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BY THE COMPTROLLER GENERAL

# Report To The Congress

OF THE UNITED STATES

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## Changing Medicaid Formula Can Improve Distribution Of Funds To States

The formula used to establish Federal reimbursement rates for State Medicaid spending is not as equitable to States as it could be. This is because per capita income--a key formula factor--does not adequately reflect the greater tax burden of States with a high proportion of the needy and because it is not the best available measure of States' ability to finance Medicaid from State revenue sources. The formula also contributes to the wide disparity in benefits provided under State Medicaid programs.

GAO identifies formula changes that will improve tax burden equity and reduce interstate program disparities in varying degrees. Therefore, GAO presents a series of options that could improve the current formula with Federal funding either reduced, increased or maintained at current levels.



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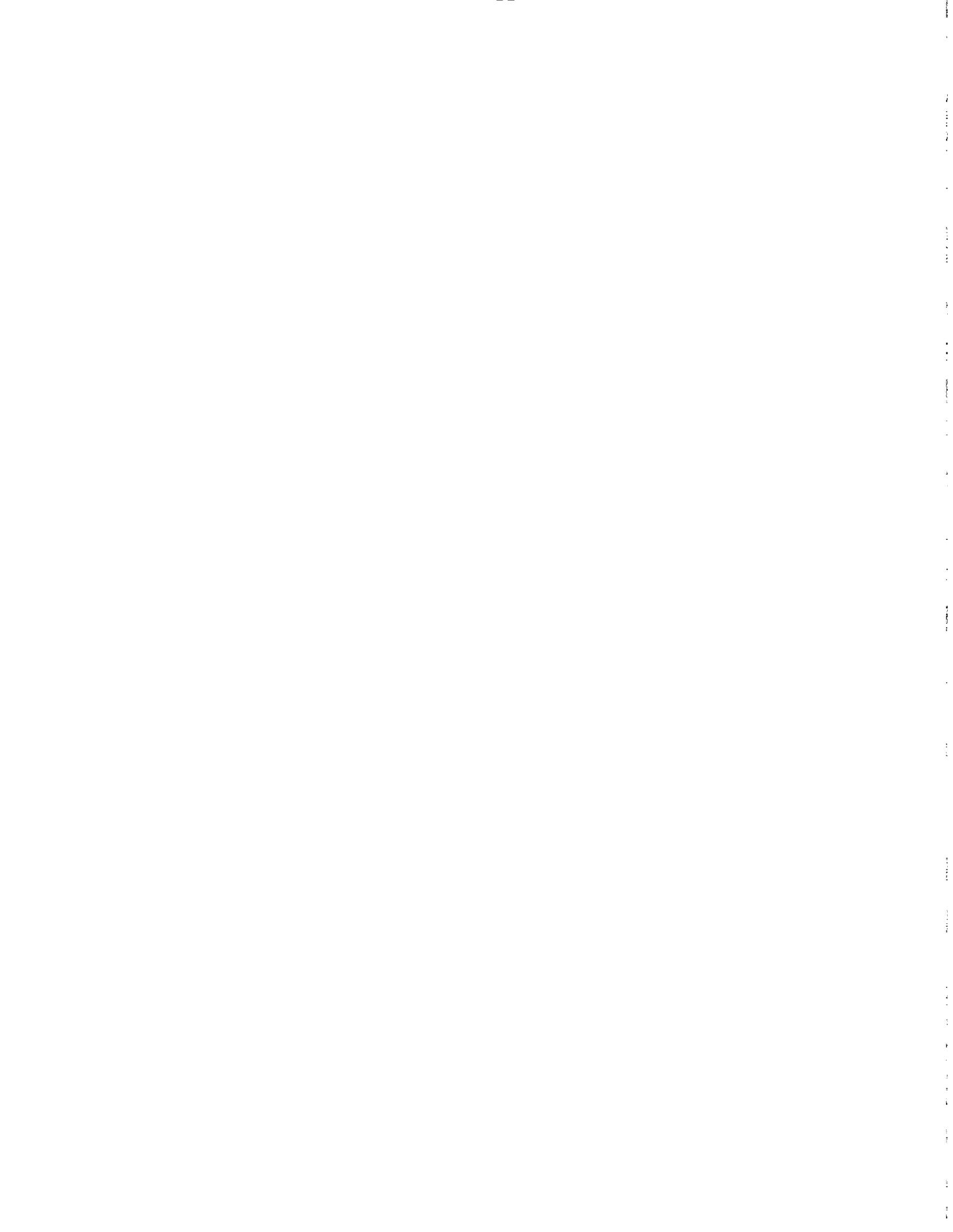
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To the President of the Senate and the  
Speaker of the House of Representatives

This report describes inequities inherent in the formula used to establish the Federal reimbursement rate for eligible State Medicaid spending and develops options for improving the equity of the formula. We made this review in response to the legislative mandate for this study contained in the Omnibus Budget Reconciliation Act of 1981.

We are sending copies of this report to the Director, Office of Management and Budget; the Secretary of the Department of Health and Human Services; and the Chairman of the Advisory Commission on Intergovernmental Relations.

*Charles A. Bowsher*  
Comptroller General  
of the United States



D I G E S T

This report is in response to the Omnibus Budget Reconciliation Act of 1981 mandate that GAO study the Medicaid formula and provide information that would contribute to a more equitable distribution of Federal Medicaid funds to States. The Medicaid program, which is administered within broad Federal requirements by the States, is financed jointly with State and Federal funds as specified in Title XIX of the Social Security Act (P.L. 89-97). Medicaid accounted for \$28.4 billion in total expenditures in fiscal year 1981. The cost of the program has risen dramatically in recent years, with Federal spending rising from \$3.4 billion in fiscal year 1971 to \$16.9 billion in fiscal year 1981.

GAO evaluated the formula relative to three policy objectives it identified in the Medicaid program's legislative history:

- narrowing differences in program benefits provided by States;
- providing a more equitable distribution of tax burdens between the richer and poorer States as they pay for their share of the medical services provided;
- reducing the rate of increase in Federal Medicaid funding which the program has experienced.

Changes can be made to the formula which would result in a more equitable distribution of Federal Medicaid funds to States. Because no single formula change will equally address the three competing objectives used as criteria for GAO's study, any changes made would depend on the importance the Congress places on each of these objectives and the degree to which each is affected by the proposed formula alternatives. Because the Medicaid formula is also used to determine Federal funding for the Aid to Families with Dependent Children (AFDC) Program in all States except Texas and Arizona, most of GAO's observations on the Medicaid formula apply to the AFDC Program as well.

MEDICAID FORMULA IS NOT AS  
EQUITABLE AS IT COULD BE

To determine how much of a State's Medicaid expenditures will be reimbursed by the Federal Government, the current formula uses per capita income as an indicator of the size of the needy population which the program is intended to serve and as an indicator of a State's tax base (i.e., its capacity to pay for the services it provides). Because per capita income is an incomplete measure of both, GAO believes the distribution of Federal funding to the States is not as equitable as it could be.

Under the formula, States with high per capita incomes receive a smaller Federal share of Medicaid expenditures (though not less than 50 percent) while States with low per capita incomes receive a larger share (though not more than 83 percent). GAO's study shows that, although the use of per capita income compensates for varying State taxing capacities to some extent, the poorer States generally would still have to shoulder significantly higher tax burdens if they were to provide benefits comparable to those of wealthier States. For example, Mississippi would have to make four times the tax effort of either Alaska or Wyoming if all three States were to provide a similar mix of Medicaid services to their poor residents. (See pp. 17 to 19.)

The Medicaid formula does not adequately equalize tax burdens because per capita income, which is an average amount based on a State's total personal income divided by its total population, does not recognize wide differences in how such income is distributed among residents. For example, Nevada and the District of Columbia (treated as a State under the program) have nearly the same per capita income, but the District has more than twice the percentage of its population below the poverty line than Nevada does. Because the District has to meet the needs of a greater proportion of its people than Nevada, the District has a larger burden. Yet both Nevada and the District are reimbursed for their Medicaid expenditures at the same Federal percentage rate. (See pp. 61 to 69.)

Per capita income is also an incomplete measure of a State's capacity to pay for the services it provides. Per capita income directly takes into account only one tax base, the individual income tax, and other major available revenue sources such as property and sales taxes are not considered. GAO believes the Representative Tax System, pioneered by the Advisory Commission on Intergovernmental Relations, measures a much greater range of States' potential revenue sources and is therefore a more complete measure of true tax capacity. (See pp. 69 to 74.)

Poorer States generally avoid the higher tax burdens they would have to bear in paying for their Medicaid programs by establishing more restrictive eligibility requirements and providing fewer medical services than richer States. For example, Connecticut spends \$1,228 per poor person compared to Mississippi's \$329 per poor person. Although such differences are the result of many social, economic, and political circumstances, empirical evidence indicates that the formula is partially responsible for them. (See pp. 19 to 21 and 80 to 83.)

Finally, the 1981 Budget Reconciliation Act includes incentives to reduce the rate of Medicaid spending increase by reducing each State's Federal share. However, the approach adopted applies the same percentage reduction in Federal funding in all States. This raises the tax burdens of lower income States more than it does for wealthier States. Consequently, the 1981 provisions could lead to greater program disparities and tax burden inequities among States. (See pp. 23 to 25.)

#### MATTERS FOR CONSIDERATION BY THE CONGRESS

To reduce inequities in the formula, GAO's analysis identified four possible changes that could be made simultaneously or in various combinations (see p. 46) without requiring significant additional research. However, collecting additional data needed for these formula changes would require additional estimated budgetary outlays of \$4 million to \$6 million annually. (See pp. 65 and 74.)

Because all formula changes GAO considered produce large changes for some States, a new formula should be phased in over several years. Congressional action will be required to implement the identified formula changes.

The four changes GAO has identified are:

- giving additional weight to the number of people below the poverty line by using personal income per person in poverty instead of personal income per total population as an indicator of the needy (pp. 27 to 30);
- replacing personal income with the Representative Tax System as a measure of State tax capacity (p. 31);
- reducing the minimum Federal reimbursement of State expenditures from 50 percent to 40 percent (pp. 31 to 34); and
- reflecting State Medicaid spending per person in poverty by using an incentive factor that (1) would increase incentives to reduce program disparities among States and (2) could be adjusted in future years to provide incentives to slow the rate of Medicaid spending growth (pp. 39 to 44).

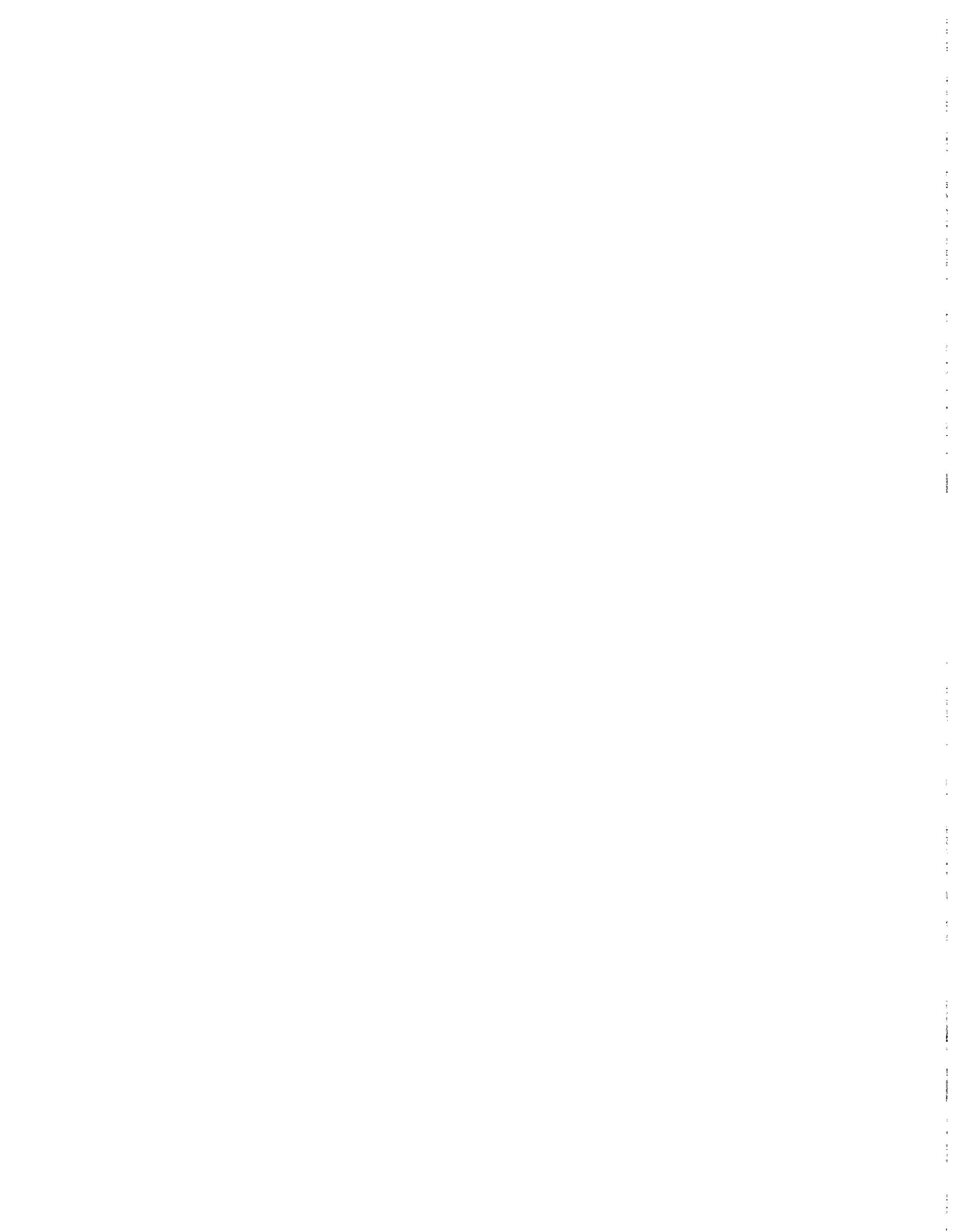
The proposed formula changes would significantly raise the Federal share for New York because of its relatively large poverty population and low tax capacity. This has major budgetary implications because New York's is the largest program, accounting for 18 percent of total Medicaid funding for States in fiscal year 1980. Increasing the Federal share for New York can be justified on the grounds of creating a more equitable distribution of tax burdens among States. However, this could be considered unfair to the other States if they must suffer reductions in their programs to make up for New York's increase, because such reductions would have to be made in many cases in programs already less generous than New York's. GAO discusses various combinations of the proposed formula changes and their effects on the three policy objectives outlined earlier. (See pp. 44 and 46 to 56.)

## VIEWS OF PROGRAM OFFICIALS

The Department of Health and Human Services did not provide official comments on this report because of the short time allowed. Program officials, however, did orally provide their views to GAO.

Program officials said that, because the Representative Tax System has never before been used to allocate Federal aid, it might have been desirable to present options which represent lesser changes to the formula. They were also concerned that use of the Representative Tax System in GAO's analysis might be viewed as an endorsement for its use in the many other programs which allocate Federal aid on the basis of personal income. Program officials also expressed concern over the report's presentation of options with and without New York because of the impracticability of treating one State differently than the others.

GAO did not present formula alternatives suggested by program officials because they have already been identified by earlier research and they do little to improve the equity of the formula. Also, some of the options presented in the report do not include the Representative Tax System. This is because, while it would improve tax burden equity, it would weaken the formula's incentive to reduce program disparities. GAO's use of the Representative Tax System should be viewed solely as it applies to the Medicaid program; its use for other programs would have to be considered in the context of the objectives of those programs. Finally, implementation of the various options would either significantly increase total Federal funding or significantly reduce the shares of most States. GAO's presentation of the options with and without New York was designed to illustrate that this result is due primarily to New York. GAO takes no position on how New York should be handled. GAO merely provides the data for the Congress to consider. (See pp. 38 and 58.)



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#### ABBREVIATIONS

ACIR	Advisory Commission on Intergovernmental Relations
AFDC	Aid to Families with Dependent Children Program
BLS	Bureau of Labor Statistics

## GLOSSARY

Categorically needy	Persons who qualify for either the Aid to Families with Dependent Children or the Supplemental Security Income programs and are therefore entitled to participate in the State's Medicaid program.
Fiscal capacity	The ability (or potential) to raise public revenues from State sources expressed relative to the number of people below the poverty line.
Matching rate	The percentage of State Medicaid vendor payments reimbursable by the Federal Government, also referred to as the "Federal share."
Medically needy	Persons who would qualify for the Aid to Families with Dependent Children or the Supplemental Security Income programs if their medical expenses were deducted from their income.
People below the poverty line	The number of people with annual incomes, net of welfare transfer payments, below the official poverty line as established by the Office of Management and Budget and tabulated by the Bureau of the Census. Used as an indicator of the needy.
Program benefits	The extent to which a State provides program coverage to its low income residents and the scope of medical services provided under their program. For comparison purposes this is measured by State's Medicaid spending per person below the poverty line.
Program disparities	Differences among States in program benefits measured by differences in their Medicaid spending per person below the poverty line.
Recipients	Persons who actually received Medicaid-funded health care services at any time during the calendar year.

CPI	Consumer Price Index
CPS	Current Population Survey
CRS	Congressional Research Service
GAO	General Accounting Office
FY	Fiscal Year
HCFA	Health Care Financing Administration
HHS	Department of Health and Human Services
RTS	Representative Tax System
SSI	Supplemental Security Income Program

Representative Tax System

A specific methodology used to measure fiscal capacity which reflects the major revenue sources used by States. Generally expressed in relative terms in this report so that the median State has an index value of 100.

Tax capacity

See fiscal capacity.

Tax effort

The ratio of tax revenues to tax capacity, used as an indicator of State tax burdens.

Actual tax effort--the ratio of a State's actual Medicaid spending financed from State revenue sources to its tax capacity as measured by the Representative Tax System. Generally expressed so that the median State's index has a value of 100.

Equalized tax effort--the ratio of a State's Medicaid spending that would be financed from State revenue sources if Medicaid spending per person below the poverty line were equalized among States. Also, generally expressed so that the index has a value of 100 for the median State.

Tax burden

See tax effort.

Tax burden disparities

(1) Differences in the equalized tax effort of States or (2) differences in the actual tax effort of States with the same Medicaid spending per person below the poverty line.

Tax burden equity

The absence of tax burden disparities.

Tax wealth

See fiscal capacity.



## CHAPTER 1

### INTRODUCTION

The Omnibus Budget Reconciliation Act of 1981 (P.L. 97-35, 95 Stat. 806-807 Title XXI, Section 2165) mandated the General Accounting Office (GAO) to study the current Medicaid formula to help identify ways to improve the equity of the existing formula. This report presents various formula options for achieving a more equitable distribution of Federal aid.

### DESCRIPTION OF THE MEDICAID PROGRAM

Title XIX of the Social Security Act provides for a program of medical assistance for certain low-income individuals and families. The program, known as Medicaid, became Federal law in 1965 (P.L. 89-97). It succeeded earlier welfare-linked medical care programs, most notably the Kerr-Mills program of medical assistance for the aged. Medicaid accounted for some \$28.4 billion in Federal, State, and local expenditures in fiscal year 1981 and is the primary source of health care coverage for the poor in America.

Medicaid is financed jointly with State and Federal funds, with the current Federal contribution to the cost of the program ranging from 50 percent to 77.36 percent, according to State per capita income. It is administered by each State within certain broad Federal requirements and guidelines.

Medicaid provides medical assistance to those people who are eligible to receive cash payments under one of the existing welfare programs established under the Social Security Act, that is, Title IV, the program of Aid to Families with Dependent Children (AFDC), or Title XVI, the Supplemental Security Income (SSI) Program for the aged, blind, and disabled. In general, receipt of a welfare payment under one of these programs means automatic eligibility for Medicaid (i.e., categorically needy).

In addition, States may provide Medicaid to the "medically needy," that is, to people who fit into one of the categories of people covered by cash welfare programs (aged, blind, or disabled individuals, or members of families with dependent children when one parent is absent, incapacitated, or unemployed) and have enough income to pay for their basic living expenses (and so are not recipients of welfare) but not enough to pay for their medical care.

Title XIX of the Social Security Act requires that certain basic services, such as inpatient hospital and physician services, must be offered in any State Medicaid program. In addition, States may provide a number of other services including drugs, eyeglasses, private duty nursing, dental care, etc. Payments are made directly to the provider of services for

care rendered to an eligible individual. Providers must accept the Medicaid reimbursement level as payment in full.

States may choose whether or not to operate a Medicaid program and all currently do. <sup>1/</sup> The District of Columbia, Puerto Rico, Guam, the Virgin Islands, and the Northern Mariana Islands also provide Medicaid coverage. The Health Care Financing Administration (HCFA) in the Department of Health and Human Services (HHS) administers the Medicaid program.

#### CONGRESSIONAL CONCERNS WHICH LED TO MANDATE FOR GAO STUDY

Congressional concerns over continuing growth in Medicaid expenditures and with the equity of the current method of allocating Federal Medicaid funds to the States led to the legislative mandate for the GAO study.

#### Rapidly growing Medicaid expenditures

The cost of the Medicaid program has risen dramatically over the past 11 years. During this period, Federal spending devoted to Medicaid increased at an average annual rate of 17.4 percent, rising from \$3.4 billion to \$16.9 billion. These growing costs are in part reflected in the overall growth in health care costs as measured by the Consumer Price Index (CPI). From 1971 to 1981, the CPI registered a compound annual rate of growth of 8.7 percent in the cost of medical care, which was slightly higher than the general rate of growth in prices (8.4 percent). The rate of growth of medical care costs was even greater between 1975 and 1981, 9.8 percent annually, as compared to 9.1 percent for prices in general. Between 1971 and 1981, the percentage of Federal Budget outlays devoted to health services rose from 6.8 percent to 10 percent of total outlays.

The Omnibus Budget Reconciliation Act of 1981 reflected congressional concern over growing Medicaid costs in provisions designed to give States a greater ability to reduce spending. For example, it repealed the requirement that, if participating States provide coverage to persons eligible for AFDC who attend school, they must do so for all such persons under 21. The act now makes the requirement optional. The act also allows States to pursue economy measures, such as requiring persons who over-utilize Medicaid to use State-designated providers, and limits the participation of providers who abuse the program.

The 1981 act further demonstrated congressional concern for spending reductions by reducing Federal Medicaid aid in fiscal

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<sup>1/</sup>Arizona, which did not have a Medicaid program until fiscal year 1983, operates its program with a waiver of some Federal requirements.

years 1982 through 1984. The act also added a complex set of incentives for States to slow their rate of spending increase. The act, for example, provides for return of some or all of the State's previous year's funding reduction if the State reduced its spending by an amount sufficient to keep the Federal share of Medicaid spending below a target amount established in the legislation (see p. 23).

Longstanding congressional  
interest in equity of the formula

Inequities in Medicaid fund distribution have long been a concern of the Congress. Our review of the program's legislative history, applicable public discussion, and policy research identified two issues which the Congress has addressed in its attempt to achieve a more equitable distribution of Federal medical funds. These are the wide State differences in Medicaid services provided to the Nation's low-income residents and differences in tax burdens borne by State residents in financing those services.

Historically, the Congress has attempted to deal with inequities in the State distribution of medical benefits to the needy by adjusting the Federal share of State Medicaid spending inversely with State per capita income. The coupling of varying Federal percentage rates with State per capita income explicitly recognized that differences in State programs were due, in part, to differing abilities of States to finance them.

The relationship between differences in State public assistance programs and tax burden inequities was first discussed in conjunction with a variable percentage rate formula in 1946. The Senate report proposing the use of per capita income to determine Federal shares for the Old Age Assistance, Dependent Children, and Aid to the Blind Programs (which, in 1950, began to include medical vendor payment reimbursement) stated that:

"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 for 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/

Concerns over program disparities and tax burden inequities were first reflected in a variable rate formula in the 1958 amendments to the Old Age Assistance Program. Before 1958, the Federal Government reimbursed States for 80 percent of the first \$30 spent for each recipient each month and 50 percent of the next \$30 spent per recipient each month. Expenses in excess of the \$60 monthly total were paid for entirely by the State. In 1958, the Old Age Assistance Program was modified to establish varying Federal rates to be applied to the State's monthly expenditure per recipient of more than \$30 up to \$65.

The reimbursement rate--which varied according to State per capita income--ranged from 50 percent for high-income States to 65 percent for low-income States. The States continued to be reimbursed for 80 percent of the first \$30 spent per recipient per month.

The House and Senate reports accompanying the 1958 amendments provided the following explanation for varying Federal rates with State income:

"The revised formula in the bill for determining the Federal share of assistance will be of particular assistance to States with limited fiscal resources and will enable States to make more nearly adequate assistance payments. This will help to more nearly balance the level of assistance made available to needy people in the various parts of the country." 2/

The Congress' continuing concern with the wide differences in medical benefits being provided by the States and with the differing abilities of the States to finance needed medical services surfaced again in 1960. The Congress revised the Old Age Assistance Program to further encourage States to provide medical services to the aged. For example, under the 1960 provisions the Federal Government reimbursed States for 50 to 80 percent of the next \$12 dollars in medical vendor payments in addition to the prior \$65 ceiling for reimbursable expenditures.

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1/Report of the Senate Committee on Finance, "Social Security Amendments of 1946." Senate Report No. 1862, 79th Congress, Second Session (July 27, 1946), as reported in the U.S. Congressional Service (1946), p. 1525.

2/Report of the Senate Committee on Finance, "Social Security Amendments of 1958." Senate Report No. 2388, 85th Congress, Second Session, p. 40 (August 14, 1958) and report of the House Committee on Ways and Means, "Social Security Amendments of 1958." House Report No. 2233, 85th Congress, Second Session, p. 40 (July 28, 1958).

As with the 1958 amendments, the poorer the State the higher would be the Federal match for these additional medical expenditures.

The Senate report accompanying the legislation explained that

"\* \* \* States provide needy aged persons with \* \* \* vendor payments to the suppliers of medical care (for instance, doctors, hospitals, and nurses). These provisions vary greatly. Some States have relatively adequate provisions for the medical care of needy aged persons; others have little or no provision. The increased Federal financial provisions in the bill are designed to encourage the States to extend comprehensive medical services to all needy persons receiving monthly assistance payments." 1/

In addition, the 1960 amendments created a new Medical Assistance to the Aged Program. This program encouraged States to provide medical assistance for aged people who were not eligible for the Old Age Assistance Program yet lacked the resources to pay for medical care, i.e., the medically needy. Under the Medical Assistance to the Aged Program, the Federal Government's share of medical vendor payments varied from 50 to 80 percent according to State per capita income and was applied to the State's total expenditures.

An open-ended sharing formula which varied according to State per capita income was included in the Medicaid program with two changes when Medicaid was enacted in 1965. First, the maximum Federal share for any one State was raised from 80 to 83 percent and second, the program's total nationwide share financed by the Federal Government was raised from 50 to 55 percent.

The current formula results in States with a high per capita income paying a larger proportion of program expenditures according to the following formula:

$$\text{State share} = \left( \frac{\text{State per capita income}}{\text{U.S. per capita income}} \right)^2 \times 45 \text{ percent}$$

The State's relative per capita income carries an exponent of 2 which has the effect of magnifying differences between a State's per capita income and the U.S. average. This procedure has the effect of reducing the State share for States with low per capita incomes.

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1/Report of the Senate Committee on Finance, "Social Security Amendments of 1960." Senate Report No. 1856, 86th Congress, Second Session, p. 3 (August 19, 1960).

The Federal share is simply 100 percent minus the State share with a minimum Federal share of 50 percent and a maximum of 83 percent. Multiplying relative per capita income by a constant equal to 45 percent affects the division of total Medicaid spending between the Federal and State governments. For example, if the 45 percent constant were increased to 55 percent, the State share for all States not affected by the maximum or minimum constraint on the Federal share would be increased, thereby reducing the Federal share of national Medicaid spending.

Over the years the Congress has used per capita income to adjust Federal rates because it was the best data available for making such an adjustment. However, as discussed in appendix II, alternative measures of State need now exist which could be used to improve the existing matching formula.

#### SAME EQUITY CONCERNS ARE EXPRESSED IN THE AFDC-MEDICAID SWAP PROPOSAL

As part of the Reagan Administration's "New Federalism" proposals, a Federal-State swap of Medicaid for AFDC has been proposed. This has raised a concern over "fiscal disparities" among States. The fiscal disparity issue is directly related to the Congress' past concerns about program disparities and tax burden equity.

A major issue voiced in the Medicaid-AFDC swap debate is that, if AFDC is turned back to States, the poorer States could not afford to provide adequate benefits because of the greater tax burden they would have to bear. This has raised a concern that the needs of the Nation's poor would go unmet in these States.

Chapter 2 documents the existing inequities under the current Medicaid formula. Chapters 3 and 4 develop formula options designed to improve both objectives with either a reduction or an increase in Federal Medicaid expenditures.

