GAO

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MEDICAID

Alternative Measures Could Be Used to Allocate Funding More Equitably

GAO Highlights

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Alternative Measures Could Be Used to Allocate Funding More Equitably

Why GAO Did This Study

Medicaid is the largest federal program assisting states in financing medical and health-related services for certain low-income individuals. States and the federal government share in the financing of the Medicaid program, with the federal government matching most state expenditures for Medicaid services on the basis of a statutory formula known as the FMAP, which is based solely on state PCI in relation to national PCI. Prior GAO work has raised concerns about the FMAP, noting that PCI does not accurately represent states' populations in need of Medicaid services or states' ability to finance services, and does not account for geographic cost differences among states. GAO was asked to examine ways to improve the allocation of Medicaid funding.

GAO considered whether available data sources could be used to develop measures to more equitably allocate Medicaid funding. To do so, GAO reviewed its prior reports and other studies, examined data sources produced by federal agencies, and illustrated how selected data could be used to develop measures to allocate Medicaid funding. GAO based its analysis on commonly used equity standards and focused its efforts on readily available data sources, which are not inclusive of all possibilities.

The Department of Health and Human Services provided technical comments, which GAO incorporated as appropriate.

View GAO-13-434. For more information, contact Carolyn L. Yocom at (202) 512-7114 or yocomc@gao.gov.

What GAO Found

GAO identified multiple data sources that could be used to develop measures to allocate Medicaid funding to states more equitably than the current funding formula—known as the Federal Medical Assistance Percentage (FMAP)—which is based solely on per capita income (PCI). To be equitable from the perspective of beneficiaries and allow states to provide a comparable level of services to each person in need, a funding allocation mechanism should take into account the demand for services in each state and geographic cost differences among states. To be equitable from the perspective of taxpayers, an allocation mechanism should ensure that taxpayers in poorer states are not more heavily burdened than those in wealthier ones, by taking into account state resources. To illustrate, GAO identified at least one federal data source that could be used to develop measures of each of these aspects, in order to allocate Medicaid funding more equitably.

- **Demand for services**. A measure of the demand for Medicaid services should account for both the size of the target population in need of services and the health services needs of that population. Nationally representative federal surveys, such as the U.S. Census Bureau's American Community Survey (ACS) and Current Population Survey (CPS), are available data sources that can be used to directly estimate the number of persons residing in each state with incomes low enough to qualify them as potentially in need of Medicaid services. These estimates can then be adjusted to reflect variation in health services needs within the identified population, using additional information collected in the surveys or from data sources external to the surveys, such as Medicaid data on enrollment or spending.

- **Geographic cost differences**. A measure of geographic cost differences should account for all components of health care costs, including the cost of the personnel who provide services, which represents the greatest share of costs. National data that can be used to estimate average wages for health care personnel by state include the Occupational Employment Statistics survey conducted by the Bureau of Labor Statistics.

- **State resources**. A measure of state resources should account for all income—regardless of whether the state taxes the income or not. While PCI includes the personal income of state residents, it excludes other taxable income, such as undistributed corporate profits. In contrast, the Total Taxable Resources (TTR) measure, as generated by the Department of the Treasury from multiple data sources, comprises not only the income included in PCI but also other significant sources of taxable income. As a result, nationwide, the TTR measure of income was 42 percent larger on a per capita basis than PCI in 2010, and provided a more comprehensive measure of state resources.

GAO's analysis shows that measures of the demand for services, geographic cost differences, and state resources can be combined in various ways to provide a basis for allocating Medicaid funds more equitably among states.

_____ **United States Government Accountability Office**

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Abbreviations

ACS	American Community Survey
CMS	Centers for Medicare & Medicaid Services
CPS	Current Population Survey
FMAP	Federal Medical Assistance Percentage
FPL	federal poverty level
HHS	Department of Health and Human Services
IPPS	Inpatient Prospective Payment System
MACPAC	Medicaid and CHIP Payment and Access Commission
MedPAC	Medicare Program Advisory Commission
MSIS	Medicaid Statistical Information System
OES	Occupational Employment Statistics
PCI	per capita income
PPACA	Patient Protection and Affordable Care Act
TTR	Total Taxable Resources

May 10, 2013

The Honorable Orrin G. Hatch
Ranking Member
Committee on Finance
United States Senate

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
House of Representatives

Created in 1965, Medicaid is the largest federal program assisting states in financing medical and health-related services for certain low-income individuals, such as children and individuals who are disabled or elderly. Within broad federal requirements, states have some flexibility in deciding the range of medical services to provide and which individuals to cover, and state Medicaid programs accordingly vary in scope. In fiscal year 2011, Medicaid served an estimated 70 million enrollees and had expenditures totaling an estimated $432.4 billion, $275.1 billion of which was financed by the federal government, with the rest financed by the states. Medicaid enrollment and expenditures have increased significantly over the most recent 10-year period for which data are available— enrollment growth averaged 4.2 percent per year between 2001 and 2011, and expenditures grew, on average, by 6.5 percent per year.

States and the federal government share in the financing of the Medicaid program, with the federal government matching most state expenditures for Medicaid services on the basis of a statutory formula known as the Federal Medical Assistance Percentage (FMAP). The FMAP calculates the federal matching rate for each state on the basis of the state's per capita income (PCI) in relation to the national PCI.[1] Under the FMAP, the federal government pays a larger portion of Medicaid expenditures in

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[1]The FMAP is calculated using the following formula: $FMAP = 1.00 - 0.45 \left(State\ PCI\ /\ U.S.\ PCI \right)^2$. PCI is calculated by the U.S. Bureau of Economic Analysis. Federal law specifies that the FMAP will be no lower than 50 percent and no higher than 83 percent. The Department of Health and Human Services is required to publish FMAPs for states between October 1 and November 30 of each fiscal year. See 42 U.S.C. §§ 1396b(a)(1), 1396d(b). For fiscal year 2013, states' FMAPs range from 50.00 percent to 73.43 percent.

states with low PCI relative to the national average, and a smaller portion for states with higher PCIs. PCI is used in the formula as a proxy for both state resources and the low-income population in need of Medicaid services in each state.[2]

Our prior work has noted multiple concerns regarding how the FMAP formula allocates funds among states. Specifically, we have noted that PCI, the sole measure included in the FMAP formula, is an incomplete measure of states' resources, is a poor proxy for the size or characteristics of the states' population in need of Medicaid services, and does not take into account geographic differences in the cost of providing health care services.[3] In addition, we have expressed concerns that the FMAP does not take into account states' current economic circumstances due to lags in the calculation of PCI and implementation of the FMAP.[4]

Given these concerns regarding the Medicaid formula and the overall growth in Medicaid enrollment and expenditures, you asked us to examine ways to improve the allocation of Medicaid funding. In this report, we considered whether available data sources could be used to develop measures to more equitably allocate Medicaid funding. To do this, we applied two equity standards that we and others have commonly used to evaluate federal funding mechanisms: beneficiary equity, which stipulates that funds should be distributed so that each state can provide a comparable level of services to each person in need; and taxpayer equity, which stipulates that each state should receive enough funds to be able to provide a comparable level of services as others while contributing about the same proportion of its own resources. With these standards in mind, we reviewed prior GAO reports and other relevant studies, examined potential data sources produced by federal agencies, and developed illustrative examples of how selected data sources—largely

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[2]Consistent with this intent, squaring PCI has the effect of making PCI appear in the formula twice as an attempt to reflect both state resources and the population in need of Medicaid services.

