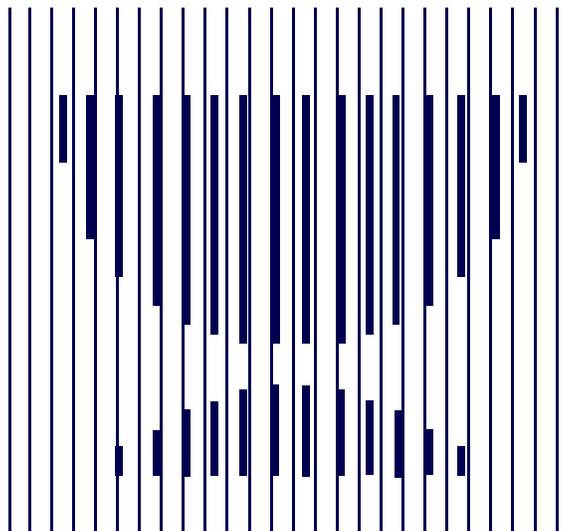




CBO MEMORANDUM

**THE EFFECTS OF MANAGED CARE
AND MANAGED COMPETITION**

February 1995



CONGRESSIONAL BUDGET OFFICE



CBO

MEMORANDUM

**THE EFFECTS OF MANAGED CARE
AND MANAGED COMPETITION**

February 1995



**CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.
WASHINGTON, D.C. 20515**

This Congressional Budget Office (CBO) memorandum updates and revises an earlier CBO report--a March 1994 memorandum titled "Effects of Managed Care: An Update." It presents CBO's current assessment of the effects of health maintenance organizations based on an analysis of the 1992 National Health Interview Survey. In keeping with CBO's mandate to provide impartial analysis, the report makes no recommendations.

Sandra Christensen of CBO's Health and Human Resources Division wrote the memorandum under the direction of Nancy Gordon and Linda Bilheimer. Roger Feldman, Marsha Gold, Scott Harrison, Jeffrey Lemieux, Murray Ross, John Sheils, David Stapleton, and Christina Witsberger offered helpful suggestions.

Sherwood Kohn edited the manuscript and Christian Spoor provided editorial assistance. Sharon Corbin-Jallow prepared the final version of the manuscript. Questions about the analysis may be addressed to the author at (202) 226-2665.

CONTENTS

SUMMARY	v
INTRODUCTION	1
EFFECTS OF HMOs AND OTHER MANAGED CARE ARRANGEMENTS	1
Average Effects of HMOs on Use of Services	2
Any-Willing-Provider and Point-of-Service Requirements	6
Revised Estimates of Effects on Total Spending	8
Quality of Care and Enrollee Satisfaction	12
EFFECTS OF MANAGED COMPETITION	14
APPENDIX: THE EFFECTS OF MANAGED CARE ON USE OF SERVICES: EVIDENCE FROM NATIONAL SURVEY DATA	18

TABLES

1.	Average Reduction in Use Estimated for People in HMOs Compared with Those in Typical Indemnity Plans	3
2.	Average Reduction in Use Estimated for People in Managed Care Plans Compared with Those in Unmanaged Indemnity Plans	9
3.	Estimated Savings as a Percentage of Potentially Manageable Expenditures, 1990	10
4.	Estimated Savings as a Percentage of Alternative Health Expenditure Totals, 1990	11
A-1.	Variable Definitions and Weighted Means	21
A-2.	Regression Estimates for Outpatient Visits	22
A-3.	Regression Estimates for Inpatient Days	23
A-4.	Estimated Change in Use of Services for HMOs Compared with Typical Indemnity Plans	24
A-5.	Previous Estimates of Change in Use of Services for HMOs Compared with Typical Indemnity Plans	28
A-6.	Comparison Under Alternative Specifications of Estimated Change in Use of Services for HMOs Compared with Typical Indemnity Plans	29

SUMMARY

New evidence from the 1992 National Health Interview Survey indicates that health maintenance organizations (HMOs) reduce use of health care services by an average of about 8 percent, compared with services that similar patients would be expected to use in a typical fee-for-service indemnity plan. Most of this effect is generated by group- or staff-model HMOs, which reduce use of services by nearly 20 percent. Although independent practice associations (IPAs) having certain characteristics could be as effective as group/staff HMOs, many IPAs do not have these characteristics. Further, IPAs would be unable to develop two of the necessary characteristics in states that have "any-willing-provider" laws, which require network plans to accept all providers who are willing to meet the plans' terms.

The effects on use of services presented in this memorandum, however, do not necessarily imply similar effects on health care spending if enrollment increased in more tightly managed plans. Spending changes would mirror changes in use only if it was reasonable to assume that there would be no alteration in payment rates for providers or in administrative costs, at least on average. Those assumptions would not be reasonable in many instances. For example, if enrollment in HMOs or other managed plans increased, average payment rates for providers might fall because managed plans are more likely than unmanaged plans to negotiate for and win price discounts from providers. It is also likely that administrative costs would increase.

INTRODUCTION

The Congressional Budget Office (CBO) last summarized its assessment of research on the effects of various forms of managed care in a memorandum released in March 1994.¹ That memorandum also presented estimates of national health spending under alternative assumptions about the proportion of insured people who were moved into more effective forms of managed care.

This memorandum presents CBO's current assessment of the effects of health maintenance organizations (HMOs) based on an analysis of the 1992 National Health Interview Survey conducted by the National Center for Health Statistics. Further, it expands the previous memorandum to discuss the effects of point-of-service and "any-willing-provider" requirements on HMOs and other network plans. It also examines the experiences of some purchasing cooperatives that have attempted to introduce more competitive pressures on health plans.

EFFECTS OF HMOs AND OTHER MANAGED CARE ARRANGEMENTS

The health insurance market has been changing rapidly in recent years. New forms of managed care (such as independent practice associations and point-of-service plans) have developed to compete with group/staff HMOs, and even most indemnity plans have now incorporated some elements of managed care.² Participation in all forms of managed care has increased as both providers and patients have become more accepting of limits imposed by insurers.

How much the growth of managed care has reduced the use medical services and health care costs is uncertain. Data and methodological limitations make it difficult to isolate the effects of specific types of managed care. Nevertheless, estimates of these effects are important for assessing some legislative proposals. In the comparisons made in this memorandum, a "traditional" indemnity plan is one that has no managed care component. A "typical" indemnity plan is one that has some elements of managed care--such as utilization review or a network of preferred providers.

-
1. Congressional Budget Office, "Effects of Managed Care: An Update," CBO Memorandum (March 1994).
 2. An independent practice association is an HMO that contracts with individual physicians or groups to provide services to its enrollees in the physicians' private offices. The physicians also continue to treat patients not enrolled in the HMO. Physicians in group/staff HMOs treat the HMO's patients exclusively. Until recently, independent practice associations and group/staff HMOs were generally "closed-panel" plans, in which enrollees were restricted to the plan's panel of providers. In recent years, however, the "open-panel" or point-of-service option has become more common. Under that option, plans pay part of the costs of covered services from out-of-plan providers.

Average Effects of HMOs on Use of Services

In CBO's 1994 managed care memorandum, assumptions about the potential drop in use of health care services under proposals that would shift insurance enrollment to HMOs were based on a study by Lewin-VHI, Inc., which used data for 1989 from the National Health Interview Survey (NHIS).³ New evidence from the 1992 NHIS, however, indicates that the Lewin-VHI results probably understate the reduction in use to be expected from HMOs when compared with indemnity plans. By introducing a variable for childbirth into the equations, CBO was able to control for an important source of adverse selection among HMO enrollees that apparently biased the results from the Lewin-VHI study.

