not available. Apartment rental rates were an appropriate alternative because the same factors that affect the cost of office space (for example, population density and income) affect housing rental rates, and apartment rental rates are likely to more closely mimic office space costs than would owner-occupied housing units. In addition, data are available for apartment

rentals by the size of the unit, which allowed us to take size differences into account.

Data on the geographic differences in the cost of medical equipment and supplies were not readily available. Because medical equipment and supplies generally are purchased in national markets, we assumed that the costs of these items do not vary across states.

We calculated an index of health industry wage rates and apartment rents (our proxy for the rental cost of medical facilities). For medical supplies, we used a cost index of 1.0 for all states to reflect the assumption that these costs do not vary across states. We then combined the three factors into an overall index of the cost of health care services by state, weighting each factor on the basis of its respective proportion of the total cost of health care services. Personnel costs represent the greatest share of health care costs, as much as 75 percent of total costs, according to one study.⁴ We constructed our cost index conservatively by reducing the personnel cost weight to 60 percent. We applied a cost weight of 30 percent for medical equipment and supplies and other miscellaneous costs that are assumed to be the same across states. The remaining 10 percent is the cost weight for rent. Using these cost weights is likely to understate cross-state cost differences.

Nineteen states had health care costs estimated to be at least 10 percent above or below the national average. The states with costs 10 percent or more above the national average were California, Connecticut, the District of Columbia, Hawaii, Nevada, and New Jersey. States with lower costs tended to be southern or midwestern states. (See table 8.)

⁴Gregory Pope, *Adjusting the Alcohol, Drug Abuse, and Mental Health Services Block Grant for Allocations for Poverty Population and Cost of Service* (Needham, Mass.: Health Economics Research, Inc., Mar. 30, 1990).

Table 8: Wage, Rent, and Health Care Cost Indexes, by State

State	Percentage of national average		
	Wage index (3-year averages, 1996-98)	Rent index (FY 2000)	Health care cost index
Alabama	96	70	95
Alaska	104	124	105
Arizona	106	98	103
Arkansas	88	67	89
California	112	127	110
Colorado	101	107	101
Connecticut	113	125	110
Delaware	114	104	109
District of Columbia	131	133	122
Florida	103	100	102
Georgia	100	91	99
Hawaii	119	139	115
Idaho	87	75	90
Illinois	100	104	100
Indiana	92	82	93
Iowa	83	74	87
Kansas	85	77	89
Kentucky	92	69	92
Louisiana	87	72	89
Maine	90	88	93
Maryland	105	113	104
Massachusetts	106	131	107
Michigan	101	93	100
Minnesota	99	93	99
Mississippi	87	66	89
Missouri	91	74	92
Montana	82	77	87
Nebraska	84	77	88
Nevada	122	110	114
New Hampshire	99	112	100
New Jersey	114	134	112
New Mexico	92	81	93
New York	109	132	109
North Carolina	99	84	98
North Dakota	85	71	88
Ohio	96	85	96
Oklahoma	83	69	86
Oregon	101	99	101
Pennsylvania	99	94	99

State	Percentage of national average		
	Wage index (3-year averages, 1996-98)	Rent index (FY 2000)	Health care cost index
Rhode Island	99	108	100
South Carolina	101	79	99
South Dakota	85	77	89
Tennessee	100	76	98
Texas	92	90	94
Utah	90	95	93
Vermont	85	97	91
Virginia	98	98	99
Washington	94	106	97
West Virginia	88	66	90
Wisconsin	95	85	95
Wyoming	87	76	90
United States	100	100	100

Sources: HHS, HUD, and the Department of Labor.

Notes: States in bold have health care costs estimated to be 10 percent or more above or below the national average. GAO analysis of data from HHS, HUD, and the Department of Labor.

Calculating States' Ability to Fund Medicaid Services without and with Value of Federal Matching Aid Added

We compared states' ability to fund Medicaid services without and with the value of federal matching aid added. Column 1 of table 9 shows states' funding ability: states' TTR per person in poverty adjusted for differences in the cost of providing them health care services. Column 2 shows states' effective fiscal year 2000 federal matching rates used in the analysis⁵ and column 3 shows the resulting "multipliers" (i.e., $1/(1 - \text{FMAP})$) that reflect the effect of federal matching on states' funding ability. Funding ability with federal aid is shown in column 4.

⁵To calculate effective matching rates we divided each state's federal matching aid by its total Medicaid spending, net of DSH and certain other costs.

Table 9: States' Funding Ability without and with the Value of Fiscal Year 2000 Federal Matching Aid Added

