

In Search of a Elusive Truth “How Much do Americans Spend on their Health Care?”

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Introduction

One of the main goals of research this year has been the construction of a “new” poverty series which embodies the recommendations of the NAS Panel on Poverty Measurement and Family Assistance. Such a series was constructed for the Panel’s report but the Panel was uncomfortable to report the results because of being uncertain of the imputation of the medical out-of-pocket expenditures to the various years of CPS data ranging from 1989 to 1992. In particular, there was concern over the appropriate control totals and the methods which the aggregate amounts were to be distributed to individual records. In October of last year, these concerns were found to be well taken and were documented in a paper entitled “Poor Old Folks.” The important message raised in this paper is the sensitivity of the elderly poverty rate to the control totals used in the imputation procedure

The purpose of this memo is to explore what we know about American’s spending on health care and especially how much of it comes directly out of the family’s current budgets. In the end, I hope to have laid out what are plausible assumptions we can make about the three parts of the imputation procedure: the aggregate of household spending on health care, proportion of this aggregate which is spent by families with a reference person 65 years or older, and the method to distribute the aggregates to individual family records.

What’s in a Name?

The Panel recommended that the poverty measure focus upon the ability of the family to secure a normative level of expenditures on a specific bundle of necessities: food, clothing, and shelter (including utilities). Medical needs were expressly not included in the bundle. This is not to say that the Panel felt that these needs were not an important indicator of a family’s overall well-being or did not affect the narrow definition of the economic status of the family adopted by the Panel. The Panel felt that medical needs significantly differed from other necessities and that these needs should be treated separately in an index of family health needs. However, medical needs are completely ignored in the Panel’s proposed measure. If a family has medical needs which they have to finance out of their own resources then there are less resources available for the family to meet their other needs. For this reason, the Panel proposed subtracting from the measure of the family’s resources, the dollar amount of spending on health care which the family paid for out of its income. The Panel referred to this amount of spending as “Medical Out-Of-Pocket” (MOOP) expenditures. The choice of this phrase may have been unfortunate since “out-of-pocket” spending by households in the health care literature has been used to refer to the family’s payments for direct health care services. It does not include the family’s share of private health care premiums or payments for Medicare

Part B coverage. To avoid future confusion on this issue, I am going to refer to Panel's concept of what should be subtracted from family's resources as "Household Medical Spending" (HMS) and is composed of the following three components :

- Employee's share of health care insurance or the purchase of any private health insurance;
- Payments for Medicare Part B coverage; and
- Out-of-Pocket (OOP) payments for health care services.

Note that HMS does not include the family's contributions to Hospital Trust Fund (HI) since they have already been accounted for in the subtraction of income and payroll taxes from the family's resources (a separate Panel Recommendation).

One final point of clarification should be made pertaining to the appropriate universe for the estimates of the total HMS payments. Since we are going to be considering only the noninstitutionalized population for poverty measurement -- the same universe should be employed in exploring aggregate estimates of HMS.

Aggregate HMS Payments

The following table was taken from Table 121 in *Health, United States, 1994*, a DHHS publication. Since the original source for this data was from HCFA -- I will refer to these figures as HCFA estimates.

Year	Total HMS Payments	Health Insurance Premiums Paid by Families	Medicare Part B Payments	OOP Payments for Health Care Services
1965	23.6	4.6	0.0	19.0
1967	24.4	4.9	.6	18.9
1970	32.6	6.0	1.0	25.6
1975	50.1	9.9	1.7	38.5
1980	78.8	16.6	2.7	59.5
1985	129.6	30.0	5.2	94.4
1987	152.4	37.5	6.1	108.8
1988	164.9	37.7	8.7	118.5
1989	180.1	42.6	11.2	126.2
1990	193.3	46.6	10.2	136.5
1991	207.2	52.2	10.7	144.3

While we will have to obtain updates of this table for the current years (1992 and 1994 in particular), this historical series does covers the time period we are interested. While OOP represents the single largest

component of HMS, its relative share has been declining. In 1965, OOP represented 80 percent of HMS payments. Today, its share is 70 percent with private health insurance premium and Medicare Part B payments seeing their share each rise by 5 percentage points.

These annual estimates for HMS are for the entire population including the institutionalized population. As we noted earlier we will be interested in the amount of HMS payments made by the noninstitutionalized population. Unfortunately, the source for the above numbers do not have comparable figures for just the noninstitutionalized population. To crudely adjust the above figures, we can assume that out-of-pocket payments to nursing homes are made by the institutionalized population. From Table 125 (in *Health, United States, 1994*) a historical series for out-of-pocket payments for nursing home care can be obtained. In the following table, I have adjusted the Total HMS payments for these services in order to provide an estimate for the noninstitutionalized population. While the institutionalized population may have both health insurance and Medicare Part B payments, I decided not to try to adjust these components but to place the entire adjustment on the OOP component. However, doing so may tend to understate the amount of HMS payments made by the noninstitutionalized population by overstating the payments by institutionalized population. For example consider the case of a couple where one spouse is in a nursing home while the other spouse lives at home and pays for the nursing home care. In this case, we have attributed all payments to the spouse who resides in the nursing home when the payments are in fact being made by someone in the noninstitutionalized population.