[3]See, for example, GAO, *Medicaid Formula: Differences in Funding Ability among States Often Are Widened*, GAO-03-620 (Washington, D.C.: July 10, 2003).

[4]This is of particular concern for states during economic downturns. See, for example, GAO, *State and Local Governments: Knowledge of Past Recessions Can Inform Future Federal Fiscal Assistance,* GAO-11-401 (Washington, D.C.: Mar. 31, 2011); and *Medicaid: Strategies to Help States Address Increased Expenditures during Economic Downturns*, GAO-07-97 (Washington, D.C.: Oct. 18, 2006).

federal statistical data, such as data from surveys conducted by the U.S. Census Bureau—could be used to develop measures to more equitably allocate Medicaid funding. We reviewed relevant documentation for each data source that we used and determined that the data were sufficiently reliable for our purposes. We focused our efforts on readily available data sources, most of which had been used in our prior reports. Accordingly, the data sources we discuss are not inclusive of all possibilities. Appendix I in this report provides additional details of our analysis.

We conducted this performance audit from September 2012 to May 2013 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

In prior work spanning more than three decades, we have emphasized that, in federal-state programs such as Medicaid, funds should be allocated to states in a manner that is equitable from the perspectives of both beneficiaries and taxpayers.[5] To be equitable from the perspective of beneficiaries, a funding allocation mechanism should take into account

- *demand for services*, which varies with the size and characteristics of the target population; and

- *geographic cost differences*, which affect the level of funding needed by each state to provide a comparable level of services to each person in need.

In general, the demand for services depends not only on the size of the target population, but also on the amount or level of services required, which may vary with the characteristics of the population. An allocation mechanism that adjusts for cost differences would reflect the variation in

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[5]See, for example, GAO, *Older Americans Act: Options to Better Target Need and Improve Equity*, GAO-13-74 (Washington, D.C.: Nov. 30, 2012); and the list of related GAO products at the end of this report.

the costs of key inputs used to provide services, such as the cost of the personnel involved.[6]

To be equitable from the perspective of taxpayers, a funding formula should ensure that taxpayers in poorer states are not more heavily burdened than those in wealthier ones. To do so, it must take into account each state's ability to finance its share of the costs of a given program from its own sources, which we refer to as state resources.[7] A good measure of a state's resources would include all types of taxable resources and would not be affected by an individual state's taxing authorities or policies, in that it would measure all income flows and not just those that a state currently taxes.

Our prior work has found that the FMAP does not adequately address the demand for services, geographic cost differences, and state resources. As we previously reported, PCI is a poor proxy for the size of a state's population in need of Medicaid services, as two states with similar PCI can have substantially different numbers of low-income residents.[8] Moreover, PCI does not take into account differences among states in the health care services needs of this population. As we have reported, persons who are elderly typically use health care services at higher rates than younger adults and children.[9] Similarly, disabled individuals typically have greater health care needs than nondisabled individuals. Accordingly, a state with the same number of Medicaid-eligible individuals, but a higher number of Medicaid-eligible elderly or disabled individuals than another state, may face a higher demand for Medicaid services. For example, in fiscal year 2010, Medicaid spent approximately $15,000 for each beneficiary aged 65 or older and $17,000 for each disabled beneficiary, compared with approximately $3,000 per child and $4,000 per adult under age 65.

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[6]See, for example, GAO-03-620.

[7]In this report, we use the term "state resources" to refer to funding available to states for financing the nonfederal share of their Medicaid expenditures, which may include funding provided by local government sources.

[8]For example, as we reported in 2003, New York and Maryland had similar PCIs, but the percentage of New York's population that was in poverty was almost twice Maryland's. See GAO-03-620.

[9]See GAO-03-620.

Additionally, the FMAP does not include any measure of geographic differences in the costs of providing health care services, which can vary widely. For example, in our work on Medicare payment policy, we have noted that when such differences were taken into account, physicians practicing in the District of Columbia received a higher overall payment for the same service—20 percent higher for a mid-level office visit in 2007—compared with physicians practicing in South Carolina.[10] PCI does not account for these cost differences, as they are largely driven by the cost of the personnel who provide the services (wages, for example).

Finally, PCI does not adequately account for state resources. Although PCI measures income received by state residents, such as wages, rents, and interest income, it does not include other components of state resources, such as corporate income produced within the state but not received by state residents. We previously reported that PCI especially understated the taxable resources in energy-exporting states, such as Alaska and Wyoming, and in states that house numerous corporate headquarters, such as Delaware.[11]

Available Data Sources Could Be Used to Develop Measures to Allocate Medicaid Funding More Equitably

We identified multiple data sources that could be used to develop measures of the demand for Medicaid services, geographic cost differences, and state resources. These measures could be combined in various ways to provide a basis for allocating Medicaid funds more equitably among states.

Demand for services. A measure of demand for Medicaid services should account for both the size of the target population in need of services and the health services needs of that population. Nationally representative federal surveys, such as the U.S. Census Bureau's American Community Survey (ACS) and Current Population Survey (CPS), are available data sources that can be used to directly estimate the number of persons residing in each state with incomes low enough to

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[10]GAO, *Medicare: Geographic Areas Used to Adjust Physician Payments for Variation in Practice Costs Should Be Revised*, GAO-07-466 (Washington, D.C.: June 29, 2007).

[11]See GAO-03-620.

qualify them as potentially in need of Medicaid services.[12] The specific income level chosen for this measure, such as the federal poverty level (FPL), could vary depending on Medicaid eligibility criteria for the target population.[13] These estimates could then be adjusted to reflect variation in health services needs within the identified population. These adjustments could be based on additional information collected in the surveys or on sources external to the surveys, such as Medicaid data on enrollment or spending. In appendix I, we illustrate how ACS data could be used, alone or in combination with Medicaid data, to measure states' relative demand for Medicaid services.

Geographic cost differences. A measure of geographic differences in the cost of providing health care services should account for the cost of the personnel who provide the services, the cost of medical equipment and supplies, and the rental cost of facilities in which the services are provided. Of these three components, personnel costs represent the greatest share of total costs. For example, in the 2012 Medicare physician fee schedule, the Centers for Medicare & Medicaid Services (CMS) attributed an average of 72 percent of the total cost of physician services to personnel costs,[14] which vary substantially across geographic areas. Data that can be used to estimate average wages for health care personnel by state are available through several national data-collection efforts, including the Occupational Employment Statistics (OES) survey conducted by the Bureau of Labor Statistics and the cost reports that hospitals must submit to CMS in order to be paid by Medicare under its

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[12]Unless funds were to be allocated on a per-enrollee grant basis, Medicaid program data on the number of actual Medicaid enrollees would generally not be an ideal data source for this measure because Medicaid eligibility criteria vary by state and because not all eligible individuals enroll in Medicaid.