CBO's findings from the 1992 NHIS indicate that the reduction in total use of services for HMOs is about twice as large as the estimates reported by Lewin-VHI. (See the appendix for CBO's analysis.) Compared with the current mix of managed and unmanaged indemnity plans, group/staff HMOs reduce use of medical services by an estimated average of 19.6 percent, instead of the 9.1 percent reduction implied by the Lewin-VHI results; independent practice associations (IPAs) reduce use by an average of about 0.8 percent, instead of 0.3 percent (see Table 1). When these findings for group/staff HMOs and IPAs are combined using 1992 year-end enrollment patterns, the estimated average effect of HMOs is to reduce use of services by 7.8 percent, when compared with the current mix of indemnity plans.⁴ The 1994 memorandum assumed that the average effect was about 4 percent.⁵

The results in this memorandum--which focus on use of services, not costs--confirm the Lewin-VHI findings that reductions in use of services from HMOs currently come almost entirely from group/staff models. On average, IPAs do little better than indemnity plans. As discussed in CBO's March 1994 memorandum, the IPA form of HMO can be as effective as group/staff HMOs if certain conditions are met, but frequently they are not. The IPAs that are most likely to approach the effectiveness of the best group/staff HMOs are selective about using cost-conscious providers, maintain an effective network for information and control, place providers at financial risk, and generate a substantial portion of each provider's patient load.

3. Lewin-VHI, Inc., *The Financial Impact of the Health Security Act, Appendix A* (Fairfax, Va: Lewin-VHI, Inc., December 9, 1993), Table A-4; and Lewin-VHI, Inc., "Effects of Managed Care, Uninsurance, and AIDS on Health Care Use" (Fairfax, Va.: Lewin-VHI, Inc., February 15, 1993).

4. According to a 1993 report by the Group Health Association of America (*Patterns in HMO Enrollment*, p. 25), 37 percent of HMO enrollees were in group/staff models at the end of 1992, and 63 percent were in IPAs and network plans.

5. In addition to the different effects estimated for group/staff HMOs and IPAs, this average used the 1989 distribution of HMO enrollment--41 percent in group/staff models and 59 percent in IPAs.

TABLE 1. AVERAGE REDUCTION IN USE ESTIMATED FOR PEOPLE IN HMOs COMPARED WITH THOSE IN TYPICAL INDEMNITY PLANS

	Percentage Reduction in Use of Services by Type of HMO		
	Group/Staff	IPA	HMO Average
Current Estimates	19.6	0.8	7.8 ^a
Previous Estimates	9.1	0.3	3.9 ^b

SOURCE: Congressional Budget Office.

NOTES: Typical indemnity plan refers to a fee-for-service plan with some elements of managed care.

HMO = health maintenance organization; IPA = independent practice association.

a. Assumes 37 percent in group/staff HMOs and 63 percent in IPAs.

b. Assumes 41 percent in group/staff HMOs and 59 percent in IPAs.

A study of Aetna, Humana, and Prudential insurance plans confirms the importance of patient volume if IPAs are to affect providers' treatment patterns. Managers in these plans said they could not get the attention of network physicians unless the physician had at least 100 patients from the plan. Regression estimates from Humana plans indicated that an increase in volume from 100 enrollees to 1,000 per physician was associated with a 6.4 percent decline in specialty and hospital care costs per enrollee. The effect on costs was especially large up to about 600 patients per physician.⁶

It is noteworthy that the HMO effects discussed above refer to differences in use of services between the typical HMO and the typical indemnity plan in 1992. Because indemnity plans usually have higher cost-sharing requirements than do HMOs, and because cost sharing reduces patients' use of services, the isolated effect of the HMO style of practice on reducing use of services is greater than the estimated effects show. In other words, if HMOs and indemnity plans imposed the same cost-sharing requirements, the difference in use of services between enrollees in HMOs and those in indemnity plans would be larger than the estimates given above. For most proposals, however, there is no reason to believe that the dissimilar cost-sharing requirements for HMOs and indemnity plans would change, so the smaller effects estimated from the NHIS for typical plans are the relevant ones.

The assessment in this memorandum about the savings to be expected if more insured people were in managed care plans refers to effects on use of services only, compared with the expected use of services by similar patients in a typical indemnity plan. Additional effects (either savings or costs) may be caused by changes in provider prices or discounts and in administrative costs, but this analysis makes no attempt to incorporate them. CBO's cost estimates for specific health legislation, however, do incorporate estimates of these effects.

Confusion sometimes arises when analysts report effects based on different concepts. This can be illustrated by referring to a recent study released by Lewin-VHI.⁷ The study reports that costs for patients in Aetna's IPAs were 23 percent lower than costs for similar patients in traditional indemnity plans, after eliminating the effects of benefit and copayment differences. To make this estimate comparable to CBO's estimated reduction in use of 0.8 percent for IPAs compared with the typical indemnity plan, however, three adjustments must be made. In particular, it is necessary to:

6. See David C. Stapleton, "New Evidence on Savings from Network Models of Managed Care" (Fairfax, Va.: Lewin-VHI, Inc., May 1994).

7. Ibid.

- o Eliminate the savings attributable to the IPA's negotiated price discounts by subtracting 15 percent;⁸
- o Subtract 4 percent to reflect the savings that indemnity plans typically achieve through utilization review;⁹ and
- o Subtract an additional 4 percent to account for the relatively low cost-sharing requirements in IPAs.¹⁰

The first adjustment eliminates savings from price discounts because CBO's estimate from the NHIS considers only effects on use of services. (Savings or costs that might arise from price discounts or any changes in price are, however, incorporated into CBO's estimates for specific legislative proposals in a separate step.) The second adjustment is necessary because Aetna's estimate compares IPAs with traditional (unmanaged) indemnity plans, and CBO's estimate compares IPAs with typical indemnity plans (which now generally include elements of managed care, such as utilization review). The third is necessary because IPAs typically have lower cost-sharing requirements than do indemnity plans, and Aetna's estimate was designed to eliminate the effects of these differences. If cost-sharing requirements were identical for the two kinds of plans, Aetna's results would indicate that IPAs reduce use of services by about 4 percent compared with its indemnity plans.¹¹ However, the lower cost-sharing requirements that are typical of IPAs encourage greater use of services by enrollees.

Applying the three adjustments described above to Aetna's original estimate of savings of 23 percent yields an estimate comparable to CBO's, and it indicates that the typical IPA does not appreciably reduce use of services when compared with

-
- 8. Aetna estimated the average provider discount in its network plans at 15 percent.
 - 9. Aetna estimated savings of 4 percent from utilization review in its indemnity plans.
 - 10. The amount needed to reflect the lower cost-sharing requirements in Aetna's typical IPA, compared with its indemnity plans, was estimated based on the "low" and "high" cost-sharing amounts shown in Exhibit II.1 of the Stapleton paper. The copayment for an office visit under the "low" IPA plan was two-thirds of the copayment under the "high" plan (\$10 versus \$15); consequently, it was assumed that average cost-sharing requirements in Aetna's IPAs (low cost-sharing plans) were about two-thirds of average cost-sharing requirements in Aetna's indemnity (high cost-sharing) plans. To eliminate Aetna's adjustment to equalize cost sharing, it was estimated that use of services for IPA enrollees would be about 4 percent higher if cost sharing was reduced from an average of 25 percent for high cost-sharing plans to about 17 percent, assuming an elasticity of -0.1. This adjustment could be smaller depending on the proportion of indemnity enrollees whose plans offer them lower cost sharing when they use the plan's preferred panel of providers.
 - 11. Results are derived using Aetna's 23 percent estimate minus the 15 percent adjustment to eliminate the effects of fee discounts and minus the 4 percent adjustment to recognize the utilization review now typical for indemnity plans.

the typical indemnity plan. By utilization review, both kinds of plans can reduce use of services by about 4 percent when compared with a traditional (unmanaged) indemnity plan. Independent practice associations might reduce use by another 4 percent by applying other provider controls, but in the typical IPA that effect is generally offset by the higher patient use encouraged by the IPA's low cost-sharing requirements. Independent practice associations also typically reduce enrollees' health care costs by negotiating discounted prices from providers, but that is beyond the scope of this analysis, which focuses entirely on effects on use of health care services.

