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Report to the Chairman, Subcommittee on Health, Committee on Ways and Means, House of Representatives

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MEDICARE HMOs

HCFA Can Promptly Eliminate Hundreds of Millions in Excess Payments

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The Honorable William M. Thomas
Chairman, Subcommittee on Health
Committee on Ways and Means
House of Representatives

Dear Mr. Chairman:

Medicare costs have been growing rapidly during the 1990s, and the Congressional Budget Office estimates that costs will increase an average of 8.4 percent a year during fiscal years 1998 through 2002. As the Congress seeks ways to slow this growth rate, several proposals have been made that would encourage beneficiaries to join managed care plans. These plans typically have a financial incentive to hold down costs; in fact, Medicare's method for paying risk contract health maintenance organizations (HMO)—Medicare's principal managed care option[1]—was designed to save the program 5 percent of the costs for beneficiaries who enroll in HMOs. However, a decade of research has found that enrolled beneficiaries would have cost the program less if they had stayed in the fee-for-service (FFS) sector. The research shows that Medicare's rate-setting method produces excess payments to HMOs because it overstates the costs of HMO enrollees. Recently, the Physician Payment Review Commission estimated that annual excess payments to HMOs nationwide could total $2 billion.[2]

Concerned about the inconsistency between the expectation that HMOs would save Medicare money and research findings showing that HMOs increase the program's costs, you asked us to (1) explain under what conditions Medicare's method can yield payment rates that are too high and (2) suggest a practical improvement to Medicare's method directed at the problems fostering excess payments.

To do this work, we reviewed previous research on the HMO rate-setting method used by the Health Care Financing Administration (HCFA), the Department of Health and Human Services' (HHS) agency responsible for administering Medicare. We also developed a method for estimating enrollees' costs using the data Medicare collects to determine HMO

[1]Other Medicare managed care plans include cost contract HMOs and health care prepayment plans, which together enroll fewer than 2 percent of the total Medicare population. Because Medicare pays these plans using methods other than capitation, they are not included in this study.

[2]This estimate was contained in material presented to the Commissioners for their December 12-13, 1996, meeting.

payments and applied the method to each of the 58 counties in California, a state that has about 36 percent of the total Medicare risk HMO population. Our method and estimates of excess payments to HMOs were reviewed by independent experts on HMO payment issues. We performed this work from August 1995 to December 1996 in accordance with generally accepted government auditing standards.

Results in Brief

Contrary to the expectations built into Medicare law for paying risk contract HMOs, these HMOs have not produced savings for Medicare. Medicare law says that the program should pay HMOs 95 percent of what HCFA estimates would have been paid had enrollees remained in FFS. However, Medicare-sponsored research and other studies have found that the program has actually spent more for HMO enrollees than their costs would have been under FFS. Researchers attribute this outcome to "favorable selection," or the tendency for healthier-than-average individuals to be enrolled in HMOs. Two 1996 studies, each using different methodologies, produced estimates of lower costs for HMO beneficiaries compared with those of FFS beneficiaries—one, 12 percent lower; the other, 37 percent lower. Both estimates could translate into substantial payments in excess of what Medicare would have spent if the HMO beneficiaries had remained in the FFS sector.

We have identified a modification to Medicare's current HMO rate-setting method that could help reduce excess HMO payments. Central to the current method is an estimate of the average cost, county by county, of serving Medicare beneficiaries in the FFS sector. The actual rates are set by adjusting the county averages up or down on the basis of each enrollee's likelihood of incurring higher or lower costs, a process known as risk adjustment. Although considerable attention has focused on problems with this process, our work centers on a largely overlooked problem regarding the estimates of average county costs—that is, the county rate, commonly known as the AAPCC (adjusted average per capita cost).

HCFA's method of determining the county rate excludes HMO enrollees' costs in estimating per-beneficiary average cost. The result is that in counties experiencing favorable selection, HCFA's method overstates the average costs of all Medicare beneficiaries and leads to overpayments.

Our proposed modification estimates HMO enrollees' expected FFS costs using information available to HCFA. Our approach produces a county rate that more accurately represents the costs of all Medicare beneficiaries. In

examining the rates HCFA determined for California's 58 counties in 1995, we found that applying our approach would have reduced excess payments by about 25 percent, or $276 million. On a monthly, per-beneficiary payment level, the county-rate reductions would have been relatively small, ranging from $3 to $38. Substantially better risk adjustment, which appears to be years away from implementation, would have targeted the remaining 75 percent of excess payments.

We also found that Medicare's current method produced a greater overstatement of county average costs in counties with higher Medicare HMO penetration—up to 39 percent.[3] This finding calls into question the hypothesis put forth by HMO industry advocates and others that the excess payment problem will be mitigated as more beneficiaries enroll in Medicare managed care and HMOs contain a more expensive mix of beneficiaries.

Background

Essentially, HCFA's calculation of its per-enrollee (capitation) rate in each county can be expressed as follows:

$$\text{Capitation Rate} = \text{Risk Factor} \cdot 0.95 \cdot \text{Average County Cost}$$

Medicare pays risk HMOs a fixed amount per enrollee—a capitation rate—regardless of what each enrollee's care actually costs. Medicare law stipulates that the capitation rate be set at 95 percent of the costs Medicare would have incurred for HMO enrollees if they had remained in FFS.[4] In implementing the law's rate-setting provisions, HCFA estimates a

[3]HMO penetration rates are for 1992. Following HCFA's method of calculating AAPCC rates, our estimates of excess payments in 1995 are derived from beneficiary costs in the base year (1992). See app. I for an explanation of our method of determining excess payments.

[4]Section 1876(a)(4) of the Social Security Act (42 U.S.C. 1395mm(a)(4) (1994)).

county's average per-beneficiary cost and multiplies the result by 0.95.[5] The product is the county adjusted average per capita cost rate.[6]

HCFA then applies a risk-adjustment factor to the county rate. Under HCFA's risk-adjustment system, beneficiaries are sorted into groups according to their demographic traits (age; sex; and Medicaid, institutional, and working status). These traits serve as proxy measures of health status. HCFA calculates a risk factor for each group—the group's average cost in relation to the cost of all beneficiaries nationwide. For example, in 1995 the risk factor for younger seniors (65- to 70-year-old males) was .85, whereas for older seniors (85-year-old or older males) it was 1.3. HCFA uses the risk factor to adjust the county rate, thereby raising or lowering Medicare's per capita payment for each HMO enrollee, depending on the individual's demographic characteristics.

How Medicare's HMO Rate-Setting Method Can Lead to Excess Payments

For HCFA's rate-setting method to produce appropriate rates, the risk adjusters must reliably differentiate among beneficiaries with different health status. Much has been written about the inadequacy of Medicare's risk adjuster to account for the tendency of HMOs to experience favorable selection. More than a decade of research has concluded that beneficiaries enrolling in HMOs are, on average, healthier than those remaining in FFS.[7] Studies of pre-1990 data found that Medicare HMO enrollees—in a period just prior to their HMO enrollment—had health care costs that were from 20 percent to 42 percent lower than those of FFS beneficiaries with the same demographic characteristics. Studies of post-1990 data also showed

[5]A 5-percent discount is taken on the premise that, compared with FFS care, managed care plans achieve certain efficiencies. For example, HMOs can negotiate with hospitals, physicians, and other providers to obtain discounts on services and supplies. In response to concerns that Medicare's payment rates to HMOs are too high, the administration has publicly discussed phasing in a reduction in HMO payment rates from the current 95 percent to 90 percent of FFS payments.

[6]Medicare determines four capitation rates for each county, one each for part A aged, part B aged, part A disabled, and part B disabled.

[7]Our study entitled Medicare: Changes to HMO Rate Setting Method Are Needed to Reduce Program Costs (GAO/HEHS-94-119, Sept. 2, 1994) discusses at length the inability of HCFA's rate-setting method to prevent favorable selection from increasing Medicare costs. It cites and reviews numerous studies on the subject of favorable selection in Medicare HMOs. For a review of recent studies and an analysis concluding that Medicare risk HMOs continue to benefit from favorable selection, see also Center for Studying Health System Change, "Policy Implications of Risk Selection in Medicare HMOs: Is the Federal Payment Rate Too High?" Issue Brief, No. 4 (Washington, D.C.: Center for Studying Health System Change, Nov. 1996).

costs of Medicare HMO enrollees ranging from 12 percent[8] to 37 percent lower than those of their FFS counterparts.[9]

The problem for Medicare posed by favorable selection is that HMO enrollees are healthier than FFS beneficiaries within the same demographic group; for example, 70-year-old males in HMOs are, on average, healthier than 70-year-old males in FFS. Medicare's risk adjuster is said to be inadequate because, while making broad distinctions among beneficiaries of different age, sex, and other demographic characteristics, it does not account for the significant health differences among demographically identical beneficiaries. The cost implications of health status differences can be dramatic for two demographically alike beneficiaries: one may experience occasional minor ailments while the other may suffer from a serious chronic condition.

Devising a risk adjuster sensitive enough to capture health status differences, however, is such a technically complex and difficult task that years of independent research and HCFA-sponsored research have not yet produced an ideal risk adjuster.[10] In reports issued in 1994 and 1995, we identified several promising, practical risk adjusters and suggested that HCFA implement an interim improvement.[11]

[8]See G. Riley, C. Tudor, Y. Chiang, and M. Ingber, "Health Status of Medicare Enrollees in HMOs and Fee-for-Service in 1994," Health Care Financing Review, Vol. 17, No. 4 (summer 1996), pp. 65-76. This study analyzed 1994 data from the Medicare Current Beneficiary Survey and found that HMO enrollees' costs, post HMO enrollment, were about 12 percent lower than the costs of comparable beneficiaries in FFS.

[9]Physician Payment Review Commission, "Risk Selection and Risk Adjustment in Medicare," Annual Report to Congress, ch. 15 (Washington, D.C.: Physician Payment Review Commission, 1996). In an analysis of 1989-94 data, the Commission found that health costs of new HMO enrollees—in the 6 months prior to their enrollment in an HMO—were 37 percent lower than the health costs of beneficiaries with similar demographic traits who remained in the FFS program.

[10]For example, HCFA announced in January 1997 that it was about to launch a demonstration project on two sophisticated risk-adjustment methods—the ambulatory care group and diagnostic cost group systems—that seek to differentiate more and less costly patients on the basis of diagnostic information from inpatient, outpatient, and physician encounters. HCFA has not announced a schedule for implementing a better risk adjuster programwide.

[11]GAO/HEHS-94-119, Sept. 2, 1994, and Medicare Managed Care: Growing Enrollment Adds Urgency to Fixing HMO Payment Problem (GAO/HEHS-96-21, Nov. 8, 1995).

HCFA Could Improve Its Rate-Setting Method by Including HMO Enrollees in Its Calculations of County Average Cost

Independent of risk adjustment, modifying the method for calculating county rate would help reduce Medicare's excess HMO payments. HCFA currently estimates the average Medicare costs of a county's beneficiaries using the costs of only those beneficiaries in Medicare's FFS sector. This method would be appropriate if the average health cost of FFS beneficiaries were the same as that of demographically comparable HMO enrollees.[12] However, in counties where there are cost disparities between Medicare's FFS and HMO enrollee populations, this method can either overstate the average costs of all Medicare beneficiaries and lead to overpayment or understate average costs and lead to underpayment.

To understand how favorable selection can produce an excessive county rate under HCFA's method of estimating average costs, consider the following hypothetical example:

Suppose a county has 1,000 Medicare beneficiaries with identical demographic characteristics.[13] Of these, 800 beneficiaries are in Medicare's FFS program and cost Medicare on average $100 a month. The remaining 200 beneficiaries are enrolled in HMOs, but these beneficiaries would have cost an average of $75 a month had they remained in the FFS program. For all 1,000 beneficiaries, the county average cost would be $95 a month. HCFA's method excludes the HMO enrollees with their lower costs from its calculations, producing a county average of $100 a month. Consequently, HCFA overestimates this county's average monthly cost by $5, producing $1,000 a month in excessive Medicare payments to HMOs (200 beneficiaries times $5).

The difficulty in correcting this problem comes from the inability to observe the costs HMO enrollees would have incurred if they had remained in the FFS sector. In the illustration above, HCFA needs a way to estimate that the beneficiaries enrolled in HMOs would have cost $75 a month in the FFS sector rather than $100. Therefore, we developed a method to estimate HMO enrollees' expected FFS costs using information available to HCFA. Our method consists of two main steps:

- First, we computed the average costs of new HMO enrollees during the year before they enrolled—that is, while they were still in FFS Medicare. These FFS costs are available through HCFA's claims data.

[12]HCFA's method would also be appropriate if a risk adjuster were available that could remove the effects of favorable, or unfavorable, selection with far more accuracy than is currently achieved or considered feasible today.

[13]The assumption of equivalent demographic characteristics is made to simplify the illustration.

