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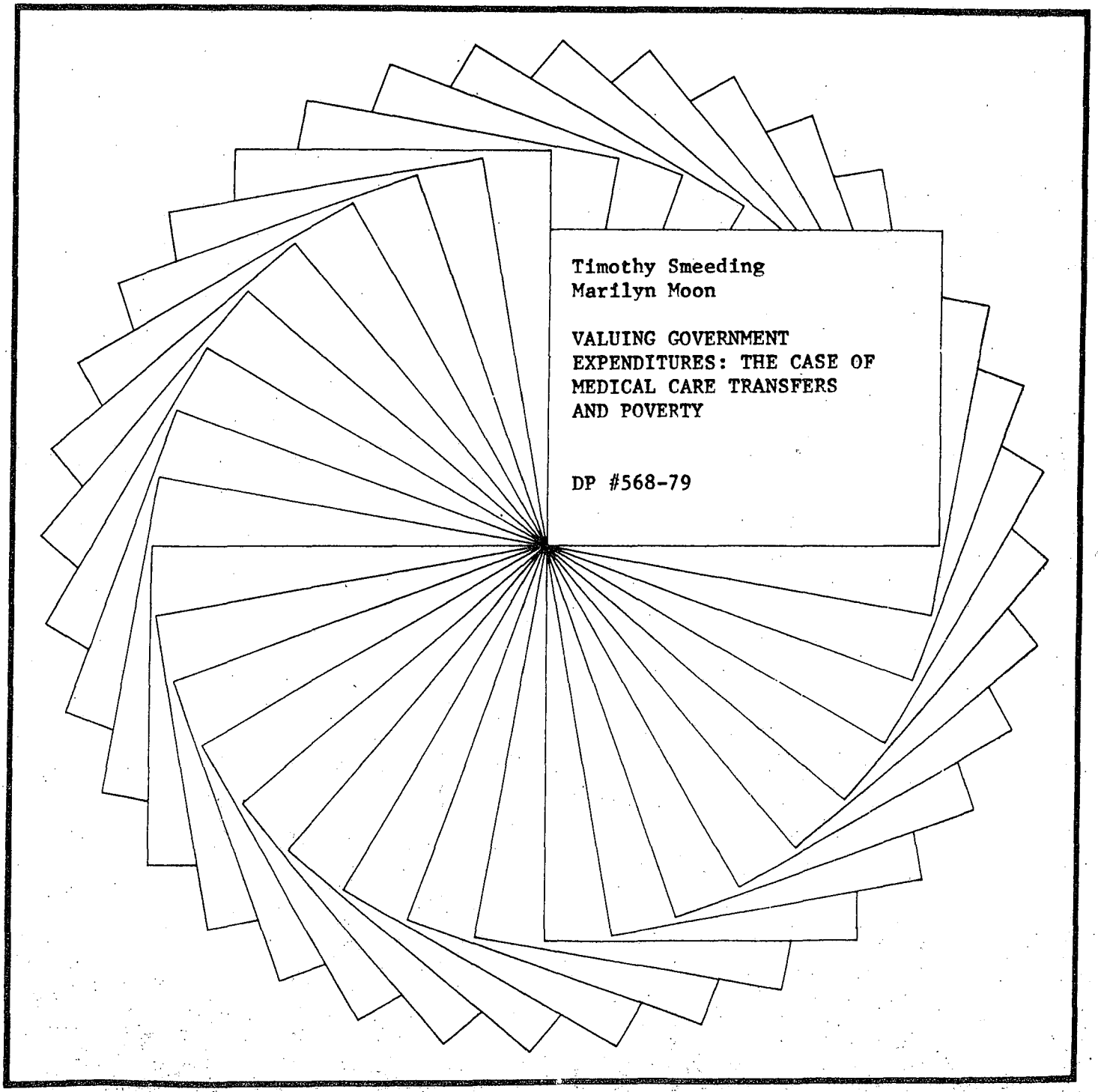

Valuing Government Expenditures:

The Case of Medical Care Transfers and Poverty

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ABSTRACT

This paper explores the choices and potential biases involved in valuing one type of government expenditure, medical transfers, and in estimating its antipoverty impact. Three methodological approaches -- (a measure of) government costs, (a measure of) cash-equivalent values and (a measure of) funds released -- are contrasted both in concept and in practice. We assign benefits to individuals after assuming that Medicare and Medicaid provide insurance to all those who are eligible. The resulting estimates for 1968 and 1974 illustrate the efficacy of these medical transfers in reducing the number of persons in poverty. Two recent studies: one by the Congressional Budget Office, and the other by Morton Paglin further highlight the importance of medical transfers for estimating poverty, despite the fact that we do not wholly agree with the methodologies which they employ. Our results indicate that in the aggregate, while medical care transfers have a substantial impact on poverty, the choice of a specific estimation approach has little effect on poverty estimates. However, for the elderly and possibly also for other groups (e.g. the rural poor), choice of estimation technique is quite crucial for estimating the extent of poverty.

Valuing Government Expenditures: The Case of Medical Care Transfers and Poverty

Difficult problems face the researcher who attempts to determine what effects government expenditures have on the individual distribution of economic well-being. These are particularly troublesome if the expenditures in question have a large degree of "publicness" (externality) associated with them (Aaron and McGuire, 1970; Brennan, 1976). In such cases, one faces two problems: (1) identifying the distribution of benefits across the different income levels and (2) determining the value of benefits to recipients. These benefit distribution and valuation problems are greatly alleviated when government expenditure takes the form of a direct cash transfer. However, when the expenditure in question is an in-kind transfer, both problems reappear, leading to some confusion and many contending estimates of the effects of government spending on income distribution.

In recent years, several studies have roundly criticized the official Census poverty estimates for the United States (Browning, 1975; Peskin, 1977; Smeeding, 1977; Paglin, 1979). Researchers generally cite as problems income underreporting, omission of direct taxes paid, and most important, failure to incorporate in-kind transfers in the definition of income. After an adjustment is made to correct for these factors, they claim, the number of persons classified as living in poverty declines by as much as 50%.[1]

The single most critical factor in these declining poverty estimates, accounting for about half the reduction, is the effect of medical care transfers, principally Medicaid and Medicare. The magnitude of the impact is attributable to the size of these programs relative to other transfers. In 1977, Medicaid and Medicare expenditures totalled $38.2 billion compared to a combined total of $25.4 billion for the major cash public assistance programs (AFDC, SSI, and state or local general assistance) and other in-kind programs

(public housing and food stamps).[2] Hence, despite the fact that only about 30% of all medical care transfers reach the poor,[3] their impact on income poverty is quite large.

The choice of techniques for evaluating the contribution of medical care transfers to economic well-being, and then to poverty status determination, is not an easy one. This paper will discuss various biases which are associated with alternative approaches, and will then present several estimates of the effect of medical transfers on poverty. Section 1 examines three conceptual approaches to assigning distributors and values to medical care transfers, while Section 2 discusses the conceptual and practical problems that arise in applying each of these three methodologies to the available data. Section 3 presents the techniques we employ to estimate the antipoverty effect of medical care transfers in 1968 and 1974, and the results are discussed in Section 4.