#### OBJECTIVES, SCOPE, AND METHODOLOGY

The Congress has, at various times, proposed basically two ways of reducing interstate program disparities and tax burden inequities. The first approach has been to impose national eligibility and benefit standards, while the other has been through proposed improvements in the fairness and efficiency of program formulas. The Congress considered the first course of action in H.R. 4904, <sup>1/</sup> which would have established national AFDC eligibility and benefit standards. It explored the second

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<sup>1/</sup>The bill passed the House on November 7, 1979, but failed to pass the Senate.

course in its consideration of S. 2584 during the 97th Congress 1/ which would have introduced new factors into the Medicaid formula, and by mandating this study.

The Congress instructed GAO to study the Medicaid formula to help identify ways to improve the equity of the existing formula. Specifically, the legislation calls for GAO to examine the:

"\* \* \* feasibility and consequence of revising the Medicaid matching formula so as to take into account the relative economic positions and needs of the different States, the different amounts of support and income payments made by different States under the Social Security Act, the relative cost-of-living and the unemployment rates in the different States, the relative taxable wealth and amount of taxes raised per capita by the different States, and other relevant factors bearing on an equitable distribution of Federal funds to States under that Act."

In addition, GAO was asked to study:

"\* \* \* the validity and equity of any adjustment to the target amount of Federal medical expenditures \* \* \* for all States or any particular State which ought to be made for fiscal year 1983 or fiscal year 1984 \* \* \* to reflect economic and demographic factors affecting such State (sic) which are out of the ordinary sphere of control of such State."

Under the current formula, States substantially control the level of Medicaid spending through their respective eligibility standards and the amount of medical services made available to recipients. However, the Federal Government has a significant influence over State spending through the Federal share because it determines the share of Medicaid expenditures that must be paid by the State. A generous Federal share can serve to encourage a State to spend more because it must provide relatively little of each additional dollar of Medicaid benefits provided. Conversely, a less generous Federal share can encourage a State to spend less because the State must bear a larger share of each additional dollar of Medicaid benefits provided.

Consequently, our objectives were to consider various ways of changing the Medicaid formula that would preserve States' choice regarding program eligibility and service provision while

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1/The bill was introduced on May 26, 1982, and proposed to include the number of Medicaid recipients in the formula and an alternative to per capita income as a measure of tax wealth.

improving equity in the distribution of Federal aid. We have attempted to show the likely effects of such changes on incentives to reduce the rate of Medicaid spending growth and State differences in tax burdens and spending levels and to assess the feasibility of including additional factors in the determination of Federal sharing rates. In considering additional formula factors, we assessed whether the needed data was available and of sufficient quality to adequately accomplish funding distribution improvements.

Current law requires that matching rates be in effect for two years and announced one year in advance. New matching rates were announced in 1982 to become effective on October 1, 1983. Formula simulations reported below, therefore, use data for 1980 since this would have been the latest data available for use beginning October 1, 1983.

Economic theory was utilized to develop alternative formulas and to develop a simple model of Medicaid spending (see app. III). The model was used to develop computer simulations designed to show the impact of including new factors in the formula and the impact of these changes on interstate program disparities and tax burden inequities. These models require making several assumptions which are discussed when these effects are discussed in chapter 3.

We also conducted a literature search and review of the Medicaid program and related formula research. Agency officials in charge of developing the statistical data employed in developing formula options were also interviewed, including officials from the Bureau of the Census, Health Care Financing Administration, Bureau of Labor Statistics, and the Office of Management and Budget.

Arizona was not included in our analysis because it did not have a Medicaid program until fiscal year 1983. The territories (Puerto Rico, Guam, etc.) were excluded from our analysis because their programs are not funded under the Medicaid formula.

As required by the 1981 Reconciliation Act, we consulted with the Advisory Commission on Intergovernmental Relations (ACIR) during our study. ACIR's comments and suggestions were considered and incorporated in our study as we considered appropriate.

Our review was made in accordance with generally accepted Government auditing standards.

GAO STUDY ALSO APPLIES  
TO THE AFDC PROGRAM

Although the Congress mandated that GAO study the Medicaid matching formula, the changes considered in our study also apply

to the AFDC Program because States with Medicaid Programs can choose either the Medicaid formula or an AFDC formula as the basis for receiving AFDC matching funds. In fiscal 1982 all States, except Texas and Arizona, used the Medicaid formula for this purpose. <sup>1/</sup> The formula changes described in this report pertain to the AFDC Program as well as to the Medicaid program except in formula options which use Medicaid spending directly in the formula. In these instances AFDC spending would have to be used.

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<sup>1/</sup>Arizona is currently considering the use of the Medicaid formula for its AFDC program.

## CHAPTER 2

### MEDICAID FORMULA'S FUNDING

#### DISTRIBUTION IS NOT AS EQUITABLE

##### AS IT COULD BE

The Medicaid program has significantly increased the availability of medical services to the poor. However, States continue to differ widely in the medical services they provide and in the tax burdens borne by their residents in financing those services.

The current formula does not equalize tax burdens because of its reliance on per capita income, which is based on total population rather than the needy population. States with the same per capita income can have widely differing percentages of their populations below the poverty line. States with a greater proportion of poor people would have to shoulder a greater tax burden to provide programs comparable to States with a smaller proportion of the poor.

The current formula also fails to equalize tax burdens because per capita income is an incomplete measure of State tax capacity. Consequently, some States are able to finance their programs with a low tax effort while other States with similar programs have higher tax burdens.

Furthermore, the 1981 Budget Reconciliation Act's incentives for reduced State spending would raise tax burdens of lower income States, compared to wealthier States. This results because the same percentage reduction in Federal funding represents a larger proportion of a low income State's tax capacity than of a wealthier State. Thus, the current incentives could lead to greater interstate program disparities and tax burden inequities.

Poorer States generally avoid high tax burdens by providing limited programs. Thus, equalizing tax burdens would increase incentives to reduce program disparities among States. However, high tax burdens in poorer States are only a partial explanation for wide program disparities. Many social, economic, and political circumstances influence a State's selection of Medicaid services to be provided. Consequently, while changing the formula can significantly improve tax burden equity, it may only partially reduce program disparities.

#### SUBSTANTIAL VARIATIONS IN STATE MEDICAID SERVICES AND ELIGIBILITY

While the Medicaid program has significantly increased the availability of medical services to the poor, wide interstate

differences persist. Medicaid legislation and regulations allow substantial variations in eligibility and services provided, and States have chosen programs that vary significantly both in terms of the services they offer and to whom they are offered.

The following basic required services must be covered under all State Medicaid programs:

1. Inpatient hospital care;
2. Outpatient hospital care and rural health clinic services;
3. Other laboratory and X-ray services;
4. Skilled nursing facility services and home health services for individuals 21 years of age and over;
5. Early and periodic screening, diagnosis, and treatment of individuals under 21 years of age;
6. Family planning services;
7. Physician services; and
8. Nurse midwife services. <sup>1/</sup>

Within certain limits, States determine the scope of services offered (they may limit the days of hospital care or number of physicians visits covered, for example) and the reimbursement rate to providers for services rendered. In addition, States elect to provide optional services including drugs, eyeglasses, private duty nursing, inpatient psychiatric hospital care for persons under 21, physical therapy, dental care, etc.

All of these variations--in benefits offered, in groups covered, and in reimbursement of providers--mean that Medicaid programs differ greatly from State to State. The diversity in State Medicaid programs is demonstrated in the following U.S. map and tables 1 and 2. The map identifies States participating in the program <sup>2/</sup> that provide the basic required Medicaid services only to the categorically needy and the 30 which extend these services to the medically needy as well. Appendix I also lists Federal Medicaid expenditures for each State in fiscal year 1980 and each State's percentage share of the total.

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<sup>1/</sup>In States which license nurse midwives as legal medical practitioners.

<sup>2/</sup>Arizona did not participate in the program until fiscal year 1983 and therefore is excluded from our analysis. The District of Columbia is treated as a State.



Table 1 (p. 15) shows there is a great deal of variance in the optional services provided by the States. For example, Minnesota provided 31 of 32 optional services to both the categorically and the medically needy while Wyoming provided six optional services to the categorically needy only.

The wide differences in State eligibility standards are reflected in the percentage of Medicaid recipients relative to the number of residents with incomes below the poverty line. 1/ Table 2 (p. 16) shows that in fiscal year 1980, this ratio varied from a low of 29 percent in Wyoming to 124 percent in Massachusetts where the number of persons receiving Medicaid services exceeded the number of people below the poverty line by 24 percent.

States which provide benefits to a larger proportion of their poverty population generally spend more per person in poverty. For example, in Wyoming recipients represent just 29 percent of the poverty population and Medicaid spending amounts to \$379 per person in poverty. In contrast, Massachusetts recipients exceed the number of people below the poverty line by 24 percent and spending amounts to \$1,612 per person below that level. In general, broader coverage is associated with higher spending per person in poverty. 2/

Differences in spending also reflect the scope of medical services provided. This is reflected, for example, by New York and New Jersey where recipients represent 86 percent of their respective poverty populations. However, New York spends \$1,712 per person in poverty while New Jersey spends \$958. Part of the explanation for this difference in spending can be accounted for by differences in the eligibility of the medically needy and reimbursement rates for nursing homes, hospitals, and physicians. Table 1 indicates that New York provides 91 percent of the optional services available compared to 42 percent in New Jersey.

The use of Medicaid spending per person below the poverty line to measure program disparities is not meant to imply that the national interest requires identical Medicaid programs in every State, although the concern is with ways to somewhat

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1/ Throughout this report we use the number of people below the poverty line as a measure of the needy. For this purpose we have measured the number of people in poverty by deducting income transfer payments, primarily AFDC and SSI, in establishing an individual's poverty status. See appendix II, pp. 61 to 67 for a complete discussion of this issue.

2/ A correlation analysis shows that nearly 70 percent of the variance in spending can be accounted for by States' coverage of their poverty population and the number of optional services provided. See appendix III, pp. 83 to 84, for more details.

reduce the disparities. Two States could have the same spending per person below the poverty line with one State providing more medical services to a smaller proportion of its low income residents while the other provides fewer services to a larger proportion of its low income residents. Using Medicaid spending per person below the poverty line allows us to consider these programs as being similarly generous while allowing for State choice between breadth and depth of coverage. 1/

Additional refinements could have been made in measuring program benefits had data been available. For example, differences in spending reflect differences in health care costs and the age distribution of States' populations. Appendix II explains why these factors could not be taken into account in this report. However, these are relatively minor adjustments since eligibility and the scope of medical services provided accounts for the major differences in State Medicaid spending per person below the poverty line.

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1/Allowing for State choice is an objective that has to be balanced with improving equity. This report focuses primarily on the equity issue while preserving States' choice regarding program eligibility and service provision.

Table 1

SUMMARY OF OPTIONAL MEDICAL SERVICES  
BY STATE AS OF FY 1980

<u>State</u>	<u>Number of optional services provided (note a)</u>			
	<u>Categorically needy</u>	<u>Medically needy</u>	<u>Total number provided (note b)</u>	<u>Percent of number available</u>
Alabama	12	0	12	19
Alaska	10	0	10	16
Arkansas	21	13	34	53
California	30	30	60	94
Colorado	12	0	12	19
Connecticut	24	24	48	75
Delaware	10	0	10	16
District of Columbia	19	19	38	59
Florida	14	0	14	22
Georgia	13	0	13	20
Hawaii	20	20	40	63
Idaho	12	0	12	19
Illinois	29	29	58	91
Indiana	24	0	24	38
Iowa	21	0	21	33
Kansas	26	26	52	81
Kentucky	17	17	34	53
Louisiana	15	7	22	34
Maine	23	20	43	67
Maryland	15	15	30	47
Massachusetts	28	28	56	88
Michigan	24	24	48	75
Minnesota	31	31	62	97
Mississippi	8	0	8	13
Missouri	14	0	14	22
Montana	26	26	52	81
Nebraska	23	23	46	72
Nevada	20	1	21	33
New Hampshire	25	22	47	73
New Jersey	27	0	27	42
New Mexico	18	0	18	28
New York	29	29	58	91
North Carolina	19	19	38	59
North Dakota	22	22	44	69
Ohio	23	0	23	36
Oklahoma	9	9	18	28
Oregon	22	0	22	34
Pennsylvania	16	11	27	42
Rhode Island	11	9	20	31
South Carolina	11	0	11	17
South Dakota	16	0	16	25
Tennessee	14	14	28	44
Texas	13	0	13	20
Utah	18	18	36	56
Vermont	10	10	20	31
Virginia	17	17	34	53
Washington	27	26	53	83
West Virginia	20	20	40	63
Wisconsin	27	27	54	84
Wyoming	6	0	6	9

a/In total, 32 different types of optional services were being provided under Medicaid.

b/This is the sum of the number of optional services available to categorically needy and the medically needy, the maximum is therefore 64.

Table 2

MEDICAID RECIPIENTS RELATIVE TO PERSONS  
BELOW THE POVERTY LINE AND AVERAGE EXPENDITURES  
PER PERSON IN POVERTY

<u>State</u>	<u>Recipient/poverty</u> <u>percentage (note a)</u>	<u>Expenditures per poor</u> <u>person (note b)</u>
Wyoming	29	\$ 379
South Dakota	31	490
Texas	32	455
Nevada	35	627
Utah	35	489
Idaho	35	417
Indiana	37	645
Florida	38	294
New Mexico	38	300
North Dakota	38	565
Alaska	40	622
North Carolina	43	454
Nebraska	43	656
West Virginia	43	348
Tennessee	44	469
Louisiana	44	500
Alabama	44	360
Montana	46	623
Colorado	46	590
Georgia	46	495
Mississippi	48	329
Arkansas	50	526
Missouri	50	463
Virginia	51	574
New Hampshire	54	868
Kentucky	59	423
Iowa	60	775
Kansas	60	819
Oklahoma	61	634
Delaware	65	601
South Carolina	66	504
Ohio	67	672
Maryland	70	712
Washington	70	730
Illinois	75	858
Connecticut	76	1,228
Minnesota	80	1,452
Michigan	83	912
New Jersey	86	958
Vermont	86	946
New York	86	1,712
Oregon	87	562
Pennsylvania	92	781
Maine	95	854
Wisconsin	95	1,531
District of Columbia	99	1,315
Hawaii	101	911
California	110	879
Rhode Island	120	1,511
Massachusetts	124	1,612

a/Recipients are those individuals both eligible for and actually receiving Medicaid services in fiscal year 1980. Because recipients are not necessarily in poverty and vice versa, the percentage reported is not the same as the percentage of people in poverty receiving program benefits. The poverty data is from the 1980 Census and is applicable for calendar year 1979.

b/The expenditure data is for fiscal year 1980.

THE USE OF PER CAPITA INCOME  
CONTRIBUTES TO TAX BURDEN INEQUITIES

The existing Medicaid formula has not equalized the tax burdens that States would have to bear in order to provide similar benefit levels. Equalization is lacking, in part, because of the reliance on per capita income. Per capita income, which serves as an indicator of the State's needy and as a measure of the State's tax capacity (as discussed in app. II), is a poor measure of both. <sup>1/</sup> Since the current formula was enacted in 1965, better statistical measures of both the needy and State tax capacity have been developed and could be used in place of per capita income. In light of these improvements, throughout the report we measured State tax capacity by expressing the Representative Tax System (RTS) relative to the number of people below the poverty line in place of per capita income. <sup>2/</sup>

The failure of per capita income to adequately reflect the needy and State tax capacity is illustrated in table 3 where pairs of States with similar spending levels are compared in terms of their tax effort and their tax capacity measured by the RTS relative to the number of people in poverty. For example, although Alabama and Wyoming have modest programs of comparable size, spending \$360 and \$379 per poor person respectively, Alabama's tax effort is 228 percent greater than Wyoming's. The reason is that Wyoming's tax capacity relative to the number of people in poverty is nearly six times greater than Alabama's (an index of 292 compared to 49).

Table 3 makes similar comparisons of States with progressively larger but similar programs. For example, Michigan and Hawaii spent virtually the same amount per person below the poverty line; but, by virtue of its greater tax capacity, Hawaii is able to provide that level of spending with about 27 percent less tax effort than Michigan.

If the Medicaid formula adequately measured the tax capacity of States and appropriately related that capacity to the concentration of the needy in different States, States with comparable Medicaid programs would have more equal tax burdens. <sup>3/</sup>

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<sup>1/</sup>There are other weaknesses with the current formula as well. However, solutions for these weaknesses are not presently available. See appendix II (pp. 75 to 78) for a discussion of these weaknesses and what needs to be done to overcome them.

<sup>2/</sup>See appendix II, pp. 69 to 74.

<sup>3/</sup>Throughout this report tax burden equity means that States which provide comparable programs, as measured by their Medicaid spending per person in poverty, should have to make the same tax effort.

Table 3

TAX BURDEN INEQUITIES IN RELATION  
TO DIFFERENCES IN TAX CAPACITY  
PER PERSON IN POVERTY (note a)

<u>State</u>	<u>Spending per person in poverty</u>	<u>Percent difference</u>	<u>Actual tax effort (median = 100)</u>	<u>Percent difference</u>	<u>Tax capacity per person in poverty (median = 100)</u>	<u>Percent difference</u>
Wyoming	\$ 379	5	25	228	292	496
Alabama	360		82		49	
Utah	489	4	64	60	93	72
Tennessee	469		102		54	
Alaska	622	3	41	166	292	175
Delaware	601		109		106	
New Hampshire	868	1	100	57	129	21
California	879		157		107	
Hawaii	911	0	149	28	117	27
Michigan	912		190		92	
Connecticut	1,228	7	161	135	147	119
District of Columbia	1,315		379		67	
(1)	(2)	(3)	(4)	(5)	(6)	(7)

a/See glossary for definition of terms.

LARGE DISPARITIES IN TAX BURDENS  
GENERALLY INDUCE WIDE PROGRAM  
DISPARITIES

As discussed in chapter 1, the Congress attempted to provide incentives in the matching formula that would encourage States to provide more nearly comparable Medicaid programs. Providing more generous Federal shares to low-income States explicitly recognized that these States would have to make markedly greater tax efforts to provide programs comparable to more wealthy States. Although the formula does reduce tax burden disparities to some extent, fiscally poor States must still make greater efforts to provide programs comparable to wealthier States and therefore tend to provide smaller programs.

The advantage of wealthier States is shown in table 4 where States are listed by their tax capacity per person in poverty (column 2). <sup>1/</sup> Column 3 lists the tax effort that States would have to make if Medicaid spending per person in poverty were equalized without any Federal funding. <sup>2/</sup> The differences are quite large, ranging from 296 percent in Mississippi to just 33 percent in Alaska and Wyoming, a ratio of nearly 9 to 1.

The current formula generally provides the most generous Federal shares for States that would otherwise have to undertake a high tax burden, shown in column 4. Mississippi with the highest tax effort, in the absence of Federal assistance (296), also receives the most generous Federal share (77.36 percent), while Alaska and Wyoming with the lowest tax effort (33) receive the lowest Federal share (50 percent).

However, the more generous Federal shares in poorer States are not sufficient to offset the advantage of the wealthier States as shown in column 5 of table 4. Even with its generous Federal share, Mississippi would still have to make a tax effort 4 times greater than either Alaska or Wyoming (156 compared to 39) to provide a comparable level of services. In other words, differences in Federal shares ranging from 50 to 77 percent are not sufficient to offset the advantage of wealthier States.

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<sup>1/</sup>We have used the RTS relative to the number of people below the poverty line as our tax capacity indicator, see pp. 69 to 74.

<sup>2/</sup>The tax efforts were expressed in relative terms by measuring each State's effort as a percent of the median tax effort. The median represents that value which half the States are below and half are above.

Table 4

Comparison of State Fiscal Capacity  
And Equalized Tax Effort (note a)

State	Tax Capacity Index (Median=100)	Tax Effort 100% State Financed (Median=100)	Federal Percentage (Fiscal 1982-83)	Tax Effort Current Formula (Median=100)	Medicaid Spending Per Person In Poverty (Fiscal Year 1980)
MISSISSIPPI	33	296	77.36%	156	\$329
ALABAMA	49	201	71.13	135	360
ARKANSAS	49	199	72.16	129	526
KENTUCKY	52	186	67.95	139	423
TENNESSEE	54	180	68.53	132	469
SOUTH CAROLINA	55	177	70.77	121	504
GEORGIA	58	168	66.28	132	495
NORTH CAROLINA	64	153	67.81	115	454
DISTRICT OF COLUMBIA	67	146	50.00	170	1,315
LOUISIANA	67	146	66.85	113	500
SOUTH DAKOTA	67	145	68.19	108	490
MAINE	71	138	70.63	94	854
NEW MEXICO	72	136	67.19	104	300
NEW YORK	72	135	50.88	155	1,712
WEST VIRGINIA	74	132	67.95	98	348
IDAHO	80	122	65.43	98	417
VERMONT	83	117	68.59	86	946
MISSOURI	87	112	60.38	103	463
FLORIDA	89	110	57.92	107	294
RHODE ISLAND	90	108	57.77	106	1,511
MICHIGAN	92	106	50.00	123	912
UTAH	93	104	68.64	76	489
VIRGINIA	98	100	56.74	101	574
PENNSYLVANIA	98	100	56.78	100	781
TEXAS	98	99	55.75	102	455
OKLAHOMA	102	96	59.91	89	634
OREGON	103	95	52.81	104	562
NORTH DAKOTA	103	95	62.11	83	565
OHIO	105	93	55.10	97	672
MASSACHUSETTS	106	92	53.56	99	1,612
DELAWARE	106	92	50.00	107	601
MONTANA	106	91	65.34	74	623
ILLINOIS	107	91	50.00	106	858
CALIFORNIA	107	90	50.00	105	879
NEBRASKA	110	88	58.12	86	656
INDIANA	111	88	56.73	88	645
MARYLAND	112	87	50.00	101	712
WASHINGTON	114	86	50.00	100	730
HAWAII	117	83	50.00	97	911
NEW JERSEY	118	82	50.00	96	958
WISCONSIN	120	81	58.02	79	1,531
MINNESOTA	123	79	54.39	84	1,452
IOWA	124	78	55.35	81	775
KANSAS	126	77	52.50	86	819
COLORADO	127	76	52.28	85	590
NEW HAMPSHIRE	129	75	59.41	71	868
CONNECTICUT	147	66	50.00	77	1,228
NEVADA	208	47	50.00	55	627
WYOMING	292	33	50.00	39	379
ALASKA	292	33	50.00	39	622
(1)	(2)	(3)	(4)	(5)	(6)

a/See the glossary for definitions of tax capacity, equalized tax effort, etc.

The inability of the current formula to fully offset the disadvantage of poorer States is partly due to the 50 percent minimum Federal share of several of the wealthier States. If the minimum were lowered, disparities among the States would be reduced. The 4-to-1 disparity in tax burdens cannot be eliminated by simply raising Federal shares in poor States without the Federal Government virtually taking over the program in several States. Therefore, a joint Federal-State partnership in all States means that equalizing tax burdens cannot be achieved by only increasing the Federal share in poorer States; reducing Federal shares in several of the wealthier States will also be required. This can be accomplished by reducing the 50 percent minimum Federal share.

The higher tax effort poor States would have to undertake is generally avoided by providing limited programs. Wealthier States, by comparison, generally provide more generous programs. For example, the 25 poorest States spend an average of \$637 per person in poverty compared to \$820 for the 25 richest States, a difference of \$183 per person. This is especially visible by noticing that a relatively wealthy State like Connecticut spends \$1,228 per person in poverty compared to a poor State such as Mississippi which spends just \$329 per poor person.

Furthermore, under the current formula, changes in Federal shares in recent years have run counter to what is needed to reduce disparities in State Medicaid programs. First, the per capita income of most States with limited programs has risen compared to U.S. income; this translates into a lower Federal share in these States. Second, many States with generous programs receive the minimum 50 percent Federal share; consequently their Federal shares have not changed. As a result, the Federal share for States with small programs has declined since fiscal year 1975 compared to States with large programs. This has made it relatively more costly for the low benefit States to maintain or expand their programs relative to States with large programs because they must finance a larger portion of the program from State revenue sources. These trends are shown in table 5.

EQUALIZATION OF TAX BURDENS  
WOULD NOT COMPLETELY SOLVE  
MEDICAID PROGRAM DISPARITIES

Equalizing tax burdens would encourage a reduction in program disparities in most cases, but there could be some significant exceptions to this general pattern. The high tax burdens poor States would have to bear to provide programs comparable to wealthier States are only a partial explanation for existing program disparities. Many social, economic, and political

Table 5

Changes in Federal Shares in States with  
Limited and Generous Medicaid Programs

<u>States</u>	<u>Average spending per person below the poverty line FY 1980</u>	<u>Percentage point change in Federal share FY 1975-80 (note a)</u>
<u>Limited programs</u>		
Florida	\$ 294	-2.01
New Mexico	300	-2.98
Mississippi	329	-1.00
West Virginia	348	.17
Alabama	360	-4.61
Wyoming	379	-10.99
Idaho	417	-3.80
Kentucky	423	-4.05
North Carolina	454	-2.37
Texas	455	-5.18
Missouri	463	+0.42
Tennessee	469	-2.85
<u>Generous programs</u>		
California (note b)	879	0.00
Hawaii (note b)	911	0.00
Michigan (note b)	912	0.00
Vermont	946	+3.02
New Jersey (note b)	958	0.00
Connecticut (note b)	1,228	0.00
District of Columbia (note b)	1,315	0.00
Minnesota	1,452	-1.73
Rhode Island	1,511	+2.44
Wisconsin	1,531	-2.07
Massachusetts	1,612	+1.75
New York (note b)	1,712	0.00

a/Declines in Federal shares represent an increase in the State cost of operating their Medicaid programs. Similarly, an increase in the Federal share represents a reduction in the cost of operating their Medicaid programs.

b/Affected by the 50 percent minimum Federal share in both fiscal year 1975 and fiscal year 1980.

circumstances influence a State's selection of Medicaid benefits to be provided. Therefore, while changing the formula can significantly improve tax burden equity, it would only partially reduce program disparities. 1/

Equalizing tax burdens would reduce the Federal share in some relatively wealthy States which could encourage them to reduce already limited programs. For example, Wyoming is a relatively wealthy State with a low tax effort as indicated in columns 2 and 5 of table 4 (p. 20). Column 6 indicates that it provides a modest Medicaid program, spending \$379 per person below the poverty line. Equalizing tax burdens would result in a reduced Federal share for Wyoming.

At the other extreme, New York and the District of Columbia have relatively low tax capacity (indices of 72 and 67, respectively, as shown in column 2) and would have to undertake a high tax burden if Medicaid spending per person in poverty were equalized (indices of 155 and 170 respectively, as shown in column 5). 2/ These States would have their Federal shares increased if tax burdens were equalized. This could encourage them to expand already relatively generous programs. Chapter 3 shows that introducing State Medicaid spending per person below the poverty line with an incentive factor can to some extent neutralize the situation represented by New York and the District of Columbia (see table 12 and pp. 39 to 43).

CURRENT INCENTIVE TO REDUCE  
FEDERAL SPENDING COULD CREATE  
GREATER INEQUITIES

The Reconciliation Act instructed GAO to study the validity and equity of adjustments to the "target amount of Federal medical expenditures." The purpose of these provisions is to encourage States to reduce their Medicaid spending below what it otherwise would have been. The incentive works in two stages. It first reduces Federal funding across the board in all States. Then, under the target amount provisions, States can subsequently earn back their lost funding if they are able to reduce their rate of spending increase. The reductions can also be offset if

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1/Tax burden equity, tax effort, and tax burden disparities are defined in the glossary.

2/The equalized tax effort shown in column 5 of table 4 represents the tax effort each State would have to undertake if all States were to offer similar programs as measured by Medicaid spending per person in poverty.

certain other specified conditions are met. 1/ While these provisions do create incentives to reduce the rate of spending increase, the across-the-board reduction could create greater tax burden inequities and possibly encourage greater program disparities. In the next chapter we have modified the temporary target amount approach by incorporating its incentives directly in the formula without the potential adverse effects arising from the across-the-board reduction.

Under the provisions of the Budget Reconciliation Act, Federal Medicaid funding in all States was reduced by 3 percent in fiscal year 1982, 4 percent in fiscal year 1983 and 4.5 percent in fiscal year 1984. This cuts Federal funding as a percentage of total State spending and effectively reduces each State's Federal share. 2/ Because these reductions also apply to States at the 50 percent minimum, these provisions in effect lower the minimum Federal share as well.

The reduction in Federal funding raises the tax burden each State must make to provide a given level of benefits and should lead States to reduce their spending. However, the approach adopted raises the tax burden of lower income States more than wealthier States because the same percentage reduction in Federal funding represents a larger proportion of a small tax capacity compared to a large one. Furthermore, because the low capacity States would have to use a larger proportion of their tax capacity to maintain the same services, they have a stronger incentive to reduce spending. As was shown earlier, the low-income States generally provide smaller programs for their needy because of the greater tax burden they must make. Consequently, the Reconciliation Act's provisions could lead to greater program disparities and tax burden inequities.