- Next, we adjusted this amount to reflect the expectation that an enrollee's use of health services will, over time, rise.[14]

Having completed these steps, we combined the result with an estimate of the average cost of FFS beneficiaries. This new average produced a county rate that reflected the costs of all Medicare beneficiaries. Thus, our method helps prevent biasing HMO payments with either overgenerous estimates of enrollees' initial health costs or low estimates that fail to compensate for the likelihood of rising health costs over time. The technical details of this approach are discussed in appendix I.

Current County Rates Produce Substantial Excess Payments

To illustrate the effect of our approach, we analyzed data for counties with different shares of beneficiaries enrolled in HMOs.[15] We found that our method could have reduced excess payments by more than 25 percent. Substantially better risk adjustment, which appears to be years away from implementation, would target the remaining 75 percent of excess payments. Specifically, for the counties that we analyzed, we estimated that total excess payments in 1995 amounted to about $1 billion of the roughly $6 billion in total Medicare payments to risk HMOs in the state. (App. III discusses excess payment estimates in further detail.) Applying our method for setting county rates would have reduced the excess by about $276 million.

We also found that the excess payments attributable to inflated county rates were concentrated in 12 counties with large HMO enrollment and ranged from less than 1 percent to 6.6 percent of the counties' total HMO payments, representing between $200,000 and $135.3 million.[16] (See table 1.) Despite the size of these amounts, the application of our method would have produced relatively small changes in the monthly, per-beneficiary capitation payments, ranging from $3 to $38.

[14]Our analysis adjusts for (1) the tendency after joining an HMO for enrollees' costs to become more like—or "regress" toward—the FFS cost mean and (2) the costs incurred by HMO enrollees who die while enrolled. A more thorough discussion of how our method accounts for these costs is contained in apps. I and II.

[15]We chose counties within a single state to eliminate variations attributable to state differences and selected California because it included counties that in 1995 had the nation's highest HMO penetration rates.

[16]For the state's remaining 46 counties, excess payments attributable to inflated county rates amounted to less than 3 percent of the 58-county total. App. III shows projections of excess HMO payments by county for 1996 and 1997.

Table 1: Estimates of Potential Reduction in Excess Payments to California HMOs in 1995, Based on Our Method for Calculating the County Rate

County	County-rate estimates of excess payments (in millions)	County-rate excess payments as a percentage of risk contract program payments
Los Angeles	$135.3	6.56
Orange	38.5	6.37
San Diego	37.3	5.12
San Bernardino	23.4	5.79
Riverside	17.5	3.70
Ventura	6.6	4.80
Kern	4.4	3.74
San Francisco	4.0	2.44
Sacramento	3.2	1.62
San Mateo	2.9	2.25
Santa Clara	2.3	1.18
Butte	0.2	0.79
Total (12 counties)[a]	**$275.7**	

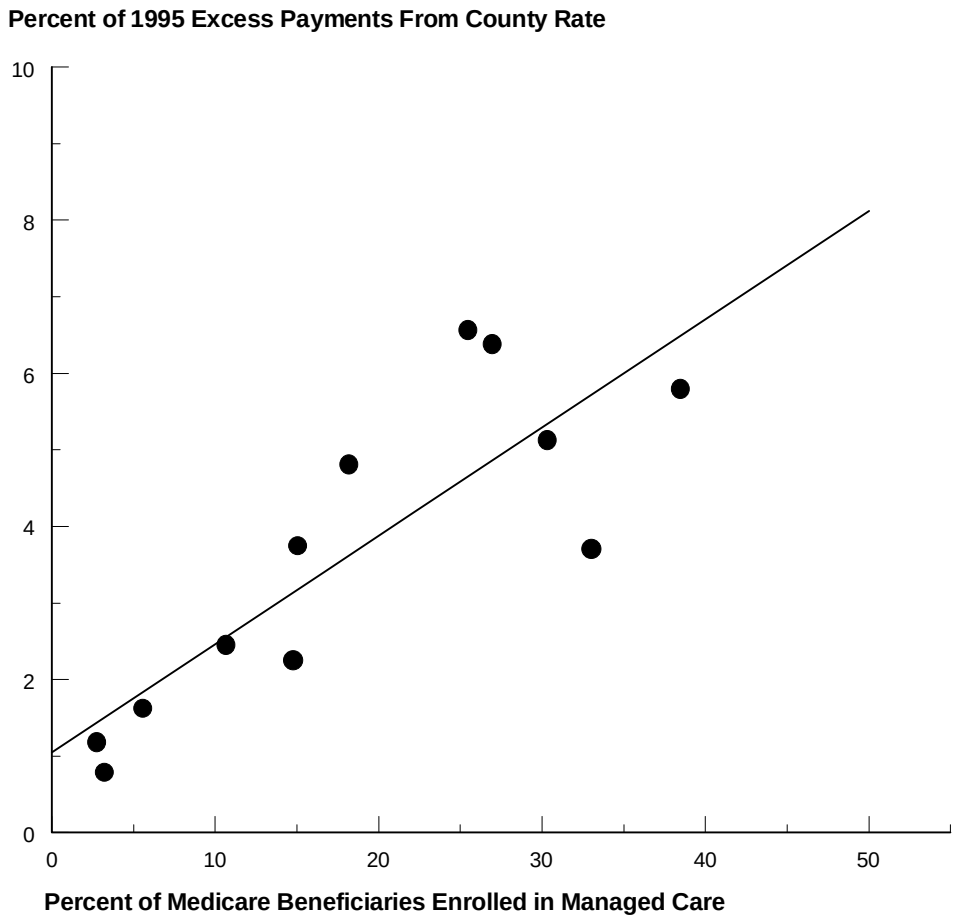
[a]Numbers may not add because of rounding.

The excess payments shown in table 1 reflect the difference between Medicare's county rates and rates calculated by our method.[17] As shown in the table, five counties accounted for more than 90 percent of the state's county-rate excess payments.

Our analysis did not support the hypothesis, put forward by the HMO industry and others, that the excess payment problem will be mitigated as more beneficiaries enroll in Medicare managed care and HMOs progressively enroll a more expensive mix of beneficiaries. Our data—from counties with up to a 39-percent HMO penetration—indicated that excess payments as a percentage of total HMO payments were higher in counties with higher Medicare penetration. For example, as seen in figure 1, the four counties with the highest rates of excess payment, ranging from 5.1 to 6.6 percent, were also among the counties with the highest enrollment rates.

[17]The technical steps to derive our estimates of excess payments are set out in app. I.

Figure 1: Excess Payments Rise With HMO Enrollment



Note: Each data point represents 1 of the 12 California counties listed in table 1.

Source: GAO analysis of HCFA data.

If the relationship between enrollment and excess payments we found for California in 1995 persists, excess payments are likely to grow. The recent trend in Medicare HMO enrollment suggests continued growth in the next several years. Therefore, some counties with moderate enrollment today may experience higher enrollment rates in the future, exacerbating the

excess payment problem. (See app. III, table III.1, for estimates of future excess HMO payments in California based on projected enrollment.)

Data Are Available to Enable HCFA to Promptly Adjust County Rates

Because the data we used to estimate HMO enrollees' costs come from data that HCFA compiles to update HMO rates each year, our method has two important advantages. First, HCFA's implementation of our proposal could be achieved in a relatively short time. The time element is important, because the prompt implementation of our method would avoid locking in a current methodological flaw that would persist in any adopted changes to Medicare's HMO payment method that continued to use either current county rates as a baseline or FFS costs to set future rates. Second, the availability of the data would also make our proposal economical: we believe that the savings to be achieved from reducing county-rate excess payments would be much greater than the administrative costs of implementing our modification.

We recognize that for counties with little or no HMO enrollment, HCFA's current method of estimating the county rate would yield virtually the same result as our method because the small number of HMO enrollees is overwhelmed by the large number of FFS beneficiaries and has only a minimal effect on average FFS costs. Thus, HCFA could decide to use a beneficiary enrollment threshold for computing revised county rates.

Conclusions

Medicare's HMO rate-setting problems have prevented it from realizing the savings that were anticipated from enrolling beneficiaries in capitated managed care plans. In fact, enrolling more beneficiaries in managed care could increase rather than lower Medicare spending—unless Medicare's method of setting HMO rates is revised.

Our method of calculating the county rate would have the effect of reducing payments more for HMOs in counties with higher excess payments and less for HMOs in counties with lower excess payments. In this way, our method represents a targeted approach to reducing excess payments and could lower Medicare expenditures by at least several hundred million dollars each year. Furthermore, because some proposals to reform Medicare HMO rate-setting rely on current county payment rates as a benchmark, correcting the current county rates would avoid locking in varying degrees of excess payments across counties for years to come.

Recommendation to the Secretary of Health and Human Services

We recommend that the Secretary of Health and Human Services direct the HCFA Administrator to incorporate the expected FFS costs of HMO enrollees into the methodology for establishing county rates using the method we explain in this report and adjust Medicare payment rates to risk contract HMOs accordingly.

Agency Comments

In commenting on a draft of this report, HHS agreed that, because Medicare HMO enrollees tend to be healthier than FFS beneficiaries, the current payment methodology may have resulted in Medicare's overpaying HMOs substantially—according to HHS, by $1 billion in fiscal year 1996. HHS noted that the President's fiscal year 1998 budget proposes to address the excess payment problem by lowering HMO capitation rates in calendar year 2000 and developing a new payment system to be phased in beginning in 2001. However, our recommended rate-setting change could be implemented much sooner and would continue to be useful after HCFA develops a new HMO payment system.

Although HHS did not question that our recommended rate-setting change would save hundreds of millions of dollars each year for Medicare and taxpayers, the Department doubted the change would be equitable and relatively easy to implement. However, our approach to reducing excess payments is equitable because it is targeted—in contrast to HHS' proposed across-the-board cut—and would reduce payments only in those counties where HMOs receive excess payments. Furthermore, our recommended change should require very little additional HCFA staff time and no collection of new data. (See app. IV for the full text of HHS' comments and our response.)

As arranged with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days after its issue date. At that time, we will send copies to the Secretary of Health and Human Services; the Director, Office of Management and Budget; the Administrator of the Health Care Financing Administration; and other interested parties. We will also make copies available to others upon request.

This work was done under the direction of William J. Scanlon, Director, Health Financing and Systems Issues. If you or your staff have any questions about this report, please contact Mr. Scanlon at (202) 512-7114. Other GAO contacts and staff acknowledgments are listed in appendix V.

Sincerely,

Richard L. Hembra
Assistant Comptroller General

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Abbreviations

AAPCC	adjusted average per capita cost
EDB	Enrollment Database File
FFS	fee-for-service
HCFA	Health Care Financing Administration
HHS	Department of Health and Human Services
HMO	health maintenance organization
PAEP	percent aggregate excess payment
PPRC	Physician Payment Review Commission
RTM	regression toward the mean
RTMF	regression-toward-the-mean adjustment factor
SAC	standard average cost

Methodology

Despite evidence from a number of studies[18] that health maintenance organization (HMO) enrollees tend to be healthier than demographically comparable fee-for-service (FFS) beneficiaries ("favorable selection"), the Health Care Financing Administration (HCFA) rate-setting method implicitly assumes that the health service needs of both groups are the same. To the extent that favorable selection occurs, HCFA's assumption increases the capitation rates HCFA pays to risk HMOs and results in excess payments. This appendix describes how making more realistic assumptions concerning the health status of HMO enrollees can partially correct the excess payment problem. In essence, our approach determines the extent to which HCFA's method overestimates average Medicare FFS costs and thus inflates the county rate—one component of HMO capitation payments.[19] This appendix also briefly discusses a related method for estimating aggregate excess payments.

Method for Reducing Excess HMO Payments by Correcting Medicare's County Rate

The basic steps HCFA takes to determine capitation payments can be described as follows.

Step 1

HCFA calculates the per capita costs in Medicare FFS, or standard average cost (SAC). This is done for each county, partly to allow for geographic differences in medical prices.

Step 2

The basic capitation rate, or county rate, is set at 95 percent of the county per capita cost. That is, COUNTY = 0.95 • SAC.[20]

Step 3

Finally, payments for specific individuals are adjusted up or down on the basis of a limited set of demographic factors, or "risk factors." These risk

[18]See footnotes 7 and 8 for studies that have addressed the issue of favorable selection in HMOs.

[19]If HMOs experienced adverse selection (if they enrolled beneficiaries who, on average, were less healthy than FFS beneficiaries), our method would also determine the extent to which HCFA's methodology underestimated a county's average Medicare costs.

[20]More precisely, Medicare determines four such rates for each county: one each for part A aged, part B aged, part A disabled, and part B disabled.

factors are intended to partially adjust for differences in expected health care costs of beneficiaries of different ages, gender, and so on.[21]

Essentially, the capitation rate formula can be expressed as follows:

Equation 1

$$\text{Capitation Rate} = \text{Risk Factor} \cdot 0.95 \cdot \text{SAC}$$

Sources of Excess Payments to HMOs

Excess payments can occur if HMOs enroll a group of beneficiaries that is healthier than the average FFS beneficiary and the capitation rate is not sufficiently adjusted for the differences in health status. In HCFA's current method, favorable selection can cause excess payments, partly because HCFA's risk factors inadequately adjust for differences in beneficiaries' health status and partly because SAC overstates the costs of serving HMO enrollees.