Before we proceed, our views on poverty measurement should be made explicit. As we see it, the problem is not <u>whether</u> to count the antipoverty effect of medical care transfers, but <u>how</u> to measure this effect. While several researchers (e.g., Orshansky, 1978) advocate including no in-kind transfers in the income definitions used to determine poverty status, we feel that they are mistaken. Clearly, medical care transfers add to family (and individual) economic well-being, at least substituting for some out-of-pocket expenditure which the consumer unit would otherwise have to bear. Thus, our paper attempts to find accurate ways to estimate the impact of medical transfers, first, on well-being and, second, on poverty status. Because of the large size and relative impact of these programs, and because poverty data are widely used in distributing government funds, these are important issues. Finally, our paper deals with the effects of medical care transfers on recipients' incomes. We do not consider donor benefits and external benefits associated with medical care transfers.

1. THREE APPROACHES TO VALUING MEDICAL CARE TRANSFERS

We weigh the merits of three basic alternatives for valuing medical care transfers: valuing them (1) by government cost, (2) by cash-equivalent value, and (3) by funds released. These approaches illustrate the basic methodological issues that arise when we attempt to value such transfers. Figure 1 provides a graphic presentation of the alternatives, using a standard utility-maximization framework. Initially, before receiving a medical care transfer the consumer unit faces a budget constraint of AD and chooses to consume OM units of medical care and OK units of other goods. The introduction of a medical care transfer, such as Medicaid, extends the budget constraint to ABS, where DS is the amount of medical care made available to consumers at no direct charge to the recipient.[4]

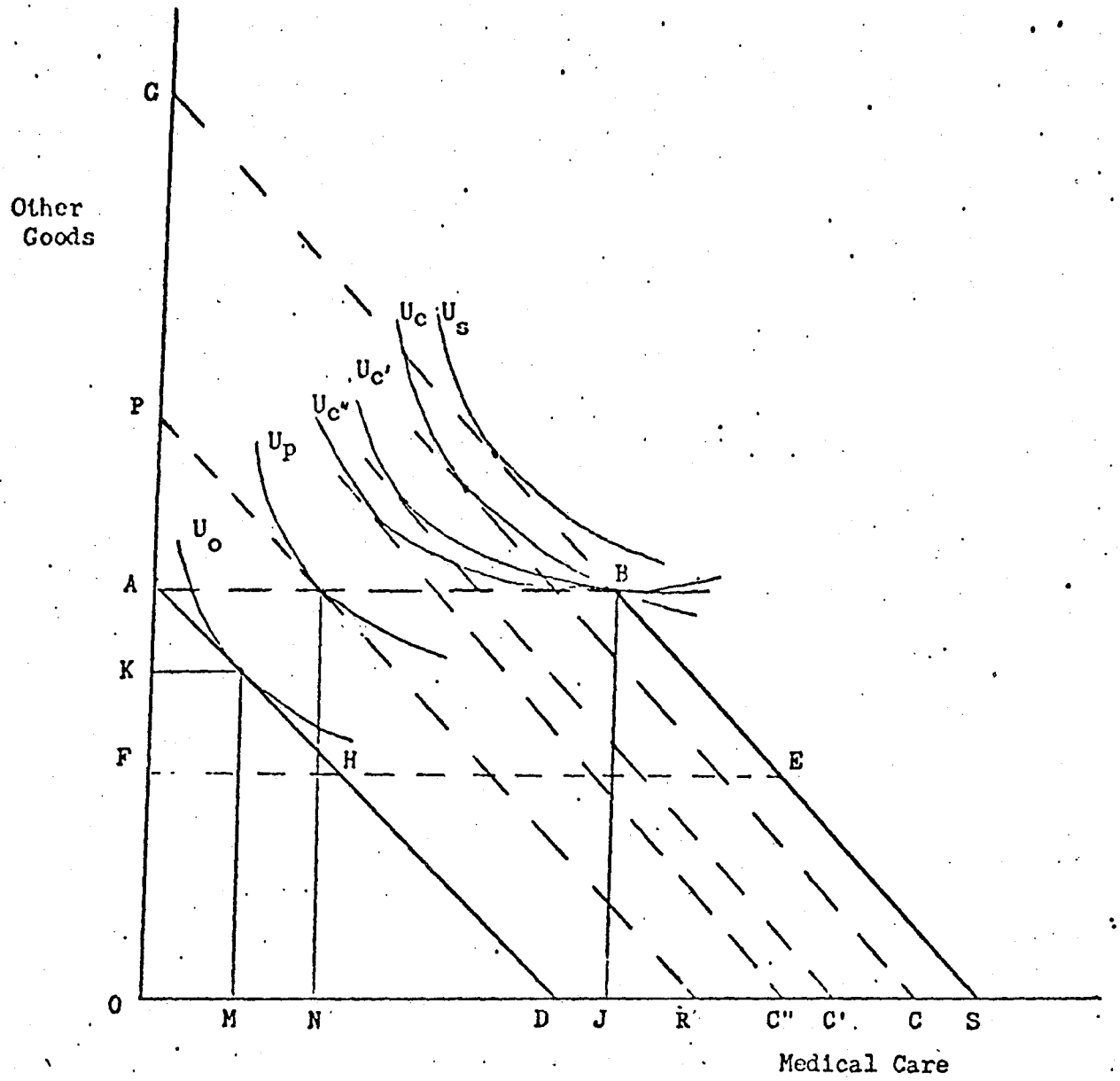
The government-cost approach values medical care transfers at the cost of providing them, which includes administrative costs. In essence, this approach suggests that the new (post-transfer) budget constraint is GBS. Hence, it follows that those who favor this alternative (Browning, 1975; Congressional Budget Office, 1977; and Paglin, 1979) at least implicitly suggest that medical care transfers be treated the same as cash transfers of equal value. The post-transfer utility level in this case would be U_S. However, such a utility level could be achieved only if the recipient could sell or trade the right to the medical care transfer for other goods or services. Only then would the portion of the budget constraint labelled GB be available to the recipient. Since the right to sell medical care transfers is not available to recipients, those accepting the transfer must consume at least OJ units of medical care. With consumer preferences as shown in Figure 1, the consumer could never reach U_S. Thus, unless the recipient's preferences are such that he or she would choose

to consume more than OJ units of medical care, the government-cost approach would overstate the recipient's welfare gain from medical care transfers. This overstatement would be particularly likely for elderly persons who received Medicare and Medicaid, because the payments would be large compared to what consumers would otherwise spend on medical care. For instance, in 1974, an otherwise poor elderly couple was guaranteed a minimum cash income of $2575 by the Supplemental Security Income (SSI) program. This same couple would have been eligible for both Medicare and Medicaid, which provided, on average, about $3000 per aged couple. Following the government-cost approach, their income (and level of well-being) would have risen to more than double. Even for the average (nonpoor) elderly couple with a 1974 cash income of $7000 (U.S. Bureau of the Census, 1976:19), a transfer of such magnitude would have represented a 40% increase in income.