Any-Willing-Provider and Point-of-Service Requirements

In some states, HMOs and network health plans are subject to "any-willing-provider" (AWP) requirements, which prohibit network plans (IPAs and preferred provider organizations, but not group/staff HMOs) from excluding any providers in the area who are willing to accept a plan's terms for participation in the network. A variant of this is the point-of-service (POS) requirement, under which health plans having a limited group of providers (group/staff HMOs and IPAs) are required to reimburse enrollees for covered services received from out-of-plan providers. Generally, however, plans are permitted to impose higher cost-sharing requirements on out-of-plan services, similar to the different cost-sharing requirements that preferred provider organizations (PPOs) impose in order to encourage enrollees to use the plans' preferred providers.

AWP requirements are intended to ensure that no providers are denied access to a plan's patient population if they are willing to abide by the plan's conditions for participation. POS requirements are intended to ensure that patients are free to use the providers of their choice (although they may have to pay more of the costs). Proponents of managed care believe, however, that these requirements greatly reduce a managed care plan's ability to provide lower-cost care than traditional indemnity plans. Proponents of the restrictive requirements argue that the protection they provide patients and providers is of sufficient importance to justify the decreased ability of managed plans to reduce costs. Thus, the policy decision to impose AWP or POS requirements on health plans comes down to a value judgement: How much is society willing to pay in higher health care costs to protect patients and providers in this way?

Any-Willing-Provider Requirements. In the states where they exist, these requirements apply to plans that have nonexclusive contracts with a network of providers (IPAs and PPOs), but not to group/staff HMOs that employ physicians exclusively to serve the plan's patients. Thus, the most effective type of HMO is not

subject to AWP requirements. The potential for IPAs to constrain use of services, however, may be adversely affected by AWP requirements.

Although the evidence to date indicates that the typical IPA does not significantly alter use of services compared with indemnity plans, IPAs with certain characteristics have the potential to reduce use as effectively as group/staff HMOs. An AWP requirement, however, might make it impossible for IPAs to develop two of those necessary characteristics: selective contracting with cost-effective providers and sufficient IPA patient volume to affect providers' behavior. Further, having to contract with all interested physicians in a region increases an IPA's costs in two other ways: the IPA incurs higher administrative costs because it has to contract with a larger number of providers and document disenrollment decisions more thoroughly, and it is less able to negotiate price discounts with providers because it cannot assure each participating provider enough of an increase in volume to offset the discount.

The Point-of-Service Option. In 1992, about 50 percent of HMO plans provided a POS option for enrollees, although these plans covered only about 6 percent of all HMO enrollees. Only 15 percent of those enrolled in a POS option were in group/staff HMOs; the rest were in IPAs or other network-model HMOs.¹²

There is little solid information about the effects that a POS option would have on a plan's ability to control use of services, although they could be substantial even if only a small proportion of enrollees used out-of-plan providers. The reason is that those patients who are most likely to consult physicians outside the plan's network have serious health problems and want treatment from particular specialists. Because the highest-cost 5 percent of enrollees typically account for 50 percent or more of health plan costs, a few of these patients can transfer a substantial portion of the plan's benefit costs to out-of-plan providers.

Plans could, however, counteract the costly effects of a POS option by imposing sufficiently high cost-sharing requirements on out-of-plan use. Indeed, evidence from Aetna indicates that its IPA-POS plans were able to reduce benefit costs by about as much as its closed-panel IPAs, when compared with a traditional indemnity plan, but the source of the reduction in benefit costs may be very different.¹³ As explained earlier, most of Aetna's savings from IPAs result from discounts on providers' fees, and there is little effect on use of services beyond that achieved by utilization review. POS plans will gain no savings from discounts on

12. Group Health Association of America, *Patterns in HMO Enrollment* (Washington, D.C.: Group Health Association of America, 1993).

13. Stapleton, "New Evidence on Savings," Exhibit II.3.

out-of-plan services, so the loss of discounts must be made up from greater patient cost sharing and less use of services. Moreover, the IPA-POS plans have higher administrative costs than do closed-panel IPAs.

Revised Estimates of Effects on Total Spending

Revised estimates of the effects of HMOs imply that those to be expected for each person moving from an indemnity plan to an HMO would be greater than was predicted in CBO's 1994 memorandum. (Tables 2 through 4 revise the results for 1990 that were shown in Tables 4 through 6 of that earlier memorandum.) Compared with a traditional (unmanaged) indemnity plan, CBO's most recent findings indicate that group/staff HMOs reduce use of services by 21.9 percent for privately insured patients, and IPAs reduce use by an average of 3.6 percent (see Table 2).¹⁴ Assumptions about the effects of managed indemnity plans on use of services are unchanged from the previous memorandum. Compared with unmanaged care, effective utilization review (including precertification and concurrent review for hospital stays) can reduce use by 4 percent, while other, less effective forms of management in indemnity plans are assumed to reduce use by about 2 percent.¹⁵ In 1990, about 47 percent of private indemnity plans had effective utilization review programs in place, 47 percent had less effective forms of use management, and 6 percent were unmanaged; consequently, use of services in the indemnity sector was about 2.8 percent lower than it would have been if all indemnity plans had been unmanaged.

Under these assumptions about changes in use of services, and assuming that spending would mirror changes in use, spending on insured services would have been lower by 16.6 percent nationwide if all insured people had been enrolled in group/staff or other equally effective HMOs in 1990 (see Table 3). Total national health expenditures would have been lower by 11.9 percent (see Table 4).

Because some people live in areas not populous enough to support HMOs, however, it is unrealistic to assume that all insured people could be enrolled in effective HMOs, even after the lengthy period needed for their development. If, instead, all insured people in less effective forms of managed care had been moved

14. These results are the combined effects for HMOs compared with the current mix of managed and unmanaged indemnity plans, augmented by the estimated average reduction in use (2.8 percent) generated by the current mix of indemnity plans compared with an unmanaged plan.

15. The 4 percent assumption is consistent with Aetna's estimated effects of utilization review in its indemnity plans.

TABLE 2. AVERAGE REDUCTION IN USE ESTIMATED FOR PEOPLE IN MANAGED CARE PLANS COMPARED WITH THOSE IN UNMANAGED INDEMNITY PLANS

Primary Source of Insurance Coverage	Percentage Reduction in Use of Services by Type of Managed Care Arrangement ^a				
	I	II	III	IV	V
Medicare	21.9	3.6	4.0	2.0	0
Medicaid	10.9	1.8	2.0	1.0	0
Private or Other Public	21.9	3.6	4.0	2.0	0
No Insurance	0	0	0	0	0

SOURCE: Congressional Budget Office.

NOTE: The effect of managed care on use of services for Medicaid enrollees is half the reduction assumed for enrollees in Medicare and private insurance plans, reflecting the expectation that payment rates and access to services for Medicaid enrollees would increase under managed care arrangements.

- a. Categories of managed care:
- I. Group/staff model health maintenance organizations
 - II. Independent practice associations
 - III. Utilization review including precertification and concurrent review of hospital care
 - IV. Other forms of managed care
 - V. Unmanaged (traditional) fee-for-service indemnity plans

TABLE 3. ESTIMATED SAVINGS AS A PERCENTAGE OF POTENTIALLY MANAGEABLE EXPENDITURES, 1990

Primary Source of Insurance Coverage	Distribution of Insured Population by Type of Managed Care		
	All in Effective HMOs	Six Percent in Effective HMOs and 94 Percent in Effective UR	Seventy Percent in Effective HMOs and 30 Percent in Effective UR
All Sources	16.6	1.3	11.7
Medicare	19.5	1.9	14.0
Medicaid	10.7	1.9	8.0
Private or Other Public	18.1	1.0	12.5
No Insurance	0	0	0

SOURCE: Congressional Budget Office.