HCFA's Risk Factors Are Rough Proxies for Expected Health Costs and Do Not Fully Adjust Payments for Favorable Selection

HCFA's risk factors adjust for favorable selection using five characteristics (age, sex, Medicaid eligibility status, institutional status, and working status) that are relatively poor predictors of beneficiaries' health care needs.[22] Specifically, the risk factors are a set of weights—intended to reflect the relative health risk of each beneficiary—used to adjust the basic capitation rate up or down. For example, the weight assigned to 65- to 70-year-old males was .85 in 1995, implying that they had a greater health cost risk—higher expected health costs—than 65- to 70-year-old females, whose weight was .70. Beneficiaries with the same risk factor are assumed to have the same relative health service needs. However, if 70-year-old males enrolling in HMOs tend to be healthier than the 70-year-old males who remain in FFS, then the risk factor will overcompensate for the enrollees' costs and the HMOs are said to have benefited from favorable selection.

HCFA's Capitation Rate Is Inflated by Favorable Selection

If HMOs' enrollees tend to be healthier than the average beneficiary in FFS, then HCFA's method will overestimate the expected cost of serving

[21]The risk-adjustment component assigns each enrollee to 1 of 70 risk adjustment cells for aged and disabled beneficiaries (with different cell weights for part A and part B). Payment rates for beneficiaries with end-stage kidney disease are computed separately.

[22]In 1994, we reported that "the demographic variables HCFA uses [as risk adjusters] are only loosely associated with health care costs . . .." See Medicare: Changes to HMO Rate Setting Method Are Needed to Reduce Program Costs (GAO/HEHS-94-119). For a more recent discussion of the weak correlation between HCFA's risk factors and beneficiaries' health care needs, see Physician Payment Review Commission (PPRC), Annual Report to Congress (Washington, D.C.: Physician Payment Review Commission, 1996).

Medicare beneficiaries in FFS. The foundation of the rate-setting formula consists of the standard average cost to Medicare of a county's FFS beneficiaries.[23] (By standard, we mean this cost measure is normalized for differences in each county's demographic composition, relative to the national average).[24] HCFA calculates SAC from the costs of FFS program beneficiaries alone (SAC_{FFS}).[25,26] However, to the extent that the health care costs of Medicare's HMO enrollee population are lower, on average, than those of beneficiaries in FFS, the exclusion of HMO enrollees' costs (that is, what they would have cost Medicare in FFS) causes SAC and, ultimately, the capitation rate, to be too high.[27]

A better way to set Medicare HMO rates would be based on a SAC that reflected both the costs of beneficiaries in FFS (SAC_{FFS}) and what the costs of HMO enrollees would have been if they had been in FFS (SAC_{HMO}). Setting rates this way would lessen the amount of adjustment needed to reflect differences in health status because HMO enrollees' expected FFS costs would already be included. The estimated average cost for all beneficiaries in the county could be calculated as a weighted average of SAC_{FFS} and SAC_{HMO}, where p_{FFS} and p_{HMO} are the proportions of county beneficiaries in FFS and HMOs, respectively. (See equation 2.)

Equation 2

$$SAC_{ALL} = p_{FFS} \cdot SAC_{FFS} + p_{HMO} \cdot SAC_{HMO}$$

[23]Section 1876(a)(4) of the Social Security Act (42 U.S.C. 1395mm(a)(4) (1994)) provides that the Secretary of Health and Human Services (HHS) estimate the average per capita amount that "would be payable . . . if the services were to be furnished by other than an eligible organization . . ."—that is, by FFS.

[24]To normalize (or standardize) the average cost for any beneficiary group, HCFA divides that average cost by the average risk-adjustment factor for that beneficiary group. The normalized average is representative of a demographically average Medicare beneficiary.

[25]HCFA's rate-setting method appropriately discards HMO payments (to arrive at SAC_{FFS}) because they do not represent what HMO enrollees' costs would be if measured on an FFS basis.

[26]HCFA's computation of the average is actually a forecast of expected costs for the contract year. HCFA actuaries develop the forecast using cost experience data from a "base year," which is usually 3 years prior to the contract year. In setting county rates for contract year 1995, for example, HCFA used 1992 (and earlier) data. For a detailed description of HCFA's rate-setting method, see Office of the Actuary, HCFA, Adjusted Average Per Capita Cost Methodology For Risk-Sharing Contracts (Baltimore, Md.: HHS).

[27]A number of studies, summarized in table 15.1 of PPRC's 1996 Annual Report to Congress, p. 258, have found that HMO enrollees' costs are lower than comparable FFS beneficiary costs.

However, because HCFA cannot directly observe what the FFS costs would have been for beneficiaries currently enrolled in HMOs (SAC_{HMO}), the agency assumes that the averages for the two groups are equal.

If relatively healthy beneficiaries enroll in HMOs while less healthy beneficiaries remain in Medicare FFS, however, SAC_{HMO} will be less than SAC_{FFS}. By assuming the two costs are equal, HCFA overstates the expected cost of serving HMO enrollees under FFS. This overestimate increases as the gap between SAC_{FFS} and SAC_{HMO} widens and can increase as the proportion of beneficiaries in HMOs (p_{HMO}) increases. Because SAC forms one of the building blocks in the capitation rate formula, overestimating SAC leads to excess payments to HMOs.

The following examples illustrate how, in the presence of favorable selection, HCFA's calculation of SAC and COUNTY results in excess payments to HMOs.

- If a county had 10 demographically identical beneficiaries, 8 of whom cost Medicare nothing each year and 2 who cost $2,000 each, the county's average per capita cost, or SAC_{ALL}, would equal $400 ($4,000 divided by the 10 beneficiaries). If no beneficiaries were enrolled in HMOs, SAC_{FFS} would equal SAC_{ALL}, or $400. In contrast, if two beneficiaries costing Medicare nothing had joined HMOs, SAC_{FFS}—on the basis of the eight remaining FFS beneficiaries—would equal $500 ($4,000 divided by eight).
- Under HCFA's method, COUNTY would be $500 • .95—reflecting just the average costs of beneficiaries in the FFS sector—instead of $400 • .95. Thus, Medicare would pay HMOs $100 • .95 more than if capitation rates were based on the actual average expected FFS cost of all beneficiaries in the county.

Furthermore, the enrollment of additional beneficiaries with low costs in the county's HMOs would widen the disparity between SAC_{FFS} and SAC_{ALL}. For example, if six beneficiaries costing Medicare nothing had joined HMOs, SAC_{FFS} would equal $1,000 ($4,000 divided by the four beneficiaries still in FFS) or more than double SAC_{ALL}'s value of $400. In this case, Medicare's payments to HMOs would be based on a COUNTY equal to $1,000 • .95 instead of the appropriate $400 • .95.

Estimating Expected FFS Costs for HMO Enrollees

We developed a method to estimate the potential FFS costs for HMO enrollees that allows calculation of average FFS cost estimates based on all beneficiaries living in the county (SAC_{ALL}).[28,29] We identified the FFS cost experience of recent risk HMO enrollees prior to their HMO enrollment. Drawing on these prior-use cost data and data on changes in individuals' health costs over time, we estimated the expected costs (on an FFS basis) of people who had been enrolled in an HMO for different periods of time. Finally, we combined these estimates to calculate SAC_{HMO}, which reflected the characteristics of the county's HMO enrollees, including the length of time they had been HMO enrollees. This "prior-use" cost approach is necessary because no other relevant cost data are currently available to HCFA. After a beneficiary enrolls in an HMO, HCFA receives no information on the health care services provided to the beneficiary or their costs.

We made adjustments to respond to two major criticisms of previous studies that employed prior-use costs to estimate expected post enrollment costs.

1. Unadjusted prior-use estimates do not allow for the possibility that enrollees' average expected costs can regress toward the mean cost of FFS beneficiaries. That is, as time passes, enrollees' average costs can rise and approach the average costs of the FFS beneficiaries, rather than remain at their preenrollment levels. If this happens, the disparity between the prior-use costs of HMO enrollees and the costs of comparable FFS

[28]HCFA's methodological steps, especially those for updating the 1992 cost estimates to a 1995 basis, are complex. However, our method to estimate excess payments is not sensitive to much of this complexity. In particular, our method improves the estimate of SAC while leaving intact all subsequent calculations that HCFA would make involving SAC. (That is, these later calculations still apply whether our estimate of SAC or HCFA's is used.) Thus, if our estimate of SAC is less than HCFA's by 10 percent, this amount would be passed directly through all subsequent calculations. As a result, payment rates determined with our method would be 10 percent lower than those determined with HCFA's method.

[29]We mirrored HCFA's methodology in developing estimates of SAC_{ALL} and SAC_{FFS} from base-year (or earlier) data. However, we did not follow the HCFA approach of using a 5-year average to estimate SAC_{FFS}. On the basis of our comparison of the 5-year Average Geographic Adjuster to the base-year Geographic Adjuster, we concluded that the 5-year averaging had little or no effect during our sample years. Nonetheless, our approach could be modified to incorporate the 5-year average approach.

beneficiaries overstates the actual difference in cost that exists in years following enrollment.[30]

2. Unadjusted prior-use estimates underrepresent enrollees' "death costs." Unadjusted prior-use cost methodologies cannot take account of the full costs associated with death for enrollees, because beneficiaries must survive the prior year to enroll.

Not making these adjustments could result in an overestimate of excess Medicare HMO payments.

In developing our method to approximate SAC_{HMO}, we struck a balance between two potentially conflicting goals: (1) minimizing the computational burden and (2) maximizing the accuracy of the enrollees' expected FFS cost estimate. The particular assumptions and modifications of our augmented prior-use methodology are detailed below. We recognize, however, that other approaches to approximating SAC_{HMO} could also result in slightly different, but equally plausible, estimates of enrollees' expected FFS costs.[31] Once we estimated SAC_{HMO}, we used the proportions of beneficiaries in FFS and HMOs to compute SAC_{ALL}. (See equation 2.) Because we also knew actual HMO payments for each county, we could use our new estimates to compute estimates of county rate excess payments.

Beneficiaries Classified According to Enrollment Status

Because Medicare allows beneficiaries to switch among specific HMOs or between an HMO and FFS monthly, we classified beneficiaries according to the number of months they spent in a risk HMO or FFS during calendar years

[30]As applied in the context of health insurance and HMOs, the statistical concept of regression toward the mean suggests that beneficiaries join HMOs during periods of unusually good health (low cost) but at some point after enrollment experience cost increases relative to the FFS mean. This hypothesis of regression toward the mean is plausible. A beneficiary is apt to be influenced to join or avoid an HMO by his or her perceived health status. Beneficiaries who have recently experienced poor health—and incurred higher than average costs—may be reluctant to join HMOs. They may have formed a close relationship with a physician who is not part of the HMO network, fear that certain medical services might not be covered by HMOs, or simply prefer having greater choice in selecting a physician. In contrast, beneficiaries who have previously experienced unusually good health may place a higher value on the monetary benefits that HMOs often provide: zero premiums, low deductibles, low copayments, and additional benefits.

[31]For example, the prior-use measure of enrollees' costs could be obtained by combining data from several prior years rather than just the most recent year. Such cost estimates would still need to be adjusted to account for RTM and death costs.

1991 and 1992.[32,33] We defined beneficiaries as enrollees (in risk HMOs) if they were Medicare eligible in 1991 and were enrolled in a risk contract HMO at least 7 months in 1992. We assigned beneficiaries who died in 1992 to the enrollee category if (1) they died while enrolled in a risk contract HMO and (2) it would have been feasible for them to have completed 7 months enrolled in an HMO in 1992 had they lived all 12 months of 1992.[34,35]

To estimate SAC_{HMO}, we needed to develop FFS cost estimates for those beneficiaries soon to enroll in HMOs. Therefore, we created the category of joiners, a subset of enrollees. Joiners are beneficiaries who spent at least 6 months in FFS in 1991 and at least 7 months in a risk HMO in 1992.

To estimate SAC_{FFS}, we used FFS costs for beneficiaries who spent at least 6 months in FFS in both 1991 and 1992. Beneficiaries who died in 1992 and did not meet the criteria for inclusion in the enrollee category, but who were enrolled in FFS for at least 6 months in 1991, were assigned to the FFS category.

Prior-Year FFS Spending Used to Estimate Base-Year Costs for Each Beneficiary Category

We adjusted prior-year cost data of joiners to approximate average costs in the base year for enrollees[36] because their costs (on an FFS basis) are unobserved while they are HMO enrollees.[37] (See table I.1 for a summary of how we adjusted prior-use costs.) In each case, we constructed average

[32]To analyze contract year 1995, we used enrollment data from 1991-92; for the 1996 contract year, we used 1992-93 enrollment data; for the 1997 contract year, we used 1993-94 enrollment data.

[33]Because Medicare cost HMOs do not receive capitated payments, our analysis includes beneficiaries enrolled in such HMOs and their costs as part of the FFS sector.