The second alternative, and the one which we favor, is the utility-value or cash-equivalent approach. This approach deems that in-kind transfers be valued in a form commensurate to cash income. In other words, what amount of cash transfer would leave the recipient equally well-off as a given amount of medical care transfer? The resulting cash-equivalent transfer (ce) is the well-known Hicksian equivalent variation (Hicks, 1943). In terms of Figure 1, the cash equivalent would be the smallest cash-income transfer that would keep the consumer on the indifference curve that passes through B. The amount of total income which would leave the medical-transfer recipient equally well-off would be OC, OC', or OC" depending upon the contours of the indifference curves (i.e., depending upon the marginal rate of substitution of medical care for other goods and on the position of the utility function as determined by the Engle Curve for medical care). The size of the cash-equivalent transfer (ce) would be the difference between the new income level and OD. The shape and

Figure 1

Approaches to Valuing Medical Transfers:
The Medicaid Example



position of the utility surface is crucial to establishing the ce.[5] If the recipient chose to consume to the right of B (more medical care than OJ), the utility approach would provide the same estimate as the government-cost figure. In such a case, the transfer would only substitute for the amount of medical care which the recipient would have consumed if presented with an equal cash transfer.[6]

The third alternative for valuing medical care transfers is the funds-released approach. Medical transfers are valued at the amount of funds released to be spent on other goods. In Figure 1, illustrating a "two-good" case, the first step is to find the level of income at which the recipient would choose to spend OA on other goods. This occurs at income OR(=OP), where the recipient consumes ON units of medical care. The value of the transfer is DR (=ON). Implicitly, this approach values the remaining medical care transfer RS (=DS-DR) at zero, and thus is hardly a defensible choice.

For purposes of poverty measurement, however, a modified funds-released approach might be acceptable. Since the official government poverty lines are calculated on an "objective consumption-needs" basis, the "food times three" formula on which poverty lines are constructed (Orshansky, 1965) carries with it the implicit assumption that some amount of expenditure for medical care is budgeted into the poverty line. Hence, one might argue that medical care transfers should be constrained to fulfill no more than the medical care budget requirement. For instance, if OP in Figure 1 were the official government poverty threshold for a particular fmaily, we could estimate the amount of medical care that families at this income level would consume (ON) and subtract this from OR for medical transfer recipients, creating a "new" poverty line (OD).[7] The logic implies that since recipients of medical transfers no longer need bear any out-of-pocket costs for medical care, their cash income need only be above

the "new" poverty line (OD) for them to escape poverty. This procedure technically prohibits large medical transfers from raising individuals (or families) above the poverty thresholds. Recall our earlier example of elderly couples. The large size of Medicare and Medicaid benefits, when valued on a government-cost basis, pushes many elderly people over poverty thresholds even though other consumption needs remain unmet. The funds-released approach prevents such an occurrence.

The funds-released approach captures a lower-bound estimate for medical care because it implicitly assumes no substitution of medical care for other goods and services. This contrasts with the government-cost alternative, which assumes no constraints on the transferability of the medical care voucher, and hence represents an upper bound on estimates of the value of medical care transfers.[8] The cash-equivalent approach, based on the rate of substitution among medical care and other goods, will normally fall between these two extremes.

2. ESTIMATING THE VALUE OF MEDICAL CARE TRANSFERS: CONCEPTUAL AND PRACTICAL PROBLEMS

A number of complications arise when one attempts to apply any of the theoretical constructs discussed above to available data in order to estimate their impact on poverty. Since the specific estimation techniques for identifying both benefits and beneficiaries may have a substantial impact on the results it is important to consider explicitly the choices available for defining and allocating medical care benefits.

Defining Total Benefits

The first problem occurs in trying to identify those medical-transfer benefits which should be included in the analysis. No current source of national data adequately captures both eligibility and the government cost of providing benefits.

Hence, one must stochastically impute available benefits to the appropriate recipient population, by using exogenous control data which relate to the amount and type of benefits received. Because this is very difficult to do, only the Medicare and Medicaid programs are examined. Together, Medicaid and Medicare (including Supplemental Medical Insurance) account for about 85% of all government medical care transfers. (The remaining programs, especially Veteran's Medical Care and Worker's Compensation medical benefits, cannot be handled for our purposes with available data.[9]) Once benefits have been imputed, government cost is obtained by adding administrative costs to total benefits. In the ce case, however, one must further estimate recipient willingness to pay for available benefits. When using the funds-released approach, one may circumvent problems in imputation by assuming that the relevant medical care transfers cover a fixed proportion of those consumer health-care costs which are budgeted into the poverty line. The value of medical care transfers for each appropriate unit can be derived from survey data on consumer expenditures. Such data includes, consequently, budget shares for medical care at poverty-line income levels.

Allocating Benefits Among Recipients

To obtain numbers of recipients and average benefits, we must divide total benefits among the recipient groups. Hence, the principal problem is a conceptual one: a choice must be made between two alternative assignments of benefits. The first treats eligibility for a medical care transfer as an insurance policy; the benefit is viewed as a nontransferable right granted to all eligible persons whether or not they actually consume any medical services. A more direct alternative assigns medical-transfer benefits on the basis of the amount reimbursed to the vendor for medical care services actually consumed.

The first approach assumes that the right to medical care itself has a value greater than zero to all eligible participating individuals, while the second alternative implies that medical transfers have value only when medical services are actually rendered. Moreover, the number of beneficiaries will vary, with the insurance approach including not only medical-service consumers but also those eligible and not currently receiving medical care. Use of the benefits-received technique is likely to attribute higher amounts of benefits to a smaller number of beneficiaries. The impact of this technique on poverty estimates will depend upon how far recipient families are from the poverty line, and upon what indicator of poverty is used. For example, if the lower insurance benefits are not sufficient to raise persons over the poverty line, the benefits-received approach could be expected to have a greater impact on poverty reduction (even though this technique applies benefits to fewer recipients). [On the other hand, the insurance-value approach will have a greater impact on the poverty gap (the aggregate difference between the incomes of the poor and their poverty lines) since there will be less chance of benefits appearing beyond recipients' poverty lines.] Finally, counting only the benefits received results in the bizarre situation whereby eligible individuals suffering the most severe health problems and, consequently, receiving greater medical benefits, are counted as "better off" than a healthy individual with equal or other income.