[13]For example, states are currently required to cover children up to age 6 in families with income at or below 133 percent of the federal poverty level (FPL) and children from ages 6 to 19 in families with income below 100 percent of the FPL. Under the Patient Protection and Affordable Care Act (PPACA), beginning in January 2014, states must cover all children ages 6 to 19 up to 133 percent of the FPL and states may extend coverage to nonpregnant, nonelderly adults up to 133 percent of the FPL.

[14]In the November 16, 2012, update to the Medicare physician fee schedule, CMS attributed 72 percent of the cost of physician services to personnel costs, 10 percent to office rent, and 17 percent to all other costs, including the cost of medical equipment and supplies. (Percentages do not sum to 100 due to rounding.) For other services, the percentages CMS attributes to personnel costs vary.

acute care hospital Inpatient Prospective Payment System (IPPS).[15] In appendix I, we illustrate how OES wage data could be used to measure geographic cost differences.

State Resources. A measure of state resources should account for all income, regardless of whether the state taxes the income or not, as states' taxing authorities or policies may vary. While PCI—the measure of state resources used in the current Medicaid funding formula—includes the personal income of state residents, it excludes other taxable income, such as undistributed corporate profits. In contrast, Total Taxable Resources (TTR) comprises not only the income included in PCI but also other significant sources of taxable income. For example, TTR includes personal income received by state residents as well as income produced within a state but received by individuals who reside out-of-state, which is considered a portion of the Gross State Product. As a result, nationwide, the TTR measure of income was 42 percent larger on a per capita basis than PCI in 2010. In appendix I, we illustrate how estimates of state TTR, generated by the Department of the Treasury from data provided primarily by the Bureau of Economic Analysis, could be used to measure state resources.

Combining Measures. Measures of the demand for services, geographic cost differences, and state resources could be combined in various ways to provide a basis for allocating Medicaid funds equitably among states.[16] For example, when determining states' ability to fund Medicaid services, rather than simply considering total state resources or state resources per

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[15]Under the IPPS, hospitals are paid a standardized amount for an entire inpatient episode. CMS calculates IPPS payments through a series of adjustments applied to national base payment rates covering operating and capital expenses. CMS adjusts hospital payments under IPPS using an area wage index to account for geographic differences in personnel costs across the country. The wage index reflects how average hospital wages in each geographic area compare to average hospital wages nationally, set at 1.0.

[16]In technical comments provided on a draft of this report, the Department of Health and Human Services noted that an alternative allocation methodology could result in significant changes in federal funding for individual states and suggested that we consider detailing the projected funding effect of such an alternative. We do not provide such details because the measures we discuss could be combined in various ways in different allocation mechanisms; additionally, it was not within the scope of this engagement to develop or test new allocation mechanisms, only to consider possible sources of data. As previously noted, the data we used to illustrate these measures are not the only data sources that could be used.

capita, a funding formula could reflect state resources in relation to the population in need of Medicaid services—that is, in relation to demand for services. This would result in a more equitable allocation of funding, because two states with similar resources and populations may have very different numbers of residents in need of Medicaid services.

For example, one way to combine measures would be to calculate each state's TTR per person in poverty, using a measure of the poverty population that is adjusted to account for both the service needs of the population and geographic differences in the cost of services.[17] We have previously found that such a combination of measures could be the basis of an alternative to the existing FMAP formula, whereby this calculation of TTR per person in poverty would replace the use of PCI in the formula.[18] These measures could also be combined in other ways and could be used to take into account specific circumstances, such as economic downturns.[19]

Agency Comments

We provided the Secretary of Health and Human Services with a draft of this report. The Department of Health and Human Services provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the Administrator of CMS and other interested parties. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

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[17]The results of this calculation would differ somewhat depending on which measures of demand for services or geographic cost differences were selected.

[18]For example, see GAO, *Medicaid: Matching Formula's Performance and Potential Modifications*, GAO/T-HEHS-95-226 (Washington, D.C.: July 27, 1995).

[19]For example, because states' economic conditions affect both demand for services and state resources, we have suggested that both of these should be considered when targeting increased assistance to states during economic downturns. Such consideration is important because rising unemployment during economic downturns can lead to increases in the number of individuals who are eligible for Medicaid coverage at the same time that states' tax revenues decline. See, for example, GAO, *Medicaid: Prototype Formula Would Provide Automatic, Targeted Assistance to States during Economic Downturns*, GAO-12-38 (Washington, D.C.: Nov. 10, 2011).

If you or your staff have any questions about this report, please contact me at (202) 512-7114 or yocomc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix II.

Carolyn L. Yocom
Director, Health Care

Appendix I: Examples of Alternative Measures That Could Be Used to More Equitably Allocate Federal Medicaid Funding

This appendix illustrates how selected data sources could be used to measure (1) the demand for services, (2) geographic differences in the cost of health services, and (3) state resources. We considered and evaluated multiple data sources, focusing our efforts on federally available data sources, most of which had been used in our prior reports.[1]

Demand for Services

To illustrate possible measures of the demand for Medicaid services, we used data from the American Community Survey (ACS) to estimate the size of the target population in need of services and then used ACS data and Medicaid program data from the Centers for Medicare & Medicaid Services (CMS) to adjust for differences in the health services needs of the target population in each state.

Measuring the Size of the Target Population

To illustrate one possible measure of the size of a potential target population by state, we used data and population weights from the ACS 3-year file for 2009-2011 to estimate the number of people living in each state with family incomes at or below 100 percent of the federal poverty level (FPL),[2] hereafter referred to as our unadjusted estimates of the population in poverty. We chose the ACS as our data source because of its large sample size and because its sample includes people living in institutions, such as nursing homes. Residents of nursing homes are an important component of the potential Medicaid-eligible population but are not included in other key surveys, such as the Current Population Survey.

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[1]The data sources we used have a significant time lag and may be appropriate when state economic conditions are stable or improving. However, funding adjustments to states during economic downturns may require more current data sources, such as unemployment rates, to reflect increasing demand for services. For example, see GAO, *Medicaid: Prototype Formula Would Provide Automatic, Targeted Assistance to States during Economic Downturns*, GAO-12-38 (Washington, D.C.: Nov. 10, 2011); *Medicaid: Improving Responsiveness of Federal Assistance to States during Economic Downturns*, GAO-11-395 (Washington, D.C.: Mar. 31, 2011); *Medicaid: Strategies to Help States Address Increased Expenditures during Economic Downturns*, GAO-07-97 (Washington, D.C.: Oct. 18, 2006).

[2]The Census Bureau produces 1-year, 3-year, and 5-year ACS data files. The 2009-2011 3-year file is a multiyear combination of 1-year files, with appropriate adjustments to weights and other data elements. We chose the 3-year file over the 1- and 5-year files in order to include only the more recent years of available data while also increasing the sample size and thus the precision of our estimates. However, both the 1-year and 5-year files would also be appropriate options depending on relative preferences in terms of how current the data are versus the precision of estimates that can be generated from them.