Year	Total HMS Payments (UPPER BOUND)	Out-of-Pocket Payments for Nursing Home Care		Total HMS Payments (LOWER BOUND)
		Amount	% of HMS	
1965	23.6	.8	3.4%	22.8
1967	24.4	1.1	4.5%	23.3
1970	32.6	2.4	7.2%	30.2
1975	50.1	4.2	8.4%	45.9
1980	78.8	7.9	10.0%	71.0
1985	129.6	15.4	11.9%	114.2
1987	152.4	17.3	11.4%	135.1
1988	164.9	18.9	11.5%	146.0
1989	180.1	19.3	10.7%	160.8
1990	193.3	22.3	11.5%	171.0
1991	207.2	22.8	11.0%	184.4

Since we can not determine the extent to which this adjustment may understate the amount of HMS payments made by the noninstitutionalized, I have decided to denote this adjustment estimate as a LOWER

BOUND estimate for the HMS payments while the unadjusted figure is clearly an UPPER BOUND estimate. As Table 2 indicates, from 1965 to 1980, the relative gap between the upper and lower bound estimates grew from 3.4% to 10% of the total amount of HMS payments made by individuals and families. After 1980, the adjustment has created a gap which has remained relative constant at about 11 percent. As an aside, the increase in the adjustment -- out-of-pocket payments for nursing home care -- is not the result of individuals paying higher proportions of their nursing home care. In 1965, 80 percent of nursing home care was paid directly by individuals. By 1980, the proportion paid by individuals fell to 40 percent. What appears to have caused the increase in the relative size of the adjustment prior to 1980, was the rapid rise in aggregate nursing home expenditures which between 1965 and 1980 rose 3.4 times faster than overall health care spending. Since 1980, total payments to nursing homes have risen at roughly the same rate as the rise in total spending on all health care services.

While arriving at a range for our controls is progress, it does not finish the job since we still have not arrived at single number. To complete the task -- let us compare these numbers to a set of control totals which the Urban Institute and the Panel have used. In the case of the Panel, the control total was provided by AHCPR and for 1992 was \$219.3 billion. The control total for the Urban Institute was employed for the analysis of the health care reform effort and for 1993 was \$231.3. To compare these numbers to the above control totals, I “deflated” each total by the growth in overall spending on health care services. Between 91 and 92, spending grew by 8.8 percent, while growing by 7.2 percent between 92 and 93. Employing these growth rates, comparable totals were constructed for 1991, the last entry in the published series,

For 1991 :			
Upper Bound HMS	\$207.2 billion		
NAS Panel Total	\$201.6		2.7% reduction
UI Total	\$198.3		4.3% reduction
Lower Bound HMS	\$184.4		11.0% reduction

While it is comforting to see that both the NAS Panel’s and UI’s totals fall in the range, it is unclear what to make of it. It is very tempting to look at these numbers and conclude that our nursing home adjustment was indeed too large and a smaller one is in order. But to do so would be based upon on the assumption that the underlying estimates for both NAS Panel and UI controls would have generated estimates of HMS for the total population of \$207.2 billions for 1992. While this assumption could be checked -- we should be cautious before adopting a control total for noninstitutionalized population which for example is the midpoint of the range of upper and lower estimates.

[Another aside -- from 1987 to 1991, HMS for the total population grew at a somewhat slower rate (about 1 to 1.5 percentage points) than did overall health care spending. If that were the case for the period

for 1991 to 1993, we have over “deflated” both the Panel’s and UI’s totals and the 2.7 and 4.3% reductions based upon 207.3 estimate would be much smaller.]

Another point of reference would be surveys that measure medical spending in the noninstitutionalized population. Two such surveys are the Consumer Expenditure Survey (CEX) and the NMES. Since the NMES is a focused survey on medical expenditures, it is probably the source for estimates of HMS. Unfortunately for reasons that are not clear, NMES reports do not examine nor report either private insurance or Medicare premiums paid by the family. They tend to focus only upon OOP payments for health care goods and services. A second problem for creating our series totals is that there are only two NMES surveys available: 1977 and 1987. However, even this data may shed light upon how good is our assumption of subtracting OOP payments for nursing care to approximate OOP spending by the noninstitutionalized population.