Further incentives to reduce spending were added through establishment of a "target amount of Federal medical

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1/Under the Budget Reconciliation Act there are three offsets to these reductions: (1) 1 percent if the State has an approved hospital cost review program, (2) 1 percent if the State recovers a certain amount of funds from Medicaid fraud and abuse, and (3) 1 percent if the State's unemployment rate is 150 percent or more of the national average rate.

2/As described in chapter 1, the current formula for the Federal share is  $100\% - 45\% \times Y^2$  where Y represents the ratio of State per capita income to U.S. per capita income. The reductions effectively change the matching rate formula to:

$$97\% - 43.65\% \times Y^2 \text{ in FY 1982}$$

$$96\% - 43.20\% \times Y^2 \text{ in FY 1983}$$

$$95.5\% - 42.18\% \times Y^2 \text{ in FY 1984}$$

expenditures"--equal to 109 percent of the fiscal year 1981 Federal share of State Medicaid expenditures in fiscal year 1982 and subsequently adjusted for changes in the medical care cost component of the CPI for fiscal years 1983 and 1984. States can earn back part or all of their previous year's reduction by restraining their Medicaid expenditures so that the amount of Federal aid they would otherwise be entitled to is below the target amount.

Therefore, States successful in restraining spending receive more Federal funding than they otherwise would have received. This added Federal funding increases the percentage of total spending financed by the Federal Government and effectively raises the Federal share in these States. Consequently, the provisions in the Reconciliation Act reward States which restrain their spending with an effectively higher Federal share. However, these incentives can be directly incorporated in the formula and at the same time increase incentives to reduce program disparities. This alternative approach is developed in chapter 3 (see pp. 43 to 44).

#### CONCLUSIONS

Although the existing formula reduces tax burden disparities between wealthier and poorer States to some extent, poorer States still must undertake a significantly greater tax burden if they want to provide comparable benefits. The result has been that States with low tax capacity generally provide limited programs, by either restricting eligibility or limiting the scope of medical services provided, to avoid the greater tax burden.

The existing formula produces higher tax burdens in poor States because of its reliance on per capita income which is a poor measure of the needy population and State tax capacity. However, high tax burdens in poorer States are only a partial explanation for wide program disparities. Many other social, economic, and political circumstances influence a State's selection of Medicaid services to be provided. Consequently, while changing the formula can significantly improve tax burden equity, it would only partially reduce program disparities. Chapter 4 develops formula options that attempt to balance these sometimes competing objectives.

Finally, the across-the-board reductions in the Budget Reconciliation Act which increase incentives for States to reduce their Medicaid spending could also raise tax burdens more in States with fewer fiscal resources and more needy. Because these States already provide fewer benefits, these provisions could encourage these States to further limit benefits and thus contribute to greater differences in State programs.

### CHAPTER 3

#### THE FORMULA CAN BE CHANGED TO ACHIEVE

#### A MORE EQUITABLE DISTRIBUTION OF

#### FEDERAL AID TO STATES

Our analysis identified four possible modifications to the existing Medicaid formula and resulted in the following conclusions:

- Including the number of people below the poverty line, by using personal income per person in poverty instead of personal income per total population as an indicator of the needy would improve tax burden equity and provide stronger incentives to reduce program disparities among States. 1/
- Replacing personal income with the Representative Tax System as a measure of State tax capacity would improve tax burden equity.
- Provided changes are made that improve tax burden equity, then lowering the minimum Federal share from 50 to 40 percent would further improve tax burden equity and increase incentives that could reduce program disparities.
- Including State Medicaid spending per person in poverty with an incentive factor that rewards States whose spending is below the national average and penalizes States whose spending is above the national average would create stronger incentives for States to reduce program disparities because more generous matching would be provided to States with more limited programs.
- Including State Medicaid spending per person in poverty would also make it possible to change Federal rates in future years to penalize States with the highest rates of spending increase. 2/

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1/See the glossary for the definitions of tax burden equity and program disparities.

2/These are not the only formula changes which are possible. In fact, other researchers have considered other alternatives. For example, see the Congressional Research Service's report, "Analysis of Federal-State Cost-Sharing in the Aid to Families with Dependent Children Program," March 22, 1982, and the Center for Governmental Research Inc.'s report, "Distributional and Equalization Effects of the Medicaid Formula and Medicaid Formula Alternatives," Rochester, New York, June 1979.

These formula improvements have potentially large effects on Federal spending primarily because New York, which alone accounts for approximately 18 percent of all Federal Medicaid funding for States, would receive significantly higher Federal funding under any formula designed to equalize tax burdens. The additional funds that would go to New York under a new formula would have to come from increased Federal funding or reductions in the remaining States. The only other alternative would be to place a ceiling on New York's allocation (possibly adjusted for inflation) to enable formula changes to be made without funding cuts in the vast majority of States.

USING THE NUMBER OF PEOPLE BELOW  
THE POVERTY LINE WOULD SIGNIFI-  
CANTLY IMPROVE TAX BURDEN EQUITY

A substantial improvement in tax burden equity will result if income is measured relative to the number of people in poverty (excluding income from Federal and State income transfer programs) rather than on a per capita basis. This change more adequately reflects the added fiscal burden faced by States with relatively high concentrations of the needy and would better target Federal aid to States with a high concentration of the poor.

Table 6 shows the results of simulating the matching formula for fiscal years 1982-83 using the same data elements as in the current formula with two changes. First, we have used the number of people with incomes below the official poverty line as a measure of the needy population, and second, squaring has been eliminated. <sup>1/</sup> The simulation demonstrates that including the number of people in poverty would significantly improve the targeting of Federal Medicaid funding to those States with relatively high concentrations of the Nation's poor.

For example, the 10 States with the largest concentration of people below the poverty line would all receive more generous Federal shares. Alternatively, of the 25 States with the smallest percentages of people below the poverty line, 22 would receive the 50 percent minimum Federal share. Each of the three States above the minimum would have their current rate reduced.

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<sup>1/</sup>The squaring of income under the current formula would no longer be necessary. In effect, squaring partially adjusts for the greater tax effort poorer States must make compared to wealthier States but such effort is better measured by including the number of people in poverty.

Table 6

Medicaid Federal Rates Based on Income  
And Poverty Without Squaring (FY 1982-83)

<u>State</u>	<u>Ratio of Poverty Population to Total Population</u>	<u>Federal Rate (FY 1982-83)</u>	<u>New Federal Rate (note a)</u>	<u>Change In Federal Rate</u>
WYOMING	8.1%	50.00%	50.00%	0.00
NEVADA	9.0	50.00	50.00	0.00
NEW HAMPSHIRE	9.0	59.41	50.00	-9.41
CONNECTICUT	9.2	50.00	50.00	0.00
WISCONSIN	9.5	58.02	50.00	-8.02
MINNESOTA	10.0	54.39	50.00	-4.39
INDIANA	10.0	56.73	50.00	-6.73
IOWA	10.2	55.35	50.00	-5.35
KANSAS	10.4	52.50	50.00	-2.50
NEBRASKA	10.6	58.12	50.00	-8.12
MARYLAND	10.7	50.00	50.00	0.00
COLORADO	10.7	52.28	50.00	-2.28
ALASKA	10.7	50.00	50.00	0.00
NEW JERSEY	10.7	50.00	50.00	0.00
WASHINGTON	10.9	50.00	50.00	0.00
MASSACHUSETTS	10.9	53.56	50.00	-3.56
HAWAII	10.9	50.00	50.00	0.00
UTAH	11.1	68.64	57.77	-10.87
OHIO	11.1	55.10	50.00	-5.10
RHODE ISLAND	11.2	57.77	50.00	-7.77
PENNSYLVANIA	11.4	56.78	50.00	-6.78
VIRGINIA	11.7	56.74	50.00	-6.74
NORTH DAKOTA	11.9	62.11	54.85	-7.26
OREGON	12.1	52.81	50.76	-2.05
ILLINOIS	12.2	50.00	50.00	0.00
VERMONT	12.3	68.59	59.51	-9.08
DELAWARE	12.6	50.00	50.00	0.00
MICHIGAN	12.7	50.00	50.00	0.00
MONTANA	12.7	65.34	57.55	-7.79
MISSOURI	12.9	60.38	55.53	-4.85
CALIFORNIA	13.1	50.00	50.00	0.00
IDAHO	13.2	65.43	61.34	-4.09
MAINE	13.7	70.63	64.29	-6.34
FLORIDA	13.7	57.92	60.86	2.94
OKLAHOMA	13.8	59.91	59.94	0.03
NORTH CAROLINA	15.0	67.81	66.84	-0.97
NEW YORK	15.1	50.88	56.46	5.58
TEXAS	15.1	55.75	62.44	6.69
WEST VIRGINIA	15.3	67.95	67.13	-0.82
SOUTH DAKOTA	16.2	68.19	67.79	-0.40
SOUTH CAROLINA	16.5	70.77	71.66	0.89
GEORGIA	17.1	66.28	70.69	4.41
TENNESSEE	17.6	68.53	72.11	3.58
NEW MEXICO	18.0	67.19	72.32	5.13
ALABAMA	18.8	71.13	74.54	3.41
KENTUCKY	19.1	67.95	73.70	5.75
ARKANSAS	19.5	72.16	76.20	4.04
LOUISIANA	19.7	66.85	74.39	7.54
DISTRICT OF COLUMBIA	20.1	50.00	60.40	10.40
MISSISSIPPI	25.4	77.36	83.00	5.64
(1)	(2)	(3)	(4)	(5)

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States receiving increased Federal rates	14
States receiving decreased Federal rates	24
States with no change	12

a/Federal rates calculated using 1979 poverty data and average personal income for 1977-79; 50% minimum and constant of .45.

Consequently, this change significantly redirects Federal Medicaid funding to States which have large needy populations. 1/

Table 7 (p. 30) shows the improvement in tax burden equity achieved by including the number of people in poverty. States are listed in order of their RTS tax capacity. Columns 5 and 6 show the tax effort each State would have to make if Medicaid spending per person in poverty was the same in all States (referred to as equalized tax effort). 2/

Under the existing formula, low tax capacity States must make a significantly greater tax effort compared to wealthier States to provide comparable benefits. Including people below the poverty line generally reduces the tax effort of the fiscally poor States toward the average (adjusted to equal 100). For example, Mississippi's Federal share increases from 77 to 83 percent with a corresponding 28 percent reduction in its tax effort. Of the 15 lowest tax capacity States, 11 would receive higher Federal shares reducing tax efforts significantly in most cases, thus reducing tax burden disparities among rich and poor States.

Although including the number of people below the poverty line helps to equalize tax burdens, this change by itself still leaves some significant inequities, even among States not affected by the 50 percent minimum Federal share. For example, column 6 of table 7 shows that Louisiana, New Mexico, and Texas all have their tax effort reduced well below the average while New York, the District of Columbia, Alabama, and other States would still have to make tax efforts well above average. These inequities persist because personal income, used in calculating States' matching rates, does not adequately reflect States' tax capacities, while the RTS, which we used in calculating resulting tax burdens, more fully reflects actual tax capacities.

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1/The number of States receiving a smaller Federal share, and the size of their reductions, can be altered by increasing or reducing the total level of Federal funding by reducing or increasing the Federal rates proportionately. The options presented in chapter 4 are developed under three assumptions, the Federal support is increased, remains the same, or declines.

2/Tax capacity is measured by the RTS and equalized tax effort is the ratio of the State share of Medicaid spending to the RTS tax capacity per person in poverty if Medicaid spending per person in poverty were equalized among States. See pp. 69 to 74 and 84 to 86 for details.

Table 7  
Improvements in Tax Burden Equity Between  
Fiscally Rich and Fiscally Poor States (note a)

State	Tax Capacity (Median=100)	Federal Rates		Equalized Tax Effort (note c)		Percentage Change
		Current Formula	New Formula (note b)	Current Formula (Median=100)	New Formula (Median=100)	
MISSISSIPPI	33	77.36%	83.00%	156	113	-28%
ALABAMA	49	71.13	74.54	135	114	-16
ARKANSAS	49	72.16	76.20	129	106	-18
KENTUCKY	52	67.95	73.70	139	109	-22
TENNESSEE	54	68.53	72.11	132	113	-14
SOUTH CAROLINA	55	70.77	71.66	121	112	-7
GEORGIA	58	66.28	70.69	132	110	-17
NORTH CAROLINA	64	67.81	66.84	115	113	-2
DISTRICT OF COLUMBIA	67	50.00	60.40	170	130	-24
LOUISIANA	67	66.85	74.39	113	84	-26
SOUTH DAKOTA	67	68.19	67.79	108	105	-3
MAINE	71	70.63	64.29	94	110	17
NEW MEXICO	72	67.19	72.32	104	84	-19
NEW YORK	72	50.88	56.46	155	132	-15
WEST VIRGINIA	74	67.95	67.13	98	97	-1
IDAHO	80	65.43	61.34	98	105	7
VERMONT	83	68.59	59.51	86	106	23
MISSOURI	87	60.38	55.53	103	111	8
FLORIDA	89	57.92	60.86	107	96	-10
RHODE ISLAND	90	57.77	50.00	106	121	14
MICHIGAN	92	50.00	50.00	123	118	-4
UTAH	93	68.64	57.77	76	99	30
VIRGINIA	98	56.74	50.00	101	112	11
PENNSYLVANIA	98	56.78	50.00	100	111	11
TEXAS	98	55.75	62.44	102	83	-19
OKLAHOMA	102	59.91	59.94	89	86	-3
OREGON	103	52.81	50.76	104	104	0
NORTH DAKOTA	103	62.11	54.85	83	96	14
OHIO	105	55.10	50.00	97	104	7
MASSACHUSETTS	106	53.56	50.00	99	103	4
DELAWARE	106	50.00	50.00	107	102	-5
MONTANA	106	65.34	57.55	74	87	18
ILLINOIS	107	50.00	50.00	106	102	-4
CALIFORNIA	107	50.00	50.00	105	101	-4
NEBRASKA	110	58.12	50.00	86	99	15
INDIANA	111	56.73	50.00	88	98	11
MARYLAND	112	50.00	50.00	101	97	-4
WASHINGTON	114	50.00	50.00	100	96	-4
HAWAII	117	50.00	50.00	97	93	-4
NEW JERSEY	118	50.00	50.00	96	92	-4
WISCONSIN	120	58.02	50.00	79	91	15
MINNESOTA	123	54.39	50.00	84	88	5
IOWA	124	55.35	50.00	81	88	9
KANSAS	126	52.50	50.00	86	87	1
COLORADO	127	52.28	50.00	85	86	1
NEW HAMPSHIRE	129	59.41	50.00	71	84	18
CONNECTICUT	147	50.00	50.00	77	74	-4
NEVADA	208	50.00	50.00	55	52	-5
WYOMING	292	50.00	50.00	39	37	-5
ALASKA	292	50.00	50.00	39	37	-5
(1)	(2)	(3)	(4)	(5)	(6)	(7)

a/See glossary for definitions of terms.

b/See note a, Table 6.

c/See footnote 1, page 32.

USING THE REPRESENTATIVE TAX  
SYSTEM IMPROVES TAX BURDEN EQUITY

After including people below the poverty line and eliminating squaring, tax burden equity can be improved further by substituting the RTS as a measure of State tax capacity in place of personal income as used in the current formula.

Table 8 lists States in order of their tax capacity with Mississippi having the lowest capacity and Alaska and Wyoming the highest (column 2). The table compares each State's Federal share under the current formula, a formula which includes the number of people below the poverty line and eliminates squaring, and a formula which uses the number of people below the poverty line, removes squaring, and substitutes the RTS for income, shown in columns 3, 4, and 5, respectively.

As previously discussed, including the number of people in poverty increases the Federal sharing rates of States with high concentrations of the poor such as Mississippi, Alabama, Arkansas, Louisiana, New Mexico, and Texas. This is reflected in column 4 of table 8 which shows the Federal share under the income-poverty based formula. Because Louisiana, Texas, and New Mexico all have significant energy-related tax sources that are reflected when the RTS is substituted for income, their Federal shares are reduced while Mississippi's, Alabama's and Arkansas' Federal shares are little affected (table 8, column 5).

The effect of the RTS on State tax effort (if all States spent the same for Medicaid) is seen by comparing States' equalized tax efforts in columns 6, 7, and 8. If spending were equalized, tax burden equity would be achieved if all States were required to make the same tax effort (i.e., an index = 100). Column 6 reproduces States' equalized tax effort under the current formula, column 7 shows the poorer States (near the top of the table) must still make higher efforts than the wealthier States (at the bottom of the table) when people in poverty is included in the formula. Column 8 shows that the RTS equalizes tax burdens for all States except those affected by the formula's 50 percent minimum rate. Column 8 also demonstrates that the effect of the 50 percent minimum enables the wealthier States to finance their programs with lower tax effort than the poorer States.

A LOWER MINIMUM FEDERAL SHARE  
WOULD IMPROVE TAX BURDEN EQUITY

If the number of people in poverty and the RTS are introduced into the Medicaid formula, then lowering the minimum Federal share from 50 to 40 percent would further improve tax burden equity. The two previous sections of this chapter demonstrated that wealthier States (States with large tax capacities relative to the size of their needy population) would be at the 50 percent minimum Federal share if the number

Table 3

Improvements in Tax Burden Equity Between  
Fiscally Rich and Fiscally Poor States Using  
RTS Fiscal Capacity and Persons in Poverty (note a)

State	Tax Capacity	Federal Percentages			Equalized Tax Effort (Median=100)		
		Current Formula	Income-Poverty Based Formula (note b)	RTS-Poverty Based Formula (note c)	Current Formula	Income-Poverty Based Formula	RTS-Poverty Based Formula
MISSISSIPPI	33	77.36%	83.00%	83.00%	156	113	104
ALABAMA	49	71.13	74.54	75.84	135	114	100
ARKANSAS	49	72.16	76.20	75.72	129	106	100
KENTUCKY	52	67.95	73.70	73.92	139	109	100
TENNESSEE	54	68.53	72.11	73.14	132	113	100
SOUTH CAROLINA	55	70.77	71.66	72.62	121	112	100
GEORGIA	58	66.28	70.69	71.22	132	110	100
NORTH CAROLINA	64	67.81	66.84	68.30	115	113	100
DISTRICT OF COLUMBIA	67	50.00	60.40	66.88	170	130	100
LOUISIANA	67	66.85	74.39	66.81	113	84	100
SOUTH DAKOTA	67	68.19	67.79	66.60	108	105	100
MAINE	71	70.63	64.29	64.86	94	110	100
NEW MEXICO	72	67.19	72.32	64.34	104	84	100
NEW YORK	72	50.88	56.46	64.21	155	132	100
WEST VIRGINIA	74	67.95	67.13	63.25	98	97	100
IDAHO	80	65.43	61.34	60.20	98	105	100
VERMONT	83	68.59	59.51	58.61	86	106	100
MISSOURI	87	60.38	55.53	56.64	103	111	100
FLORIDA	89	57.92	60.86	55.80	107	96	100
RHODE ISLAND	90	57.77	50.00	55.12	106	121	100
MICHIGAN	92	50.00	50.00	54.16	123	118	100
UTAH	93	68.64	57.77	53.64	76	99	100
VIRGINIA	98	56.74	50.00	51.43	101	112	100
PENNSYLVANIA	98	56.78	50.00	51.33	100	111	100
TEXAS	98	55.75	62.44	51.01	102	83	100
OKLAHOMA	102	59.91	59.94	50.00	89	86	99
OREGON	103	52.81	50.76	50.00	104	104	98
NORTH DAKOTA	103	62.11	54.85	50.00	83	96	97
OHIO	105	55.10	50.00	50.00	97	104	96
MASSACHUSETTS	106	53.56	50.00	50.00	99	103	94
DELAWARE	106	50.00	50.00	50.00	107	102	94
MONTANA	106	65.34	57.55	50.00	74	87	94
ILLINOIS	107	50.00	50.00	50.00	106	102	94
CALIFORNIA	107	50.00	50.00	50.00	105	101	93
NEBRASKA	110	58.12	50.00	50.00	86	99	91
INDIANA	111	56.73	50.00	50.00	88	98	90
MARYLAND	112	50.00	50.00	50.00	101	97	89
WASHINGTON	114	50.00	50.00	50.00	100	96	88
HAWAII	117	50.00	50.00	50.00	97	93	85
NEW JERSEY	118	50.00	50.00	50.00	96	92	85
WISCONSIN	120	58.02	50.00	50.00	79	91	84
MINNESOTA	123	54.39	50.00	50.00	84	88	81
IOWA	124	55.35	50.00	50.00	81	88	81
KANSAS	126	52.50	50.00	50.00	86	87	80
COLORADO	127	52.28	50.00	50.00	85	86	79
NEW HAMPSHIRE	129	59.41	50.00	50.00	71	84	78
CONNECTICUT	147	50.00	50.00	50.00	77	74	68
NEVADA	208	50.00	50.00	50.00	55	52	48
WYOMING	292	50.00	50.00	50.00	39	37	34
ALASKA	292	50.00	50.00	50.00	39	37	34
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

a/See glossary for definition of terms.

b/See note a, Table 6.

c/Federal rates calculated using 1979 poverty population and 1980 State RTS fiscal capacity as developed by ACIR; 50% minimum and constant of .45.

of people below the poverty line and the RTS were used in the Medicaid formula (see table 8, column 5). It was also shown that the 50 percent minimum would enable these States to provide the same level of Medicaid spending as poorer States with less effort (table 8, column 8 shows the equalized tax effort of States at the 50 percent minimum are all below the average of 100).

The improvement in tax burden equity, achieved by lowering the minimum Federal share, is demonstrated in table 9. States are listed according to their tax capacity per person below the poverty line (not shown). Federal shares and the corresponding equalized tax effort are shown for the current formula in columns 2 and 3. Tax burden equity would be represented by all States having an equalized tax effort of 100. The inequities of the current formula are demonstrated by the fact that States' tax efforts generally differ from 100 by wide margins. The improvements brought about by including people in poverty and using the RTS are shown in column 5 where tax efforts are equalized for all States not affected by the maximum and minimum constraints. However, the 50 percent minimum would enable 25 States to finance their programs with less tax effort than the unconstrained States. By lowering the minimum to 40 percent only nine States would be able to get by with less tax effort and of these only four would be able to do so with significantly less effort (Connecticut, Nevada, Wyoming, and Alaska). Therefore, a 40 percent minimum Federal share, in conjunction with including people below the poverty line and using the RTS would largely equalize tax burdens if States provide comparable benefits. <sup>1/</sup> The minimum could be reduced even further if desired. We have reported the results for a 40 percent minimum because most of the inequities are removed at this level and because this was the level proposed in the Senate version of the Budget Reconciliation Act.

EQUALIZING TAX BURDENS INCREASES  
INCENTIVES TO REDUCE PROGRAM  
DISPARITIES

If equalizing tax burdens is to reduce program disparities among States, States with large programs must be encouraged to scale back their programs relative to States with small programs and/or States with small programs must be encouraged to expand their programs. Table 10 shows that equalizing tax burdens (i.e., using people below the poverty line, the RTS, and a 40 percent minimum Federal share) generally provides these incentives because larger reductions in Federal shares generally occur in the higher spending States.

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<sup>1/</sup>However, inequities due to interstate differences in health care costs would remain because a methodologically sound index is not currently available (see app. II, p. 75).

Table 9  
Effect of Lowering the Minimum  
Federal Rate on Tax Burden Equity (Note a)

State	Current Formula		RTS-Poverty Formula (note b)			
	Federal	Equalized	50% Minimum		40% Minimum	
	Rate	Tax Effort	Federal	Equalized	Federal	Equalized
	Rate	Tax Effort	Rate	Tax Effort	Rate	Tax Effort
MISSISSIPPI	77.36%	156	83.00%	104	83.00%	104
ALABAMA	71.13	135	75.84	100	75.84	100
ARKANSAS	72.16	129	75.72	100	75.72	100
KENTUCKY	67.95	139	73.92	100	73.92	100
TENNESSEE	68.53	132	73.14	100	73.14	100
SOUTH CAROLINA	70.77	121	72.62	100	72.62	100
GEORGIA	66.28	132	71.22	100	71.22	100
NORTH CAROLINA	67.81	115	68.30	100	68.30	100
DISTRICT OF COLUMBIA	50.00	170	66.88	100	66.88	100
LOUISIANA	66.85	113	66.81	100	66.81	100
SOUTH DAKOTA	68.19	108	66.60	100	66.60	100
MAINE	70.63	94	64.86	100	64.86	100
NEW MEXICO	67.19	104	64.34	100	64.34	100
NEW YORK	50.88	155	64.21	100	64.21	100
WEST VIRGINIA	67.95	98	63.25	100	63.25	100
IDAHO	65.43	98	60.20	100	60.20	100
VERMONT	68.59	86	58.61	100	58.61	100
MISSOURI	60.38	103	56.64	100	56.64	100
FLORIDA	57.92	107	55.80	100	55.80	100
RHODE ISLAND	57.77	106	55.12	100	55.12	100
MICHIGAN	50.00	123	54.16	100	54.16	100
UTAH	68.64	76	53.64	100	53.64	100
VIRGINIA	56.74	100	51.43	100	51.43	100
PENNSYLVANIA	56.78	101	51.33	100	51.33	100
TEXAS	55.75	102	51.01	100	51.01	100
OKLAHOMA	59.91	89	50.00	99	49.37	100
OREGON	52.81	104	50.00	98	48.86	100
NORTH DAKOTA	62.11	83	50.00	97	48.74	100
OHIO	55.10	97	50.00	96	47.91	100
MASSACHUSETTS	53.56	99	50.00	94	47.12	100
DELAWARE	50.00	106	50.00	94	47.08	100
MONTANA	65.34	74	50.00	94	46.99	100
ILLINOIS	50.00	107	50.00	94	46.94	100
CALIFORNIA	50.00	105	50.00	93	46.46	100
NEBRASKA	58.12	86	50.00	91	45.05	100
INDIANA	56.73	88	50.00	90	44.73	100
MARYLAND	50.00	101	50.00	89	44.13	100
WASHINGTON	50.00	100	50.00	88	43.39	100
HAWAII	50.00	96	50.00	86	41.54	100
NEW JERSEY	50.00	97	50.00	85	41.11	100
WISCONSIN	58.02	79	50.00	84	40.30	100
MINNESOTA	54.39	84	50.00	81	40.00	98
IOWA	55.35	81	50.00	81	40.00	97
KANSAS	52.50	86	50.00	80	40.00	96
COLORADO	52.28	85	50.00	79	40.00	95
NEW HAMPSHIRE	59.41	71	50.00	78	40.00	93
CONNECTICUT	50.00	77	50.00	68	40.00	82
NEVADA	50.00	55	50.00	48	40.00	58
WYOMING	50.00	39	50.00	34	40.00	41
ALASKA	50.00	39	50.00	34	40.00	41
(1)	(2)	(3)	(4)	(5)	(6)	(7)

a/See glossary for definition of terms.

b/See note c. Table 8.

Table 10

Effect of Equalizing Tax Burdens  
On Federal Medicaid Rates (note a)

<u>State</u>	<u>Spending Per Person in Poverty</u>	<u>Current Formula</u>	<u>Federal Rates New Formula (note b)</u>	<u>Difference</u>
FLORIDA	\$294	57.92%	55.80%	-2.12
NEW MEXICO	300	67.19	64.34	-2.85
MISSISSIPPI	329	77.36	83.00	5.64
WEST VIRGINIA	348	67.95	63.25	-4.70
ALABAMA	360	71.13	75.84	4.71
WYOMING	379	50.00	40.00	-10.00
IDAHO	417	65.43	60.20	-5.23
KENTUCKY	423	67.95	73.92	5.97
NORTH CAROLINA	454	67.81	68.30	0.49
TEXAS	455	55.75	51.01	-4.74
MISSOURI	463	60.38	56.64	-3.74
TENNESSEE	469	68.53	73.14	4.61
UTAH	489	68.64	53.64	-15.00
SOUTH DAKOTA	490	68.19	66.60	-1.59
GEORGIA	495	66.28	71.22	4.94
LOUISIANA	500	66.85	66.81	-0.04
SOUTH CAROLINA	504	70.77	72.62	1.85
ARKANSAS	526	72.16	75.72	3.56
OREGON	562	52.81	48.86	-3.95
NORTH DAKOTA	565	62.11	48.74	-13.37
VIRGINIA	574	56.74	51.43	-5.31
COLORADO	590	52.28	40.00	-12.28
DELAWARE	601	50.00	47.08	-2.92
ALASKA	622	50.00	40.00	-10.00
MONTANA	623	65.34	46.99	-18.35
NEVADA	627	50.00	40.00	-10.00
OKLAHOMA	634	59.91	49.37	-10.54
INDIANA	645	56.73	44.73	-12.00
NEBRASKA	656	58.12	45.05	-13.07
OHIO	672	55.10	47.91	-7.19
MARYLAND	712	50.00	44.13	-5.87
WASHINGTON	730	50.00	43.39	-6.61
IOWA	775	55.35	40.00	-15.35
PENNSYLVANIA	781	56.78	51.33	-5.45
KANSAS	819	52.50	40.00	-12.50
MAINE	854	70.63	64.86	-5.77
ILLINOIS	858	50.00	46.94	-3.06
NEW HAMPSHIRE	868	59.41	40.00	-19.41
CALIFORNIA	879	50.00	46.46	-3.54
HAWAII	911	50.00	41.54	-8.46
MICHIGAN	912	50.00	54.16	4.16
VERMONT	946	68.59	58.61	-9.98
NEW JERSEY	958	50.00	41.11	-8.89
CONNECTICUT	1,228	50.00	40.00	-10.00
DISTRICT OF COLUMBIA	1,315	50.00	66.88	16.88
MINNESOTA	1,452	54.39	40.00	-14.39
RHODE ISLAND	1,511	57.77	55.12	-2.65
WISCONSIN	1,531	58.02	40.30	-17.72
MASSACHUSETTS	1,612	53.56	47.12	-6.44
NEW YORK	1,712	50.88	64.21	13.33
(1)	(2)	(3)	(4)	(5)

States receiving increased Federal rates  
States receiving decreased Federal rates

11  
39

a/See glossary for definition of terms.

b/See note c, Table 8; minimum at 40%.