NOTES: Potentially manageable expenditures are the portion of health care spending that managed care could affect, which includes all personal health services that are typically offered as insurance benefits. The analysis assumes that changes in use result in comparable changes in spending, although payment methods and differences in administrative costs may preclude this.

HMO = health maintenance organization; UR = utilization review.

TABLE 4. ESTIMATED SAVINGS AS A PERCENTAGE OF ALTERNATIVE HEALTH EXPENDITURE TOTALS, 1990

Form of Health Expenditure	Distribution of Insured Population by Type of Managed Care		
	All in Effective HMOs	Six Percent in Effective HMOs and 94 Percent in Effective UR	Seventy Percent in Effective HMOs and 30 Percent in Effective UR
Manageable Personal Health Care Expenditures	16.6	1.3	11.7
All Personal Health Care Expenditures	13.5	1.0	9.5
National Health Expenditures	11.9	0.9	8.3

SOURCE: Congressional Budget Office

NOTES: Potentially manageable expenditures are the portion of health care spending that managed care could affect, which includes all personal health services that are typically offered as insurance benefits. The analysis assumes that changes in use result in comparable changes in spending, although payment methods and differences in administrative costs may preclude this.

HMO = health maintenance organization; UR = utilization review.

into effective utilization review programs, and the proportion of insured people in the most effective HMOs was unchanged (at about 6 percent), spending on insured services would have been lower by an estimated 1.3 percent in 1990. National health expenditures would have been lower by 0.9 percent.¹⁶

Alternatively, if the 70 percent of the population who live in areas populous enough to support effective HMOs had been enrolled in them, and the other 30 percent were enrolled in indemnity plans with effective utilization review programs, insured spending would have been lower by an estimated 11.7 percent in 1990. National health spending would have been lower by 8.3 percent.

The assumption in Tables 3 and 4 that spending would mirror changes in use of services implies that average provider and administrative costs would be unchanged from their current levels, but there are reasons why that might not occur. For example, as enrollment shifted to managed care, average administrative costs would probably increase because managed plans tend to have higher administrative expenses than unmanaged plans. Average payment rates would fall if managed plans were at least as successful as they are now in negotiating lower rates for their enrollees, and if providers were unable to recover their lost revenue by increasing the rates charged to other payers.

Moreover, although there is evidence that Medicare patients enrolled in risk-based HMOs use fewer Medicare services than they would have used in the fee-for-service sector, Medicare's costs generally increase for each enrollee who switches to an HMO under the current payment system. This happens because Medicare's per capita payment to the HMO--which is based on what enrollees cost in the fee-for-service sector--does not adequately reflect the generally healthier population that chooses the HMO option.¹⁷

Quality of Care and Enrollee Satisfaction

HMOs appear to provide health care that is roughly comparable with that available through indemnity plans for most conditions, with two broad exceptions--one favorable and one unfavorable. On the favorable side, HMOs tend to provide more

16. This result is unchanged from the result reported in CBO's 1994 memorandum because the only shifts that would occur are into indemnity plans with effective utilization review. Assumed savings for such a shift are unchanged from the previous memorandum.

17. Jerrold Hill and others, "The Impact of the Medicare Risk Program on the Use of Services and Costs to Medicare: Final Version" (Princeton, N.J.: Mathematica Policy Research, Inc., December 3, 1992).

prenatal, preventive, and cancer-screening services than do indemnity plans.¹⁸ Thus, cancers tend to be diagnosed at an earlier, more curable stage.¹⁹ On the unfavorable side, group/staff HMOs and IPAs that restrict access to specialists sometimes do so with adverse effects for patients, especially those who have conditions for which treatment norms are not well defined. For example, primary care physicians in HMOs are less likely to diagnose or treat patients with depressive disorders appropriately, although treatment is comparable to that provided in indemnity plans once the patient is referred to a mental health specialist.²⁰

One study concluded, "Restrictive practices do not seem to adversely affect most people in good health or those with only minor health problems, but these practices pose special risks for people whose health is poor. In the RAND Health Insurance Experiment, low-income individuals and families who were in poor health at the start of the study and who were randomly assigned to a large, well-established HMO had, by the end of the experiment, more bed-days per year due to poor health and more serious symptoms than those assigned to the fee-for-service plan with no patient cost sharing, and they had a greater risk of dying than those in the fee-for-service plan with cost sharing."²¹ A more recent study concluded, "little evidence exists to show that the successes of prepaid care in relatively healthy populations can be replicated among sicker patients."²²

HMO enrollees tend to be more satisfied with their benefits and premiums than people in indemnity plans but less satisfied with their access to and their interactions with HMO physicians.²³ HMO enrollees in both group/staff models and IPAs have better financial access to care because cost-sharing requirements are lower than those in indemnity plans. Further, coordination of patient care tends to be better

-
18. R.H. Miller and H.S. Luft, "Managed Care Plan Performance Since 1980: A Literature Analysis," *Journal of the American Medical Association*, vol. 271, no. 19 (May 18, 1994).
 19. G.F. Riley and others, "Stage of Cancer at Diagnosis for Medicare HMO and Fee-for-Service Enrollees," *American Journal of Public Health*, vol. 84, no. 10 (October 1994).
 20. K.B. Wells and others, "Detection of Depressive Disorder for Patients Receiving Prepaid or Fee-for-Service Care: Results from the Medical Outcomes Study," *Journal of the American Medical Association*, vol. 262, no. 23 (December 15, 1989).
 21. Thomas Rice, E. Richard Brown, and Roberta Wyn, "Holes in the Jackson Hole Approach to Health Care Reform," *Journal of the American Medical Association*, vol. 270, no. 11 (September 15, 1993). The RAND results were reported in J.E. Ware and others, "Comparison of Health Outcomes at a Health Maintenance Organization with Those of Fee-for-Service Care," *Lancet*, no. 1 (1986).
 22. D.G. Safran, A.R. Tarlov, and W.H. Rogers, "Primary Care Performance in Fee-for-Service and Prepaid Health Care Systems: Results from the Medical Outcomes Study," *Journal of the American Medical Association*, vol. 271, no. 20 (May 25, 1994).
 23. Ibid.

in group/staff HMOs and in some IPAs (those with primary care case-management) than in indemnity plans. Organizational access is lower for group/staff enrollees, however, because patients have greater difficulty reaching a physician with a medical question and obtaining medical care on short notice. In addition, group/staff enrollees are less likely to have the same physician for subsequent care.

EFFECTS OF MANAGED COMPETITION

The higher estimated savings for HMOs obtained from CBO's analysis of the 1992 NHIS may understate their long-term savings potential. Proponents of managed competition believe that a number of factors that are still characteristic of the health care marketplace have shielded HMOs from the kind of competition that would induce them to achieve their full potential. Perhaps the most important factor has been the tendency of employers (encouraged by the tax laws) to subsidize generously whatever health plan choice employees make, with little or no penalty for choosing a high-cost plan when a menu of plans is offered.

Proponents of managed competition believe that if employees were required to pay all of the premium difference between their choice and the lowest-cost plan deemed acceptable, they would rapidly switch to lower-cost plans.²⁴ Consequently, plans would have strong incentives to operate efficiently and to price their benefits lower. By contrast, many believe that under current incentives HMOs need not charge the lowest cost at which they could provide benefits. Because many employers contribute up to a fixed amount based on the average cost of the most popular plans they offer (which tend to be higher-cost indemnity plans), HMOs that could offer the specified benefits for a lower premium than the employer's fixed contribution have no incentive to do so, because it would not increase enrollment.²⁵

The State Employee Insurance Program (SEIP) in Minnesota provides the best example to date of managed competition in practice.²⁶ The SEIP is a purchasing cooperative that offers to state employees a number of health plans that have similar

24. Economists believe that even the employer-paid share of premiums is effectively paid by employees, in the form of reduced wages, and that in the long run employees' choices reflect this reality. Nevertheless, the share that is nominally paid by the employer is important to employee choices even in the long run because under current law the employer share is paid from pretax income, whereas the wage income that would otherwise be paid the worker would be taxed. Thus, the employer-paid share is subsidized through the tax system.