Table 3		
Comparison of OOP Estimates -- 1987		
HCFA Estimate of		
OOP -- Total Population		\$108.8
OOP Payments to Nursing Homes		\$17.3
Difference		\$91.5
1987 NMES		\$86.2

Given the relative standard of error in the NMES total of 2%, there is a significant difference between these two estimates. If we can assume that if the NMES had surveyed the total population they would have estimated \$108.8 billion of OOP payments, then this comparison suggests that just subtracting the OOP payments to nursing homes understates the spending of the institutionalized for their health care. This is possible to the extent that the institutionalized have to pay for hospital and physician services as well as drugs which are not included in the payments to made to nursing homes. This would suggest even a bigger adjustment than we have made in Table 2, extending and not narrowing the range between the suggested totals here and the totals used by the Panel and UI in previous studies. Ideally, what we could hoped from this comparison was an estimate from NMES that would have generated a total which close if not equal to \$105 billion -- an estimate which differs from total OOP estimate of \$108.8 by 3.5% (midpoint of the Panel and UI control totals).

The CEX data provide another reference point to examine these control totals. In the following table, I compared CEX estimates of OOP and premium payments (both private and Medicare Part B) to their respective totals from the HCFA estimates (I have adjusted the OOP estimates by subtracting OOP payments to nursing homes).

Table 4

Comparison of HCFA Totals with CEX

	87	88	89	90	91
Adjusted HCFA OOP	91.5	99.6	106.9	114.3	121.5
CEX OOP Payments	70.0	78.2	83.4	87.2	87.9
CEX as a % HCFA Estimate	76.5%	78.5%	78.0%	76.3%	72.4%
HCFA Premiums	43.6	46.4	53.9	56.8	62.9
CEX Premium Payments	36.9	45.0	51.5	56.3	62.9
CEX as a % HCFA Estimate	84.7%	96.9%	95.5%	99.2%	102.1%

As with the NMES data, the CEX captures less OOP than would be suggested by crude adjustment to the HCFA but even more undercounting than is present in the NMES file. My feeling is that this differential estimates between CEX and NMES may be understandable. I would suggest that OOP payments for health services are most likely infrequent or are not regular as say mortgage payments and hence more likely to be subject to reporting error and underreporting. Now one would expect that the underreporting would be greater on the CEX than on the NMES survey because the BLS is trying to track all expenditures of the family not just the health care expenditures as in the NMES survey.

This reasoning should lead us to conclude that insurance premiums given the regularity should be subject to less reporting error. Comparing the CEX with the HCFA estimates, we see a very high level of comparability between the two estimates. This strong equality of the CEX estimates of premium which are for the noninstitutionalized population with the HCFA estimates for total population suggest that our assumption that any difference between spending in the noninstitutionalized and institutionalized population personal spending on health care is in the OOP component, is correct.

Where does this all leave us? At this point, I am very close to deciding to use the "Lower Bound" estimates of HMS payments in Table 2 as control totals for the historical series. However, I could be persuaded to a smaller adjustment to the aggregate estimates of HMS payments provided in the same table as the "upper" bound estimates. It will be extremely helpful if I could find out what were the aggregate HMS payments for the total population which employed in the Urban Institute estimates. But for right now -- I am prepared to use the Table 2 totals.

Spending by the Elderly

Clearly the single most important variable that determines the level of out-of-pocket expenses is age: the older one is, the more one spends. While age will be one variable included in the allocation mechanism, it will be important to have some control totals for the proportion of the HMS going to the

population which is 65 and older. In my most recent imputations of HMS, I have assumed that 27 percent of all HMS payments were made by families headed by some one 65 years or older. This percentage was chosen to be consistent with the assumptions that the Urban Institute had made in their imputations. After discussions in DC late in 1995 and again in 1996, this “split” of total HMS appeared to be a “consensus” figure among “experts” within and outside government.

In order to confirm this consensus figure, I decided to examine various published data sources to see what light they could shed upon this percentage. The obvious first source to check was the NMES survey. As noted above -- published NMES reports report only OOP payments and do not include premium the remaining portion of HMS. A second problem is that it can only be determined the proportion of OOP going to elderly persons not the proportion going to families headed by elderly persons. While the latter difference may not affect the resulting estimate, it should be noted. Using published tables, I determined that over in 1987, 29.3 percent of all OOP payments were made by the elderly. While this estimate is for only the OOP portion of HMS -- the corresponding percentage of HMS can be expected to be larger based upon the following spending of the elderly on premium payments. In 1991, individuals made \$62.2 billions of payments for premium of which 10.7 or 17 percent were made for Medicare Part B. Since almost all of Medicare Part B premiums are made by elderly, the elderly would have to made only 14.5 percent of all other premium payments in order for their share of all HMS payments to exceed 29 percent. This reasoning is confirmed by examining the CEX data which includes data on premium as well as OOP payments. From the published tables based upon the 1987 CEX, 27.5 percent of OOP payments and 30.5 percent of all HMS payments were made by consumer units headed by an elderly person. My guess is that if we tabulated the NMES file we would get a very similar relationship -- the proportion of HMS payments made by the Elderly would exceed 29 percent. This data suggests that the 27 percent figure may be too low.