If these changes to the formula are made, 39 States would receive smaller Federal rates than they otherwise would have received and 11 States would receive larger Federal shares. Of the 25 highest spending States, 22 would receive smaller Federal rates. Of these 22, the reduction in rates would exceed 5 percentage points in all but 3 States, creating pressure on these States to scale back their programs. In contrast, of the 25 lowest spending States, 8 would receive more generous Federal rates, encouraging them to expand their programs. Of the remaining 17 States, the reductions in Federal rates would be less than 5 percentage points in 9 States, thus somewhat mitigating incentives to reduce their programs. Thus, States with large programs would generally have stronger incentives to reduce their programs.

Assumptions used to estimate the reduction in program disparities

Estimating the impact of Federal rate changes on disparities in State Medicaid programs is very difficult. The impact depends on whether States will continue their existing eligibility standards and scope of services by substituting State funding if Federal aid is reduced, or whether they will allow increases in Federal funding to be reflected in increased benefits.

A study of States' demand for Medicaid suggests that States on average have adjusted their own spending to compensate for approximately 20 percent of any change in Federal funding, allowing the remaining 80 percent to be reflected in a change in benefits. <sup>1/</sup> That is, the assumption of no substitution is probably closer to most States' actual response than is the assumption of complete substitution.

We have estimated the impact of Federal rate changes on State Medicaid spending per person in poverty (program disparities) under three alternative assumptions about the degree to which States compensate for changes in Federal funding:

- Complete substitution - States completely offset any change in Federal funding by adjusting State spending so as to maintain existing benefits. (In this case formula changes would have no effect on program disparities.)

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<sup>1/</sup>Grannemann, Thomas, The Demand For Publicly Financed Medical Care: The Role of Interdependent Preferences, Center for Health Services and Policy Research, Northwestern University, Evanston, Illinois, August 1979, p. 73.

--No substitution - States do not offset any change in Federal funding, adjusting to the new funding level by altering eligibility and/or benefits. (In this case a dollar change in Federal funding translates into a dollar change in benefits.)

--Twenty percent substitution - States make up 20 percent of a reduction in Federal funding from other State revenue sources allowing 80 percent of the reduction to be passed through in the form of benefit reductions. Alternatively, States allow 80 percent of any increase in Federal funding to be passed on in the form of increased benefits and divert 20 percent of the increase for non-Medicaid uses.

Our estimates also assume all States display the same degree of responsiveness to a change in their Federal share. This assumption is necessary because it has not been possible to estimate how individual States will respond. Assuming that all States would respond to the same degree, we believe, produces conservative estimates because there is not much room for large States to expand their programs further. For example, New York already provides 91 percent of the available optional services and covers 86 percent of its poverty population (tables 1 and 2 on pp. 15 and 16). At the other extreme, Alaska, Wyoming, and Nevada have sufficiently large tax capacities (table 4, p. 20) that they may well use State funds to make up for reductions in Federal funding rather than cut back already limited programs. <sup>1/</sup> Our estimates should be regarded as an indication of how strong the incentives to reduce program disparities are and only rough estimates of the actual impact of Federal rate changes on program disparities.

In addition, our estimates represent the impact on Federal funding after States have completely adjusted to their new Federal rates. This adjustment process could take several years before it is completed. The estimates should therefore be interpreted to represent longrun differences in what Federal funding would be with no changes in the program and what it would be under the above assumptions if the formula were changed as described below.

Because our estimates represent percentage changes in fiscal year 1980 Federal spending from what it was, a spending increase means an increase over and above what it otherwise would have been and a reduction means an increase that is less than what it otherwise would have been.

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<sup>1/</sup>In the past 6 years, for example, Wyoming's Federal rate has been cut from 61 to 50 percent with no change in eligibility and a small increase in services provided.

We have measured program disparities by the average amount that States' spending per person below the poverty line (our measure of program benefits) differs from the average. Under the current formula States' Medicaid spending differed from the U.S. spending level by an average of \$323. <sup>1/</sup> This figure serves as the reference point to judge whether formula changes would increase or reduce incentives for States to provide more equal benefits.

Equalizing tax burdens for States with comparable programs by using the number of people in poverty, the RTS, and reducing the minimum Federal share would increase incentives that could reduce program disparities among States. If States completely offset changes in Federal funding, then existing benefits will be maintained, the average disparity would remain at \$323 per person in poverty, and formula changes would have no impact on reducing program disparities. Under the more likely assumption that States only compensate for 20 percent of any change in Federal funding (20 percent substitution), then equalizing tax burdens would reduce the average spending disparity to \$272, a 16 percent reduction. If States did not substitute State for Federal funds at all, disparities would decline further to \$266, resulting in an 18 percent reduction in disparities under the above assumptions (shown in column 1 of table 13 on p. 43).

#### VIEWS OF PROGRAM OFFICIALS

Program officials pointed out that, while changes in the formula would directly affect tax burden equity, the impact on reducing program disparities is more nebulous. They expressed a concern that the impact on program disparities we report will most likely not occur in practice and that readers may misinterpret our report as predicting States' actual response to formula changes.

We recognize this as a legitimate concern and wish to emphasize that all estimates of formula changes on program disparities are based on the assumptions outlined above. The

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<sup>1/</sup>The average difference was measured by the standard deviation of State Medicaid spending per person in poverty. Because it is a statistical average, it is sensitive to extreme values. Under nearly all the formulas we considered, New York and the District of Columbia would receive very large increases in their Federal rates and, because of their already high spending, these two States alone would heavily influence our measure of program disparities. Therefore we have excluded these two States from our disparity measure so that it will more accurately reflect the impact of formula changes on program disparities among the remaining 48 States.

primary purpose of providing the estimates reported above is to inform the reader as to differences in the incentives that different formulas would provide and not as a prediction of States' actual response to a new formula.

INCLUDING STATE MEDICAID  
SPENDING COULD FURTHER  
REDUCE PROGRAM DISPARITIES 1/

Equalizing tax burdens provides a modest increase in incentives to reduce program disparities. However, stronger incentives to reduce program disparities could be realized if there was a more consistent pattern of increase in Federal shares for low benefit States, while maintaining the reductions achieved in the high benefit States by the formula modifications discussed in the preceding sections. These added incentives can be realized by including State Medicaid spending per person in poverty with an incentive factor in the formula. Such a change would systematically provide more generous Federal shares to low benefit States, thus encouraging them to spend more.

Including State Medicaid expenditures requires an incentive factor

Introducing added incentives to reduce program disparities is accomplished by applying an incentive factor to States' relative spending level. 2/ Mathematically this takes the form of an exponent on relative spending levels as shown in the following formula:

$$\text{Federal share} = 100\% - 45\% \left( \frac{\text{relative tax}}{\text{capacity}} \right) \left( \frac{\text{relative}}{\text{spending}} \right)^{\text{(exponent)}}$$

The higher a State's relative spending level the smaller will be its Federal share. The exponent (i.e., the incentive factor) magnifies differences in State spending levels and determines how much lower the Federal share will be at high spending levels. Conversely, it determines how much higher it

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1/While the principle of creating stronger incentives to reduce program disparities can be applied to AFDC, a formula which includes State Medicaid spending would not be appropriate for that program.

2/Relative spending is defined as State Medicaid spending per person below the poverty line divided by a corresponding U.S. spending figure.

will be at low spending levels. Thus, the bigger the incentive factor the stronger the incentive to reduce State program disparities. This is illustrated in table 11 by a formula with incentive factors of 0.0, 0.2 and 0.4, comparing high, average, and low spending States.

Table 11  
Federal Rates For High And  
Low Spending States Under Alternative  
Incentive Factors

<u>State spending level</u>	Incentive factor (exponent)		
	<u>0.0</u>	<u>0.2</u>	<u>0.4</u>
High	55%	47%	37%
Average	55	55	55
Low	55	63	70

Without an incentive factor, all three States (with the same tax capacity) would have the same 55 percent Federal share. With an incentive factor, high spending States would receive a lower Federal share and low spending States a higher share. The bigger the incentive factor the greater the differences and the stronger the incentive for all States to adjust their spending toward the average.

Including State Medicaid spending in the tax burden equalizing formula affects matching rates as shown in table 12 which lists the States in order of their spending per person below the poverty line. 1/ The larger the incentive factor the greater the increase in Federal shares for States with small programs (i.e., low spending per person in poverty) and, generally, the greater the reduction in States with large programs. For example, Florida's share is increased from 55.8 percent in the formula with no incentive factor to 63.5 percent when the incentive factor is 0.2 and to 69.9 percent when it is 0.4. Conversely, New York's high Federal share of 64.2 percent in the formula with no incentive factor is reduced to 58.0

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1/Equalizing tax burdens was achieved by replacing personal income with the RTS, using the number of people in poverty, and lowering the minimum Federal share to 40 percent. In terms of a formula with an incentive factor, relative tax capacity is measured by expressing the RTS relative to the number of people below the poverty line divided by the corresponding national tax capacity figure. Note the tax burden equalizing formula is equivalent to a formula with an incentive factor (exponent) of zero and is so identified in table 12.

Table 12  
Effect of Including Medicaid Spending and  
Incentive Factors on State Matching Rates  
Fiscal Years 1982-83

State	Spending Per Person in Poverty	Current Federal Rate	Poverty-RTS Formulas with Incentive Factors (note a)					
			Incentive Factor of 0.0	Difference	Incentive Factor of 0.2	Difference	Incentive Factor of 0.4	Difference
FLORIDA	5294	57.92%	55.80%	-2.12	63.53%	5.61	69.91%	11.99
NEW MEXICO	300	67.19	64.34	-2.85	70.45	3.26	75.51	8.32
MISSISSIPPI	329	77.36	83.00	5.64	83.00	5.64	83.00	5.64
WEST VIRGINIA	348	67.95	63.25	-4.70	68.64	0.69	73.24	5.29
ALABAMA	360	71.13	75.84	4.71	79.23	8.10	82.15	11.02
WYOMING	379	50.00	40.00	-10.00	40.10	-9.90	41.64	-8.36
IDAHO	417	65.43	60.20	-5.23	64.78	-0.65	68.82	3.39
KENTUCKY	423	67.95	73.92	5.97	76.85	8.90	79.45	11.50
NORTH CAROLINA	454	67.81	68.30	0.49	71.47	3.66	74.32	6.51
TEXAS	455	55.75	51.01	-4.74	55.87	0.12	60.25	4.50
MISSOURI	463	60.38	56.64	-3.74	60.81	0.43	64.57	4.19
TENNESSEE	469	68.53	73.14	4.61	75.67	7.14	77.96	9.43
UTAH	489	68.64	53.64	-15.00	57.64	-11.00	61.29	-7.35
SOUTH DAKOTA	490	68.19	66.60	-1.59	69.47	1.28	72.09	3.90
GEORGIA	495	66.28	71.22	4.94	73.64	7.36	75.85	9.57
LOUISIANA	500	66.85	66.81	-0.04	69.53	2.68	72.04	5.19
SOUTH CAROLINA	504	70.77	72.62	1.85	74.83	4.06	76.87	6.10
ARKANSAS	526	72.16	75.72	3.56	77.49	5.33	79.13	6.97
OREGON	562	52.81	48.86	-3.95	51.96	-0.85	55.06	2.25
NORTH DAKOTA	565	62.11	48.74	-13.37	51.79	-10.32	54.89	-7.22
VIRGINIA	574	56.74	51.43	-5.31	54.18	-2.56	56.78	0.04
COLORADO	590	52.28	40.00	-12.28	43.99	-8.29	48.41	-3.87
DELAWARE	601	50.00	47.08	-2.92	49.61	-0.39	52.92	2.92
ALASKA	622	50.00	40.00	-10.00	40.06	-9.94	40.99	-9.01
MONTANA	623	65.34	46.99	-18.35	49.20	-16.14	52.42	-12.92
NEVADA	627	50.00	40.00	-10.00	40.32	-9.68	42.32	-7.68
OKLAHOMA	634	59.91	49.37	-10.54	51.27	-8.64	53.69	-6.22
INDIANA	645	56.73	44.73	-12.00	47.21	-9.52	50.81	-5.92
NEBRASKA	656	58.12	45.05	-13.07	47.31	-10.81	50.79	-7.33
OHIO	672	55.10	47.91	-7.19	49.31	-5.79	52.03	-3.07
MARYLAND	712	50.00	44.13	-5.87	46.19	-3.81	49.53	-0.47
WASHINGTON	730	50.00	43.39	-6.61	45.65	-4.35	48.99	-1.01
IOWA	775	55.35	40.00	-15.35	43.40	-11.95	46.77	-8.58
PENNSYLVANIA	781	56.78	51.33	-5.45	51.16	-5.62	52.26	-4.52
KANSAS	819	52.50	40.00	-12.50	43.04	-9.46	46.23	-6.27
MAINE	854	70.63	64.86	-5.77	64.10	-6.53	63.33	-7.30
ILLINOIS	858	50.00	46.94	-3.06	46.65	-3.35	49.00	-1.00
NEW HAMPSHIRE	868	59.41	40.00	-19.41	42.51	-16.90	45.50	-13.91
CALIFORNIA	879	50.00	46.46	-3.54	46.20	-3.80	48.58	-1.42
HAWAII	911	50.00	41.54	-8.46	43.86	-6.14	46.65	-3.35
MICHIGAN	912	50.00	54.16	4.16	52.56	2.56	52.20	2.20
VERMONT	946	68.59	58.61	-9.98	56.84	-11.75	55.18	-13.41
NEW JERSEY	958	50.00	41.11	-8.89	43.54	-6.46	46.21	-3.79
CONNECTICUT	1,228	50.00	40.00	-10.00	40.94	-9.06	42.82	-7.18
DISTRICT OF COLUMBIA	1,315	50.00	66.88	16.88	63.11	13.11	58.93	8.93
MINNESOTA	1,452	54.39	40.00	-14.39	41.89	-12.50	43.68	-10.71
RHODE ISLAND	1,511	57.77	55.12	-2.65	48.72	-9.05	47.76	-10.01
WISCONSIN	1,531	58.02	40.30	-17.72	42.07	-15.95	43.75	-14.27
MASSACHUSETTS	1,612	53.56	47.12	-6.44	43.60	-9.96	44.83	-8.73
NEW YORK	1,712	50.88	64.21	13.33	57.99	7.11	52.07	1.19
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

States with increased rates 11  
States with decreased rates 39

18  
32  
22  
28

a/The minimum Federal rate is 40 percent.

percent and 52.1 percent respectively. This increases the number of States receiving increased Federal rates, without increasing Federal funding, from 11 to 18 and 22, respectively. All the low benefit States would receive increased Federal shares, compared to their matching rates with no incentive factor.

The potential changes in State spending disparities due to including Medicaid spending with an incentive factor is summarized in table 13 (p. 43). As before, if there is a dollar change in State resources for a dollar change in Federal funding, there will be no impact on program disparities as the average disparity would remain at \$323. <sup>1/</sup> With 20 percent substitution the average disparity would decline to \$245 both with an incentive factor of 0.2 and 0.4. <sup>2/</sup> Assuming no substitution, average disparities would decline to \$230 and \$228, respectively.

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<sup>1/</sup>Recall from the footnote on p. 38 that New York and the District of Columbia are excluded from our measure of program disparities in order to provide a better measure of the impact of these changes on the remaining 48 States.

<sup>2/</sup>Values of 0.2 and 0.4 were selected for illustrative purposes. Simulations with alternative values of the incentive factor can be provided to the legislative committees at their request.

Table 13

Effect of Including Medicaid Spending  
And Incentive Factors on State Medicaid  
Spending Disparities (note a)

<u>Degree of substitution</u>	<u>Tax burden equalizing formula (note b)</u>	<u>Formula with Medicaid spending</u>	
		<u>Incentive factor = 0.2</u>	<u>Incentive factor = 0.4</u>
Complete	\$323	\$323	\$323
20 percent	272	245	245
None	266	230	228

a/The calculation of program disparities excludes New York and the District of Columbia (see footnote on p. 38).

b/This formula uses the RTS, people below the poverty line, a 40 percent minimum Federal share, and a maximum of 83 percent and a constant of .45.

INCLUDING STATE MEDICAID SPENDING  
WITH AN INCENTIVE FACTOR CAN  
ENCOURAGE STATES TO REDUCE THEIR  
RATES OF SPENDING GROWTH

The primary purpose of the Budget Reconciliation Act's provisions regarding the "target amount of Federal medical expenditures" was to increase the incentive for States to reduce their rate of increase in Medicaid spending. This was accomplished by reducing Federal funding and allowing States to recover the reduction if they hold their spending increases below a certain level, effectively increasing their Federal share if their increase in Medicaid spending is held below a certain level.

Including Medicaid spending with an incentive factor directly in the formula could create similar incentives because the incentive factor could be made to increase Federal shares automatically if States' Medicaid spending increases less than a specified average rate of increase and penalize States whose rate of increase was above the average rate.

This adjustment works in the following way. In the first year of the new formula each State's spending would be measured relative to the U.S. average or any chosen spending level. In subsequent years this spending level is increased for inflation or some other target rate of increase. Consequently, if a State's spending increases faster than the selected rate of increase its relative spending level would rise, and the incentive factor would produce a smaller Federal share. Conversely, States in which spending increases at a rate slower than the

selected rate would automatically be rewarded. This is, in effect, what the Reconciliation Act incentives do but without the potential adverse effects on equity.

NEW YORK SIGNIFICANTLY AFFECTS  
THE BUDGETARY IMPACT OF  
CHANGING THE FORMULA

Weaknesses in per capita income as a measure of tax capacity and the needy result in New York having a smaller Federal percentage than it would if these two factors were more accurately reflected in the formula. Thus, new formula options which would improve tax burden equity would increase New York's Federal share substantially (see table 12 on p. 41 as an illustration).

New York's Federal share increase would either cause the Federal shares in the vast majority of States to be lower than they otherwise would be if total Federal funding was not increased or it would cause a significant increase in Federal funding. This occurs because New York's Medicaid program costs the most of any State in the country, representing almost 18 percent of Federal Medicaid outlays to States in fiscal year 1980.

For example, in fiscal year 1980 Medicaid spending in New York was \$4.54 billion of which the Federal Government financed half, or \$2.27 billion. If New York's Federal rate were increased to 64 percent, as in column 4 of table 12, the Federal Government's cost would increase by an additional \$646 million. If Federal funding of the program were to remain unchanged, this increase would have to come from reductions in Federal aid to other States.

Increasing the Federal share for New York can be justified on the grounds of creating a more equitable distribution of tax burdens among the States. However, this could be considered unfair to the other States if they must suffer reductions in their programs to make up for New York's increase. Such reductions would have to be made in many cases in programs already less generous than New York's.

To show the impact New York has on the Federal funding of other States, chapter 4 shows formula options with and without New York.

CONCLUSIONS

Using the number of people below the poverty line, which eliminates the need for squaring, replacing personal income with the RTS, and reducing the minimum Federal rate to 40 percent would virtually equalize tax burdens of wealthy and poor States

if they were to provide comparable programs with the exception of four States (Alaska, Wyoming, Nevada, and Connecticut). 1/

A formula which equalizes tax burdens would also increase incentives for most States to apply more equal eligibility standards and provide similar levels of medical services for their needy. Including State Medicaid spending per person below the poverty line with an incentive factor would more systematically increase incentives to reduce interstate program disparities and could also introduce incentives for States to reduce the rate of growth in Medicaid spending.

The improvements which can be brought about by changing the formula have potentially major implications for Federal spending. New York alone accounted for nearly 18 percent of Federal Medicaid funding to States in fiscal year 1980 and therefore has a major influence on Federal outlays. Consequently, if New York's Federal share is raised to improve the tax burden equity of the formula, a sizable portion of that increase would have to come either from significant reductions in States which do not provide programs as generous as New York's, or it would have to come from a major increase in Federal funding. The only other alternative would be to place a ceiling on New York's allocation (possibly adjusted for inflation) to enable formula changes to be made without funding cuts in the vast majority of States. Options are presented in chapter 4 both with and without New York in order to show the impact New York has on other States.

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1/These are all States with large tax wealth compared to the number of needy and they would receive the minimum 40 percent share. Even with this relatively low Federal share they would be able to provide the same benefit level with significantly less tax effort than the remaining States.

## CHAPTER 4

### MATTERS FOR CONSIDERATION

#### BY THE CONGRESS

This chapter discusses the effects of possible formula changes on the three policy objectives used as criteria for our study. Because no single formula change will equally address the three objectives, the changes that should be made depend on the importance the Congress places on each objective and the degree to which each objective is affected by the various formula options. Because all options produce large changes for some States, any formula change should be phased in over several years.

#### OPTION #1 (POVERTY OPTION)

Option #1 is to include the number of people below the poverty line by using personal income per person in poverty instead of personal income per resident. 1/ This change would better reflect the greater tax burden associated with a high concentration of the needy within a State.

This option reduces tax burden disparities by 19 percent if Federal funding is moderately decreased and by as much as 27 percent if it is moderately increased, as shown in table 14. It also raises incentives that could reduce program disparities by 9 to 15 percent depending on whether Federal funding is reduced or increased. 2/

The number of States that would receive higher Federal shares depends on whether Federal funding is to remain constant, be increased, or be reduced. 3/ For example, if the level of

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1/All options presented in this chapter eliminate squaring from the Medicaid formula. See footnote 1 on p. 27.

2/The average increase in Federal funding was 8 percent or \$1 billion in options with increased Federal funding and 6 percent or \$0.8 billion in options with reduced Federal funding. These figures are approximate because the actual change depends on the extent to which States replace reductions in Federal funding with State funds and the extent to which they withdraw State funds if their Federal funding is increased. The methodology used to develop this and the remaining options is presented in appendixes III and IV.

3/To be more exact, by increased funding we mean increases over and above those which would occur with no change in the formula and by a reduction we mean an increase that is less than that with no changes to the formula. (See pp. 36 to 38 for a more complete discussion of the assumptions underlying these estimates.)

Federal support remains about the same, option #1 would result in increased funding rates for 13 States, no change for 12, and decreased funding rates in 25 States. A moderate increase in Federal funding would increase funding rates for 20 States, produce no change for 10, and reductions for 20 States. Conversely, a moderate decline in Federal funding would increase funding rates for 11 States with no change in 12 and reductions in 27 States.

The number of States receiving funding rate increases and the magnitude of the increase depends on whether New York is included in the formula, for reasons discussed in chapter 3 (see pp. 44 to 45). For example, if New York were excluded from the formula in option #1 with no change in Federal funding among the remaining 49 States, the number of States that would receive a higher Federal share would increase from 13 to 19 States and 20 States instead of 25 would have their Federal shares reduced.

In addition, States receiving rate increases would experience larger increases and the reductions would be less for those States receiving lower Federal shares as shown in table 15. For example, option #1 (with increased Federal funding) would increase Florida's matching rate from 57.92 to 62.60 percent; but if New York were excluded, Florida's matching rate would increase to 65.21 percent. This pattern exists for all States not affected by the maximum or minimum Federal share.

Table 14

Effect Of Option #1 On Tax Burden And Program Disparities And Federal Funding

Change in Federal funding (note a)	Reduction in tax burden disparities (%) (note b)	Increase in incentives to reduce program disparities (%) (note b)	Number of States with funding					
			Increase		No change		Decrease	
			with N.Y.	without N.Y.	with N.Y.	without N.Y.	with N.Y.	without N.Y.
Moderate increase	27	15	20	22	10	9	20	18
No change	23	12	13	19	12	10	25	20
Moderate decrease	19	9	11	11	12	12	27	26

a/These changes are approximate because it depends on whether States replace lost Federal funding from State funds and whether States withdraw State funds if Federal funding is increased.

b/See appendix IV for the explanation of how these figures were calculated.

Table 15

## Federal Medicaid Rates Under Option #1

State	Current Formula	Increased Federal Funding		Constant Federal Funding		Decreased Federal Funding	
		With New York	W/O New York	With New York	W/O New York	With New York	W/O New York
FLORIDA	57.92%	62.60%	65.21%	59.99%	62.60%	56.51%	59.12%
NEW MEXICO	67.19	73.55	75.40	71.71	73.55	69.25	71.09
MISSISSIPPI	77.36	83.00	83.00	83.00	83.00	81.57	82.67
WEST VIRGINIA	67.95	68.59	70.78	66.40	68.59	63.47	65.67
ALABAMA	71.13	75.67	77.37	73.97	75.67	71.71	73.41
WYOMING	50.00	50.00	50.00	50.00	50.00	50.00	50.00
IDAHO	65.43	63.06	65.64	60.48	63.06	57.05	59.62
KENTUCKY	67.95	74.87	76.62	73.12	74.87	70.78	72.53
NORTH CAROLINA	67.81	68.31	70.52	66.10	68.31	63.15	65.36
TEXAS	55.75	64.11	66.61	61.60	64.11	58.27	60.77
MISSOURI	60.38	57.50	60.47	54.54	57.50	50.58	53.55
TENNESSEE	68.53	73.35	75.21	71.50	73.35	69.02	70.88
UTAH	68.64	59.65	62.47	56.84	59.65	53.08	55.90
SOUTH DAKOTA	68.19	69.23	71.37	67.08	69.23	64.22	66.36
GEORGIA	66.28	71.99	73.94	70.04	71.99	67.43	69.38
LOUISIANA	66.85	75.53	77.23	73.82	75.53	71.54	73.25
SOUTH CAROLINA	70.77	72.92	74.81	71.03	72.92	68.51	70.40
ARKANSAS	72.16	77.26	78.85	75.68	77.26	73.56	75.15
OREGON	52.81	52.95	56.23	50.00	52.95	50.00	50.00
NORTH DAKOTA	62.11	56.85	59.86	53.84	56.85	50.00	52.84
VIRGINIA	56.74	51.90	55.25	50.00	51.90	50.00	50.00
COLORADO	52.28	50.00	50.00	50.00	50.00	50.00	50.00
DELAWARE	50.00	50.55	54.00	50.00	50.55	50.00	50.00
ALASKA	50.00	50.00	50.00	50.00	50.00	50.00	50.00
MONTANA	65.34	59.43	62.26	56.60	59.43	52.83	55.66
NEVADA	50.00	50.00	50.00	50.00	50.00	50.00	50.00
OKLAHOMA	59.91	61.72	64.39	59.05	61.72	55.49	58.16
INDIANA	56.73	50.00	50.00	50.00	50.00	50.00	50.00
NEBRASKA	58.12	50.00	50.00	50.00	50.00	50.00	50.00
OHIO	55.10	50.00	50.77	50.00	50.00	50.00	50.00
MARYLAND	50.00	50.00	50.00	50.00	50.00	50.00	50.00
WASHINGTON	50.00	50.00	50.00	50.00	50.00	50.00	50.00
IOWA	55.35	50.00	50.00	50.00	50.00	50.00	50.00
PENNSYLVANIA	56.78	50.00	52.91	50.00	50.00	50.00	50.00
KANSAS	52.50	50.00	50.00	50.00	50.00	50.00	50.00
MAINE	70.63	65.87	68.25	63.49	65.87	60.32	62.70
ILLINOIS	50.00	50.00	50.00	50.00	50.00	50.00	50.00
NEW HAMPSHIRE	59.41	50.00	50.00	50.00	50.00	50.00	50.00
CALIFORNIA	50.00	51.30	54.69	50.00	51.30	50.00	50.00
HAWAII	50.00	50.00	50.00	50.00	50.00	50.00	50.00
MICHIGAN	50.00	50.00	53.37	50.00	50.00	50.00	50.00
VERMONT	68.59	61.31	64.01	58.61	61.31	55.01	57.71
NEW JERSEY	50.00	50.00	50.00	50.00	50.00	50.00	50.00
CONNECTICUT	50.00	50.00	50.00	50.00	50.00	50.00	50.00
DISTRICT OF COLUMBIA	50.00	62.16	64.80	59.52	62.16	56.00	58.64
MINNESOTA	54.39	50.00	50.00	50.00	50.00	50.00	50.00
RHODE ISLAND	57.77	50.00	52.89	50.00	50.00	50.00	50.00
WISCONSIN	58.02	50.00	50.00	50.00	50.00	50.00	50.00
MASSACHUSETTS	53.56	50.00	50.00	50.00	50.00	50.00	50.00
NEW YORK	50.88	58.39	N/A	55.49	N/A	51.62	N/A
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

OPTION #2 (POVERTY AND 40  
PERCENT MINIMUM)

Option #2 is the same as option #1 except that the 50 percent minimum Federal share is reduced to 40 percent. This option would result in larger reductions in tax burden disparities and stronger incentives that could reduce program disparities compared to option #1 (see table 16). It would result in funding rate reductions in a majority of States unless Federal funding is moderately increased and New York is excluded from the formula. The effect of option #2 on each State's Federal share is shown in table 17 under the three Federal funding levels with and without New York. Again, New York is seen to significantly affect the Federal rates of the remaining States.