While the ACS does not provide family income data for respondents living in institutions, we included respondents living in institutions in the population in poverty if they reported receipt of Medicaid.

In addition to using the ACS data to generate unadjusted estimates of the population in poverty, we also used the data to generate an adjusted estimate of the population in poverty that takes into account cost-of-living differences among states, such as differences in the costs of renting an apartment. To do so, we used state-specific regional price parity estimates published by the Bureau of Economic Analysis to adjust family income relative to the FPL prior to estimating the population in poverty.[3] For states with higher than average cost of living, this adjustment has the effect of increasing the amount of income that a family can have while still being considered to be in poverty, while the reverse is true for states with lower than average cost of living. For example, table 1 shows that in Alaska the number of people counted as being in poverty is 8.1 percent higher after the cost-of-living adjustment, because Alaska has a higher than average cost of living. Conversely, the number of people counted as being in poverty in Wyoming is 8.7 percent lower after the cost of living adjustment, because Wyoming has a lower than average cost of living. Additional possible options for measuring the size of the target population include using higher or lower family income thresholds (for example, 133 percent of FPL) for specific population subgroups or for the entire population, or calculating family income in a manner that more closely corresponds to Medicaid eligibility rules than does the ACS family income variable.[4]

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[3]Regional price parities are indexes that measure price-level differences across regions during a given period by comparing the average price level of an area to the national average price level for all areas. See Bettina H. Aten, Eric B. Figueroa, and Troy M. Martin, "Regional Price Parities for States and Metropolitan Areas, 2006-2010," *Survey of Current Business* (Bureau of Economic Analysis, August 2012). Alternative price indexes are available; for example, see Trudi Renwick, "Geographic Adjustments of Supplemental Poverty Measure Thresholds: Using the American Community Survey Five-Year Data on Housing Costs," U.S. Census Bureau, Social, Economic, and Housing Statistics Division, Working Paper 2011–21 (July 2011).

[4]The ACS family income variable is based on all family members aged 15 years and older residing within a household. The Patient Protection and Affordable Care Act (PPACA) specified that, beginning in 2014, for purposes of determining Medicaid eligibility for most individuals, income will be defined based on the income of every individual in a household, including the income of individuals that a household's primary taxpayer expects to claim as tax dependents, unless the dependents are not required to file tax returns.

Table 1: Estimates of Population in Poverty, by State

State	Population in poverty	Cost-of-living-adjusted population in poverty	Percentage difference
Alabama	893,216	789,200	-11.6%
Alaska	72,387	78,215	8.1
Arizona	1,136,376	1,123,273	-1.2
Arkansas	548,677	473,915	-13.6
California	5,929,053	6,717,844	13.3
Colorado	687,964	680,010	-1.2
Connecticut	385,454	426,196	10.6
Delaware	108,723	113,331	4.2
District of Columbia	113,653	125,540	10.5
Florida	3,079,970	3,079,970	0.0
Georgia	1,727,122	1,607,924	-6.9
Hawaii	153,295	179,899	17.4
Idaho	240,044	220,514	-8.1
Illinois	1,846,804	1,846,804	0.0
Indiana	995,798	916,037	-8.0
Iowa	392,032	341,986	-12.8
Kansas	389,181	340,643	-12.5
Kentucky	829,055	730,839	-11.8
Louisiana	855,925	796,600	-6.9
Maine	183,849	177,418	-3.5
Maryland	582,585	646,042	10.9
Massachusetts	770,818	838,820	8.8
Michigan	1,648,959	1,561,684	-5.3
Minnesota	628,483	606,052	-3.6
Mississippi	664,170	576,936	-13.1
Missouri	938,980	812,178	-13.5
Montana	144,955	134,372	-7.3
Nebraska	232,418	203,135	-12.6
Nevada	401,723	397,253	-1.1
New Hampshire	117,629	123,594	5.1
New Jersey	925,547	1,047,850	13.2
New Mexico	415,761	386,481	-7.0
New York	3,001,976	3,464,867	15.4
North Carolina	1,656,411	1,517,681	-8.4

State	Population in poverty	Cost-of-living-adjusted population in poverty	Percentage difference
North Dakota	78,796	68,993	-12.4
Ohio	1,882,856	1,698,819	-9.8
Oklahoma	649,564	570,564	-12.2
Oregon	614,086	593,279	-3.4
Pennsylvania	1,715,637	1,680,290	-2.1
Rhode Island	144,196	142,555	-1.1
South Carolina	847,614	774,451	-8.6
South Dakota	118,358	102,631	-13.3
Tennessee	1,133,239	1,021,628	-9.8
Texas	4,553,162	4,397,261	-3.4
Utah	363,480	341,294	-6.1
Vermont	70,410	70,040	-0.5
Virginia	937,069	964,561	2.9
Washington	918,816	937,728	2.1
West Virginia	338,273	291,751	-13.8
Wisconsin	767,774	699,022	-9.0
Wyoming	64,480	58,865	-8.7
United States	**47,896,803**	**47,496,835**	**-0.8%**

Source: GAO analysis of U.S. Census Bureau data.

Note: Data are 2009-2011 data from the American Community Survey (ACS). To account for cost-of-living differences, we used state-specific regional price parity estimates published by the Bureau of Economic Analysis to adjust family income relative to the federal poverty level (FPL).

Adjusting for Differences in Health Services Needs

An ideal estimate of the demand for Medicaid services would take into account the health needs of the target population—defined in this example as the population in poverty—based on individuals' specific health conditions and the costs of services to treat those conditions, an approach known as risk adjustment. A simplified approach is to identify categories—such as age or disability categories that describe the composition of the population—that are known to be correlated with different levels of health service needs and expenditures as a proxy for the health service needs of individuals within the categories. For example, the Medicaid and CHIP Payment and Access Commission (MACPAC) estimated that disabled individuals represented about 15 percent of Medicaid enrollees in fiscal year 2009, yet accounted for about 43 percent

of Medicaid benefit spending that year—in line with their greater need for health services.[5] We used age and disability categories as proxy measures of the health services needs of this population. We distinguished the following categories, which we used to weight the estimated population in poverty obtained from the ACS:

- children ages 0 through18,

- adults ages 19 through 64,

- individuals with disabilities ages 0 through 64,

- elderly individuals ages 65 through 84, and

- elderly individuals ages 85 and older.

Other possible options for accounting for health service needs include using more detailed age categories; separating out certain Medicaid eligibility categories,[6] such as foster children; or using age categories without consideration of disability status, as we did in a prior report.[7]

We used CMS Medicaid program data to estimate per-enrollee Medicaid spending in order to create Medicaid-service-need weights specific to each of the five categories. CMS has two key data sets that report state Medicaid expenditures—the Medicaid Statistical Information System (MSIS) and CMS-64. The MSIS data set was established as a national eligibility and claims data set and can provide a summary of expenditures linked to specific enrollees on the basis of their medical claims for care, while the CMS-64 data set aggregates states' expenditures and is used to reimburse the states for their Medicaid expenditures. We have previously reported that Medicaid expenditures as captured in the MSIS were less than the CMS-64 amounts and that MSIS data were considered less

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[5]See MACPAC, *Report to the Congress on Medicaid and CHIP* (Washington, D.C.: June 2012).