The next question is how does the percentage of HMS change over time? The only other data point from the NMES survey is from 1997 and it is 18 percent suggesting that over time the percentage of OOP has been rising. Data from the CEX survey confirms this observation. Consider the following data from various CEX published reports.

	60-1	72-3	84	85	86	87	88	89	90	91
CU's	19.0	20.0	19.8	20.4	20.5	21.0	20.7	21.2	20.7	21.1
OOP	NA	18.1	25.4	27.9	29.1	27.5	30.6	29.1	28.1	27.0
HMS	16.9	19.0	28.2	30.4	31.1	30.5	33.4	32.2	30.9	30.7

Table 5 -- Continued

Percentage of Consumer Units (CU's), OOP and HMS which are attributable to the Elderly in the CEX Surveys from :

	92	93	94	Averages :	84 to 89	90 to 94
CU's	21.8	21.9	21.0			
OOP	29.0	30.2	26.8		28.3	28.2
HMS	33.0	33.6	32.1		31.0	32.1

Based upon this data, it appears that sometime in the 80s -- the elderly began paying a significantly larger share of out-of-pocket payments compared to the nonelderly population. While in the 60s and 70s, they seemed to be paying a share equal to their representation in the population, in the 80s they are paying a much larger proportion of these payments.

Where does this leave us? Although I think there is some evidence that the 27% figure used to allocate HMS to the elderly population may be too low -- I am for the time being willing to continue using that figure for purposes of constructing control totals for elderly population. Given the greater sensitivity of the elderly to changes in their resource definition, this approach is conservative in the sense that it will tend to undercount the elderly who are poor. While for the use of 27 percent allocation to the elderly may be appropriate for the 80s and 90s, for the first years in the series (I am obtaining an extract from Susan Meyer from either 1967 or 68) a 18 percent figure (the midpoint between the 60s and 70s CEX figures) appears to more appropriate.

Comparison of 77 and 87 NMES

The Panel in their report confined their analysis of their recommendations to a single year, 1992, mostly based upon the concern that the imputation of HMS payments may have been misleading especially at other points in time. Since the release of the report, it has been discovered that even the Panel's imputations to the March 1993 CPS were in error. In particular, too little HMS was imputed to the elderly population. The effects of reimputation of the HMS payments to the data base have been documented in "Poor Old Folks."

In this memo, it is clear that proportion of total HMS payments made by the elderly has significantly changed over time and hence any historical series will need to take this trend into account. We should also be concerned whether the distribution of HMS payments to relatively similar individuals has changed over time. For example, while we know that the elderly are bearing a larger proportion of aggregate HMS payments, has the distribution of payments also varied within the elderly population?

To attempt to answer this question, I first turn to the published analysis of the NMES surveys from 1977 and 1987. Recall that the NMES reports will examine a portion of the total HMS payments made by a family, the OOP payments for health care goods and services (including copays and deductibles), and will not report the family's payments for health care insurance premiums.

To summarize the distribution of OOP payments reported in the NMES survey, I have focused upon two measures: the proportion of families who did not have an OOP payment, and the cumulative distribution of families with OOP payments as a function of the size of payment expressed as a percentage of the family's income. These two measures are presented in the following table for the total population and several one way characterization of the populations in both years of the NMES survey.

	Percent of All Families With No OOP Payment	Percent of Families with Payments Who Spend Less than % of Family Income					
		1%	2%	3%	5%	10%	20%
Total							
1977	10.2	31.4	52.9	64.6	77.6	89.2	95.2
1987	11.0	34.3	53.8	64.8	77.2	88.7	95.0
Low Income							
1977	17.5	21.0	36.4	46.9	61.4	78.2	89.4
1987	17.7	22.3	36.8	46.8	59.8	76.8	89.1
Black							
1977	18.7	37.1	57.5	69.5	80.8	90.7	96.2
1987	24.5	39.9	57.9	68.4	78.1	87.6	93.6
Age > 64							
1977	10.5	18.7	34.5	46.0	62.4	81.8	92.2
1987	7.8	16.4	30.1	40.2	56.4	75.2	88.5
Age < 65 and Uninsured							
1977	21.1	32.2	50.1	60.2	71.0	82.3	91.7
1987	22.8	27.8	45.0	56.9	68.0	83.7	91.2
Age < 65 and Private Insurance							
1977	6.4	33.8	57.6	69.9	82.3	92.0	96.5
1987	7.1	40.1	62.3	73.4	85.1	94.0	97.7

Before examining how the distributions change over time, I think it is first important to compare the OOP distributions across the various demographic characteristics at point in time. The probability of not having any OOP payments appears to be a function of the characteristics of the family. Being black, having low income, or in cases where the family head is less than 65 and is uninsured, all raise the probability of not having OOP payments to levels well above the average in the population. While being black or being young uninsured has an effect on having a payment, these characteristics do not have an effect on the size of the OOP payments. Only having a low income or being elderly seem to have a significant effect on the size of OOP payments relative to the family's income.