Whichever choice of benefit assignment is employed, some additional problems, closely linked to data availability, arise. For the benefits-received approach, we need data on specific amounts of health care consumed by various types of individuals in various situations, in order to construct stochastic distribution models of services provided. Unfortunately, there is no data available on the joint distribution of benefits by type of care provided and by recipients' characteristics, nor is there data on a national basis on persons receiving multiple

services. Consequently, another disadvantage to the benefits-received alternative is that it is nearly impossible to identify actual amounts of medical care consumed by recipients. Moreover, if substantial amounts of medical care are consumed shortly before death, e.g., during long expensive hospital stays complete with operations and the use of intensive care facilities, many actual recipients of multiple medical transfers may not be counted among the poor.[10]

On the other hand, the insurance treatment of benefits requires a measure of government cost spread over the total population which is eligible for medical care transfers. Even this measure presents problems, especially for examining Medicaid.[11] There are several ways to estimate Medicaid eligibility, each of which contains its own biases. Ideally, one might count all those with Medicaid identification cards as eligible for benefits. However, there are no national data on Medicaid cardholders. In the absence of such data, one might estimate eligibility by a two-fold process. First, virtually all recipients of public assistance in cash (AFDC, SSI, general assistance) are categorically eligible for Medicaid. Further, in 29 states plus the District of Columbia, other medically needy families are also eligible for Medicaid benefits. The medically needy are those persons who meet the basic demographic eligibility requirements for cash assistance (persons who are aged, blind, disabled, or families deprived of parental support) but whose incomes exceed the eligibility standards for cash assistance. The families of such persons may qualify in two ways. First, families may have incomes and assets below the Medicaid qualification levels (which in most states are above the cash assistance eligibility standards). Second, families whose medical care expenses are large relative to their incomes may qualify by "spending down" (i.e., by spending a large enough proportion of their incomes) to meet the state eligibility cutoffs. Some low-income families above

the cutoffs have a high probability of becoming eligible after spending down, but are not included in the estimates in this lower-bound approach.[12] Only those families not on public assistance who qualify for benefits on the basis of their current incomes (gross of medical expenses) are included as both medically needy and eligible in this case.

However, it is also possible that this "conservative" estimation procedure could overstate the number of those eligible, if, for example, persons classified as eligible do not participate in the program, due to insufficient knowledge of its existence, lack of information on how to go about qualifying for benefits, or costs associated with actually receiving benefits. This type of problem is particularly important for rural poor families[13] and central city residents, for whom many types of medical care may be unavailable or available only at the cost of considerable time and money.

Determining the length of time persons eligible are assumed to receive benefits poses an additional estimation problem. Because there exist no data on the length of time people receive (or qualify for) cash assistance compared to the annual income data used to estimate the poor, some categorically eligible families may be eligible for Medicaid for only part of the year. Since annual income figures are used to determine eligibility, and to measure benefits, we may overestimate or underestimate both the amount of time a person is eligible for medical care benefits, and the benefits themselves. The use of annual data automatically suppresses at least some of the variance in the amount of insurance benefits for which an individual is actually eligible.

One important category of recipients, ignored by the Current Population Survey (CPS) poverty estimates but receiving large medical transfers, are skilled-nursing-facility (SNF) and intermediate-care-facility (ICF) Medicaid

beneficiaries.[14] In 1976, 38 cents of each Medicaid dollar were spent for SNF and ICF services. Obviously, treatment of these benefits and beneficiaries affects the apparent impact of Medicaid on the poor. One could exclude SNF and ICF benefits, counting as eligible only families which the Census defines as poor. However, because these benefits are large, benefits from Medicaid are seriously understated.[15] On the other hand, one could include these benefits, estimate the additional ICF-SNF recipients not counted by CPS, and add them to those the CPS defined as eligible. This second alternative is more consistent with the assignment of benefits by an insurance technique, assuming that poor families--particularly, the aged poor--are willing to pay for insurance which provides support in situations where institutionalized care is necessary.

Finally, we must consider the degree of disaggregation occurring among recipient categories, particularly by location and by individual characteristics. Expenditures for Medicaid vary widely by state and by type of recipient. For instance, in 1975 average benefits for elderly and disabled recipients were $970 and $1030 respectively, while average benefits for children and other adults were only $185 and $378 respectively. In addition, benefits vary widely not only within eligibility categories but also among states. On average, an elderly Medicaid recipient in Connecticut in 1975 recieved $2709 in benefits, while his (her) counterpart in Missouri received only $303 (U.S. Department of Health, Education and Welfare, 1978). Benefits also vary by eligibility status--that is by whether or not a person is eligible for cash public assistance, and by race and place of residence (rural vs. urban). For instance, in 1974, average Medicaid payments per white beneficiary were $560, 75% greater than the $321 average payment per nonwhite beneficiary (Congressional Budget Office, 1977a:18). All of these differences ought to be taken into account in

determining the value of benefits per recipient (in both the benefits-received and insurance-value schemes).

Estimating the Utility Function

The benefit allocation and valuation problems discussed above confront all three conceptual approaches discussed in Section 1. Use of the utility or ce approach poses an additional problem in that it requires the estimation of a utility function for eligible families. The usual procedure is to specify some type of utility function for all persons eligible, to determine the level of utility attained after the benefit is received, and then to estimate the amount of total cash income which would make the eligible family as well off (I'). The cash equivalent (ce) is then equal to $I'-I^{o}$ where I^{o} is the original income of the family. In following such a procedure the researcher encounters several difficulties. The specification of the budget constraint contains two troublesome dimensions. First, when a person receives several types of in-kind benefits (e.g., both food stamps and Medicaid) cash income is not the relevant budget constraint. We must take account of the income value of other in-kind transfers as well. Secondly, low-income people, on the average, dissave.[16] If cash income is used as a budget constraint, we fail to include dissaving. Therefore the estimated ce will be less than if we were to use total annual consumption expenditures as a budget constraint.

Regardless of the budget constraint, the choice of a utility function, with its particular parameters, may effectively determine the results of the simulation. Most empirical utility functions require data on medical care and other prices, as well as data on income elasticities for medical care consumption and on the elasticity of substitution between medical care and other goods. In order to take account of differences in medical care expenditures by place,

income level, and family size and structure, we need a large source of data. The only such data available on a nationwide basis are found in the Bureau of Labor Statistics Consumer Expenditure Survey (CES) for 1960-61 and 1972-73. Unfortunately, this data base is beset with several shortcomings. Most importantely, for our purposes is the lack of data on Medicaid, Medicare, and employer-subsidized health insurance. Becuase the CES is designed to measure out-of-pocket expenditures for medical care, drugs, and health insurance, the medical care consumed by recipients of Medicaid, Medicare, and employer-subsidized health insurance, as reported, is biased downward. Moreover, no data on SNF or ICF expenditures are available from these surveys unless they are captured as part of out-of-pocket insurance payments. Thus the relevant parameter, consumption of medical care in the absence of government or employer subsidies, cannot be estimated accurately. The CES estimates of medical care consumption are biased downward. (The funds-released approach also faces these same consumption data problems when it is used to determine the budget share for medical care expenditures at poverty-line income levels.)

Microdata vs. Aggregate Data

One final approach which needs mention is the use of microdata for imputing medical care transfers to various groups of individual recipients. Given the wide variation in medical-transfer eligibility and in the subsequent benefits received according to location and eligibility status, it is practically impossible to get an accurate picture of the effect of medical transfers on poverty if one must rely solely on published data. For instance, Morton Paglin (1979) uses published CPS income data in determining the effect of medical transfers on poverty. The use of such data precludes analyzing the direct distribution of medical benefits to eligible persons on a disaggregated basis. Therefore, Paglin

is forced to use a 1973 estimate of the Council of Economic Advisors (Economic Report of the President, 1974:176) suggesting that 70% of Medicaid recipients in that year were poor. On this basis Paglin allocates 70% of all Medicaid benefits to the poor. Our estimates of microdata for 1974 indicate that, using Paglin's definition of pretransfer poor, only 52% of Medicaid recipients were poor, and that they received 47% of all Medicaid benefits. Moreover, Paglin's use of aggregate published data prohibits estimates of the differential impact of medical care transfers on specific groups of recipients, e.g., the elderly. This differential impact will be shown to be quite significant in the next section of the paper.