25. Enrollees who choose plans costing less than the employer's fixed contribution amount do not receive the excess contribution; instead, the employer keeps it.

26. See John Klein and Robert Cooley, "Managed Competition in Minnesota," *Managed Care Quarterly*, vol. 1, no. 4 (Autumn 1993).

(but not identical) benefits during an annual open-enrollment period. It provides employees with comparative information not only about participating plans' premiums, but also about enrollee satisfaction. Community rating applies, and the state's contribution toward premiums is set by the lowest-cost plan available to each employee.²⁷ Because the program is still evolving and took its current form only recently, however, it is too soon to draw more than tentative conclusions. Furthermore, because it covers only state employees, its effects may differ significantly from those of a comprehensive program.

Before 1986, Minnesota based its contribution toward health insurance costs for state employees on SEIP's most popular plan, which was traditional indemnity coverage offered by Blue Cross. The state paid 100 percent of this premium for employees, and 90 percent for dependents. Premiums for other plans offered by the state clustered closely around the Blue Cross premium. Effective for the 1986 contract year, however, the state changed the basis for its contribution to the lowest-cost plan available in each area. Employees who chose the lowest-cost plan paid nothing for their coverage, but those who chose a more expensive plan paid the amount by which their plan's premium exceeded that of the lowest-cost plan.

After this change in the basis for the state's contribution, significant variation in the premiums charged by participating plans emerged. The result was a substantial shift in enrollment toward the lowest-priced plans. By 1989, a group/staff HMO had become the lowest-priced plan in the areas it served. Its share of enrollment in the Minneapolis metropolitan area grew from 27 percent in 1988 to 51 percent by 1993 (growth statewide was from 19 percent to 35 percent). The unmanaged plan that had been the basis for the state's contribution before 1986 was changed in 1990 to a PPO in an attempt to remain competitive; nevertheless, its share of enrollment in the Minneapolis metropolitan area dropped from 42 percent in 1988 to 16 percent by 1993 (statewide it dropped from 56 percent to 42 percent). Thus, enrollees were quite responsive to the price they paid out of pocket for insurance. Further, enrollees were willing to shift not only among plans of a similar type, but also among those of

27. See Congressional Budget Office, *Managed Competition and Its Potential to Reduce Health Spending* (May 1993), Chapter 3, for a description of the important features of managed competition. Of the features listed in the CBO study, the Minnesota program lacks only a risk-adjustment mechanism to offset any effects of selection bias that may occur among the competing health plans.

different types--from higher-cost plans that permitted patients to see any provider of their choice to HMOs with a closed panel of providers.²⁸

The rate of growth in premiums for state employees also slowed significantly after 1989, although the competitive discipline that resulted from employees' enrollment choices was not the only relevant influence. The state also subjected each plan's rate proposal to analysis by an independent actuary and negotiated reasonable rate changes where appropriate. Further, the reduction in average premium growth for SEIP also reflected the resolution of the financial problems of the Blue Cross plan (which introduced a PPO and other elements of managed care) and an economywide slowing in the rate of inflation. The net result of changes to SEIP was to slow the growth in premiums from rates that were above the national average to rates that were below it. Once having adjusted to a lower level of costs, however, the rate of growth in premiums under SEIP might return to its historical trend.

Although proponents of managed competition differ about whether they believe purchasing cooperatives should have the authority to negotiate with health plans about premiums, the ability to negotiate with insurers may be a critical factor in the ability to control costs. Especially in its first few years, the negotiation process in Minnesota sometimes led to significant reductions in rates from those first proposed. Some insurers were not well prepared to defend their rating methods, or made errors in rate-setting calculations or assumptions that would have been costly to the state and its employees if they had gone undetected.

A number of other states also have purchasing cooperatives that incorporate some elements of managed competition.²⁹ These cooperatives typically have the authority to negotiate premiums with health plans, and their administrators generally believe that this authority is critical in controlling costs. Most introduced rate negotiation only recently, however, subsequent to experiencing rapid increases in health plan premiums. All the cooperatives require plans to submit operating data to justify their premium proposals and some, like SEIP, use independent actuaries to develop target premiums. If a plan's bid is significantly higher than the target

28. The enrollment shifts that took place in the Minneapolis metropolitan area between 1989 and 1993 were consistent with the shifts that would be predicted in response to enrollees' out-of-pocket premium costs using the estimates developed by Roger Feldman and others, "The Demand for Employment-Based Health Insurance Plans," *Journal of Human Resources*, vol. 24, no. 1 (Winter 1989). See also Roger Feldman and Bryan Dowd, "The Effectiveness of Managed Competition in Reducing the Costs of Health Insurance," in R.B. Helms, ed., *Health Policy Reform: Competition and Controls* (Washington, D.C.: AEI Press, 1993), Chapter 7.

29. See General Accounting Office, *Access to Health Insurance: Public and Private Employers' Experience with Purchasing Cooperatives*, GAO/HEHS-94-142 (May 1994), for a description of existing cooperatives.

premium, officials of the cooperative discuss the discrepancies with representatives of the plan and ask them to submit a best and final offer, which is often substantially lower.

Thus, there is evidence that introducing elements of managed competition, including rate negotiation, can slow the rate of growth in health plan premiums. For its estimates of health reform proposals in the last session of Congress, CBO assumed that a comprehensive plan that had all the important elements of managed competition might ultimately reduce the rate of growth in health spending for people in the managed competition sector by 1 percentage point. That reduction was about one-quarter of the amount by which growth rates exceeded those attributable to population growth and economywide inflation.

Experience under existing systems of managed competition, however, is too limited to assess accurately the magnitude or duration of effects. For one thing, the introduction of significant elements of managed competition has occurred simultaneously with a slowdown in the rate of economywide inflation, so some of the apparent effects of managed competition may only reflect that slowdown. Further, recent experiences in Minnesota have raised concerns that the pressures generated by managed competition may trigger too much consolidation among health plans and providers for genuine competition to thrive. Although the Minnesota legislature recently passed laws intended to establish a statewide delivery system composed largely of competing "integrated service networks," competitors have combined at a much more rapid pace than expected. By 1993, about 78 percent of Minnesotans in managed care plans were enrolled in one of three organizations. The legislature has temporarily banned further horizontal mergers involving any of these three plans.³⁰

30. Office of Technology Assessment, *Managed Care and Competitive Health Care Markets: The Twin Cities Experience*, OTA-BP-H-130 (July 1994). Also see National Health Policy Forum, "Consolidation in the Health Care Marketplace and Antitrust Policy," Issue Brief No. 660 (Washington, D.C.: National Health Policy Forum, 1995).

**APPENDIX: THE EFFECTS OF MANAGED CARE ON USE OF SERVICES:
EVIDENCE FROM NATIONAL SURVEY DATA**

A number of studies indicate that enrollees in health maintenance organizations (HMOs) use fewer services than similar patients in indemnity plans, with little or no adverse effect on health. Some of the studies also appear to show that the independent practice association (IPA) form of HMO is as effective as the group/staff model. The primary distinction between these two forms is that physicians in IPAs treat a mix of HMO and fee-for-service patients, while those in group/staff models treat only patients enrolled in their HMO. The group/staff models are generally thought to be more tightly managed, and thus more effective at controlling use and costs.