Comparing the distribution of OOP payments in the total population, there appears to a remarkable stability of the distribution across the decade. If we focus only upon the distribution of OOP payments in the total population, one could be lead to the conclusion that imputation procedure need not change over time. Even if we examine low income families (those have less than \$12,000 income in 1977 and \$20,000 in 1987) or black families, one is hard pressed to argue that either of these two groups' OOP payments have significantly changed over time. Only in the case of black families, one may concluded that over the decade these families were less likely to have an OOP payment.

But turning to the last three categories presented in Table 6 which are based upon age of the family head, a slightly different picture begins to surface. Over the decade, elderly families are more likely to have an OOP payment and for those elderly families which did have payments -- the OOP payments represented a larger proportion of their income (this is indicated by a "downward" shift of the cumulative distribution of OOP payments.) A similar story can be told for nonelderly families without either private or public insurance. However, the opposite appears to hold for nonelderly families with private insurance -- they are less likely to have an OOP payment and when they do, it takes out less of a bite of their family's income.

While the NMES survey may be a "good" data set to base an imputation strategy -- it is failure to consider the other portion of HMS spending, payments of premiums -- does compromise its usefulness. While it is possible to examine premium payments on the NMES, past and current attempts to get a consistent data NMES extract containing both OOP and premium payments have been unsuccessful. An alternative data source is the CEX data which attempts to record all family expenditures including OOP and premium payments. Another desirable of feature of this survey is that surveys are available over a longer period of time and are more frequent than the NMES survey.

Since the published CEX reports do not provide similar information which is included in the NMES analysis reports, I turned to the CEX interview data available on CD-ROM for 1994 and constructed tables comparable to the ones presented in Table 6. When I first examined the summary data from the CEX, the first glaring difference between the two surveys is in the percentage of families reported not having OOP payments. As noted above, 11 percent of all families and 7.8 percent of elderly families report in the 1987 NMES survey not having any OOP payments. In the 1994 CEX survey the percentage of families not reporting OOP payments is significantly higher, 34.6 and 24.4 percent respectively. These differences can

not be explained in terms of differences in survey periods, 1987 versus 1994. Furthermore, these differences in families not reporting OOP payments are consistent with differences observed in the aggregate OOP captured by both of these surveys. (Previously, we noted that the aggregate NMES OOP amount was \$86.2 billion while the 1987 CEX OOP estimated that aggregate was \$70 billion. If we assume that total number of families were the same and average OOP payments of those having payments were the same in the two surveys then the difference between the aggregates could be explained if proportion of families in the CEX was 27.8 percent while it was 11 percent in the NMES file).

While the two surveys give quite a different perspective on the proportion of families not having OOP payments, there appears to be much more similarity between the two surveys when the distribution of OOP payments relative to family income is considered. In Figures One and Two, I have plotted the cumulative distribution of OOP relative to family income for families with OOP payments from both surveys for both the total population and for the elderly populations. For both populations, the two surveys give rather similar descriptions of the cumulative distribution. To any extent to which there is a difference, the CEX indicates that OOP payments are likely to be a higher proportion of family income than what is revealed in the NMES survey.

This comparison leads me to conclude that CEX and NMES are quite comparable with respect to the distribution of OOP payments for those families that have payments which gives us some confidence to compare the distribution of OOP with the distribution of HMS on the CEX and then infer what might the distribution of HMS from the NMES might be. First, let us compare the proportion of the CEX sample reporting no HMS payments. For the total population, the proportion is 18.6 percent while only 1.9 percent of the elderly families report not having HMS payments.

Focusing upon the families with HMS payments, we see that premium payments represent a significant burden on families. Median HMS payments for families with payments are roughly 4 percent of family income almost double the share of family income devoted to OOP spending. For the elderly population, a similar doubling occurs rising the median proportion of family income devoted to HMS payments to 12 percent. Some caution should be noted here. In the 90s, the CEX report that aggregate OOP and premium spending are about equal while in the HCFA accounts (adjusted for the institutionalized) OOP spending is about twice the premium spending. At this time, there is no way to know if this difference could affect our estimates of the distribution of HMS payments by families. However, it should be noted that this difference in aggregates could leave estimates of the distribution of those families unaffected and the CEX distribution provides a good estimate.

Examining the distribution of HMS provided by the CEX, it is surprising the size of the "upper" tail of the distribution of families with payments. In the population as a whole, 11.6 percent of families have HMS payments which are 20 percent or more of their family income. In the elderly population, the proportion of families rises to 30.9 percent. To examine whether this large proportion of families in the upper tail is do to large payments or small incomes, I again tabulated the 1994 CEX data on HMS

payments by the income to needs ratio (three groups: less than one, one to less than two, greater than two) of the family as well as the size of payment relative to the family's income. The results of that tabulation are presented in the following table.