[6]Eligibility for Medicaid is based on a variety of categorical and financial requirements. For example, Medicaid eligibility focuses on certain categories of individuals, such as low-income children, individuals who are aged, and individuals with disabilities.

[7]See GAO, *Medicaid Formula: Differences in Funding Ability among States Often Are Widened*, GAO-03-620 (Washington, D.C.: July 10, 2003), in which we used age categories of 0 through 20, 21 through 64, and 65 and older.

reliable when compared with the CMS-64.[8] However, MSIS data are linked to specific enrollees, unlike the CMS-64 data, and therefore can be used on their own to measure per enrollee spending. For the purpose of providing an illustrative example for this report, we therefore relied on MSIS data to develop our estimates of Medicaid spending per enrollee and Medicaid-service-need weights. It is also possible to combine information from MSIS and the CMS-64 in order to develop more comprehensive estimates of per-enrollee Medicaid spending. Therefore, our per-enrollee estimates—based on MSIS data alone—differ from other published estimates that are based on a combination of CMS-64 and MSIS data, such as certain estimates published by the CMS Office of the Actuary and MACPAC.[9] We compared our calculated service-need weights with those that would be obtained if we had used per-enrollee spending estimates published by MACPAC and the CMS Office of the Actuary and found them to be similar for comparable categories. We used our own calculations because of our interest in dividing enrollees who were older than age 64 into two age groups.

Specifically, we used fiscal year 2009 MSIS data, the latest year for which complete data were available for every state, to estimate Medicaid spending per enrollee for each category nationwide, measuring enrollees in terms of full-year equivalents rather than the total number of persons who were enrolled for any length of time during the year. We then compared Medicaid spending per enrollee for each category with average Medicaid spending per enrollee for all categories. For example, in table 2 the service-need-weight for the disabled category indicates that, on average, Medicaid spending per enrollee among disabled enrollees ages 0 through 64 is 2.6 times higher than the average for all enrollees.

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[8]See GAO, *Medicaid: Data Sets Provide Inconsistent Picture of Expenditures*, GAO-13-47 (Washington, D.C.: Oct. 29, 2012).

[9]See Department of Health and Human Services, Centers for Medicare & Medicaid Services, Office of the Actuary, *2011 Actuarial Report on the Financial Outlook for Medicaid* (Washington, D.C.: Mar. 16, 2012) and MACPAC, *Report to the Congress on Medicaid and CHIP* (Washington, D.C.: June 15, 2012).

Table 2: Estimates of Medicaid-Service-Need Weights by Age and Disability Category

Category	Average spending per enrollee (dollars)	Medicaid-service-need weight[a]
Children ages 0 through 18	$2,526	0.4
Adults ages 19 through 64	3,692	0.6
Individuals with disabilities ages 0 through 64	16,027	2.6
Elderly individuals ages 65 through 84	10,472	1.7
Elderly individuals ages 85 and older	24,918	4.0
All categories	**$6,267**	**1.0**

Source: GAO analysis of Centers for Medicare & Medicaid Services (CMS) data.

Notes: Categories are mutually exclusive. Data are fiscal year 2009 data from the Medicaid Statistical Information System (MSIS).

[a]Calculated as average spending per enrollee by category divided by average spending per enrollee for all categories.

We next examined two possible methods for calculating the demand for services measure, by adjusting the state populations in poverty on the basis of the Medicaid-service-need weights shown in table 2. For the first method, we adjusted the state population in poverty by applying the service-need weights according to the composition of the state Medicaid population—specifically, according to the extent to which each age and disability category is represented within a state's Medicaid population. To do so, we used fiscal year 2009 MSIS data to calculate the percentage of Medicaid enrollees in each category by state. We then multiplied the state poverty population by the percentage of Medicaid enrollees in each category in that state and by the national service-need weight for that category, and summed the results.[10]

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[10]Under this first method, the final demand for services measure is calculated as follows:
State population in poverty * percentage of state Medicaid enrollees who were ages 0 through 18 * 0.4
+ state population in poverty * percentage of state Medicaid enrollees who were ages 19 through 64 * 0.6
+ state population in poverty * percentage of state Medicaid enrollees who were disabled (under age 65) * 2.6
+ state population in poverty * percentage of state Medicaid enrollees who were ages 65 through 84 * 1.7
+ state population in poverty * percentage of state Medicaid enrollees who were ages 85 and older * 4.0.

This first method accounts for potential differences among categories in the participation rates among eligible individuals within those categories, as well as potential differences in the proportions of children, adults, disabled individuals, and elderly individuals within each state's population in poverty. It also reflects state-specific coverage decisions about eligibility criteria for each category, in that—all else being equal—states with stricter eligibility criteria for a given age or disability category relative to other states would have a smaller proportion of enrollees in that category, while the reverse would be true for states with more generous eligibility criteria relative to other states.

Table 3 shows the results of calculating demand for services measures by this first method, which weights estimates of the state population in poverty for service needs on the basis of the composition of the Medicaid population. We applied the same service-need weights to (1) the unadjusted population in poverty and (2) the cost-of-living adjusted population in poverty, and then calculated the percentage difference compared with the unweighted population in poverty estimates shown in table 1. Table 3 illustrates, for example, that in West Virginia—a state with a higher than average proportion of disabled Medicaid enrollees—the demand for services measure increases by about 27 percent after using this method to account for the service needs of the population in poverty. The percentage differences shown in columns three and five of table 3, between weighted and unweighted measures, are the same for the population in poverty and the cost-of-living-adjusted population in poverty because the same weights—reflecting the distribution of each state's Medicaid population among age and disability categories and the relative cost of serving each category—are applied to each population measure.