Although there is some evidence that well-managed IPAs can control use of services as well as group/staff HMOs, data from national surveys indicate that, on average, use of services by IPA enrollees is only slightly lower than it is for indemnity patients. Average use of services by enrollees in group/staff HMOs, however, is substantially lower than use by either indemnity or IPA patients.

This memorandum uses data from the 1992 National Health Interview Survey (NHIS) to estimate the average effects of group/staff HMOs and IPAs compared with indemnity plans in the fee-for-service sector. It updates and revises earlier results reported by Lewin-VHI, based on the 1989 NHIS.¹

The estimates show that average use of medical services by patients in group/staff HMOs is about 20 percent lower than that of similar patients in indemnity plans, and use by patients in IPAs is about 1 percent lower. Weighting the effects for group/staff HMOs and IPAs by 1992 year-end HMO enrollment indicates that, when compared with indemnity plans, the current mix of HMOs reduces use of services by an average of 7.8 percent.² These HMO effects are about twice as large as those found by Lewin-VHI. One reason for the larger effects is that CBO used information about whether or not a respondent gave birth in the hospital at any time during the year, whereas Levin-VHI did not. Thus, the Lewin-VHI study did not control for an

-
1. Lewin-VHI, Inc., *The Financial Impact of the Health Security Act, Appendix A* (Fairfax, Va.: Lewin-VHI, Inc., December 9, 1993), Table A-4; and Lewin-VHI, Inc., "Effects of Managed Care, Uninsurance, and AIDS on Health Care Use" (Fairfax, Va.: Lewin-VHI, Inc., February 15, 1993).
 2. In 1992, an estimated 63 percent of HMO enrollees were in IPAs (including network plans) and 37 percent were in group/staff HMOs. See Group Health Association of America, *Patterns in HMO Enrollment* (Washington, D.C.: Group Health Association of America, 1993).

important source of adverse selection affecting HMOs--the preference of many people planning a pregnancy to insure through an HMO because of the relatively generous maternity and well-baby benefits that HMOs typically provide.

Data and Methods

The data used for this analysis were taken from the 1992 National Health Interview Survey conducted by the National Center for Health Statistics, which included a health insurance supplement that describes the type of insurance plans each respondent had.³ The NHIS is an annual survey of about 130,000 individuals from about 50,000 households that are representative of the civilian noninstitutional population of the United States.⁴

The sample used here included all NHIS respondents who at the time of the survey were less than 65 years old, had private insurance coverage, and did not have public insurance (Medicare, Medicaid, or other publicly assisted medical coverage). Those who met the criteria but did not know whether their insurance plan was an HMO or not were excluded. The resulting unweighted sample included 47,822 people.

CBO estimated two sets of multivariate regression equations--one to explain respondents' use of outpatient medical visits during the 12 months before the survey, and the other to explain their use of hospital inpatient days. In each case, CBO used two equations to explain respondents' use of services--logistic regression to estimate the probability that the respondent had any use (one or more outpatient visits, or one or more inpatient stays) during the year, and ordinary least squares regression to predict the amount of use (number of outpatient visits for those with any visits during the year, or number of inpatient days for those with at least one hospital admission). The predicted probability of any use multiplied by the predicted amount of use for users gives an estimate of the total amount of use for a respondent with a given set of characteristics.

The explanatory variables used here were the same for each of the four regression equations, and all were coded as sets of categorical, or "dummy," variables. The set of greatest interest is the one describing the primary health

-
3. Respondents were asked to classify their plans by type, but were also asked to identify the plans by name. Plan names were used later to verify and, if necessary, correct the plan type given by the respondent.
 4. The overall response rate to the health insurance supplement for the National Health Interview Survey was about 92 percent.

insurance plan that respondents had at the time of the survey. Three HMO categories were specified--a group or staff HMO, an IPA, and an HMO of unknown type. The remaining insurance category contained all non-HMO plans, which would include both unmanaged and managed indemnity plans, such as those with utilization review programs or with preferred provider organizations (PPOs). A number of additional categorical variables were included to control for factors other than insurance that might affect respondents' use of medical services. They included variables for delivery of a child during the year, race, age, sex, health status, education, income, region, and urbanization of the respondent's residence.⁵

The estimated coefficients were obtained using unweighted data, but the implications of the regressions were calculated using weighted means to reflect the characteristics of the insured population.⁶ Table A-1 lists the dependent and explanatory variables used here, with their definitions and weighted sample means. Tables A-2 and A-3 show the estimated coefficients for the four regressions, along with their levels of significance.

Results

Estimated results were obtained separately for outpatient and inpatient services. The dollar-weighted average of these separate effects was then used as an estimate of the overall effects of HMOs on use of services.

Outpatient Visits. The first column in Table A-4 shows the implications derived from the two regressions for use of outpatient visits. Compared with indemnity enrollees, enrollees in group/staff HMOs are 3 percent more likely to use some outpatient services, although the number of services per user is not appreciably higher than it is for indemnity enrollees. Combining the findings for the probability of use and the extent of use for users, the results indicate that group/staff enrollees typically use 3.2 percent more outpatient visits than similar indemnity enrollees. Although this effect is small, it is statistically significant--that is, the evidence is not consistent with the hypothesis that group/staff enrollees use no more outpatient visits than similar indemnity enrollees.

5. A female respondent was identified as having given birth during the previous 12 months if her reported hospital inpatient days excluding stays for delivery differed from the total inpatient days reported.

6. Because the NHIS uses a complex survey sampling scheme rather than simple random sampling, it is necessary to use weighted data to produce representative estimates of the magnitude of events, but unweighted data produce reliable coefficient estimates.

TABLE A-1. VARIABLE DEFINITIONS AND WEIGHTED MEANS

Name of Variable	Definition	Mean
childbirth [excluded]	1 if gave birth during year in hospital 1 if did not give birth	0.013 0.987
black [excluded]	1 if black 1 if not black	0.096 0.904
ch00	1 if age is less than 1	0.015
ch 1-6	1 if age is 1 through 6	0.093
fe7-18	1 if female age 7 through 18	0.090
fe19-34	1 if female age 19 through 34	0.134
fe35-54	1 if female age 35 through 54	0.177
fe55-64	1 if female age 55 through 64	0.055
ma7-18	1 if male age 7 through 18	0.097
[excluded]	1 if male age 19 through 34	0.125
ma35-54	1 if male age 35 through 54	0.166
ma55-64	1 if male age 55 through 64	0.048
[excluded]	1 if reported health is excellent	0.454
hlth2	1 if reported health is very good	0.307
hlth3	1 if reported health is good	0.190
hlth4	1 if reported health is fair	0.041
hlth5	1 if reported health is poor	0.008
[excluded]	1 if years of family head's education is under 12	0.044
educ2	1 if years of family head's education is 12	0.303
educ3	1 if years of family head's education is 13 through 16	0.262
educ4	1 if years of family head's education is 17 or more	0.390
[excluded]	1 if family income is under \$35,000	0.331
midncome	1 if family income is between \$35,000 and \$50,000	0.224
hincome	1 if family income is \$50,000 or more	0.325
unkncome	1 if family income is unreported	0.120
[excluded]	1 if residence is in Northeast	0.234
region2	1 if residence is in Midwest	0.258
region3	1 if residence is in South	0.278
region4	1 if residence is in West	0.230
[excluded]	1 if residence is an MSA-central city	0.273
msa2	1 if residence is an MSA-not central city	0.548
msa3	1 if residence is a nonfarm non-MSA	0.167
msa4	1 if residence is a farm non-MSA	0.012
grpstf	1 if primary health plan is a group or staff HMO	0.059
ipa	1 if primary health plan is an IPA	0.122
unkhmo	1 if primary health plan is an HMO, type unreported	0.220
[excluded]	1 if primary health plan is indemnity	0.599
inpuse	1 if respondent had any inpatient stays during year	0.058
ln (inpdays)	natural log of number of inpatient days for users	1.184
outpuse	1 if respondent had any outpatient visits during year	0.793
ln (outpvsts)	natural log of number of outpatient visits for users	0.974

SOURCE: Congressional Budget Office tabulations from the 1992 National Health Interview Survey.