[34]Because we express the criteria for those who do not die in numbers of months, those who died in 1992 might not meet the enrollment criteria to be assigned a category. However, including beneficiaries who die is important because they often incur extraordinarily high health care costs.

[35]Beneficiaries considered disenrollees were excluded from these groupings and our analysis. We defined disenrollees as beneficiaries that either (1) were enrolled in an HMO at least 7 months in 1991 and fewer than 7 months (including months deceased) in 1992 or (2) met the criteria for enrollees but then died in 1992 while not enrolled in an HMO (this is a small percentage of all enrollees who died in 1992). Empirical studies have shown that these beneficiaries, once disenrolled from an HMO, have higher costs than the FFS average. Therefore, had we accounted for their costs in determining SAC_{FFS}, we would have obtained a larger disparity between the cost of HMO enrollees and FFS beneficiaries, and consequently larger estimates of excess payments to HMOs.

[36]Although costs of FFS beneficiaries during 1992 were available, we used 1991 costs so that the FFS cost measures would be comparable to the (prior-use) costs for enrollees, which are also obtained from 1991 data.

[37]Base-year (1992) cost data were available for FFS beneficiaries only. To maintain comparability with the joiners' cost estimates, we also obtained the costs of FFS beneficiaries from 1991 data. Thus, the 1992 costs of both the joiners and FFS beneficiaries were approximated by their actual FFS costs in 1991. In contrast, Medicare uses cost data from 5 consecutive years, the base year being the most recent, to approximate FFS costs. The 5-year average approach will minimize the influence of an outlier year.

monthly costs using total Medicare claims paid and months of FFS eligibility.[38] The assumptions and adjustments we made to assign costs to the enrollee category of beneficiaries are described in the following sections.

Table I.1: How HMO Enrollee and FFS Beneficiary Costs Were Estimated, Sample Year 1992

	Cost estimate	
Beneficiary group	**Cost measure**	**Adjustment to cost measure**
HMO enrollees	1991 costs of people who joined an HMO in 1992 (joiners)	Costs increased to account for RTM effect
FFS beneficiaries	1991 costs of all FFS beneficiaries	None
People who died within the sample year (1992)		
HMO enrollees	Costs of people who died in FFS in 1991	None
FFS beneficiaries	Costs of people who died in FFS in 1991	None

Joiners' Prior-Use Costs Used to Estimate All HMO Enrollees' Costs

In estimating SAC_{HMO}, we used the prior-use costs of joiners as a baseline in estimating the (unobserved) expected FFS costs of all HMO enrollees. Adjusting these baseline costs for regression toward the mean and death costs translates the joiners' costs into enrollees' costs.

Our analysis of HMO enrollees from several years suggested that new HMO enrollees (joiners) in a given year tend to be similar—in terms of cost histories prior to joining an HMO—to longer-term HMO enrollees. Therefore, we assumed that enrollees' costs could be estimated by adjusting joiners' costs for expected cost changes after enrollment. This assumption enabled us to estimate costs for all HMO enrollees on the basis of a subset who had FFS costs in the prior year. (If the data had not supported this assumption, we would have had to collect FFS costs on all HMO enrollees prior to their enrollment. Because some enrollees had been HMO enrollees for several years while Medicare eligible, this more comprehensive task would have required complex adjustments to account for changes in price levels, medical practice patterns, and technology across years. In fact, such an

[38]Because the demographic characteristics of each group of beneficiaries may be different, and because health care costs vary by those characteristics, it would be inappropriate to compare average costs between groups without controlling for such demographic differences. Therefore, the average cost estimates of all groups were made comparable, or normalized, by dividing each group average cost by the group's risk-adjustment factor—as determined by HCFA. In effect, each cost estimate corresponds to a representative individual within the group who has a risk adjustment factor of 1.0.

approach would not have been possible for beneficiaries who enrolled in an HMO upon becoming Medicare eligible.)

We tested our assumption that joiners' costs—with some adjustments—are representative of enrollees' costs by examining joiners' costs over several years. Noting that most enrollees were joiners in earlier years,[39] we examined whether the relationship of joiners' costs in the base year to average costs of those remaining in the FFS system was similar to the relationship of joiners' costs in earlier years, relative to FFS beneficiaries' costs. We found that the ratio of joiners' to FFS beneficiaries' costs remained relatively stable over time. Therefore, we concluded that joiners' costs (in the base year) are representative of the just-prior-to-enrollment costs of enrollees from many years before the base year.[40]

The ratio of joiners' costs to FFS beneficiaries' costs showed no trend and did not differ greatly from year to year. In fact, in all the years we examined, the ratio varied by less than 10 percent of its 3-year average.[41] This suggests that, relative to FFS beneficiaries, soon-to-be HMO enrollees in 1992 and 1993 (who constituted about 25 percent of all HMO enrollees in 1994) were very similar to soon-to-be HMO enrollees in 1994. Ratios for each of three California counties for the years 1992 through 1994 are shown in table I.2.[42]

[39]Beneficiaries who enrolled in a risk contract HMO immediately upon becoming eligible for Medicare were excluded from our joiner group because their costs were not observable until or unless they disenrolled. These "age-ins" composed about 24 percent of all new HMO enrollees in California during 1992-94. These age-ins may be included as enrollees in the following year when they meet the enrollee criteria. For the purposes of our analysis, we assumed that the costs of age-ins, when they became enrollees, were like those of all other HMO enrollees. (That is, they resembled joiners from earlier years.) We based this assumption on the fact that death rates for 65-year-old FFS beneficiaries are about 25 percent higher than for 65-year-old risk contract program age-ins. This finding is consistent with the differences (and age-related trend) in death rates we observed between joiners and FFS beneficiaries (see table II.5).

[40]If the empirical relationship between joiners' costs and FFS beneficiaries' costs is not stable across years, the prior-use costs of enrollees (from multiple prior years) could provide an alternate baseline for enrollee costs. Moreover, this option should be considered when the number of joiners in any given year is insufficient to obtain a reasonable estimate of baseline enrollee costs. This option would minimize the influence of outlier observations on the baseline estimate. As noted in app. III, we found that a minimum of 500 joiners per county appeared to provide reasonably stable baseline average cost measures. Furthermore, counties below that threshold did not display significant excess payments.

[41]The variation in cost ratios was greatest for Sacramento, the smallest county in terms of HMO enrollment. This suggests that our method to estimate excess payments may be less precise for low-enrollment counties than for high-enrollment counties.

[42]App. III describes our data set.

Table I.2: Ratios of Monthly Average Costs of New Risk HMO Enrollees to FFS Beneficiaries' Costs for Three California Counties, 1992-94

	Year			
	1992	**1993**	**1994**	**1995**
Los Angeles				
Joiners	$161	$184	$189	$178
FFS beneficiaries	333	362	399	365
Ratio	**.48**	**.51**	**.47**	**.49**
San Diego				
Joiners	162	195	191	183
FFS beneficiaries	285	315	342	314
Ratio	**.57**	**.62**	**.56**	**.58**
Sacramento				
Joiners	159	204	198	187
FFS beneficiaries	268	298	318	295
Ratio	**.59**	**.68**	**.62**	**.63**

Note: To reduce the computational burden for the purposes of this example, we did not normalize these cost measures to reflect the costs of an average beneficiary, and we excluded the costs of the disabled and of the FFS and joiner beneficiaries who died in the year of reference. Normalizing these cost measures would bring the FFS costs closer to the joiners' costs. On the basis of our other analyses, however, we believe that normalization would only increase the ratio levels by about .1, which would not significantly alter the cost relationships of FFS to joiners either across years or counties.

Prior-Use Costs of Joiners Adjusted for Regression-Toward-the-Mean Effect

After a beneficiary joins an HMO, it is hypothesized that the beneficiary's cost is likely to increase relative to his or her FFS costs in the year prior to enrolling. Such cost increases seem likely for two reasons. First, beneficiaries may postpone discretionary care in the months prior to joining an HMO so that they can take advantage of HMOs' typically lower copayments. Second, beneficiaries may be more likely to join HMOs during a spell of unusually good health. This expectation that costs increase is known as "regression toward the mean" (RTM). To the extent that RTM occurs, unadjusted prior-use costs of joiners understate the initial average health care costs of new HMO enrollees, as well as the costs of all HMO enrollees.

HCFA's method for determining HMO capitation rates implicitly assumes that RTM is full (100 percent) and immediate. That is, HCFA assumes that, upon enrolling in an HMO, joiners' costs immediately increase to equal the average cost of FFS beneficiaries. Although it is reasonable to expect some

RTM, no evidence supports a 100-percent effect that occurs so soon after enrollment.

We estimated the degree of RTM likely to occur and used this estimate to adjust joiners' prior-use costs so they more accurately represented all enrollees' costs. We derived our estimate of the regression effect, which we term the "regression-toward-the-mean adjustment factor" (RTMF), from actual FFS cost data for beneficiaries whose cost and demographic characteristics resembled those of joiners and from the actual distribution of enrollees' HMO tenure. Our analysis of 1995 data suggested that the RTMF was about half of the maximum potential effect—50 percent, as opposed to the 100-percent RTMF that HCFA's methodology implicitly assumes. (For further discussion of the RTMF, see app. II.)

Prior-Use Costs Adjusted for Death Costs

Because new HMO enrollees, by definition, do not die during the period just prior to their enrollment, prior-use cost data understate the costs of HMO enrollees who die during the year. The costs associated with the final months of life—"death-related costs"—are typically substantial. Consequently, we accounted for them to avoid underestimating SAC_{HMO}. We assumed that the costs of an HMO enrollee who died equal the costs of an FFS beneficiary who died. To find the average cost estimate for the deceased, we divided the calendar year total costs of all FFS beneficiaries deceased in 1991 in each county by the number of months those beneficiaries were alive during the year.

Our adjustment was equivalent to imposing a 100-percent RTM effect on the costs of HMO enrollees who died during the base year. Because favorable selection can result in HMOs' having lower mortality rates than FFS, we imputed death costs only for HMO enrollees who died during the year. This approach accounted for excess payments to HMOs in counties where mortality rates were lower in HMOs than in FFS.

Calculating County-Rate Excess Payments That Are Due to Using Only FFS Beneficiaries' Experience to Set Rates

After estimating the average expected costs of serving all of a county's beneficiaries in FFS (SAC_{ALL}), we could estimate the excess capitation payments that resulted from HCFA's method of calculating SAC and the county rate. The formula for determining capitation rates can be expressed as the following:

Equation 3

$$\text{Capitation Rate} = \text{Risk Factor} \cdot 0.95 \cdot SAC_{ALL}$$

However, HCFA estimates average costs using only beneficiaries actually in FFS, so that HCFA's formula is actually this:

Equation 4

$$\text{Capitation Rate} = \text{Risk Factor} \cdot 0.95 \cdot SAC_{FFS}$$

Consequently, the excess capitation rate can be estimated by the following:

Equation 5

$$\text{Excess Capitation Rate} = \text{Risk Factor} \cdot 0.95 \cdot (SAC_{FFS} - SAC_{ALL})$$

The risk factor term is specific to individual beneficiaries. On the basis of their demographic characteristics, it can take on values greater or less than 1.0. The total of county rate excess payments for a given county is obtained by summing the individual level excess payment amounts, expressed by equation 5. We applied this methodology to California's 58 counties to estimate county-rate excess payments for 1995, 1996, and 1997. Our estimates are presented in appendix III.

Method for Estimating Medicare's Aggregate Excess Payments

This section describes the steps we followed to estimate aggregate excess payments to HMOs, that is, total excess payments caused by the full effect of favorable selection on the rate-setting formula. Our method compares what Medicare paid for risk contract HMO enrollees to what Medicare would have paid for the same enrollees had they not joined HMOs. Although this method establishes a benchmark for excess payments against which HMO payment reforms can be measured, we do not suggest that HCFA use the methodology described below to adjust capitation rates because it was not designed or tested as a rate-setting methodology.[43]

[43]In order to use this method to adjust rates, HCFA would need data that only become available after the contract year; hence, the method would have to be applied retroactively. Because the current payment method is prospective, such a change in approach could have consequences for the operation of the program that are not yet well understood.

Step 1

We estimated the average cost of HMO enrollees (AC_{HMO}) using the same prior-use approach described above. After our adjustments for RTM and death-related costs were applied, AC_{HMO} was representative of the costs of a group of HMO enrollees with the demographic characteristics of new HMO enrollees (joiners).[44]

Step 2

We used HCFA's method to calculate a county average capitation rate. Because AC_{HMO} reflected the demographic characteristics of only joiners, we calculated the average capitation rate for the joiner population (CAP_RATE_{JAVG}) so that it, too, reflected the demographic characteristics of only joiners. Specifically, we adjusted the 1995 county rate up or down according to the average risk factor of that county's joiners.

Step 3

We calculated the percent aggregate excess payment (PAEP) to risk contract HMOs in each county using the following formula:

Equation 6

$$PAEP = \frac{CAP_RATE_{JAVG} - AC_{HMO}}{CAP_RATE_{JAVG}}$$

CAP_RATE_{JAVG} and AC_{HMO} reflect the demographic characteristics only of joiners, but the cost characteristics of all HMO enrollees. Because these terms affect both the numerator and denominator, PAEP is demographically neutral—that is, demographic characteristics are canceled out in the expression.