State	(1) Funding ability from state resources (dollars per person in poverty) ^a	(2) Effective FY 2000 FMAP (percentage)	(3) FMAP multiplier	(4) Funding ability with federal matching aid (col. 1 x col. 3)
Alabama	\$169,683	69.64	3.29	\$558,840
Alaska	570,409	67.26	3.05	1,742,447
Arizona	189,505	69.19	3.25	615,081
Arkansas	158,718	73.11	3.72	590,165
California	222,437	52.06	2.09	463,963
Colorado	429,969	50.08	2.00	861,380
Connecticut	459,835	50.02	2.00	920,046
Delaware	422,823	50.20	2.01	848,991
District of Columbia	184,951	70.93	3.44	636,309
Florida	211,705	56.60	2.30	487,803
Georgia	251,548	60.01	2.50	628,961
Hawaii	256,566	51.03	2.04	523,891
Idaho	244,092	70.29	3.37	821,587
Illinois	341,369	50.15	2.01	684,770
Indiana	386,661	61.84	2.62	1,013,136
Iowa	382,676	63.14	2.71	1,038,320
Kansas	328,243	60.09	2.51	822,538
Kentucky	205,683	70.62	3.40	700,085
Louisiana	187,290	70.37	3.38	632,139
Maine	246,614	66.31	2.97	732,052
Maryland	374,141	50.18	2.01	750,931
Massachusetts	342,550	50.13	2.01	686,922
Michigan	289,686	55.17	2.23	646,136
Minnesota	372,580	51.69	2.07	771,185
Mississippi	140,227	76.89	4.33	606,653
Missouri	320,009	60.58	2.54	811,740
Montana	190,431	74.49	3.92	746,413
Nebraska	319,214	61.00	2.56	818,427
Nevada	327,582	50.45	2.02	661,158
New Hampshire	467,893	50.08	2.00	937,274
New Jersey	417,976	50.07	2.00	837,128
New Mexico	142,227	74.19	3.87	551,081
New York	229,337	50.11	2.00	459,721
North Carolina	244,355	62.61	2.67	653,542
North Dakota	238,866	70.97	3.45	822,897
Ohio	289,509	58.72	2.42	701,375
Oklahoma	198,643	71.63	3.53	700,263
Oregon	288,765	60.42	2.53	729,556
Pennsylvania	281,796	53.84	2.17	610,540

State	(1) Funding ability from state resources (dollars per person in poverty) ^a	(2) Effective FY 2000 FMAP (percentage)	(3) FMAP multiplier	(4) Funding ability with federal matching aid (col. 1 x col. 3)
Rhode Island	264,602	53.77	2.16	572,326
South Carolina	189,300	70.18	3.35	634,851
South Dakota	274,528	71.07	3.46	948,856
Tennessee	209,859	63.19	2.72	570,142
Texas	224,158	61.54	2.60	582,883
Utah	452,178	71.65	3.53	1,595,085
Vermont	315,610	62.39	2.66	839,259
Virginia	325,551	51.90	2.08	676,811
Washington	367,374	52.08	2.09	766,584
West Virginia	145,611	74.80	3.97	577,734
Wisconsin	392,390	58.88	2.43	954,178
Wyoming	383,724	64.63	2.83	1,084,827
United States	\$260,851	56.83	2.32	\$624,935

Sources: HHS and the Department of the Treasury.

Notes: Calculations were done with unrounded numbers, not the rounded numbers shown in the table. GAO analysis of data from HHS and the Department of the Treasury.

^aFunding ability without federal matching aid was calculated using an average of TTR for 1996 through 1998.

Comparing Proportion of States’ Resources Devoted to Medicaid with Their Total Spending per Person in Poverty

The data used to show the relationship between a state’s effort to fund Medicaid benefits from its own financial resources and its total Medicaid spending per person in poverty, shown in figure 2, are displayed in table 10.

Table 10: Proportion of State Resources Devoted to Medicaid per \$1,000 of TTR Compared with Total Medicaid Spending per Person in Poverty, Cost Adjusted, Fiscal Year 2000

State	State financial resources per \$1,000 of TTR	Total Medicaid spending per person in poverty
Alabama	\$6.08	\$3,397
Alaska	5.84	10,178
Arizona	4.64	2,851
Arkansas	6.35	3,747
California	8.04	3,731
Colorado	6.26	5,391
Connecticut	8.99	8,274
Delaware	7.35	6,242
District of Columbia	8.51	5,417
Florida	6.48	3,160
Georgia	6.15	3,869
Hawaii	7.51	3,935
Idaho	5.07	4,166
Illinois	7.79	5,332
Indiana	6.07	6,153
Iowa	6.48	6,729
Kansas	6.23	5,127
Kentucky	7.40	5,179
Louisiana	5.59	3,533
Maine	10.93	7,999
Maryland	7.38	5,544
Massachusetts	11.43	7,849
Michigan	9.12	5,895
Minnesota	9.20	7,094
Mississippi	6.19	3,757
Missouri	7.82	6,345
Montana	5.13	3,826
Nebraska	7.26	5,941
Nevada	3.83	2,533
New Hampshire	7.32	6,864
New Jersey	7.00	5,857
New Mexico	6.12	3,370
New York	18.16	8,347
North Carolina	7.77	5,075
North Dakota	6.64	5,467
Ohio	7.77	5,449
Oklahoma	5.12	3,586
Oregon	7.26	5,299
Pennsylvania	11.29	6,891

Appendix II: Methodology

State	State financial resources per \$1,000 of TTR	Total Medicaid spending per person in poverty
Rhode Island	14.27	8,170
South Carolina	6.40	4,061
South Dakota	4.92	4,671
Tennessee	11.04	6,296
Texas	5.58	3,252
Utah	3.74	5,964
Vermont	10.32	8,661
Virginia	5.10	3,455
Washington	8.71	6,679
West Virginia	7.22	4,170
Wisconsin	7.89	7,532
Wyoming	3.85	4,171
United States	\$8.37	\$5,056

Sources: HHS and the Departments of Commerce, Housing and Urban Development, and the Treasury.

Note: GAO analysis of data from HHS and the Departments of Commerce, Housing and Urban Development, and the Treasury.

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