3. OUR PROCEDURES FOR DETERMINING THE IMPACT OF MEDICAL TRANSFERS ON THE POOR

In this section, we review our approach to estimating the effects of Medicaid and Medicare on poverty in 1968 and 1974, using Current Population Survey (CPS) data. We present sets of estimates based on all three valuation approaches, including three separate estimates of the cash-equivalent value of medical care transfers. Three different income concepts are employed. First, we use original Census income (ORGINC) as defined by the U.S. Department of Commerce (1978); second, we adjust Census income for underreporting **and federal** income tax and OASDHI payroll tax liabilities (CSHINC). Finally, to CSHINC we add an estimate of the cash-equivalent value of Food Stamps (CFSINC).[17] To each of these income concepts we apply various measures of the value of medical care transfers.

To obtain an insurance-value estimate of medical-transfer benefits on a government-cost basis, we include total vendor payments for Medicaid and Medicare (including administrative expensed estimated at 4% of benefits), distributed

across the eligible population. ICF-SNF payments are included in the Medicaid figures.[18] Medicaid eligibility is imputed based on state income and asset eligibility qualifications as described in Section 2. Separate insurance values are calculated by the type of person eligible (elderly, disabled, child, or adult), the state of residence, and the public assistance status of recipients (U.S. Department of Health, Education and Welfare, 1972, 1977, 1978).[19] After these adjustments, we estimate that 32.3 million people were eligible for Medicaid in 1974.[20] For Medicare, all elderly persons and a small number of nonelderly Disability Insurance recipients are assumed to have participated. The estimated insurance values (net of participant premiums for Medicare-SMI) vary only by state of residence (U.S. Department of Health, Education and Welfare, 1972a, 1976). On this basis, $7.5 billion of medical care transfers were distributed in 1968, while the 1974 total was $23.1 billion.

The lower-bound funds-released estimate is derived by assuming that families eligible for Medicaid and/or Medicare at poverty-line income levels spent the same proportion of their incomes on medical care as did similarly situated families in 1972-73. The amount of medical care expenditure at poverty-line income is calculated from the CES, and includes out-of-pocket expenditures for health insurance, medical care, and drugs. Separate estimates are made for families of different sizes and ages of head. This dollar amount of expenditure is subtracted from official U.S. government poverty lines for families of given size and structure who were eligible for Medicaid (or for both Medicaid and Medicare).[21] For families eligible only for Medicare, the full out-of-pocket medical costs are not subtracted. Since Medicare meets only about 45 to 60% of the health care needs of the elderly, this program does not fully offset out-of-pocket medical expenses. Hence, the adjusted poverty-line figure for someone eligible only for Medicare is higher than it would be if that individual were also eligible for Medicaid. No adjustments in the poverty lines are made for families

ineligible for both programs. Appendix Table A-1 presents the "new" poverty lines as a percentage of the official poverty lines.

Three estimates of the cash-equivalent value of Medicaid and Medicare are presented. One set of estimates--based on what is called "own cash equivalent"--has been published elsewhere (Smeeding, 1977; Danziger and Plotnick, 1980). The estimates are derived as follows:

a. Add the government cost of Medicaid and/or Medicare on an insurance-value basis (M) to cash income (Y_o)[22] net of federal taxes, yielding adjusted income ($\hat{Y}$).

b. At an income level ($\hat{Y}$), find the amount of expenditure on medical care for a family of similar size, structure and income level from the 1972-73 CES ($C_m = C_m(\hat{Y})$).

c. If $C_m(\hat{Y}) \geq M$ $\quad \underline{ce}_m = M$

If $C_m(\hat{Y}) < M$ $\quad \underline{ce}_m = C_m(\hat{Y})$

where $\underline{ce}_m$ is the cash equivalent value of medical care transfers.

Note that this rough estimate of cash-equivalent value represents a lower bound on $\underline{ce}_m$ since in cases where $c_m(\hat{Y}) < M$, we constrain $M - c_m(\hat{Y})$ to be zero. The estimates of $\underline{ce}_m$ total $5.3 billion for 1968 and $15.7 billion in 1974--roughly 65 percent of total government cost.

The other two sets of cash equivalent estimates are based on an HEW contract report (Cooper and Katz, 1977). In that study, the authors estimated $\underline{ce}_m$ using four separate utility functions[23] and 1972-73 CES consumption data. For each income level they present estimates of the ratio of $\underline{ce}$ to government cost.[24] Two additional variations must also be considered when interpreting their results. First, their estimated utility functions are based only on CES out-of-pocket expenditures on health insurance. If Medicaid substitutes for other out-of-pocket

medical-care expenditures and/or drugs, these $\underline{ce}_m$'s will be biased downward. Second, instead of imputing state specific Medicaid insurance values, they assigned recipients the U.S. average value of Medicaid, differentiated by age of head, family size and structure, and whether the eligible family rented or owned its own home. An elderly individual, for instance, they assigned recipients the U.S. average value of Medicaid, Medicaid (plus 17%) instead of a state-specific amount. We start with the Cooper and Katz estimates of the highest and lowest ratio of $\underline{ce}_m$ to subsidy cost by family size and age structure at each income level,[25] but then we multiply these ratios by our insurance values in order to arrive at rough upper- and lower-bound estimates of $\underline{ce}_m$.

4. THE IMPACT OF MEDICAL CARE TRANSFERS ON POVERTY

Tables 1 and 2 contain the results of our simulations. In column 3 of each table we estimate, on the basis of each of our three income concepts, the number of people who are poor. In columns 4 through 8 we calculate the marginal effect of including medical care transfers based on the three general approaches reviewed above: government cost (column 4); funds released (column 5); and cash-equivalent value (columns 6,7, 8). Table 1 presents these estimates for 1968 and 1974. Table 2 disaggregates the 1974 results into the impact medical care transfers on poverty for elderly and nonelderly persons.

The overall impact of medical care transfers on poverty is substantial. In 1974, as can be seen by looking across the rows and comparing Columns 3 and 9, medical-care transfers reduced poverty by an average of 14 to 16%. Further, although Column 3 shows that little general progress in poverty reduction occured between 1968 and 1974 (especially in terms of ORGINC or CSHINC), the impact of

Table 1

The Effect of Medical Care Transfers on Poverty in 1968 and 1974
(Millions of Persons in Poverty)

Year	Income Concept	Number of Poor Based on Income Concept	Number of Poor Based on Income Concept Plus: Government Cost	Funds Released	Own Cash Equivalent	Cooper-Katz Cash Equivalents: Upper Bound	Cooper-Katz Cash Equivalents: Lower Bound	Average Impact[4]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1968	ORGINC[1]	24.2	21.0	21.9	22.0	21.8	22.9	21.9
	CSHINC[2]	21.6	19.0	19.8	19.7	19.3	20.6	19.7
	CFSINC[3]	21.5	18.9	19.7	19.6	19.4	20.5	19.6
1974	ORGINC	23.4	17.9	20.6	19.3	19.2	20.8	19.6
	CSHINC	21.4	17.1	19.1	18.1	18.0	19.8	18.4
	CFSINC	19.7	15.5	17.2	16.4	16.0	17.9	16.6

[1]ORGINC is official Census income.