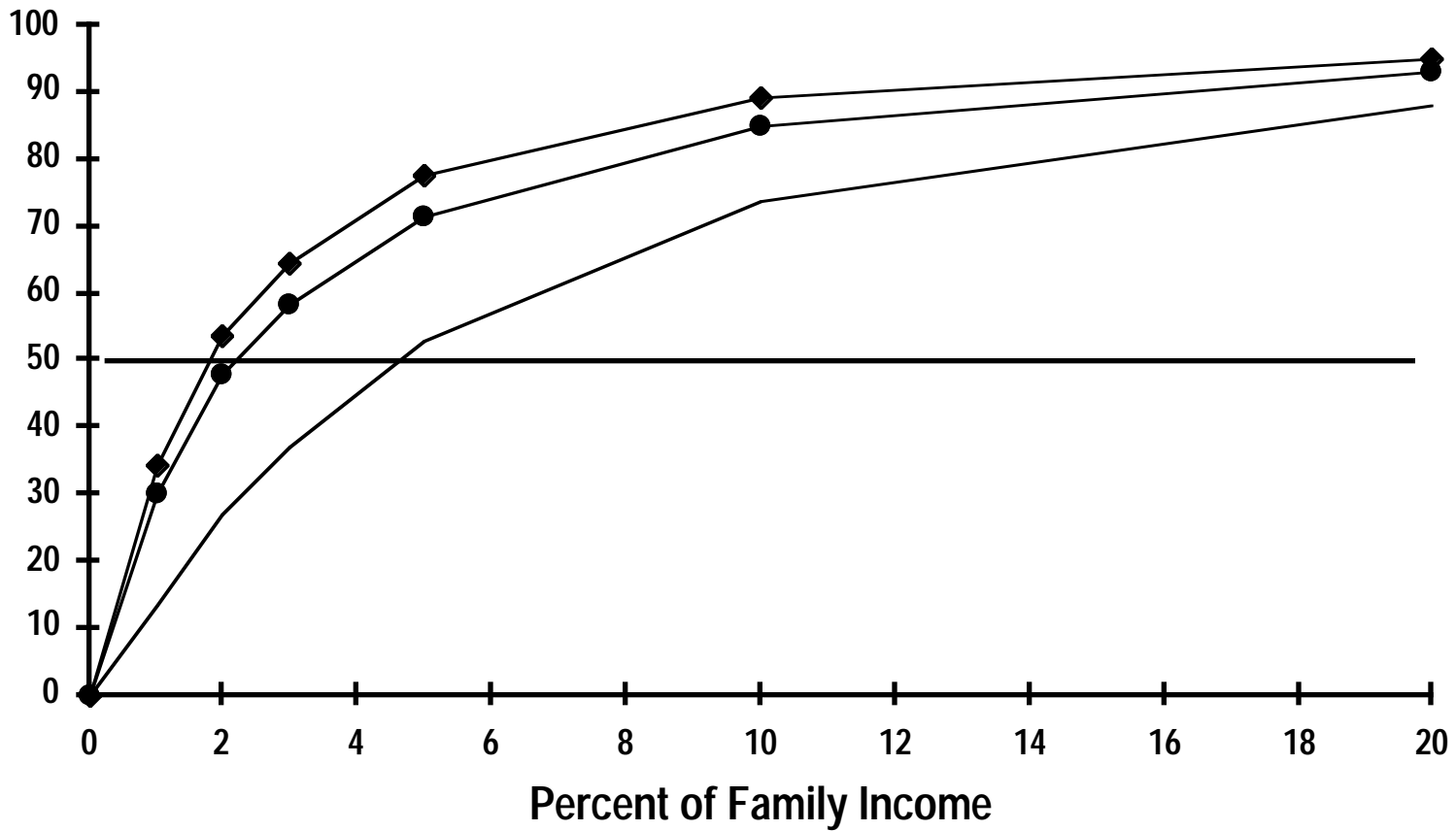
Income to Needs Ratio	Total Population	Elderly Population
Less than 1.0	53.9%	48.2%
1.0 to 2.0	33.0%	40.5%
More than 2.0	13.0%	11.3%

These figures suggest that the majority of the "upper" tail of the HMS distribution can be attributed to low incomes in the total population but less so in the elderly population. This also suggests that we will need to control for the relative income of the family in the imputations. I have used the 1994 CEX to construct summaries of the distribution of relative size of HMS payments and as a function of the family's income to need ratio (income divided by the unit's poverty line). The results of these tabs are presented in Table 8.