To find aggregate excess payments that corresponded to actual HMO enrollees, we multiplied PAEP by total payments to risk HMOs by county.

We applied this methodology to estimate aggregate excess payments to HMOs in California's 58 counties in 1995. (See app. III.)

[44]We used 1994-95 data to define joiners, enrollees, and FFS beneficiaries for this analysis.

Adjustments for Regression Toward the Mean and Death-Related Costs in Estimating Excess Payments to Medicare HMOs

As explained in appendix I, establishing the Medicare capitation rate for HMOs on the basis of the cost of serving beneficiaries hinges on estimating the expected FFS costs of HMO enrollees (SAC_{HMO}). In turn, adequately estimating SAC_{HMO} requires adjusting HMO enrollees' observed prior-use costs for the increases expected to occur after they enroll. This increase has been labeled regression toward the mean because enrollees' average health costs, which are relatively low before joining the HMO, begin to rise over time and approach ("regress" toward) the average cost of similar beneficiaries who remain in FFS. This appendix describes our methodology to account for the RTM effect, including the high health care costs typically incurred during the last months of life. Although we drew on previous studies, available data required that we develop a new method of adjusting prior-use estimates of enrollees' costs for RTM.

HCFA implicitly assumes than HMO enrollees' costs fully regress (increase) to the mean of FFS immediately upon enrollment. Studies have generally found that, after a beneficiary enrolls in an HMO, his or her service use and costs rise. Nonetheless, HCFA's assumption that RTM is full and immediate receives no empirical support in the literature.[45] For example, Beebe found significant increases in the first year after enrollment and moderate increases thereafter. After 3 years, estimated costs of HMO enrollees were 94 percent of those of comparable FFS beneficiaries; by year 6, enrollees' estimated costs had risen modestly to 96 percent of FFS beneficiaries' costs.[46] A more recent study by Hill and others found that RTM closed half the gap in costs between HMO joiners and FFS beneficiaries.[47]

[45]Studies do differ, however, in their estimates of how fully and rapidly the costs of HMO enrollees regress toward the mean. While some have found that differences in cost between enrollees and the FFS population rapidly shrink after enrollment, others have found that initial cost differences are quite persistent. (See James Beebe, "Medicare Reimbursement and Regression to the Mean," Health Care Financing Review, 9 (3) (spring 1988), p. 9.)

[46]J. Beebe, "Medicare Reimbursement and Regression to the Mean," pp. 9-22. This study estimates RTM by tracking over time the costs of a "proxy joiner cohort"—that is, a group of beneficiaries who resemble new HMO enrollees but remain in FFS.

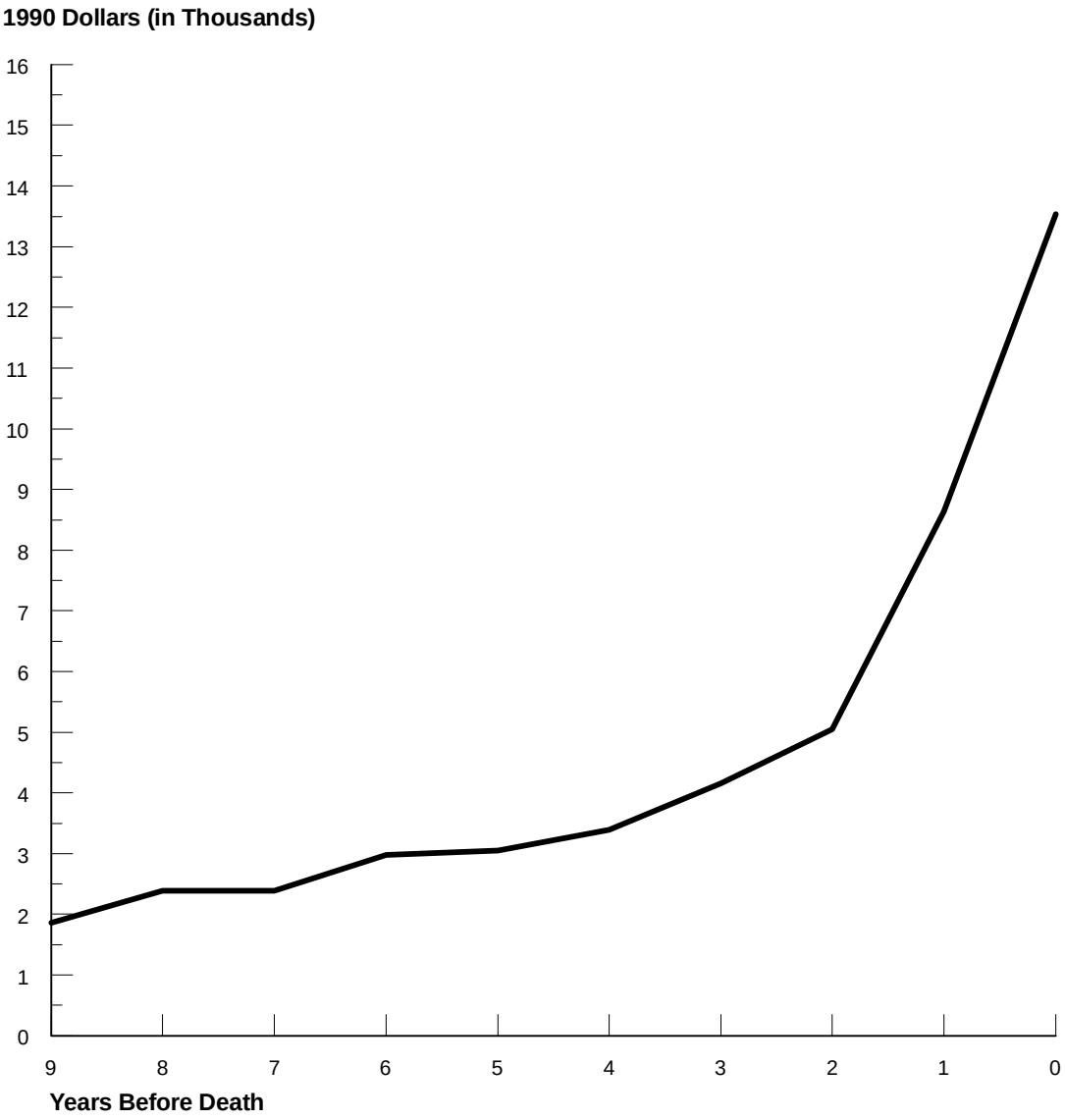
[47]J. Hill, R. Brown, D. Chu, and J. Bergeron, The Impact of the Medicare Risk Program on the Use of Services and Costs to Medicare, report to HCFA (Washington, D.C.: Mathematica Policy Research, Inc., Dec. 3, 1992). This study derives an estimate of RTM by comparing the estimated cost ratio of all enrollees with that of joiners. Joiners' costs were estimated by prior use, and enrollees' costs, by a survey of service use.

Methodology Allows RTM Factor to Vary by Beneficiary Survival Status

We allow our estimate of RTMF to differ between groups of beneficiaries, depending on whether they survived or died during the 4-year period that we analyzed. The association between mortality and average costs is well documented by previous studies. For example, Lubitz and others found that people in their last 12 months of life have costs that are significantly higher than those of other Medicare beneficiaries and account for a disproportionate share (about 28 percent) of health care expenditures. Similarly, average costs during the final 2 and 3 years of life, while not as large, are also considerably higher than the average for all beneficiaries.[48] This pattern is illustrated in figure II.1.

[48]See J. Lubitz, J. Beebe, and C. Baker, "Longevity and Medicare Expenditures," New England Journal of Medicine, 332 (15) (1995), pp. 999-1003; J. Lubitz and R. Prihoda, "Medicare Services in the Last 2 Years of Life," Health Care Financing Review, 5(3) (1984), pp. 117-31; J. Lubitz and G. Riley, "Trends in Medicare Payments in the Last Year of Life," New England Journal of Medicine, 328(15) (1993), pp. 1092-96.

Figure II.1: Annual Medicare Payments in the Years Preceding Death



Note: Figure shows costs for people who died at age 75.

Source: J. Lubitz, J. Beebe, and C. Baker, "Longevity and Medicare Expenditures."

The relationship between the degree of RTM experienced by HMO enrollees and their proximity to death has not been addressed by previous studies. Nonetheless, it is possible that enrollees surviving different lengths of time after joining an HMO would experience different degrees of RTM. For example, it is plausible that HMO enrollees in their last year of life might experience complete RTM, while those many years from death might experience little.

In our analysis, we allowed for the possibility that the appropriate RTM adjustment for a group of beneficiaries may depend on their proximity to death. Table II.1 presents the definitions of the beneficiary categories and the percentage of HMO enrollees (for California in sample year 1992) in each category.

Table II.1: Classification of HMO Enrollees by Survival Status

Category of enrollee	Status	Percentage of all HMO enrollees[a]
I	Survived 4 or more years	83.8
II	Survived at least 1 year but less than 4 years	12.9
III	Survived less than 1 year	3.3

[a]Percentages are based on 1992 Medicare risk HMO enrollees in California and include those who disenrolled in subsequent years.

Source: GAO analysis of HCFA data on Medicare beneficiaries.

Method Used to Estimate the RTM Factor for Category I Enrollees

To estimate RTMF for enrollees who survive for 4 or more years (category I enrollees), we developed an approach that generally follows Beebe's 1988 methodology. That is, we used 4 years of longitudinal data on a sample of the FFS Medicare population to track the cost experience over time of two proxy cohorts—one representing HMO joiners and one representing FFS beneficiaries. Our method involved four steps.

1. We randomly drew two samples—one reflecting the distribution of age, sex, and costs of new HMO enrollees (joiners)[49] and the second reflecting the distribution of age, sex, and costs of beneficiaries who remained in FFS.

2. We then computed, for each of 4 years, the ratio of the average annual cost of the proxy HMO joiners to the cost of the proxy FFS beneficiaries.

[49]In app. I, we defined new HMO enrollees (joiners) as beneficiaries with 6 or more months of FFS experience in the prior year and 7 or more months of HMO experience in the year that they join the HMO.

3. Next, we used these cost ratios to estimate how rapidly and fully the costs of HMO joiners converged toward those of FFS beneficiaries.

4. Finally, we combined the cost ratios with data on HMO enrollees' tenure within each county to produce a county-specific RTMF.

Description of FFS Beneficiary Data Set

We assembled a longitudinal data set that contained the claims for approximately 1.4 million California beneficiaries who were continuously enrolled in FFS Medicare between 1991 and 1994. Only beneficiaries who were eligible for part A and part B and who remained in the FFS sector for the entire 4-year period were included.[50] People under age 65 who were eligible for Medicare because of a disability and people with end-stage renal disease were excluded.

Methodology for Constructing the Proxy HMO Joiner and Proxy FFS Cohorts

We constructed two proxy cohorts, one with the same demographic mix and 1991 service cost distribution as the Medicare HMO joiners, and the other with the demographics and cost distribution of continuing FFS beneficiaries. To do this, we divided the FFS data set into 10 age and sex subgroups[51] and further divided each subgroup into 25 smaller strata according to the cost of services they received in 1991. We then selected two stratified random samples—one for each proxy cohort—from each demographic subgroup. We limited each sample to 20 percent of the size of its corresponding demographic subgroup within the FFS data set. The sample sizes within each cost stratum were determined by the actual cost distribution of HMO joiners and continuing FFS beneficiaries.

Table II.2 lists the cost strata for one demographic subgroup: females aged 65 to 69. Columns 2 and 3 show the percent distribution of the actual FFS and joiner populations across 25 cost categories. For example, among females aged 65 to 69, 19.2 percent of the FFS population and 39.9 percent of the joiner population had no Medicare charges in 1991.

[50]We excluded those who died during the 1991 through 1994 period from our analysis. Our treatment of people who die within 4 years of enrollment is discussed in the following sections pertaining to category II and III enrollees.

[51]These groups are (1) male, aged 65-69; (2) female, 65-69; (3) male, 70-74; (4) female, 70-74; (5) male, 75-79; (6) female, 75-79; (7) male, 80-84; (8) female, 80-84; (9) male, 85+; and (10) female, 85+.