Table 3: Estimates of Demand for Services, Including Adjustment for Service Need Based on the Composition of the Medicaid Population, by State

State	Population in poverty		Cost-of-living-adjusted population in poverty	
	Weighted by service need[a]	Percentage difference compared with unweighted population in poverty[b]	Weighted by service need[c]	Percentage difference compared with unweighted, cost-of-living-adjusted population in poverty[d]
Alabama	1,047,183	17.2%	925,237	17.2
Alaska	65,533	-9.5	70,809	-9.5
Arizona	914,545	-19.5	904,000	-19.5
Arkansas	596,947	8.8	515,607	8.8
California	5,271,251	-11.1	5,972,529	-11.1
Colorado	650,065	-5.5	642,549	-5.5
Connecticut	369,451	-4.2	408,502	-4.2
Delaware	97,983	-9.9	102,136	-9.9
District of Columbia	122,937	8.2	135,795	8.2
Florida	3,384,924	9.9	3,384,924	9.9
Georgia	1,743,384	0.9	1,623,064	0.9
Hawaii	140,330	-8.5	164,684	-8.5
Idaho	246,076	2.5	226,055	2.5
Illinois	1,570,507	-15.0	1,570,507	-15.0
Indiana	924,821	-7.1	850,745	-7.1
Iowa	393,682	0.4	343,426	0.4
Kansas	436,818	12.2	382,338	12.2
Kentucky	1,035,117	24.9	912,489	24.9
Louisiana	889,593	3.9	827,934	3.9
Maine	219,147	19.2	211,481	19.2
Maryland	577,868	-0.8	640,811	-0.8
Massachusetts	834,562	8.3	908,187	8.3
Michigan	1,574,151	-4.5	1,490,835	-4.5
Minnesota	641,583	2.1	618,685	2.1
Mississippi	777,059	17.0	674,997	17.0
Missouri	982,026	4.6	849,411	4.6
Montana	152,432	5.2	141,303	5.2
Nebraska	234,093	0.7	204,599	0.7
Nevada	383,647	-4.5	379,378	-4.5
New Hampshire	120,245	2.2	126,343	2.2
New Jersey	1,037,859	12.1	1,175,003	12.1

State	Population in poverty		Cost-of-living-adjusted population in poverty	
	Weighted by service need[a]	Percentage difference compared with unweighted population in poverty[b]	Weighted by service need[c]	Percentage difference compared with unweighted, cost-of-living-adjusted population in poverty[d]
New Mexico	344,122	-17.2	319,887	-17.2
New York	2,994,488	-0.2	3,456,224	-0.2
North Carolina	1,767,180	6.7	1,619,173	6.7
North Dakota	85,362	8.3	74,742	8.3
Ohio	1,903,295	1.1	1,717,261	1.1
Oklahoma	625,371	-3.7	549,313	-3.7
Oregon	645,999	5.2	624,110	5.2
Pennsylvania	2,082,818	21.4	2,039,906	21.4
Rhode Island	170,425	18.2	168,485	18.2
South Carolina	869,468	2.6	794,419	2.6
South Dakota	118,482	0.1	102,739	0.1
Tennessee	1,237,668	9.2	1,115,772	9.2
Texas	4,412,370	-3.1	4,261,290	-3.1
Utah	317,608	-12.6	298,222	-12.6
Vermont	70,630	0.3	70,259	0.3
Virginia	1,009,078	7.7	1,038,683	7.7
Washington	857,040	-6.7	874,680	-6.7
West Virginia	428,467	26.7	369,541	26.7
Wisconsin	824,210	7.4	750,405	7.4
Wyoming	57,543	-10.8	52,532	-10.8
United States	**47,896,803**	**0.0%**	**47,496,835**	**0.0%**

Source: GAO analysis of U.S. Census Bureau and Centers for Medicare & Medicaid Services data.

Notes: The data are 2009-2011 data from the American Community Survey (ACS) and 2009 data from the Medicaid Statistical Information System (MSIS).

The percentage differences shown in columns three and five, between weighted and unweighted measures, are the same for the population in poverty and the cost-of-living-adjusted population in poverty because the same weights—reflecting the distribution of each state's Medicaid population among age and disability categories and the relative cost of serving each category—are applied to each population measure.

[a]Calculated by multiplying the state population in poverty by the proportion each age and disability category represents among all state Medicaid enrollees and by the category service-need weight, then summing the results for each category.

[b]Calculated in comparison to the unweighted, unadjusted population in poverty.

[c]Calculated by multiplying the cost-of-living adjusted state population in poverty by the proportion each age and disability category represents among all state Medicaid enrollees and by the category service-need weight, then summing the results for each category.

[d]Calculated in comparison to the unweighted, cost-of-living-adjusted population in poverty.

For the second method, we adjusted the state population in poverty by applying the service-need weights on the basis of the composition of the state poverty population rather than on the basis of the composition of the Medicaid population. Specifically, we generated poverty population estimates from ACS data separately for each age and disability category, and then multiplied these estimates by the Medicaid-service-need weights, summing the results.[11]

This second method more directly measures differences in the representation of each category within each state's population in poverty and is not affected by individual state coverage decisions. However, it also does not account for differences in Medicaid participation rates among categories, nor does it track federal eligibility criteria for the categories. (For example, the adult poverty population includes adults who generally have not been eligible for Medicaid under federal law, and may or may not become eligible in future years depending on state decisions about whether to expand Medicaid as provided for under PPACA.)[12]

Table 4 shows the results of calculating a demand for services measure by this second method, which—in contrast to the previous method— weights the state population in poverty for service need based on the composition of the population in poverty itself instead of the composition of the Medicaid enrollee population. Again, we applied the same service-

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[11]Under this second method, the final demand for services measure is calculated as follows:

State population in poverty * percentage of that population who were children ages 0 through 18 * 0.4

+ state population in poverty * percentage of that population who were adults ages 19 through 64 * 0.6

+ state population in poverty * percentage of that population who were disabled individuals under age 65 * 2.6

+ state population in poverty * percentage of that population who were elderly individuals ages 65 through 84 * 1.7

+ state population in poverty * percentage of that population who were elderly individuals ages 85 and older * 4.0.

[12]These considerations could, however, be addressed by additional modifications to the measure. For example, the category-specific estimates of the population in poverty could be further weighted to account for each category's national Medicaid participation rate (that is, the national number of Medicaid enrollees in the category divided by the number of persons in the national poverty population who are in the category). For an example of this modification, see GAO-03-620.

need weights to (1) the unadjusted population in poverty and (2) the cost-of-living adjusted population in poverty, and then calculated the percentage difference compared with the unweighted population in poverty estimates shown in table 1. Due to the different weighting method employed, the results of the demand for services calculation shown in table 4 generally differ from those shown in table 3.[13] For example, table 4 shows that the demand for services measure for West Virginia increases by about 13 percent when the service-need adjustment is made based on the composition of the poverty population, as opposed to by about 27 percent when the adjustment is made based on the composition of the Medicaid enrollee population as shown in table 3.

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[13]The percentage differences shown in columns three and five of table 4, between weighted and unweighted measures, differ because the application of the cost-of-living adjustment affects not only the size of the population in poverty, but the distribution of that population across the age and disability categories used in weighting. In contrast, the cost-of-living adjustment does not affect the weighting used in table 3, which is based on distribution of states' Medicaid populations across categories.