	Percent of All Families With No HMS Payment	Percent of Families with Payments Who Spend Less than % of Family Income					
		1%	2%	3%	5%	10%	20%
Total Population							
less than Poverty Line	36.9%	4.4%	8.4%	11.4%	17.1%	35.2%	50.8%
1 to 2 times Poverty Line	19.1	6.9	13.9	19.7	30.8	55.8	79.3
more than 2 times Poverty Line	12.1	17.9	35.1	48.7	67.6	86.8	96.9
All Families	18.6	13.3	26.1	36.3	51.5	71.8	85.8
Elderly Population							
less than Poverty Line	3.6%	.4%	.9%	.9%	2.0%	20.8%	38.4%
1 to 2 times Poverty Line	1.9	.2	.5	1.4	8.8	34.3	66.0
more than 2 times Poverty Line	1.1	2.8	8.9	18.1	35.7	65.0	90.5
All Elderly Families	1.9	1.2	3.8	7.6	17.3	42.6	68.5

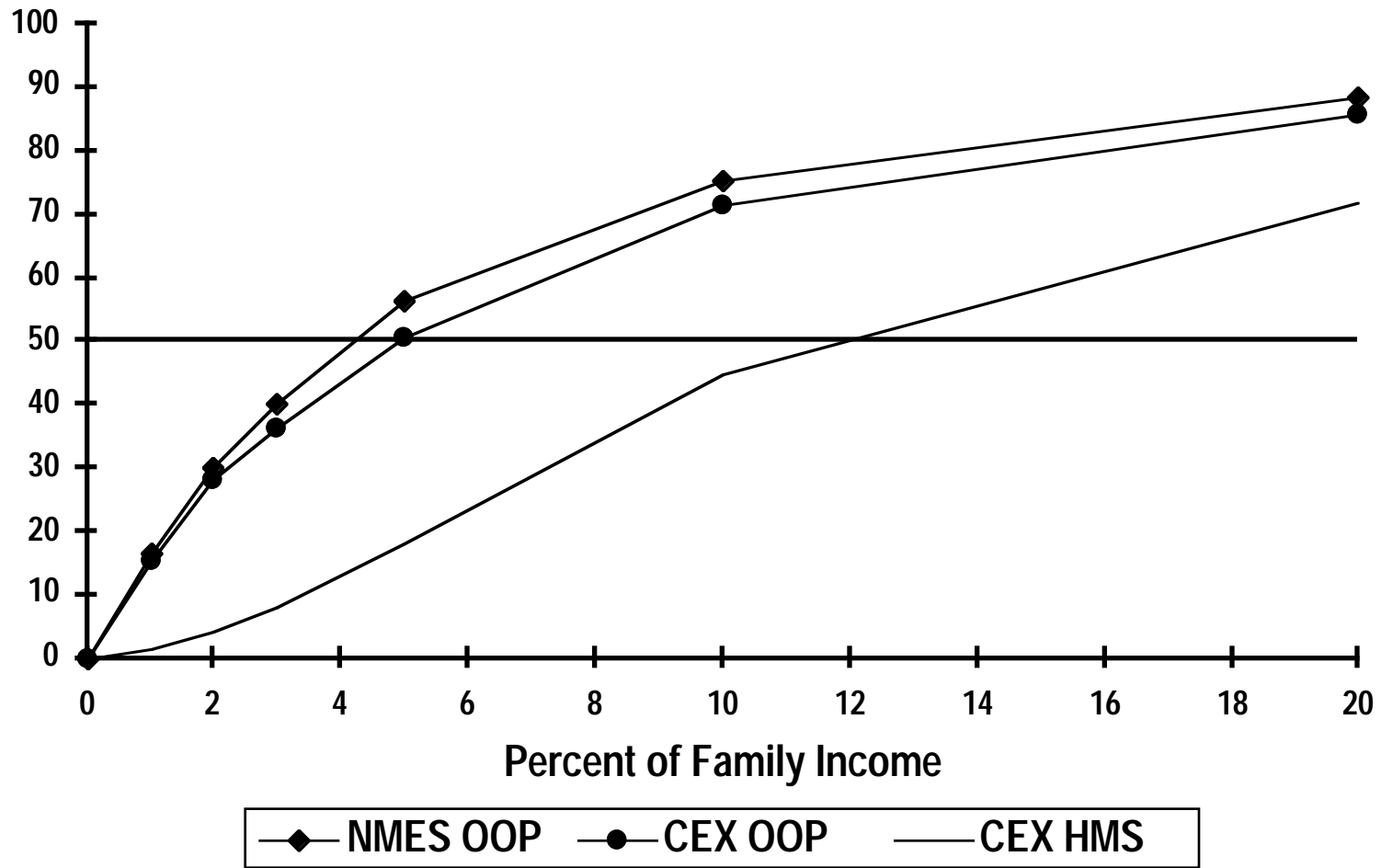
Where does this all leave us? One has to be quite impressed with the relative stability of the distribution of HMS payments over time and gain confidence that the use of a single allocation procedure with different control totals may provide a fair basis for HMS imputation over the time period we are interested. The only exception may be the elderly where there is some evidence that not only the aggregate totals have changed so too has the distribution.