Table II.2: 1991 Distribution Across Cost Categories of HMO Joiners and FFS Beneficiaries, 65- to 69-Year-Old Females

	Percentage distribution of beneficiaries		Number of beneficiaries		
Cost	FFS	Joiner	Longitudinal population of beneficiaries[a]	Proxy FFS cohort sample	Proxy joiner cohort sample
$0	19.2	39.9	37,595	8,362	17,392
1-99	9.4	9.8	20,264	4,104	4,267
100-199	8.5	7.9	18,329	3,687	3,439
200-299	7.4	6.1	15,981	3,213	2,646
300-399	6.2	4.6	13,584	2,690	2,021
400-599	9.1	6.9	20,228	3,963	3,004
600-799	6.2	4.6	13,832	2,692	2,011
800-999	4.5	2.9	10,066	1,956	1,252
1,000-1,499	7.1	4.6	16,059	3,083	2,004
1,500-1,999	3.9	2.4	8,869	1,699	1,035
2,000-2,499	2.6	1.4	5,807	1,112	590
2,500-2,999	1.9	1.2	4,411	840	535
3,000-3,499	1.5	0.9	3,356	638	404
3,500-3,999	1.2	0.7	2,678	507	297
4,000-4,499	1.0	0.6	2,263	432	262
4,500-4,999	0.9	0.5	2,091	395	207
5,000-5,999	1.6	0.8	3,608	677	362
6,000-6,999	1.2	0.7	2,787	522	304
7,000-7,999	0.9	0.6	2,049	391	255
8,000-9,999	1.3	0.6	2,944	558	279
10,000-14,999	1.9	1.1	4,312	811	476
15,000-24,999	1.7	0.7	4,011	742	321
25,000-49,999	1.0	0.5	2,377	440	214
50,000-74,999	0.2	0.0	379	70	21
75,000-99,999[b]	0.0	0.0	83	15	7
Total	**100**	**100**	**217,963**	**43,599[c]**	**43,605[c]**

[a]Composed of people in Medicare FFS for 48 consecutive months, from 1991 through 1994.

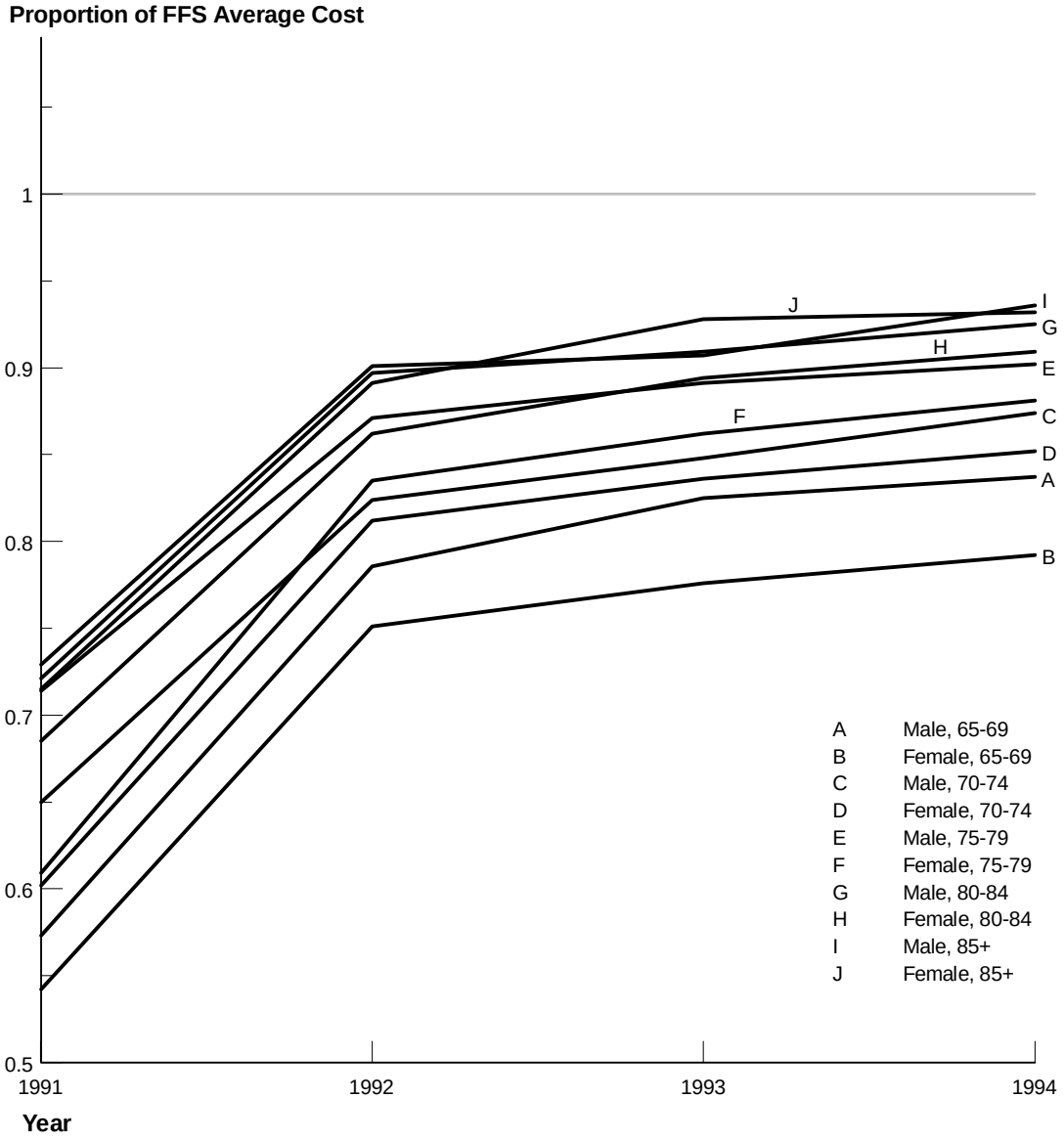
[b]Because of insufficient representation in the population, beneficiaries with costs in the first year of $100,000 or more were excluded from the analysis.

[c]The totals in columns 5 and 6 each represent 20 percent of the total in column 4, which is the entire category of 65- to 69-year-old female beneficiaries. The slight difference between column 5 and column 6 totals is due to rounding error associated with sampling the 25 cost strata.

Ratio of Proxy HMO Joiners' Costs to Proxy FFS Beneficiaries' Costs

Within each demographic group, we calculated the ratio of the proxy HMO joiner cost average to the proxy FFS cost average for each of 4 years (1991 through 1994). The results are presented in figure II.2, which shows that the pattern of changes in the cost ratios over time displays a high degree of consistency across demographic groups.

Figure II.2: Regression-Toward-the-Mean Patterns for 10 Demographic Groups of Proxy HMO Enrollees



The weighted average (across demographic groups) of these cost ratios is shown in table II.3.[52] These ratios show how rapidly and fully the costs of the overall proxy HMO joiner cohort are likely to converge toward the costs of the proxy cohort in FFS.

Table II.3: Costs of Proxy HMO Joiners Relative to Those of Proxy FFS Beneficiaries, 1991-94

	Tenure in HMO (in years)			
Cost ratio	Year prior to enrollment (1991)[a]	Year 1 (1992)	Year 2 (1993)	Year 3 (1994)
Proxy HMO/proxy FFS	.64	.85	.88	.90

[a]As in our modified prior-use methodology for estimating excess payments, the year prior to enrollment is the benchmark for estimating HMO enrollee costs.

These cost ratios show that HMO enrollee costs (represented by proxy HMO joiners' costs) are about two-thirds of comparable FFS beneficiary costs in the year before enrollment, suggesting significant favorable selection. However, once beneficiaries enroll, their costs are expected to increase significantly relative to FFS costs in the first year; the proxy HMO cohorts' costs rose from 64 percent to 85 percent of FFS cost. In the second year of HMO enrollment, enrollees' relative costs are expected to rise moderately, and they did—from 85 percent to 88 percent. In the third year, enrollees' relative costs are expected to show a further, slight increase. By the end of the third year, enrollees' expected costs—as represented by their proxy cohort's costs—had regressed about 71 percent; the difference between enrollees' costs and those of FFS beneficiaries had declined from 36 percent to 10 percent. The slight increases in the proxy enrollees' costs (relative to the FFS beneficiaries' costs) after the first year suggest that complete regression either will not occur or will take many years.[53]

Calculating the RTMF From the Estimated Cost Ratios

We used the information on the joiners' estimated cost increases over time (presented in table II.3) to construct an RTMF for each county. Table II.4 illustrates the calculations for a hypothetical county (based on California data). First, we used our estimates to calculate the increase in expected

[52]The weights are assigned according to the proportion of the actual HMO joiner group that is accounted for by each demographic group.

[53]Several peer reviewers commented that, because proxy HMO enrollees are drawn from the FFS population, our method is conservative and may somewhat overestimate the degree of RTM. Our proxy HMO enrollees are, after all, FFS beneficiaries who chose not to join an HMO. If their reason for not joining an HMO was health-related, one could expect their costs (within each 1991 cost stratum) to exhibit greater increases over time than those of actual HMO enrollees.

FFS costs of people who had been enrolled in an HMO for 1, 2, or 3 or more years—relative to their prior-use costs. (See table II.4, row 1.) Computing a weighted average of these increases—where the weights reflect the tenure distribution of HMO enrollees in a given county—yielded a county's RTMF. (A tenure distribution representative of all California counties is presented in table II.4, row 2.) The RTMF of 1.40 combines information about how quickly and fully RTM occurs (row 1) with these data on the tenure of HMO enrollees.

Table II.4: Example of Derivation of Regression-Toward-the-Mean Adjustment Factor From Cost Ratios

	Number of years in HMO		
Measure	**1**	**2**	**3 or more**
Benchmark cost proportion: the cost ratio for each year divided by the cost ratio for the year prior to enrollment[a]	1.33	1.38	1.41
Tenure distribution: proportion of HMO enrollees for the county (from actual enrollment data)[b]	.11	.18	.71
RTMF: a weighted average of benchmark cost proportions, using the tenure distribution as weights[c]		1.40	

[a]For example, 1.38=.88/.64.

[b]The values shown here are for illustration. They represent the tenure distribution of enrollees for all California counties in 1993.

[c]This number is for a hypothetical county: RTMF = (.11 • 1.33) + (.18 • 1.38) + (.71 • 1.41) = 1.40. We constructed actual RTMF values for each county in each year on the basis of tenure in that county in the year.

Source: GAO calculations based on HCFA Medicare claims and enrollment data for 1992.

Method Used to Estimate the RTM Factor for Category II Enrollees

We could not estimate an RTMF for category II enrollees with the method that we used for category I enrollees. That method requires constructing proxy cohorts of HMO joiners and FFS beneficiaries, but the number of category II enrollees—those who survive between 1 year and 4 years after enrollment—was insufficient to do so.

We chose to assume full RTM for the year a joiner died and to apply our estimate of RTMF for category I enrollees to category II enrollees prior to the year they died. Research indicates that individuals' costs tend to rise most sharply in the months before death,[54] so we assumed the costs of

[54]The average cost of FFS beneficiaries who will live for 3 or more years (alive in 1995) is about one-fifth the average of those FFS beneficiaries in their final (calendar) year of life (that is, those who died in 1991). This finding is consistent with the work of Lubitz and others. See footnote 47.

category II enrollees in their year of death regressed fully to the mean of FFS beneficiaries' costs. With respect to the year or years before this last year of life, when individuals' costs generally rise less sharply, we applied the category I RTMF estimate to category II enrollees, which represented a significant increase in prior-use costs. If these assumptions over- or underestimate the RTMF for category II enrollees, the effect on the estimate of the county adjusted average per capita cost (AAPCC) rate will be quite small, given the limited number of category II enrollees.[55]

The RTM Factor for Category III Enrollees

The average costs of HMO joiners in the year of their death (in this case 1991) cannot be estimated. After all, joiners must live beyond the prior-use year (1991) to become HMO enrollees. This means that we lacked data to estimate the extent to which category III enrollees' average costs (in the year of their death) might remain below the costs of comparable FFS beneficiaries. Consequently, to account for enrollees' death-related costs that prior-use estimates cannot capture, we assigned to HMO enrollees who died in 1992 the costs of FFS beneficiaries with comparable demographic characteristics who died in 1991. Similarly, we used the costs of FFS beneficiaries who died in the prior-use year to approximate the costs of FFS beneficiaries who died in the sample year (1992). By setting the death-related costs of HMO enrollees equal to those of FFS beneficiaries, we assumed that, among category III enrollees, RTM in costs was complete.

Favorable Selection Indicated by Relatively Low HMO Death Rates

Although our method for estimating excess payments to HMOs assumed that no difference existed in death-related costs between HMO and FFS enrollees, it did not assume that the respective death rates were equal. As table II.5 shows, the death rates (per 100) of beneficiaries enrolled in HMOs are significantly lower than those of beneficiaries in FFS. This finding is consistent over time and across demographic groups. The lower death rates among HMO enrollees are a measure of favorable selection. Consequently, these lower death rates are partly responsible for the findings of excess payments to HMOs reported in appendix III.

[55]HCFA may have sufficient national data on category II enrollees to empirically estimate the RTM effect on these enrollees.

Table II.5: Death Rates, per 100, of Aged Medicare Beneficiaries by Demographic Group and Year, 1992-94

	1992		1993		1994	
Demographic	**FFS**	**HMO**	**FFS**	**HMO**	**FFS**	**HMO**
Male						
65-69	2.8	2.1	2.8	2.1	2.8	2.1
70-74	3.9	3.1	3.9	2.9	3.8	2.9
75-79	6.2	4.6	6.1	4.6	6.2	4.6
80-85	9.6	7.0	9.7	7.1	9.8	7.1
85+	16.9	12.3	16.9	12.3	17.8	12.7
Female						
65-69	1.7	1.2	1.7	1.1	1.8	1.2
70-74	2.5	1.7	2.5	1.7	2.6	1.7
75-79	4.0	2.7	4.0	2.7	4.3	2.7
80-85	6.2	4.2	6.5	4.2	6.7	4.2
85+	13.3	8.7	13.9	8.7	14.6	9.1
Weighted mean[a]	5.2	3.7	5.2	3.6	5.2	3.5

[a]To control for differences in the demographic composition of the FFS and HMO populations, population group means are weighted by the proportion of the FFS population in each demographic group.