NOTE: Except for the continuous dependent variables (inpdays and outpvsts), all are categorical, or "dummy," variables that have only two values--1 if the characteristic is present, and 0 if otherwise. Thus, the means show the proportion of people in the sample who have the specified characteristic.

TABLE A-2. REGRESSION ESTIMATES FOR OUTPATIENT VISITS

Explanatory Variable ^a	Logistic Regression for Probability of Any Visits		Least Squares Regression for Number of Visits (Log Form)	
	Estimated Coefficient	P-value ^b	Estimated Coefficient	P-value ^b
intercept	-0.189	0.0039	0.399	0.0001
childbirth	2.114	0.0001	1.319	0.0001
black	-0.096	0.0184	-0.154	0.0001
ch00	2.381	0.0001	0.671	0.0001
ch1-6	1.955	0.0001	0.336	0.0001
fe7-18	0.713	0.0001	0.032	0.1111
fe19-34	1.137	0.0001	0.257	0.0001
fe35-54	0.877	0.0001	0.196	0.0001
fe55-64	1.043	0.0001	0.195	0.0001
ma7-18	0.707	0.0001	-0.006	0.7581
ma35-54	0.056	0.1450	0.059	0.0017
ma55-64	0.485	0.0001	0.073	0.0043
hlth2	0.368	0.0001	0.234	0.0001
hlth3	0.548	0.0001	0.525	0.0001
hlth4	1.156	0.0001	1.021	0.0001
hlth5	1.857	0.0001	1.772	0.0001
educ2	0.395	0.0001	0.082	0.0003
educ3	0.639	0.0001	0.172	0.0001
educ4	0.842	0.0001	0.233	0.0001
midncome	0.067	0.0401	-0.014	0.2517
hincome	0.195	0.0001	-0.001	0.9372
unkncome	0.021	0.5794	-0.108	0.0001
region2	-0.125	0.0003	0.046	0.0004
region3	-0.209	0.0001	-0.041	0.0013
region4	-0.241	0.0001	0.029	0.0266
msa2	0.019	0.5042	0.016	0.1406
msa3	-0.086	0.0191	-0.004	0.7573
msa4	-0.183	0.0706	0.005	0.9129
grpstf	0.160	0.0019	0.001	0.9381
ipa	0.243	0.0001	0.041	0.0036
unkhmo	0.208	0.0001	0.037	0.0009

SOURCE: Congressional Budget Office regressions from the 1992 National Health Interview Survey.

a. See Table A-1 for definitions.

b. The lower the reported P-value, the stronger (or more significant) the relationship is. All variables with a P-value less than 0.05 are generally considered to be significant.

TABLE A-3. REGRESSION ESTIMATES FOR INPATIENT DAYS

Explanatory Variable ^a	Logistic Regression for Probability of Any Days		Least Squares Regression for Number of Days (Log Form)	
	Estimated Coefficient	P-value ^b	Estimated Coefficient	P-value ^b
intercept	-3.952	0.0001	1.098	0.0001
childbirth	9.837	0.0001	-0.140	0.0087
black	-0.073	0.3532	0.090	0.1124
ch00	1.351	0.0001	0.592	0.0001
ch1-6	-0.127	0.2788	-0.128	0.1881
fe7-18	-0.386	0.0025	0.007	0.9479
fe19-34	0.187	0.0620	-0.056	0.4698
fe35-54	0.375	0.0001	0.023	0.7464
fe55-64	0.459	0.0001	0.182	0.0356
ma7-18	-0.449	0.0005	0.264	0.0130
ma35-54	0.179	0.0585	0.133	0.0876
ma55-64	0.664	0.0001	0.282	0.0013
hlth2	0.405	0.0001	0.089	0.0434
hlth3	1.076	0.0001	0.203	0.0001
hlth4	1.854	0.0001	0.427	0.0001
hlth5	2.760	0.0001	0.828	0.0001
educ2	0.009	0.9276	-0.115	0.1035
educ3	0.147	0.1443	-0.031	0.6737
educ4	0.148	0.1472	-0.082	0.2643
midncome	-0.122	0.0540	-0.024	0.5921
hincome	-0.113	0.0767	-0.060	0.1906
unkncome	-0.215	0.0047	0.072	0.1832
region2	0.149	0.0223	-0.033	0.4748
region3	0.028	0.6644	-0.065	0.1613
region4	-0.214	0.0029	-0.146	0.0036
msa2	0.167	0.0033	0.033	0.4180
msa3	0.249	0.0005	0.073	0.1537
msa4	-0.023	0.9168	-0.189	0.2372
grpstf	-0.443	0.0002	0.010	0.8972
ipa	-0.059	0.4350	-0.015	0.7675
unkhmo	0.003	0.9590	-0.021	0.6085

SOURCE: Congressional Budget Office regressions from the 1992 National Health Interview Survey.

a. See Table A-1 for definitions.

b. The lower the reported P-value, the stronger (or more significant) the relationship is. All variables with a P-value less than 0.05 are generally considered to be significant.

TABLE A-4. ESTIMATED CHANGE IN USE OF SERVICES FOR HMOs
COMPARED WITH TYPICAL INDEMNITY PLANS

	Percentage Change in Use		
	Outpatient Visits	Inpatient Days	Medical Services ^a
Probability of Any Use			
HMOs			
Group/Staff	3.0	-34.8	-20.1
IPA	4.5	-5.5	-1.6
Unreported	3.9	0.3	1.7
HMO Average ^b	3.9	-16.3	-8.4
Extent of Use Among Users			
HMOs			
Group/Staff	0.1	1.0	0.7
IPA	4.1	-1.5	0.6
Unreported	3.7	-2.1	0.2
HMO Average ^b	2.6	-0.6	0.7
Total Use of Services			
HMOs			
Group/Staff	3.2	-34.2	-19.6
IPA	8.7	-6.9	-0.8
Unreported	7.7	-1.8	1.9
HMO Average ^b	6.7	-17.0	-7.8

SOURCE: Congressional Budget Office estimates from the 1992 National Health Interview Survey.

NOTES: Typical indemnity plan refers to a fee-for-service plan with some elements of managed care.
HMO = health maintenance organization; IPA = independent practice association.

- a. Calculation of effects on use of medical services weights outpatient visits by 0.39 and inpatient days by 0.61, to reflect the mix of spending on outpatient and inpatient services.
- b. Calculation of the HMO average uses weights of 0.37 for group/staff HMOs, 0.63 for IPAs, and 0 for HMOs of unreported type.

The increase in use of outpatient visits for other HMO enrollees, compared with indemnity enrollees, is 8 percent to 9 percent--and is thus larger than it is for group/staff enrollees. Further, the higher use among other HMO enrollees results as much from more visits per user as from a higher probability of any use, in contrast to the results for group/staff HMOs, in which most of the effect was due to a higher probability of any use during the year. The probability of any use is primarily the result of patients' preferences and would be expected to be higher among HMO enrollees because of the lower cost-sharing requirements typical in HMOs. The extent of use once a patient has initiated contact with the medical system, however, is a function of both the patient's preferences and the provider's responses. The difference between group/staff HMOs and other HMOs concerning the extent of use among users is indicative of the more effective control that group/staff HMOs apparently have over providers' treatment patterns.