Table 4: Estimates of Demand for Services, Including Adjustment for Service Need Based on the Composition of the State Poverty Population, by State

State	Population in poverty		Cost-of-living-adjusted population in poverty	
	Weighted by service need[a]	Percentage difference compared with unweighted population in poverty[b]	Weighted by service need[c]	Percentage difference compared with unweighted, cost-of-living-adjusted population in poverty[d]
Alabama	916,994	2.7%	809,176	2.5%
Alaska	65,074	-10.1	69,654	-10.9
Arizona	941,599	-17.1	929,741	-17.2
Arkansas	559,659	2.0	480,214	1.3
California	5,013,297	-15.4	5,686,186	-15.4
Colorado	610,160	-11.3	604,119	-11.2
Connecticut	408,524	6.0	450,223	5.6
Delaware	103,156	-5.1	107,240	-5.4
District of Columbia	114,624	0.9	126,924	1.1
Florida	2,909,093	-5.5	2,909,093	-5.5
Georgia	1,540,854	-10.8	1,435,464	-10.7
Hawaii	146,227	-4.6	174,422	-3.0
Idaho	218,125	-9.1	199,745	-9.4
Illinois	1,669,156	-9.6	1,669,156	-9.6
Indiana	956,705	-3.9	877,350	-4.2
Iowa	397,264	1.3	345,596	1.1
Kansas	382,114	-1.8	333,048	-2.2
Kentucky	895,273	8.0	779,190	6.6
Louisiana	834,311	-2.5	770,853	-3.2
Maine	212,808	15.8	205,964	16.1
Maryland	581,446	-0.2	642,543	-0.5
Massachusetts	856,630	11.1	932,803	11.2
Michigan	1,611,096	-2.3	1,522,285	-2.5
Minnesota	627,103	-0.2	603,857	-0.4
Mississippi	650,244	-2.1	562,051	-2.6
Missouri	964,236	2.7	834,033	2.7
Montana	139,985	-3.4	129,316	-3.8
Nebraska	225,390	-3.0	198,046	-2.5
Nevada	340,050	-15.4	336,691	-15.2
New Hampshire	126,953	7.9	134,087	8.5
New Jersey	901,993	-2.5	1,018,230	-2.8
New Mexico	365,621	-12.1	338,296	-12.5

State	Population in poverty		Cost-of-living-adjusted population in poverty	
	Weighted by service need[a]	Percentage difference compared with unweighted population in poverty[b]	Weighted by service need[c]	Percentage difference compared with unweighted, cost-of-living-adjusted population in poverty[d]
New York	2,928,975	-2.4	3,384,800	-2.3
North Carolina	1,574,434	-4.9	1,432,154	-5.6
North Dakota	82,997	5.3	71,554	3.7
Ohio	1,914,640	1.7	1,720,652	1.3
Oklahoma	652,381	0.4	568,368	-0.4
Oregon	584,968	-4.7	566,970	-4.4
Pennsylvania	1,841,165	7.3	1,803,930	7.4
Rhode Island	156,997	8.9	154,398	8.3
South Carolina	807,345	-4.8	734,110	-5.2
South Dakota	118,266	-0.1	101,276	-1.3
Tennessee	1,148,919	1.4	1,025,634	0.4
Texas	3,915,084	-14.0	3,780,997	-14.0
Utah	289,619	-20.3	271,339	-20.5
Vermont	80,753	14.7	80,165	14.5
Virginia	918,232	-2.0	949,145	-1.6
Washington	881,651	-4.0	900,148	-4.0
West Virginia	383,995	13.5	329,769	13.0
Wisconsin	756,778	-1.4	683,516	-2.2
Wyoming	62,976	-2.3	57,919	-1.6
United States	**45,385,937**	**-5.2%**	**44,832,438**	**-5.6%**

Source: GAO analysis of U.S. Census Bureau and Centers for Medicare & Medicaid Services data.

Notes: The data are 2009-2011 data from the American Community Survey (ACS) and 2009 data from the Medicaid Statistical Information System (MSIS).

The percentage differences shown in columns three and five, between weighted and unweighted measures, differ for the population in poverty and the cost-of-living-adjusted population in poverty because the application of the cost-of-living adjustment affects not only the size of the population in poverty, but the distribution of that population across the age and disability categories used in weighting.

[a]Calculated by multiplying the age and disability-category-specific state population in poverty by the service-need weight for the category, then summing the results for each category.

[b]Calculated in comparison to the unweighted, unadjusted population in poverty.

[c]Calculated by multiplying the age and disability-category-specific, cost-of-living adjusted state population in poverty by the service-need weight for the category, then summing the results for each category.

[d]Calculated in comparison to the unweighted, cost-of-living-adjusted population in poverty.

Geographic Cost Differences

To illustrate possible measures of geographic differences in the cost of providing health care services, we used data from the Bureau of Labor Statistics' Occupational Employment Statistics (OES) survey to estimate personnel costs, which represent the greatest proportion of total health care costs. We then constructed two indexes of geographic cost differences, each of which gives a different weight to cost of personnel relative to the cost of other inputs, which include health care facilities, equipment, and supplies.

To measure geographic differences in the cost of the personnel who provide health care services, we used data from the 2009-2011 OES to estimate average wages, by state, for health care workers. We used OES data instead of CMS's Inpatient Prospective Payment System (IPSS) hospital cost report data in part because of concerns about the latter. Specifically, the Medicare Program Advisory Commission (MedPAC) has noted that the IPPS hospital cost report data reflect at least to some extent hospitals' choices regarding wages and staff mix and proposed an alternative wage index based on OES data to adjust Medicare payments to hospitals.[14] We also chose to use the OES data because it covers personnel in a wide variety of health care settings in addition to hospitals, including offices, clinics, nursing homes, and medical and dental laboratories, as well as health care providers who work for home health agencies.

To construct a wage index, we used OES wage data for 22 broadly defined occupations within the health care and social assistance industry sector.[15] For each state, we calculated a weighted average wage for the sector, on the basis of the number employed in each occupation nationwide, and then constructed an index by dividing each state's weighted average wage by the national weighted average wage for the sector.

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[14]See MedPAC, *Report to the Congress: Promoting Greater Efficiency in Medicare* (Washington, D.C.: June 15, 2007).

[15]Because nursing home care represents a sizeable percentage of total Medicaid expenditures—more than 11 percent in 2011, not including hospital-based nursing home care—we also constructed an alternative wage index using data for occupations within the nursing and residential care facilities industry sector. This index did not differ substantially from the one we constructed from wage data on occupations in the health care and social assistance industry sector, so we present only the latter index here.

Data are not readily available on geographic differences in the cost of
other inputs to health care services—medical equipment and supplies
and the facilities through which health care services are delivered.
However, because medical equipment and supplies are generally
purchased in national markets, we assumed that the costs of these items
did not vary across states.[16] Similarly, we assumed that facility costs did
not vary across states, as CMS does in calculating Medicare prospective
payment rates for many services other than acute inpatient hospital or
physician services.