Summary of Adjustments for RTM

We summarize below the source of empirical evidence we used to estimate the RTM experience for each category of enrollee, and how this evidence was used to arrive at a corresponding RTM adjustment factor.

Category I Enrollees

We used FFS data on cohorts of beneficiaries whose costs and demographic characteristics were comparable with those of HMO enrollees to simulate their RTM experience. On the basis of this simulation, we estimated an RTMF (a numerical factor) to adjust the average cost of category I enrollees upward.

Category II Enrollees

Because of insufficient sample size of cost strata, we could not conduct a simulation of proxy HMO enrollees' costs to estimate an RTMF. However, research indicates that individuals' costs tend to rise most sharply in the months before death. Consequently, we assumed these enrollees' costs regressed fully to the mean of FFS beneficiaries' costs. With respect to the year or years before the last year of life (when costs generally rise less sharply), we applied the category I RTMF estimate to category II enrollees.

Category III Enrollees

We could not conduct a category I-type simulation. Prior-use data provided only limited insight on the RTM experience for these enrollees. Consequently, we assumed that the costs of category III enrollees displayed complete RTM, that is, that their costs in the sample year were no different on average than costs for comparable FFS beneficiaries.

By making these RTM-related adjustments to our prior-use-based estimates of HMO enrollees' costs, we significantly lowered our estimates of HMO excess payments from what they would have been otherwise. Appendix III presents estimates of excess payments affected by the RTM adjustments described above.

Estimates of Medicare Excess Payments to HMOs in California

This appendix discusses our estimates of the amount of excess payments Medicare has made to California HMOs that participate in its risk contract program, in order to indicate the size and significance of this problem in Medicare's method of setting capitated rates. The appendix details the savings that could be realized by adopting our method to improve the county rate. These savings are implied by our estimates of county-rate excess payments for the years 1995, 1996, and 1997. The appendix also addresses aggregate excess payments to Medicare HMOs—the sum of county-rate and risk-adjuster-related excess payments—for 1995.

To reduce the computational burden, we limited our efforts to the 58 counties of California. Because risk contract program enrollees are concentrated in relatively few states,[56] demonstrating the magnitude of excess payments did not require us to produce estimates for every county nationwide. We selected the counties of California because (1) about 36 percent of all risk contract enrollees reside there, (2) rates of beneficiary enrollment in risk HMOs vary substantially across the 58 counties, and (3) in recent years, California has experienced rapid growth in HMO enrollment. Although our estimates pertain to a large portion of the risk contract program, we cannot project our estimates nationwide or to other states with demographically similar counties.

We constructed all our estimates from individual-level claims data,[57] using data from two HCFA sources: (1) the Enrollment Database File (EDB)[58] and (2) the HCFA claim files, which contain Medicare claims submitted by FFS providers.[59] We combined individual expenditure information with EDB data to produce a single enrollment/expenditure file containing information on approximately 4.3 million California residents.

[56]See Medicare HMOs: Growing Enrollment Adds Urgency to Fixing HMO Payment Problem (GAO/HEHS-96-21, Nov. 8, 1995). Two states (California and Florida) account for more than half of Medicare risk HMO enrollees.

[57]Compared with HCFA's rate-setting method, our improvement involves greater disaggregation of the claims data. We needed individual-level data for a key step in estimating excess payments: isolating the FFS costs of beneficiaries remaining in FFS from the costs of those about to join an HMO.

[58]The claim files contain detailed enrollment and entitlement data for all individuals who are or have ever been Medicare beneficiaries. Data items include age, sex, Medicare entitlement status, state and county of residence, and date of HMO enrollment.

[59]We extracted claims information from seven separate files for 1991-94: inpatient hospital, outpatient, home health agency, skilled nursing facility, hospice, physician/supplier, and durable medical equipment. We obtained expenditure information from the "payment amount" portion of the claim. Also, following HCFA's methodology, we added pass-through and per-diem expenses to the payment amount for inpatient claims. From the claim files, we computed annual expenditures for individual beneficiaries enrolled in the FFS program and produced separate part A and part B subtotals for the years 1991-94.

Estimates of County-Rate Excess Payments

Table III.1 presents estimates of county-rate excess payments in dollar amounts and as a percentage of risk contract program expenditures for each county. (The estimates are weighted averages of the excess payments in the rates for aged (parts A and B) and disabled (parts A and B).) The counties are ranked by excess payment amounts for 1997. We have included in table III.1 only those counties for which the number of new risk HMO enrollees exceeded 500 in the base year.[60,61] With respect to the excluded counties, the county-rate excess payments (in each year) total less than 3 percent of total county-rate excess payments in the state.

Table III.1: Medicare County-Rate Excess Payments for 20 California Counties in Dollars and as a Percentage of Program Payments, 1995-97

	County-rate excess payment amount (in millions)			County-rate excess payment as percentage of risk contract program payments		
County	**1995**	**1996**	**1997**	**1995**	**1996**	**1997**
Los Angeles	$135.3	$119.4	$182.7	6.56	5.32	7.62
San Diego	37.3	20.2	57.5	5.12	2.43	6.37
Orange	38.5	28.4	46.5	6.37	4.17	6.31
San Bernardino	23.4	21.1	29.5	5.79	4.61	5.99
Riverside	17.5	25.4	21.3	3.70	4.86	3.78
Alameda	•	5.7	12.5	•	1.75	2.96
Sacramento	3.2	4.1	10.2	1.62	1.40	2.77
Contra Costa	•	4.9	9.8	•	1.94	2.92
Ventura	6.6	4.7	8.8	4.80	2.91	4.97
Santa Clara	2.3	4.4	8.4	1.18	1.48	2.19
Kern	4.4	5.3	4.6	3.74	3.67	2.87
Sonoma	•	•	3.9	•	•	2.68
Stanislaus	•	•	3.8	•	•	3.08
San Mateo	2.9	2.7	3.7	2.25	1.53	1.70
San Luis Obispo	•	•	2.9	•	•	4.54
San Francisco	4.0	1.4	2.9	2.44	0.66	1.12
Santa Barbara	•	2.1	2.4	•	2.67	2.70
Butte	0.2	0.3	1.1	0.79	0.81	2.51
Fresno	•	•	0.6	•	•	0.79

(continued)

[60]The base year is 3 years prior to the contract year. We use base-year data to be consistent with HCFA's practice of calculating county rates from base-year enrollment and cost data.

[61]Joiner cost estimates are the starting point for estimates of all risk HMO enrollees' costs, so accuracy of joiner cost estimates is important. Given this, we sought to minimize the undue influence of outlier observations on our estimates. After examining our estimates for a wide range of joiner sample sizes, we concluded that a sample size of 500 would dampen outliers' influence and yield reasonable estimates.

County	County-rate excess payment amount (in millions)			County-rate excess payment as percentage of risk contract program payments		
	1995	1996	1997	1995	1996	1997
San Joaquin	•	•	0.1	•	•	0.14
Total	**$275.7**	**$249.9**	**$413.2**			
Weighted average[a]				5.26	3.72	5.13

Notes: Excess payment amounts are based on projections of risk contract program payments. (By contrast, percentage rates of excess payment depend only on HCFA's county AAPCC and risk adjuster and our estimate of the baseline county cost.) We projected 1995 payments by annualizing HCFA risk contract program payments for October through November 1995. We projected the 1996 and 1997 payments by updating the 1995 projection to account for (1) changes in the HMO payment rates (AAPCC) from 1995 to 1996 and (2) changes in enrollment since 1995 that were assumed equal to the 1994-95 rate of enrollment growth.

Bullets indicate that the estimate was not sufficiently precise to be reported, because the county had fewer than 500 joiners during the base year.

[a]These weighted average percentages are the ratios of total excess payments to risk contract program expenditures. Each weighted average pertains only to the counties listed. The weighted averages are not comparable across years because the number of counties differs from year to year. However, the percentages for a given county can be compared across years.

Table III.1 shows that, for California in 1996, the estimated excess payments solely attributable to the county rate are substantial. Consequently, elimination of this component of excess payments—in one state—would save Medicare several hundred million dollars annually. This potential saving equals about 5 percent of risk contract program expenditures in California.

As rates of risk HMO enrollment increase in future years, county-rate excess payments may increase as well. (As a result, the longer-term savings from eliminating county-rate excess payment could well exceed the immediate savings.) This conclusion follows from three premises:

1. Across counties in each year, the higher the HMO enrollment rate, the higher the county-rate excess payment as a share of risk contract outlays. (More technically, the relationship between the county-rate excess payment—as a share of risk contract outlays—and the share of Medicare beneficiaries in the county enrolled in a risk HMO is positive and statistically significant.)[62] This premise implies that the degree of favorable selection in a county does not decline as enrollment rates rise—at least over their observed range of variation.

[62]The correlation coefficients between the excess payment and enrollment percentages for each of the 3 years are .84, .82, and .74. All are significant at the 1-percent level. These correlations pertain only to the counties listed in table III.1.

2. The enrollment rate for risk HMOs will increase nationwide and in California.

3. As the national and state enrollment rates increase, the number of counties with substantial risk HMO enrollment will increase.

In sum, in California, growing enrollment is likely to have two effects on excess payments. The more straightforward effect will be to raise excess payments because a given excess payment per enrollee will be multiplied by a larger number of enrollees. Less obvious, however, will be higher enrollment's tendency to raise the excess payment per enrollee. That is, if favorable selection continues to occur while HMO enrollment increases, the average cost of beneficiaries remaining in FFS can also increase, leading to higher excess payments per HMO enrollee. As a result of these two effects, the statewide total estimate of county-rate excess payments will increase with HMO enrollment, between 1995 and 1997, from about $276 million to about $413 million.[63]

Estimates of Aggregate Excess Payments

Table III.2 presents our estimates of aggregate excess payment by county.[64] Only those counties for which the number of new HMO enrollees (joiners) exceeded 500 in 1995 are presented in the table.[65] The counties are ranked by excess payment amounts. We estimated that aggregate excess payments totaled about $1 billion in 1995. This amount represents about 16 percent of Medicare's payments to California HMOs under the risk contract program in 1995. Like county-rate excess payments, aggregate excess payments are concentrated in the five counties ranking highest in risk contract program enrollment. Together, these counties account for more than 75 percent of our estimate of statewide aggregate excess payments.

[63]Contrary to expectation, excess payments fell between 1995 and 1996, because of the introduction of the Medicare Fee Schedule in 1992. (Recall that we used 1992 cost data to estimate the 1996 county-rate excess payment.) This new fee schedule coincided with an unusually large decline in Medicare physician service volume growth—from an average of almost 9 percent in 1990-91 to about 2 percent in 1992. As a result, average part B costs for FFS beneficiaries declined in 1992. The lower FFS costs caused a narrowing of the cost disparity between HMO enrollees and FFS beneficiaries.

[64]HCFA actually determines four sets of HMO base-payment rates for each county: (1) aged part A, (2) aged part B, (3) disabled part A, and (4) disabled part B. The estimates in table III.1 are a weighted average of the biases in the rates for aged (parts A and B) and disabled (parts A and B). (HCFA also determines separate statewide rates for beneficiaries with end-stage renal-disease. We excluded these beneficiaries from our estimates.)

[65]The counties excluded from the table account for less than 1 percent of the sum of aggregate excess payments of all California counties.

Table III.2: Aggregate Excess Payments by County for 1995 in Millions of 1995 Dollars

County	Aggregate excess payment amount (in millions)	Aggregate excess payment as a percentage of risk contract program payments
Los Angeles	$429.0	20.8
Orange	121.3	20.0
San Diego	113.2	15.5
San Bernardino	71.9	17.8
Riverside	66.7	14.1
Alameda	30.5	14.8
Ventura	29.4	21.3
Contra Costa	25.2	15.6
San Francisco	17.4	10.7
Santa Clara	16.2	8.2
Kern	16.0	13.6
San Mateo	9.2	7.0
Fresno	8.7	19.7
Santa Barbara	7.9	12.5
Sonoma	6.7	9.5
San Joaquin	6.4	15.8
Solano	5.2	15.9
Placer	5.1	21.2
Sacramento	4.4	2.2
Santa Cruz	4.2	30.7
Marin	3.4	9.7
Stanislaus	2.9	4.2
Yolo	1.7	10.6
San Luis Obispo	1.5	3.6
Monterey	1.1	9.6
Butte	.5	2.4
Total	**$1,005.6**	
Weighted average		16.4

Note: Excess payment amounts (but not percentages) are based on county-level projections of risk contract program payments for 1995. We projected 1995 payments by annualizing actual HCFA risk contract program payments for October through November 1995.