[2]CSHINC is official Census income adjusted for income underreporting and federal income and OASDHI payroll tax liabilities.

[3]CFSHINC is CSHINC plus the cash equivalent value of food stamps.

[4]Average impact is the average of columns 4 through 8.

Table 2

The Effect of Medical Care Transfers on Poverty Among the Elderly and Nonelderly, 1974
(Millions of Persons in Poverty)

Group	Income Concept	Number of Poor Based on Income Concept	Number of Poor Based on Income Concept Plus:					
			Government Cost	Funds Released	Own Cash Equivalent	Cooper-Katz Cash Equivalents: Upper Bound	Cooper-Katz Cash Equivalents: Lower Bound	Average Impact[4]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ELDERLY	ORGINC[1]	3.9	1.5	2.5	2.2	1.9	2.7	2.2
	CSHINC[2]	2.8	1.0	1.8	1.5	1.3	2.0	1.5
	CFSINC[3]	2.3	.9	1.5	1.1	1.0	1.7	1.2
NON-ELDERLY	ORGINC	19.0	16.4	18.0	17.1	17.3	18.4	17.4
	CSHINC	18.6	16.1	17.3	16.6	16.7	17.8	16.9
	CFSINC	17.3	14.6	15.7	15.3	15.0	16.2	15.4

[1]ORGINC is official Census income.

[2]CSHINC is official Census income adjusted for income underreporting and federal income and OASDHI payroll tax liabilities.

[3]CFSINC is CSHINC plus the cash equivalent value of food stamps.

[4]Average impact is the average of columns 4 through 8.

medical transfers increased markedly over this period. In 1968, medical care transfers reduced poverty by only about 9% (vs. the 14 to 16% for 1974). Consequently, comparisons between 1968 and 1974 in Column 9 display a greater decline than when only cash income changes are used (Column 3).

Looking across any one row at Columns 4 through 8 provides a comparison of the alternative estimates of the impact of Medicare-SMI and Medicaid. Regardless of the alternative employed, the range of estimates remains less than 2 million persons in 1968 and less than 3 million in 1974. Considering the variety of techniques employed in arriving at these estimates, their similarity is striking. Even when we count medical transfers at government cost, that is, treat them in exactly the same way as cash income, their net effect on the estimation of poverty is not much different than when we use alternative techniques. Thus, even the most optimistic measures of the value of these medical transfers are unable to elicit large declines in the poverty estimate over the lower-bound figure.

The consistency of these estimates may be explained by several factors. First, we have unilaterally utilized the insurance value (vs. the benefits received) approach. What would have happened had we used the alternative approach? In their work on the problem of medical transfers and poverty, researchers in the Congressional Budget Office (1977) used the government cost approach and the benefits received technique to estimate the impact of medical care transfers on poverty in 1975-76. Using an income definition roughly comparable to our CFSINC[26] they estimated that 18.8 million persons were poor. After including $27.8 billion of Medicaid and Medicare, they found a 27% decrease to 13.8 million poor persons. Thus, when a government-cost approach on a benefits-

received basis was used in 1975-76, $27.0 billion of medical transfers appeared to have had the marginal impact of reducing the numbers of the poor by 5.0 million persons (27%). The figures in Table 1 for 1974 indicate that on a government-cost approach, but an insurance-value basis, $23.1 billion of medical transfers reduced the number of those in poverty by 4.2 million persons (21%). Ignoring differences between years and among other programs covered, the benefits-received approach, as predicted in Section 2, reduces the poverty count by a larger percentage, and results in a larger drop per dollar of medical transfer, than the insurance-value approach.

Secondly, the estimates based on our cash equivalent figures (Column 4) used the same CES consumption data and medical-expense concept as was used in the funds-released approach. Given the similarity between our technique for estimating ce's (constrained to be no more than medical care consumption shares at a given income level) and the funds-released approach (lowering the poverty line by medical care consumption shares at given poverty income levels), it is not surprising that the lower bound funds-released approach is not much different from our ce approach.

What explains the similarity of the other estimates? The answer rests with one common element underlying all of the estimates presented--the distribution of persons eligible for Medicaid. Given the distribution of such persons, insurance values are apparently adequate to remove most recipients from official poverty, whether we use the full government cost (Column 4) or some fraction of that cost (i.e., cash equivalents as in Columns 7 and 8, or even funds released, as in Column 5). Thus, even the range of ce ratios to insurance value between the Cooper-Katz upper- and lower-bound estimates (Table A-2) does not yield substantial differences in poverty estumates. This suggests that the issue which Medicaid needs to address is not the adequacy of benefits

but the fact that many of the poor are ineligible for those benefits. In 1974, less than 60% of the CSHINC pretransfer poor were eligible for medical care transfers. Moreover, 10% of these pretransfer poor received only Medicare. Despite popular belief, then, only about half of the poor are eligible for Medicaid.[27]

Changes in Medicaid could substantially reduce this newly discovered population, and in so doing, substantially reduce the severity of income poverty. For example, Medicaid coverage could be extended to unemployed fathers in those 24 states that do not at present cover them, while all states could be required to provide benefits for the medically needy whose income (net of medical expenses) falls below a national minimum income level. In 16 states, there is no Medicaid provision for either unemployed fathers or for the medically needy in low income families.[28] Medicaid could also be extended to low-income individuals who do not have dependent children. Alternatively, the categorical requirements could be eliminated entirely, and eligibility could be based only on financial criteria. These changes would greatly decrease the number of newly discovered poor persons, thus enrolling most of the poor in the Medicaid program.[29]

The various techniques for valuing medical transfers yield similar results in total counts of the poor. This may not be the case for all subgroups of the poor. In Table 2, we consider the antipoverty effect of medical care transfers separately upon elderly and nonelderly persons. All of the elderly are assumed to be eligible for Medicare, and most low-income elderly persons are also assumed to qualify for Medicaid. The combined insurance value of Medicare and Medicaid in 1974 was nearly $1500 for each elderly individual. Therefore, the effects of medical transfers on the aged have been substantial. Looking across any one

row (comparing Columns 3 and 9) we find that medical care transfers reduce poverty among the aged by about 45%. In contrast, for persons who are not elderly, these reductions are on the order of 8 to 11%. These figures are not surprising. For 1975, adding the SSI guarantee and the cash-equivalent value of Food Stamps together, we find that an elderly couple who received them would have risen to within $200 of their poverty line. At a minimum, the cash-equivalent value of Medicare (and in most cases Medicaid as well) brings such families well above their poverty line.[30] The dramatic declines in poverty experienced by the elderly, relative to nonelderly persons, underscores the importance of medical transfers for reducing poverty. The nonelderly experience substantive gaps in coverage. Similar differentials in the poverty impact among groups can be noted when comparing urban to rural poor and white to nonwhite poor.