Table 16  
Effect Of Option #2 On Tax Burden And  
Program Disparities And Federal Funding

Change in Federal funding (note a)	Reduction in tax burden disparities (%) (note b)	Increase in incentives to reduce program disparities (%) (note b)	Number of States with funding			
			Increase		Decrease	
			with N.Y.	without N.Y.	with N.Y.	without N.Y.
Moderate increase	38	21	23	27	27	22
No change	35	27	20	20	30	29
Moderate decrease	35	28	14	19	36	30

a/These changes are approximate because it depends on whether States replace lost Federal funding with State funds and whether States withdraw State funds if Federal funding is increased.

b/See appendix IV for the explanation of how these figures were calculated.

Table 17  
Federal Medicaid Rates Under Option #2

State	Current Formula	Increased Federal Funding		Constant Federal Funding		Decreased Federal Funding	
		With New York	W/O New York	With New York	W/O New York	With New York	W/O New York
FLORIDA	57.92%	65.21%	66.95%	62.60%	64.34%	60.86%	62.60%
NEW MEXICO	67.19	75.40	76.63	73.55	74.78	72.32	73.55
MISSISSIPPI	77.36	83.00	83.00	83.00	83.00	83.00	83.00
WEST VIRGINIA	67.95	70.78	72.24	68.59	70.05	67.13	68.59
ALABAMA	71.13	77.37	78.50	75.67	76.80	74.54	75.67
WYOMING	50.00	40.00	40.00	40.00	40.00	40.00	40.00
IDAHO	65.43	65.64	67.36	63.06	64.78	61.34	63.06
KENTUCKY	67.95	76.62	77.79	74.87	76.04	73.70	74.87
NORTH CAROLINA	67.81	70.52	71.99	68.31	69.78	66.84	68.31
TEXAS	55.75	66.61	68.28	64.11	65.78	62.44	64.11
MISSOURI	60.38	60.47	62.44	57.50	59.48	55.53	57.50
TENNESSEE	68.53	75.21	76.45	73.35	74.59	72.11	73.35
UTAH	68.64	62.47	64.34	59.65	61.53	57.77	59.65
SOUTH DAKOTA	68.19	71.37	72.80	69.23	70.66	67.79	69.23
GEORGIA	66.28	73.94	75.25	71.99	73.29	70.69	71.99
LOUISIANA	66.85	77.23	78.37	75.53	76.67	74.39	75.53
SOUTH CAROLINA	70.77	74.81	76.06	72.92	74.18	71.66	72.92
ARKANSAS	72.16	78.85	79.91	77.26	78.32	76.20	77.26
OREGON	52.81	56.23	58.42	52.95	55.14	50.76	52.95
NORTH DAKOTA	62.11	59.86	61.87	56.85	58.86	54.85	56.85
VIRGINIA	56.74	55.25	57.49	51.90	54.13	49.66	51.90
COLORADO	52.28	49.95	52.45	46.19	48.70	43.69	46.19
DELAWARE	50.00	54.00	56.30	50.55	52.85	48.25	50.55
ALASKA	50.00	40.00	40.00	40.00	40.00	40.00	40.00
MONTANA	65.34	62.26	64.15	59.43	61.32	57.55	59.43
NEVADA	50.00	40.00	41.03	40.00	40.00	40.00	40.00
OKLAHOMA	59.91	64.39	66.17	61.72	63.50	59.94	61.72
INDIANA	56.73	46.85	49.51	42.87	45.52	40.21	42.87
NEBRASKA	58.12	49.59	52.11	45.80	48.32	43.28	45.80
OHIO	55.10	50.77	53.23	47.08	49.54	44.62	47.08
MARYLAND	50.00	45.06	47.81	40.94	43.69	40.00	40.94
WASHINGTON	50.00	49.11	51.65	45.29	47.84	42.75	45.29
IOWA	55.35	46.18	48.87	42.14	44.83	40.00	42.14
PENNSYLVANIA	56.78	52.91	55.26	49.37	51.73	47.02	49.37
KANSAS	52.50	45.82	48.53	41.76	44.47	40.00	41.76
MAINE	70.63	68.25	69.84	65.87	67.46	64.29	65.87
ILLINOIS	50.00	49.47	52.00	45.68	48.21	43.15	45.68
NEW HAMPSHIRE	59.41	44.82	47.58	40.68	43.44	40.00	40.68
CALIFORNIA	50.00	54.69	56.96	51.30	53.56	49.03	51.30
HAWAII	50.00	49.83	52.34	46.07	48.58	43.56	46.07
MICHIGAN	50.00	53.37	55.70	49.87	52.20	47.54	49.87
VERMONT	68.59	64.01	65.81	61.31	63.11	59.51	61.31
NEW JERSEY	50.00	42.53	45.40	40.00	41.09	40.00	40.00
CONNECTICUT	50.00	40.00	40.00	40.00	40.00	40.00	40.00
DISTRICT OF COLUMBIA	50.00	64.80	66.56	62.16	63.92	60.40	62.16
MINNESOTA	54.39	44.87	47.63	40.73	43.49	40.00	40.73
RHODE ISLAND	57.77	52.89	55.25	49.36	51.71	47.00	49.36
WISCONSIN	58.02	44.09	46.88	40.00	42.69	40.00	40.00
MASSACHUSETTS	53.56	48.17	50.76	44.28	46.87	41.69	44.28
NEW YORK	50.88	61.30	N/A	58.39	N/A	56.46	N/A
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

OPTION #3 (POVERTY, 40  
PERCENT MINIMUM, AND RTS)

Option #3 is the same as option #2 except the RTS is used in place of personal income to better reflect States' tax bases. This option produces the biggest reduction in tax burden disparities (from 42 to 50 percent) but incentives that could reduce program disparities are increased less than in option #2. (See table 18.) New York significantly reduces the number of States that could have their funding rates increased under this option. For example, if Federal funding was moderately increased, 31 States would receive higher Federal percentages if New York were excluded from the formula compared to 18 otherwise. States' Federal percentages under this option are shown in table 19.

Table 18  
Effect Of Option #3 On Tax Burden And  
Program Disparities And Federal Funding

Change in Federal funding (note a)	Reduction in tax burden disparities (%) (note b)	Increase in incentives to reduce program disparities (%) (note b)	Number of States with funding			
			Increase		Decrease	
			with N.Y.	without N.Y.	with N.Y.	without N.Y.
Moderate increase	50	12	18	31	32	18
No change	46	18	11	20	39	29
Moderate decrease	42	21	10	11	40	38

a/These changes are approximate because it depends on whether States replace lost Federal funding with State funds and whether States withdraw State funds if Federal funding is increased.

b/See appendix IV for the explanation of how these figures were calculated.

Table 19

## Federal Medicaid Rates Under Option #3

State	Current Formula	Increased Federal Funding		Constant Federal Funding		Decreased Federal Funding	
		With New York	W/O New York	With New York	W/O New York	With New York	W/O New York
FLORIDA	57.92%	58.74%	62.67%	55.80%	59.73%	52.85%	57.76%
NEW MEXICO	67.19	66.72	69.89	64.34	67.51	61.96	65.92
MISSISSIPPI	77.36	83.00	83.00	83.00	83.00	82.56	83.00
WEST VIRGINIA	67.95	65.70	68.97	63.25	66.52	60.80	64.88
ALABAMA	71.13	77.45	79.60	75.84	77.99	74.23	76.91
WYOMING	50.00	40.00	40.00	40.00	40.00	40.00	40.00
IDAHO	65.43	62.86	66.39	60.20	63.74	57.55	61.97
KENTUCKY	67.95	75.66	77.98	73.92	76.24	72.18	75.08
NORTH CAROLINA	67.81	70.42	73.23	68.30	71.12	66.19	69.71
TEXAS	55.75	54.28	58.63	51.01	55.37	47.75	53.19
MISSOURI	60.38	59.53	63.39	56.64	60.49	53.75	58.57
TENNESSEE	68.53	74.93	77.32	73.14	75.53	71.35	74.34
UTAH	68.64	56.73	60.86	53.64	57.77	50.55	55.70
SOUTH DAKOTA	68.19	68.83	71.80	66.60	69.57	64.38	68.09
GEORGIA	66.28	73.14	75.70	71.22	73.78	69.30	72.50
LOUISIANA	66.85	69.02	71.97	66.81	69.76	64.59	68.28
SOUTH CAROLINA	70.77	74.44	76.88	72.62	75.05	70.79	73.84
ARKANSAS	72.16	77.34	79.50	75.72	77.88	74.10	76.80
OREGON	52.81	52.27	56.81	48.86	53.40	45.45	51.13
NORTH DAKOTA	62.11	52.16	56.72	48.74	53.30	45.33	51.02
VIRGINIA	56.74	54.67	58.98	51.43	55.75	48.19	53.59
COLORADO	52.28	40.89	46.52	40.00	42.30	40.00	40.00
DELAWARE	50.00	50.61	55.31	47.08	51.78	43.55	49.43
ALASKA	50.00	40.00	40.00	40.00	40.00	40.00	40.00
MONTANA	65.34	50.52	55.23	46.99	51.70	43.45	49.34
NEVADA	50.00	40.00	40.00	40.00	40.00	40.00	40.00
OKLAHOMA	59.91	52.74	57.24	49.37	53.87	45.99	51.62
INDIANA	56.73	48.41	53.32	44.73	49.64	41.04	47.18
NEBRASKA	58.12	48.71	53.60	45.05	49.94	41.39	47.49
OHIO	55.10	51.39	56.02	47.91	52.54	44.44	50.23
MARYLAND	50.00	47.85	52.82	44.13	49.09	40.40	46.61
WASHINGTON	50.00	47.17	52.20	43.39	48.42	40.00	45.91
IOWA	55.35	42.22	47.72	40.00	43.59	40.00	40.84
PENNSYLVANIA	56.78	54.57	58.90	51.33	55.65	48.08	53.49
KANSAS	52.50	41.55	47.12	40.00	42.94	40.00	40.16
MAINE	70.63	67.20	70.32	64.86	67.98	62.51	66.42
ILLINOIS	50.00	50.47	55.19	46.94	51.65	43.40	49.30
NEW HAMPSHIRE	59.41	40.00	45.69	40.00	41.40	40.00	40.00
CALIFORNIA	50.00	50.03	54.79	46.46	51.22	42.89	48.84
HAWAII	50.00	45.44	50.64	41.54	46.74	40.00	44.14
MICHIGAN	50.00	57.22	61.29	54.16	58.24	51.11	56.20
VERMONT	68.59	61.36	65.04	58.61	62.28	55.85	60.44
NEW JERSEY	50.00	45.04	50.27	41.11	46.35	40.00	43.73
CONNECTICUT	50.00	40.00	40.00	40.00	40.00	40.00	40.00
DISTRICT OF COLUMBIA	50.00	69.08	72.03	66.88	69.82	64.67	68.35
MINNESOTA	54.39	42.65	48.11	40.00	44.02	40.00	41.29
RHODE ISLAND	57.77	58.11	62.10	55.12	59.11	52.12	57.11
WISCONSIN	58.02	44.28	49.59	40.30	45.61	40.00	42.95
MASSACHUSETTS	53.56	50.65	55.35	47.12	51.82	43.60	49.47
NEW YORK	50.88	66.60	N/A	64.21	N/A	61.82	N/A
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

OPTION #4 (POVERTY, 40 PERCENT  
MINIMUM AND INCENTIVE FACTOR) 1/

Option #4 is the same as option #2 except State Medicaid spending per person below the poverty line is included in the formula. The table reflects an incentive factor of 0.2 associated with State Medicaid spending which would reward States whose spending is below the U.S. average and penalize States whose spending is above the average. 2/

This option does not reduce tax burden disparities as much as options #2 or #3 but it increases incentives that could reduce program disparities more than any of the other options we considered. (See table 20.) Slightly more than half the States (26) would have their funding rates increased, assuming total Federal funding remains at its current level, while 31 would if Federal funding were increased moderately. New York's effect on State rates is not as strong as it is in other options because its Federal rate increases the least under this option. States' Federal percentages under this option are shown in table 21.

Table 20

Effect Of Option #4 On Tax Burden And  
Program Disparities And Federal Funding

Change in Federal Funding (note a)	Reduction in tax burden disparities (%) (note b)	Increase in incentives to reduce program disparities (%) (note b)	Number of States with funding			
			Increase		Decrease	
			with N.Y.	without N.Y.	with N.Y.	without N.Y.
Moderate increase	23	35	31	34	19	15
No change	23	35	26	26	24	23
Moderate decrease	23	33	21	21	29	28

a/These changes are approximate because it depends on whether States replace lost Federal funding with State funds and whether States withdraw State funds if Federal funding is increased.

b/See appendix IV for the explanation of how these figures were calculated.

1/This option would not be applicable to the AFDC program due to its use of States' Medicaid, rather than AFDC, spending.

2/See chapter 3 pp. 39 to 44 and appendix III (pp. 86 to 96) for a discussion of the incentive factor.

Table 21

Federal Medicaid Rates Under Option #4

State	Current Formula	Increased Federal Funding		Constant Federal Funding		Decreased Federal Funding	
		With New York	W/O New York	With New York	W/O New York	With New York	W/O New York
FLORIDA	57.92%	73.45%	74.17%	71.30%	72.01%	69.14%	69.86%
NEW MEXICO	67.19	81.14	81.65	79.61	80.12	78.09	78.60
MISSISSIPPI	77.36	83.00	83.00	83.00	83.00	83.00	83.00
WEST VIRGINIA	67.95	76.93	77.56	75.06	75.69	73.19	73.82
ALABAMA	71.13	82.01	82.49	80.55	81.03	79.09	79.57
WYOMING	50.00	46.02	46.90	44.07	44.62	42.84	43.19
IDAHO	65.43	71.87	72.63	69.59	70.35	67.31	68.07
KENTUCKY	67.95	80.81	81.33	79.25	79.77	77.70	78.21
NORTH CAROLINA	67.81	75.45	76.12	73.46	74.13	71.47	72.14
TEXAS	55.75	72.18	72.93	69.92	70.68	67.67	68.42
MISSOURI	60.38	66.95	67.84	64.27	65.16	61.59	62.48
TENNESSEE	68.53	79.23	79.79	77.55	78.11	75.86	76.42
UTAH	68.64	68.27	69.13	65.70	66.56	63.13	63.99
SOUTH DAKOTA	68.19	75.79	76.45	73.83	74.48	71.87	72.52
GEORGIA	66.28	77.92	78.52	76.13	76.73	74.34	74.94
LOUISIANA	66.85	80.67	81.19	79.10	79.63	77.54	78.06
SOUTH CAROLINA	70.77	78.58	79.16	76.84	77.42	75.10	75.68
ARKANSAS	72.16	81.86	82.35	80.39	80.88	78.92	79.41
OREGON	52.81	61.97	63.00	58.88	59.91	55.80	56.83
NORTH DAKOTA	62.11	65.08	66.03	62.25	63.19	59.42	60.36
VIRGINIA	56.74	60.95	62.01	57.79	58.84	54.62	55.68
COLORADO	52.28	56.08	57.27	52.52	53.71	49.02	50.15
DELAWARE	50.00	59.48	60.57	56.19	57.29	52.91	54.00
ALASKA	50.00	43.00	43.44	42.03	42.31	41.42	41.59
MONTANA	65.34	66.53	67.43	63.81	64.72	61.10	62.00
NEVADA	50.00	46.13	47.03	44.15	44.71	42.89	43.25
OKLAHOMA	59.91	68.30	69.16	65.73	66.59	63.16	64.01
INDIANA	56.73	52.53	53.81	48.78	49.96	46.11	46.88
NEBRASKA	58.12	54.82	56.04	51.15	52.38	47.83	48.81
OHIO	55.10	55.66	56.86	52.07	53.26	48.60	49.68
MARYLAND	50.00	49.95	51.30	46.74	47.65	44.69	45.28
WASHINGTON	50.00	53.39	54.65	49.62	50.87	46.70	47.54
IOWA	55.35	50.11	51.46	46.85	47.77	44.77	45.37
PENNSYLVANIA	56.78	56.29	57.47	52.74	53.92	49.24	50.38
KANSAS	52.50	49.27	50.61	46.28	47.12	44.37	44.92
MAINE	70.63	70.00	70.81	67.57	68.38	65.14	65.95
ILLINOIS	50.00	52.21	53.50	48.49	49.64	45.91	46.65
NEW HAMPSHIRE	59.41	47.99	49.16	45.41	46.14	43.77	44.24
CALIFORNIA	50.00	56.94	58.11	53.45	54.61	49.96	51.12
HAWAII	50.00	51.98	53.28	48.29	49.41	45.77	46.50
MICHIGAN	50.00	55.35	56.56	51.73	52.94	48.31	49.35
VERMONT	68.59	65.29	66.23	62.48	63.42	59.66	60.60
NEW JERSEY	50.00	45.90	46.76	43.99	44.53	42.78	43.13
CONNECTICUT	50.00	41.79	42.05	41.21	41.38	40.84	40.95
DISTRICT OF COLUMBIA	50.00	63.74	64.72	60.80	61.78	57.86	58.84
MINNESOTA	54.39	44.79	45.50	43.25	43.68	42.26	42.54
RHODE ISLAND	57.77	50.11	51.45	46.84	47.77	44.77	45.36
WISCONSIN	58.02	44.23	44.86	42.87	43.25	42.00	42.25
MASSACHUSETTS	53.56	45.87	46.74	43.98	44.52	42.77	43.12
NEW YORK	50.88	57.97	N/A	54.57	N/A	51.16	N/A

(1)

(2)

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(8)

OPTION #5 (POVERTY, 40 PERCENT  
MINIMUM, RTS, AND INCENTIVE FACTOR) 1/

Option #5 combines all the previous changes into one option. It replaces per capita income with people below the poverty line to better reflect the needy and includes the RTS to better reflect relative taxing capacity. State Medicaid spending per person below the poverty line is included to provide incentives that could reduce program disparities and could also be adapted to reduce the rate of spending growth and the minimum Federal share is lowered to 40 percent.

The combined effect of making all these changes would produce a major reduction in tax burden disparities (about the same as in option #3) and a significant increase in incentives that could reduce program disparities (nearly as great as those in option #4). (See table 22.) The majority of States would have their funding rates increased if Federal funding were allowed to increase moderately. If New York were excluded from the formula, 33 States would have higher Federal rates with moderately increased Federal funding compared to 28 if New York were funded under the formula. Twenty-seven would have higher rates if the level of Federal funding were to remain the same and New York were excluded; 22 would if New York were to be included. (See table 23.)

Table 22  
Effect Of Option #5 On Tax Burden And  
Program Disparities And Federal Funding

Change in Federal funding (note a)	Reduction in tax burden disparities (%) (note b)	Increase in incentives to reduce program disparities (%) (note b)	Number of States with funding			
			Increase		Decrease	
			with N.Y.	without N.Y.	with N.Y.	without N.Y.
Moderate increase	46	29	28	33	22	16
No change	46	29	22	27	28	22
Moderate decrease	42	29	18	21	32	28

a/These changes are approximate because it depends on whether States replace lost Federal funding with State funds and whether States withdraw State funds if Federal funding is increased.

b/See appendix IV for the explanation of how these figures were calculated.

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1/This option would not be applicable to the AFDC program due to its use of States' Medicaid, rather than AFDC, spending.

Table 23

Federal Medicaid Rates Under Option #5

State	Current Formula	Increased Federal Funding		Constant Federal Funding		Decreased Federal Funding	
		With New York	W/O New York	With New York	W/O New York	With New York	W/O New York
FLORIDA	57.92%	69.20%	70.82%	65.96%	68.39%	63.53%	65.96%
NEW MEXICO	67.19	75.05	76.36	72.42	74.39	70.45	72.42
MISSISSIPPI	77.36	83.00	83.00	83.00	83.00	83.00	83.00
WEST VIRGINIA	67.95	73.52	74.91	70.73	72.82	68.64	70.73
ALABAMA	71.13	82.46	83.00	80.62	82.00	79.23	80.62
WYOMING	50.00	40.23	40.30	40.14	40.20	40.10	40.14
IDAHO	65.43	70.26	71.82	67.12	69.47	64.78	67.12
KENTUCKY	67.95	80.45	81.48	78.39	79.94	76.85	78.39
NORTH CAROLINA	67.81	75.91	77.18	73.37	75.27	71.47	73.37
TEXAS	55.75	62.74	64.70	58.81	61.76	55.87	58.81
MISSOURI	60.38	66.90	68.64	63.42	66.03	60.81	63.42
TENNESSEE	68.53	79.45	80.54	77.29	78.91	75.67	77.29
UTAH	68.64	64.23	66.11	60.46	63.29	57.64	60.46
SOUTH DAKOTA	68.19	74.22	75.58	71.50	73.54	69.47	71.50
GEORGIA	66.28	77.74	78.91	75.40	77.15	73.64	75.40
LOUISIANA	66.85	74.27	75.63	71.56	73.60	69.53	71.56
SOUTH CAROLINA	70.77	78.75	79.87	76.51	78.19	74.83	76.51
ARKANSAS	72.16	80.99	81.99	78.99	80.49	77.49	78.99
OREGON	52.81	59.43	61.57	55.16	58.36	51.96	55.16
NORTH DAKOTA	62.11	59.29	61.44	55.01	58.22	51.79	55.01
VIRGINIA	56.74	61.31	63.34	57.24	60.29	54.18	57.24
COLORADO	52.28	49.30	51.94	45.64	48.17	43.99	45.64
DELAWARE	50.00	57.44	59.68	52.96	56.32	49.61	52.96
ALASKA	50.00	40.14	40.18	40.08	40.12	40.06	40.08
MONTANA	65.34	57.07	59.33	52.55	55.94	49.20	52.55
NEVADA	50.00	40.75	40.99	40.46	40.66	40.32	40.46
OKLAHOMA	59.91	58.85	61.02	54.52	57.77	51.27	54.52
INDIANA	56.73	54.93	57.30	50.18	53.74	47.21	50.18
NEBRASKA	58.12	55.04	57.41	50.31	53.86	47.31	50.31
OHIO	55.10	57.17	59.43	52.66	56.05	49.31	52.66
MARYLAND	50.00	53.53	55.98	48.74	52.31	46.19	48.74
WASHINGTON	50.00	52.67	55.17	47.98	51.43	45.65	47.98
IOWA	55.35	47.93	50.38	44.80	46.96	43.40	44.80
PENNSYLVANIA	56.78	58.76	60.93	54.41	57.67	51.16	54.41
KANSAS	52.50	47.09	49.28	44.30	46.22	43.04	44.30
MAINE	70.63	69.68	71.28	66.49	68.89	64.10	66.49
ILLINOIS	50.00	54.19	56.60	49.39	52.98	46.65	49.39
NEW HAMPSHIRE	59.41	45.85	47.67	43.55	45.14	42.51	43.55
CALIFORNIA	50.00	53.55	55.99	48.76	52.33	46.20	48.76
HAWAII	50.00	48.99	51.61	45.45	47.89	43.86	45.45
MICHIGAN	50.00	59.94	62.05	55.72	58.88	52.56	55.72
VERMONT	68.59	63.56	65.47	59.72	62.60	56.84	59.72
NEW JERSEY	50.00	48.24	50.76	44.99	47.23	43.54	44.99
CONNECTICUT	50.00	42.18	42.86	41.32	41.92	40.94	41.32
DISTRICT OF COLUMBIA	50.00	68.85	70.49	65.57	68.03	63.11	65.57
MINNESOTA	54.39	44.40	45.76	42.67	43.86	41.89	42.67
RHODE ISLAND	57.77	56.60	58.89	52.03	55.46	48.72	52.03
WISCONSIN	58.02	44.81	46.31	42.92	44.23	42.07	42.92
MASSACHUSETTS	53.56	48.39	50.94	45.08	47.37	43.60	45.08
NEW YORK	50.88	64.52	N/A	60.79	N/A	57.99	N/A
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

## SUMMARY

Option #1, which includes the number of people in poverty, makes the least disruptive change in the formula yet still provides modest improvement in the two policy objectives of improving tax burden equity and increasing incentives that could reduce program disparities. With somewhat larger changes in matching rates, option #2 would further improve both policy objectives by, in addition, reducing the minimum Federal share to 40 percent.

The last three options indicate that, after the previous two changes are made, further improvements in one policy objective can only be realized by sacrificing some improvement in the other. For example, option #3 would make the greatest improvement in tax burden equity but at the expense of weaker incentives to reduce program disparities among the States. Option #4 provides the strongest incentives to reduce program disparities but tax burden disparities are improved the least of any option. Option #5, representing a compromise between options #3 and #4, attempts to balance the two policy objectives. Finally, both options #4 and #5, by including State Medicaid spending with an incentive factor, could permanently incorporate cost control incentives in the formula.

The five options identified above could be implemented in such a way as to increase Federal funding, reduce it, or maintain it at current levels by adjusting the overall share of Federal funding (currently 55 percent). The alternative selected heavily influences the number of States whose Federal funding rates would be increased and the number whose rates would be decreased.

Because New York's funding rate increases significantly in most of the formula options and it has the largest program, New York significantly affects the funding rates of the remaining States. For example, under option #3 (see table 19, p. 52, columns 3 and 4), the vast majority of States would have their funding rates increased between 2 and 4 percentage points if Federal funding (exclusive of New York) were to remain unchanged and New York's program were funded outside the formula mechanism. New York's matching rate changes the least under options #1 and #4 if Federal funding were reduced or maintained at current levels (see table 15, p. 48, columns 5 and 7 and table 21, p. 54, columns 5 and 7).

All options produce large changes in some States' funding rates if implemented immediately. Therefore, formula changes should be phased in over several years to allow States to adjust to their new funding levels without creating unnecessary disruptions in the program. This could be accomplished, for example, by limiting the change in a State's rate to no more than 2 or 3 percent per year until the new formula is fully implemented.

## VIEWS OF PROGRAM OFFICIALS

Program officials expressed the view that introduction of the RTS, although theoretically appealing, represented a major change in the present formula and that it might be desirable to present options which represent lesser changes to the formula. Program officials also said that use of the RTS in our analysis might be viewed as a general endorsement for its use in other programs which allocate Federal aid on the basis of personal income.

There are two reasons why we chose the options outlined previously. First, formula options which produce lesser changes in the existing formula would do little to improve its equity. Our objective was to identify those options which would have the greatest effect on improving the formula's equity. While it would not be practical to present all possible changes that could be made to the formula in our report, we can provide analyses of other options to the legislative committees if needed. Secondly, the alternatives suggested by program officials have already been analyzed by other researchers and are therefore available to the Congress if it wishes to consider other alternatives (see footnote on p. 26).

We wish to emphasize that, while use of the RTS would improve tax burden equity, this is only one of several possible objectives. If use of the RTS conflicts with other program objectives which are deemed more important, use of the RTS may not be justified. It is because of this consideration that we have presented formula options that do not use the RTS as well as some that do. The desirability of using the RTS in any particular program should be decided on the basis of its compatibility with other objectives of the program in question.

Program officials also said that, while it is not feasible to take geographic differences in health care costs into account, formula options which rely on State Medicaid spending may be inequitable without such an adjustment. The reason is that some of the disparities in programs are due to geographic differences in health care costs and not to differences in real benefits. Consequently, some States would be unfairly rewarded or penalized.

Our discussion on pages 10 to 14 and additional statistical analysis on pages 83 to 84 of appendix III indicates that differences in State Medicaid spending largely reflect differences in eligibility and medical benefits and that medical care costs do not account for a large proportion of State spending differences. Because Medicaid spending largely reflects real differences in program benefits we believe that its use, even without taking cost differences into account, would systematically provide incentives to reduce the wide differences in programs among States.