Hospital Inpatient Days. The second column in Table A-4 shows the implications derived from the two regressions for use of inpatient hospital days. On average, the probability of an inpatient stay is about 35 percent lower for enrollees in group/staff HMOs than for similar people in indemnity plans. Among those who are admitted to the hospital, the number of days used is slightly (and not significantly) higher for group/staff HMO enrollees than for similar people in indemnity plans--perhaps because the much lower admission rate means that those who are admitted are sicker. Total use of hospital inpatient days is about 34 percent lower for group/staff HMO enrollees compared with similar people in indemnity plans.

The estimates indicate that IPA enrollees use about 7 percent fewer hospital inpatient days than similar people in indemnity plans, with most of this effect attributable to fewer hospital admissions. However, these effects are not statistically significant. In other words, these results are consistent with the hypothesis that IPAs, on average, do not reduce the use of inpatient days compared with indemnity plans.

Among HMO enrollees who do not know whether their plan is a group/staff model or an IPA, the estimated effects on use of inpatient days are even smaller. Compared with indemnity enrollees, this group uses about 2 percent fewer inpatient days. Here, too, the difference is not statistically significant.

Overall Use of Medical Services. The results discussed above are combined in the third column in Table A-4 to obtain an estimate of the effects of HMOs on the resource cost of medical services overall.⁷ For this estimate, it is assumed that the

7. Nominal costs would include the effects of prices paid per service as well, but that is beyond the scope of this analysis. The NHIS does not include information on health care expenditures.

resource costs of all outpatient care are proportional to the number of outpatient visits made, and that the costs of all inpatient care are proportional to the number of inpatient days used. For the population under age 65 in 1987, about 39 percent of spending on insured services was for outpatient care, and 61 percent was for inpatient care.⁸ These values are used to weight the results discussed above to estimate the effects of HMOs on the overall use of medical services. The estimates given here for overall use of medical services would probably be somewhat different if later expenditure data were available.

For each HMO group, use of outpatient services is somewhat higher than it would be for similar enrollees in indemnity plans, whereas use of inpatient services is lower. For group/staff HMOs, the combined effect on use of medical services overall is a substantial reduction of nearly 20 percent when compared with indemnity plans, because the reduction in inpatient use is large and the increase in outpatient use is small. For other HMO groups, small reductions in inpatient use are largely offset by increases in outpatient use of services, with little or no change in use of medical services overall. The average effect on overall use of medical services is a reduction of 7.8 percent.

Comparison with Other Research

Only one of the previously published studies that compares the effects of group/staff HMOs and IPAs with indemnity plans is based on nationally representative data. The other studies are based on selected plans, physicians, and patients that are not nationally representative.⁹ Because it is inappropriate to conclude that the performance of HMOs in studies of selected plans is typical of all HMOs, this comparison focuses only on the nationally representative study by Lewin-VHI.

In addition to the different survey year examined (1989 instead of 1992), the methods used for the Lewin-VHI study differed from those used here in several ways. One important difference is that this analysis included an indicator for childbirth in the regressions, whereas the Lewin-VHI study did not. Other differences in specification that may have contributed to different results are that the

8. Percentages are based on tabulations from the 1987 National Medical Expenditure Survey, the latest expenditure data available. Both outpatient and inpatient expenditures include facility, physician, and other professional costs.

9. For example, see Sheldon Greenfield and others, "Variations in Resource Utilization Among Medical Specialties and Systems of Care," *Journal of the American Medical Association*, vol. 267, no. 12 (March 25, 1992); and Randall Brown and Jerrold Hill, "Does Model Type Play a Role in the Extent of HMO Effectiveness in Controlling the Utilization of Services?" (Princeton, N.J.: Mathematica Policy Research, Inc., May 10, 1993).

Lewin-VHI study used only a single ordinary least squares regression to estimate total use of outpatient visits, instead of the two-part estimation procedure used here; further, it included uninsured and publicly insured people in the sample along with privately insured people, combined those in HMOs of unspecified type with those in IPAs, and estimated separate equations for children and adults.

For both group/staff HMOs and IPAs, the reduction in total use of services estimated here is about twice as large as the estimates reported by Lewin-VHI (see results for total use of services in Table A-4, in comparison with Table A-5). Group/staff HMOs reduce use of medical services by nearly 20 percent, instead of the 9 percent reduction implied by the Lewin-VHI results. IPAs reduce use by about 0.8 percent, instead of 0.3 percent. Averaged over both types, these estimates indicate that HMOs reduced use of services by nearly 8 percent in 1992, when compared with indemnity plans. By contrast, the Lewin-VHI results imply a reduction of 3.9 percent overall using the 1989 mix of HMOs, or a reduction of 3.6 percent using the 1992 mix.

When the explanatory variable for childbirth is excluded from the regressions in this analysis, the estimated reduction in use for HMOs overall is less than half the estimated drop when the childbirth variable is included (see Table A-6). The estimated reduction in use of inpatient services is only about half as large, while the increase in use of outpatient visits is slightly larger. Thus, excluding the childbirth variable produces estimates much closer to the results reported by Lewin-VHI. This probably indicates that the absence of a variable for childbirth in the data used by Lewin-VHI produced an estimate of HMO effects on reducing use of inpatient days that was too small, so the estimated effect on use of medical services overall was also too small.

TABLE A-5. PREVIOUS ESTIMATES OF CHANGE IN USE OF SERVICES FOR HMOs COMPARED WITH TYPICAL INDEMNITY PLANS

	Percentage Change in Use		
	Outpatient Visits	Inpatient Days	Medical Services ^a
Total Use of Services			
HMOs			
Group/Staff	6.6	-19.0	-9.1
IPA or Unreported	9.9	-6.9	-0.3
HMO Average			
As Reported ^b	8.4	-11.7	-3.9
Using 1992 Weights ^c	8.7	-11.4	-3.6

SOURCE: Congressional Budget Office, derived from Table A-4 in "The Financial Impact of the Health Security Act" (Fairfax, Va.: Lewin-VHI, Inc., December 9, 1993).

NOTES: Typical indemnity plan refers to a fee-for-service plan with some elements of managed care.
HMO = health maintenance organization; IPA = independent practice association.

- a. Results for medical services were not reported in the study, but were calculated from reported results for outpatient visits and inpatient days using 0.39 and 0.61 as the respective weights.
- b. Calculation of the HMO average as reported uses (1989) weights of 0.41 for group/staff HMOs and 0.59 for other HMOs.
- c. Calculation of the HMO average for 1992 uses weights of 0.37 for group/staff HMOs and 0.63 for other HMOs.

TABLE A-6. COMPARISON UNDER ALTERNATIVE SPECIFICATIONS OF ESTIMATED CHANGE IN USE OF SERVICES FOR HMOs COMPARED WITH TYPICAL INDEMNITY PLANS

	Percentage Change in Use		
	Outpatient Visits	Inpatient Days	Medical Services ^a
CBO Model with Childbirth Variable (Total Use of Services)			
HMOs			
Group/Staff	3.2	-34.2	-19.6
IPA	8.7	-6.9	-0.8
Unreported	7.7	-1.8	1.9
HMO Average ^b	6.7	-17.0	-7.8
CBO Model Without Childbirth Variable (Total Use of Services)			
HMOs			
Group/Staff	3.4	-23.5	-13.0
IPA	9.2	-1.9	2.4
Unreported	8.1	1.4	4.0
HMO Average ^b	7.0	-9.9	-3.3

SOURCE: Congressional Budget Office estimates from the 1992 National Health Interview Survey.

NOTES: Typical indemnity plan refers to a fee-for-service plan with some elements of managed care.
HMO = health maintenance organization; IPA = independent practice association.

- a. Calculation of effects on use of medical services weights outpatient visits by 0.39 and inpatient days by 0.61, to reflect the mix of spending on outpatient and inpatient services.
- b. Calculation of the HMO average uses weights of 0.37 for group/staff HMOs, 0.63 for IPAs, and 0 for HMOs of unreported type.