The BLS is in the process of constructing a series of extracts from CEX interview data from 60s through the 90s for the purpose of constructing an summary of the HMS distribution. I think the evidence points to the fact that I should be summarizing not the distribution of HMS payments but the distribution of HMS payments relative to the family's income. At this point in time, it is my intention to construct characterizations of this HMS distribution for separate age, income, and family size categories from the CEX data. I was hoping that ACHPR would have by this time provided me with revised NMES data but they have not. In the absence of this data, the CEX data seems to be the most appropriate data to consider in conjunction with the control totals described in previous sections.

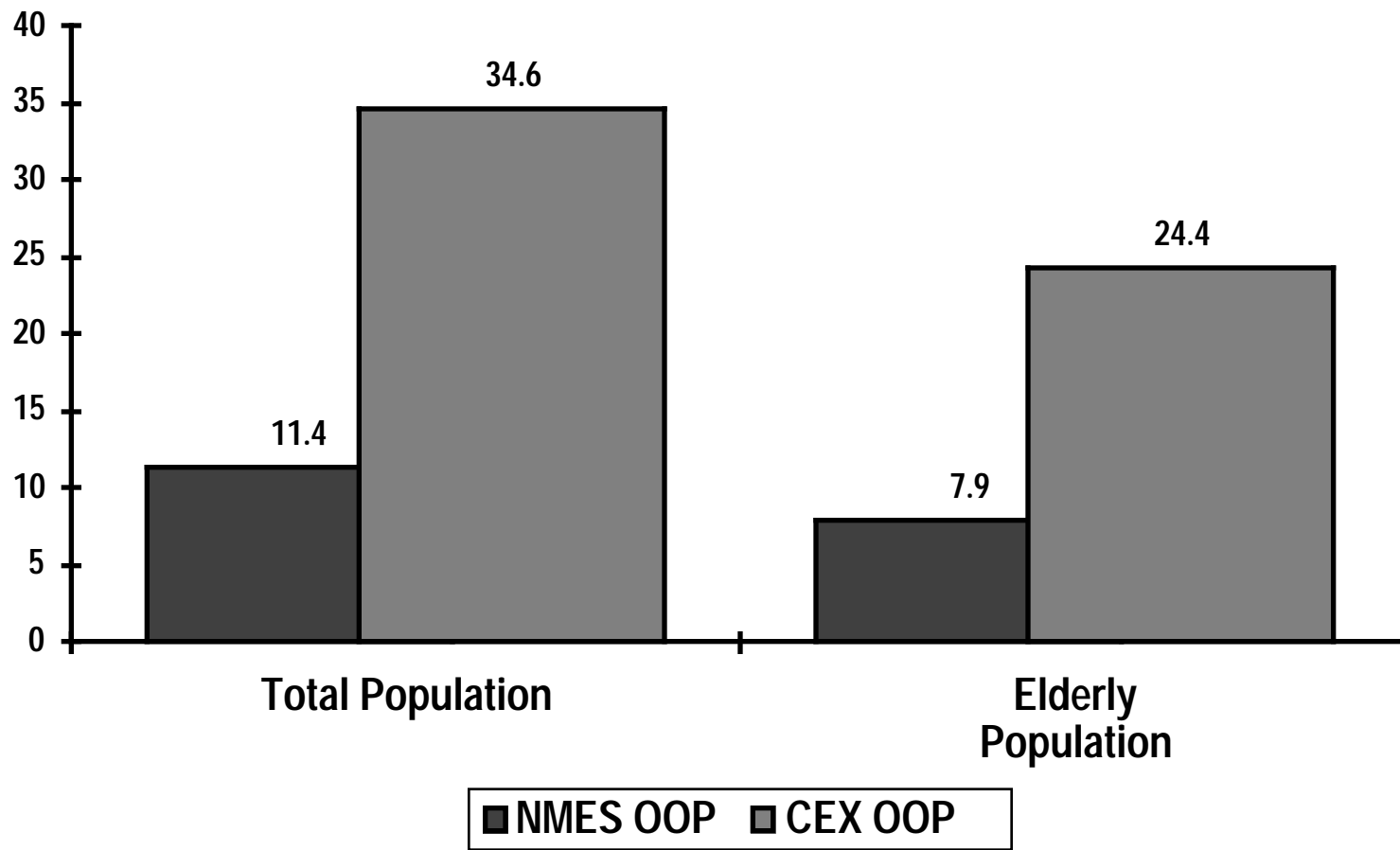


—◆— **NMES OOP** —●— **CEX OOP** — **CEX HMS**

**Cumulative Distributions of Health Spending
as a Function of Percentage of Family Income
in the Total Population**



**Cumulative Distributions of Health Spending
as a Function of Percentage of Family Income
in the Elderly Population**



Proportion of Families Not Reporting OOP