Disaggregating the impact of medical transfers on the extent of poverty among the elderly highlights the importance both of choosing among the various procedures for estimating medical transfers, and of weighing their implications carefully. Using CFSINC, poverty among the aged falls from 2.3 million persons to either .9 (Column 4) or 1.7 (column 8) million persons--a drop of either 61 or 26%. When upper-bound estimates are used, the large average dollar benefit to aged beneficiaries will move many persons with very low cash incomes across poverty thresholds. Congressional Budget Office researchers, (1977:12) examining households headed by elderly persons rather than the elderly population as a whole, found that medical care transfers reduced poverty among elderly households by a similar proportion (57% on a benefits-received and government-cost basis). The theoretical justification for each technique is thus clearly very important in any discussion of the number of the aged who live in poverty.

5. CONCLUSION

This paper explores the choices and potential biases involved in valuing one type of government expenditure, the medical care transfers, and in estimating its antipoverty impact. Three methodological approaches--(a measure of) government costs, (a measure of) cash-equivalent values and (a measure of) funds released--are contrasted. We assign benefits to individuals after assuming that Medicare and Medicaid provide insurance to all those who are eligible. The resulting estimates for 1968 and 1974 illustrate the efficacy of these medical transfers in reducing the number of persons in poverty. A recent study by the Congressional Budget Office further highlights the importance of medical transfers for estimating poverty. Our results indicate that in the aggregate, the specific choice of an estimation approach has little effect on poverty estimates. However, for the elderly, choice of estimation technique is quite crucial for estimating the extent of poverty.

NOTES

[1]See Smeeding (1977) or Congressional Budget Office (1977). Paglin (1979) finds even larger differences, but his estimates are, we believe, faulty due to various technical issues, some of which will be briefly mentioned later in the paper.

[2]These figures are taken from The Budget of the United States Government, Fiscal Year 1978, Appendix.

[3]Smeeding (1977). The pretransfer poor are those who are still in poverty after accounting for underreporting, taxes, and all cash transfers. One reason for the low estimate of medical transfer benefits reaching the poor is that Medicare expenditures ($21.0 billion in 1977) are not income-tested. Only 10.8% of Medicare benefits, as compared to 49.2% of Medicaid benefits ($17.2 billion in 1977) reached the pretransfer poor in 1974.

[4]In the case of Medicare-Supplemental Medical Insurance (SMI) the budget constraint would be shifted to AHES because SMI requires payment of an insurance fee (AF). Otherwise the analysis remains the same for both programs. An alternative theoretical approach might treat these transfers, especially Medicare, as a price subsidy. Indirect recipient costs, i.e., the time and money costs associated with actually receiving medical care services, are not considered here.

[5]Additional research on estimating the cash equivalent value of various in-kind transfers has been done by Smolensky et al. (1977); Kraft and Olsen (1977); Murray (1975); Peskin (1977); Smeeding (1975, 1977); and Cooper and Katz (1977).

[6]This equivalence implicitly assumes that the cost of obtaining the medical care transfer and the cash transfer are identical, even if the cost is more than zero.

[7]Actually, this approach differs somewhat from a "pure" funds-released approach. For families with incomes below the poverty line, medical care expenditures will be less than medical-care expenditures for families with incomes at the poverty line. For these people, actual funds released would be less than funds released at the poverty line. However, these differences are quite small and have no measurable effect on poverty status. Moreover, it is not clear at which income level "pure" funds released should be calculated. In our figures, if we begin at original income level OA, only OM is spent for medical care and, hence, only this much is released for other consumption. However, in our example ON is calculated after amount of funds released, since the consumption share is calulated after receipt of the medical care transfer (i.e., based on budget constraint OABS, not on OAD). While it is not clear which concept of funds released is appropriate, it is clear than any version of this approach will understate the true welfare value of the transfer.

[8]If the medical-transfer recipient were forced to purchase equivalent private medical services, the cost might well exceed the government cost. Hence, this alternative may not be a "true" upper bound. No attempt will be made to account for such situations here, although they may occur to certain chronically or acutely ill medical-transfer recipients.

[9]The benefits from Veteran's Medical Care and Worker's Compensation medical benefits are not insignificant--totalling $7 billion in 1976 (Social Security Bulletin, 1979, Table M-2). However, the Veterans'

program applies in large part to those with severe service connected disabilities. Many of these are institutionalized persons omitted from Census poverty figures. The remaining 50% of benefits apply to fewer than one million veterans with nonservice-connected health problems (U.S. Congress, 1974, p. 216), who qualify on the basis of medical indigency or receipt of veterans' pensions. The families of these individuals are not covered, but may receive Medicare and/or Medicaid. Recipients of medical benefits from the Worker's Compensation program are also difficult to identify. $2.3 billion which was awarded in 1976 was directed at work-connected disabilities and on-the-job injuries. Consequently, these medical payments do not cover normal family medical expenses and are not confined to low-income groups. Finally, the remaining medical programs--Indian Health Services, public health services, the Maternal and Child Health Care program, and other temporary-disability health care expenditures--are also omitted. The total expenditures for these programs in 1976 was under $1.4 billion, with public health accounting for over $.9 billion.

[10]This anomaly arises simply because the poor population in a given year is determined by an interview survey which takes place in March of the following year. Needless to say, the dead do not appear!

[11]In the case of Medicare, the vast majority (96%) of persons eligible are those age 65 or over (mainly those with OASDI benefits or Railroad Retirement benefits). Other eligible groups include chronic renal disease patients and some Social Security disability insurance recipients.

[12] Such a procedure would surely increase the estimated number of persons eligible for Medicaid. Whereas an increase in this number reduces the insurance value of Medicaid for previously eligible poor individuals, newly eligible families are often not poor, since they qualify for Medicaid because of heavy medical expenses rather than low incomes. On the other hand, there is growing evidence that states are cutting back on Medicaid expenses by reducing income levels qualifying persons as medically needy to the level or even below the level which qualifies them as eligible for cash assistance (Davidson, 1979). As the concept of medical indigency is further and further eroded, fewer families become eligible for Medicaid on the basis of medical need. In sum, not including those who would qualify for Medicaid by spending down to qualifying income levels is a decision which will probably have little effect on the extent of poverty.

[13] However, 60% of the nonmetropolitan poor reside in Southern states which have relatively small cash assistance populations and which do not generally have provisions for the medically needy. Of all Southern states, only Kentucky, North Carolina, and Virginia provide such services. Hence, many low-income rural families are ineligible for Medicaid to begin with.

[14] Medicaid also benefits a much smaller number of Medicaid recipients who reside in hospitals for the mentally ill. All SNF, ICF and mental hospital Medicaid recipients are treated by the Census as residing in group quaters, i.e., as institutionalized, and are on these grounds excluded from the official poverty count.

[15] On a benefits-received basis, we would have to exclude benefits (including additional non-SNF/ICF medical care benefits) paid to those who

are excluded from the CPS population. Because CPS information on the poor is collected in March following the year for which poverty counts are estimated, one must adjust benefits to take account of those who are not in an SNF or an ICF in March, but who were in such a facility in the previous year. Because data is not available, such a process presents many difficulties (Uhalde, Allen, and Beebout, 1977).