Accordingly, to calculate illustrative indexes of geographic differences in
the cost of health care services by state, we weighted our OES wage
index on the basis of the proportion of total cost of health care services
attributed to personnel. Because estimates of the proportion of total
health care costs that is attributable to personnel vary depending on the
type of service, we calculated two separate indexes of geographic
differences in health care costs—one in which we assumed personnel
costs accounted for 50 percent of total costs and another in which we
assumed personnel costs accounted for 77 percent of the total. These
percentages are the minimum and maximum proportions of health care
costs attributed to personnel costs in Medicare's prospective payment
systems for a variety of services.[17] All other costs were assumed to
account for 50 and 23 percent of the total, respectively. So, for example,
when we assumed that personnel costs accounted for 77 percent of total
costs, if a state had personnel costs 10 percent higher than the national
average, and thus an index of 1.10, the state's index for geographic cost

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[16]Under Medicare's prospective payment systems, providers are paid a predetermined,
fixed amount, which is derived on the basis of the classification system for the type of
service provided (for example, diagnosis-related groups for inpatient hospital services).
CMS uses separate prospective payment systems for different types of services, including
hospital outpatient and home health services. For certain services, the payment
calculation includes a geographic cost adjustment factor for differences in personnel
costs, but no adjustment for differences in the other costs of providing health care
services, including facility costs. However, for other services, adjustments are made for
geographic differences in nonpersonnel costs. For example, for physician services, the
Medicare payment system includes a Geographic Practice Cost Index based on
apartment rents as captured in the ACS to account for geographic differences in health
care facility costs.

[17]These services include outpatient hospital services and home health care services, as
well as services provided in ambulatory surgical centers, skilled nursing facilities, inpatient
rehabilitative facilities, and psychiatric hospitals, among others.

of services was calculated as follows: (0.77) * (1.10) + (0.23) * (1.0) = 1.033. See table 5.

Table 5: Estimates of Cost Indexes for Health Care Services, by State

State	Cost index with 50 percent weight for personnel costs[a]	Cost index with 77 percent weight for personnel costs[b]
Alabama	0.95	0.92
Alaska	1.09	1.14
Arizona	1.01	1.02
Arkansas	0.93	0.89
California	1.10	1.15
Colorado	1.03	1.05
Connecticut	1.08	1.12
Delaware	1.05	1.08
District of Columbia	1.10	1.16
Florida	0.99	0.98
Georgia	0.98	0.97
Hawaii	1.07	1.10
Idaho	0.96	0.94
Illinois	1.02	1.02
Indiana	0.97	0.95
Iowa	0.95	0.92
Kansas	0.96	0.94
Kentucky	0.95	0.93
Louisiana	0.94	0.91
Maine	0.99	0.99
Maryland	1.07	1.11
Massachusetts	1.09	1.13
Michigan	1.00	1.00
Minnesota	1.03	1.05
Mississippi	0.92	0.87
Missouri	0.95	0.93
Montana	0.94	0.91
Nebraska	0.96	0.93
Nevada	1.06	1.09
New Hampshire	1.02	1.03
New Jersey	1.08	1.13
New Mexico	0.98	0.98

State	Cost index with 50 percent weight for personnel costs[a]	Cost index with 77 percent weight for personnel costs[b]
New York	1.07	1.11
North Carolina	0.98	0.97
North Dakota	0.94	0.91
Ohio	0.99	0.98
Oklahoma	0.93	0.89
Oregon	1.05	1.07
Pennsylvania	1.00	0.99
Rhode Island	1.05	1.07
South Carolina	0.96	0.94
South Dakota	0.93	0.89
Tennessee	0.95	0.92
Texas	0.99	0.98
Utah	0.98	0.96
Vermont	1.01	1.01
Virginia	1.02	1.02
Washington	1.06	1.09
West Virginia	0.92	0.87
Wisconsin	1.00	1.00
Wyoming	0.99	0.98
United States	**1.00**	**1.00**

Source: GAO analysis of U.S. Bureau of Labor Statistics data.

Notes: Data are 2009-2011 data from the Occupational Employment Statistics (OES).

[a]Calculated as 0.5 + 0.5 * (weighted average wage for health care industry workers in the state / weighted average wage for health care industry workers in the nation).

[b]Calculated as 0.23 + 0.77 * (weighted average wage for health care industry workers in the state / weighted average wage for health care industry workers in the nation).

State Resources

To illustrate two possible measures of state resources, we used data on states' Total Taxable Resources (TTR), as reported by the Department of the Treasury. TTR is a measure of all income potentially subject to taxation that is either produced within a state or received by state residents from out-of-state sources. As such, TTR comprises the income included in per capita income (PCI), as well as income from other sources, such as corporate income and capital gains. For each state, TTR is reported by the Department of the Treasury both as a total dollar amount and in dollars per capita. The total dollar amount reflects state resources, and the per capita amount reflects the state resources relative to the size of the state population. We calculated average TTR and

average per capita TTR for 2008 through 2010, the most recent years for which data are available. See table 6.

Table 6: Average Total Taxable Resources (TTR) and Per Capita TTR, by State, 2008 through 2010

State	Average TTR (dollars in billions)	Average per capita TTR (dollars)
Alabama	$188	$39,627
Alaska	49	70,074
Arizona	277	43,689
Arkansas	114	39,322
California	2,018	54,608
Colorado	273	55,007
Connecticut	260	72,903
Delaware	67	74,980
District of Columbia	58	97,608
Florida	882	47,246
Georgia	431	44,875
Hawaii	70	52,197
Idaho	62	39,938
Illinois	701	54,750
Indiana	287	44,494
Iowa	151	49,725
Kansas	143	50,377
Kentucky	172	39,765
Louisiana	230	51,262
Maine	56	42,355
Maryland	351	61,263
Massachusetts	406	62,377
Michigan	397	40,067
Minnesota	286	54,222
Mississippi	107	36,233
Missouri	270	45,270
Montana	41	41,571
Nebraska	96	52,886
Nevada	143	53,231
New Hampshire	73	55,339
New Jersey	573	65,453

State	Average TTR (dollars in billions)	Average per capita TTR (dollars)
New Mexico	83	40,807
New York	1,215	62,936
North Carolina	442	46,841
North Dakota	36	54,299
Ohio	505	43,782
Oklahoma	165	44,300
Oregon	195	51,124
Pennsylvania	617	48,685
Rhode Island	56	53,162
South Carolina	178	38,806
South Dakota	43	53,033
Tennessee	271	43,070
Texas	1,275	51,455
Utah	123	45,403
Vermont	28	45,564
Virginia	465	58,651
Washington	370	55,547
West Virginia	69	37,437
Wisconsin	266	46,857
Wyoming	41	72,917
United States	**$15,675**	**$51,108**

Source: GAO analysis of Department of the Treasury data.

One possible alternative to TTR as a measure of state resources would be a measure based on the concept of the representative tax system, which refers to a hypothetical tax system that is representative of the taxes actually levied by all states in the aggregate. Such a measure would estimate the resources that would be available to each state if their tax policies were in line with those of most other states.[18]

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[18]For example, see Advisory Commission on Intergovernmental Relations, *1988 State Fiscal Capacity and Effort* (Washington, D.C.: August 1990).

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact	Carolyn L. Yocom, (202) 512-7114 or yocomc@gao.gov
Staff Acknowledgments	In addition to the contact named above, Robert Copeland, Assistant Director; Emily Beller; Kye Briesath; Greg Dybalski; Nancy Fasciano; Kaycee M. Glavich; Drew S. Long; and Hemi Tewarson made key contributions to this report.

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