A comparison of the percentages shown in tables III.1 and III.2 indicates that county-rate excess payments account for roughly one-quarter of

aggregate excess payments.[66] This result suggests that, even if the imprecision in the estimates of excess payment due to the county rate were substantial, correction of the county rate on the basis of those estimates would not lead Medicare to underpay HMOs as a group. In effect, the component of aggregate excess payment due to inadequate risk adjustment acts as a cushion for the county-rate correction.

[66]Alternatively, about three-quarters of aggregate excess payments result directly from inadequate risk adjustment.

Comments From the Department of Health and Human Services and Our Evaluation

DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of Inspector General

Washington, D.C. 20201

MAR 26 1997

Mr. William J. Scanlon
Director, Health Financing
and Systems Issues
United States General
Accounting Office
Washington, D.C. 20548

Dear Mr. Scanlon:

Enclosed are the Department's comments on your draft report, "Medicare HMOs: HCFA Can Promptly Eliminate Hundreds of Millions in Excess Payments." The comments represent the tentative position of the Department and are subject to reevaluation when the final version of this report is received.

The Department appreciates the opportunity to comment on this draft report before its publication.

Sincerely,

June Gibbs Brown
Inspector General

Enclosure

The Office of Inspector General (OIG) is transmitting the Department's response to this draft report in our capacity as the Department's designated focal point and coordinator for General Accounting Office reports. The OIG has not conducted an independent assessment of these comments and therefore expresses no opinion on them.

Comments of the Department of Health and Human Services on the General Accounting Office (GAO) Draft Report, "Medicare HMOs: HCFA Can Promptly Eliminate Hundreds of Millions in Excess Payments"

We appreciate the opportunity to comment on GAO's draft report. GAO cites findings that Medicare overpays managed care plans because managed care plan enrollees are, on average, healthier than those enrollees in fee-for-service (FFS). GAO recommends modifying the current methodology for paying health maintenance organizations (HMOs) to incorporate estimates of the lower cost experience of managed care plan enrollees as well as Medicare FFS beneficiaries when computing capitation rates. Because estimated costs under FFS for managed care enrollees are lower, including their cost experience would lower payment rates in areas with managed care enrollment.

We agree with GAO that the current payment methodology results in overpayments to managed care plans due to favorable selection into these plans. This finding is supported by the Health Care Financing Administration's (HCFA's) evaluation of the Tax Equity and Fiscal Responsibility Act risk HMO/competitive medical plan program performed by Mathematica Policy Research (MPR) and published in 1993. Specifically, MPR found that if Medicare were to pay 89.9 percent of the adjusted average per capita cost (AAPCC) rather than 95 percent, payments would be equal to Medicare's costs for managed care enrollees if those enrollees remained in FFS. Some argue that the extent of favorable selection documented by MPR in this evaluation no longer exists. However, this perspective is not supported by a recent HCFA study (Summer 1996), which justifies payment at 87.6 percent of the AAPCC. Based on estimates from recent studies showing favorable selection, Medicare may have overpaid managed care plans $2.2 billion in the last 3 years and $1 billion in Fiscal Year (FY) 1996.

The President's FY 1998 Budget proposes changes to address these and other longstanding concerns with the current payment methodology. Specifically in regard to favorable selection, payments to managed care plans would be reduced by about 5.3 percent beginning in calendar year (CY) 2000. This proposal reflects the MPR findings that Medicare should pay about 90 percent of the AAPCC rather than 95 percent ((.90/.95)-1=-5.3%).

While we agree with GAO that Medicare overpays managed care plans under the current methodology, we also believe the methodology change proposed by GAO is not equitable. Because the proposed GAO approach will differentially affect payment to counties based on managed care penetration rates (see example below), without more information it is difficult to analyze the impact of the GAO methodology on national

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Medicare expenditures or payment rates to counties with managed care enrollment. In particular, counties that currently have relatively low AAPCC rates, but high Medicare managed care penetration, may be very adversely affected. We believe the distributional effects must be better understood before this approach is implemented nationwide.

Of primary importance, GAO's method would reduce payments more in areas with high managed care penetration regardless of health status. The current system computes capitated payment at 95 percent of:

$$\text{(Eq.1)}\ \frac{\text{(County Per Capita Cost FFS)}}{\text{(County Average Demographic Factor FFS)}} * \text{Enrollee Demographic Factor}$$

Ninety-five percent of the first term is the ratebook amount published for each county. The GAO method (Eq.2) replaces the FFS numerator and denominator with weighted averages of FFS beneficiaries' and HMO enrollees' costs and demographic factors. It does not change the demographic factors. (The HMO enrollee costs are estimates of Medicare expenditures for enrollees had they remained in Medicare FFS.)

$$\text{(Eq.2)}\ \frac{\text{(County Per Capita Cost FFS and HMO)}}{\text{(County Average Demographic Factor FFS and HMO)}} * \text{Enrollee Demographic Factor}$$

Therefore, payment for an individual will be inappropriately changed based on the county's HMO penetration rather than adjusted solely on the basis of the individual's health status. Though GAO acknowledges that counties with high penetration rates would be affected the most, the potential for inequitable results is not brought out. The following example is simplified, but illustrates a potential paradoxical outcome.

Assume county A has 10 percent of its beneficiaries in HMOs and their per capita cost is 80 percent of the FFS users. Assume county B has 50 percent in HMOs and their per capita costs are 90 percent of FFS users. For simplicity assume all average demographic factors are the same. Computing the weighted average of the numerators, the healthier group enrollees (county A) would have a payment of .98 of FFS payments (where .98=.9FFS+.1(.8FFS)); the sicker enrollees (county B) would have a payment of .95 FFS (where .95=.5FFS+.5 (.9FFS)). Payment should rightly be lower in county A than county B.

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In addition, we note the following concerns:

- The GAO proposal includes an estimate of selection bias adjusted for an estimate of the tendency of enrollees to become more like FFS beneficiaries in terms of their health status, known as regression to the mean. Since many beneficiaries switch plans or switch between managed care enrollment and FFS enrollment, the issue of when to begin counting for the regression effect is problematic.

- Implementation of GAO's proposal would require a significant amount of resources though the method would be only an interim measure. For example, new programs and data tabulations would be required to compute estimates of FFS costs for managed care plan enrollees and death-related costs for each county in the United States. Much study is required to determine the geographic unit for which the regression-toward-the-mean factors for longer-term enrollees are to be computed. If separate estimates are required for each county, the burden would be very great. GAO has no recommendation on this issue.

In conclusion, HCFA is also developing a new payment methodology that incorporates health status adjusters and moves away from the current policy of ignoring differences in utilization between managed care and FFS in making payments to managed care plans. We hope to submit a proposal for congressional action as early as FY 1999, with phase-in beginning as early as CY 2001. The reduced payment levels proposed under the FY 1998 budget would be consistent with payment levels anticipated under this new payment methodology.

The following is GAO's comment on the Department of Health and Human Services' letter dated March 26, 1997.

GAO Comment

In commenting on a draft of this report, HHS agreed that, because of favorable selection, the current payment method results in substantial overpayments to Medicare managed care plans. Moreover, HHS did not dispute that our recommended rate-setting revision would save money. However, HHS cited our proposed revision as potentially "inequitable," possibly burdensome to implement, and "only an interim measure" until HCFA develops better health status adjusters. As discussed below, we believe that certain features make our recommended revision evenhanded, easy to implement, and important to adopt, regardless of the likely improvements to risk adjustment now under consideration. The details of our reasoning follow.

Recommended Revision Would Improve Payment Rate Accuracy and Target Excess Payments Reductions

HHS stated that our proposed revision is not equitable because it would differentially affect HMO payments based on the managed care penetration rate within each county. This is not accurate. Nothing in our proposed refinement to the Medicare payment method would tie HMO payments to HMO penetration rates. Our recommendation is to include an estimated FFS cost for HMO enrollees in the formula used to calculate the county rate. By making the estimate of a county's average Medicare costs more accurate, this revision would reduce payments most in counties where cost disparities between the FFS and HMO beneficiaries are greatest. Our recommended approach would leave the county payment rate unchanged despite high managed care enrollment—if HMO and FFS beneficiaries in a county have the same average cost.

HHS also expressed concern that, with the adoption of our revision, counties with relatively low AAPCC rates but high Medicare managed care penetration rates could be "very adversely affected." Our approach is targeted and would not reduce Medicare rates in counties with no cost disparities between the FFS and HMO beneficiaries. Under our approach, a county with a low AAPCC rate but no cost disparities would see no change in its county payment rate—even if the HMO penetration rate in that county was high. In contrast, an across-the-board payment rate cut—which, as HHS notes, is part of the administration's fiscal year 1998 budget proposal—would affect high AAPCC and low AAPCC counties equally, regardless of how costly a county's beneficiaries might be. Our proposed revision would reduce but not eliminate excess HMO payments.

Consequently, substantial excess payments would probably remain to cushion HMOs from any resulting reduction in the county rate. (See p. 49.)

To illustrate what HHS believes is the potential for our modified payment method to produce inequitable results, HHS constructed an example involving two hypothetical counties. HHS contends that the example shows a paradoxical result: under our modified method, HHS asserts, HMOs in county A would receive higher capitation payments than HMOs in county B even though HMO enrollees in county A are healthier than those in county B. As explained below, this conclusion is incorrect.

- Our recommendation would yield HMO payment rates in line with Medicare law, because they would be set on the basis of the estimated average FFS cost of all beneficiaries in a county. HHS did not acknowledge that under the current method both counties' HMOs receive the same rate even though county A HMOs serve healthier beneficiaries than county B HMOs. Our method would reduce excess payments to HMOs in both counties, although HMOs would still receive payments exceeding their enrollees' expected per capita costs. Moreover, our method would increase payments to HMOs in counties experiencing adverse selection—that is, in instances where a county's HMOs have enrollees whose expected costs exceed those of FFS users.
- HHS' example also runs counter to the experience of the counties we examined. Our data show that counties with low HMO penetration rates tend to have low excess payments relative to counties with high penetration rates. For example, excess HMO payments are lower in Sacramento, which had 5.6 percent of its Medicare beneficiaries enrolled in HMOs, than in Los Angeles, which had 25.5 percent enrolled in HMOs. Nonetheless, HHS' example assumes excess payments and HMO penetration are inversely related (higher penetration rate, lower excess payments). Though some counties may display this pattern, the counties we examined do not.

In discussing its example, HHS seemingly endorses the current method of paying Medicare HMOs as an interim strategy and, consequently, considers it appropriate to ignore the problem of large excess payments in counties like A, at least for several years. In contrast, our recommended modification of the current method would reduce excess payments significantly and promptly. While it is true that HMOs in B would be paid less than in A, correcting such discrepancies is the role of improved health status adjusters.

Recommended Revision Could Be Readily Implemented

HHS commented that our modification to the current payment method may be difficult to implement, citing both conceptual issues and resource requirements. For example, HHS suggested that "the issue of when to begin counting for the regression (toward the mean) effect is problematic" because many beneficiaries switch plans or switch between managed care and FFS. To overcome this potential difficulty, HCFA could consider time spent in various HMOs with brief spells in FFS as continuous enrollment in managed care. If the beneficiary spent a significant length of time in FFS, HCFA could reset the regression effect for that beneficiary to zero. This approach would be conservative in that it would tend to increase the estimated FFS costs of HMO enrollees and thus yield rates favorable to HMOs.

In addition, HHS expressed concern that "if separate [RTM factor] estimates are required for each county the [computational] burden could be very great." Separate estimates of RTM factors for each county are not needed. We estimated the RTM factor using statewide data, although we used HMO tenure levels at the county level in conjunction with the RTM factor to adjust county costs.

HHS believes that implementing our refinement to the current method would require a significant amount of resources. Given the modest resources (two analysts) that we used in conducting our analysis, and that our proposed change would not entail collecting new data, we believe that the additional resources needed to implement our refinement would be small. Moreover, the likely benefits greatly outweigh such costs. As our report indicates, the payoff from this effort would probably be hundreds of millions of dollars in Medicare savings each year.

Recommended Revision Is Fundamental to Fixing Excess Payment Problem

HHS states that our payment method revision is an interim solution to the HMO overpayment problem. HHS also notes that HCFA is working to develop a new payment methodology incorporating health status adjusters that might be phased in starting in calendar year 2001. Together, these assertions could imply that our approach is unnecessary.

Our revision, however, is not an interim solution. It is an important first step toward—and most likely will be a component of—a comprehensive solution. By addressing the effect of favorable selection in the county rate, our revision makes an essential adjustment to the rate on which the rest of an HMO's capitation payment is based. The revision could be implemented as early as calendar year 1998. This would allow the government, at the very least, 3 years to make partial reductions in excess HMO

payments—amounting to saving hundreds of millions of taxpayer dollars in each of those years. Moreover, our recommended correction of the county rate would complement improved health status adjusters to provide the foundation for a more efficient, accurate, and equitable redesign of Medicare's method of HMO payment.

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