IMPROVING THE FORMULA WILL REQUIREADDITIONAL FACTORS AND STATISTICAL DATA

As part of the Medicaid study mandated in the 1981 Omnibus Budget Reconciliation Act, GAO was instructed to consider a number of factors which could bear upon an equitable distribution of Medicaid funds to States. In chapters 3 and 4 we demonstrate that improved tax burden equity between wealthier and poorer States can be brought about by using the number of people below the poverty line and the Representative Tax System (RTS) in place of per capita income.

This appendix explains our conceptual reasons for concluding that the number of people below the poverty line is the best available indicator of the needy and that the RTS is the best available indicator of tax wealth. None of the data used are without fault; therefore, the strengths and weaknesses of the indicators we reviewed are presented so the reader can judge the validity of our conclusions.

In addition, this appendix explains why other factors the Congress asked us to consider, such as unemployment rates and interstate health care cost differentials, were not included in the formula options developed in chapter 4. In brief, these factors were not included because the methodology behind their construction is not sufficiently sound to provide reasonably accurate data or because they would not serve the objectives of improving tax burden equity or reducing program disparities.

PEOPLE IN POVERTY, THOUGH IMPERFECT,  
IS A BETTER INDICATOR OF THE NEEDY  
THAN PER CAPITA INCOME

The use of per capita income in the current formula serves two purposes: (1) an indicator of the needy population which the program is intended to serve and (2) an indicator of State tax wealth. <sup>1/</sup> When per capita income was first used in Federal sharing formulas, more direct measures of the needy were unavailable. However, direct measures of persons below the poverty line were developed in the 1960s, and the methodologies have been used in the Current Population Survey (CPS) since 1968. The 1980 census provides a State-by-State tabulation of the poor that we feel represents an improvement over the use of per capita income as a measure of the needy. This data can be updated annually through the CPS if the Congress wishes to make this improvement in the formula. While poverty data represents an improvement over per capita income, further improvement could be made but additional research would be required. The major

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<sup>1/</sup>The issue of measuring tax wealth is discussed on pages 69 to 74.

weakness is that the income threshold used to determine an individual's poverty status does not reflect cost-of-living differences in various sections of the country.

Per capita income does not adequately reflect the needy

Defining the needy for purposes of Medicaid eligibility is problematical because program responsibilities are shared by the Federal and State governments. Federal law does not define who the needy are, and States determine eligibility. However, Federal law does require participation of all individuals who qualify for the State AFDC program, implying that low-income people are an important component of the needy for purposes of receiving Medicaid benefits. In addition, Federal law allows for participation of the medically needy, implying that Federal policy intends to include people who do not have the financial resources to purchase needed medical services although they do have enough income to meet their basic living needs. Thus, while Federal law does not define the needy, Federal statutory provisions suggest that the needy include low-income people who lack the financial resources to purchase needed medical services.

The legislative history summarized in chapter 1 revealed that per capita income was proposed as a basis for a variable Federal share formula in part because it would reflect the greater incidence of poverty in low-income States.<sup>1/</sup> However, by its very nature, per capita income simply represents the average of a State's income distribution. In contrast, the needy represent not the average but the low end of the income distribution scale. Consequently, two States can have the same per capita income but the State with a more unequal income distribution can have a larger proportion of its population below the poverty line.

While a low per capita income is symptomatic of a large concentration of people below the poverty line, the relationship is far from exact. For example, on the basis of 1980 census data Nevada and the District of Columbia have nearly equal per capita incomes (\$10,521 and \$10,570 respectively) but the District has over twice the percentage of its population below the poverty line (20.1 percent compared to 9.0 percent). Consequently, using per capita income suggests that Nevada and the District of Columbia have roughly equal percentages of people below the poverty line when in fact they differ markedly. Similar inconsistencies exist among other States with similar

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<sup>1/</sup>See pp. 3 to 5.

per capita incomes as listed in table 24. <sup>1/</sup> Consequently, for several States, per capita income is a poor indicator of the needy.

Table 24

Relationship Between Per Capita  
Income and the Percentage of  
People Below the Poverty Line

<u>States</u>	<u>Per capita income</u>	<u>Percent of population below the poverty line</u>
Nevada	\$10,521	9.0
District of Columbia	10,570	20.1
Iowa	8,772	10.2
Texas	8,788	15.1
Colorado	9,122	10.7
New York	9,104	15.1
Wisconsin	8,484	9.5
Oklahoma	8,509	13.8
Vermont	7,329	12.3
Kentucky	7,390	19.1
Connecticut	10,129	9.2
California	10,047	13.1
Indiana	8,570	10.0
Florida	8,546	13.7

Transfer payments should be  
deducted from income in  
determining poverty status for  
purposes of measuring the needy

The definition of poverty applied to Census income data was developed by the Social Security Administration in 1964 and later modified by a Federal Interagency Committee for official use by Federal agencies. Currently, the poverty level is designated annually by the Office of Management and Budget, and the Bureau of the Census provides estimates of the number of people

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<sup>1/</sup>A regression of per capita income with the percentage of people in poverty shows that differences in per capita income account for only 31 percent of the variance in poverty

(i.e.,  $R^2 = .31$ ).

below various proportions of the official poverty line ranging from 75 to 200 percent.

The official poverty line is based on an income threshold that defines an annual income needed to maintain a nutritionally adequate diet and provide for other basic needs. 1/ People whose cash income falls below that income level are defined as being in poverty.

Using poverty data as a measure of the needy should exclude cash transfers from government programs whose purpose it is to provide benefits to people deemed to be in need. Adjusting income thresholds in this way prevents penalizing States whose public assistance programs raise a significant number of people above the official poverty line and would to some extent reflect cost-of-living differences among States because higher cash transfers, in part, reflect higher cost-of-living.

Therefore, we have used the number of people below the poverty line based on incomes net of cash transfers that are included in the determination of an individual's poverty status-- primarily cash payments from AFDC, SSI, and some relatively small State income transfer programs. Taking these cash transfers into account fulfills a mandate in the Reconciliation Act which specified that transfer payments made by States under the Social Security Act be considered as a means of improving the equity of the formula.

Data on the poor by State  
could be produced annually  
by Census

The 1980 Decennial Census conducted by the Bureau of the Census includes statistics on the number of people in poverty (based on an income threshold net of cash transfers). The major limitation of this series is that it is only current for a short time and becomes increasingly inaccurate as the decade progresses beyond the Decennial Census years.

The Current Population Survey (CPS) on Money Income and Poverty Status is a yearly update of the Decennial Census Income figures. 2/ The March Supplement, as it is referred to, consists of a much smaller sample than that used to estimate

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1/Although the determination of a nutritionally adequate diet and its cost are subjective judgments about which there have been disagreements, the Federal Government has adopted a specific methodology for determining an income threshold for use by Federal agencies.

2/The CPS also includes monthly surveys that deal mainly with labor force data.

income distributions in the Decennial Census. The March 1982 CPS Supplement was based on a sample of 68,500 households, although this sample size is being scaled back in future supplements. The income definition and method of determining poverty thresholds are the same as for the Decennial Census. However, unlike the Decennial Census data, the CPS March Supplement does not produce reliable income estimates for all States because of its smaller sample size.

If the CPS Supplement were used to estimate the low-income population of States between census years, its sample must be redesigned and/or expanded to yield reliable State estimates. The Bureau of the Census has provided us with cost estimates of restructuring the CPS.

All the estimates provided by Census are based on the assumption that a 2-year average of separate independent samples will be used. This procedure reduces the sample size needed and therefore the cost of achieving a given level of reliability. The expansion could not be put into effect until 1986 because of the need to wait for an impending change in the design of the CPS based on the 1980 census, which will not be ready until 1983.

Census officials have informed us the estimated startup cost of an independent expansion would be approximately \$10.1 million over 3 years, followed by a yearly operating cost of \$3.5 million. If the new sample can eventually be merged with the traditional CPS March Supplement, the \$3.5 million annual additional cost of collecting reliable data would be significantly reduced because only an additional 25,000 units would have to be sampled at an annual cost of \$1.9 million. The specific estimated costs of the 2-year expansion of the CPS are shown in table 25.

Table 25  
Estimated Costs of CPS  
Expansion by Fiscal Year  
(in thousands of dollars)

	<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87 and beyond</u>
50,000 independent sample (fund-year average)	\$700	\$5,000	\$4,400	<u>a/</u> \$3,500

a/If a 25,000 sample is merged with the CPS, annual additional costs would be reduced to \$1.9 million.

Poverty data does not reflect  
cost-of-living differences

Census poverty data, despite the survey expansion suggested in the previous section, still has certain flaws which are noteworthy but not serious enough to reject it as an improvement in the measurement of the needy.

Poverty data could be improved if the income thresholds were adjusted for inter-area cost-of-living differentials; however, the methodology for such an adjustment has yet to be developed. Currently, income levels below which a family is considered in poverty are calculated on a national basis only. Therefore, States with relatively high cost-of-living may have understated poverty populations. These States probably require poverty thresholds based on higher income levels because of their higher cost-of-living. The reverse is true of States with low cost-of-living, that is, their poverty populations are probably overstated.

Over the years there has been much discussion about the need for a methodology which would yield reliable cost-of-living estimates for States and sub-State regions. Presently, the only series available which comes close to doing this is the Bureau of Labor Statistics' (BLS) Family Budget Program. However, this series falls far short in terms of its coverage because it produces cost-of-living estimates only for major cities and broad regions. Experts in measuring cost-of-living have also questioned the reliability of using the Family Budget Program for this purpose.

In 1978 BLS took steps to develop a more useful and reliable cost-of-living index. It requested an independent Expert Committee on Family Budget Revisions, assembled by the Wisconsin Institute for Research on Poverty, to propose changes in the Family Budget Program that could ultimately lead to better State and sub-State cost-of-living measures.<sup>1/</sup> However, BLS this year discontinued the Family Budget Program for economy reasons before it considered the Committee's recommendations. It therefore appears that an appropriate cost-of-living index for adjusting State poverty thresholds cannot be expected for some time.

It should be noted, however, even if cost-of-living differences could be taken into account, major tax burden and program disparities would continue to exist if no other changes were made to the formula. Cost-of-living indices based on the Family Budget Plan show differences between high and low cost areas to range somewhere between 30 and 50 percent. This is relatively

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<sup>1/</sup>Expert Committee on Family Budget Revisions, New American Family Budget Standards, unpublished draft, May 1980.

small compared with tax burden disparities of approximately 400 percent and spending disparities of about 600 percent.

Poverty data could be adjusted  
to better reflect the higher  
cost of the elderly

Some age groups are more expensive to care for than others. Therefore, counting all people below the poverty line equally does not reflect the greater burden associated with a high concentration of the elderly or the lighter burden of a relatively young population.

This problem could be overcome by weighting the elderly and the young by differences in the costs of caring for these groups. However, data on the age distribution of each State's poverty population were not available from the 1980 census in time to be included in our analysis. If the Congress wishes to consider using poverty data in a new formula, this adjustment could be made when the Census Bureau releases the necessary data.

THE NUMBER OF RECIPIENTS SHOULD  
NOT BE USED TO MEASURE THE NEEDY

The number of persons receiving benefits under the Medicaid program is an alternative measure of the needy we considered but rejected because this series is marked by serious conceptual and practical flaws. This option was considered by the Congressional Research Services (CRS) in connection with the AFDC program, <sup>1/</sup> and its use in a new Medicaid formula was proposed in S. 2584. Our analysis, however, leads us to conclude that recipient counts are susceptible to reporting errors, and their use in the formula can result in the Federal Government financing nearly all of the additional cost of adding more recipients to the program.

Using the number of recipients to measure the needy would give all States an incentive to relax their eligibility standards and make more people eligible for Medicaid services because more recipients would mean a more generous Federal rate. In fact, the Federal Government would pay nearly all the additional Medicaid costs of adding another person to the welfare rolls. Similarly, the Federal Government would reap nearly all of the savings associated with reducing the number of recipients. <sup>2/</sup> Therefore, including the number of actual

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<sup>1/</sup>"Analysis of Federal-State Cost-Sharing in the Aid to Families with Dependent Children Program," Congressional Research Service, March 22, 1982, pp. 60 to 62.

<sup>2/</sup>See appendix III, pp. 90 to 91.

recipients in the formula is not consistent with prudent incentives which encourage States to be cost conscious in determining State eligibility standards.

Furthermore, the HCFA recipient data is not reliable because recipient counts are vulnerable to duplication. Duplication results when persons for whom more than one Medicaid claim is paid during a given period (a month or year depending on the reporting cycle under consideration) are counted more than once. A person need only submit one valid Medicaid claim to be considered a recipient. Thus, persons submitting more than one claim during a reporting cycle could be double counted each time if proper controls are not in place.

States endeavor to "unduplicate" both the monthly and annual counts with computer programs or by other means before sending them to HCFA. According to HCFA, most States submit counts accurate enough for statistical reporting purposes, although a few States with outdated claims reporting systems probably submit seriously inaccurate data even for this purpose. HCFA, however, does not presently verify the accuracy of the recipient counts submitted and therefore does not know the extent of duplication, because it is used only for statistical purposes.

Though HCFA does not know how pervasive the problem of recipient count duplication is, officials of the agency described two situations where the likelihood of duplication is increased. The first is when a Medicaid eligible changes classification status such as switching from categorically needy-blind, to categorically needy-aged upon turning 65. The second situation results when a Medicaid eligible moves from one jurisdiction to another within a State. In both instances, States with inadequate eligibility recordkeeping systems may assign such eligibles new account numbers without nullifying their old numbers, resulting in double counting. Thus, in either instance, if eligibles receive services under both account numbers they will be counted twice.

The inclusion of recipients in the formula could also introduce an incentive for States to intentionally duplicate their recipient counts because doing so would be to their financial advantage. High recipient counts would result in a higher Federal share for States with large numbers of recipients relative to other States. Thus, States submitting duplicated recipient counts would receive a higher Federal share without increasing benefits or coverage.

The duplication problem could be reduced if HCFA certification and recertification of State Medicaid Management

Information Systems <sup>1/</sup> was contingent upon a State having the capacity to accurately unduplicate recipient counts.

THE REPRESENTATIVE TAX SYSTEM  
IS A BETTER MEASURE OF STATE  
TAX WEALTH THAN PERSONAL INCOME

State tax capacity was one of the factors the Congress asked to be considered in our review. Tax capacity is an important factor because it is an indicator of a State's ability to provide medical services for its needy population from its own revenue sources. Taking tax capacity into account gives recognition to the fact that fiscally poor States would have to impose a much heavier tax burden on their taxpayers than would fiscally rich States providing similar benefits to their needy population. However, because States use a wide variety of taxes to raise revenues from many sources, gauging their actual tax capacity is difficult.

The two major indicators of States' ability to raise revenues are per capita income and an index, produced by ACIR which is commonly called the Representative Tax System (RTS). Because the RTS measures a much greater range of States' potential revenue sources than does per capita income, it is a more complete measure of true tax capacity. However, unlike per capita income, the RTS is not routinely available. Before the RTS can be used in the Medicaid formula, the Congress would have to designate an agency to produce it and appropriate funding for the system. If the RTS is selected, cost effective improvements in the underlying data and estimation techniques should also be made.

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<sup>1/</sup>A computer system, designed to help States administer their Medicaid programs more efficiently, effectively, and economically. These systems must be approved by HCFA before a State can qualify for 75 percent Federal sharing instead of the normal 50 percent to operate them. The systems after approval are reviewed annually by HCFA. However, at present, both the initial approval process and the yearly approval only superficially review a State's capacity to generate recipient counts. See GAO reports "Attainable Benefits Of The Medicaid Management Information System Are Not Being Realized" (HRD-78-151, Sept. 26, 1978); "Pennsylvania Needs An Automated System To Detect Medicaid Fraud And Abuse" (HRD-79-113, Sept. 24, 1979); "District Needs To Improve The Process For Identifying Misuse Of Its Medicaid Program" (GGD-81-78, July 13, 1981); "Federal Oversight Of State Medicaid Management Information Systems Could Be Further Improved" (GAO/HRD-82-99, July 30, 1982).

Weaknesses of per capita income  
as a measure of State tax  
capacity outweigh its strengths

The tax capacity factor now used in the Medicaid formula consists of a per capita measure of gross resident personal income which is produced on a quarterly basis by the Bureau of Economic Analysis. All pretax income from wages, salaries, interest, rent, dividends, and transfer payments received by State residents is contained in this measure as well as some nonmonetary income sources such as wages received in kind and in kind transfer payments (food stamps, for example).

Resident personal income, however, is an incomplete measure of tax capacity; it only measures income at the point it is received, in the form of wages, salaries, etc. Income is also taxed, through severance, commercial/industrial property, or sales taxes, where it is produced or used for consumption. These taxes are often ultimately paid by nonresidents. Thus, resident per capita income fails to capture the ability of States to export a portion of their taxes because they are not paid directly from the income received by State residents. Therefore, the tax capacity of some States, especially those with substantial natural resources or tourism, can be seriously understated by per capita income.

Another drawback of personal income is its inability to reflect the diversity of revenue sources within a State. The property tax, for example, which yields the most revenue within States, is inadequately measured by income. This tax is not based on the flow of income but rather on the possession of certain forms of wealth. In fact, personal income reflects only the base directly subject to the individual income tax. In 1979, however, individual income taxes only reflected 18 percent of all taxes raised by State/local governments, as such major revenue sources as property, sales, and severance taxes were excluded.

Finally, cash transfer payments to individuals are included in the income measure currently used in the Medicaid formula. The inaccuracy introduced by these transfer payments, from the standpoint of measuring tax capacity, is that the taxes used to finance them are also included in personal income and are therefore double counted. <sup>1/</sup> Consequently, there is a systematic overstatement of the income of States in which cash transfer payments, and the taxes which finance them, are relatively large.

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<sup>1/</sup>Except for the employee portion of Social Security taxes, which is deducted.

The two basic advantages of personal income are mostly of a practical nature. Most personal income estimates are available on a relatively current basis at both the State and county levels. The concept of personal income is also easy to understand. These factors are probably the major reasons for the acceptance of personal income as a measure of tax wealth. As testimony to its wide appeal, 29 assistance programs, as of 1979, used personal income as an allocation factor. However, as CRS noted in its study of the AFDC formula, the second "advantage" is more apparent than real.

"While the concept of per capita income is not intuitively difficult to grasp, the actual calculation of the numbers is a long, complicated process that the official Bureau of Economic Analysis (BEA) publication on the topic takes 18 pages of small print to describe. Thus, it is anything but simple and straightforward. For example, there are nearly 400 individually estimated income items for which data are derived from literally hundreds of different sources, including Federal, State, and non-Governmental sources. Also, because the appropriate data for each type of income included in the calculation are not always available, some data are estimated, other values are imputed and judgments are sometimes made." <sup>1/</sup>

The RTS is superior to personal income as a measure of tax wealth despite its limitations

In recognition of personal income's serious limitations as a measure of State and local tax capacity, ACIR in 1962 introduced the methodology for a national Representative Tax System. This comprehensive measure of the ability of States and localities to finance services has been improved and refined over the years by ACIR, and in the mid-1970's a simplified version was developed by the National Institute of Education. Finally, in March 1982, ACIR formally recommended that an RTS type of fiscal capacity index be used by the Federal Government. In conjunction with its use, ACIR also recommended that it be assigned to an agency for routine production and improvement of data and estimation techniques.

Unlike resident per capita income, which only measures one facet of economic activity, the RTS provides a measure of nearly all the major revenue resources States can tap using a variety of taxes. It calculates the amount of revenue each State would raise if an identical set of tax rates were applied to a comprehensive set of tax bases such as income, property, retail sales,

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<sup>1/</sup>Congressional Research Service, op. cit., p. 47.

and mineral production. Because an identical set of tax rates are used, States only differ in the size of their tax bases and therefore the RTS compares tax capacity between States.

The RTS calculates a State's tax capacity using all tax bases that are usually subject to State and local taxation, regardless of whether a State actually taxes a particular base. This is necessary because otherwise a State's tax capacity measure would reflect State policy rather than solely its "ability" to raise revenues. For example, as of 1979, Connecticut did not have an income tax, and Oregon did not maintain a retail sales tax but each of these tax bases are entered into each State's tax capacity computation.

The RTS is superior to personal income as an indicator of tax capacity because it reflects the major revenue sources available to State and local governments. As a result, taxes that are not drawn directly from personal income, such as the property tax, are more adequately reflected by RTS than by personal income. Similarly, taxes which can be exported by States, such as some sales and severance taxes, can be accounted for much more accurately by the RTS than personal income because the tax base is measured irrespective of the origin of the resources used to pay these taxes. Thus a State's ability to tax income from its neighboring States is imputed into the calculation of its overall tax capacity. 1/

The RTS, in essence, is conceptually better than personal income for measuring tax capacity because it attempts to account for all major tax bases directly. Personal income, on the other hand, although it measures a significant amount of the resources available to a State, cannot be considered a truly valid gauge of State tax capacity due to the limited range of economic activity it directly represents.

Some concerns exist, however, regarding certain data or estimation techniques used in calculating the RTS. Because the RTS measures several tax bases, it must rely on data from several sources. Although most of these data bases are reliable and current, not all of them are available on an annual or biennial basis, which necessitates interim updating and projections through the use of benchmarks and/or trend characteristics. In addition, the data for estimating a few tax bases are

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1/CRS, in a study of interstate tax exportation, concluded that tax exportation may distort the personal income factor in grant formulas enough to influence Federal grant allocations. The RTS, in our view, would partially offset this distortion if it were to replace personal income in grant formulas. See Dennis Zimmerman, Interstate Tax Exportation, Severance Taxation, and Intergovernmental Policy Issues, Congressional Research Service, September 30, 1981.

not complete, and proxy measures must be substituted for the missing information.

For example, data problems are particularly serious for the corporate income base which RTS researchers must estimate using an elaborate methodology without the benefit of a benchmark on which to base the estimation. Because the estimating techniques cannot be verified against a benchmark, tax capacity indices are susceptible to shifts over time due to judgment rather than any real changes in State or local fiscal capacity. Although the estimating procedure is not unreasonable, there is no way to judge its reliability.

Many of the data limitations are not as serious as it might seem. ACIR has calculated an abbreviated RTS that excludes corporate income, and several other small tax bases some of which also have data limitations. This abbreviated index displayed a nearly perfect correlation with the original RTS index. <sup>1/</sup> Because the abbreviated index very closely reproduces the original index we conclude that the data limitations in the bases ACIR excluded do not seriously affect the measurement of States' tax capacity.

Regardless of whether the standard or abbreviated RTS is used, some data limitations and estimation difficulties will remain. Such problems are not unique to the RTS. Many other Federal statistics, including the personal income measure currently used in the Medicaid formula, have similar problems.

In the specific instance of the RTS and personal income, an unknown degree of error is present in both measures due to these limitations. Although we did not conduct a detailed comparison of the two measures' relative accuracy, the information we reviewed suggests that the data and estimation difficulties are unlikely to materially detract from the greater ability of the RTS to gauge States' true tax capacities.

In comparing the RTS with personal income as an index of tax capacity, the appropriate criterion to be used in analyzing data limitations is whether the RTS' data/estimation procedure or the personal income figure comes closer to measuring a particular tax base. For example, does the RTS data on property values come closest to measuring the "true" value of property or does personal income provide a better reflection of the "true" value of property?

Unfortunately, no one knows the "true" value of property and consequently there is no way to empirically prove whether

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<sup>1/</sup>"Tax Capacity of the Fifty States: Methodology and Estimates," Advisory Commission on Intergovernmental Relations, Washington, D.C., March 1982, p. 31.

the RTS or personal income is a better measure of a given tax base. However, because the RTS attempts to directly measure each tax base while using personal income merely assumes that each base is highly correlated with per capita income, the RTS measure is likely to be a more accurate reflection of tax capacity than is personal income.

Measuring tax capacity accurately  
is necessary to correctly measure  
States' tax effort

An accurate tax capacity measure is important to achieving the tax burden equity objective of the Medicaid formula. Tax burden equity is achieved when States must make equal efforts to fund equal Medicaid services. The tax burden States must make to support their share of the Medicaid program is directly related to their tax capacity. The higher a State's capacity, the less effort it must make to raise a given amount of revenue and vice versa.

The tax burden some States must bear in raising revenues varies substantially depending on whether per capita income or the RTS capacity index is used to gauge their tax capacity. Using per capita income, Oklahoma must make an effort of 103 to raise \$97 million, while with RTS it must make only an effort of 87. Because the RTS more completely measures State tax capacities, its use also results in a more realistic measure of the tax burdens States must bear. Therefore, throughout this report we use the RTS to measure the tax burden equity of the current Medicaid formula as well as that resulting from alternative formulas.

However, if the Congress chooses to use the RTS in the Medicaid formula, an appropriate statistical agency must be charged with annually computing the index. To date the RTS index has been calculated only on an occasional basis by ACIR and other researchers. In addition, RTS' data limitations and estimation techniques should be further studied and steps should be taken to improve them where appropriate.

ACIR's cost for producing the 1979 RTS index was approximately \$56,000. It therefore could be available soon at a small cost if the Congress wishes to use the index as currently produced. If improvements in the data or estimation techniques are determined to be necessary before the RTS is used, its cost could be considerably higher and its availability significantly delayed. Additional costs and the length of any delay in availability would depend on how much additional accuracy is desired. It would not be unreasonable to assume that an improved RTS could be obtained at an annual cost of \$1 to \$2 million although a major effort to improve the index could be significantly higher. Thus the total cost of improving the

data on the poverty population (see p. 65) and the RTS could amount to somewhere between \$4 and \$6 million per year.

INCLUDING A MEASURE OF GEOGRAPHIC  
DIFFERENCES IN HEALTH CARE COSTS  
IS NOT PRESENTLY FEASIBLE

The Budget Reconciliation Act stipulated that our study of the Medicaid formula should take into account the effects of relative cost-of-living differences on State Medicaid expenditures. We interpret this to mean differences in health care costs among States since Medicaid is only used to purchase health care services. <sup>1/</sup> Our review of current methodologies, however, has revealed that none are appropriate for measuring interstate health care cost differentials. In addition, adding a medical care cost adjustment to the Medicaid formula could serve to increase States' Medicaid spending.

Differences in health care costs among States are of concern because they can cause tax burden inequities for States that must finance Medicaid programs in the face of relatively high health care costs. Health care cost differentials cause the actual purchasing power of a high cost State's tax base to be overstated because a tax dollar purchases fewer medical services as compared to low cost States. Therefore, geographic differences in health care costs, according to this logic, should be reflected in the formula so that taxpayers in the various States sacrifice tax dollars of equal purchasing power in financing the State share of the Medicaid program.

Presently it is not practicable to adequately measure geographic differences in health care costs because a methodologically defensible index for States does not exist. The two indices we reviewed which most closely measure health care costs are the health care component of the CPI and a regional version of the National Hospital Input price index. However, both have serious deficiencies as measures of interstate health care cost measures, which make them unsuitable for use in the Medicaid matching formula.

The medical care component of the CPI measures price changes for a different mix of medical services in various geographical areas. This cannot be employed to compare price levels for the simple reason that such a comparison requires the same basket of medical services as a necessary condition to compare price levels. In addition, the index is calculated for only 85 urban areas. In our opinion, extrapolating prices for

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<sup>1/</sup>The issue of a "general" cost-of-living index was discussed in connection with measuring the needy (see pp. 66 and 67).

50 States on the basis of data from 85 urban areas is highly questionable.

The National Hospital Input Price Index developed by HCFA is another index which attempts to measure a major component of prices of goods and services purchased by hospitals. The methodology to construct this index for the nine census regions was developed in 1981. <sup>1/</sup> Constructing a similar index for States would involve a significant data collection and research effort. If a State index were developed, it should also include non-hospital medical services.

In addition to the methodological problems associated with medical care cost differentials there are also conceptual arguments against taking this factor into account. Rising medical care costs create pressures on States to find ways of limiting the rate of expenditure growth. If States' Federal sharing rates are adjusted to compensate for health care inflation, the incentive for States to control inflation will be reduced because a larger portion of the higher costs would be passed on to the Federal taxpayer. In addition, States which experience below average inflation in medical care costs would be penalized by a reduction in its Federal share. Therefore, conceptual reasons exist for both excluding as well as including this factor.

UNEMPLOYMENT RATES  
SHOULD NOT BE USED

The Budget Reconciliation Act required GAO to consider including unemployment rates in the Medicaid formula. There are two arguments which could be advanced for including unemployment rates. In our opinion, neither argument carries sufficient weight to justify using them at this time.