[16] The U.S. Department of Labor (1978) Consumer Expenditure Survey indicated that average current consumption expenditures exceeded pretax income up to approximately $4800 of income in 1972. The poverty line for a nonfarm family of four persons was $4275 in 1972 (U.S. Department of Commerce, 1978).

[17] The exact mechanics of the adjustments for income underreporting, tax liability, and the receipt of Food Stamps are contained in Smeeding (1975, 1977).

[18] Again, we face the problem of including in our estimates only those who were in an ICF or SNF at the time of the survey. Adjustments need to be made not only for those who were in these facilities during the previous year, but also for those who died before the next March CPS survey. For our empirical calculations, we have made such adjustments using HEW data, the CPS Survey of the Institutionalized, and state data regarding the disposition of SNF and ICF populations at the time they left each facility.

[19]To a large extent, such controls effectively account for racial differences and urban-rural differences as well, despite the fact that the size of the data base did not permit us directly to control for these differences. Data tabulations separating benefits by race and urban-rural residency produced patterns of benefit recipiency which compared well to those cited by others (Congressional Budget Office, 1977a; Davis and Schoen, 1978).

[20]U.S. Department of Health, Education, and Welfare (1977, 1978) estimated that there were 22.2 million Medicaid recipients in 1974. Hence, we estimate that recipients were 68.7% of all those eligible for Medicaid in that year.

[21]Because elderly families spend 50 to 60% more on health care than do economically similar younger families, the adjusted poverty line will now be higher for these younger families. In addition, while no CES data were available to confirm that the disabled spend a larger proportion of their incomes on health care, it was assumed that nonelderly Medicare recipients (about 1.3 million disabled persons in 1974) spent the same percentage of their incomes on health care as elderly recipients of Medicare in families of similar size.

[22]In our estimates we have taken account of the recipient of multiple benefits, thus when using the income concept CFSINC, $\hat{Y} = Y + FSB_s$ were FSB_s is the bonus value (i.e., the net value over and above the purchase requirement) of food stamps. On average, the ce_m on this basis differ only slightly from those calculated assuming $Y = Y_o$. Again, however, in estimating the $\underline{ce}_m$, we took into account both age and the fact that Medicare-SMI accounts for only 45-60% of the medical expenses of the aged.

We have also limited the budget constraint to income, rather than total consumption expenditures. We have not used the budget constraint reflecting

more generous total consumption, primarily because Census poverty figures are based on annual income, and also because microdata on total expenditures are only available for 1972-73. If such data were generally available, the use of total consumption expenditures as a measure of economic status would yield smaller estimates of the number of people in poverty.

[23]These utility functions were: Cobb-Douglas; Stone-Geary: Constant Elasticity of Substitution; and Variable Elasticity of Substitution.

[24]They arrive at their government-cost figures by taking medical expenditures and multiplying them by 1.17 in order to account both for administrative costs and for "normal" profits as estimated by Rosett and Huang (1973). This estimate of government cost is 13% higher than our calculations, which include on only a 4% increase for administration.

[25]These ratios are taken from Appendix F, Cooper and Katz (1977), and are displayed in our Appendix Table A-2.

[26]The CBO included $4.2 billion of Child Nutrition and Housing Assistance Benefits, while CFSINC does not. In addition, the CBO poverty estimates presented below come from a tabulation which excludes $4.7 billion of the medical benefits presumed to accrue to the institutionalized population (Uhalde, Allen, and Beebout, 1977). The CBO "persons" poverty counts come from unpublished CBO data made available to us by William Hoagland, to whom we are grateful.

[27]Using CFSINC, 5.8 million of the 16.4 million people in poverty were ineligible for medical care transfers. It should again be noted that the estimates provided here assume that all eligible persons participate in the Medicaid program. The problem cited here is exacerbated to the extent that persons eligible for Medicaid fail to participate, whether their failure is due to lack of access (e.g., the

rural poor) or to lack of information on how to apply.

[28]Only 19 states both extend AFDC (and hence categorical Medicaid eligibility) to unemployed parents in two-person households, and allow Medicaid benefits to the medically needy.

[29]President Carter has recently suggested that changes in Medicaid similar to those suggested here be included in a new national health-care package for the U.S.

[30]This assumes that all elderly couples participate in SSI, which is not the case. In fact, only about 50% of elderly persons eligible for SSI participate in the program (Warlick, 1978:1). In practice, those who do not participate receive less cash income and lessened eligibility for Medicaid in states which have no provisions for the medically needy.

Table A-1

Poverty-line Adjustments for Medical Care Transfer Recipients

Family Size	Age of Head	Medicare Only	Medicaid Only	Both
1	65 or older	91.0	NA	84.5
1	under 65	91.0	90.9	88.0
2	65 or older	88.7	NA	81.0
2	under 65	88.7	89.0	85.0
3	all	95.0	89.0	90.0
4	all	95.0	90.8	90.0
5	all	95.0	91.8	90.0
6 or more	all	95.0	91.8	90.0

Note: "Recipients" are those who are eligible for either Medicaid or Medicare, or both. For persons receiving Medicaid and Medicare, "new" poverty line is shown as a percentage of the official poverty line. For "nonrecipients, the "new" poverty line equals the official poverty line.

Table A-2

Cash Equivalent Simulations
Ratios of Cash Equivalent Value to Subsidy Cost:
Upper (U) and Lower (L) Bound Values Used to Generate CEMU, CEML

	Head 65 or Older				Head 64 or Younger													
	Size=1		Size=2		Size=1 Adults=1		Size=2 Adults=2		Size=3 Adults=2 Children=1		Size=4 Adults=2 Children=2		Size=5+ Adults=2 Children=3+		Size=2 Adults=1 Children=1		Size=3+ Adults=1 Children=2+		All Other	
Money Income Level	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
less than $3000	.73	.20	.66	.21	.70	.26	.70	.29	.65	.17	.43	.18	.72	.19	.65	.20	.58	.18	.6	.2
3000-4999	.78	.41	.75	.31	.69	.31	.75	.33	.69	.27	.53	.25	.74	.20	.71	.25	.65	.23	.7	.2
5000-6999	.85	.53	.76	.42	.74	.42	.79	.43	.75	.35	.63	.24	.78	.26	.75	.36	.69	.28	.8	.3
7000-9999	.88	.52	.85	.65	.76	.31	.79	.45	.78	.42	.74	.39	.80	.29	.78	.45	.72	.34	.9	.4
10,000-14,999	.98	.67	.99	.83	.84	.36	.85	.62	.85	.55	.88	.51	.86	.45	.85	.63	.80	.54	.9	.5
15,000 or more	.99	.74	1.00	.93	.92	.47	.95	.81	.95	.63	.98	.78	.93	.68	.95	.85	.91	.69	.9	.7
Market Value	$597		1194		347		694		901		901		901		901		901		NA	

Source: Cooper and Katz (1977). Appendix F.

Adults = age 18-64
Children = under 18
Size = family size
"Market value" = cost to receipient of equivalent private insurance policy (= 117% government cost) in 1973.

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