The first argument is that rising unemployment rates reflect more unemployed people whose lost incomes result in more people eligible for Medicaid, especially in States with an unemployed fathers program (AFDC-U). While this is true, changes in unemployment rates could have widely differing impacts on Medicaid programs in different States. For example, increased unemployment will likely add more recipients to the Medicaid program of States with an AFDC-U program compared to States without this program. This means that States without an AFDC-U program would receive more Federal funding when unemployment rose even though the number of people receiving benefits in their State did not change appreciably. Similarly, when unemployment declined, their Federal funding would decline

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<sup>1/</sup>Freeland, Mark, et. al., "Regional Hospital Input Price Indexes," Health Care Financing Review, December 1981.

even though it must still provide benefits to the same number of recipients. In addition, there is limited data to determine differences in the sensitivity of State Medicaid programs to unemployment rate changes. Additional research is needed to determine the feasibility of using unemployment rates to measure the impact of a recession on the number of Medicaid recipients or if other alternatives would be better.

The second argument that could be advanced for including unemployment rates in the formula is to provide Federal funding to counteract the impact of recession on State budgets.

There are several reasons why this argument may not justify the use of unemployment rates in the Medicaid formula. First, it is questionable whether using a program designed to provide medical care to a State's needy population is the most efficient way to provide countercyclical assistance to States hard hit by a recession. 1/ Unemployment rates are a lagging indicator of a recession, which means that data on employment does not generally reflect the recession until it is already underway and it does not reflect the recovery until it is well underway. 2/

Second, the differential impact of a recession on States is eventually reflected in both personal income and the RTS, the two major indicators of tax capacity discussed earlier. Therefore, including unemployment rates in conjunction with either of these measures in effect would ultimately reflect the impact of a recession twice, once through its impact on unemployment rates and again through its subsequent impact on income or the RTS.

Third, the extent that a recession added more people to the State's low-income needy population would already be reflected in the formula if the number of people in poverty is included in the formula as discussed above. Therefore, including unemployment rates would be redundant.

If research were to demonstrate that unemployment rates could be used to measure the impact of recession on State Medicaid programs, their use would conflict with current budgeting practices. The Medicaid formula would have to be updated as frequently as unemployment changed through the course of a

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1/This is the position taken by CRS regarding use of unemployment rates in calculating AFDC shares. See Analysis of Federal-State Cost Sharing in the Aid to Families with Dependent Children Program, Education and Public Welfare Division, March 22, 1982, pp. 73-75.

2/See "Antirecession Assistance--An Evaluation" (PAD-78-20, Nov. 1977, p. 35) for a more complete analysis of the timing problem associated with the use of unemployment rates.

recession to prevent the formula from becoming out of date thereby creating new inequities. Current budgeting practices allow for formula changes only every 2 years. Thus, if unemployment rates were used, budgeting practices would have to change.

Nineteen States currently budget on a biennial basis. The Federal program recognizes this practice by announcing new Federal rates (caused by changes in State per capita income) 1 year before they go into effect and uses the new rate for a 2-year period. If unemployment rates were used in the formula, Federal funding would change in the middle of the budget period of many States. If the 2-year funding period were maintained, the unemployment data would rapidly become outdated, creating other funding inequities.

An indication that the current formula was not intended to be countercyclical is that the current formula is based on a 3-year average of per capita income. The effect of using a 3-year average is to smooth out fluctuations in State per capita income so that it reflects changes in the longer term trend rather than short term fluctuations of the business cycle.

### CONCLUSIONS

Improving the equity of the Medicaid formula is intrinsically related to two objectives: reducing the wide disparities in medical services States provide the poor and equalizing the tax burdens borne by State taxpayers in financing those services. Improving the formula to better realize these objectives requires consideration of additional factors suggested by the Congress in the Reconciliation Act mandating this study.

Our review of the statistical data suggests the formula would better reflect the needy within each State by using the number of people below the official poverty line instead of per capita income. To better reflect the needy, an individual's poverty status should be based on income which excludes cash transfer payments from AFDC and SSI programs. This data series, although it has weaknesses, is superior to using the number of Medicaid recipients, the other major alternative.

Our review of techniques for measuring State tax wealth reveals major weaknesses with personal income as used in the existing formula. Although improvements in the measurement of personal income would represent an improved measure of State tax wealth, they would be relatively minor compared to improvements made by using the RTS developed by ACIR.

We considered the feasibility of taking differences in health care costs into account but found serious methodological weaknesses which would require a major statistical and analytic

effort to improve the measurement of these cost differentials. If the Congress wishes to take interstate differences in health care costs into account, it will require that an appropriate statistical agency be charged with developing a methodology for this purpose. From a conceptual standpoint, however, there are pros and cons to reflecting health care cost differences in the formula. While doing so would improve tax burden equity, it would weaken the incentive for States to hold down these cost increases since the Federal Government would reimburse States for a higher proportion of these costs in States with large increases while reducing the reimbursement rate for States that successfully held health care cost inflation below average.

CONCEPTUAL FRAMEWORK AND METHODOLOGY

This report evaluates the existing Medicaid matching formula and develops formula options designed to improve two long-standing objectives of the program:

- reduce interstate program disparities and
- equalize interstate tax burdens.

This appendix describes the conceptual framework used to evaluate why the current formula fails to fully achieve these objectives. This framework is then used to develop alternative formulas and the methodology used to assess the impact these alternatives have on program disparities, tax burden equity, and Federal spending.

ECONOMIC MODEL OF STATE  
POLICY CHOICE

Our conceptual framework utilizes economic models of the demand for public goods. These models characterize the political process of States as responding to changing economic circumstances in arriving at spending and taxation decisions. This literature has recently been summarized by Inman <sup>1/</sup> and has been applied to the AFDC program by Orr <sup>2/</sup> and to the Medicaid program by Grannemann <sup>3/</sup>.

On the basis of these models, State provision of medical services depends on prices and tax wealth. Following Inman, tax wealth is adjusted to include any nonmatching aid, such as revenue sharing, which could be used to purchase more medical services. The price represents the marginal cost of providing an additional unit of benefits and is referred to as the "tax price." State demand for Medicaid can be summarized in the following demand function:

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<sup>1/</sup>Robert Inman, "The Fiscal Performance of Local Governments: An Interpretative Review," Current Issues In Urban Economics, (Baltimore: Johns Hopkins University Press, 1975).

<sup>2/</sup>Larry L. Orr, "Income Transfers as a Public Good: An Application to AFDC," American Economic Review (June 1976).

<sup>3/</sup>Thomas Grannemann, The Demand For Publicly Financed Medical Care: The Role of Interdependent Preferences, Center for Health Services and Policy Research (Evanston, Illinois: Northwestern University, August 1979).

$$(1) B_i = f(I_i, T_i) \quad i = 1 - 50$$

where  $B_i$  = Medicaid benefits provided by State  $i$

$I_i$  = tax wealth of State  $i$  adjusted for  
non-matching aid

$T_i$  = tax price in State  $i$

In this formulation a larger tax wealth and/or more general assistance will lead to a larger State demand for providing medical benefits to the needy. However, a high tax price will curtail voter demand for providing medical benefits.

Federal policy affects States' demand for Medicaid both through its effect on tax wealth ( $I_i$ ) and the tax price ( $T_i$ ). Federal policy affecting regional economic growth will raise tax wealth and demand in more rapidly growing regions. More general purpose aid like revenue sharing would, in effect, raise tax wealth, increasing demand to the extent that States are willing to devote part of the increased tax wealth to Medicaid.

Federal policy also affects States' demand for Medicaid directly through the tax price. The cost of providing additional benefits depends on the cost of medical services consumed by recipients, proportion of State taxes perceived to be exported to non-State residents, and what portion of expenditures must be financed by State taxpayers. This is shown in the following expression for the tax price, adapted from Inman:

$$(2) T_i = (1 - m_i) c_i (x_i)$$

where  $m_i$  = Federal share of Medicaid spending  
in State  $i$

$(1 - m_i)$  = State share of Medicaid  
spending in State  $i$

$c_i$  = unit cost of providing additional benefits  
in State  $i$

$x_i$  = perceived proportion of taxes paid by  
average taxpayer

The important thing to notice in this formulation is that Federal policy affects the tax price through the Federal matching rate.

Recent empirical support for this model as it applies to Medicaid has been reported by Grannemann. Table 26 reproduces Grannemann's empirical estimates of the income and price elasticities with Medicaid benefits ( $B_i$ ) measured by total

(Federal plus State) Medicaid spending disaggregated into several subgroups. The estimates are based on a pooled time series-cross section sample of 49 States from fiscal year 1973 through fiscal year 1976.

Table 26

Summary of Income and Price  
Elasticities (note a)

	<u>Income</u>	<u>Tax price</u>
Total Medicaid	1.23 (.44)	-.78 (.18)
Elderly	.51 (.51)	-.88 (.23)
Children	2.44 (.50)	-.67 (.20)
AFDC adults	2.81 (.46)	-.57 (.19)
Inpatient hospital	1.18 (.42)	-.41 (.18)
Physician	2.34 (.52)	-.30 (.21)
Health aid hospitals	.93 (.36)	-.89 (.11)
Optional services	5.63 (5.74)	-1.35 (.51)

a/Standard errors in parentheses. Source: Grannemann, *op. cit.*, pp. 78 and 98. Elasticities are the expected percent change in benefits (i.e., spending) from a one percent increase in the level of the independent variable (i.e., either income or tax price).

The price elasticities are negative and statistically significant which confirms the hypothesis that the political process within States does respond to economic incentives. The price elasticity of  $-.78$  suggests that States reduce total Medicaid spending by approximately .8 percent for each 1.0 percent rise in the tax price. This implies that Federal policy can successfully influence the level of Medicaid benefits provided by States through changes in their matching rate.

These estimates also provide empirical support for the assumption in chapter 3 that approximately 80 percent of a reduction in Federal funding would be passed on in the form of

reduced benefits. 1/ The high price elasticity of -1.35 for optional services suggests that changing the matching formula will have its greatest effect on these services and a smaller impact on eligibility or limitations on required services.

The income elasticity estimate of 1.23 suggests that increases in State income bring forth a more than proportionate increase in Medicaid spending. Estimates for the various subgroups indicate that spending for AFDC children, AFDC adults, and physician services are the most sensitive to income changes and spending for the elderly is the least sensitive. This reflects the fact that most low income States (primarily in the South) concentrate more on providing services for the elderly. That is, benefits for the elderly are treated as a necessity while services for the nonelderly are treated more as luxury items. It also implies that more rapid economic growth in low income States will increase the demand for services for AFDC children, adults, and physician services, reducing the disparity in program services provided by wealthier and poorer States, other things being equal. 2/

#### DEFINITION OF EQUITY CRITERIA

The demand for Medicaid expressed in equation (1) and the expression for the tax price shown in equation (2) provide a conceptual framework for evaluating how well the existing formula achieves the goals of reducing interstate program disparities and equalizing tax burdens.

#### Benefit disparities

Chapter 2 argued that program disparities can empirically be measured by interstate differences in State Medicaid spending per person in poverty. The two major components of benefits are the extent the needy population is eligible for services and the scope of medical services provided. The following regression model, based on cross-section data, is a crude measure of how much State differences in spending per person

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1/See the discussion on p. 36. Inman reviews the extensive literature on the demand for public goods and the existence of a negative price elasticity. We have used a range of estimates for the price elasticity in the text because the true response could deviate from the sample estimate shown here.

2/However, other things have not been equal. While the income of poorer States has risen relative to wealthier States, matching rate changes since fiscal year 1975 have increased the tax price of the poorer States relative to wealthier States, thus offsetting the tendency of income changes to reduce program disparities over time. See the discussion on pp. 21.

below the poverty line can be accounted for by eligibility (measured by the ratio of Medicaid recipients to the number of people in poverty shown in table 2, p. 16) and the scope of medical services (measured by the percentage of optional services provided shown in table 1, p. 15).

$$e_i = -4.7 + \underset{(7.1)}{9.3} \text{ RECPOV}_i + \underset{(3.2)}{4.0} \text{ PCTSVCS}_i \quad R^2 = .69$$

where  $e_i$  = Medicaid spending per person below the poverty line in State  $i$

$\text{RECPOV}_i$  = recipients as a percent of people below the poverty line in State  $i$

$\text{PCTSVCS}_i$  = percent of optional services provided by State  $i$

t- statistics are shown in parentheses

The results show these two factors alone account for nearly 70 percent of the variance in State Medicaid spending per person in poverty. If the model were refined by taking into account the varying limitations States place on required services as well as variations in the "mix" of optional services provided (some being more costly than others), differences in benefits would account for an even larger proportion of State differences in spending per person in poverty. Consequently we have used spending per person in poverty ( $e_i$ ) as our measure of program benefits. <sup>1/</sup> Statistically, benefit disparities are measured by the standard deviation and coefficient of variation of  $e_i$ .

On the basis of this framework the wide disparity in benefits (shown in table 2, p. 16) can be viewed as the failure of the current matching formula to produce a distribution of State tax prices ( $T_i$ ) that will result in a smaller variance in  $e_i$ , determined in equation (1).

### Tax burden equity

Chapter 3 utilized two concepts of tax burden equity. The first is based on the premise that if States were to provide the same benefits (spending per person in poverty) they should be required to devote the same proportion of their tax wealth to financing those benefits. This concept of equity was referred to as equalized tax effort, defined as the tax effort (ratio of State financed spending to tax capacity) that would

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<sup>1/</sup>In terms of the demand function in equation 1 benefits (B) will be measured by Medicaid spending per person below the poverty line ( $e_i$ ).

result if all States spent the same per person in poverty. Algebraically this can be expressed as:

$$(3) t_i^e = (1 - m_i)e^*/y_i$$

where  $t_i^e$  = equalized tax effort of State i

$y_i$  = tax wealth per person in poverty in State i 1/

$e^*$  = selected benefit level (i.e., spending per person in poverty)

$(1 - m_i)$  = State share of program spending

A distribution of Federal matching rates ( $m_i$ ) would achieve this concept of equity if  $t_i^e$  is equal to a constant for all States. Consequently the level of inequity can be measured by the standard deviation or coefficient of variation of  $t_i^e$ . 2/

A weaker and therefore more general concept of tax burden equity is based on the premise that States providing comparable benefits should be required to make the same tax effort. In its most general formulation this can be expressed as:

$$(4) t_i^a = s_i/y_i = k e_i^\alpha$$

where  $t_i^a$  = actual tax effort of State i

$s_i$  = State medical spending per person in poverty from own source revenues

$y_i$  = State tax wealth per person in poverty

$k$  = arbitrary constant

$e_i$  = total (Federal plus State) Medicaid spending per person in poverty in State i (Medicaid benefits)

$\alpha$  = benefit elasticity of tax effort

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1/We have used the RTS as the best empirical measure of tax wealth (see appendix II, pp. 69 to 74).

2/Tax burden inequities based on this definition of equity were shown in table 3, p. 18, under both the current formula and if  $e^*$  was financed with no Federal funding (i.e.,  $m_i = 0$ ).

This criterion embodies both a horizontal and vertical equity criterion. Two States which provide the same benefits ( $e_i$ ) should make the same tax effort ( $t_i^a$ ), the horizontal standard. The vertical standard implied by equation 4 depends on the parameter  $\alpha$  and implies that each 1 percent increase in benefits should be associated with an  $\alpha$  percent increase in tax effort. The parameter  $\alpha$  determines the tax effort States should make at different benefit levels. An  $\alpha > 1$  means that an increase in benefits should produce a more than proportionate increase in tax effort,  $\alpha = 1$  a proportionate increase, and  $\alpha < 1$  a less than proportionate increase analogous to progressive, proportional, and regressive taxation.

The equalized tax effort criterion in equation (3) is a special case of the criterion in equation (4) and represents the vertical equity criterion based on a proportional relationship between tax effort and benefits (i.e.,  $\alpha = 1$ ). This can be seen by noting that the State share of total spending is by definition the ratio of State own source spending to total spending. Thus, substituting  $(1 - m_i) = s_i/e_i$  into (3) yields the equity criterion in (4) if  $\alpha = 1$ . <sup>1/</sup> Thus, equalized tax effort implies a vertical equity criterion which says that tax effort should be proportional to benefits.

The horizontal equity criterion in equation (4) represents a constant elasticity relationship between tax effort and benefits. This suggests that horizontal equity can be measured empirically by the  $R^2$  of a log-linear regression of  $t_i^a$  on  $e_i$  where  $R^2 = 1$  would represent complete horizontal equity.

#### EVALUATION OF THE EXISTING FORMULA

Under the existing matching formula the State share depends on per capita income as follows:

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<sup>1/</sup>Substituting  $(1 - m_i) = s_i/e_i$  into equation (3) and setting the result equal to a constant ( $k_1$ ) in order to equalize tax effort yields  $t_i^e = s_i/e_i \cdot e^*/y_i = k_1$ . Solving for the State's actual tax effort,  $t_i^a = s_i/y_i$  yields  $s_i/y_i = k_1 \cdot e_i/e^*$ . If we define the constant in equation (4) to be  $k = k_1/e^*$ , we obtain  $t_i^a = s_i/y_i = k e_i$  if  $\alpha = 1$ .

$$(5) 1 - m_i = .45 (PCI_i/PCI_{US})^2$$

$PCI_i$  = per capita income of State  $i$

$PCI_{US}$  = U.S. per capita income

On the basis of this formula State tax effort can then be expressed as follows:

$$(6) t_i = s_i/y_i = k_1(I/Y)_i (Pov/P)_i PCI_i e_i$$

where  $I$  = aggregate personal income

$Y$  = aggregate tax wealth

$Pov$  = number of people in poverty

$P$  = population 1/

The equity standard defined in equation (4) requires tax effort to be proportional to benefits. Equation (6) shows that the current formula departs from this standard for three reasons: (1) personal income differs from tax wealth ( $I/Y \neq$  constant); 2/ (2) interstate variation in the concentration of poverty ( $Pov/P =$  constant) 3/; and (3) squaring, which imposes a greater tax effort on States with higher per capita incomes. 4/

1/This expression is derived as follows:

$$t_i = s_i/y_i = (1 - m_i)e_i/y_i = .45 (PCI_i/PCI_{US})^2 * (e_i/y_i)$$

using the following definitions

$PCI_i = (I/P)_i$  = aggregate personal income per person

$y_i = (Y/Pov)_i$  = aggregate tax wealth per person in poverty.

With these definitions tax effort can be expressed as

$$t_i = (.45/PCI_{US}^2)(I/P)_i^2(Pov/Y)_i e_i$$

$$= (.45/PCI_{US}^2)(I/Y)_i (Pov/P)_i(I/P)_i e_i$$

which produces the above expression with  $k_1 = .45/PCI_{US}^2$ .

2/Appendix II concluded that tax wealth is better measured by the representative tax system than by personal income.

3/This term appears because the current formula uses per capita income rather than income per person in poverty.

4/The squaring of per capita income in the current formula accounts for the appearance of  $PCI_i$  in equation (6).

In other words the current formula would produce tax burden equity if personal income accurately measured tax wealth (i.e.,  $I = Y$ ), if per capita income was inversely proportional to the concentration of poverty (i.e.,  $PCI_i = P/Pov_i$ ) and squaring was eliminated.

The current formula also assumes that vertical equity is based on a proportional relationship between tax effort and benefits (i.e., equation (6) implies  $\alpha = 1$ ). Since equalized tax effort, defined in equation (3), is also based on this assumption, we have used equalized tax effort as our primary measure of tax burden equity in chapters 3 and 4.

The effect of the matching formula on benefits occurs through its influence on the tax price. This can be seen more clearly by reproducing equations (1), (2), and (6) where we have substituted Medicaid spending per person in poverty ( $e_i$ ) in place of  $B_i$  in equation (1).

$$\begin{aligned} (1) \quad e_i &= f(I_i, T_i) \\ (2) \quad T_i &= (1 - m_i) (c_i) (x_i)^2 \\ (6) \quad (1 - m_i) &= .45 (PCI_i/PCI_{us}) \end{aligned}$$

A high per capita income leads to a high State share (equation 6) which raises the tax price (equation 2) of providing Medicaid benefits (equation 1). The effect of the matching rate formula (equation 6) on benefit disparities (i.e., variance of  $e_i$ ) depends on how systematic the relationship between benefits and per capita income is as well as each State's price elasticity of demand. To the extent that low per capita income is associated with low benefits the current formula will lower the tax price in these States, encourage an increase in benefits, and serve to reduce program disparities. However, if low benefits are associated with a high per capita income, as in Alaska and Wyoming, the current formula would not provide the incentives that would reduce program disparities. Low per capita income is generally associated with low benefits with the notable exceptions of New York and the District of Columbia.

#### DERIVATION OF MATCHING FORMULAS

Achieving tax burden equity is a matter of developing a formula for the State share that satisfies the equity standard in equation (4). With  $s = (1-m)e$ , solving equation (4) for the State share then yields the following formula:

$$(7) \quad 1 - m_i = ky_i e_i^{\alpha - 1}$$

the Federal share is given by:

$$(8) \quad m_i = 1 - ky_i e_i^{\alpha - 1}$$

There are several differences between this and the current formula that are noteworthy. First, on the basis of our equity standard, tax wealth should be measured per person in poverty rather than on a per capita basis, and squaring of the tax base is eliminated. Second, our equity standard allows different vertical equity standards depending on the value of  $\alpha$  selected.

The choice of a vertical equity standard is a purely normative choice. However, as is shown below, this choice determines the formula's incentives to reduce program disparities. Therefore, the effect the vertical standard has on program disparities should be taken into consideration in making this choice. If vertical equity is defined by  $\alpha = 1$ , then equalizing tax burdens through the formula in equation (7) will reduce interstate benefit disparities to the extent that tax wealth per poor person ( $y_i$ ) raises the tax price in high benefit States compared to the square of per capita income ( $PCI_i$ ) (i.e., program equalization will depend on the nature of the statistical data for  $y_i$  used in the formula). If vertical equity is defined as  $\alpha > 1$  this will guarantee that the tax price will systematically be high in high benefit States and low in low benefit States, guaranteeing a more systematic incentive to reduce program disparities. Because  $\alpha > 1$  produces a systematic incentive to reduce benefit disparities we have termed the exponent in equation 7 ( $\alpha - 1$ ) the "incentive factor."

In addition to defining the vertical equity standard and establishing systematic incentives to reduce program disparities the incentive factor also establishes incentives for all States to reduce the rate of spending increase. This can be seen by noting that the elasticity of the State share with respect to spending per person in poverty is  $\alpha - 1$ .<sup>1/</sup> Consequently, an increase in spending ( $e$ ) will raise the State share, increasing the tax price and reducing demand.

In equation (7) the State share depends on the absolute level of spending ( $e_i$ ) which means that, over time, inflation would cause the State share to rise automatically. To avoid this it is necessary to express each State's spending in relative terms. In chapter 4 we used the national average spending per person in poverty, although any selected spending level could be used. Expressing the State share in relative terms results in equation 7 being re-expressed as:

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<sup>1/</sup>From equation (7)  $[\partial(1 - m)/\partial e] [e/(1 - m)] = \alpha - 1$ .

$$(9) (1 - m)_i = k' (Y_i/Y_{us}) (e_i/e^*)^{\alpha - 1}$$

where  $y_{us}$  = U.S. tax wealth per person in poverty  
 $e^*$  = arbitrary Medicaid spending level  
 $k' = (k) (y_{us}) (e^*)^{\alpha - 1}$

By expressing the State share in relative terms, the incentive to reduce spending can be controlled by changing  $e^*$ . For example, if  $e^*$  is adjusted upward to compensate for inflation, then any State whose spending increases by this amount will experience no change in its relative spending level resulting in an unchanged matching rate. States whose spending increases faster than inflation will automatically have their matching rate reduced and the State share increased. Thus, States with rapidly increasing spending will automatically be penalized creating an incentive to keep spending increases below the rate at which  $e^*$  is adjusted each year.

#### The effect of adding recipients

In addition to controlling benefits, States also control eligibility and therefore the number of recipients. It is therefore important to assess the effect that recipients have on a State's matching rate. Multiplying the State share by total Medicaid spending (i.e.,  $S_i = (1-m_i)E_i$  where  $S_i$  = total State own source spending and  $E_i$  = total State Medicaid spending) yields the following expression for State own source spending assuming  $\alpha = 1$ . <sup>1/</sup>

$$(10) S_i = k'(Y_i/Y_{us}) e_i^r R_i$$

where  $S_i$  = State own source spending

$e_i^r$  = Medicaid spending per recipient in State i

$R_i$  = recipients

Thus the elasticity of State own source spending with respect to the number of recipients ( $R_i$ ) is unity, a 1-percent increase in recipients would increase State spending by 1 percent.

However, if the formula were based on the number of recipients instead of people in poverty the recipient elasticity would be considerably less. For example, using recipients, equation 10 would be expressed as

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<sup>1/</sup>Assuming  $\alpha = 1$  is a simplifying assumption which does not affect the conclusions.

$$S_i = k \left( \frac{Y_i/R_i}{\sum Y_i / \sum R_i} \right) e_i^r R_i$$

where  $\sum Y_i / \sum R_i$  = total tax capacity per recipient.

This yields the following expression for the recipient elasticity

$$\epsilon = R_i / \sum R_i \quad \underline{1/}$$

The recipient elasticity depends on the share of recipients within each State. For example, the largest number of recipients are in California and represents 16 percent of all recipients. Under a formula based on recipients, a 1 percent increase in recipients would produce only a .16 percent increase in State spending with the Federal Government financing the remaining .84 percent. In small States such as Wyoming which has only .1 percent of all recipients a 1 percent increase in recipients would increase State own source spending by .001 percent. That is, the Federal Government would finance virtually all the benefits for these additional recipients. Therefore, using recipients in the formula would virtually insulate States from the increased cost of adding more recipients to the Medicaid roles.

#### DISTINCTION BETWEEN AVERAGE AND MARGINAL MATCHING RATES

Additional insight into the influence of the incentive factor can be seen by making a distinction between the average and marginal State share. The average State share is simply the fraction of total spending financed from State revenues shown in equation (9). The marginal State share (MSS) is the fraction of an additional dollar of spending financed from State revenue sources. This is obtained by differentiating State own source spending ( $s_i$ ) with respect to total spending ( $e_i$ ) which yields:

$$(11) \text{ MSS} = \partial s_i / \partial e_i = k(Y_i)(e_i)^{\alpha-1} = \alpha(1-m) \underline{2/}$$

In other words, the marginal State share is proportional to the average State share with the constant of proportionality equal to  $\alpha$ . If  $\alpha = 1$  the average and marginal State shares are identical, as they are in the existing formula. The larger the incentive factor the greater the difference between the average

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1/This is arrived at as follows:  $S_i = k' Y_i e_i^r (\sum R_i / \sum Y_i)$ .

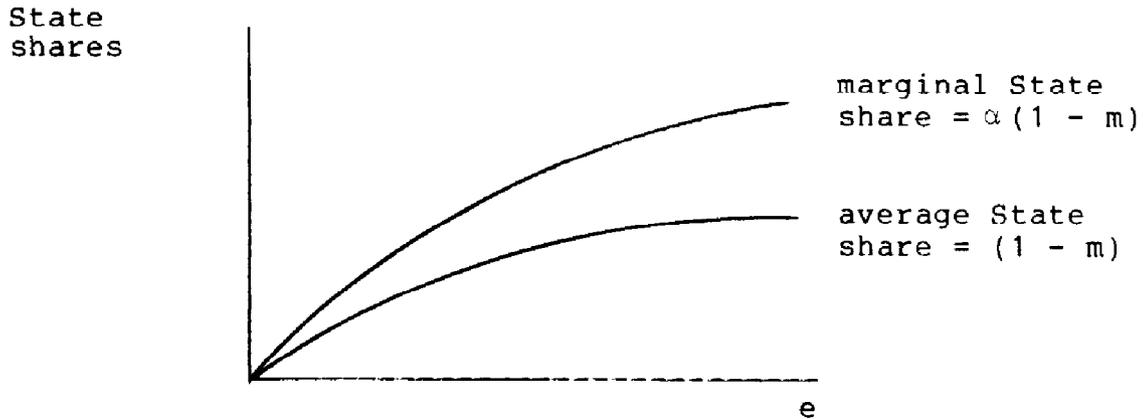
$$\epsilon = (\partial S_i / \partial R_i) \times (R_i / S_i) = k' e_i^r (Y_i / \sum Y_i) (R_i / S_i) = R_i / \sum R_i.$$

2/State own source spending ( $s_i$ ) is the average State share times spending ( $e_i$ ). Thus,  $s_i = k y_i e_i^\alpha$  which leads to the above expression by differentiating  $s_i$  with respect to  $e_i$ .

and marginal shares. Figure 1 shows the average and marginal shares based on the formula in equation (9) with  $\alpha > 1$ .

Figure 1

Average and Marginal State Shares with an Incentive Factor



IMPOSING CONSTRAINTS

The current formula operates with constraints by imposing a maximum and minimum Federal share of 83 and 50 percent, respectively, or in terms of State shares, a minimum of 17 and a maximum of 50 percent. An  $\alpha$  greater than one means that average and marginal matching rates differ. This raises the question as to whether the constraints should be applied to the average or marginal rate.

The marginal rate represents the marginal cost of increased spending and is weighed against the benefits of additional spending in deciding whether the added spending is worthwhile. Therefore constraints were imposed to ensure the incentives of the formula are consistent with the objective of reducing interstate program disparities.

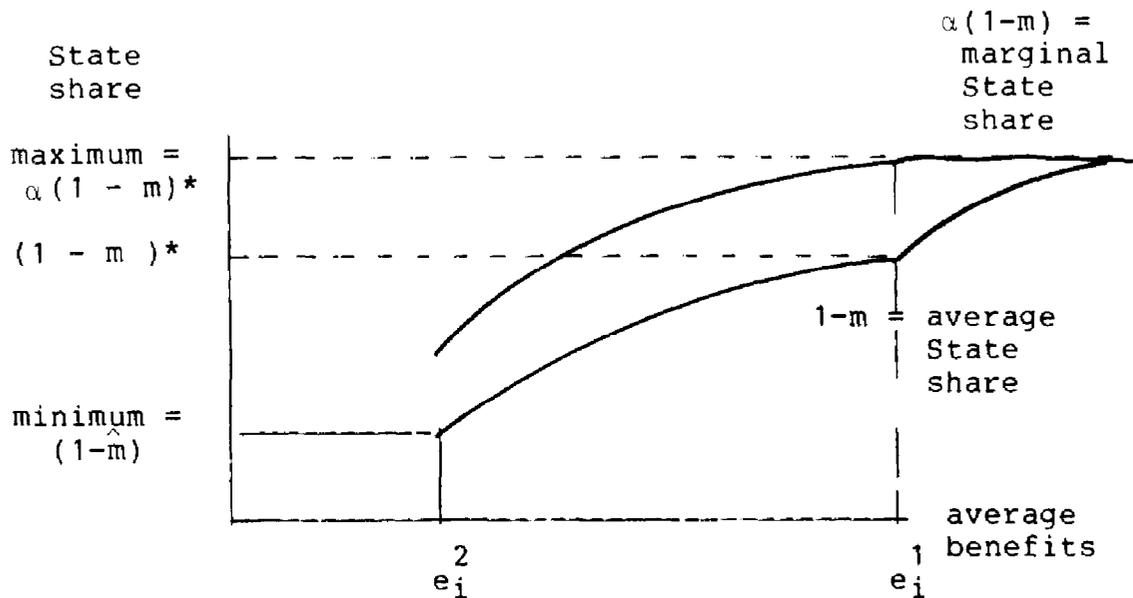
The imposition of constraints is explained with the aid of figure 2 which shows average and marginal State shares versus benefits (spending per person in poverty). The average State share is given by the formula in equation (9). A maximum of  $\alpha(1 - m)^*$  is imposed on the marginal rate. The formula yields the maximum marginal rate at the benefit level  $e_i^1$  with an average State share of  $(1 - m)^*$ . Thus States affected by the constraint finance  $(1 - m)^*$  of benefits up to  $e_i^1$  and  $\alpha(1 - m)^*$

on all benefits in excess of  $e_i^1$ . Thus State-financed spending for States affected by the constraints is given by:

$$(12) s_i = (1-m) * e_i^1 + \alpha(1-m) * (e_i - e_i^1) = (1-\alpha)(1-m) * e_i + \alpha(1-m) * e_i^1$$

Figure 2

Effect of Constraint on the Matching Formula



From this the average State share for States whose spending exceeds  $e_i^1$  is determined by:

(13)  $1 - m_i = s_i/e_i = \alpha(1 - m_i)^* + (1 - \alpha)(1 - m_i)^*(e_i^1/e_i)$  instead of by the expression in equation (9). As State spending ( $e_i$ ) increases the average State share approaches the maximum marginal State share. With  $\alpha > 1$  a State's average State share is given by the expression in equation (9) if  $e_i < e_i^1$  and by equation (12) if  $e_i > e_i^1$ .

The minimum constraint was imposed directly on the average State share in order to avoid perverse incentives. In this case a State whose spending is below  $e_i^2$  would receive the minimum State share of  $(1 - \hat{m})$ . When spending is below  $e_i^2$  the average and marginal State shares are simply the minimum  $(1 - \hat{m})$ . When

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$1/e_i^1$  is the benefit level which equates the State's marginal rate with the maximum marginal rate (i.e.,

$$\alpha(1 - m)^* = \alpha k(y_i/y_{US})(e_i^1/e^*).$$

spending increases beyond  $e_i^2$  the formula in equation (9) comes into operation and a discontinuity in the marginal State share occurs at this point.

With constraints imposed on the formula, the State share is given by equation (9). If this produces a rate below the minimum the State receives the minimum. If it produces a marginal State share above the maximum the State receives the rate given in equation (11). This can be summarized as follows:

$$(14) \quad 1-m = \begin{cases} 1 - \hat{m} & \text{if } k(y_i/y_{us})(e_i/e^*) < 1 - \hat{m} \\ k(y_i/y_{us})(e_i/e^*)^{\alpha-1} & \\ \alpha(1-m)^* + (1-\alpha)(1-m)^* e_i^1/e_i & \\ & \text{if } k(y_i/y_{us})(e_i/e^*)^{\alpha-1} > \alpha(1-m)^* \end{cases}$$

#### MODEL USED TO ESTIMATE CHANGES IN MEDICAID BENEFITS/SPENDING

The introduction of a new matching formula affects each State's tax price and, through this, demand for Medicaid benefits and spending. Thus the impact of a formula change on benefit disparities and Federal spending is directly dependent on States' demand elasticities implicit in equation (1). Grannemann's results reported above suggest that the average elasticity is somewhere between 0 and -1 with a point estimate of approximately -0.8.

If we assume a constant elasticity demand function we can express the demand for benefits from equation (1) as:

$$(15) \quad e_i = AI_i^\beta T_i^\delta$$

where  $\beta$  = income elasticity  
 $\delta$  = price elasticity  
 A = constant

Substituting equation (2) into (15) and multiplying by the number of people in poverty we obtain the demand for total Medicaid spending as a function of the State's matching rate. 1/

1/Making the above substitution produces

$$E_i = \text{Pov}_i AI_i^\beta \{c_i x_i (1 - m_i)\}^\delta$$

where  $\text{Pov}_i$  is the number of people in poverty in State  $i$  and  $E_i = \text{Pov}_i \times e_i$ .  $E_i = \text{Pov}_i I_i^\beta A (c_i x_i)^\delta$  yields the expression in (16).

$$(16) E_i = \bar{E}_i (1 - m_i)^\delta$$

Where  $\bar{E}_i$  = total Medicaid spending State i

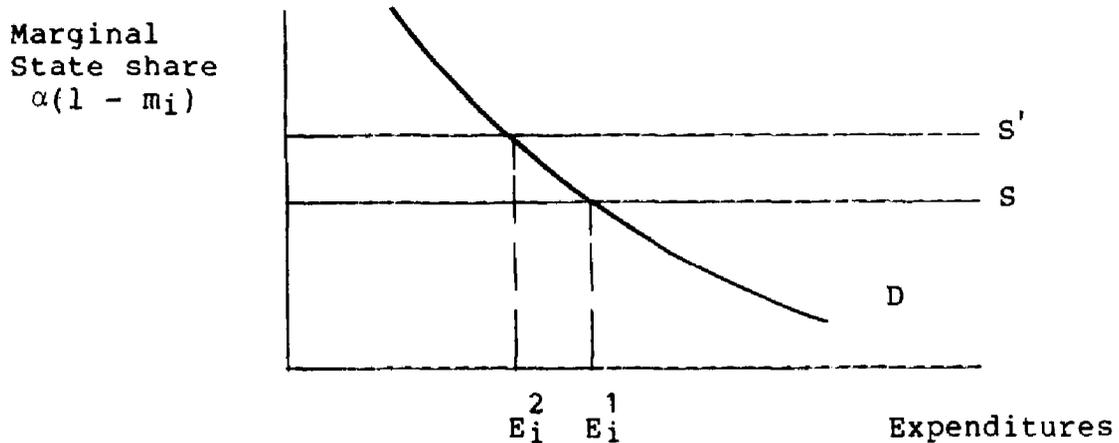
$$E_i = Pov_i AI_i^\beta (c_i)^\delta (x_i)^\delta$$

The marginal State share is the marginal cost of an additional dollar of benefits and was shown in figure 2 with maximum and minimum constraints. The matching formula establishes the marginal State share which can be interpreted as a supply function for Medicaid spending which together with the demand function in equation (16) determines the equilibrium spending. An equilibrium is depicted in figure 3 assuming the supply function (S) is determined by the current formula and, with demand given by D, produces an equilibrium expenditure level  $E_i$ .

If a new formula (with an incentive factor of  $\alpha = 1$ ) caused the State share to rise to, say,  $S'$ , then, with the same demand function, spending would ultimately reach a new equilibrium

$E_i^2$ . The change in spending ( $E_i^1 - E_i^2$ ) depends on the new matching rate  $S'$  and the elasticity of the demand function.

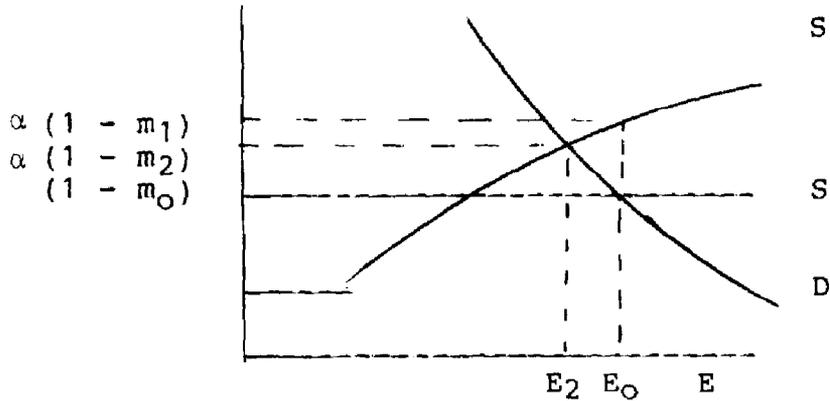
Figure 3  
Demand and Supply for  
Medicaid Spending



If  $\alpha > 1$  the marginal State share is an upward sloping line as shown in figure 4. The current formula is again represented by S and the new marginal matching rate by  $S'$ .

Under the old formula, the State spends  $E_0$  and finances  $(1 - m_0)$  from own source revenues. Under the new formula the State's marginal share is raised to  $\alpha (1 - m_1)$ . At  $E_0$  marginal cost exceeds marginal benefits and spending is reduced until they are equated at a spending level of  $E_2$  with a marginal State share of  $\alpha(1 - m_2)$ .

Figure 4



Estimating the impact of formula changes on Federal spending and interstate benefit disparities

The above model was used to estimate changes in spending. This was accomplished by selecting parameter values for the formula (equation 14) and the demand function (equation 16). The same demand elasticity was assumed for each State and the constant  $\bar{E}_i$  was set to yield each State's actual Medicaid spending level for fiscal year 1980 given the matching rate applicable to fiscal year 1980 spending. The value of the constant which yields this result is given by:

$$(17) \bar{E}_i = S_i / (1 - m_i) + 1$$

where  $(1 - m_i)$  = State share in FY 1980

$S_i$  = State own source spending in FY 1980

Solving equations 14, 16 and 17 yields the equilibrium State share and spending level as a function of relative tax wealth per person in poverty ( $y_i/y_{us}$ ), the formula's parameters ( $k$  and  $\alpha$ ), the demand elasticity ( $\epsilon$ ), and State's own source spending ( $S_i$ ). The initial equilibrium is designated by  $E_0$  in figure 4 and the new equilibrium by  $E_2$ . Dividing expenditures by the number of people in poverty produces our measure of benefits ( $e_i$ ).

Because the transition to the new equilibrium is a comparative static analysis, it should be noted that our estimates of spending reductions and impacts on program disparities are long-run estimates under ceteris paribus assumptions.

SUMMARY OF FORMULA SIMULATIONS

Each new formula is defined by the data used to measure the variables in the formula and values selected for the formula's parameters. This appendix provides a detailed description of the formula options presented in chapter 4.

Table 27 (p. 101) is divided into two halves, the top half reports the results with New York included in the formula, the bottom half reports the same formula options with New York excluded. Each of the five options are reported under three different assumptions about the overall level of Federal funding. Options identified with the suffix "A" would increase Federal funding moderately over and above what it otherwise would have been. Options with no suffix would keep Federal funding at approximately the level of current trends under the existing formula, generally within + 3 percent. Options identified with the suffix "B" would reduce Federal funding moderately below what it would otherwise have been.

All the formula options are of the form shown in the following equation:

$$\text{State share} = K \times \left[ \frac{\text{State tax capacity per person in poverty}}{\text{U.S. tax capacity per person in poverty}} \right] \times \left[ \frac{\text{State Medicaid spending per person in poverty}}{\text{U.S. Medicaid spending per person in poverty}} \right]^{\alpha - 1}$$

The Federal share is 100 percent minus the State share with a specified minimum and maximum.

The five options differ depending on how tax capacity is measured, whether the minimum is lowered to 40 percent, and whether State Medicaid spending with an incentive factor ( $\alpha - 1$ ) is included in the formula. <sup>1/</sup> The data used in each option are as follows:

Option #1 (poverty): State tax capacity is measured as a 3-year average of State personal income for the years 1977, 1978, and 1979 divided by the number of people below the official poverty line from the 1980 census based on income net of transfer payments from the AFDC and SSI programs. U.S. tax capacity is a corresponding 3-year average of U.S. personal income divided by the number of people below the official poverty line in the U.S., also net of transfer payments.

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<sup>1/</sup>Not using an incentive factor (i.e.,  $\alpha - 1$ ) has the effect of excluding State Medicaid spending from the formula since any expression with an exponent of zero is by definition equal to 1.

Option #2 (poverty and 40 percent minimum): Same data as in option #1.

Option #3 (poverty, 40 percent minimum, and RTS): State tax capacity is measured by the RTS as reported by the Advisory Commission on Intergovernmental Relations for 1980 divided by the number of people below the poverty line. U.S. tax capacity is the sum of the RTS measures for all States and the District of Columbia divided by the number of people below the poverty line net of transfer payments from the 1980 census.

Option #4 (poverty, 40 percent minimum, and an incentive factor): State and U.S. tax capacity is measured the same as in options #1 and #2. State Medicaid spending is fiscal year 1980 total Medicaid spending (State plus Federal) reimbursable for Federal matching as reported by HCFA. U.S. Medicaid spending is the sum of fiscal year 1980 reimbursable Medicaid spending of all States and the District of Columbia.

Option #5 (poverty, 40 percent minimum, RTS, and an incentive factor): State and U.S. tax capacity is the same as in option #3 and State and U.S. Medicaid spending is the same as in option #4.

The formula's constant ( $k$ ) is reported in column 2. A low constant produces smaller State shares and corresponding higher Federal shares while a high constant produces the opposite result. Therefore the options with an "A" suffix have lower values for  $k$  and the options with a "B" suffix have higher values for  $k$ . Corresponding options with and without New York show that lower constants (i.e., lower State shares) are possible with the same level of Federal funding when New York is excluded from the formula. For example, option 1A with New York would increase Federal funding somewhere between 2.3 and 8.4 percent (shown in columns 10 and 11) using a constant of .43. Option 1A without New York (shown in the bottom half of the table) would have approximately the same effect on Federal funding but with a constant of .40 which allows lower State shares. The effect on Federal shares was shown in table 15 on page 48.

The incentive factor ( $\alpha - 1$ ) is shown in column 3. The first three options have an incentive factor of zero which has the effect of excluding State Medicaid spending from the formula while options 4 and 5 use an incentive factor of 0.2.

The minimum Federal share is shown in column 4 and is equal to 50 percent in the current formula. The maximum Federal share is 83 percent. Since the same maximum was used in all the options, it is not reported in the table.

Vertical tax burden equity is shown in column 5 and measured by the coefficient of variation (CV) of equalized tax, defined in appendix III (see pp. 84 to 85). A CV of zero would signify perfect vertical equity. The current formula produces a CV of 26 percent, indicating that substantial inequities exist. Option 1A produces a CV of 19 percent, a 27 percent reduction in vertical inequities. The percentage reductions in vertical inequities are reported in chapter 4 (see tables 14, 16, 18, 20, and 22) as our indicator of the impact of the new formula options on tax burden equity.

Horizontal tax burden equity is reported in column 6 and measured by the  $R^2$  from a log-linear regression of State Medicaid spending per person in poverty on States' actual tax effort (see app. III, pp. 85 to 86). An  $R^2$  of 100 percent would indicate perfect horizontal equity. Thus according to this criterion the current formula is 71 percent effective in producing horizontal equity, option 1A would increase the formula's effectiveness to 81 percent.

Two measures of program disparities are reported in columns 7 and 8. Absolute disparities (column 7) are measured by the standard deviation of State fiscal year 1980 Medicaid spending per person below the poverty line, relative disparities by the coefficient of variation. These measures exclude New York and the District of Columbia for the reasons discussed in footnote 1 on page 38.

Under the current formula absolute disparities averaged \$323 per person in poverty. Option 1A reduced these disparities to \$276, a 15 percent reduction. The percent difference in absolute disparities under each option compared to the current formula's \$323 disparity is reported in chapter 4 as the "increase in incentives to reduce program disparities" (see tables 14, 16, 18, 20, and 22).

The disparity figures are interpreted as an increase in incentives rather than an estimate of actual program disparities because they are numbers that result from assuming that all States are equally responsive to changes in their Federal share and that there is no substitution of State funds when Federal funding changes (see pp. 36 to 38 and pp. 94 to 96). Since the actual response of individual States will most likely vary, the estimate of State Medicaid spending under these assumptions is more a reflection of the change in the incentive structure faced by States than it is an estimate of their actual response and should be interpreted accordingly.

Average benefits are reported in column 9. Under the current formula this amounted to \$777 per person below the poverty line for fiscal year 1980. Under a new formula, the average benefit level would remain the same if there is 100 percent substitution and is therefore not reported. 1/ Consequently, column 9 shows what the average spending per person in poverty would be assuming no substitution. The actual benefit level would likely be somewhere between the \$777 spending level and that shown under each option.

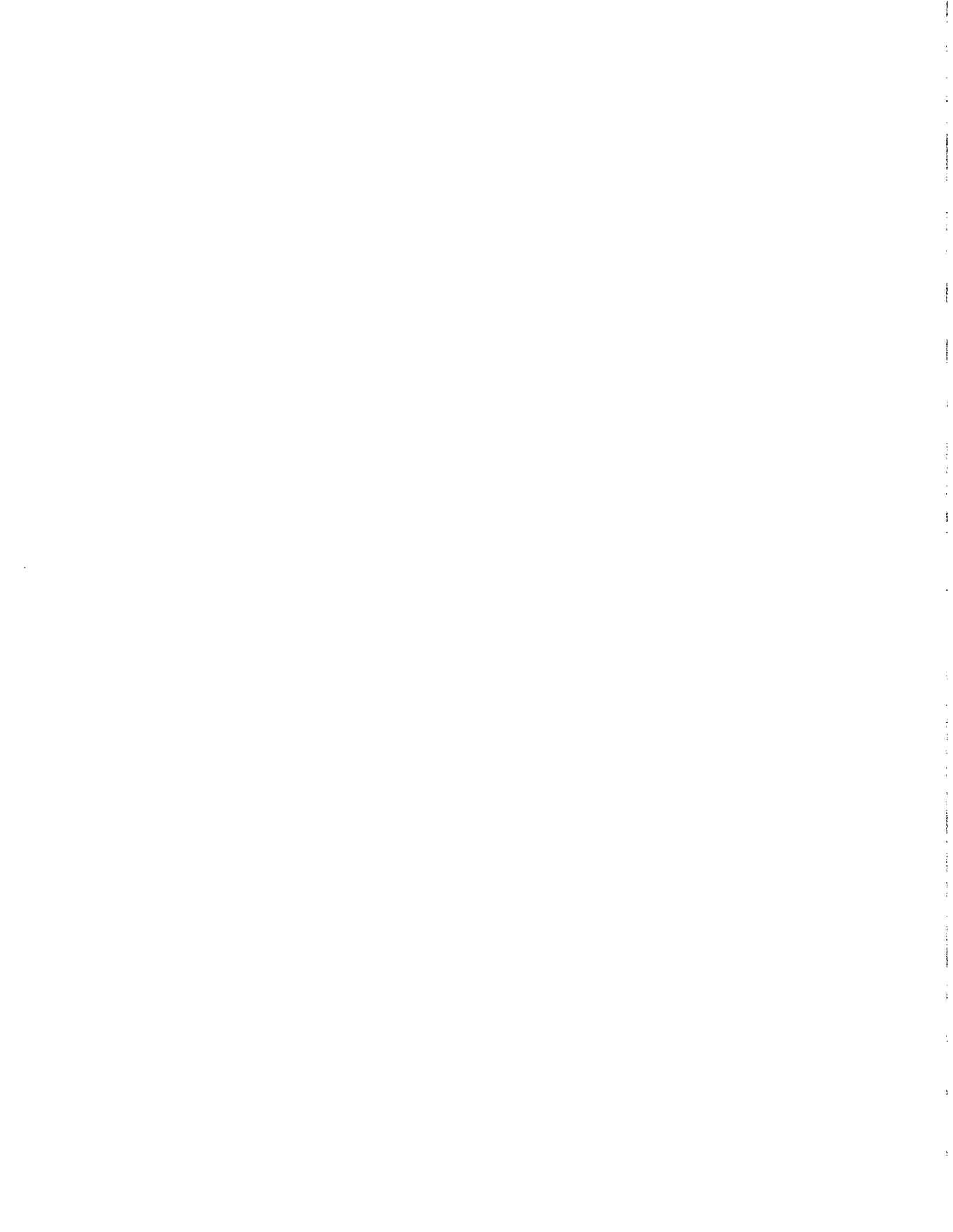
A range of estimates of changes in Federal funding are reported in columns 10 and 11 assuming no State substitution and 100 percent substitution. The percentage of national Medicaid spending financed by the Federal Government is shown in the final two columns of the table.

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1/One hundred percent substitution means that States would make compensating changes when Federal funding is altered because of matching rate changes in order to maintain existing benefits.

Table 27  
Summary of Impact of Five Formula Options

Formula options	Constant (k)	Incentive factor (a - 1)	Minimum Federal share	Vertical tax equity	Horizontal tax equity	Program absolute	disparities relative	Average benefits	Change in Federal spending		Federal share of total spending	
									No substitution	100 percent substitution	No substitution	100 percent substitution
<b>Options with New York</b>												
Current formula	.45	0.0	.50	26%	71%	\$323	46%	\$777	N/A	N/A	55.1%	55.1%
1A	.43	0.0	.50	19	81	276	41	813	8.4%	2.3%	57.1	56.4
1	.46	0.0	.50	20	78	284	43	785	1.8	-0.0	55.6	55.1
1B	.50	0.0	.50	21	74	294	46	755	-5.2	-2.7	53.8	53.7
2A	.40	0.0	.40	16	90	254	38	842	15.1	3.9	58.6	57.3
2	.43	0.0	.40	17	88	237	38	785	1.9	-1.6	55.6	54.2
2B	.45	0.0	.40	17	86	231	38	754	-5.4	-4.9	53.8	52.4
3A	.42	0.0	.40	13	89	284	44	845	15.8	3.4	58.7	57.0
3	.45	0.0	.40	14	87	266	44	791	3.2	-1.8	55.9	54.1
3B	.48	0.0	.40	15	85	256	44	746	-7.1	-6.4	53.3	51.6
4A	.37	0.2	.40	20	90	210	33	752	6.8	7.2	60.9	59.1
4	.40	0.2	.40	20	89	210	35	711	-3.1	2.0	58.4	56.3
4B	.43	0.2	.40	20	88	216	37	680	-11.3	-2.6	55.9	53.7
5A	.38	0.2	.40	14	93	230	37	759	8.8	8.6	61.4	59.9
5	.42	0.2	.40	15	91	229	39	707	-4.0	2.0	58.1	56.2
5B	.45	0.2	.40	14	90	230	41	680	-11.4	-2.3	55.8	53.9
<b>Options without New York</b>												
Current formula	.45	0.0	.50	25%	68%	\$323	46%	\$686	N/A	N/A		
1A	.40	0.0	.50	18	80	274	39	723	9.7%	2.2%	56.8	57.6
1	.43	0.0	.50	18	77	276	41	692	1.5	-0.8	55.6	56.0
1B	.47	0.0	.50	19	74	286	44	669	-4.4	-2.3	55.3	54.8
2A	.38	0.0	.40	16	89	267	38	744	15.1	3.6	59.8	58.4
2	.41	0.0	.40	16	87	247	38	691	1.5	-2.3	56.8	55.2
2B	.43	0.0	.40	17	85	237	38	661	-6.4	-5.6	54.8	53.2
3A	.38	0.0	.40	12	90	313	45	746	15.5	4.3	59.9	58.8
3	.41	0.0	.40	13	88	291	44	693	1.8	-1.2	56.8	55.7
3B	.43	0.0	.40	13	87	277	44	662	-6.2	-4.9	54.8	53.6
4A	.36	0.2	.40	19	89	210	33	672	8.5	7.0	62.4	60.3
4	.39	0.2	.40	19	88	210	34	636	-1.4	2.0	59.9	57.6
4B	.42	0.2	.40	19	87	214	36	608	-9.6	-2.4	57.5	55.1
5A	.36	0.2	.40	14	93	236	47	669	8.0	7.7	62.5	60.7
5	.39	0.2	.40	14	91	229	38	631	-2.3	2.5	59.9	57.8
5B	.42	0.2	.40	14	90	229	39	601	-10.8	-2.2	57.4	55.1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)



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Finally, program officials said that reporting formula options which include and exclude New York from the formula give the impression that excluding New York is a feasible option. They said it is not feasible to treat one State differently than all the others.

Implementation of the formula options would significantly increase Federal Medicaid funding or, alternatively, cause significantly larger reductions in Federal funding rates for most of the other States. This effect is due primarily to the large size of New York's program. Our purpose in showing options with and without New York is to show the impact New York has on total Federal Medicaid funding versus its impact on other States' Federal funding rates. GAO takes no position on how New York should be handled. We merely provide the data for Congress to consider.

Distribution of Federal Medicaid  
Aid by State, Fiscal Year 1980

<u>State</u>	<u>Federal Medicaid Aid</u>	<u>Percent Of Total (note a)</u>
ALABAMA	\$187,899,536	1.5%
ALASKA	13,331,598	0.1
ARIZONA	(b)	(b)
ARKANSAS	170,996,934	1.3
CALIFORNIA	1,364,076,867	10.7
COLORADO	96,598,627	0.8
CONNECTICUT	174,836,666	1.4
DELAWARE	22,625,117	0.2
DISTRICT OF COLUMBIA	84,237,980	0.7
FLORIDA	231,055,407	1.8
GEORGIA	308,727,903	2.4
HAWAII	48,080,762	0.4
IDAHO	34,145,670	0.3
ILLINOIS	595,957,374	4.7
INDIANA	202,901,853	1.6
IOWA	130,241,897	1.0
KANSAS	107,987,994	0.8
KENTUCKY	201,219,491	1.6
LOUISIANA	285,762,663	2.2
MAINE	91,306,638	0.7
MARYLAND	159,788,940	1.2
MASSACHUSETTS	522,293,169	4.1
MICHIGAN	535,840,499	4.2
MINNESOTA	328,477,187	2.6
MISSISSIPPI	163,664,978	1.3
MISSOURI	178,093,139	1.4
MONTANA	40,071,599	0.3
NEBRASKA	62,680,187	0.5
NEVADA	22,444,811	0.2
NEW HAMPSHIRE	43,934,580	0.3
NEW JERSEY	377,964,444	3.0
NEW MEXICO	48,498,567	0.4
NEW YORK	2,271,317,685	17.8
NORTH CAROLINA	271,281,129	2.1
NORTH DAKOTA	28,718,271	0.2
OHIO	445,831,693	3.5
OKLAHOMA	168,921,840	1.3
OREGON	99,596,102	0.8
PENNSYLVANIA	583,488,435	4.6
RHODE ISLAND	92,714,824	0.7
SOUTH CAROLINA	183,934,554	1.4
SOUTH DAKOTA	37,764,760	0.3
TENNESSEE	263,491,694	2.1
TEXAS	572,328,458	4.5
UTAH	54,159,631	0.4
VERMONT	40,538,679	0.3
VIRGINIA	202,956,984	1.6
WASHINGTON	164,473,532	1.3
WEST VIRGINIA	69,768,482	0.5
WISCONSIN	397,468,097	3.1
WYOMING	7,224,148	0.1
TOTAL	<u>\$12,791,722,071</u>	<u>100.3</u>

a/Percentages add up to 100.3 because of rounding.

b/See footnote 1 on page 2.